AtwaterVillageAlways.org

Hon. Jose Huizar, Chair, PLUM Committee
Hon. Marqueece Harris-Dawson
Hon. Gilbert A. Cedillo
Hon. Mitchell Englander
Hon. Filipe Fuentes
Office of the City Clerk, c/o Ms. Sharon Dickinson

May 6, 2016

Attn: PLUM Committee
200 North Spring Street, Room 395,
LA, CA 90012

Case Number: CHC-2015-4255-HCM
Albert Van Luit Complex
4000-4010 E. Chevy Chase Drive

Sent via email to:
sharon.dickinson@lacity.org

From: Kelly Blanpied, on behalf of Atwater Village Always
4007 Verdant Street, LA 90039
atwatervillagealways@gmail.com

Re: Van Luit Complex (CHC-2015-4255-HCM) – Letter of Support

Dear Chairman Huizar and Councilmembers,

I write on behalf of the community members of Atwater Village Always. First, I write to commend the Cultural Heritage Commission's unanimous decision to preserve the Albert Van Luit Complex as a Los Angeles Landmark. I also write to add cultural and historical evidence to the record that further supports the Cultural Heritage Commission's decision. And finally, I write to contextualize the land use issues surrounding the Albert Van Luit Complex.

Patents owned by Albert Van Luit, which revolutionized the wallpaper industry, were uncovered since the most recent Cultural Heritage Commission hearing.

In 1951, the same year that the new factory opened, Van Luit worked with engineer John Bruce to develop a revolutionary silk screening process that utilized drying ovens. This new invention

replaced two problematic methods of drying printed wallpaper: 1) an air-drying method, in which elongated strips of wallpaper were festooned on drying racks, requiring hundreds of square feet of factory space, including a great deal of time and labor spent in handling; and 2) a method using internally heated drums over which wallpaper was carried, a process which adversely affected color values and reduced the moisture content in the paper. Wallpaper stock required a specific percentage (5 - 7%) of moisture, which was integral for color stability, storage, and workability. Air-drying retained the moisture content of the printed material, while heat reduced it, affecting color, shelf-life, and ease of paper hanging. Van Luit's drying ovens employed a method using steam to preserve the moisture content of the printed material, resolving these problems, while increasing efficiency and vastly improving quality. The invention was filed with the US Patent Office on February 2, 1953, and then officially patented US2831269 and published April 22, 1958, under the name "Drying Apparatus" (see attached patent).

John Bruce and Albert Van Luit continued their collaboration for at least a decade. Another invention that revolutionized the wallpaper industry was the development of the "means for unidirectional photo enlarging and reducing" that created an explosion of design applications, thus significantly increasing sales. The technique involved the use of a photographic process which enabled any desired background to be printed on wall-covering material. Prior to the development of this process only one wall in a room would be covered by wallpaper. The remaining walls were painted to match the color of the "scenic." The new technique substantially increased sales because it permitted the consumer to have a scenic on one wall, and the other three walls covered in a complementary background paper (see attached photo advertisement). The complexity of the background prevented imitations by others in the industry, thus assuring the unique quality and market position of the Van Luit product. The invention was filed with the US Patent Office on October 10, 1960, and then officially patented US3115081 and published December 24, 1963, under the name "Means for Unidirectional Photo Enlarging and Reducing" (see attached patent).

Though history had yet to so state, it is very likely that these two inventions most revolutionized the manufacture and design of wallpaper. As they changed the wallpaper industry, they also firmly established Albert Van Luit's position as a leader in the industry. History has yet to also document Van Luit's propensity for collaboration, without which the above inventions may not have materialized. It has been said that his "phenomenal success […] was attributable almost entirely to Van Luit's guiding genius —his technical and artistic abilities, his business sense, his flare for effective marketing, and his unceasing devotion to his work."[1]

At the February 4, 2016 hearing we fleshed out Albert Van Luit's character, best summarized by one of his showroom interior designers, Virginia Knight:

> Before LBGT was recognized, Mr. Van hired and nurtured a cross section of humanity. People who otherwise [were] a marginalized group, maybe even unemployable people. Mr. Van made a safe place for us to work, an environment for us to be who we were, *to be creative*. Quite a guy. (Emphasis added.)

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[1] *Albert Van Luit Co v. Commissioner, US Tax Court*, (March 13, 1975), 4.

We documented how careers were launched from his factory floor, an unofficial equal opportunity workplace, where he collaborated with printers, silk-screen designers and care-takers, colorists, and interior designers. Van Luit's recognition of, and collaboration with talented individuals may well be the genius behind his genius. While several of Van Luit's innovations were patented, his genius with color, known as the "Van Luit Touch," was not. It was however, the result of good-natured collaboration. Soon after the factory opened a group of the above individuals, including Albert Van Luit and Virginia Knight, convened on the factory floor, curious about a certain color. They started playing with the color, which in time became a sort of ritual, which Van Luit came to call creating a "funny old putty" color, known to his co-collaborators as "FOP." Invariably, an FOP color would become another popular new color in the design world. Without Van Luit's propensity to collaborate, his reputation as a genius with color may not have been realized. This is how innovation comes about - in collaboration with others.

From the Daylight Factory at the Albert Van Luit Complex in Atwater Village, the "Cadillac" of wallpaper was distributed all over the US. Van Luit's innovative idea to distribute his products through retail outlets, expanded his market beyond the exclusive world of interior design and the motion picture industry, where the name Albert Van Luit was already established as the "go to" name for wallpaper. Indeed, Van Luit's products were distributed throughout the world in Asia, Europe, and Latin America. It is little wonder that in 1962, the National Wallcovering Wholesalers Association awarded Albert Van Luit with the Justin P. Allman Award, an award given to individuals who are judged to have done the most to advance interest in wallpapers.

It must be noted that it was only *after* these important innovations transpired, and Van Luit received the Justin P. Allman award, that the Killingsworth showroom was added to the complex in 1965. Although Edward A. Killingsworth is not as well known today as are his contemporaries - Pierre Koenig, Frank Lloyd Wright, Richard Neutra, and Charles Eames - the iconic architectural photographer Julius Schulman singled out Killingsworth's work "of what constitutes the definition of successful, even great architecture."[2] It was only because of Van Luit's extraordinary success within the design world that he was aware of, and able to afford, one of the most prominent architects of his time to design his new showroom.

Were it not for the Daylight Factory where historic cultural change and innovation occurred, Van Luit's products would not have achieved the success that his company enjoyed. (Gross sales in 1964 were over $2 million, an equivalent of over $15 million in today's dollars; in 1970, the year Albert Van Luit died, gross sales were nearly $4 million, an equivalent of over $30 million in today's dollars.[3]) Even after the space-saving dryers were incorporated into production, numerous additions to the factory were required to enable production to meet demand for the Van Luit brand. Preserving the factory and showroom together as the Complex that it was and is, enhances the significance of these important cultural and industry advances.

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[2] Volland, Jennifer M. & Mullio, Cara, *Edward A. Killingsworth: An architect's life* (Santa Monica: Hennessey & Ingalls, 2013), 14.

[3] *Albert Van Luit Co v. Commissioner, US Tax Court*, (March 13, 1975), 6-7.

Not only did Albert Van Luit revolutionize the wallpaper industry within his factory in Atwater Village, but he also lived directly behind his factory. As a leader in the industry, and as a resident and horse-owner, Van Luit carefully situated his factory with 30 - 40 foot buffer zones between it and the factory's equestrian and residential neighbors. He also maintained 25 foot height limits on the factory in order to preserve the view of the hills in Griffith park. Residents and equestrians who live in the area today continue to appreciate Van Luit's considerations; some still remember what Van Luit said of his Complex during the planning phase, that it would be the "jewel of the neighborhood." Even the current owner of the property seems to have recognized the aesthetic values of the factory, as evidenced by a proposed adaptive reuse concept that was marketed in 2014 (see attached).

Approximately one year ago, at the invitation of the Complex owner's representative, members of the community toured the Complex and submitted questions. The community, including concerned equestrians, were encouraged to explore the historical significance of the bridle paths in answer to a query about the historical significance of the buildings on the Complex. Like Van Luit, today's equestrians and residents are concerned about the impact of out-of-scale land use. Motivated by the representative's suggestion, the community uncovered a fascinating history that is exemplary of the character of Los Angeles where individuals come to engage in creative pursuits, innovate, and reinvent lives. Our community was extremely fortunate to find that the Complex contained architectural and industrial importance, including significant LGBT historic cultural value. Otherwise, with demolition permits granted almost immediately following the filing of the developer's application, our community would have been powerless to slow down a spot-zoned development, which would likely render the end of equestrian activity in the immediate area. We believe there are locations in Atwater Village where in-fill density is appropriate, and we believe that future housing in Atwater Village needs to provide affordable housing in order to retain our valuable working-class community and to be more environmentally sustainable.

Adjacent to the LA River, the Van Luit Complex signifies a transition from residential and equestrian use, to manufacturing and industrial use in Atwater Village. We are proud of our working-class heritage that has historically populated our Village, and we value our industrial and manufacturing district. The Complex also demonstrates how thoughtful planning can integrate diverse and sensitive uses in a single area. After the Van Luit factory shut down, the Complex has been the home of Scenic Expressions, who have served local television studios in Burbank, Hollywood, and Atwater Village for over two decades, all while residents and equestrians have abided nearby, undisturbed by the operation of their business. We, in Atwater Village, hope for continued harmonious use of the property.

Each element of the Complex is integral to the cultural and historic value of it. The mere fact that it has survived - intact - for over half a century offers proof that it has been the perfect neighbor to the equestrian community and those residents living nearby. Now that the actual importance of the Complex throughout the world has been clearly demonstrated, it would be a disservice to the Atwater Village community and to the City of Los Angeles to take any action other than to preserve this entire property. An opportunity such as this is indeed rare and must not be lost.

However the future unfolds, our community is proud to bring this history to light. We must preserve the history that makes Los Angeles what it is today. We strongly urge the PLUM Committee to support the Cultural Heritage Commission's determination to preserve the Albert Van Luit Complex in whole.

Respectfully,

Kelly Blanpied, on behalf of Atwater Village Always

Attachments:
Drying Apparatus Patent
The Architectural Digest (Fall 1964) Advertisement for Albert Van Luit & Co.
Means for Unidirectional Photo Enlarging and Reducing Patent
Adaptive Reuse Real Estate Internet Advertisement for 4000 E. Chevy Chase Drive

cc: councilmember.ofarrell@lacity.org, christine.peters@lacity.org, amy.ablakat@lacity.org, CHC@lacity.org, shannon.ryan@lacity.org, lambert.giessinger@lacity.org, atwatervillagealways@gmail.com

April 22, 1958 J. K. BRUCE 2,831,269

DRYING APPARATUS

Filed Feb. 2, 1953 2 Sheets-Sheet 1

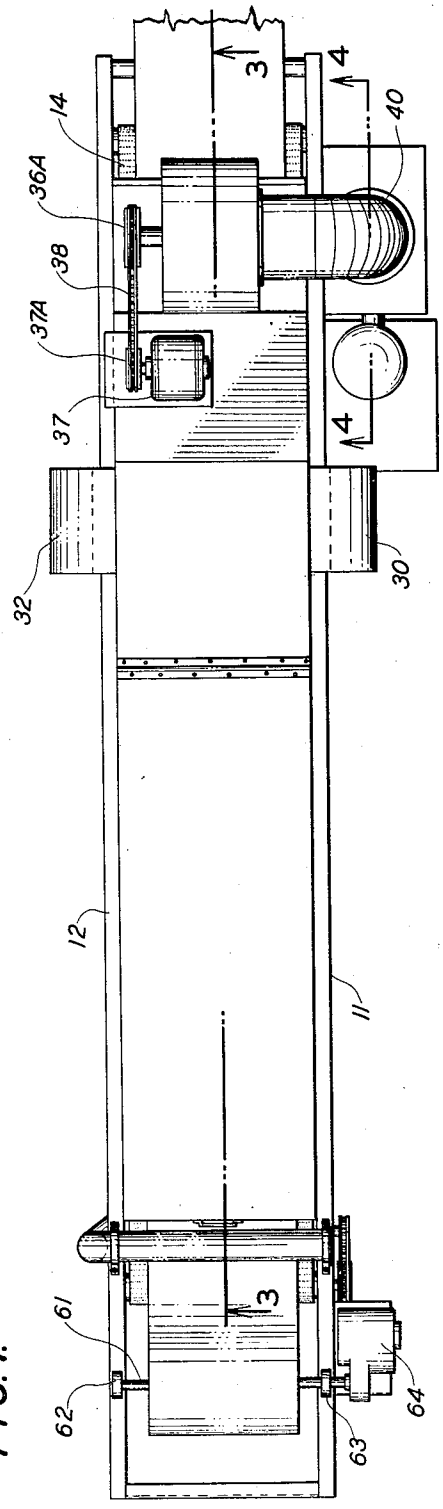

FIG. 1.

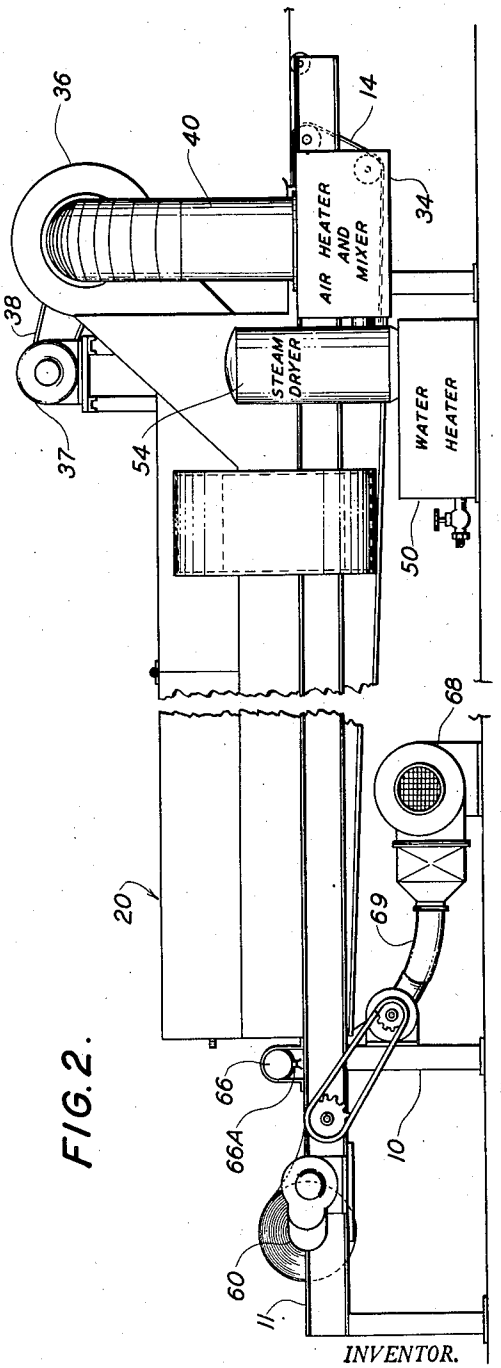

FIG. 2.

INVENTOR.
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ATTORNEY

April 22, 1958 J. K. BRUCE 2,831,269

DRYING APPARATUS

Filed Feb. 2, 1953 2 Sheets-Sheet 2

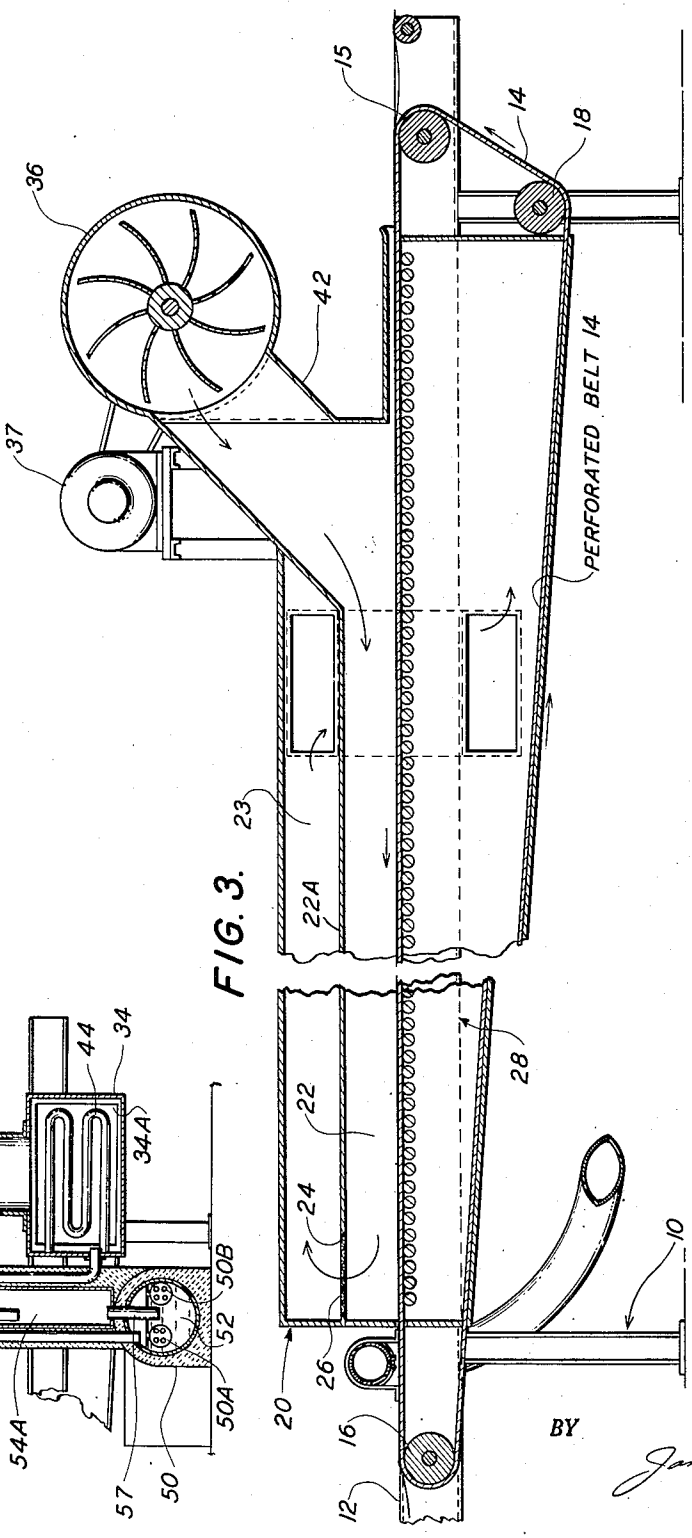

FIG. 3.

FIG. 4.

INVENTOR.
JOHN K. BRUCE

BY

James B. Christie

ATTORNEY

United States Patent Office 2,831,269 Patented Apr. 22, 1958

2,831,269

DRYING APPARATUS

John K. Bruce, South Pasadena, Calif., assignor to Albert Van Luit & Co., Los Angeles, Calif., a corporation of California

Application February 2, 1953, Serial No. 334,567

6 Claims. (Cl. 34—155)

This invention relates to non-destructive drying of coated materials and specifically to a method and apparatus for drying such materials. The term "coated materials" is employed throughout the specification and claims to include pulp and fiber products having a continuous or discontinuous paint, ink or other coating which requires drying.

The invention is excellently suited to wallpaper drying and is described in this application, although in no way so limited. At present, wallpapers are dried after painting or printing either by festooning the elongated strips thereof on racks built for such purpose or by carrying the paper over very large internally heated drums. Each of these methods has significant and characteristic disadvantages. Festooning requires an inordinate amount of handling and drying time and also, as a consequence, an excessive amount of plant space if any appreciable footage production is involved. Heated drum drying has a tendency to adversely affect the color values of the paper coating and to reduce the moisture content of the paper itself. Such reduction in moisture content may be the cause of color instability, and, in addition, it makes the paper difficult to handle, store and apply. A great deal of time and money has been expended in the past in an effort to develop a rapid non-destructive method of drying wallpapers, and I have now discovered such a method.

The invention lies in a method of drying coated materials which comprises passing the material through a drying zone, while circulating through the zone and in contact with the coated surface of the material, a volume of moist, warm air. The method is unique in that drying does not depend upon contacting the paper with a heated object or surface, nor does it depend upon superheated steam or high temperature gases, both of which techniques have been shown to be unsuited for this purpose.

In its preferred embodiment the drying method of the invention comprises circulating in contact with the coating to be dried a large volume of air which has been heated to a temperature in the range of about 180° F. to about 200° F. and humidified to a relative humidity of between about 75% and 95%. For drying wallpaper, 85% relative humidity is preferred. The temperature of the air is carefully maintained below the boiling point of water so as to prevent water loss from the paper itself. As a consequence of the sub-boiling temperatures and relatively high moisture content of the drying media, the dried paper still has a moisture content, after drying, within the so-called mill tolerance range of approximately 5% to 7%. This water content is apparently quite important in maintaining color stability, shelf life and workability.

Drying is accomplished in accordance with the described method in a fraction of the time required for rack drying, which is the only other presently known method of drying without adversely affecting moisture content and color stability. By way of example, a water

base wallpaper paint will rack dry in approximately one-half hour and is dried in accordance with the invention in approximately one to two seconds. The so-called transparent base wallpaper paints require upwardly of three hours for rack drying and something less than twenty seconds by the method of the invention. In addition to this appreciable time saving, the method affords a tremendous economy of space. A single installation for carrying out the method of the invention occupying approximately 40 to 50 square feet will, in a day's time, accommodate a quantity of paper requiring hundreds of square feet of rack drying space.

The invention is also directed to apparatus for drying coated materials in accordance with the described method. In this aspect the invention comprises a housing having side walls, a conveyor having a delivery flight and a return flight passing through the housing, means for admixing steam and air, means for heating the air either prior to, during or after mixing with steam, and means for circulating the air in the housing and in the vicinity of the surface of the conveyor and preferably concurrently to the direction of conveyor travel. To minimize heat load, in a preferred embodiment of the incention, the air is recirculated through the mixing and heating means for redelivery into the enclosed chamber.

The invention will be clearly understood in relation to both method and apparatus aspects thereof from the following detailed description taken in conjunction with the accompanying drawing, in which:

Fig. 1 is a plan view of one form of apparatus of the invention;

Fig. 2 is a side elevation of the apparatus of Fig. 1;

Fig. 3 is a longitudinal vertical section taken on the line 3—3 of Fig. 1; and

Fig. 4 is a vertical section taken on the line 4—4 of Fig. 1.

Referring to the drawing, the illustrated apparatus comprises a framework **10** including longitudinally extending I beams **11** and **12** supported on pedestals as illustrated. A conveyor **14** includes a section **14A** extending between pulleys **15**, **16** mounted between the beams **11** and **12** and respectively adjacent opposite ends thereof, and a section **14B** beneath section **14A** and over a third pulley **18** mounted beneath the beams **11** and **12** and approximately below the pulley **15**. A housing **20** is supported by the framework **10** substantially enclosing a major portion of the conveyor **14**. The housing includes a first longitudinal extending compartment **22** overlying the upper surface of the conveyor **14**, a horizontally disposed partition **22A** forming the upper closure of the first compartment **22** and the bottom closure of a second longitudinally extending compartment **23** overlying the compartment **22** and giving access thereto at one end through a port **24** in the partition **22A** and a third section **28** underlying the conveyor section **14A**. The port **24** is provided with a screen **26**. In preferred practice, as illustrated, the conveyor section **14B** is carried through the lower section **28** of the housing between pulleys **16** and **18**. The conveyor need not be sealed through the housing walls but the openings therein through which the conveyor passes in ingress and egress are held at a practical minimum size to minimize breathing. A pair of ducts **30**, **32** communicate between the upper chamber **23** and the lower chamber **28** and provide means for gas flow from the upper to the lower chamber.

An air heater and mixer **34** in the form of a generally rectangular chamber is supported on the framework adjacent an end of the housing **20** designated as the input end, and, as shown in Fig. 4, opens at one face **34A** into the lower chamber **28**. A blower **36** is mounted above the housing **20** and adjacent the input end thereof, the

blower being driven in a conventional manner by a motor 37. The blower 36 takes suction through a duct 40 opening into the top of the heater and mixer 34 and delivers through a duct 42 into compartment 22 of the housing.

The heater 34 includes heating coils 44, which may be steam coils, an electric heater, or the like, to maintain the temperature of the air drawn from the lower chamber 28 through the heater and into the duct 40 at a predetermined value. A water heater 50 is mounted adjacent the air heater 34 and includes conventional immersion-type heating elements 50A, 50B for heating a body 52 of water contained in the heater 50. A trap 54 is mounted above the heater 50 and includes a chamber 54A, an inlet 56 opening into the upper end of the chamber and communicating with the water heater 50, and a drain 57 opening between the bottom of the chamber 54A and the water heater 50, the drainpipe 57 extending below the level of water in the heater 50. An outlet 58 communicates between the upper portion of the chamber 54A and the air heater 34.

The air heater 34 serves the double purpose of maintaining the desired temperature of the air stream passing therethrough and also as a mixer for mixing steam entering through conduit 58 and air entering from the housing chamber 28 to maintain the proper moisture content in the circulating air.

A rewind roller 60 is supported on a shaft journaled in pillow blocks 62, 63 on opposite members 11 and 12 of the framework 10. A torque motor 64 is mounted on the side of the framework to drive the shaft 61 and to maintain a predetermined take-up tension on the roller 60.

Between the outlet end of housing 20 and the rewind roller 60 a tube 66 is supported transversely above the conveyor 14 and is provided with a linear slot 66A directed downwardly toward the upper surface of the conveyor. A second blower 68 is connected through a conduit 69 to deliver dry air to the tube 66 from which it escapes through slot 66A against the surface of material passing along the conveyor 14. Some types of coating compounds are fusible at the drying temperature within the housing and with such compounds it is important that they be cooled prior to rewind. Such cooling is effectuated by the auxiliary dry air source furnished by the blower 68 and distributing tube 66.

The conveyor 14 is preferably perforated to take advantage of the pressure drop between the upper and lower housing compartments. Since blower 36 effectively takes suction on compartment 23 and discharges into compartment 22, material carried on the perforated conveyor is held firmly thereon as a consequence of the inherent pressure differential.

The operation of the apparatus as illustrated is as follows:

Air circulation within the housing 20 is initiated by starting the blower 36, the circulation being in the path indicated by the arrows, i. e. through the lower section 22 of the upper portion of the housing from inlet to outlet ends of the housing escaping from compartment 22 at the downstream end through port 24 into the upper section 23 of the upper portion of the housing, flowing therein in the reverse direction to and through ducts 30, 32 into the lower section 28 of the housing. The air passing into the lower section of the housing flows through the open face 34A of the air heater 34 into the heater wherein it is mixed with steam entering the heater from the steam drier 54, the moist air mixture being maintained at the proper temperature by means of the heating element 44 in the heater 34. Blower 36 takes suction on the heater 34 through duct 40 to complete the air flow cycle.

The volume of air flow is determined by the capacity of the blower 36 and any escape of air from the system is automatically compensated by drawing new air into the system. In other words, the housing "breathes" to a certain extent through the ports of entry and exit of the conveyor 14. When the air temperature and saturation are within the desired range, conveyor 14 is started and coated material to be dried is supplied thereto at the right-hand end as viewed in Fig. 3.

As previously mentioned, the conveyor is perforated to take advantage of the pressure differential existing between the lower portion 28 of the housing and the section 22 of the upper portion of the housing to hold the coated material against the surface of the conveyor. The rewind roller 16 automatically pulls the paper through the drier at a rate corresponding to the rate of introduction. Introduction of coated paper may be continuous, or intermittent and the rewind roller may be operated accordingly.

Intermittent feed is required, as for example where the coated material, say wallpaper, is coated by a process of silk screening. In the silk screening process a section of paper is coated with a predetermined design and color and it is thereafter released into the drier while an immediately following section is similarly coated, so that the paper progresses through the drier in stages and at a rate determined by the silk screening process. In a typical operation involving the drying of wallpaper as coated by silk screening, paper is passed through the drier as described and taken up on the rewind roller 16, and after a given length of paper has been coated in a first operation it is returned from the rewind roller 60 to pass through a second silk screening procedure and again through the drier for applying a second portion of the final design which, in the silk screening process, is applied in increments.

If the material to be dried is being roller coated, it may be fed through the drier in a continuous manner and by means of the torque rewind motor at a synchronous speed with the coating speed.

Port 24, through which air circulates between the lower and upper portions 22 and 23 respectively of the upper portion of the housing, is provided with a screen 26. This screen prevents any paper from being sucked through the system in event of breakage within the drier and greatly facilitates quick resumption of operation in the event of such breakage.

The desired aim in drying the coating superimposed on any base material is to avoid, to the greatest possible extent, any change in the moisture content of the material itself. For example, wallpaper stock has a so-called "mill tolerance" of from 5% to 7% moisture. That is, suitable wallpaper stocks have a moisture content in this range when delivered from the paper mill. Any drying process which disturbs this moisture content, either by increase or decrease thereof from the specified mill tolerance range, is objectionable as materially affecting the properties of the paper itself and as apparently being responsible for changes in color values of the coating as occurring in such processes. The only drying process now known in the wallpaper art which satisfies the requirement with respect to effect on moisture content of the base stock is the process of racking or festooning. As pointed out, this process involves an undue amount of time and requires a great deal of space. By selection of operating conditions, as herein specified, drying with moist heated air in the manner described is accomplished in a minimum amount of time and without disturbing the moisture content of the paper stock.

The process is highly economical, the heat load being extremely small because of the very low specific heat of the material being dried. At the same time the process effectuates considerable saving because of the amount of racking or festooning space it replaces and because of the racking or festooning time and labor that is eliminated.

I claim:

1. Apparatus for drying coated material comprising a

substantially enclosed housing having side walls, a conveyor passing through the housing from a feed end to a discharge end and extending transversely substantially from side wall to side wall, the conveyor dividing the housing into end to end extending upper and lower sections, means providing a passageway for gas flow between the discharge end of the upper section of the housing and the lower section of the housing, a mixing chamber communicating with the lower section of the housing, heating means disposed in the mixing chamber, means operable to introduce water vapor into the mixing chamber, and means operable to circulate air from the lower section of the housing through the mixing chamber into the upper section of the housing adjacent the feed end to flow concurrently in contact with coated material carried through the housing on the conveyer.

2. Apparatus for drying coated material comprising a substantially enclosed housing having side walls, a conveyor passing through the housing from a feed end to a discharge end and extending transversely substantially from side wall to side wall and between end to end extending upper and lower sections of the housing, an air duct communicating with the discharge end of the housing at the upper section and extending between the upper and lower sections of the housing, means for introducing warm moist air into the upper section of the housing adjacent the feed end thereof to circulate the air in concurrent contact with the upper face of the conveyor, and means for withdrawing air from the lower section of the housing, said conveyor being pervious to gas flow therethrough, the pressure differential between the upper and lower sections of the housing biasing the coated material toward the conveyor.

3. Apparatus for drying coated material comprising a substantially enclosed housing, a conveyor passing through the housing from a feed end to a discharge end, the conveyor dividing the housing into upper and lower sections and being pervious to gas flow therethrough, a partition in the upper section of the housing dividing that section into lower and upper compartments, the lower compartment overlying the conveyor and the upper compartment overlying the lower compartment and communicating with the lower compartment by means of a port in the partition located near the discharge end of the housing, ducts communicating between the upper compartment of the upper section of the housing and the lower section of the housing at a point spaced from the discharge end of the housing, means operable to pass warm moist air into the lower compartment of the upper section of the housing adjacent the feed end thereof, and means operable to withdraw air from the lower section of the housing.

4. Apparatus for drying coated material comprising a substantially enclosed housing having side walls, a conveyor passing through said housing having a delivery flight and a return flight, said delivery flight extending from a feed end to a discharge end of said housing and extending transversely substantially from side wall to side wall, said delivery flight defining end-to-end extending first and second sections of said housing, an air duct communicating with the discharge end of the housing at the upper section and extending between the first and second sections of the housing around said delivery flight, means for introducing warm moist air into the first section of the housing adjacent the feed end thereof to circulate the air in concurrent contact with the face of the delivery flight of the conveyor, and means for withdrawing air from the second section of the housing.

5. Apparatus in accordance with claim 4 and wherein said conveyor is pervious to gas flow therethrough, the pressure differential across the delivery flight between the first and second sections of the housing biasing the coated material toward the delivery flight of the conveyor.

6. Apparatus for drying coated wallpaper comprising a substantially enclosed housing having side walls and a feed end and a discharge end, moving means for moving wallpaper to said feed end through said housing and out said discharge end, support means within said housing contacting the uncoated side of said wallpaper, the support means and the wallpaper in contact therewith extending substantially from side wall to side wall of said housing thereby dividing the housing into end to end extending first and second sections, means providing a passageway for gas flow between the first section of the housing and the second section of the housing, a mixing chamber communicating with the second section of the housing, heating means disposed in the mixing chamber to heat the air to a temperature of about between 180° F. to about 200° F., means operable to introduce water vapor into the mixing chamber to humidify the heated air to a relative humidity of between about 75% and 95%, and means operable to circulate air from the second section of the housing through the mixing chamber into the first section of the housing to cause drying of the coating material on the wallpaper.

References Cited in the file of this patent

UNITED STATES PATENTS

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734,949	Prince	July 28, 1903
1,034,112	Hopkins	July 30, 1912
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2,306,607	Horton	Dec. 29, 1942
2,677,900	Mann	May 11, 1954

The exquisite colors for which VAN LUIT scenic wallpapers have always been famous are *now available* in beautiful textures and interesting small repeat patterns. These combinations make it *easier* to achieve perfect room-to-room correlation, decorative smartness and good taste in *any* series of residential or business interiors.

Exec. Offices & Factory: 4000 Chevy Chase Dr., Los Angeles 39 · *Eastern Branch & Warehouse:* 1240 Huron Rd., Cleveland 15
Van Luit Showrooms: NEW YORK, 979 Third Ave. · CLEVELAND, 1240 Huron Rd. · CHICAGO, Mdse. Mart · LOS ANGELES, 100 S. Robertson
Distributors in: Atlanta, Miami, Washington & Charlotte · Houston & Dallas · San Francisco & Oakland · Honolulu · Hong Kong

Panel #1, KOTO, a four panel scenic wallpaper • Photo by Maynard L. Parker

Dec. 24, 1963 J. K. BRUCE 3,115,081

MEANS FOR UNIDIRECTIONAL PHOTO ENLARGING AND REDUCING

Filed Oct. 10, 1960 2 Sheets-Sheet 1

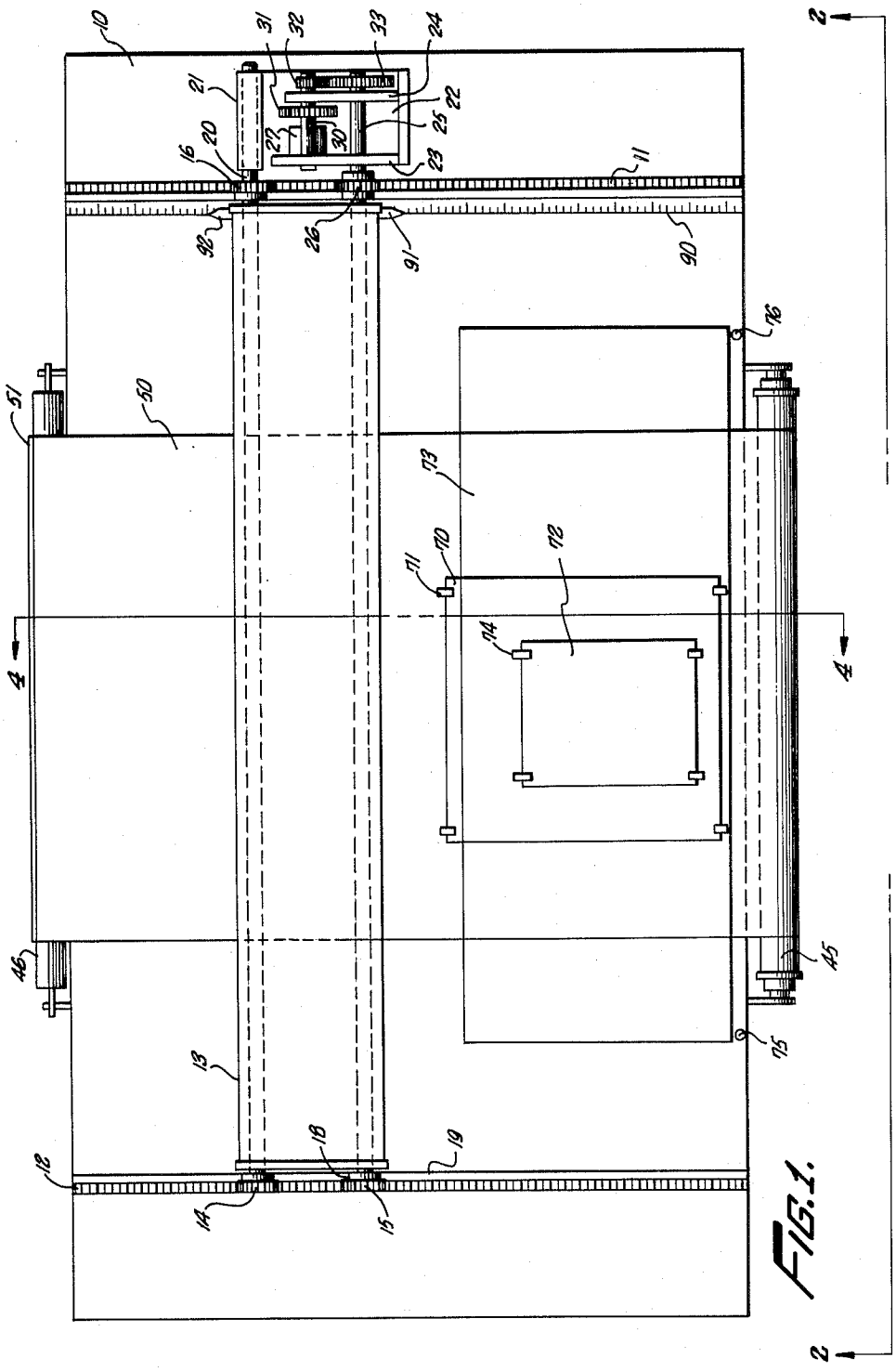

FIG. 1.

Dec. 24, 1963 J. K. BRUCE 3,115,081

MEANS FOR UNIDIRECTIONAL PHOTO ENLARGING AND REDUCING

Filed Oct. 10, 1960 2 Sheets-Sheet 2

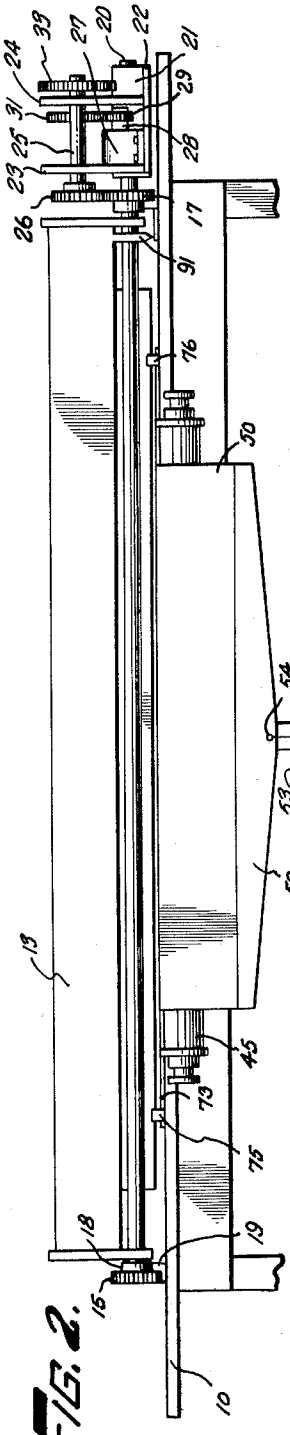

FIG. 2.

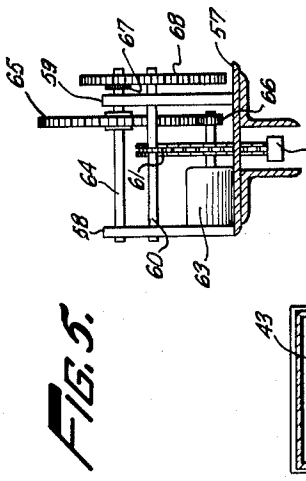

FIG. 5.

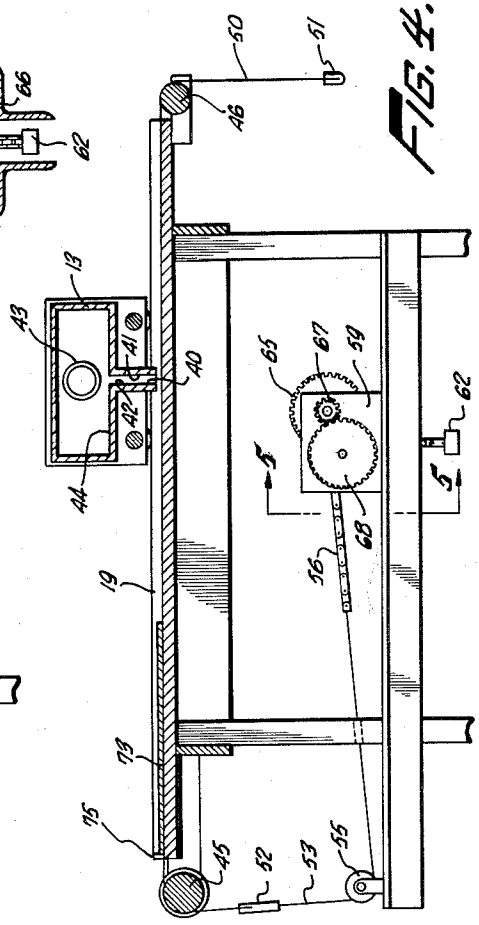

FIG. 4.

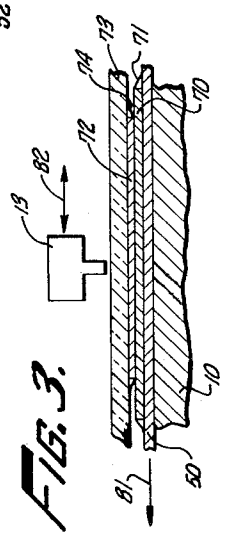

FIG. 3.

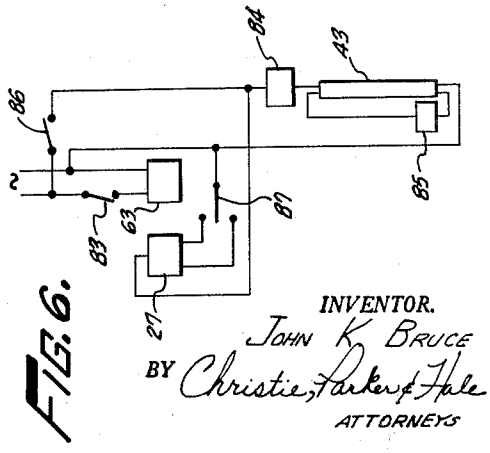

FIG. 6.

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3,115,081

MEANS FOR UNIDIRECTIONAL PHOTO ENLARGING AND REDUCING

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Filed Oct. 10, 1960, Ser. No. 61,736
1 Claim. (Cl. 95—75)

The invention relates to method for making a photographic print of unidirectionally proportionally different dimensions than the dimensions in the same direction of a variably transparent positive from which the print is made, and to apparatus for practicing such method.

The invention solves a problem of critical importance in the wallpaper industry with respect to wallpaper produced by rotogravure printing, that is, a wallpaper produced by printing with etched cylindrical rollers of a rotary printing press.

Wallpaper companies search far and wide on a worldwide basis for acceptable designs and patterns to be used for wallpaper. When such a design is found, it is necessary to reduce or enlarge its width and length proportionally so that its length, or even multiples thereof, will equal the circumference of a standard rotogravure roller and its width will conform with standard lengths of rotogravure rollers and standard widths of wallpaper. Conventional photo enlarging and reducing equipment may be used to change the dimensions of the design to approximately those desired but often cannot be used to obtain the exact dimensions desired, because usually the length and width of the design must be changed different amounts which are not proportional to each other, whereas the conventional equipment changes the dimensions of the design proportionally in all directions. The final change of length and width of the design so that the design will conform with rotogravure roller dimensions and conventional wallpaper widths is normally but a small fraction of an inch and has presented a serious problem in the industry.

This problem has been solved in the past through a meticulous process of physically cutting and piecing the design by hand to produce the required length and width thereof. The disadvantages of this solution of the problem are obvious. It not only is time consuming and expensive, but the cut and pieced design may have a slight patchwork appearance, and for some complicated ornate designs it cannot be used at all.

The invention solves the problem through method and apparatus for making a photographic print of unidirectionally different proportional dimensions than the dimensions in the same direction of a variably transparent positive of the design from which the print is made. Through use of the method and apparatus twice for the same design in perpendicular directions, the design is unidirectionally enlarged or reduced in each direction independently of the enlargement or reduction in the other direction to produce a finished print of the design of proper dimension in each direction to conform with the circumference and length of the rotogravure roller and with standard widths of wallpaper. This print is then etched on the rotogravure roller in conventional manner.

After a variably transparent positive of the design is obtained through conventional photographic processes, the method is practiced by printing the positive on light-sensitive film with a source of light which illuminates only a discrete extent of the positive while there is relative motion of the positive and the film and of the positive and the source of light simultaneously in parallel directions. The discrete extent of the positive which is illuminated by the light at a given instant extends in a direction parallel to the directions of relative movement.

As a consequence of the relative motions, an extent of film is exposed in the direction of the relative motions which is different than the illuminated extent of the positive in the same direction. This results in a print of the design with dimensions in the direction of relative motions which are proportionally reduced or enlarged, as the case may be, relative to the corresponding dimensions of the transparent positive. Through proper selection of the relative velocities, the dimensions of the positive may be unidirectionally proportionally reduced or increased within a range of an inch or two. To effect the relative motions, the transparent positive may be stationary and the film and the source of light moved with respect thereto. This is the preferred form of the method. Alternatively, the relative motions of the method may be obtained by holding the source of light in stationary position and moving the positive and the film with respect thereto, or by holding the film in stationary position and moving the source of light and positive with respect thereto, or by moving the film, source of light, and positive, in each case there being the requisite relative velocity of the source of light and the positive and of the film and the positive.

Apparatus to practice the preferred form of the method of the invention includes means for moving light-sensitive film to be exposed to light through a variable transparent positive print of the design, means for exposing to light a discrete extent of the film in the direction of its movement, means for moving the means for exposing in a direction parallel to the direction of movement of the film so that discrete portions of the film in the direction of movement are successively and continuously exposed, means for positioning the positive in the stationary position intermediate the film and the means for exposing, means for preselecting the velocity relative to each other of the means for exposing and the film, and means for operating simultaneously the means for moving the film, the means for exposing, and the means for moving the means for exposing.

The invention will be fully understood from a reading of the following description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a plan view of a preferred embodiment of apparatus for practicing the preferred form of the method of the invention;

FIG. 2 is a fragmentary elevation view of the apparatus shown in FIG. 1 looking along the line 2—2 in FIG. 1;

FIG. 3 is a schematic enlarged vertical sectional view illustrating the operation of the apparatus;

FIG. 4 is a sectional view along the line 4—4 in FIG. 1;

FIG. 5 is an enlarged elevational view of a portion of the apparatus looking along the line 5—5 in FIG. 4; and

FIG. 6 is a schematic wiring diagram of the apparatus.

The method of the invention comprises generically the step of moving simultaneously relative to each other at constant velocity in parallel directions both (*a*) a variably transparent positive from which a print is to be made and light-sensitive film to be photographically exposed through the positive and (*b*) the positive and a source of light which illuminates a discrete extent of the positive in the direction of relative movement. The movements of the source of light relative to the positive and of the film relative to the positive result in exposure of a different extent of the film in a direction parallel to the directions of the relative motions than the extent of the positive illuminated in the same direction, depending upon the magnitude of such relative velocities and their directions. For example, if the positive is stationary and the velocity of the source of light relative to the positive is a constant ten units per second in one direction and the velocity of the film relative to the positive is a constant one unit per second in a parallel but opposite direction, the illumina-

tion of ten units of the positive by the source of light will result in exposure of eleven units of the film, because the film will have displaced one unit in the opposite direction from the direction of displacement of the source of light during the time the source of light displaces ten units to illuminate the ten units of the positive and such displacements, being in opposite directions, will add, thus effecting a unidirectional increase in the direction of movement of the dimensions of the positive as printed on the film which is proportional in all respects because the velocities of the source of light and the film are simultaneous and constant. If the velocities of the source of light and of the film relative to the stationary positive are the same as in the above example but in the same, rather than opposite, directions, the illumination of ten units of positive by the source of light will result in exposure of only nine units of the film, because the film will have displaced one unit in the same direction as the direction of displacement of the source of light during the time the source of light illuminates the ten units of the positive and such displacements, being in the same direction, will subtract, thus effecting a unidirectional decrease in the direction of movement of the dimensions of the positive as printed on the film which is proportional in all respects because the velocities of the source of light and of the film are simultaneous and constant. The relative movements of the positive and the source of light and of the positive and the film are planar, rectilinear and parallel, although they may be curvilinear if the parallel relationship is maintained. As explained in the introductory portion of the application, the relative velocities may be effected through a stationary positive and moving the film and light with respect thereto, or through a stationary light and moving the positive and film with respect thereto, or through stationary film and moving the positive and light with respect thereto, or through moving the film, light, and positive. The preferred form of the method is practiced with a stationary positive and moving the source of light and the film simultaneously in parallel directions.

The preferred form of the method includes the following steps: First, positioning stationarily a variably transparent positive which is to be printed on light-sensitive film. The positive is so positioned in planar orientation, although it may be positioned in curved or other orientation if the film and the source of light are moved in paths parallel to the orientation of the positive. Second, moving at constant preselected velocity adjacent to one side of the positive light-sensitive film to be exposed through the positive. The movement of the film is parallel to the positive. If the positive is positioned planarly, the film is similarly positioned planarly and is moved rectilinearly. Third, moving simultaneously with the movement of the film a source of light on the side of the positive opposite the side thereof adjacent to the film which illuminates a small preselected discrete extent of the positive in a direction parallel to the direction of movement and which illuminates the entire width of the positive in a direction at right angles to such direction of movement to photographically expose the film through the positive. The movement of the source of light is parallel to the movement of the film and is at constant preselected velocity. If the film is in planar orientation, the source of light moves rectilinearly in a plane parallel thereto. The movement of the source of light and film may be in the same direction or in opposite directions, depending on whether the print is to be shortened or lengthened, as explained above. A specific example of practice of the preferred form of the method with a form of apparatus for practicing same is given below.

An illustrative form of apparatus for practicing the preferred form of the method is illustrated in the drawings. Referring to FIG. 1, 10 designates a support surface. The support surface 10 is planar and is supported on legs in the manner of a conventional table. Rack gears 11 and 12 are fixed to the support surface 10. The rack gears are parallel and extend the full width of the support surface.

An elongated housing 13 extends between the rack gears at right angles thereto. At each end of the housing is a pair of pinions or gear wheels which mesh with the rack gear at that end, indicated at 14 and 15 at the left end of the housing in FIG. 1, and 16 and 17 at the right end of the housing. The pinions 14, 15 and 16, 17 are rotatably mounted on the housing so that the housing can be moved only rectilinearly in either direction in a direction parallel to the parallel extent of the rack gears. Each pinion has a concentric hub which rolls on a raised portion of the rack gear to carry the weight of the housing and permit smooth movement thereof with proper meshing and no binding of the pinions and rack gears, such as the hub 18 on the pinion 15 and the raised track 19 on the rack gear 12.

At the right end of the housing, as shown in FIGS. 1 and 2, the shaft which rotatably mounts pinion 16 on the housing protrudes at 20 beyond the rack gear 11. A sleeve 21 rotatably mounts on the shaft extension 20 a base 22. As shown in FIGS. 1 and 2, a pair of spaced flanges 23 and 24 are fixed to the base 22 and extend upwardly therefrom in parallel relation to each other. Journaled in the flanges 23 and 24 is a drive shaft 25 to which a drive pinion 26 is fixed for rotation therewith. The drive pinion 26 meshes with the pinion 17 on the housing so that when the drive shaft 25 is rotatively driven the drive pinion 26 rotatively drives the pinion 17 to move the housing. Since the base 22 is rotatably mounted on the shaft extension 20, it may be lifted to rotate it about such shaft to disengage the drive pinion 26 and pinion 17 and thus permit the housing to be moved along the rack gears by hand to a desired position, at which the base may be lowered to again mesh the drive pinion 26 and pinion 17. Mounted on the base 22 is a constant speed electric housing motor 27. The motor 27 is preferably a synchronous motor, and it is wired for rotation of its armature shaft 28 in either direction. A motor pinion 29 is fixed to the shaft 28 of the motor for rotation therewith and, through a reduction drive schematically shown in FIGS. 1 and 2, rotatively drives the drive shaft 25 to move the housing at a velocity of on the order of six inches per minute. As schematically illustrated, the reduction drive consists of gearing comprising a countershaft 30 journaled in the flanges 23 and 24 to which is fixed a reduction gear wheel 31 which meshes with the motor pinion 29. The countershaft 30 extends beyond the flange 24 and on its cantilever portion is removably fixed a small gear wheel 32 which meshes with a second reduction gear wheel 33 removably fixed to a cantilevered portion of the drive shaft 25. It is to be understood that any conventional reduction drive between the motor 27 and the drive shaft 25 may be utilized to produce the desired relatively slow velocity of movement of the housing 13.

Means for varying and preselecting the velocity at which the housing will be moved by the housing motor 27 is provided. The range of such velocities which may be preselected is on the order of four to twelve inches per minute. This means is schematically illustrated in FIGS. 1 and 2, and consists of the cantilevered portions of the countershaft 30 and drive shaft 25 with the gears 32 and 33 removably fixed thereto. With this structure, the gears 32 and 33 may be removed and replaced by a selected pair of meshing gears with a ratio which will produce the desired velocity of the housing 13, such pair of gears being determined in conventional manner obvious to those with ordinary skill in the art. It is to be understood that any conventional means for varying and preselecting the velocity within the above range at which the housing is moved by the housing motor 27 may be utilized, in particular, a conventional electrical speed regulator interposed in the electrical circuit which operates the housing motor 27 may be used. Thus, it is apparent that the housing is operable to be moved rectilinearly in a direc-

tion parallel to the parallel extent of the rack gears 11 and 12 at constant preselected velocity.

As best shown in FIG. 4, the housing 13 has an aperture 40 communicating between the exterior of the housing and an interior space 44 therein. The aperture 40 is a slit which extends substantially the entire length of the housing 13 which parallel sides 41 and 42 oriented at right angles to the parallel extent of the rack gears 11 and 12 and to the direction of movement of the housing 13. The aperture 40 is of small width in a direction parallel to the direction of movement of the housing 13, and such width is constant throughout the length of the aperture, for example, a uniform width of on the order of one-eighth inch. The parallel sides 41, 42 of the aperture extend at substantially right angles to the plane of the support surface 10 from the exterior to the interior of the housing. The sides are of substantial length, for example, on the order of one and one-half inches, such length functioning to reduce diffusion of light in order that only a small finite width is illuminated through the aperture from a light source mounted in the space 44 of the housing. The light source consists of a conventional fluorescent illuminating tube 43 which is mounted in the interior space 44 of the housing 13 over the aperture 40 and which extends substantially the full length of the aperture. The interior space 44 of the housing and the surfaces of the sides 41 and 42 of the aperture, as well as the support surface 10, are all preferably of a dull black finish to reduce to a minimum reflection and diffusion of light from the aperture.

A pair of belt rollers 45 and 46 are rotatably mounted on the support surface 10 along each side thereof. The axes of the belt rollers extend at right angles to the parallel extent of the rack gears 11 and 12 and the peripheries of the rollers are even with or slightly below the plane of the planar support surface 10. A flexible but inextensible belt 50 extends across the support surface 10 over the belt rollers 45 and 46 and down from such rollers on each side of the support surface. The belt 50 slides on the support surface 10 and is maintained in planar configuration while on the support surface as a result of the planarity of the support surface and the structure described below. As best shown in FIG. 4, one end of the belt has a weight 51 fixed to it which extends uniformly the full width of the belt. The other end of the belt has a weighted yoke 52 fixed to it which extends the full width of the belt uniformly on each side of the center of the belt. The two weights 51 and 52 function to maintain the belt in evenly tensioned condition so that it does not ripple and maintains contact with the planar support surface 10, with the result that the belt is maintained in planar orientation as it is slid across the support surface 10. The belt is of dull black color for the reason explained above for the similar color of the support surface 10.

A pull wire 53 is attached at 54 to the yoke 52. The point of attachment 54 of the pull wire to the yoke is located centrally of the yoke and of the belt 50 so that pulling forces exerted on the pull wire 53 are not unevenly applied to the belt 50. The pull wire 53 is flexible and is inextensible. The inextensibility of the pull wire and belt facilitate constant velocity motion of the belt as described below. The pull wire 53 extends around a pulley wheel 55 rotatably mounted on the undercarriage of the support surface 10 and extends therefrom to a sprocket chain 56 to which it is connected. Thus, when the pull wire 53 is pulled, the belt 50 is thereby moved, and its portion supported on the support surface 10 moves planarly as described above and also, because the axes of the belt rollers are perpendicular to the parallel extent of the rack gears and the belt its tensioned over their peripheries, rectilinearly in a direction parallel to the parallel extent of the rack gears 11 and 12.

As best shown in FIG. 5, a base plate 57 is mounted on the supporting undercarriage of the support surface 10, and a pair of parallel spaced flanges 58 and 59 extend

upwardly therefrom. A sprocket shaft 60 is journaled in the flanges 58 and 59. A small diameter sprocket wheel 61 is attached to the shaft 60 for rotation therewith. The teeth of the sprocket wheel 61 mesh with the sprocket chain 56. The sprocket chain 56 extends over the sprocket wheel 61 in meshed relation therewith and downwardly to a free end to which is fixed a weight 62. The weight 62 maintains engagement between the sprocket wheel and the sprocket chain without play or backlash therebetween. Through this arrangement, the belt 50 may be moved as described above through rotation of the sprocket shaft 60, and, when it is desired to move the belt large amounts to reset it, the sprocket chain 56 may be lifted from the sprocket wheel 61 and the belt so moved by hand to a desired position where the sprocket chain and sprocket wheel are again engaged. It is apparent that means other than that described above may be used to move the belt 50.

A constant speed electric motor 63, preferably a synchronous motor, is mounted on the base 57. The motor 63 is operatively connected to the sprocket shaft 60 to rotatively drive such shaft at such speeds that the belt 50 is moved at a constant velocity of on the order of one-eighth inch per minute. This connection may be effected through any of many conventional types of reduction drives. A reduction drive is schematically illustrated in FIGS. 2, 4, and 5. As best shown in FIGS. 4 and 5, a countershaft 64 is rotatably journaled in the flanges 58 and 59. Fixed to the countershaft 64 for rotation therewith is a large diameter reduction gear wheel 65 which meshes with a small diameter pinion gear 66 fixed to the shaft of the motor 63. The countershaft 64 cantilevers beyond the flange 59, and a small diameter pinion gear 67 is removably fixed to the cantilevered portion. The sprocket shaft 60 cantilevers beyond the flange 59 in the same manner as the countershaft 64, and a large gear wheel 68 which meshes with the small gear wheel 67 is removably fixed to the cantilevered portion of the sprocket shaft. Through this reduction gearing, the motor 63 rotatively drives the sprocket shaft 60 and sprocket wheel 61 at the necessary slow speed. The speed at which the sprocket shaft 60 is rotatively driven can be selectively determined by means of removing the gears 67 and 68 and replacing them with meshed gears of the proper ratio to produce the desired rotational speed of the sprocket shaft 61; alternatively, conventional speed selecting means may be employed, such as an electric speed regulator in the circuit which operates the motor 63.

Light-sensitive film to be photographically exposed through a variable transparent positive is releasably fixed to the belt 50 for movement therewith. As shown in FIG. 1, the film 70 is so fixed by means of adhesive tabs, such as the tab 71. The film is flexible. With this arrangement, the film 70 conforms with the orientation and movement of the belt 50, so that the film moves rectilinearly and planarly in a direction and in a plane parallel to the direction and to the plane of movement of the housing 30 at preselected constant velocity responsive to movement of the belt 50 in such manner with the means described above.

A conventional variably transparent positive 72 is positioned stationarily and planarly adjacent to the film 70 and between the film and the housing 13. As illustrated in FIG. 1, this is accomplished by releasably attaching the positive 72 to a rigid planar transparent member 73, such as a piece of plate glass or the like, by means of adhesive tabs, such as the tab 74. The transparent plate 73 and the positive 72 removably attached thereto are, as a unit, placed over the film and held in stationary position by means of stops 75 and 76 engaging the edge of the plate.

The spatial relationship of the belt 50, film 70, positive 72, and transparent plate 73 are best shown in FIG. 3, which is an enlarged vertical section through such members. As shown in FIG. 3, the planar support surface 10 supports the flexible belt 50 thereon in slidable planar

bearing engagement. The film 70 assumes the same configuration and orientation as the belt 50. In sliding bearing contact with the film 70 is the transparent positive 72 which is held in stationary planar position by the transparent member 73. The transparent member 73 is planar and has substantial weight so that it presses the positive into slidable bearing contact with the film and causes the positive as well as the film to assume a planar configuration. Located immediately adjacent to the transparent member 73 is the housing 13 with its light aperture 40 extending down as close as possible to the surface of the member 73 for minimal reflection and diffusion of light emanating from the aperture to print the positive on the film. The belt normally moves in one direction only, as indicated with the arrow 81. The housing 13 may selectively move in either direction, depending on the direction of rotation of its driving motor 27, as indicated with the arrow 82.

The housing motor 27, belt drive motor 63, and light 43 are wired in conventional manner so that all three may be operated simultaneously. An illustrative wiring diagram to achieve such purpose is shown schematically in FIG. 6. The belt drive motor 63 is connected directly to a source of current with a switch 83 interposed in the circuit. The source of light 43, preferably a fluorescent tube, is wired in conventional manner with ballast 84 and automatic starter 85 through a switch 86. The housing drive motor 27 is connected in parallel with the circuit for the light with a two-way switch 87 so that completing a circuit to the motor through one pole of the switch operates the motor in one direction of rotation and completing the circuit to the motor through the other pole operates the motor in the opposite direction of rotation. Consequently, when the switches 83, 86, and 87 are all closed, the housing motor 27, belt drive motor 63, and light 43, all operate simultaneously.

Operation of the above described apparatus to perform the method of the invention will now be described. Assume that through conventional photo reduction methods a variably transparent positive measuring 26.5 by 24 inches has been obtained. Assume that in order for the length of the positive to conform to the circumference of the rotogravure roller, the length must be increased from 26.5 to 26.875 inches and that for the width of the positive to conform with a standard width of wallpaper and the length of the rotogravure roller, the width must be reduced from 24 to 23.5 inches. This calls for a unidirectional extension of length of 0.375 inch and a unidirectional contraction of width of 0.50 inch.

Assume that the belt drive motor, through the reduction drive, is set up to move the belt in the direction indicated with the arrow 81 in FIG. 3 at a constant unidirectional velocity of 0.125 inch per minute. This velocity may be picked arbitrarily within the limitations described below with respect to proper exposure of the film.

Starting with the extension of 0.375 inch in length of the print of the positive, it is apparent that the belt and the film attached thereto, moving to the left in FIG. 3 at a velocity of 0.125 inch per minute, will displace to the left 0.375 inch in three minutes. If, during this period of three minutes, the displacement of the housing 13 relative to the stationary positive is the entire 26.5 inch length of the positive, and the direction of such displacement of the housing is to the right in FIG. 3, the resulting length of film exposed to light from the aperture in the housing will be 26.875 inches, because the displacements of the film and of the housing are in opposite directions and therefore add relative to each other. In order for the housing to displace the 26.5 inches in the time period of three minutes while moving at constant velocity, it is apparent that such velocity relative to the positive must be 8.833 inches per minute. Accordingly, the velocity at which the housing is moved by the motor 27 is selected at 8.833 inches per minute.

Checks of the velocity of the housing 13 may be accomplished by means of a graduated measuring scale 90 fixed to the support surface 10 and index pointers 91 and 92 fixed to the housing and aligned with the indicia on the scale 90. With a stop watch the displacement of the housing for a given period, and hence its velocity, may be determined readily with the scale 90 and index pointers 91 and 92. If the means for preselecting the velocity of the housing 13 is not susceptible to preselection of exact velocities, such as might be the case with the above described removable gears 32 and 33, this may be compensated for without disrupting the practice of the method by preselecting a slightly greater velocity of the housing 13 than desired and stopping the movement of the housing 13 at, for example, the third points of the positive for a very short duration of time so that the total displacement of the housing 13 during the three minute period is the desired 26.5 inches. The light 23 is turned off during the stopped period to avoid over exposure of the film. This stopping of the housing 13 with a turning off of the light 23 during the stopped period but without turning off the belt drive motor 63 may be accomplished with the circuit diagram illustrated in FIG. 6 by merely opening the switch 86.

With the velocity of the housing 13 thus selected, the room is darkened, the film to be exposed is releasably fixed to the belt by means of tape tabs, and the variably transparent positive to be illuminated for exposure of the film is similarly releasably attached to the member 73 by means of tape tabs. The member 73 with the positive is then laid over the film with the positive and the film in sliding contact as described above. The drive pinion 26 and pinion 17 are disengaged by rotating the base 22 as described above, and the housing 13 is then moved by hand to a position which places its light aperture 40 to the left of the left edge of the positive in FIG. 3. The drive pinion 26 and pinion 17 are then meshed. The apparatus is now ready for operation to practice the method.

The housing motor 27, belt drive motor 63, and light 43 are all turned on simultaneously, the switch 87 for the housing motor 27 being closed in such manner to cause the housing motor to move the housing 13 in a direction to the right in FIG. 3. A small portion of the film is wasted during the period of time that the light aperture 40 of the housing takes to reach the left edge of the positive, but when the light aperture reaches the left edge of the positive, the positive is thereafter exposed on the film while the film and the light aperture are moving rectilinearly simultaneously in opposite parallel directions. The entire 26.5 inch length of the positive is so exposed. The machine is then turned off and the exposed film developed. This will result in a print of the positive with a lengthwise dimension of 26.875 inches and with the pattern of the design on the positive enlarged proportionately and unidirectionally on the print, as described above in connection with the method of the invention.

The print thus made, while it is the desired 26.875 inches in length, will be 24 inches wide, as was the positive. Consequently, a second variably transparent positive is made of this print and is positioned on the member 73 with its 24 inch dimension extending in the direction of movement of the housing 13 and belt 50. The change desired of the 24 inch dimension is a reduction of 0.50 inch. From the belt velocity of 0.125 inch per minute to the left in FIG. 3, it is apparent that the belt and the film attached thereto will displace to the left 0.50 inch in four minutes. If within this four minute period the displacement of the housing 13 relative to the stationary positive is the entire 24 inch extent of the positive and such displacement of the housing is in a direction to the left in FIG. 3, it is apparent that the displacement of the housing relative to the film during such four minute period will be only 23.50 inches, because the simultaneous displacements of the housing and the film will be in the same direction and therefore will subtract. As a consequence,

the entire 24 inch extent of the positive will be exposed on the film, but the resulting print on the film will be only 23.50 inches in extent in the same direction. The necessary velocity of the housing relative to the stationary positive is calculated as described above for the lengthening of the 26.50 inch dimension and would be 6 inches per minute in a direction to the left in FIG. 3. The method is then carried out in the same manner as described above for the lengthening, except that the light aperture is started from a position to the right of the right edge of the positive in FIG. 3 and displaces to the left rather than to the right. The dimensions of the resulting print will be the desired 23.50 by 26.875 inches with the pattern of the design correspondingly proportionally changed in size. The print is then transferred to the rotogravure roller in conventional manner.

Since the film is exposed through the positive, the aspect of proper exposure time of the film with the light source **43** arises. Normally this is not a critical factor. The exposure time of the film is determined by the velocity of the light aperture **40** relative to the film in relation to the width in the direction of such movement of the aperture. Thus, as described above for the lengthening of the 26.5 inch dimension of the positive, if the film is moving 0.125 inch per minute to the left in FIG. 3 and the aperture **40** is moving 8.333 inches per minute to the right, the velocity of the aperture relative to the film is 8.333 plus 0.125, or 8.958 inches per minute, and if the width of the aperture is 0.125 inch, the time required for a displacement of 0.125 inch of the aperture relative to the film is the exposure time of the film. This time period is computed from the aperture width, 0.125 inch, divided by the velocity of the aperture relative to the film of 8.958 inches per minute, which equals 0.8310 second. If the exposure time thus effected is not proper for the film, a faster or a slower film in terms of its light sensitivity may be used, or through suitable apparatus the width of the aperture **40** may be changed, with a smaller width decreasing the exposure time for given velocities of the film and light aperture, or the velocity of the film may be changed with corresponding necessary change of the velocity of the light source. For example, if in the above example in connection with the 26.5 inch dimension of the positive, the velocity of the belt is increased from 0.125 to 0.250 inch per minute to the left in FIG. 3, the velocity of the light source to the right in FIG. 3 must be 17.666 inches per minute, which for an aperture width of 0.125 inch results in an exposure time for the film of 0.4186 second.

It is to be understood that the apparatus described above is an illustrative form of apparatus which may be used to practice the preferred form of the method. Many other arrangements of apparatus may be used to practice the method. For example, the light-sensitive film could be mounted on a rotatable cylindrical drum and held thereon by a vacuum plate surface of the drum. The positive could be mounted on a concentric coaxial juxtaposed transparent sleeve surrounding the drum and rotatable about the same axis as the drum. The light source then could be mounted in fixed position over the sleeve radially of the common axis of the drum and sleeve. To practice the method, the drum and the sleeve could be rotated in the same direction or in opposite directions at preselected constant velocities. Alternatively, the sleeve could be stationary and the light source mounted on arms to rotate about the axis of rotation of the drum. Many other forms of apparatus to practice the method would be apparent to one skilled in the art.

I claim:

A unidirectional photo enlarger and reducer comprising a planar support surface, parallel rack gears fixed to the support surface, a housing extending between the rack gears, gear wheels rotatably mounted on the housing meshing with the rack gears, whereby the housing can move only rectilinearly in a direction parallel to the parallel extent of the rack gears, an elongated aperture in the housing adjacent the support surface communicating between the exterior and the interior of the housing, said aperture having parallel sides extending between the rack gears at right angles thereto, a source of light within the housing and surrounded thereby for illuminating through the aperture in the housing, a first motor on the housing, means for rotatively driving the gear wheels on the housing at constant speed with the first motor, means for preselecting the speed at which the first motor will rotatively drive the gear wheels, a belt member supported movably and planarly on the support surface between the rack gears, a second motor, means for moving the belt rectilinearly in a direction parallel to the direction of motion of the housing at constant speed with the second motor, means for preselecting the speed at which the second motor will move the belt, light-sensitive film releasably fixed to the belt, whereby the film moves with the belt, a variably transparent positive to be photographically printed on the film disposed between the film and the housing, means for holding the positive in stationary planar position, and means for operating simultaneously the first motor, the second motor, and the source of light, whereby the motion of the housing relative to the film results in exposure of an extent of film in the direction of motion different than the illuminated extent of the positive in the same direction.

References Cited in the file of this patent

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2,261,538	Brand	Nov. 4, 1941
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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,115,081 December 24, 1963

John K. Bruce

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 9, lines 26 and 27, for "8.333", each occurrence, read -- 8.833 --.

Signed and sealed this 26th day of May 1964.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

EDWARD J. BRENNER
Commissioner of Patents

UNITED STATES PATENT OFFICE

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Prepared for
6/30/2014

One Page Report for Property Records

1 4000 Chevy Chase Drive, Los Angeles, CA 90039

Property Details

Property Type	Industrial
Property Sub-type	Manufacturing
Building Size	57,921 SF
Year Built	1950
Building Class	C
Lot Size	2.19 AC
Zoning	LAA1

Property Notes

Owner and Mortgage Info

Owner	4000 CHEVY CHASE LLC
Event	Sale (Arm's Length)

Tenant Info

Current Tenants Scenic Expressions, The Inc, Upstage Parallels Inc

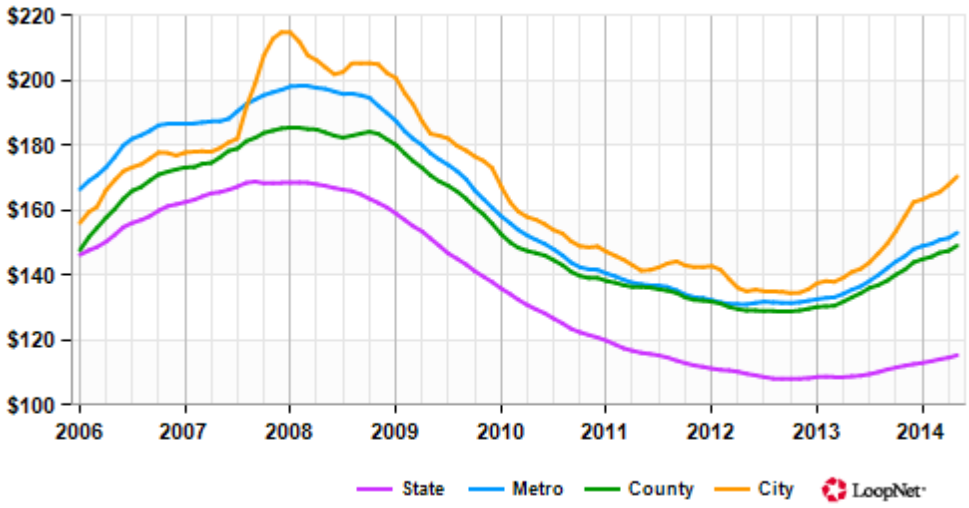
Active For Lease

#	Space Avail.	Rental Rate	Min Divisible	Max Contiguous	Lease Type	Date Avail.	Description
Space 1	64,333 SF	$0.78 /SF/Mo	64,333 SF	64,333 SF	NNN	10/01/2012	

Photos

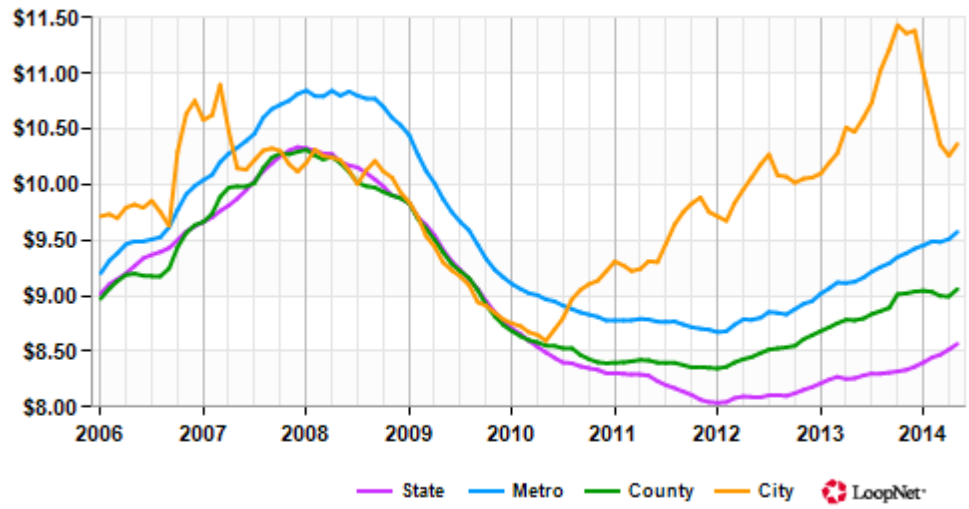
Market Trends

Asking Prices Industrial for Sale Los Angeles, CA ($/SF)



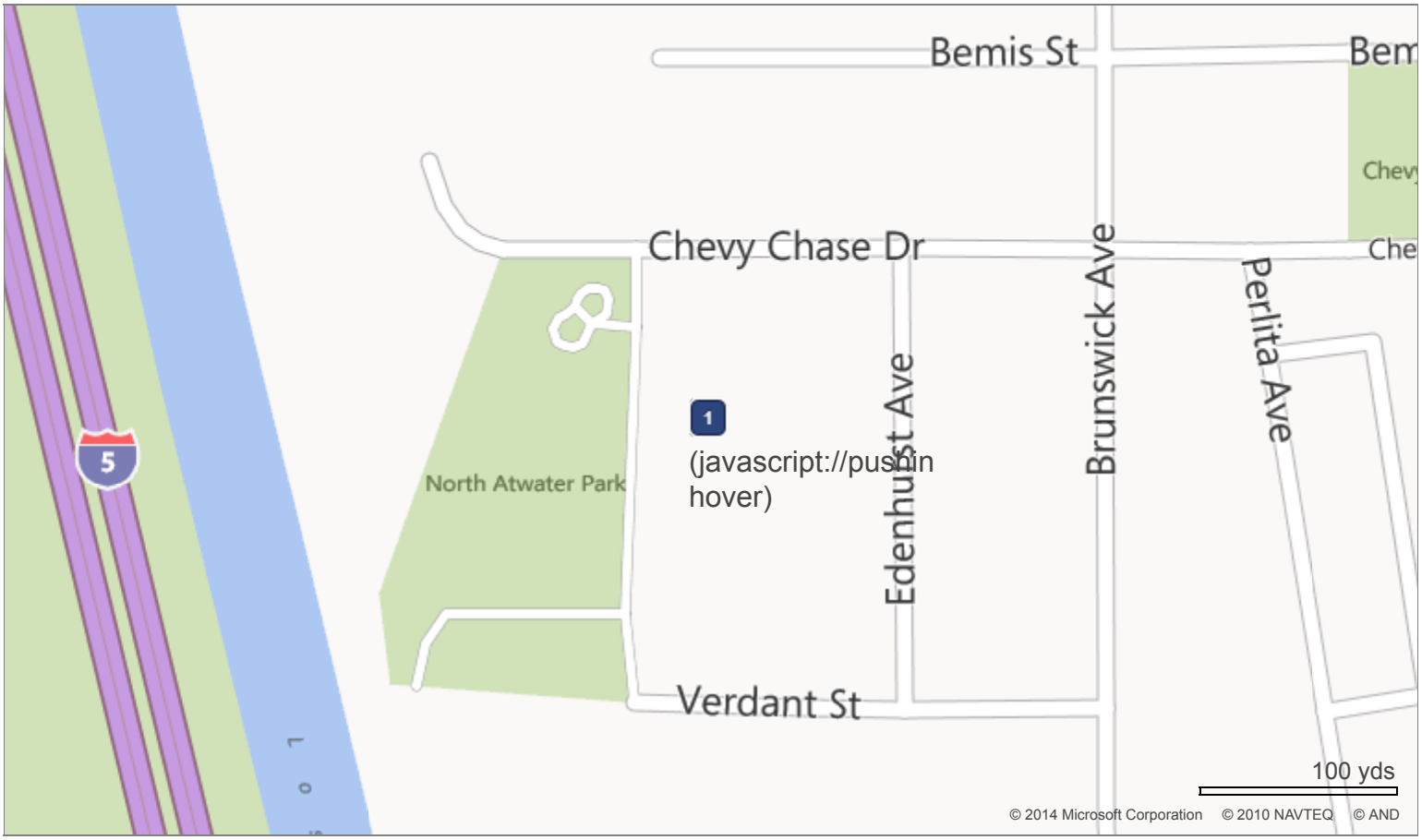
	May 14	vs. 3 mo. prior	Y-O-Y
State	$115	+1.6%	+6.0%
Metro	$153	+2.3%	+13.0%
County	$149	+2.4%	+12.0%
City	$170	+3.5%	+20.9%

Asking Rent Industrial for Lease Los Angeles, CA ($/SF/Year)



	May 14	vs. 3 mo. prior	Y-O-Y
State	$103	+1.4%	+3.7%
Metro	$115	+0.9%	+4.9%
County	$109	+0.3%	+3.2%
City	$124	-2.8%	-1.0%

Map



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