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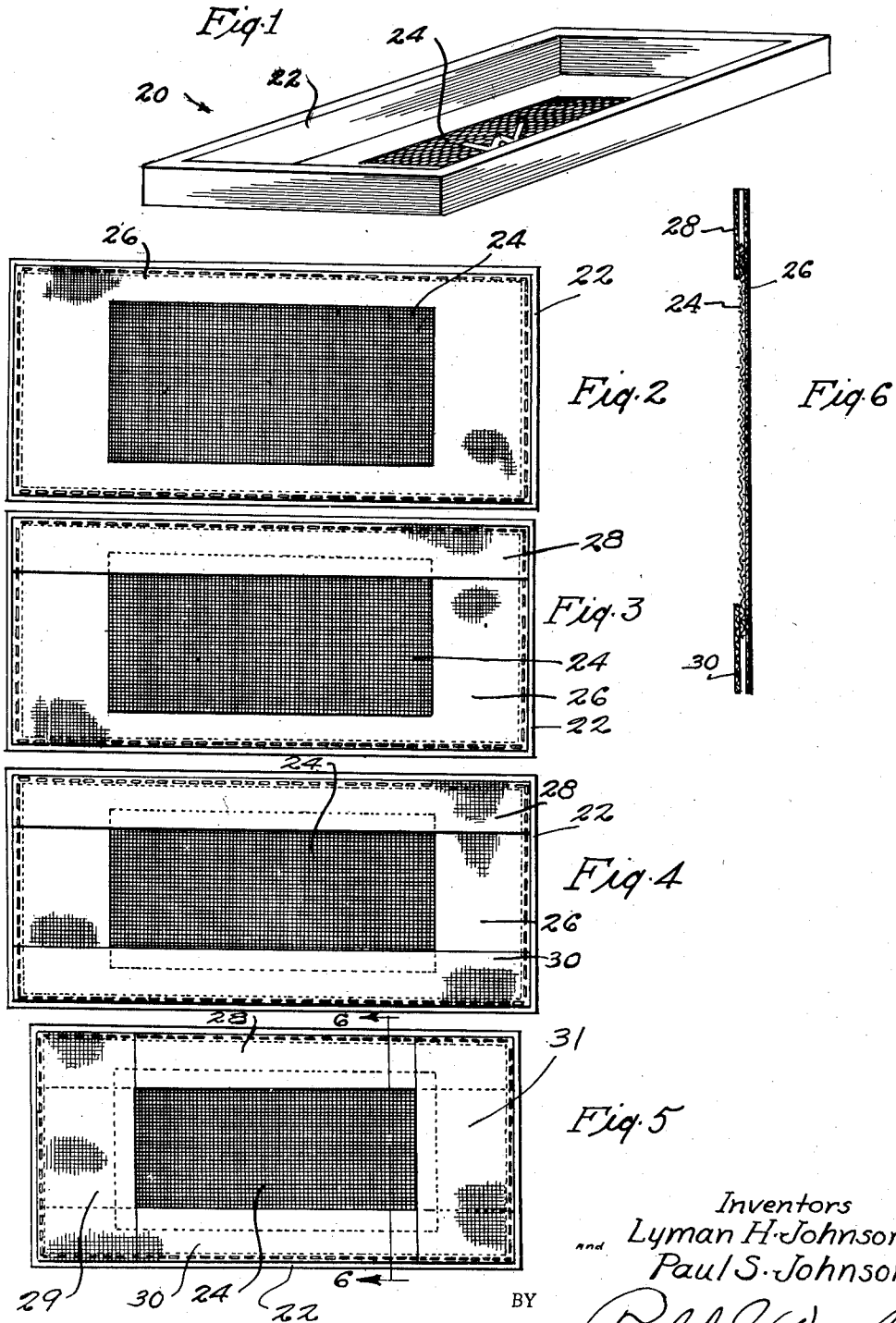
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2,299,628

MOUNTING STENCIL SCREEN AND IMPRESSING A STENCIL THEREIN

Filed July 19, 1940

2 Sheets-Sheet 1



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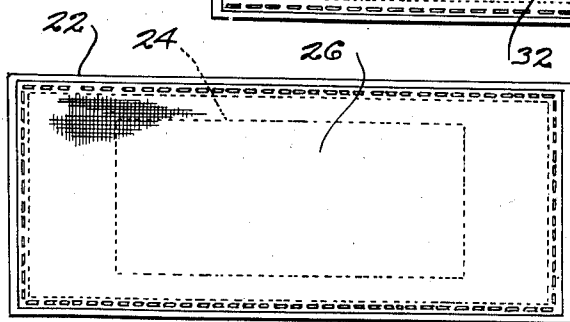
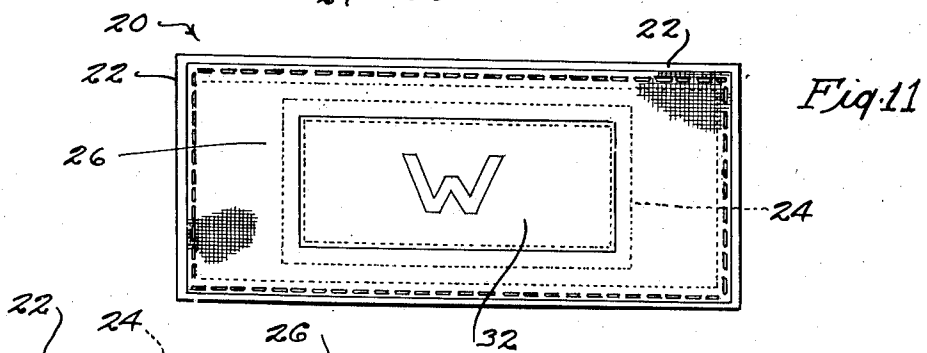
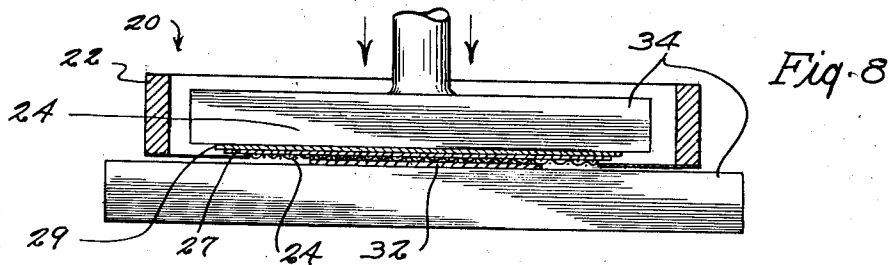
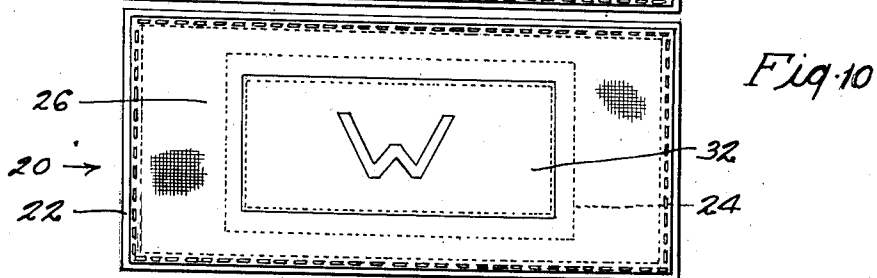
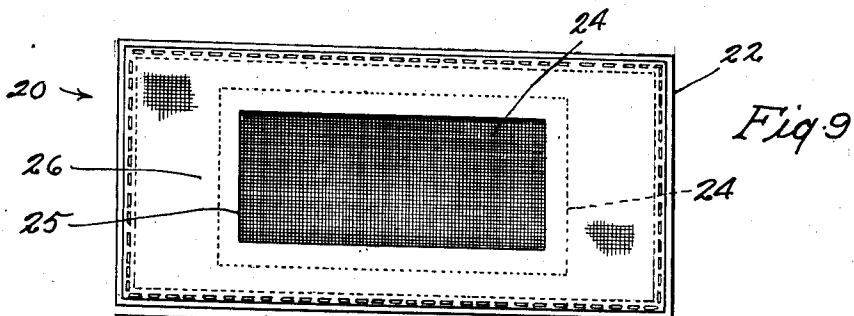


Fig. 7

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UNITED STATES PATENT OFFICE

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MOUNTING STENCIL SCREEN AND IMPRESS-
ING A STENCIL THEREINLyman H. Johnson and Paul S. Johnson, Los
Angeles, Calif.

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7 Claims. (Cl. 101—127)

In certain types of work a stencil is mounted upon a screen which in turn is secured over one of the open sides of a frame, forming in effect a container having the stencil upon one of the faces thereof. Suitable pigments are then placed within and upon the object to be stenciled in accordance with the requirement of the job at hand.

And within the meaning of the word screen, it is to be noted that any type of screen may be used, that is screens formed of metallic wire, spun glass or other material as well as perforated sheets of Celluloid, etc.

The preceding statement is introductory as to the type of work contemplated and of itself is not new, being an accepted form of operation in certain types of work, however, past experience has shown that it is quite difficult to properly draw a screen taut upon the frame so that it lies in a substantially true horizontal plane without warping or sagging upon being placed under strain, and this is particularly true when metallic screen is used, for in all of the operations involving this type of screen apparatus, pressure is placed upon one or the other of the sides of the screen and such pressure while not great, but in the repetition nature thereof, causes the screen to become loosened from the frame and hence to sag and to become worthless in a short time for the purposes intended.

It may therefore, in view of the foregoing, be stated that a prime object of the present invention is to provide a screen mounting in which the screen is held in a substantially horizontal plane under such conditions of resiliency as to absorb the forces of motion and pressure with a minimum of wear and dislocation.

A further object of the invention is to provide means to mount a screen wherein the screen proper forms an island tautly supported upon a frame by means of an intervening sheet of material having elastic qualities.

A still further object of the invention contemplates the use of a screen of smaller lineal dimension than its supporting frame, wherein the screen is brought into adhesion with surrounding elastic material which is drawn taut and is secured to the supporting frame whereby the screen and the associated elastic material will lie in a substantially horizontal plane.

A still further object of the invention is to provide a stencil screen support wherein the screen per se forms an island supported with respect to a frame by means of an interposed

sheet of fabric drawn taut with respect to the screen and frame and secured to the frame.

A still further object of the invention is to provide a stencil screen support wherein the screen per se forms an island supported with respect to a frame by means of an interposed sheet of rubber drawn taut with respect to the screen and frame and secured to the frame.

A still further object of the invention is to unite a stencil type of screen, a frame, and elastic material whereby the screen will be tautly but yieldably held in a horizontal plane.

And a still further object of the invention is to unite a stencil type of screen, a frame, and an elastic material whereby the screen will be tautly but yieldably held in a horizontal plane, in combination with a stencil affixed to the screen by the application of pressure so that the body portion of the stencil is intertwined with the material of the screen to form a unitary mass whereby increased life and durability of the stencil is obtained.

Other objects, features, and advantages of the invention may be observed from the accompanying drawings, the specification, and the accompanying claims.

In the drawings of which there are two sheets:

Figure 1 is a perspective or utility view of a screen mounting of the type contemplated in the present invention.

Figure 2 is a detail showing the first step used in development of this invention, wherein a sheet of elastic material is first drawn tautly over a frame and upon which a sheet of metallic or other screen is layed flat upon the said sheet of material having elastic characteristics.

Figure 3 is a detail similar to Figure 2 except that here an elastic material has been layed along one of the marginal edges of the top side of the screen.

Figure 4 is a detail similar to Figure 3 except that here a second strip of elastic material has been layed along the other of the marginal edges of the top side of the screen, and of course parallel thereto.

Figure 5 is a detail similar to Figure 4 except that strips of elastic material now cover the end portions of the screen intermediately of the parallel strips and overlapping the adjacent parallel strips.

Figure 6 is a sectional view taken along line 6—6, in Figure 5, showing the relationship of the screen and the elastic material.

Figure 7 is a bottom view deleting lines of material abutment, and showing the material in-

cluding the screen tautly layed across a rectangular frame and secured thereto, the screen is shown in dotted lines.

Figure 8 is a view of the composite structure thus formed being subjected to pressure to develop an intertwining of the material with the screen so that the whole of the mass including the binder used are securely anchored together, if the material used is rubber, then the application of pressure is combined with heat to vulcanize the rubber into the mesh of the screen.

Figure 9 is a view of the bottom side of the device with a portion of the first layed sheet cut and removed from the face of the screen.

Figure 10 is a view of the device analogous to Figure 9, except that a stencil has been placed upon the exposed screen preparatory to being pressed into the mesh thereof.

Figure 11 is a bottom view of the finished screen mounting including the impressed stencil.

In the drawings the reference character 20 indicates the completed screen stencil support and impressed stencil of this invention, and comprises a customary frame 22 of convenient shape having a screen 24 secured in position thereon.

Insofar as appearance is concerned the general appearance of the product 20 of this invention is similar to conventional screens used for analogous purposes, however, reference to the succeeding figures of the drawings indicates in progressive order definite departures from current practice in mounting the screen 24 upon the frame 22, and it is this mounting which comprises the present invention.

In carrying out the construction of the screen mounting we prefer to use a fabric such as silk as a suspension for the screen in ordinary work, but for work having a surface formed with relatively high and low spots or an undulating surface, we use sheet rubber for the suspension, and as to this latter material it is to be noted that any material having relatively great elastic qualities may be used, such as certain types of plastics in sheet form.

Use of fabric

In using fabric material for a screen suspension, we first draw the fabric across an open frame 22 and secure the same tautly thereon. The fabric thus placed upon the frame may then be marked for subsequent placement of the screen 24, being usually centrally placed with respect thereto.

That portion of the material 26 which lies between the edge of the frame 22 and approximately $\frac{1}{2}$ inch inwardly of the marked area is then coated with lacquer or other suitable blocking-in material having bonding qualities, and after drying, the screen 24 is placed upon the marked area and its marginal edges are taped in and affixed to the previously lacquered portion of the sheet 26 by the application of more bonding material. For the purpose of taping, any strong fabric may be used, however, preference is given to material having qualities similar to those which comprise the sheet 26.

In building up the taped edges of the screen, reference is directed to Figure 3 wherein a fresh lacquered strip 28 is shown as being first placed upon the screen. Lacquer may again be freely applied to effect a bond between the strip 28 and sheet 26. In Figure 4, we show a further step, wherein a fresh lacquered strip 30 is placed upon the opposite side of the screen, this strip is like-

wise lacquered whereby it will be bonded to the sheet 26.

The end portions of the screen 24 are then taped in with fresh lacquered fabric strips 29 and 31, which are likewise lacquered to bond them to the sheet 26.

The whole of this assembly including the frame 22 is then placed in a suitable press 34 and pressure is applied thereto to straighten out the screen and to force the screen, fabric, and bonding material into an intertwined mass which is permitted to dry in the press before being removed, being insulated from contacting the jaws of the press by intervening sheets of paper or other material so as not to adhere thereto.

After having been removed from the screen, a portion of the material of the sheet 26 which lies over the screen 24 is removed as shown in Figure 9 so that the screen is now exposed upon both of its sides, and further and of vital importance is the fact that when a portion of the fabric is thus removed, the tautly drawn material which remains upon the sides of the screen now pulls upon the screen, whereas the screen had previously merely layed thereon, and this action draws the screen as tautly as the fabric had previously been drawn. In other words tension in the fabric is transferred in part to the screen and since the tension is equally applied upon all of the sides of the screen and is equally exerted in all directions the screen is held in a plane with the fabric across the side of the frame to which it is secured, and the screen thus mounted is supported with a degree of elasticity which is proportional to that of the fabric used as a suspension medium.

After the center of the fabric has been removed (Fig. 9) in definition of an inner marginal edge 25, a gelatinous stencil 32 is placed upon the outer side of the screen 24. An absorbent sheet 27 is preferably placed upon the opposite side of the screen, and on top of this sheet we place a sheet of rubber so that when the press 34 is worked the pressure thereof will force the material of the stencil into the mesh of the screen. During this operation the absorbent sheet 27 takes up excess moisture from the gelatinous stencil, while the rubber sheet 29 aids in forcing the stencil into the mesh of the screen, literally pressing the screen and stencil into an integral mass, thereby ensuring that the screen and stencil will not become dis-united in part or whole, thus greatly increasing the useful life of the stencil. Stencils cut from other materials may be more firmly attached or re-attached to the screen by slightly moistening the same with their proper solvent and then placing the stencil under pressure as above stated.

Use of rubber

If sheet rubber is used in lieu of fabric, substantially the same procedure is followed in building the screen suspension as in the case of fabric, excepting that after being built up the mass is subjected to heat and pressure to vulcanize the screen and rubber together. Thereafter a portion of the first layed sheet is removed as in the case of fabric to transfer lateral tension from the sheet to the screen. The stencil is applied in the same manner as aforementioned.

To describe the use of the screen of this invention is believed to be aside the point for there are many uses for a screen of this type, and since we are only concerned with the mounting of the screen including a stencil impressed thereon, at-

tention will only be directed to outstanding characteristics concerning the same.

All screens of this type are subjected to varying kinds and degrees of pressure from being brought into contact with the work to be stenciled, and this pressure because of its repetitious nature eventually causes the screen to become frayed and to sag because it is not elastic in any real sense. However, with the mounting of this invention, the material used to suspend the screen is possessed to elasticity and hence yields sufficiently to absorb stresses otherwise imposed directly upon the screen. In the case of fabric suspension the degree of elasticity is relatively small and this type of mounting is best adapted for relatively smooth work, that is, where the surface to be stenciled is relatively smooth.

For rough work, that is, work having relatively high and low surface extremes or an undulating surface, the rubber type of screen suspension is best adapted for its elastic qualities are far greater than silk or other fabric and hence readily accommodates itself to such conditions of surface irregularity without danger of developing sag or natural fatigue due to excess tension.

Impressing the stencil in the mesh of the screen as aforesaid greatly lengthens the life of the stencil for the screen and stencil are brought into such intimate relationship that it has been found that the stencil will last a far greater length of time than if otherwise secured to the screen, thereby effecting a saving in stencil replacement and time involved in placing a new one in functional position.

The preceding statement covers our preferred screen suspension, however, it may be stated that various changes and modifications thereof may be effected in practicing the invention in departure from the drawings and description as given, without however, departing from the true spirit of the invention as defined by the scope of the appended claims.

We claim:

1. The method of forming a support for a stencil which comprises securing a sheet of elastic material upon a frame, then placing a screen upon said sheet of elastic material, placing strips of elastic material upon all of the marginal portions of said screen including the sides thereof, the bonding of said strips and said sheet to the marginal portions of said screen with an adhesive, and the subsequent application of pressure thereto so as to force the elastic and bonding material into the interstices of the screen, and then removing a portion of the sheet of material from lying over said screen.

2. The method of forming a support for a stencil which comprises securing a sheet of elastic material upon a frame, the placing of a screen upon said sheet of elastic material, then placing strips of like material upon marginal portions of the sides of said screen, the application of a bonding agent to said strips and sheet of material to bind the same to said screen, the application of pressure thereto so as to force the elastic and bonding material into the interstices of the screen for anchorage, then removing a portion of the sheet of material from over the screen, and then impressing a stencil into the mesh of the screen whereby the structure of the stencil is substantially moulded thereto.

3. The method of forming a support for a stencil

which comprises securing a sheet of elastic material upon a frame, the placing of a screen upon said sheet of elastic material, then placing strips of like material upon marginal portions of the sides of said screen, the application of an agent having the characteristics of blocking-in the interstices of said elastic material and of a bond whereby said sheet and strips of material will adhere to said screen, the application of pressure thereto so as to force the elastic materials and bonding agent into the mesh of the screen, and then removing a portion of the said sheet of material from over the screen whereby tension in the remaining portion of the sheet of elastic material is partially imparted to the said screen to hold the same taut.

4. The method of affixing a gelatinous sheet stencil upon a tautly drawn screen secured upon a frame, comprising the steps of applying a gelatinous sheet stencil upon a face of said screen, the placing of an absorbent sheet upon the opposite side of said screen, the placing of a resilient sheet upon said absorbent sheet, and then applying a squeezing pressure thereto so as to force the gelatinous sheet stencil to flow inwardly of the face of the screen upon which it is situated whereby the wire of the screen is encased with the material of the stencil.

5. The method of affixing a gelatinous sheet stencil upon a tautly drawn screen secured upon a frame, comprising the steps of applying a gelatinous sheet stencil upon a face of said screen, the placing of an absorbent sheet upon the opposite side of said screen, the placing of a resilient sheet upon said absorbent sheet, and then subjecting the built-up mass to pressure between metallic plates so that the gelatinous sheet stencil is forced inwardly of the face of the screen upon which it reposes to flow around and substantially encase the wire and mesh of the screen with the material of the stencil whereby the screen and stencil form a unitary organization.

6. A stencil comprising in combination with a frame, a sheet of relatively elastic material secured under tension across said frame and secured thereto, a fine mesh metallic screen positioned within said frame and upon said material, and strips of like material, said strips being positioned upon the marginal edges of said screen and in adherence to said sheet of material and screen so that the marginal edges of the screen are firmly secured to the said sheet and strips of material, a portion of said sheet being removed from within the area defined by placement of said strips whereby tension previously existing in said sheet of material is in part transferred to said metallic screen, and a removable figure secured upon said screen, said figure being impervious to pigments.

7. A stencil support for industrial use, said support comprising the elements in combination of, a frame, a fabric secured upon said frame under tension, a fine mesh metallic screen superposed upon said fabric and being bonded to the marginal edges thereof, said fabric having a portion thereof removed from within the area delineated by the bond between said fabric and screen whereby tension in said fabric is in part transferred to said screen, and a figure secured upon said screen, said figure being impervious to pigments.

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