United States Patent

[11] **3,625,611**

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[21] Appl. No. **884,235**
[22] Filed **Dec. 11, 1969**
[45] Patented **Dec. 7, 1971**

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[54] **MASTER REGISTRY CHASE FOR USE IN A VACUUM ENCLOSURE**
16 Claims, 10 Drawing Figs.

[52] **U.S. Cl.** **355/87,** 96/30, 355/91, 355/94, 355/95
[51] **Int. Cl.** **G03b 27/20**
[50] **Field of Search** 355/87, 86, 72, 75, 91, 92, 94, 95, 78, 53, 54, 122, 128; 96/30, 41

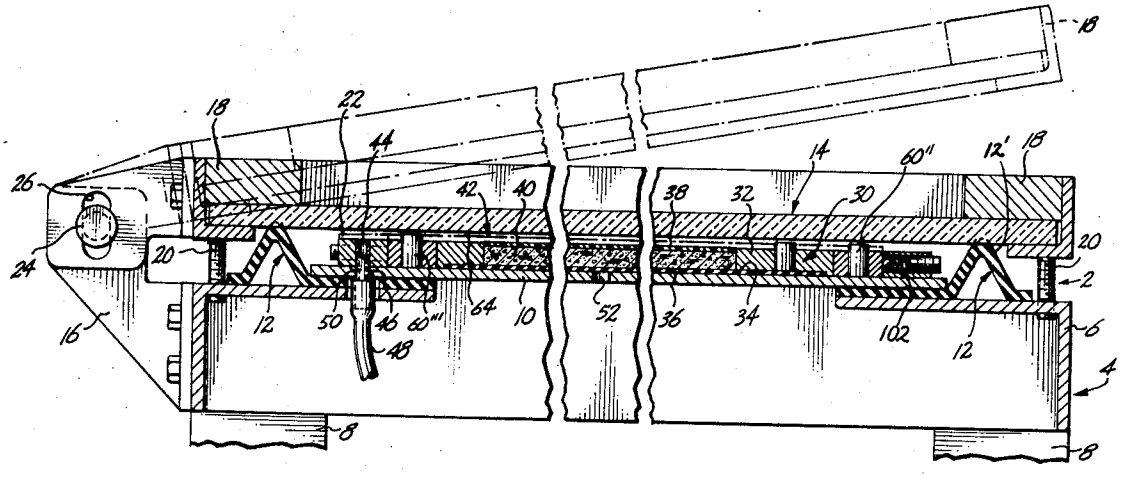
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ABSTRACT: In a vacuum enclosure having a transparent cover to enable the photoimpression of an image on a photosensitive plate therein, there is an open faced marginal frame having a stiff, hard-surfaced platen supported in free-floating condition and reciprocably guided within the opening thereof, to be applied by the vacuum against the cover, while the plate and an image-producing transparency are compressed therebetween, and indexing means on the marginal frame, in substantially the surface plane of the platen, to fix the positions of the plate and the image-producing transparency in relation to one another, while they are under compression between the platen and the cover.



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SHEET 1 OF 4

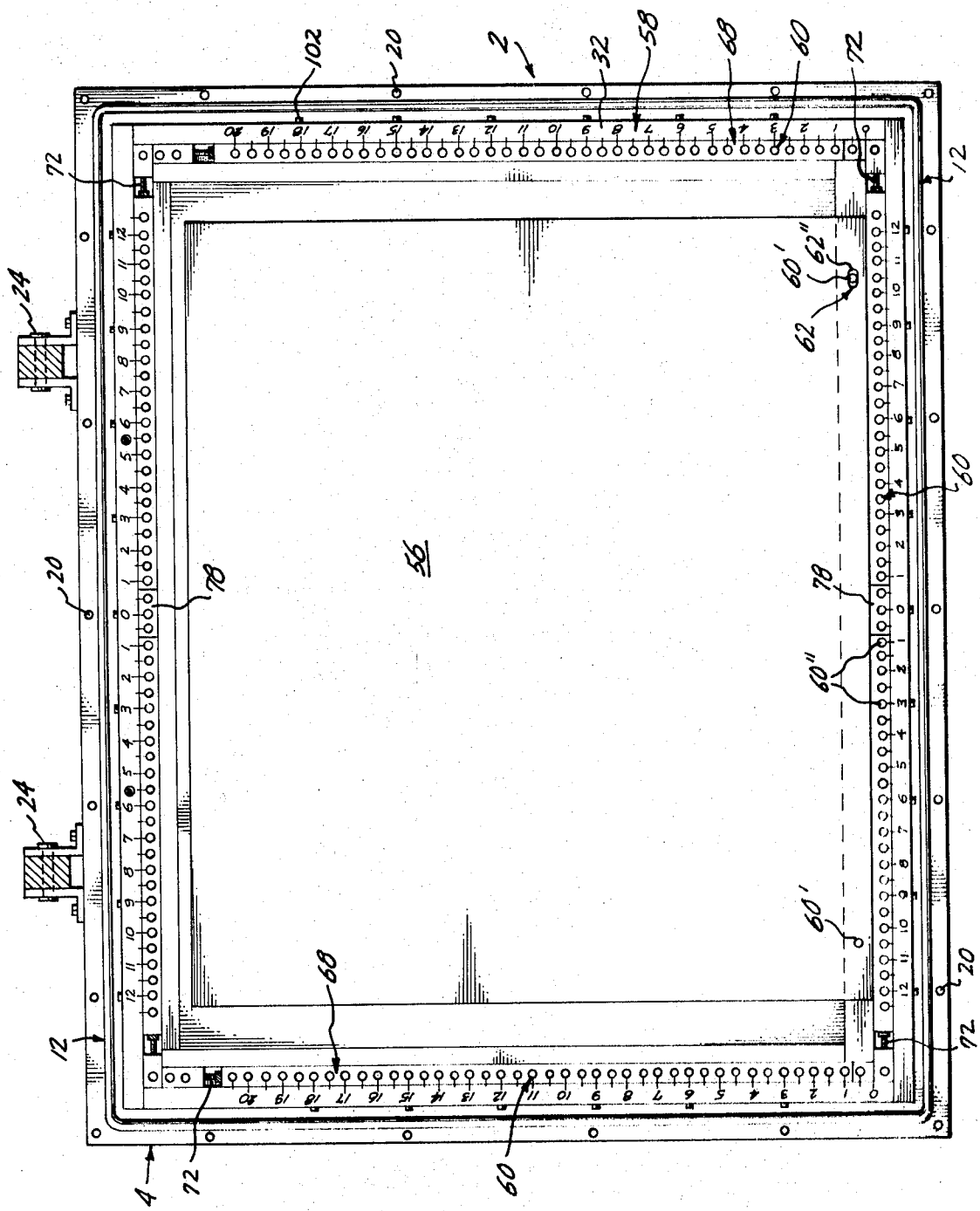


Fig. 1.

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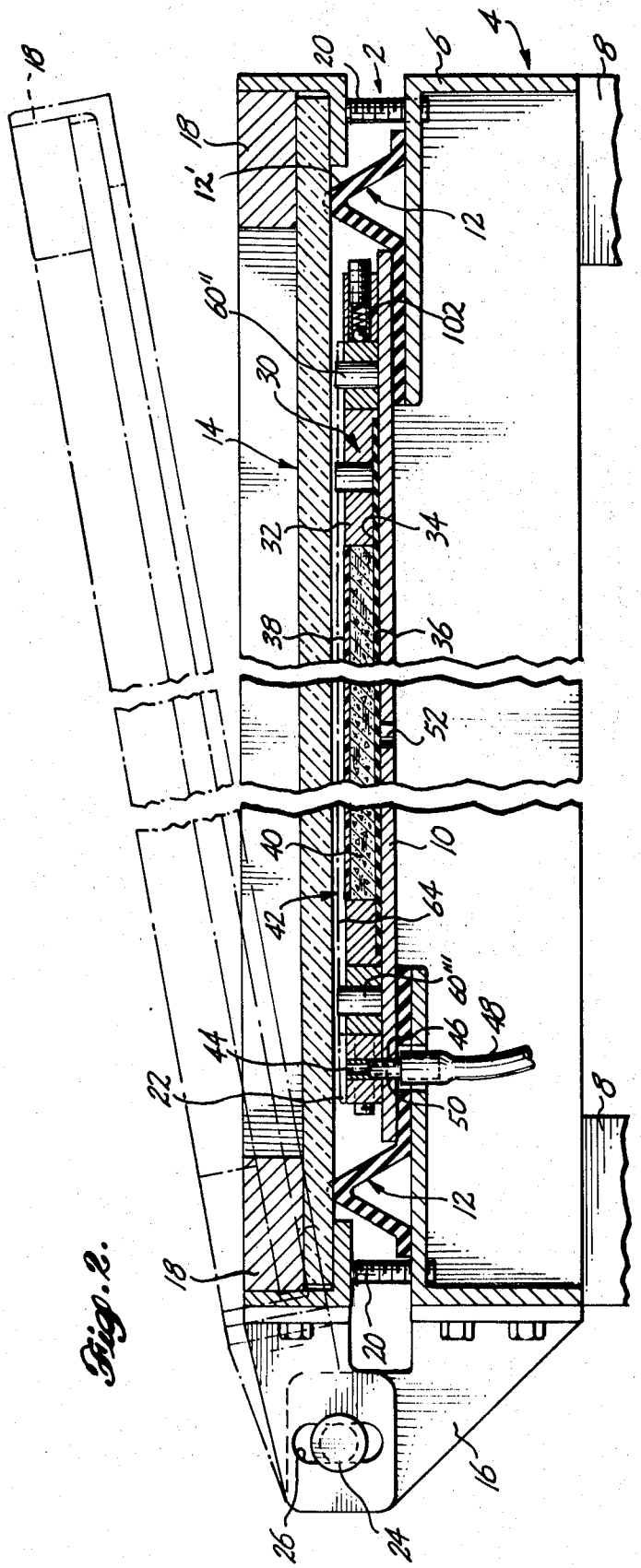


Fig. 2.

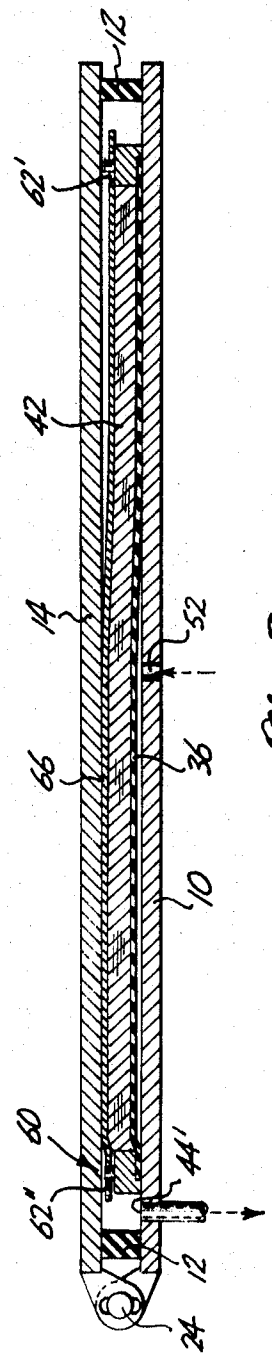


Fig. 3.

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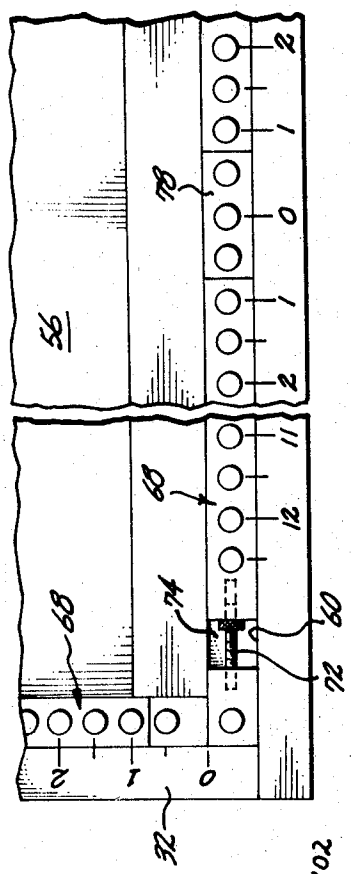


Fig. 4.

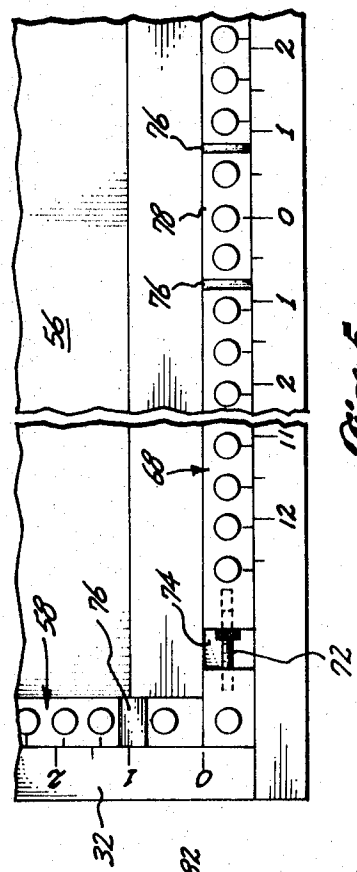


Fig. 5.

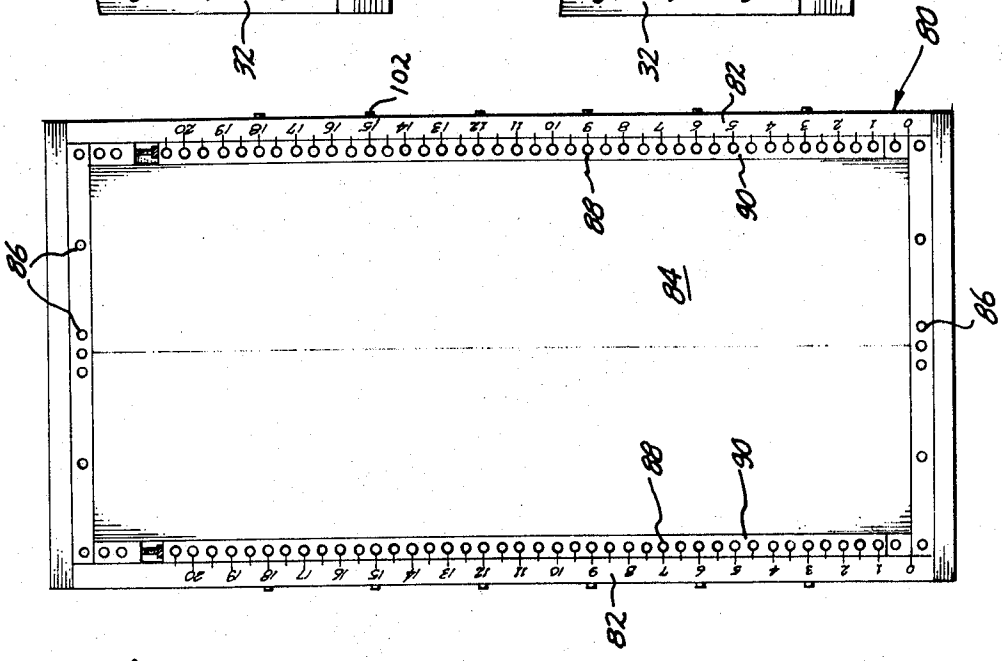


Fig. 6.

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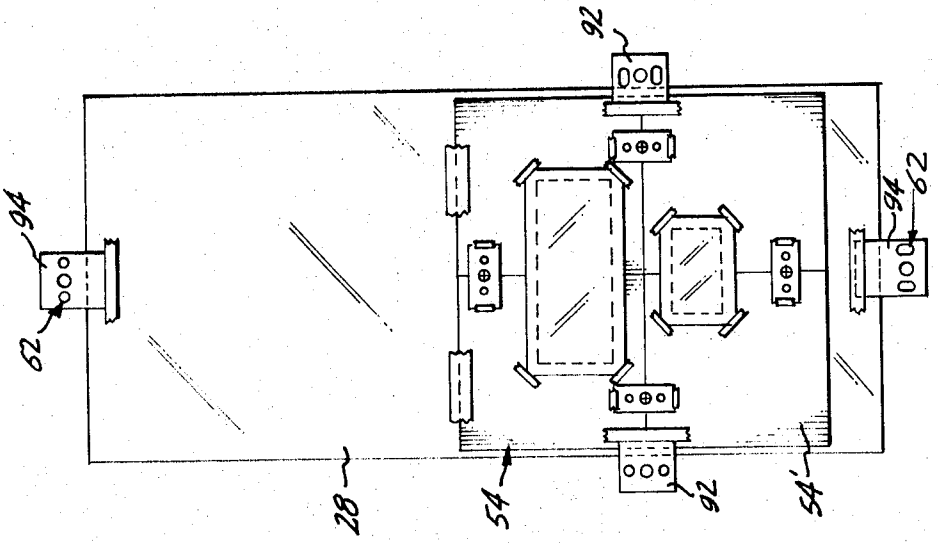


Fig. 9.

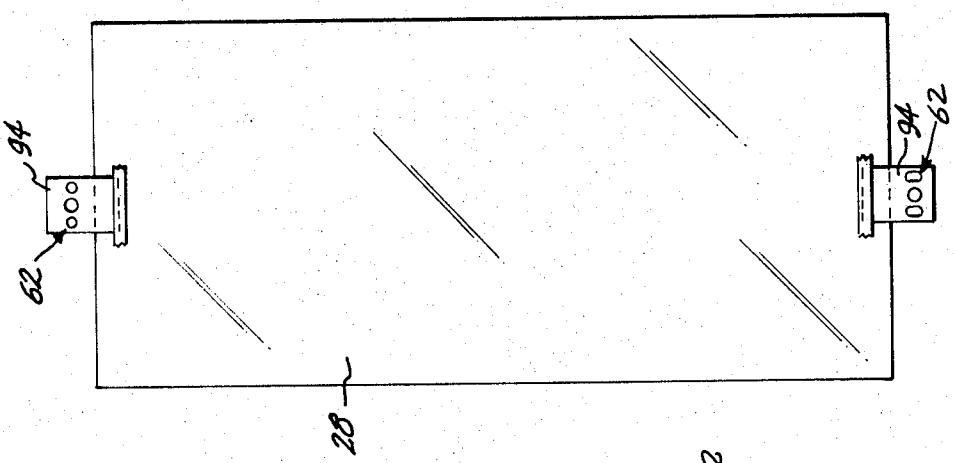


Fig. 8.

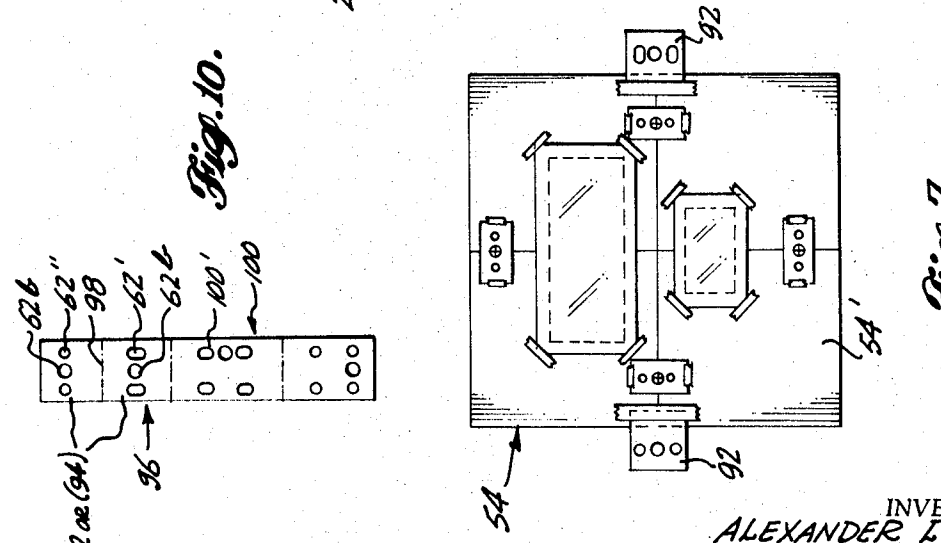


Fig. 7.

Fig. 10.

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MASTER REGISTRY CHASE FOR USE IN A VACUUM ENCLOSURE

FIELD OF THE INVENTION

This invention relates to apparatus for processing photosensitive materials, and in particular to apparatus of this nature which are employed in successively imposing upon different predeterminedly spaced surface areas of such material, identical photoimpressions of an image created by the passage of light through a single image-producing transparency. A prime use for such apparatus is in the field of photolithography where a plurality of spaced identical photoimpressions are made upon a chemically treated photosensitive surface of a metallic plate from a single negative.

BACKGROUND OF THE INVENTION INCLUDING CERTAIN OBJECTS THEREOF

In photolithography, it is necessary that the negative whose image is to be photoimpressed upon a photosensitive plate, must be aligned and positioned in relation to the plate with great accuracy. Moreover, in the art of photolithographical printing known as step-and-repeat printing, where rows and columns of like images are prepared by stepping a negative across the plate through a series of positions, it is necessary to use the same degree of accuracy in relocating the negative over each step, so that the images are also properly interrelated with one another. This is particularly true in multicolor printing, where several color images are registered with one another over each step in the series.

One object of the present invention is to provide an apparatus of the foregoing nature in which the negative and plate are marginally secured to a pair of fixed points, so as to have fixed positions in relation to one another, while they are compressed together under vacuum between a pair of floatably mounted platens that enable the image to be photoimpressed upon the plate. Another object is to provide an apparatus of this nature wherein the negative can be shifted from one location to another in a step and repeat operation, and within close tolerances, such as within tolerances of $\pm$ 0.001 inch. A further object is to provide an apparatus of this nature wherein the negative is mounted on a carrier which can be used and reused through repeated steps of the operation, and in fact, through many such operations, without risking a loss of accuracy in the process.

A still further object is to provide an apparatus of this nature wherein a relatively large negative can be mounted on such a shiftable and reusable carrier, and uniformly compressed against the plate over a series of locations in a step and repeat operation, without the necessity for special perforated materials, intermediate sprinkling powders, oversized mask openings, marginal shadowing of the transparency, and the like, to assure that the photoimpression is free from printing flaws due to the entrapment of air between the negative and the plate.

Other objects include the provision of an apparatus of this nature which is light in weight, easily manually operated, cheap to manufacture and operate, and adapted so that errors can be readily corrected between the steps of a step and repeat operation. Still further objects will be apparent from the description of the invention which follows hereafter.

SUMMARY OF THE INVENTION

These objects and advantages are realized by an apparatus of our invention wherein the image-processing "layup" constituted by the photosensitive plate and the image-producing transparency or negative, is superimposed on a master chase comprising an open-faced marginal frame having a stiff, hard-surfaced platen supported in free-floating condition and reciprocably guided within the opening thereof. The chase is disposed in a vacuum enclosure having a transparent cover against which the platen is applied by the vacuum, while the layup is compressed therebetween; and the platen is sufficiently hard and stiff that it fully removes all wrinkles and irregularities in the layup as the air is evacuated from the enclosure. The term "stiff" indicates that the platen can be but need not be absolutely rigid so long as it assumes a planar condition under vacuum. In fact, a slight degree of flexibility may enable the platen to "roll out" the layup against the cover, from a pair of fixed reference points, as illustrated hereinafter. In the presently preferred embodiments of the invention, the platen takes the form of an unbonded laminar assembly comprised of a hard, low-flexibility face sheet arranged back-to-back with a layer of stiff, relatively compressible backing material thereunder. The face sheet is made of high-impact styrene, and the backing material is cork. However, other materials such as a high durometer (80 durometer or higher) rubber, and a foamed polymeric or resinous material may be used in their place.

While under compression between the platen and the cover, the plate and negative are fixed in position in relation to one another by means of an indexing system on the marginal frame, in substantially the surface plane of the platen. The indexing system is rigidly upstanding on the face of the frame, so as to be operatively interposed between the face of the frame and the cover when the vacuum is applied; and includes series of spaced attachment elements on opposite sides of the opening in the frame, between which the air can be evacuated as the platen is applied against the cover. The attachment elements are individually aligned with one another on spaced parallel courses from one side of the opening to the other, and in addition the series of elements are substantially coextensive with the opening at each side, so that the negative can be attached on any given centerline between the sides. Preferably, the attachment elements comprise sets of upright pins for engagement with holes in the members of the layup. The pin sets are shiftably mounted in the body of the frame, to be located at varying positions along the lengths of the sides of the opening. This in turn makes it possible to attach the layup on centerlines which lie between the courses of the pins.

In the aforementioned preferred embodiments of the invention, the marginal frame has a diaphragm secured air tight across the opening thereof, and the platen is rested in a free-floating condition on the diaphragm and reciprocably guided by the edges of the opening. The face of the frame has flat coplanar surfaces adjacent the edges of the opening and in its normal condition the platen is interposed between the diaphragm and the plane of these surfaces. The sets of indexing pins are upstanding on a pair of flat elongated adjustment members which are slidably engaged in the face of the frame, flush with the plane of the surfaces.

These embodiments also employ a vacuum enclosure which has a perforated base plate, and in which the marginal frame is supported on and secured air tight to the base plate, about the perforation or perforations therein. A flexible vacuum seal is formed on the base plate, about the body of the frame, to be engaged by the cover when the vacuum is applied. Preferably, the cover is floatably mounted in relation to the base plate, so that the platen and cover can seek a parallel when the cover is engaged with the seal.

When putting the apparatus to use, the image-producing transparency or negative is mounted on a mask and attached to a carrier comprising a blank of transparent sheet material having tabs projecting from opposite edges thereof which are of substantially lesser width than the edges themselves. The tabs contain pairs of holes which are arranged in parallel rows from one tab to the other, for engagement with pairs of indexing pins on the aforesaid sides of the opening in the frame. The holes in the tab at one end of the blank are complemental to the pins in size; whereas the holes in the tab at the other end of the blank are oblong in relation thereto, to allow for the "roll out" of the layup, as mentioned earlier. Also, in order to facilitate setting up the apparatus, the tabs are cut or otherwise removed from an elongated tape containing the pairs of holes at sufficient longitudinal distance from one another to allow not only for the cutting operation, but also for adhesively securing the tabs to the blank.

When using the apparatus in a step and repeat operation, a transfer chase is also employed which like the master chase in the vacuum enclosure, comprises a flat-faced frame having a platen formed therein for supporting the image carrier, and an indexing system rigidly upstanding on the face thereof, including series of spaced attachment elements along opposite edges of the platen, which are individually aligned with one another on spaced parallel courses from one edge of the platen to the other, and substantially coextensive with the platen at each edge, so that the image carrier can be attached on any given centerline between the edges. Also, the attachment elements again comprise sets of upright pins which are shiftably mounted in the body of the frame to be located at varying positions along the lengths of the edges.

BRIEF DESCRIPTION OF THE DRAWINGS

These features and advantages will be better understood by reference to the accompanying drawings which illustrate a preferred apparatus for carrying out the image processing operation on a step and repeat basis.

In the drawings:

FIG. 1 is a plan view of a vacuum enclosure used in the operation, as the enclosure is seen after it has been opened by raising a pivoted cover thereon;

FIG. 2 is a part vertical cross-sectional view of the enclosure, showing two positions of the cover including the fully closed position thereof;

FIG. 3 is an exaggerated schematic view of the enclosure after an image processing layup has been assembled therein, and the cover has been closed and the vacuum applied;

FIG. 4 is a part plan view of one corner of the enclosure illustrating the normal condition of an indexing system for positioning the image processing layup in the enclosure;

FIG. 5 is another part plan view of the corner of the enclosure, illustrating the indexing system in an adjusted condition;

FIG. 6 is a plan view of a transfer chase used in conjunction with the enclosure for the step and repeat aspects of the operation;

FIG. 7 is a plan view of a masked negative, targeted and tabbed for use in the image processing apparatus;

FIG. 8 is a plan view of a transparent carrier for the negative, prepared and tabbed for use in the foregoing apparatus;

FIG. 9 is a plan view of the tabbed negative mounted on the tabbed carrier; and

FIG. 10 is a plan view of a punched tape from which the tabs for the negative and the carrier are formed.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings and to FIGS. 1–3 in particular, it will be seen that the vacuum enclosure 2 is generally rectangular in plan, and is supported in a horizontal disposition on an open topped bench 4 constructed from lengths of angle iron 6 assembled in a frame on legs 8. The vacuum enclosure 2 comprises a rectangular base plate 10 which rests on the inner peripheral edge of the bench with an elastomeric sealing strip 12 inserted therebetween. The sealing strip extends in a closed course about the periphery of the plate, and has an inverted U-shaped bead 12′ thereon which is raised around the edge of the plate. The enclosure 2 also comprises a glass cover 14 which is hinged to brackets 16 on one side of the bench 4 so as to engage the sealing strip 12 when it is lowered onto the plate 10. The cover is clamped within a two-part frame 18 that extends therearound, and in the lowered position of the cover, the frame engages a series of adjustable stop pins 20 which are threaded upwardly through the bench adjacent the outer peripheral edge thereof. The stop pins 20 are erected to a common level below the bead 12′ on the strip 12 to assure that an airtight "envelope" 22 is formed between the cover 14 and the plate 10, within the area circumscribed by the bead 12′. In addition, the hinges 24 of the cover 14 are mounted within slotted recesses 26 in the brackets 16 to assure that the cover 14 always assumes a parallel to the plate 10 when under vacuum. Alternatively, the brackets 16 may be slidably secured to the bench 4 for this purpose.

During the image processing operation, the image carrier 28 (FIG. 8) is affixed to and supported on a master registry chase 30 which is housed within the envelope 22. The chase 30 comprises a marginal frame 32 which is rectangular in shape to correspond to the shape of the vacuum enclosure 2, and characterized with a shallow recess or rabbet 34 around the lower inner peripheral edge thereof to accommodate the edge portions of a flexible diaphragm 36 of Hypalon (Dupont's chlorosulphonated polyethylene) stretched thereunder. The frame 32 is supported on the base plate 10 and rigidly secured to the upper surface of the same by means of fasteners such as screws (not shown) which are passed upwardly into the frame from the lower surface of the plate so as to clamp the diaphragm 36 therebetween.

Freely supported within the frame 32 on top of the diaphragm 36, is a sheet 38 of relatively stiff, low flexibility, high impact styrene which is underlaid by a thicker sheetlike layer 40 of cork that is unbonded to the diaphragm 36 and the styrene face sheet. Together, the styrene sheet 38 and layer 40 of cork form a free floating platen 42 which can be raised against the glass of the cover 14 by means of a vacuum applied to the upper side of the platen through a pair of ports 44 in the frame 32 of the chase. The ports 44 are in registry with holes 46 to the lower side of the bench in the base plate 10, and a vacuum connection 48 is made to each hole 46 by means of a nipple 50 wedged or otherwise inserted therein. In addition, one or more holes 52 in the center portion of the plate 10 operate to expose the diaphragm 36 to atmosphere, so that a pressure differential is generated thereacross, to raise the diaphragm against the underside of the platen 42 when the vacuum is applied.

In a typical processing operation, the masked negative 54 (FIG. 7) is mounted on the transparent carrier 28, and retained in fixed transverse orientation on the chase 30 over a photosensitive plate 56 (FIG. 1), by means of an indexing system 58 which is formed on the frame 32 of the chase, inside of the vacuum ports 44. The indexing system 58 comprises series of upright pins 60 which are spaced apart at regular intervals along the sides of the opening in the frame to cooperate with holes 62 in the image carrier 28 and the photosensitive plate 56. The pins 60 along the lower side of the opening in FIG. 1 are in two spaced rows, the inside or upper row 60′ of which accommodates the adjacent end of the photosensitive plate 56, whereas the outside or lower row 60″ accommodates the corresponding end of the image carrier 28. The pins 60 along the upper side of the opening, adjacent the hinges 24 of the cover 14, are in a single row 60‴ which accommodates the opposite end of the carrier 28.

During the operation, first the photosensitive plate 56 is applied to the chase 30, and anchored to the inside set 60′ of pins; and then the image carrier 28 is applied over the plate 56 and anchored at each end to the frame 32. The platen 42 has sufficient thickness to be flush with the upper surface of the frame 32, and thus supports the resulting "layup" immediately below the lower surface of the glass 14 when the cover is closed. See the dot-dash line 64 in FIG. 2 representing the layup. As the air in the envelope 22 is withdrawn, a slight clearance may continue between the pins 60 and the surface of the glass 14; or the plate 10 may buckle sufficiently that they abut the glass. In all events, however, the air escapes between the pins 60 and the platen 42 is progressively lifted by the diaphragm 36 and forced against the underside of the glass 14, with the layup 64 clamped therebetween. As it does, the face sheet 38 is able to free float on the diaphragm 36 and to see a parallel with the glass 14, despite the numerous irregularities in the layup, due to the fact that the styrene face sheet 38 and the layer 40 of cork are unbonded with one another, and with the diaphragm 36. Similarly, the glass 14 is floatably supported on its hinges 24, so that in every case the layup is uniformly compressed over its entire area; that is, it makes uniform contact with the glass 14 and the platen 42 over the entire area thereof, and is free from entrapped air pockets.

In the process, however, the layup undergoes certain tensile forces; and therefore, it is preferred to employ slotted holes at one end of each member in the layup, so as to allow for a certain degree of "play" in a predetermined direction away from fixed references on the chase. Referring to FIG. 3, wherein the layup is again represented in greatly simplified form by a sheet 66, it will be seen that the holes 62' in the right hand end of the sheet 66 are enlarged or slotted in the longitudinal direction of the sheet. Registry is assured by the fact that the layup makes continual reference to the pins 60 at the left-hand end of the sheet 66 where the holes 62'' are complementally sized thereto. Moreover, due to the adjacent relationship between the latter holes 62'' and the vacuum ports 44' the platen 42 has the effect of progressively "smoothing out" the sheet 66 in the same direction away from the holes 62'' each time the sheet is used, so that the "action" of the sheet does not vary from one operation to another. Similarly, one 62''' of the holes in the photosensitive plate 56 is slotted, although in the crosswise sense, because of the absence of a pin and hole connection at the other end of the plate 56.

In a step and repeat operation, it is necessary to subdivide the photosensitive plate 56 into a number of predeterminately spaced areas for the separate photoimpressions, as indicated earlier. Moreover, it is necessary to locate the negative 54 within each area with great accuracy, particularly in a color printing process. With this in mind, the indexing system 58 is adjustably mounted on the chase 30 at half-inch spaces in opposite directions from the center line of the chase. Referring again to FIGS. 1 and 2, and additionally to FIGS. 4 and 5, it will be seen that the pins 60 are mounted upright on elongated bars 68 which are slidably engaged in slots 70 along the sides of the frame 32. In addition, one end of each bar 68 is spaced from the adjacent end of its slot 70, and a biasing means such as a screw 72 or a spring is inserted in the gap 74 to bias the bar against the opposite end of the slot. Should the subdivision of the plate 56 require centering the negative 54 on a line falling between pins 60, the appropriate bars 68 can be shifted against the biasing means, and a pair of shims 76 can be added to the slots 70 at the opposite end of the bars to retain them in their new positions. See FIG. 5. Alternatively, the bars 68 can be retained in their slots 70 by means of a micrometer mechanism (not shown) whereby the adjustment is simply made by rotating a screw against the bias of a spring.

As can be seen in FIG. 1, the vertical sides of the chase employ only single slidable bars 68'. However, since the step and repeat operation is usually conducted with reference to the vertical center line of the chase, the horizontal sides of the same employ pairs of slidable bars 68'' that can be shifted in opposite directions away from a fixed bar 78 at each end of the center line. See FIGS. 4 and 5.

In a typical step and repeat operation, both rows and columns of the images are prepared on the photosensitive plate. To accomplish this, the image carrier 28 is used in conjunction with a rectangular transfer chase (FIG. 6) 80 which is only a fraction of the width of the master chase 30 to accommodate the width of the masking sheet 54'. The transfer chase 80 has a pegged frame 82 around the margin thereof, somewhat similar to that of the master chase, but with a fixed platen 84 therewithin. The upper and lower sides of the frame 82 have sets of pins 86 thereon, and the two sets are spaced apart from one another at the same distance as are the pins 60 along the upper and lower sides of the master chase 30. However, the pins 86 on the transfer chase 80 are more limited in number, and are concentrated at the upper and lower ends of the center line of the fixed platen 84. The longer right and left-hand sides of the transfer chase 80, on the other hand, have full sets of pins 88 which duplicate the pin sets 60 along the right and left-hand sides of the master chase 30. Also, the latter pins 88 are mounted on slide bars 90 in a fashion similar to the master chase 30, so that increments of less than a half inch can be obtained as readily as in the case of the master chase.

In preparing for the step and repeat operation, the masked negative 54 is targeted on the transfer chase 80 and adhesively taped to it at the level of the first row of photoimpressions to be made on the master chase 30. Then, a pair of apertured tabs 92 are engaged over the slide bar pins 88 to each side of the negative 54, and subsequently taped to the masking sheet 54'. So tabbed, the negative 54 is then lifted from the transfer chase 80, and the transparent carrier 28 for the same is applied in its stead, lengthwise of the chase 80. Thereafter, the negative 54 is reapplied to the chase 80 over the carrier 28, using the tabs 92, and is taped to the carrier 28 as in FIG. 9. The composite comprising the carrier 28 and the negative 54, is then removed from the transfer chase 80, and carried over to the enclosure 2 where the tabs 94 on the carrier enable the composite to be mounted "in columns" across the master chase 30.

Thus, returning to the vacuum enclosure 2, the composite 28, 54 is applied to the master chase 30 on the center line of the first column of impressions to be made, the cover 14 is closed, and a photoimpression is made. Thereafter the cover 14 is lifted and the composite is shifted to the next column of impressions by lifting the tabs 94 of carrier 28 and reapplying the carrier to the chase 30 in the new location. Each impression in the row is completed, and the composite is then returned to the transfer chase 80 for relocation of the negative to the next higher or lower row. The relocation process is accomplished by untaping the negative 54 from the carrier 28, shifting it lengthwise of the chase 80 to its new location, and then retaping it to the carrier 28. The composite is then returned to the master chase 30, along the vertical of the first column of impressions, and an impression is made in the new row, and thereafter in each column along the new row. Should it be necessary to return to a previously burned area, this is readily possible through the use of the transfer chase 80 and the carrier 28 in conjunction with the enclosure 2. Likewise, in a step and repeat operation involving two or more negatives of different color, the apparatus guarantees that there will be registration from one negative to the next.

The tabs 92 and 94 for the negative 54 and the carrier 28 are made up from punched tape 96 containing both those tabs with complemental holes 62'', and those with slotted holes 62'. The two tabs 92 (or 94) are separated by a cutting line 98, and after being individually separated from the tape 96, are adhesively taped to the mask 54' of the negative or the carrier 28, as illustrated. Each tab 94 (or 94) in fact contains three holes 62 which are arranged in series crosswise of the tape 96, and of the three holes, the intermediate hole 62*b* is oversized with respect to the pins 60. Thus only the two end holes 62 engage the pins 60, but the spaced relationship of these latter holes assures that the carrier or negative will firmly engage on the pins and will not develop slack when used repeatedly in the processing operation.

Each tape 96 also contains a pair of tabs 100 of which one 100' has the holes arranged lengthwise of the tab for those operations in which the carrier 28 is otherwise applied on the master chase 30.

The bars 68 and 90 are held snugly against the inner walls of their slots by spring loaded snubber elements 102 (FIG. 2) in the marginal frame of each chase, to assure that the bars maintain a fixed distance from one side of the opening in the frame to the other.

If desired, the pin and hole connections made between the chase 30 and 80 on one hand, and tabs 92 and 94 of the carrier and the negative on the other, can be effected by means of pins on the latter which cooperate with holes in the chase frames. Also, in lieu of applied tabs, the mask 54' and carrier 28 can have tabs which are integral therewith, as for example, where they project from the edges of a single-piece blank.

What is claimed is:

1. A chase for use in a vacuum enclosure having a transparent cover to enable the photoimpression of an image on a photosensitive plate therein, comprising an open-faced marginal frame having a stiff, hard-surfaced platen supported in free-floating condition and reciprocably guided within the opening thereof, to be applied by the vacuum against the

cover, while the plate and an image-producing transparency are compressed therebetween, and indexing means on the marginal frame, in substantially the surface plane of the platen, to fix the positions of the plate and the image-producing transparency in relation to one another, while they are under compression between the platen and the cover, the platen taking the form of an unbonded laminar assembly comprised of a hard, low flexibility face sheet arranged back to back with a layer of stiff, relatively compressible backing material thereunder.

2. A chase for use in a vacuum enclosure having a transparent cover to enable the photoimpression of an image on a photosensitive plate therein, comprising an open-faced marginal frame having a stiff, hard-surfaced platen supported in a free-floating condition and reciprocably guided within the opening thereof, to be applied by the vacuum against the cover, while the plate and an image-producing transparency are compressed therebetween, and indexing means on the marginal frame, in substantially the surface plane of the platen, to fix the positions of the plate and the image-producing transparency in relation to one another, while they are under compression between the platen and the cover, the indexing means being rigidly upstanding on the face of the frame so as to be operatively interposed between the face of the frame and the cover when the vacuum is applied, and including series of spaced attachment elements on opposite sides of opening in the frame, individually aligned with one another on spaced parallel courses from one side of the opening to the other, and substantially coextensive with the opening at each side, so that the image producing transparency can be attached on any given center line between the sides.

3. The chase according to claim 2 wherein the attachment elements comprise sets of upright pins for engagement with holes in the plate and the image-producing transparency.

4. The chase according to claim 3 wherein the sets of indexing pins are upstanding on a pair of flat elongated adjustment members which are slidably engaged in the face of the frame, flush with the plane of the surfaces.

5. A chase for use in a vacuum enclosure having a transparent cover to enable the photoimpression of an image on a photosensitive plate therein, comprising an open-faced marginal frame having a stiff, hard-surfaced platen supported in a free-floating condition and reciprocably guided within the opening thereof, to be applied by the vacuum against the cover, while the plate and an image-producing transparency are compressed therebetween, and indexing means on the marginal frame, in substantially the surface plane of the platen, to fix the positions of the plate and the image-producing transparency in relation to one another, while they are under compression between the platen and the cover the marginal frame having a diaphragm secured airtight across the opening thereof, and the platen resting in a free-floating condition on the diaphragm and reciprocably guided by the edges of the opening.

6. The chase according to claim 5 wherein the face of the frame has flat coplanar surfaces adjacent the edges of the opening, and in its normal condition the platen is interposed between the diaphragm and the plane of said surfaces.

7. In a vacuum enclosure having a transparent cover to enable the photoimpression of an image on a photosensitive plate therein, an open-faced marginal frame having a stiff, hard-surfaced platen supported in free-floating condition and reciprocably guided within the opening thereof, to be applied by the vacuum against the cover, while the plate and an image-producing transparency are compressed therebetween, and indexing means on the marginal frame, in substantially the surface plane of the platen, to fix the positions of the plate and the image-producing transparency i relation to one another, while they are under compression between the platen and the cover, the vacuum enclosure having a perforated base plate, and the marginal frame being supported on and secured airtight to the base plate, about the perforation or perforations therein.

8. The vacuum enclosure according to claim 7 wherein a flexible vacuum seal is formed on the base plate, about the body of the frame, to be engaged by the cover when the vacuum is applied.

9. THe vacuum enclosure according to claim 7 wherein the cover is floatably mounted in relation to the base plate, so that the platen and cover can seek a parallel when the cover is engaged with the seal.

10. THe vacuum enclosure according to claim 7 wherein a blank of transparent sheet material is superimposed on the marginal frame, which has tabs projecting from opposite edges thereof which are of substantially lesser width than the edges themselves and contain pairs of holes which are arranged in parallel rows from one tab to the other, and engaged with the indexing means on opposite sides of the opening in the frame.

11. The vacuum enclosure according to claim 7 wherein the indexing means includes sets of upright pins which are upstanding on the face of the frame, and the holes in the tab at one end of the blank are complemental to the pins in size, whereas the

12. A chase for use in a vacuum enclosure having a transparent cover to enable the photoimpression of an image on a photosensitive plate therein, comprising a marginal frame having an opening therein and a platen reciprocably guided in the opening, means supporting the platen in the opening, for movement in relation to the frame, and indexing means on the frame, in substantially the surface plane of the platen, to fix the positions of the plate and image producing transparency in relation to one another, while the plate and transparency are under compression between the platen and the cover.

13. The chase according to claim 12 wherein the frame has a diaphragm secured airtight across the opening thereof, and the platen is rested in a free-floating condition on the diaphragm and reciprocably guided by the edges of the opening.

14. In a vacuum enclosure having a transparent cover to enable the photoimpression of an image on a photosensitive plate therein, a marginal frame having an opening therein and a platen reciprocably guided in the opening, means supporting the platen in the opening, for movement in relation to the frame, means operative to raise the platen against the cover when the vacuum is applied to the enclosure, and indexing means on the frame in substantially the surface plane of the platen to fix the positions of the plate and the image producing transparency in relation to one another, while the plate and transparency are under compression between the platen and the cover.

15. THe vacuum enclosure according to claim 14 wherein the frame has a diaphragm secured air tight across the opening thereof, and the platen is rested in a free floating condition on the diaphragm and reciprocably guided by the edges of the opening.

16. THe vacuum enclosure according to claim 14 wherein the enclosure has a perforated base plate, and the frame is supported on and secured air tight to the base plate, about the perforation or perforations therein.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,625,611 Dated December 7, 1971

Inventor(s) Alexander L. Orr and Edward W. Hilton

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Claim 11 incomplete.

Line 5, after "whereas the" add --holes in the tab at the other end of the blank are oblong in relation thereto.--

Signed and sealed this 2nd day of May 1972.

(SEAL)
Attest:

EDWARD M.FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents