

April 8, 1952

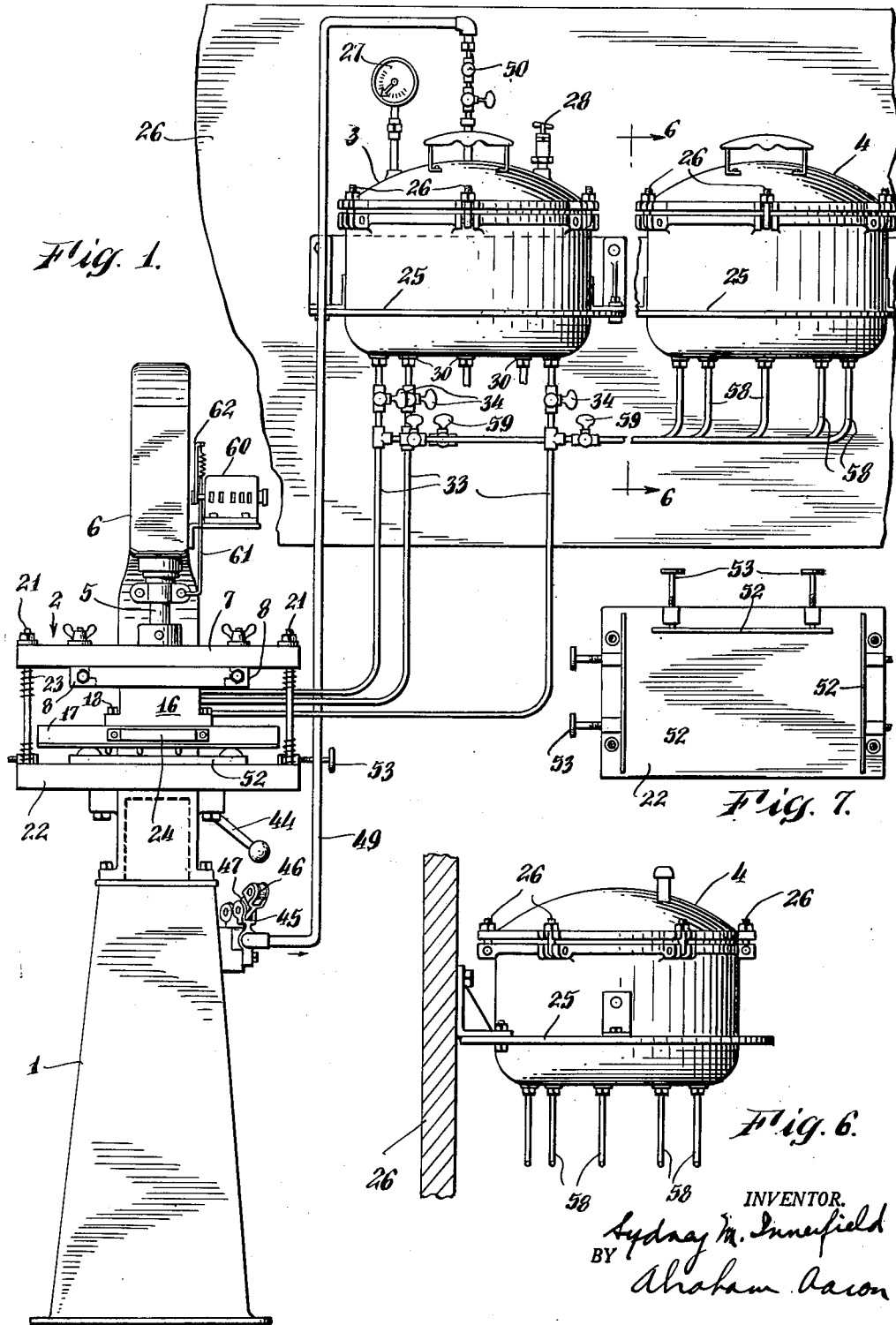
S. M. INNERFIELD

2,591,941

MULTICOLOR PRESS

Filed Jan. 14, 1950

5 Sheets-Sheet 1



April 8, 1952

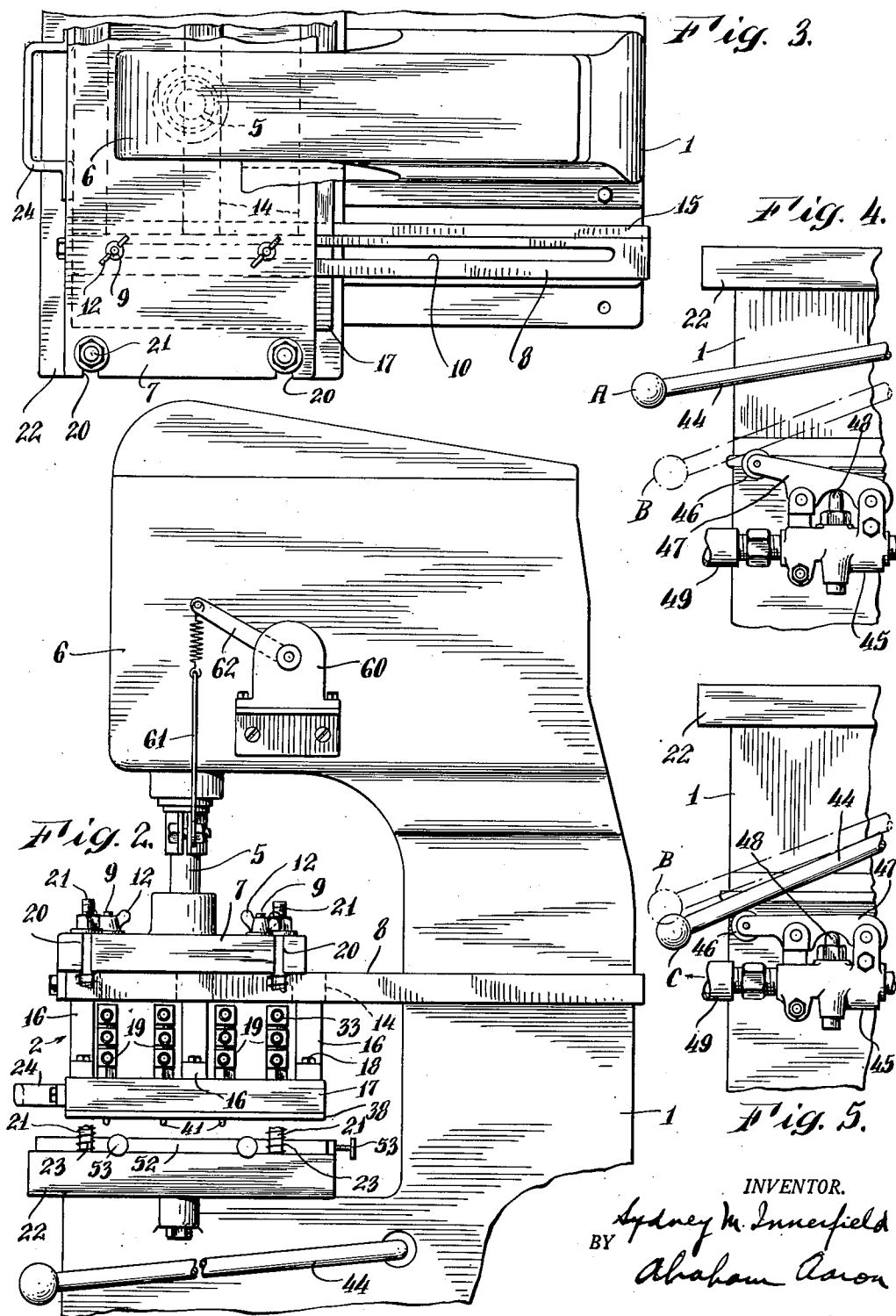
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MULTICOLOR PRESS

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5 Sheets-Sheet 2



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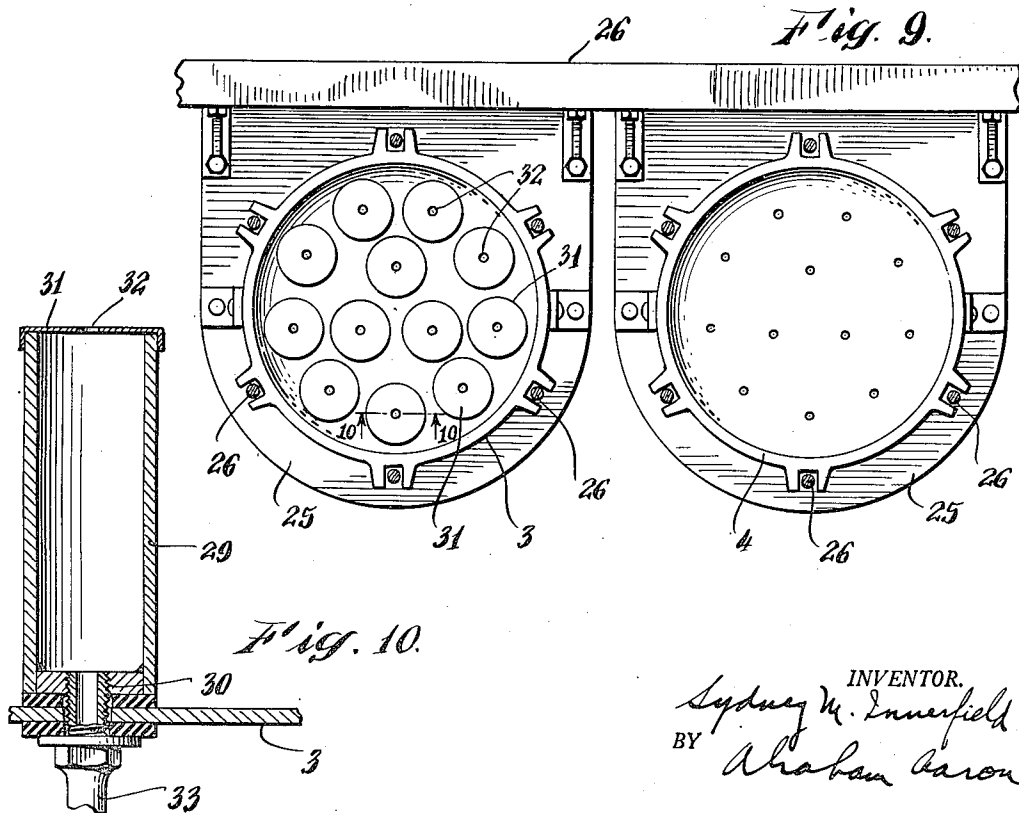
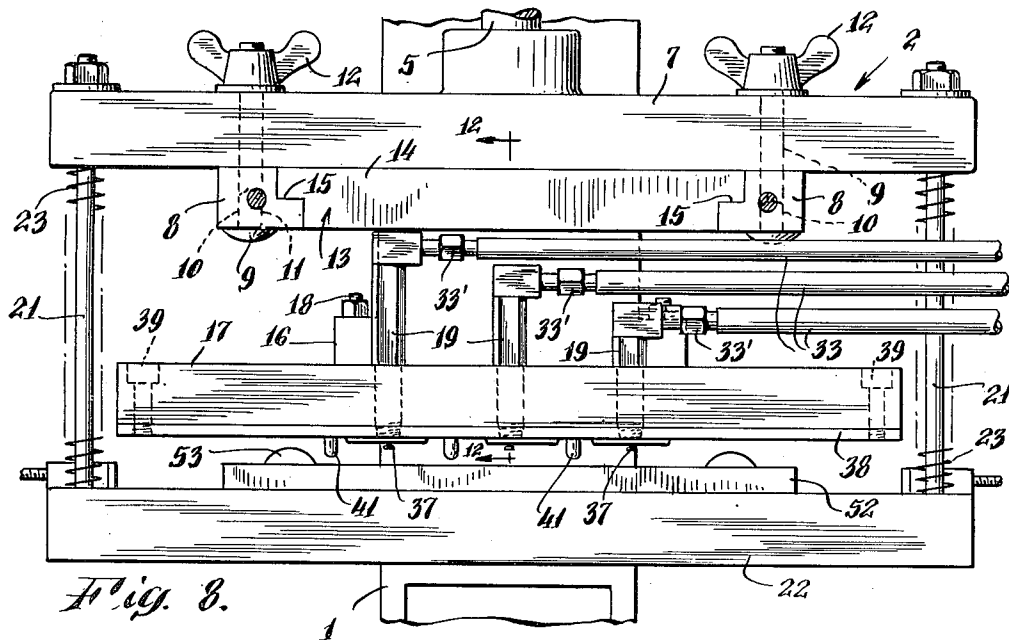
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5 Sheets-Sheet 3



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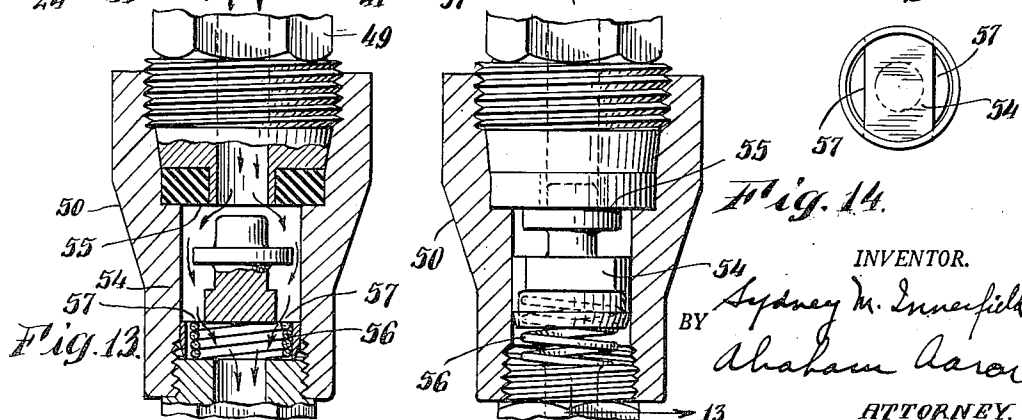
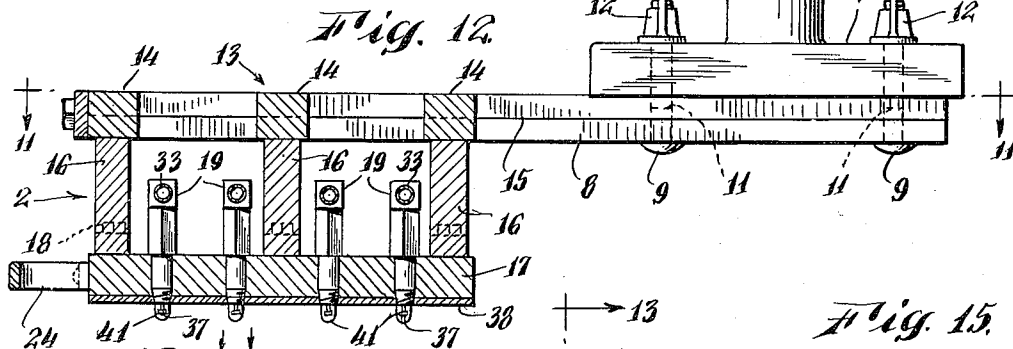
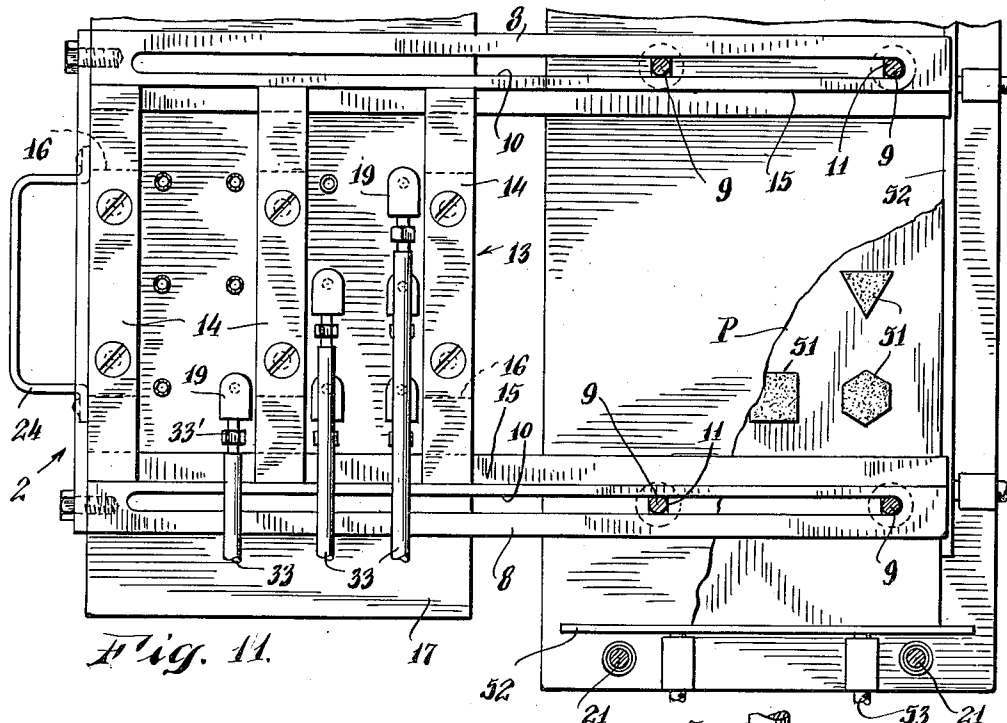
S. M. INNERFIELD

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MULTICOLOR PRESS

Filed Jan. 14, 1950

5 Sheets-Sheet 4



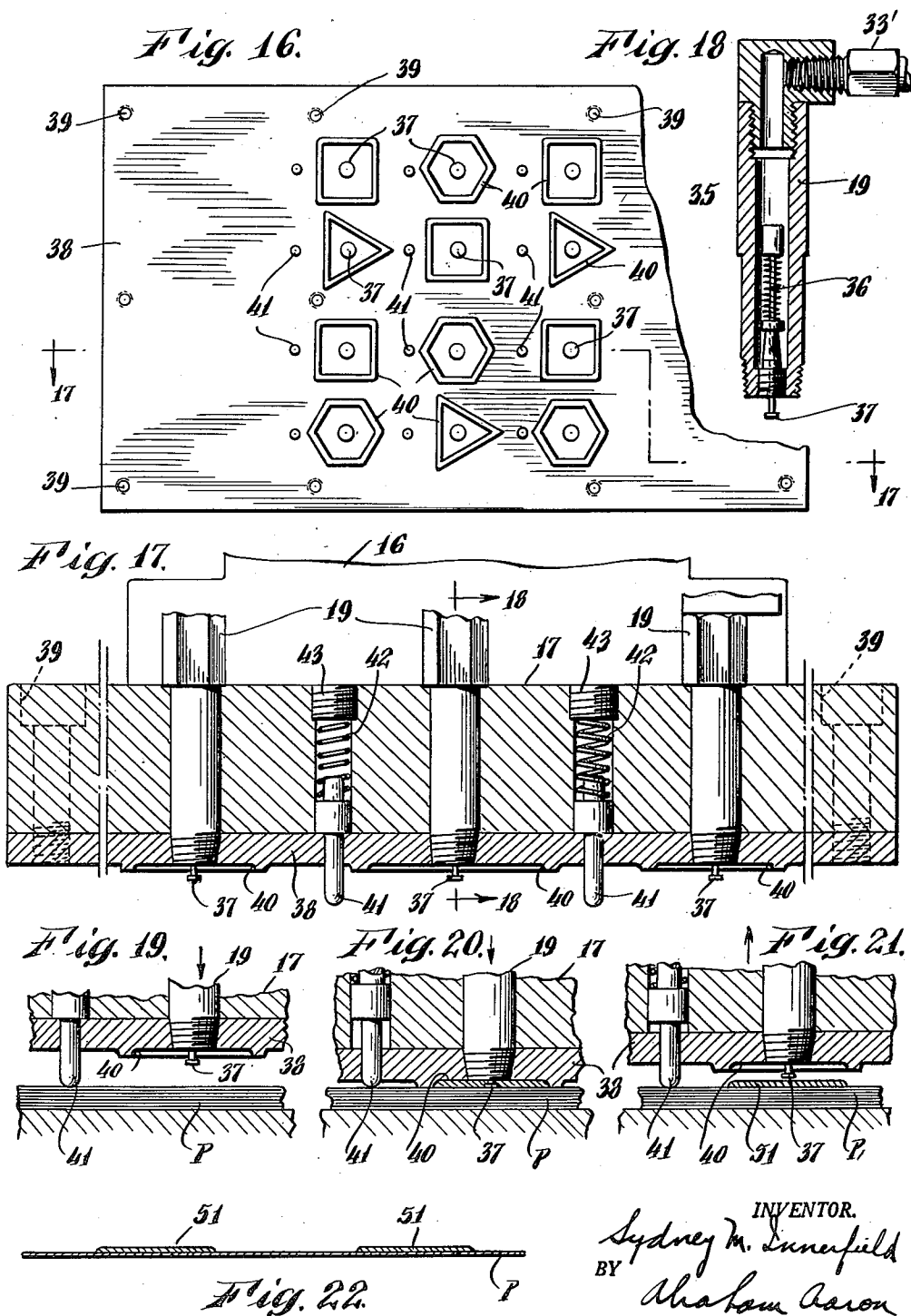
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S. M. INNERFIELD
MULTICOLOR PRESS

2,591,941

Filed Jan. 14, 1950

5 Sheets-Sheet 5



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UNITED STATES PATENT OFFICE

2,591,941

MULTICOLOR PRESS

Sydney M. Innerfield, Brooklyn, N. Y.

Application January 14, 1950, Serial No. 138,596.

6 Claims. (Cl. 41—1)

1

The purpose of my invention is to provide a multicolor press which prints or impresses suitable figures or impressions on paper or other flat surfaced material as may be required.

A further purpose of my invention is that fluid of any color or consistency may be used.

A further advantage of my invention is that twelve or more colors may be used in printing one impression, each impression having twelve or more single units in twelve or more colors.

To illustrate my invention

Figure 1 is a front elevation of the complete printing unit.

Figure 2 is a side elevation of the press portion enlarged, similar to Fig. 1.

Figure 3 is a top plan view of the press.

Figure 4 is the side elevation (fragmentary) of the main air valve.

Figure 5 is the similar view to Fig. 4 but in moved position.

Figure 6 is a section on the line 6—6 of Fig. 1.

Figure 7 is a top plan view of the paper table.

Figure 8 is a front elevation, enlarged, of the main press mechanism.

Figure 9 is a top plan view of the liquid kettle and the cleaning kettle with covers removed.

Figure 10 is the section on the line 10—10 of Fig. 9.

Figure 11 is the section taken on the line 11—11 of Fig. 12 showing the pulled out portion.

Figure 12 is the section on the line 12—12 of Fig. 8.

Figure 13 is the section on the line 13—13 of Fig. 14 in opened position.

Figure 14 is a cross-section of the check valve in closed position.

Figure 15 is a bottom view of the valve member.

Figure 16 is a bottom view of the recessed printing mold member.

Figure 17 is the section on the line 17—17 of Fig. 16.

Figure 18 is the section on the line 18—18 of Fig. 17 showing the valve.

Figure 19 shows detail similar to Fig. 17 indicating the operation.

Figure 20 shows the detail similar to Fig. 17 indicating further operation.

Figure 21 shows the detail similar to Fig. 17 indicating another operation.

Figure 22 is strip of material showing the formed impression in section.

Referring specifically to the drawings in which a fluid impression material set by the press consisting of a conventional press frame 1, a main

2

press mechanism 2, a fountain kettle 3, and a cleaner kettle 4. The shaft 5 extends from the press head 6 and is journaled in the upper plate 7. Said plate 7, rectangular in shape, carries the slide rails 8 by means of carriage bolts 9, which run through the slots 10, and the square portion 11 of the bolts 9, preventing the turning of the bolts and they are secured by the wing nuts 12. The slide rails 8 extend from the front edge of the upper plate to the rear of the press (Fig. 2). A slide member 13 is constructed of three beams 14, the ends of which conform with the mortised edges 15 of the rails. Each beam has the brackets 16 screwed to it. Said brackets are slightly narrower in the width than the beams, thus affording spacious room for the insertion of a plurality of material members 19. The Fig. 11 illustrates the spacing of the members 19, there being twelve shown but any number may be employed. There are four banks of members 19, the members in each bank are so constructed to allow each to overlap the other one (see Fig. 8).

The upper plate 7 is slotted at 20 (see Fig. 2) at four points to permit the insertion of spacer rods 21 which extend from the main press table 22 with pressure springs 23 extending from the table 22 to the under surface of the upper plate 7 always tending to keep the plate 7 in upward position.

A handle 24 is secured to the lower plate 17 at its front edge to facilitate pulling the unit in and out (see Figs. 2 and 11).

Figure 1 illustrates the kettle 3 comprising a bracket 25 which is secured to a wall 26 (Fig. 9). The kettle 3 is actually a pressure kettle being secured by bolts 26 around the periphery and provided with pressure gauge 27 and a safety valve 28. A series of small containers 29 are secured by coupling 30 to the inside of the material kettle 3.

In this instance there are twelve retainers to conform with the twelve multi-colored fluids described previously which are the members contained in the fountain kettle 3. A cover 31 with a small hole 32 covers each individual retainer. Extending from each retainer is a pipe 33 provided with a cock 34, each pipe continuing to one of the material units. Said units comprise a nipple 33' to which the pipe 33 is journaled, a bore 35 which houses a valve member 36 which ends in a pusher rod 37. The units 19 are screwed into the mold plate 38 which is secured to the lower plate 17 by the screws 39. The molds 40 may be of any required design, illus-

trated are squares, triangle and hexagonal forms and are centered around the unit 19. Spaced between these molds are pusher pins 41 driven outwardly by the springs 42 bound in the bores in the plate 17 and abutted by the plugs 43.

In operation, a lever 44 extending from the side wall of the press is pushed downwardly from position A to position B. During this pressure the mechanism (not shown) inside the press housing is actuated, driving the press mechanism 2 downwardly to a position shown in Figs. 5 and 20, at which point it will be seen that the pusher rod 37 of the fluid valve 36 has been retracted allowing escape of the fluid material into the mold and onto the paper. The fluid material is forced out of the fountain 3 under pressure which has been stored up in the kettle 3. Approximately twenty-five pounds of pressure is employed. At this operation almost all of the air pressure is expended thus requiring more pressure for the further operation. To provide for this the air valve 45 is secured to the side wall of the press convenient to the lever 44. As the said lever 44 is moved from position B to position C, the handle bears on the roller 46 forcing the arm 47 downwardly on the pin 48 opening the valves, thus permitting air to flow through the valves through a pressure cylinder, not shown, into the press mechanism which drives the unit 2 upwardly again. The remainder of the air goes through the pipe 49, up through the check valve 50 and into the pressure kettle 3, thus replenishing the necessary pressure.

Upon using of the unit 2 (Fig. 21), the pins 41 will bear against the paper P holding it down and preventing it from adhering to the surface of the molds. This results in a series of sharp impressions 51 being of the same shape as the molds.

The paper is stacked onto the table 22 of the press and centered against the fences 52, said fences 52 being set by the adjusting screws 53. (See Fig. 7.)

Figures 13 to 15 illustrate the check valve 50, the valve 54 being driven from its seat 55 by the air, against the spring 56 and the spaces 57 permitting air to travel through.

A provision is made for cleaning the pipes when the change of color fluid is required. A cleaner kettle 4 of similar design as the fluid kettle 3 is provided. Said kettle 4 is secured to the wall 26 by the similar bracket 25 but is cleaned by pressurizing. However, the twelve pipes 58 also run from the kettle 4 and are connected to the pipes 33 below the cocks 34, and are also provided with the cocks 59. When cleaning is necessary the cocks 34 are closed and the cocks 59 are opened thus permitting a flow of cleaner fluid through the pipes and into the material pipes 19. The mechanism 2 has been previously pulled out on the slide rails 8 (Fig. 11), thus facilitating cleaning the molds at the same time. A counter 60 (see Fig. 2) is secured to the side wall of the press from which a rod 61 extends to the shaft 5. Every time the shaft is lowered the counter registers another impression through the action of the rod 61 against the counter lever 62.

Although the drawings and specification disclose the best means in which I have contemplated embodying my invention, I desire in no way to be limited to the details of such disclosure, for in the further use of my invention, slight changes in form and proportions may be made without departing from the spirit of the inven-

tion within the broad scope of the appended claims.

What I claim as new and novel is:

1. A device for applying predetermined quantities of coating liquids to the face of a sheet of material comprising, a press frame, a fountain kettle mounted on said frame, a plurality of liquid containers mounted within said kettle, each of said containers being provided with a liquid conduit leading therefrom, a mold plate provided with a plurality of depressions on one face thereof, material supporting means secured to said frame, press mechanism adapted to reciprocate said plate toward and away from contact with a sheet on said material support, said plate being provided with an aperture in communication with each of said depressions, a valve carried by each of said apertures, each of said valves having an inlet end connected to one of said conduits and an outlet end in communication with one of said depressions, a valve actuating member provided at the outlet end of each of said valves adapted to be actuated by contact with said sheet material upon the downward movement of said plate to thereby discharge said liquid material upon said sheet material within the confines of the walls of each of said depressions.

2. A device for applying predetermined quantities of coating liquids to the face of a sheet of material comprising, a press frame, a fountain kettle mounted on said frame, a plurality of liquid containers mounted within said kettle, each of said containers being provided with a liquid conduit leading therefrom, a mold plate provided with a plurality of depressions on one face thereof, material supporting means secured to said frame, press mechanism adapted to reciprocate said plate toward and away from contact with a sheet on said material support, said plate being provided with an aperture in communication with each of said depressions, a valve carried by each of said apertures, each of said valves having an inlet end connected to one of said conduits and an outlet end in communication with one of said depressions, a valve actuating member provided at the outlet end of each of said valves adapted to be actuated by contact with said sheet material upon the downward movement of said plate to thereby discharge said liquid material upon said sheet material within the confines of the walls of each of said depressions, an auxiliary kettle adapted to contain a cleaning fluid secured to said press frame, a plurality of conduits for said cleaning fluid carried by said kettle, the free ends of said conduits being adapted to be connected to the inlet ends of said valves whereby said cleaning fluid may be conducted through said device by the operation of said press to thereby subject the entire liquid conducting system to the cleaning action of said cleaning fluid.

3. In a device for applying a predetermined quantity of coating liquid to the face of sheet material, a mold plate including a depression at the operative face thereof, said depression being of a predetermined depth and defined by confining walls formed in the configuration of a predetermined pattern, an aperture in communication with the interior of said depressed area, a liquid flow control valve mounted in said aperture, liquid supply means connected to inlet of said valve, a valve operating member at the outlet of said valve extending into said depression and beyond the operative face of said mold plate

5

whereby said valve is adapted to be operated during contact with the sheet material.

4. A device for applying a coating liquid in predetermined pattern to the face of sheet material comprising a support, a mold plate provided with a plurality of depressions representing the desired pattern formation reciprocally carried by said support, coating liquid supply means, a liquid flow control valve operatively connected to said supply means and in communication with each of said depressions, an operating member for said valve, said operating member extending into the interior of each of said depressions and below the face of said mold plate, whereby said valve is actuated by the contact of said operating member with sheet material upon downward reciprocation of said mold plate.

5. In a device for applying a predetermined quantity of coating liquid to the face of sheet material, a mold plate provided with a plurality of depressions at the operative face thereof, each of said depressions being defined by confining walls formed in the configuration of the liquid to be deposited upon said sheet material, an aperture in communication with the interior of each of said depressed areas, a liquid flow control valve mounted in each of said apertures, liquid supply means connected to the inlet of said valve, a valve operating member at the outlet of said valve and extending into said depression beyond the operative face of said mold plate, whereby said valve is operated during contact with the sheet material.

6

6. A device for applying predetermined patterns of predetermined quantities of coating material upon a sheet material including a reciprocal type printing press having a top platen, said top platen including a plurality of independent depressions at the operative face thereof, said depressions being of a predetermined depth and configuration, apertures singly in communication with the interior of said respective depressed areas, liquid flow control valves mounted in each of said respective apertures, liquid supply means connected to the inlet of each of said respective valves, each of said valves including an operating member extending into said depression and beyond the operative face of said platen whereby said valve is adapted to be operated during contact with sheet material.

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