

April 6, 1943.

R. ORTHWINE

2,315,730

SCREEN PRINTING PRESS

Filed Aug. 16, 1941

4 Sheets-Sheet 1

FIG. 2.

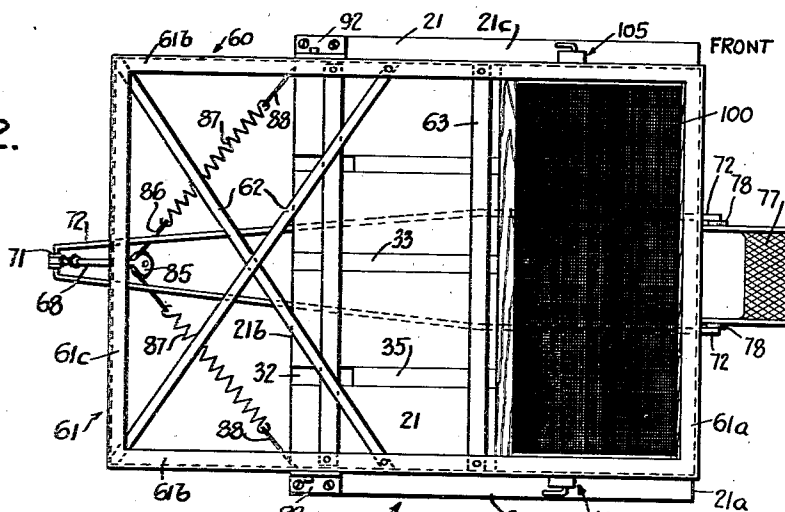


FIG. 1.

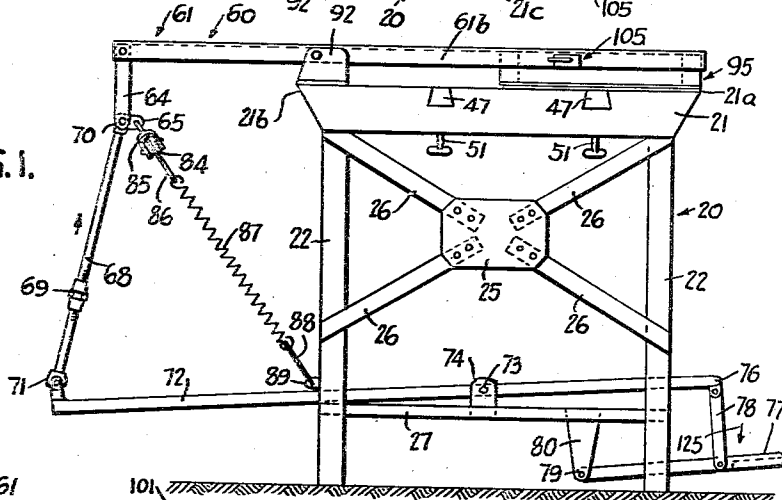
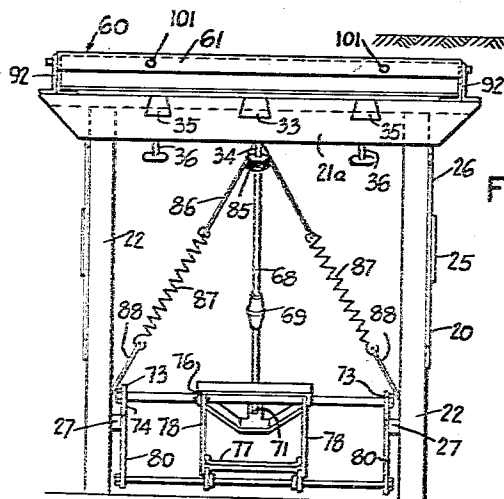


FIG. 3.



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4 Sheets-Sheet 2

FIG. 4.

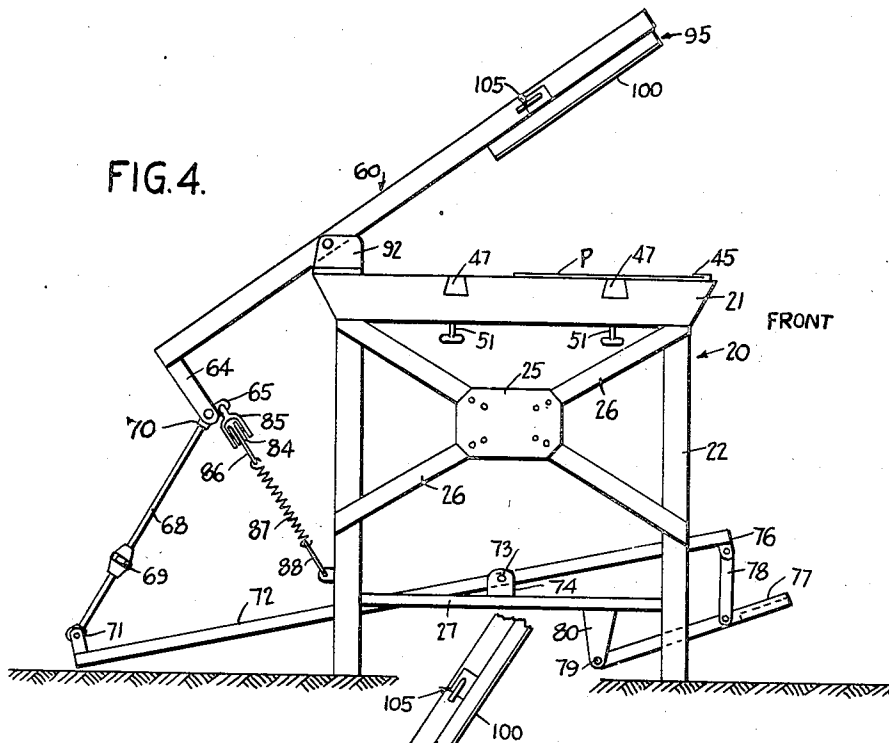
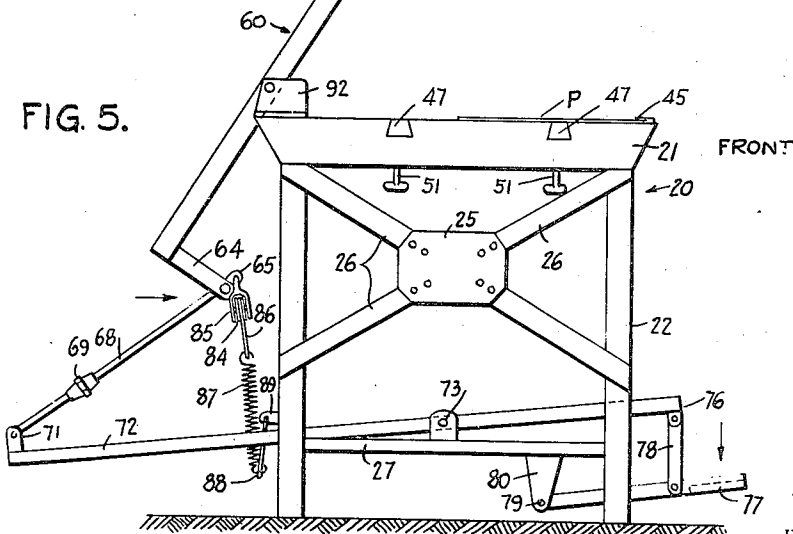


FIG. 5.



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4 Sheets-Sheet 3

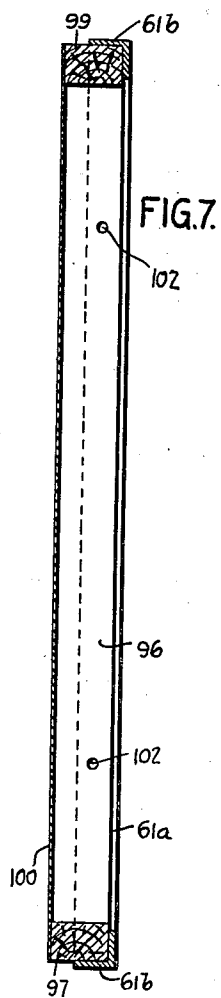
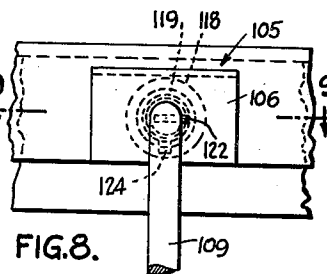
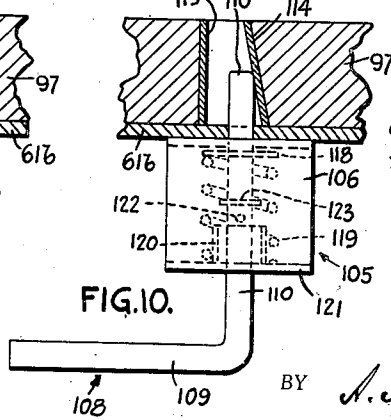
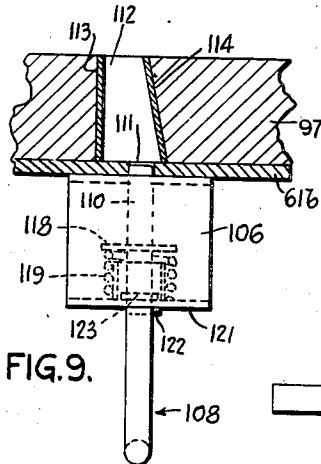
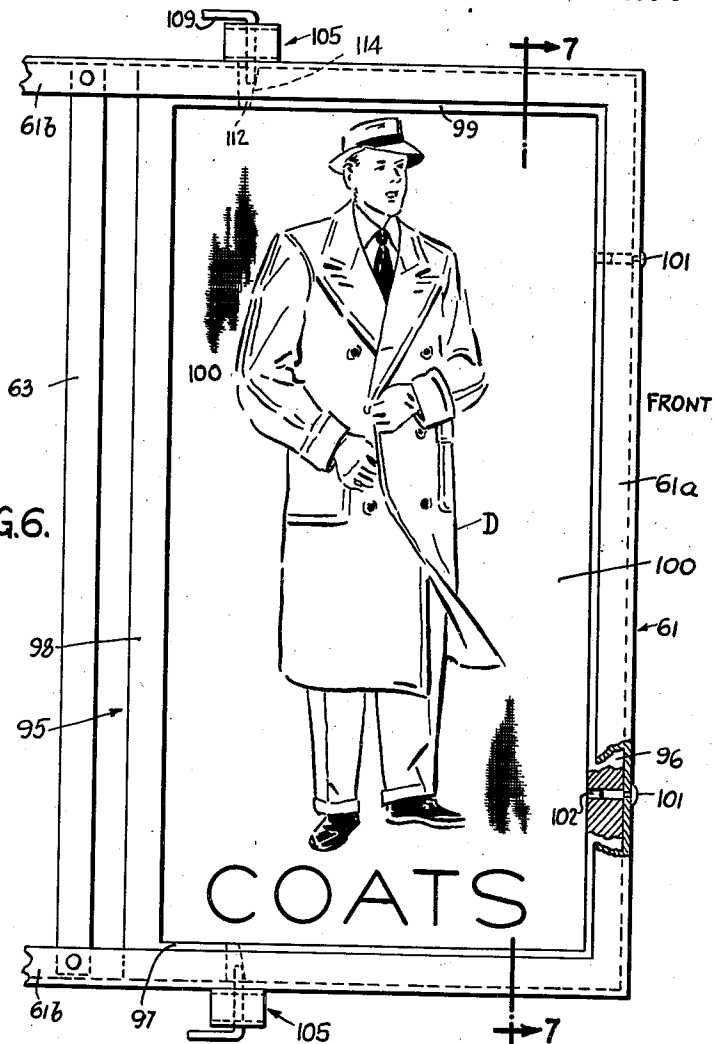


FIG. 6.



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4 Sheets-Sheet 4

FIG. 11.

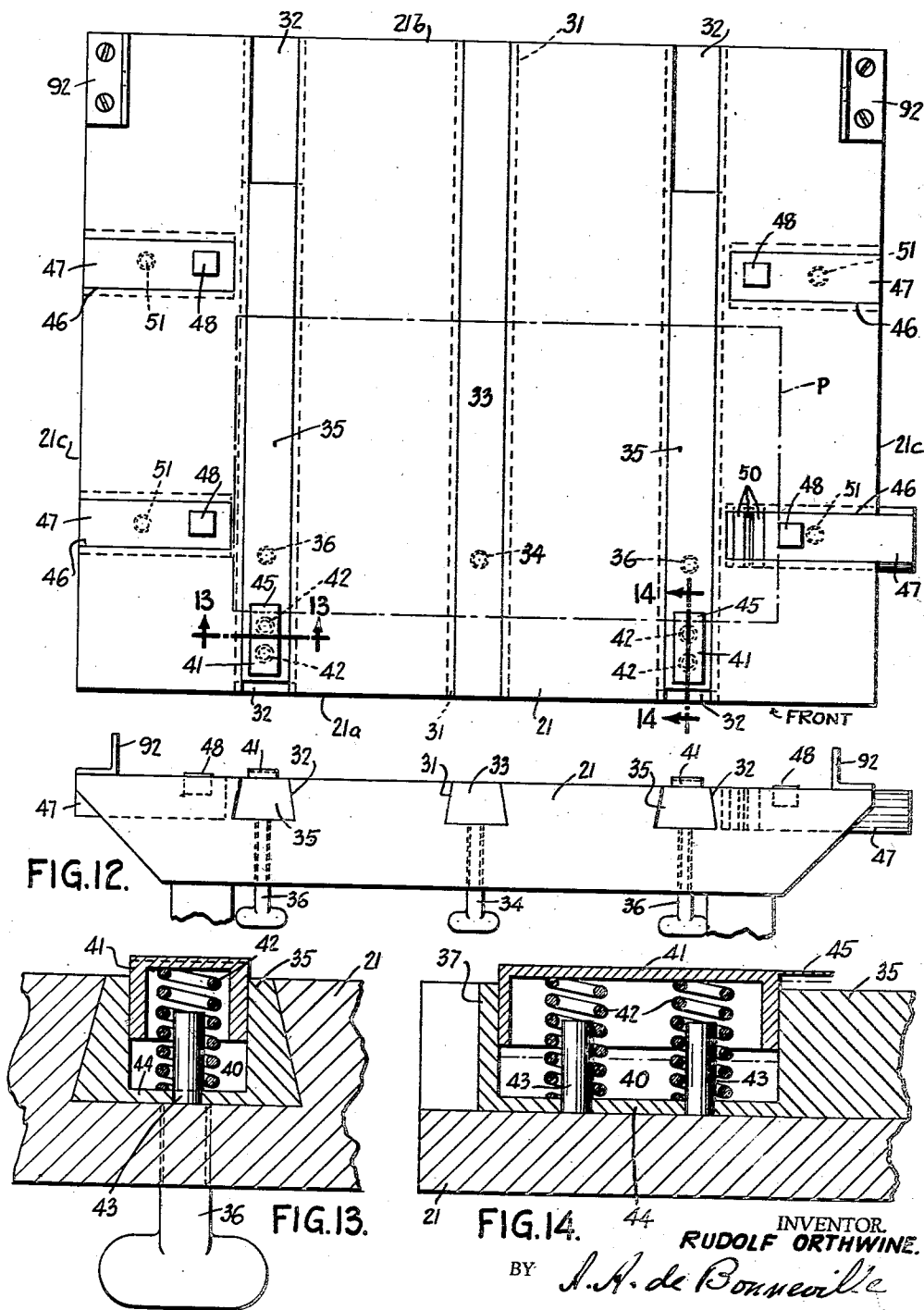


FIG. 14.

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UNITED STATES PATENT OFFICE

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SCREEN PRINTING PRESS

Rudolf Orthwine, New York, N. Y.

Application August 16, 1941, Serial No. 407,151

2 Claims. (Cl. 101—126)

This invention relates to a screen printing press.

The object of the invention is the production of a printing press which will expedite printing with either single or multiple colors.

A second object of the invention is the production of a printing press, by means of which a material printed upon can be removed from the printing press, and again positioned therein in the exact same position.

A third object of the invention is the production of a screen printing press in which the material printed upon is held in place by other than hand pressure.

Various other objects of the invention will be apparent from the specification and drawings.

In the drawings Fig. 1 represents a side elevation of the improved screen printing press in operative position; Fig. 2 is a top view of Fig. 1; Fig. 3 shows a right hand side view of Fig. 1; Fig. 4 shows a view similar to Fig. 1 with its movable parts in a different position; Fig. 5 is a side view similar to Fig. 4 with its essential moving elements in a raised locked position; Fig. 6 represents an enlarged plan view of a portion of the screen end of the swinging frame of the printing press; Fig. 7 is a section of Fig. 6 on the line 7, 7; Fig. 8 indicates a partial end view of Fig. 6 with the locking handle in open position; Fig. 9 shows a partial section of Fig. 8 on the line 9, 9 with the locking handle in disengaged position; Fig. 10 is a view similar to Fig. 9 with the locking handle in locked position; Fig. 11 shows an enlarged top view of the supporting table of the printing press with the swing frame removed; Fig. 12 is a front elevation of Fig. 11; Fig. 13 indicates an enlarged section of Fig. 11 on the line 13, 13 and Fig. 14 shows an enlarged section of Fig. 11 on the line 14, 14.

The screen printing press comprises the supporting table designated in its entirety by the numeral 20. The table 20 comprises the top table member 21 with its front 21a, the rear 21b, and sides 21c. The table is shown with the four legs 22. Each pair of the legs 22 at the sides of the supporting table 20, is provided with the gusset plate 25, and the four braces 26. A supporting brace 27 connects a pair of the legs 22 on each side of the table. The said top table member 21, see Figs. 11 to 14 inclusive for details, has provided therefore adjusting means as follows: Across the member 21 extends the dovetail center slot 31 and a pair of dovetail side slots 32 on the opposite sides of the slot 31. A dovetail slide 33 engages the dovetail slot 31 and is of equal

length with the top table member 21. A set screw 34 maintains the slide 33 in operative position. In each of the side slots 32 is adjustably positioned a dovetail slide 35. The slides 35 are shorter in length than the center slide 33. The slides 35 are maintained in operative position by the set screws 36. Adjacent to front end of each of the slides 35 is indicated a rectangular recess 40. In each recess 40 is slidably positioned a clamping member 41, held in extended position by the springs 42, which are maintained in position by the pins 43, which extend up from the bottom 44 of the recess 40. The clamping members 41 have each a clamping finger 45 extending therefrom toward the other side of the table 21b.

At each of the sides 21c of the table member 21 are indicated a pair of dovetail side slots 46, similar to the slots 31 and 32. Within the slots 46 are positioned the dovetail slides 47. Each of the slides 47 is provided with a guide block 48 which slightly extends above its slide 47. Filler blocks 50 may be used for each slide 47. Set screws 51 maintain the slides 47 in operative position.

Referring to Figs. 1 to 5 inclusive, the swing frame member of the printing press is indicated in its entirety by the numeral 60.

The member 60 comprises the rectangular top member 61, preferably of angle iron, and which comprises the front portion 61a, the side portions 61b and the rear portion 61c. Diagonal braces 62 and the cross brace 63 are provided to stiffen the top member 61.

An extension 64 projects from the center of the rear portion 61c and the latter is shown with the extension lug 65. A connecting rod 68 with the adjustable buckle 69 has one end 70 pivoted to the extension 64 and its other end 71 is pivoted to the swinging arm 72. The said arm 72 is pivoted at 73 to the supporting table 20, by means of a pair of lugs 74 of each of the braces 27. The end 76 of the arm 72 is connected to the foot pedal 77 by means of the connecting link 78. The end 79 of the foot pedal 77 is pivoted to the supporting table 20 by means of the lugs 80 extending from the braces 27. A pulley 84 is shown with the frame 85, and the latter extends from the extension lug 65. A short cable 86 extends over the pulley 85, and its ends are connected to one end of the springs 87. Connecting members 88 extend from the other ends of the springs 87. The other ends of the connecting members 88 are connected to the lugs 89 extending from a pair of the legs 22 of the table 20.

The swinging frame member 60 is pivoted to

the top table member 21, by means of the lugs 92, that extend from the top table member 21.

Referring to Figs. 6 to 10 inclusive for details, a screen frame 95 is shown with the four members 96, 97, 98 and 99. The frame 95 has connected to its lower side a screen 100 preferably of silk which has outlined thereon a design D, indicated thereon by outlining the same through covering surfaces not to be printed, which is well known in the art.

The said covering is accomplished by means of shellac or any other simple and conventional material used in the art.

The front portion of the screen frame 95 is secured to the lower side of the rectangular top member 61 by means of the pins 101 secured to the frame members 61a and which extend into openings 102 of the frame member 96. The rear portion of the screen frame 95 is secured to the rectangular top member 61, by means of spring locks 105.

The locks 105 each comprise a U-shaped frame member 106 secured to the side portion 61b of the rectangular top member 61. An operating handle 108 having the handle portion 109 and the locking portion 110, which latter extends through the U frame member 106, through the opening 111 in the side portion 61b and extends into an opening 112 of the frame member 97. The opening 112 preferably is provided with a metal lining 113. The front side of said opening is enclosed as indicated at 114. The locking portion 110 has integral therewith the collar 118, which functions as a spring rest for the springs 119 which encircle the locking portion 110, and also encircles the short sleeve member 120, which latter is secured to the inside of the front wall 121 of the frame member 106. The purpose of the sleeve member 120 is to prevent interference of the spring 119 with the stop pin 122. The said stop pin 122 bears against the outer face of the front wall 121, when the operating levers 108 are in disengaged position as shown in Fig. 9. To prevent the operating lever 108 from being withdrawn too far, a stop collar 123 is integral with the locking portion 110 of the opening lever 108. To lock the frame 95 to the top member 61, the operating lever 108 is turned 90 degrees from the position shown in Fig. 8, thereby causing the stop pin 122 to enter the opening 124 of the front wall 121, thereby permitting the springs 119 to push the locking portions 110 into the openings 112 of the frame members 97. Since the front walls 114 of the openings 112 are inclined, the locking portion 110 will bear against the inclined wall 114 of the linings 113 and thereby pressing the entire screen frame 95, which moves toward the pins 101 in the front portion 61a and thereby positions the frame 95 tightly against the front portion 61a.

The operation of the improved printing press is as follows.

Referring to the drawings, the screen frame 95 has been locked to the lower side of the member 60, see Fig. 4, by pushing said frame 95 into engagement with the pins 101, and then locking the frame 95 to the top member 60, by means of the locks 105 as described.

A paper P is now positioned upon the top table member 21, as indicated in broken lines, in Fig. 11, by utilizing the clamping members 41 and the guide blocks 48. Foot pressure is now exerted upon the foot pedal 77 in the direction of the arrow 125, see Fig. 1 and thereby the swinging arm 72 is swung and the connecting rod 68 is raised, thereby causing the screen frame 95 to contact the paper P. Ink or paint is placed on the top of the silk screen 100, and forced through openings left in the screen when the design D was prepared, by means of passing a squeegee over the surface of the screen 100 in the conventional manner. The design D will be printed on the paper P. By releasing the foot pedal 77 the swinging frame member 60 is returned to its original position shown in Fig. 4. The paper P is now removed and another paper is placed on top of the table member 21. The arrangement of the clamps number 45 and the guide blocks 48, will insure every paper P to be located in the identical position on the top of the table member 21. It may be necessary sometimes to repair the silk screen 100, by covering small tears, rips or holes with "Scotch tape," shellac, glue, or any simple form of filler. To facilitate this work the swinging frame 60 is held in an almost perpendicular position as shown in Fig. 5, by raising the swinging frame 60 manually and then holding the same in that position, by foot pressure against the pedal 77.

Various modifications may be made in the invention and the present exemplification is to be taken as illustrative and not limitative thereof.

Having described the invention I claim

1. In a screen printing press the combination of a table having a plurality of dovetail slots, some of said slots extending the entire width of the table, the balance of said slots at right angles to the other slots, the second lot of slots extending adjacent to the other slots, a slide in each slot, means to maintain the slides in different operative positions, a recess at one end of some of the slides, a clamping member slidably engaged in said recess, a clamping finger connected to one end of clamping member, helical springs interposed between said clamping member and said recess to maintain the clamping member in extended position when not in use and means to securely clamp the material to be printed when a printing medium is pressed thereon.

2. In a screen printing press the combination of a table, a swinging frame member pivoted to the table, a screen frame connected to said swinging frame member by means of a plurality of stationary pins on one end of the swinging frame member and a plurality of movable locking pins extending into openings of the screen frame, said openings being tapered on the side nearest to the stationary pins to provide a tight engagement of said screen from against the front member of the swinging frame by means of said locking pins sliding against the tapered sides of the openings in the screen frame.

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