

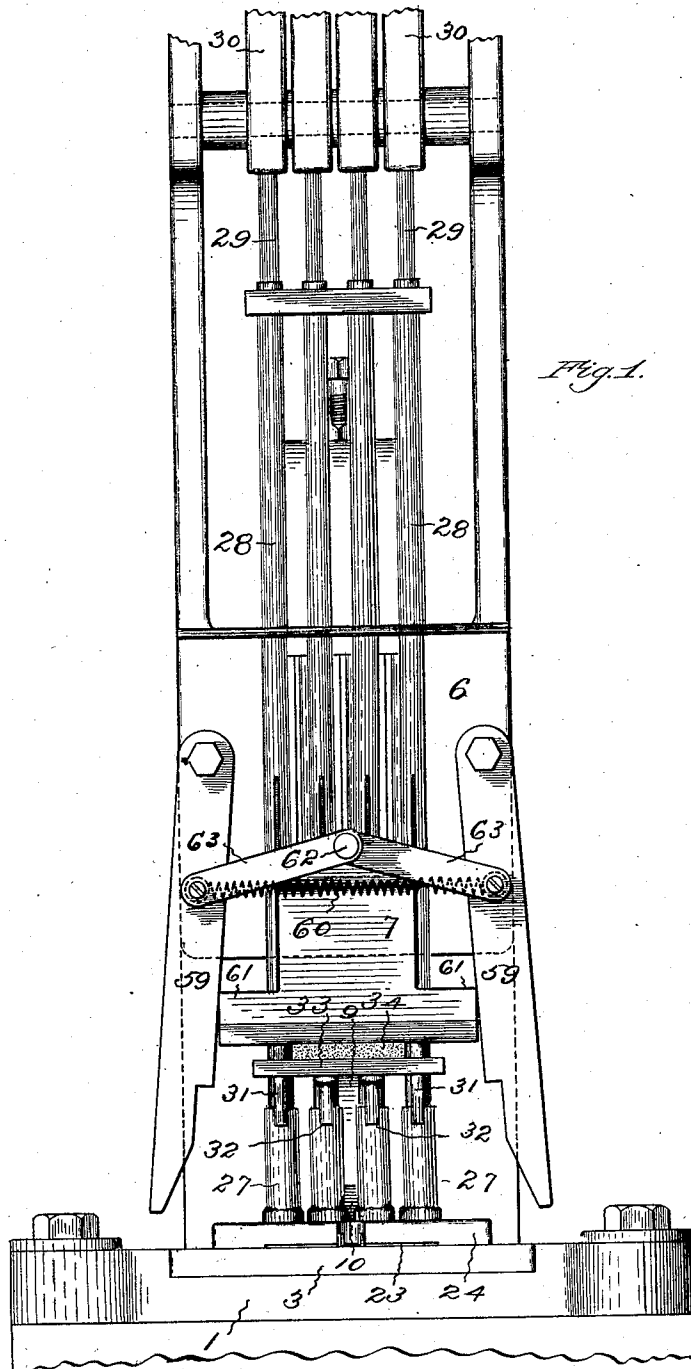
No. 876,899.

PATENTED JAN. 14, 1908.

N. W. CRANDALL.  
PRESS.

APPLICATION FILED JULY 27, 1906.

4 SHEETS—SHEET 1.



Witnesses.

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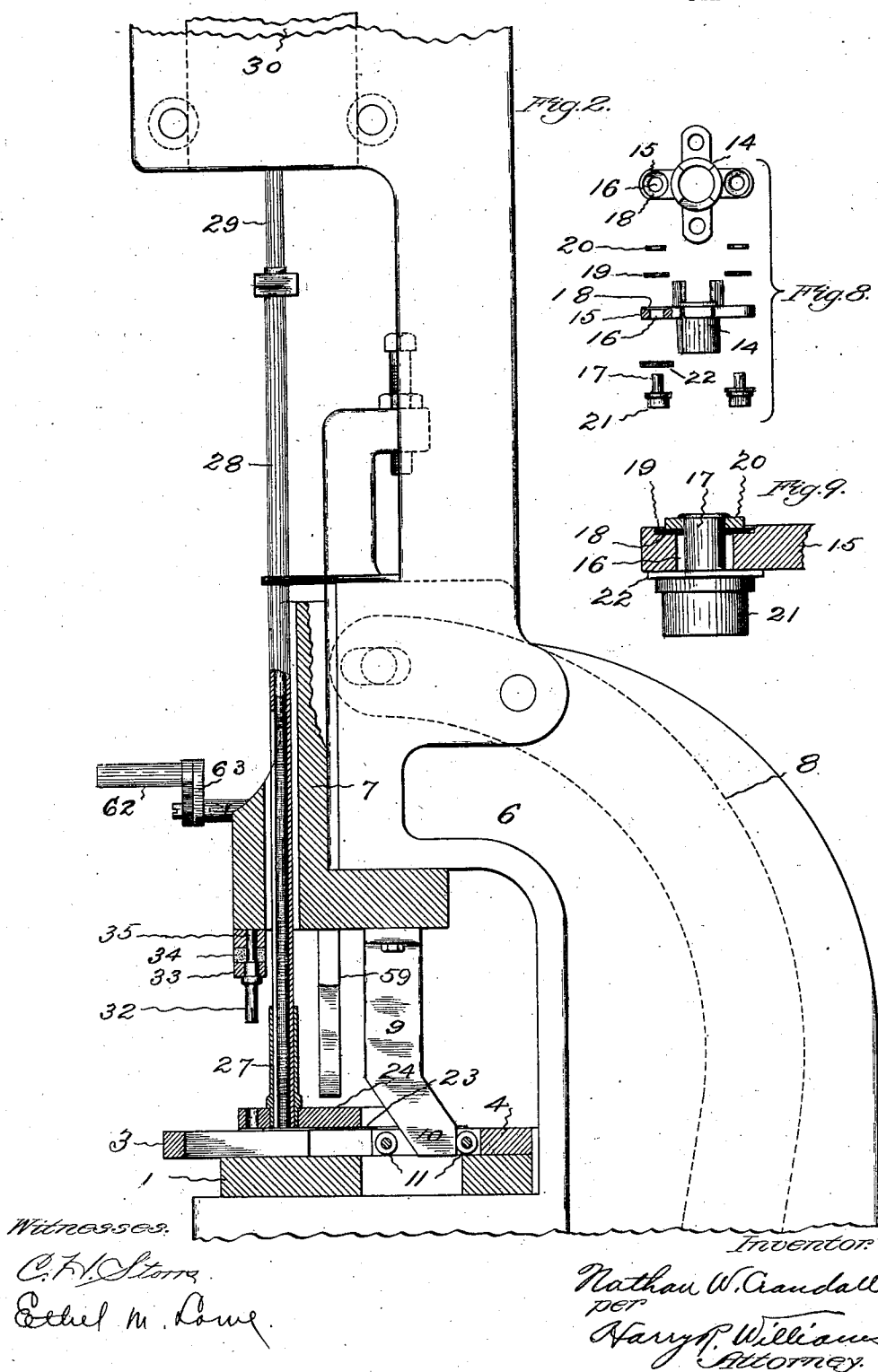
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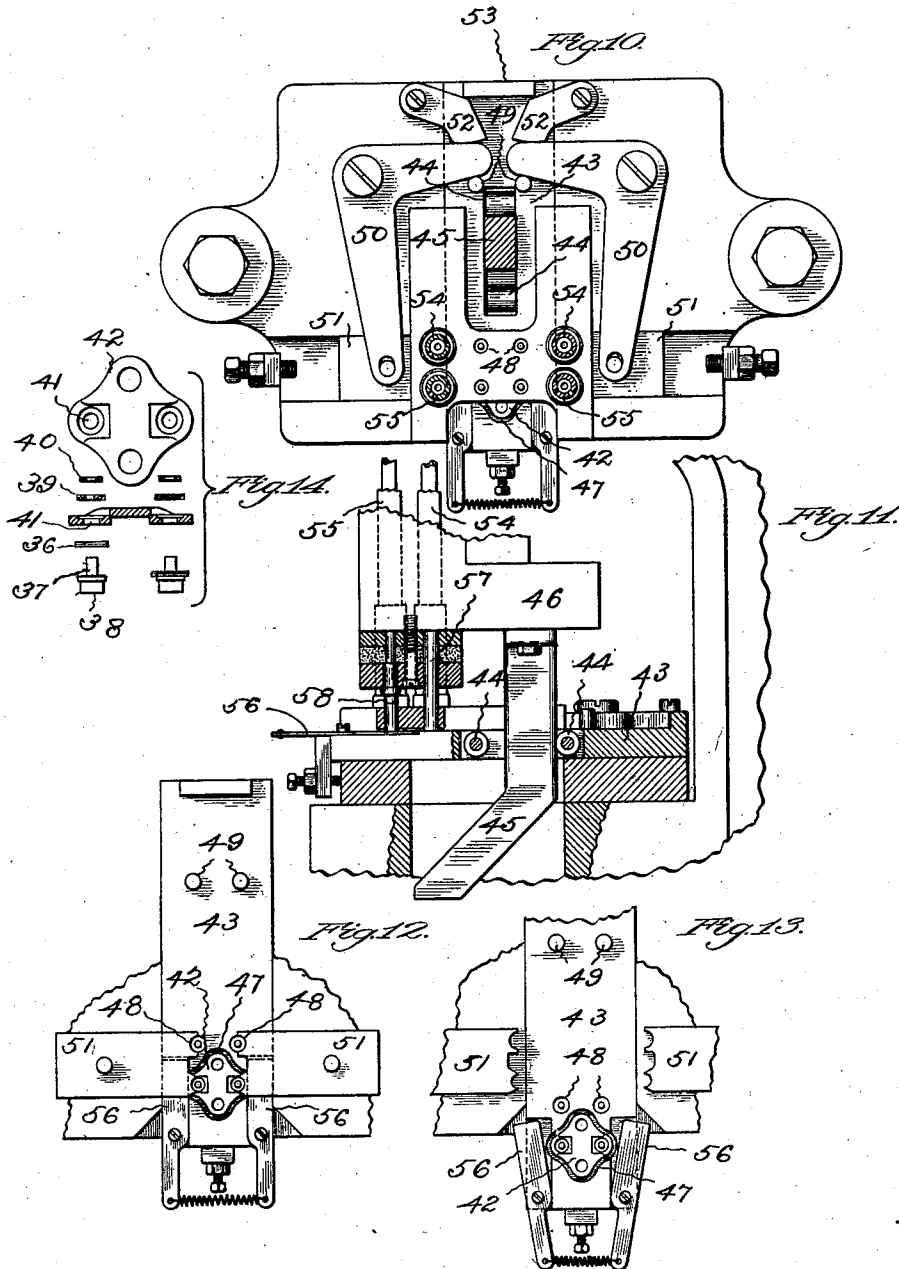
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PRESS.

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4 SHEETS—SHEET 4.



Witnesses.

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# UNITED STATES PATENT OFFICE.

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## PRESS.

No. 876,899.

Specification of Letters Patent.

Patented Jan. 14, 1908.

Application filed July 27, 1906. Serial No. 328,119.

*To all whom it may concern:*

Be it known that I, NATHAN W. CRANDALL, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Press, of which the following is a specification.

This invention relates to a press which is designed to assemble small constructive parts.

The particular parts which the press illustrated is adapted to put together are portions of the movable pole supporting mechanism of an electric snap switch, although the press can be used for assembling parts for other purposes.

The object of the invention is to produce a simple construction whereby the various parts may be quickly assembled and firmly secured together.

The invention is illustrated in connection with a press designed to be operated by the foot of the operative although, of course, the press could be operated by mechanical power.

The forms of the invention shown are adapted to apply electrical insulating material to small metallic studs and then secure the insulated studs and other insulating material to a metallic frame in such manner that the metallic parts will be firmly secured together but electrically insulated from each other.

Details of the press are necessarily different for securing the studs to frames of various shapes. The press is shown as arranged for two different forms. This press has feed tubes containing supplies of mica washers and it has horizontally movable slides which bring the mica and the parts to be provided with the mica together and a vertical slide which is actuated by the operating lever for first moving the horizontal slides and bringing the pieces together, and then punching the parts so that they will be secured together, as more particularly hereinafter described.

Figure 1 of the accompanying drawings shows a front elevation of so much of a press as is necessary to an understanding of the invention. Fig. 2 is a side elevation of the same with portions cut in section in order to show the construction. Fig. 3 is a plan of the bed and the horizontal slides of this form of the press. Fig. 4 is a section on larger

scale showing the construction and arrangement of the punches. Fig. 5 is a plan of the horizontal slides. Fig. 6 is a section on larger scale taken through the horizontal slides and showing the end of one of the punches about to force mica washers upon a stud. Fig. 7 shows a sectional view of the end of one of the punches about to upset the head of a stud for securing together the assembled pieces. Fig. 8 shows a frame, studs and washers that are assembled by this form of the press. Fig. 9 is a sectional view on greatly enlarged scale showing the pieces which are assembled and secured together by this press. Fig. 10 shows a plan of the bed and horizontal slides of a modified form of the press. Fig. 11 shows a side elevation with parts in section of a part of the modified form of press. Fig. 12 shows a plan of the horizontal slides of this form of press in the positions occupied when the punches are about to act. Fig. 13 shows a plan of the slides of this form of press opened as when the press is at rest. And Fig. 14 shows the parts which are assembled and secured by this modified form of press.

In a recess in the upper face of the bed 1 of the form of press first shown are slides 3 and 4 which are movable horizontally toward the front and back. These slides are connected by links 5 which are pivoted to the bed so that when one slide is moved the other slide is moved oppositely.

Movable vertically in the head of the frame 6 is a slide 7 and engaging this slide in the form of press illustrated, is the upper end of the treadle lever 8. Extending downwardly from the vertical slide is an arm 9 which has an oblique portion 10 that is arranged to engage with rolls 11 mounted on the rear horizontal slide. When the treadle lever is swung backwardly either by power or the foot of an operative the vertically movable slide is depressed and this by means of the oblique portion of the arm causes the rear horizontal slide to move forwardly and through the pivoted links move the front horizontal slide rearwardly. When the lever swings forwardly the vertical slide is lifted and the rear slide moved backwardly and the front slide moved forwardly.

In the upper face of the front horizontal slide are sockets 12 for receiving the studs which are to be supplied with mica and a recess 13 for receiving the frame to which the

mica-supplied studs are to be fastened. In the first form illustrated the recess is cylindrical with radiating pockets in order to receive such a piece as 14, (Fig. 8). Each radiating arm 15 of this piece has a perforation 16 for receiving the shank 17 of the stud and has a recess 18 for receiving the mica washers 19 that are to insulate the stem of the stud and the metallic washer 20 over which the end of the stud is upset for securing the parts together. The head of the stud 21 is insulated from the arm by mica washers 22 (Figs. 8 & 9).

Attached to and extending forwardly from the rear horizontal slide is a thin blade 23. This blade is held close to the upper surface of the front slide by a plate 24 which is fastened to the top of the bed. In the blade are two perforations 25 and two perforation 26 so located that when the slides are moved together the former perforations will register with the stud sockets and the latter perforations will register with the ends of the frame recess.

Extending upwardly from the plate 24 are four tubular posts 27 and extending upwardly through each post is a tube 28. These tubes are supplied with mica washers. In the form of press shown in Fig. 1 the outer tubes contain the washers 22 (Figs. 8 & 9) which are used to insulate the head of the stud and the inner tubes contain the washers 19 (Figs. 8 & 9) which are a little smaller than the washers 22 and which are used to insulate the stud shank and the metallic washer. Rods 29 provided with weights 30 are arranged to extend into these tubes for the purpose of pressing down the washers so that there will always be a supply at the lower end of the tubes.

When the rear slide is in its rear position the perforations 25 and 26 in the blade are directly beneath the tubes so that mica washers will drop from the ends of the tubes into these perforations and then when the slides close by the forward movement of the rear slide and the backward movement of the front slide, these washers in the perforations in the blade will be carried above the sockets in which studs with their shanks up have been placed and the recess in which a frame with insulated studs has been placed. When the slides are brought together in this manner the mica which is carried from the lower ends of the tubes by the blade is ready to be applied to the shanks close to the heads of two studs and also to the shanks of two studs that extend through the arms of the frame.

Four punches project downwardly from the front part of the vertically movable slide. The outside punches 31 are arranged to force the mica washers 22 down upon the shanks 17 of the studs when the vertical slide is brought down (Figs. 4 & 6). The intermediate punches 32 are tubular and have their

lower ends split and arranged to receive the metallic washers 20 which are thrust into the ends of the punches by the operative each time the vertical slide is raised. When the vertical slide is depressed the tubular punches 32 carry the metallic washers down upon the shanks of the studs and at the same time force down and hold the mica washers 19 upon the shanks of the studs (Figs. 4 & 7). The tubular punches 32 are carried by a plate 33 which has a cushioning backing 34 between it and the lower face of the vertical slide to allow these punches to yield.

Extending through the tubular punches are upsetting punches 35 which are fixed to the lower part of the vertical slide. After the tubular punches have forced the mica washers 19 and the metallic heading washers 20 upon the shanks of the studs the punches 35 strike the ends of the studs and upset them over the heading washers so that the studs are securely fastened to but are electrically insulated from the arms of the frame.

In the modified form shown in Figs. 10 to 14 the parts of the press are arranged for depositing mica washers 36 upon the shanks 37 against the heads 38 of the studs, also for depositing mica washers 39 and metal washers 40 on the shanks of the studs after they have been thrust through the perforations 41 of the frame plate 42. With this form of frame the end of the stud that is headed over is in a recess or depression in the upper surface of the plate so that the mica washers 39 cannot be brought accurately over the shanks 37 of the studs from the back, consequently the horizontally movable blades which carry the mica washers into position are arranged to move from side to side. In this form of the invention the slide 43 is moved back and forth by the engagement with rolls 44 of the oblique end 45 of the finger that extends downwardly from the vertically movable slide 46. In the upper face of this slide is a recess 47 for the frame plate 42 and two sockets 48 for the studs.

When the slide is moved backwardly a sufficient distance pins 49 engage the ends of angle levers 50 and swing them on their pivots so that they will move transversely movable blades 51 toward each other. Pivoted to the upper face of the bed of this form of the machine are a pair of locking pawls 52 that bear against the rear ends of the angle levers and hold them in place until the slide moves back. The slide is shown in Fig. 10 as moved part way back and having its pins engaging and about to move the angle levers. A further backward movement of the slide carries the lug 53 rearwardly so that the levers can push the pawls out of the way. When the slide moves forward the lug passes between the pawls and holds them separated so that the levers cannot be rocked until the slide is moved back the necessary distance. In this

form of the invention the feed tubes are arranged in pairs, one pair being behind the other, instead of being all in a row as in the other form. When the slide is moved backwardly and the forward ends of the levers are swung in the blades move toward each other and push mica washers from beneath the feed tubes 54 over the shanks of the studs in the sockets 48 and from beneath the feed tubes 55 over the shanks of the studs that extend through the plate 42 which is in the recess 47.

In order that the washers may be accurately located over the shanks of the studs which extend through the plate a pair of wings 56 are pivoted to the front end of the slide in such manner that as the slide is drawn backwardly their forward ends engage inclined walls on the bed and are closed over the edges of the plate so as to form a smooth surface for the mica washers to slide over when they are brought up by the blades. In this case, of course, the punches 57 which press the mica washers down upon the shanks of the studs in the sockets 48 stand behind the tubular punches 58 which press the mica washers and the metallic washers down upon the shanks of the studs that extend through the plate and the upsetting punches which are inside of the tubular punches.

In operating this press a pair of metallic studs are placed in the sockets of the horizontal slide and a frame with studs which have had the washers applied next to the heads is placed in the recess in the horizontally movable slide. Upsetting washers are then thrust into the ends of the tubular punches. When the machine is loaded and the operating lever is swung back the vertical slide first causes the horizontal blades to carry mica washers from the ends of the supply tubes over the studs. The continued downward movement of the vertical slide presses the mica washers on the shanks of the studs and causes the ends of the shanks of the stud that extend through the frame to be upset over the upsetting washers so as to secure these parts together. After this operation the frame may be turned around and the two studs which have had mica washers thrust on the shanks up to the heads are placed in the other two holes of the frame and two more studs are placed in the stud sockets. The next movement of the operating lever provides the two fresh studs with mica washers next to the heads and puts mica washers and heading washers on the other studs and upsets their ends. At each swing of the operating lever mica washers are automatically deposited on the shanks of two studs near their heads and on the shanks of two studs which have previously had the mica put on near the heads and are thrust through the frame, and the ends of these latter studs are upset so as to secure them in

position and yet have them electrically insulated from the frame.

In order to be able to obtain a good blow for the purpose of upsetting the ends of the studs it is desirable to first swing the operating lever easily so as to crowd down the insulating and heading washers and then give a second blow. For the purpose of accomplishing this and preventing the parts from moving after the first swing of the lever, a pair of latches 59 are hinged to the front of the frame in such position that when the vertical slide is partly down these latches will be drawn together by a spring 60 and will catch over the edges 61 of the slide and prevent it from being lifted, then the lever is allowed to swing forwardly a little, but not enough to cause the movement of the horizontal slides, so that it may be pushed back violently to obtain the upsetting blow. If the vertically movable slide was allowed to lift way up when the second blow was given additional supplies of mica would be moved over the studs. Now as the vertically movable slide goes down the latches are drawn together and hold it until the latches are separated by moving the handle 62 which projects from the middle of the toggle links 63 that are joined to the latches. (Fig. 1.)

The invention claimed is:—

1. A press having feed tubes, a vertically movable slide, means for moving said slide vertically, punches carried up and down by said slide, a horizontally movable slide having stock recesses, a cam projection from the vertical slide engaging and causing the movement of the horizontal slide, horizontally movable blades for transferring material from beneath the feed tubes to beneath the punches, and connections between the horizontal slide and the blades whereby the movement of the slide causes the movement of the blades, substantially as specified.

2. A press having feed tubes, a vertically movable slide, means for moving said slide vertically, punches carried up and down by said slide, a horizontally movable slide having stock recesses, a cam projection from the vertical slide engaging and causing the movement of the horizontal slide, horizontally movable blades for transferring material from beneath the feed tubes to beneath the punches, and means for moving the blades, substantially as specified.

3. A press having feed tubes, a vertically movable slide, means for moving said slide vertically, punches carried up and down by said slide, a horizontally movable slide having stock recesses connected with and moved by the movement of the vertical slide, and horizontally movable blades connected with and moved by the movement of the horizontal slide for transferring material from beneath the feed tubes to beneath the punches, substantially as specified.

4. A press having feed tubes, a vertically movable slide, means for moving said slide vertically, punches carried up and down by said slide, slides having stock recesses movable toward the front and back, connected with and moved by the movement of the vertical slide and connected with each other so as to move oppositely, and blades movable horizontally for transferring material from beneath the feed tubes to beneath the punches, substantially as specified.

5. A press having feed tubes, a vertically movable slide, punches carried up and down by the slide, a horizontally movable slide having stock recesses, means whereby the horizontal slide is moved by the movement of the vertical slide, horizontally movable blades, means whereby the blades are moved by the movement of the horizontal slide, for transferring material from beneath the feed tubes to beneath the punches, and latches adapted to engage and temporarily hold down the vertical slide, substantially as specified.

6. A press having feed tubes, a vertically movable slide, punches carried up and down by the slide, a finger with an oblique end projecting downwardly from the slide, a horizontally movable slide having stock recesses engaged and moved by the oblique end of said finger, horizontally movable blades, and means whereby the blades are moved by the movement of the horizontal slide, for transferring material from beneath

the feed tubes to beneath the punches, substantially as specified.

7. A press having feed tubes, a vertically movable slide, punches rigidly attached and punches yieldingly attached to and carried up and down by said slide, a horizontally movable slide having stock recesses, connections whereby the horizontally movable slide is moved by the movement of the vertically movable slide, and horizontally movable blades with connections whereby the blades are moved by the movement of the horizontally movable slide for transferring material from beneath the feed tubes to beneath the punches, substantially as specified.

8. A press having feed tubes, a vertically movable slide, punches carried up and down by said slide, a slide, connections whereby said slide is movable horizontally toward the front and back by the movement of the vertically movable slide, a slide having stock recesses movable horizontally toward the front and back, links connecting the said horizontally movable slides, and horizontally movable blades with connections whereby the blades are moved by the movement of the horizontally movable slides for transferring material from beneath the feed tubes to beneath the punches, substantially as specified.

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