

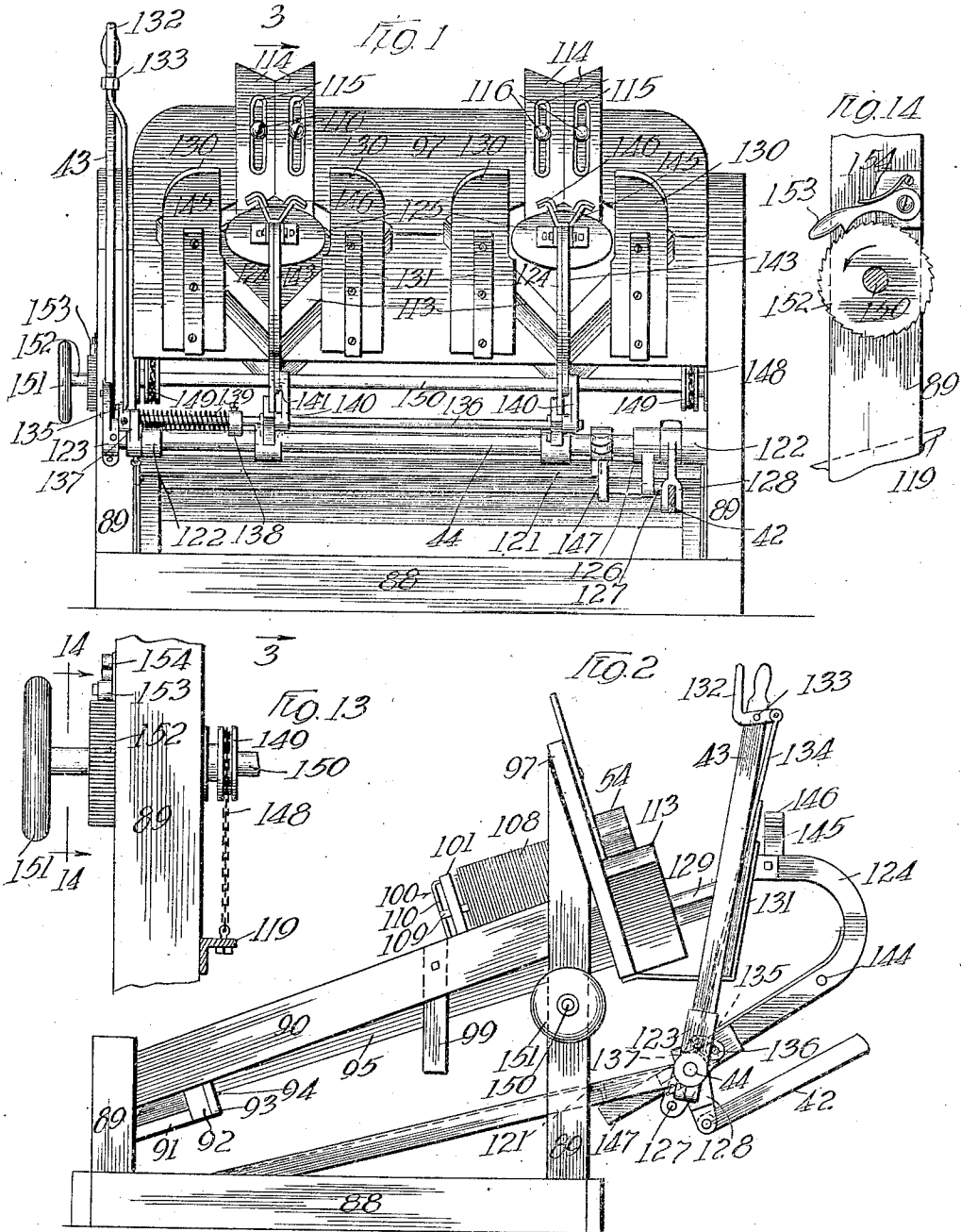
DIE EMPTYING DEVICE.

APPLICATION FILED FEB. 25, 1918. RENEWED MAY 24, 1920.

1,362,411.

Patented Dec. 14, 1920.

4 SHEETS—SHEET 1.



Witnesses:

Harry B. White
W. P. Kilroy

Inventor:

Le Roy B. Fraser,

By John Howard McElroy
his Atty.

LE ROY B. FRASER.

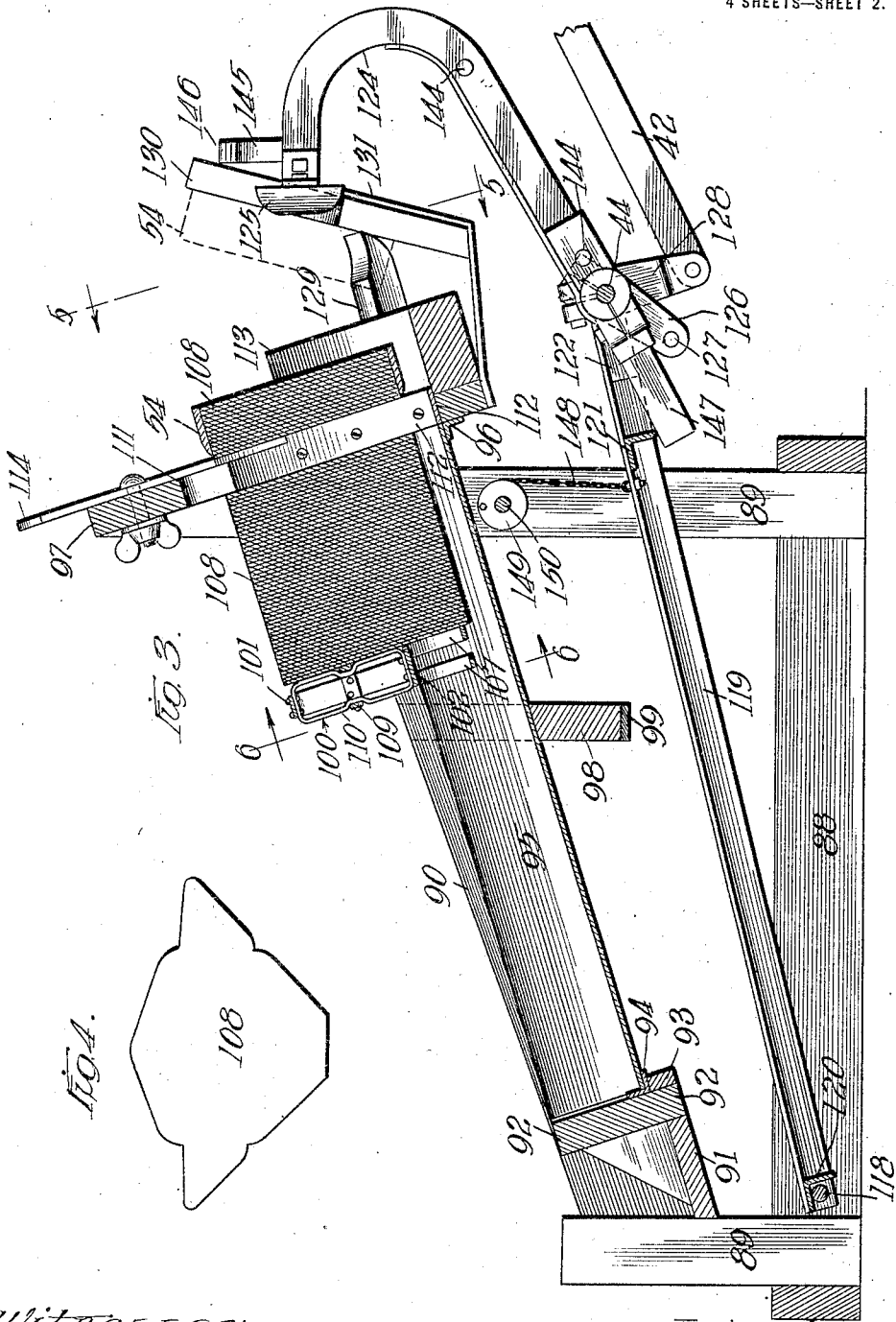
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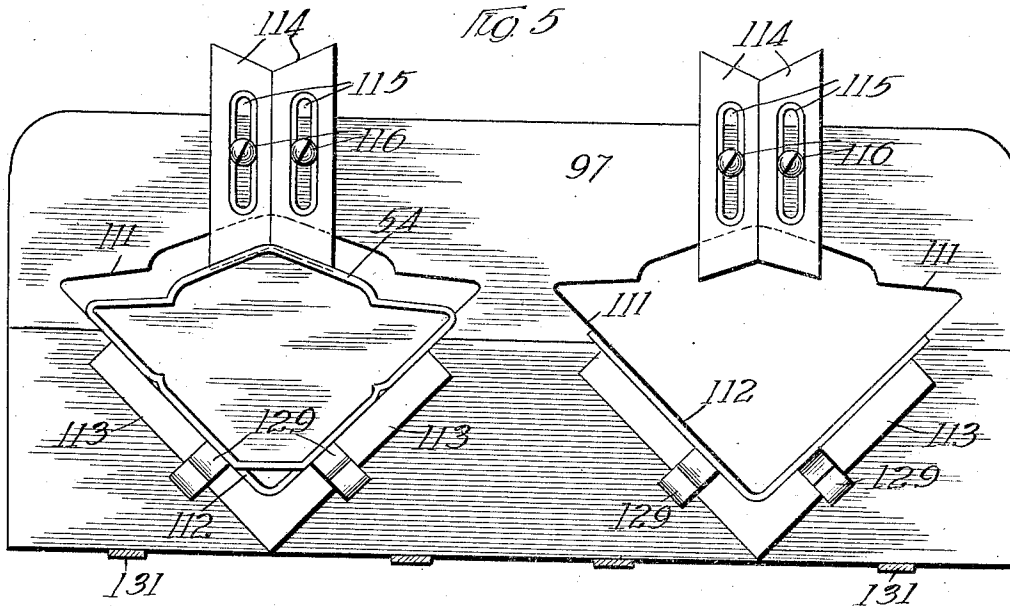
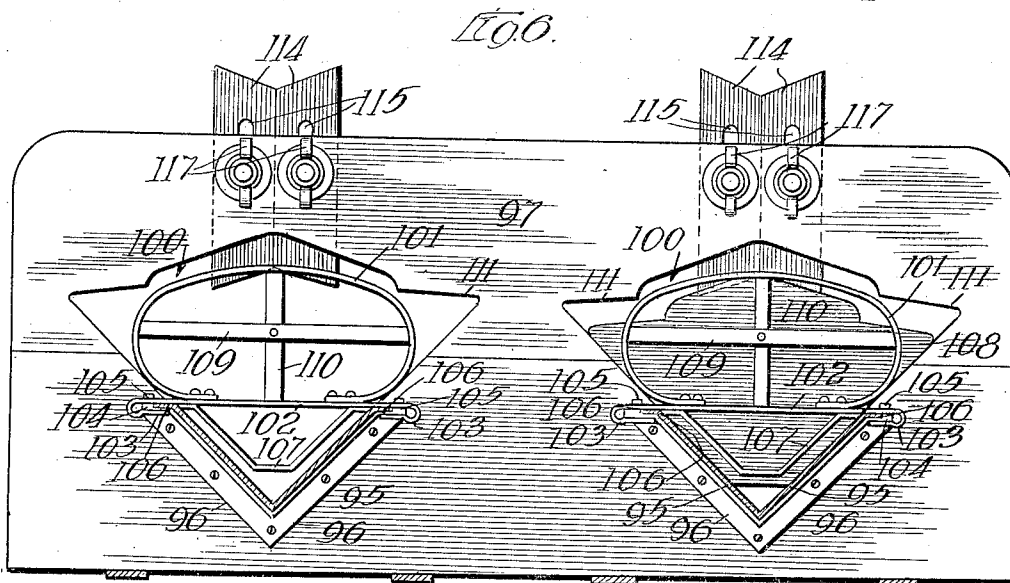
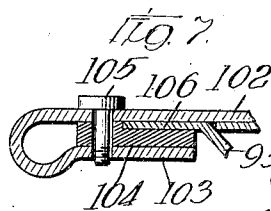
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Witnesses:
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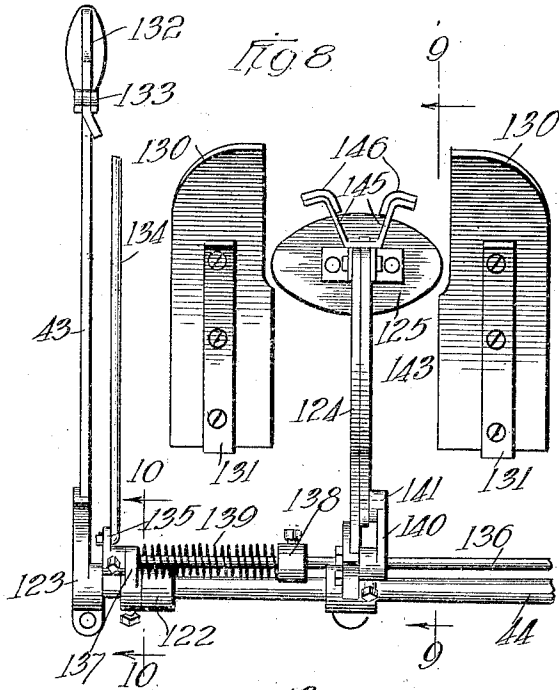
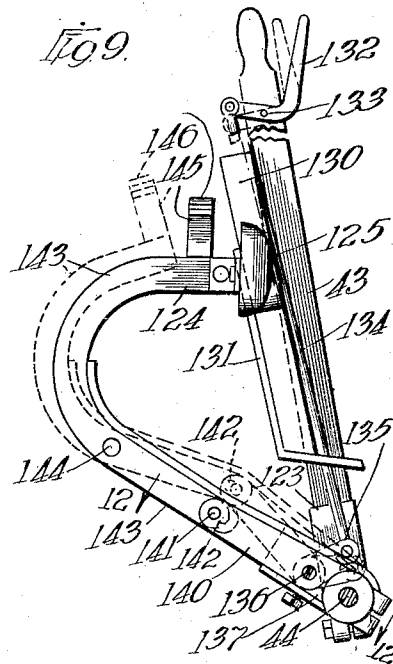
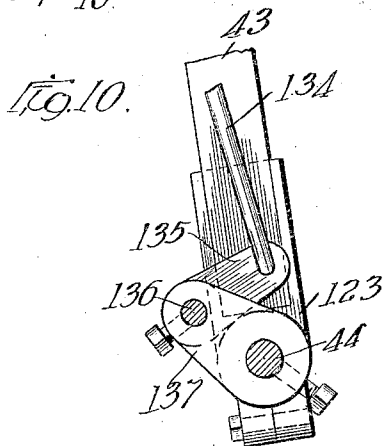
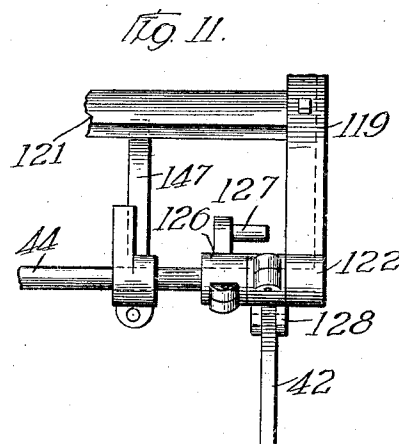
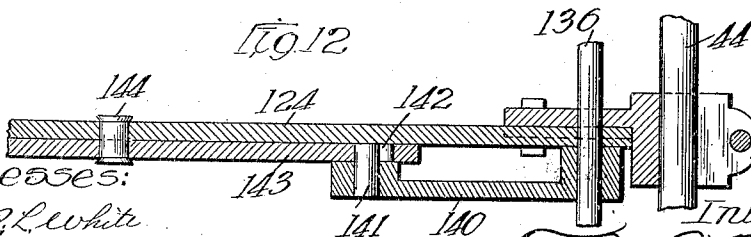
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Witnesses:
Harry B. L. White
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UNITED STATES PATENT OFFICE.

LE ROY B. FRASER, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO SEWELL-CLAPP ENVELOPES, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

DIE-EMPTYING DEVICE.

1,362,411.

Specification of Letters Patent.

Patented Dec. 14, 1920.

Original application filed September 29, 1917, Serial No. 193,894. Divided and this application filed February 25, 1918, Serial No. 218,937. Renewed May 24, 1920. Serial No. 383,926.

To all whom it may concern:

Be it known that I, LE ROY B. FRASER, a citizen of the United States, and a resident of New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Die-Emptying Devices, of which the following is a full, clear, and exact specification.

My invention is concerned with paper cutting machinery, and more especially with machinery for cutting envelop blanks, and is designed to produce a die emptying device adapted to coöperate with a pair of dies and with a blank cutting press so that one die can be emptied by and into said device while another is being filled by the operation of the press, so that the latter can be operated rapidly without wasting any time for emptying the dies of the blanks cut thereby. To this end, it consists in a novel structure and combination of elements, all as will be described hereinafter fully and at length, and the novel features and combinations thereof particularly pointed out in the claims.

To illustrate my invention, I annex hereto four sheets of drawings in which the same reference characters are used to designate identical parts in all the figures, of which—

Figure 1 is a front elevation of my die emptying device;

Fig. 2 is a side elevation of the same;

Fig. 3 is a section on the line 3—3 of Fig. 1, but on a larger scale;

Fig. 4 is a view showing the form and size of the envelop blank adapted to be cut by the die shown in the drawings;

Fig. 5 is a section, as seen from the line 5—5 of Fig. 3;

Fig. 6 is a similar view, as seen in section on the line 6—6 of Fig. 3;

Fig. 7 is an enlarged detail in section, showing the frictional sections of the follower with the trough;

Fig. 8 is an end view of a portion of the die emptying device, as seen in Fig. 2, but on an enlarged scale;

Fig. 9 is a view in section on the line 9—9 of Fig. 8;

Fig. 10 is an enlarged detail in section on the line 10—10 of Fig. 8;

Fig. 11 is a top plan view showing the inner end of the rock shaft on which the die emptying operating lever is located;

Fig. 12 is an enlarged detail in section on the line 12—12 of Fig. 9;

Fig. 13 is an end view of the mechanism for adjusting the fulcrum of the operating lever of the die emptying device; and

Fig. 14 is a view as seen in section on the line 14—14 of Fig. 13.

The present application is an enforced division of my application No. 193,894 filed September 29, 1917, wherein I show the die emptying device herein described and claimed *per se*, in combination with a press and table for cutting the envelop blanks so that by using said press and table with a couple of dies and the die emptying device, more blanks can be cut with a single press by a single operator than has been possible heretofore.

Adjacent to the framework of the press, not herein shown, I locate the hollow rectangular base 88, which is provided with the four upwardly projecting corner posts 89, which are connected along the length of the frame by the pair of inclined side pieces 90 on the inside of the posts. The two outer, and preferably shorter, posts 89 are connected by the inclined cross piece 91, which has secured to its higher edge the inclined cross piece 92, which connects the side pieces 90. On the flange 93 at the bottom of this cross piece 92 is secured the angle iron 94, which is bent into the necessary angular shape to form a support for that end of the preferably metallic trough 95, the preferred shape of which in cross section is shown in Fig. 6. I preferably employ two of these troughs 95, and their upper ends are supported upon angle-iron supports 96, similar to 94, and secured on the outer face of the inclined wooden face-plate 97, the shape of which is seen in Figs. 5 and 6, and which is supported at its ends by being secured to the properly inclined upper end of the adjacent posts 89. The troughs 95, being symmetrical throughout, can obviously be reversed and either end rest on the respective angle-iron supports 94 and 96, the middle parts of the troughs being preferably supported by the wooden cross-piece 98 having suitably shaped notches in the upper face thereof, which in turn is supported by the generally U-shaped metallic strap 99 having its upper ends secured to the sides of the side pieces 90. The troughs 95 are each provided

with a follower 100, the details of which are best seen in Figs. 3 and 6, where the main portion thereof will be seen to be formed of the flat metallic strip 101 bent into the general shape of an oval open at the bottom, and with its ends riveted to the horizontal metallic strip 102, the ends 103 of which are turned back upon the under side and drawn up against the resilient friction block 104 by the set screw 105 passing through an aperture in the body of the plate 102, and threaded into the end 103. The friction blocks 104 engage the under side of the flanges 106 projecting from the edges of the troughs 95, so that the followers 100 may be adjusted to slide along the troughs in the position shown in Fig. 3, with just the desired amount of resistance. At the under side of the portion 102 is riveted the metallic strip 107, which is of the shape shown, and which coöperates with the lower portion of the envelop-blank 108, the design of which is shown in Fig. 4. The hollow body of the follower formed by the strips 101 and 102 is closed on both faces by the metallic strips 109 and 110, the shape of which is apparent from Figs. 3 and 6, and which are riveted to each other at their points of intersection, and also to the strip 101 where they cross it, and at their ends to the strip 102. By this means, I have produced a light follower which can be shoved along the trough as additional envelops are forced into it at the receiving end. The face plate 97 is provided with apertures 111, which are of the general shape of the envelop-blank 108, and of a size to accommodate the largest envelop of that design that is to be cut. The lower portion of the aperture is lined by the polished steel strip 112, and projecting forwardly from the bottom of the face plate 97 are the angular wooden pieces 113, which, as best seen at the left hand of Fig. 5, form the support for the filled die 54. The inner face of the lower portion of the die registers exactly with the face of the metallic strip 112, so that the envelop blanks 108 can be readily pushed from the die, through the plate 97 and into the trough 95. The top of the die 54 is accurately supported, irrespective of its size, by the adjustable bars 114, which have the slots 115 therethrough, through which pass the set screws 116, which pass through holes in the face plate 97 and have the wing nuts 117 on their threaded ends, by which the heads of the bolts can be drawn against the edges of the slots to secure the bars 114 in the precise adjustment desired so as to coöperate with the cutting edge of the top of the die 54 without interfering with the passage of the envelop-blanks therefrom.

Passed through side bars of the frame 88 is a rod 118 upon which is fulcrumed the lower end of an elongated rectangular frame

made up of the two side angle-bars 119, the lower end angle-bar 120, and the top angle-bar 121, all suitably riveted together. The side bars 119 extend up beyond the end or cross bar 121, and are provided at their upper ends with the bearings 122 for the shaft 44, which is mounted to rock therein, and has a bearing bracket 123 secured on the outer end thereof to receive the lower end of the operating lever 43. Secured on the shaft 44 opposite the center of each of the apertures 111 is the pusher arm or lever 124, which is of the shape best shown in Figs. 3 and 9, and is provided at its upper end with the head 125, which passes through the center of the die 54 in place on the support 113 and when the shaft 44 is rocked by the handle, and pushes the cut blanks into the trough. At the same time that the pusher 125 is moved forward to discharge the cut blanks, the shaft 44 is rocked, and the crank arm 126 secured on the other end of the shaft has its pin 127 projecting from the side thereof engage the side of the crank arm 128 which has the link or thrust bar 42 pivoted to the lower end thereof, so that said thrust bar 42 is forced inward to start the machine (not shown) with which the apparatus is associated.

In addition to the mechanism thus far described, which provides for the emptying of the filled die 54 placed on the supports 113, I preferably associate therewith mechanism by which the die 54 which has just been emptied is lifted off of the supports 113 and carried over toward the machine and deposited on the ends of the pair of supports 129, which, as best seen in Figs. 3 and 5, have their ends approaching the wooden rests 130, the design of which is seen in Fig. 8, which are supported from the face plate 97 by the iron straps 131 secured to the back thereof and having their lower ends secured to the bottom of the plate 97. For this purpose, I provide the generally bell-crank-shaped handle 132 pivoted at 133 near the top of the hand lever 43, so that when the same is grasped to return it, the handle 132 can be moved toward the handle of the hand lever 43. Pivoted to the other end of the handle 132 is the link 134, which has its lower end connected to the crank arm 135, which is secured on the adjacent end of the rock shaft 136 journaled in an arm 137 of the adjacent bearing 122, and having its other end journaled in a bearing, not shown, loosely mounted on the shaft 44. A collar 138 secured on the shaft 136 has one end of a helically-coiled torsional spring 139 secured thereto, while the other end of the spring is secured to the arm 137, so that the spring will return the shaft to its normal position as soon as the handle 132 is released. Adjacent the two arms 124, the shaft 136 has secured thereon the crank arms 140, 130.

which are provided with the pins 141 entering the slots 142 in the lower ends of the levers 143 pivoted at 144 to the arms 124. The shape of the levers 143 is indicated in Figs. 8 and 9, and secured on the upper ends of said levers is the fork 145 back of the head 125, and the upper end of the fork is provided with the pads 146, which are adapted to engage the under side of the upper portion of the die 54 and lift the same off of the seat 113 as soon as the handle 132 is operated. The handle 132 is kept in its operated position until the handle 43 is swung back to its normal position, and during this movement the empty die 54 is lifted and carried over into engagement with the pieces 130 and deposited on the ends of the projection 129, where it is handy for the operator to lift it off and place it on the stock wherever it is needed. To limit the backward movement of the levers 124 and 143, I secure on the rock shaft 44 the arm 147, seen in Figs. 3 and 11, which engages the under side of the cross piece 121.

To raise and lower the rock shaft 44 so that the head 125 will always pass through the center of the die 54, irrespective of its size, I provide the means best shown in Figs. 3, 13 and 14, where it will be seen that the two sides 119 of the frame in which the rock shaft 44 is journaled, are each provided with a chain 148 secured at its lower end thereto, and having its upper end secured on the adjacent sheave 149 secured on the shaft 150 journaled in suitable bearings in the posts 89, and having at the forward end of the machine the hand wheel 151 by which the shaft is turned to raise or lower the frame, and consequently the shaft 44. To retain it in the position of adjustment, I secure on the shaft 150 the ratchet disk 152, and cooperating therewith is detent pawl 153 held to its work by the leaf spring 154.

While I have shown and described my invention as embodied in the form which I at present consider best adapted to carry out its purposes, it will be understood that it is capable of modifications, and that I do not desire to be limited in the interpretation of the following claims except as may be necessitated by the state of the prior art.

What I claim as new, and desire to secure by Letters Patent of the United States, is:

1. In a device of the class described, the combination with a trough shaped to hold blanks on edge, of a follower movable by pressure along the trough and cooperating with adjacent blanks, a filled-die holder adjacent one end of the trough, and a pusher adapted when moved in its path to force blanks from the die into the trough and toward the follower.

2. In a device of the class described, the combination with a trough shaped to hold blanks on edge, of a follower movable by

pressure along the trough and cooperating with adjacent blanks, a filled-die holder adjacent one end of the trough, and a pusher adapted when moved in its path to force blanks from the die into the trough and toward the follower, said trough being downwardly inclined from the filled-die holder.

3. In a device of the class described, the combination with a trough shaped to hold blanks on edge, of a follower movable by pressure along the trough and cooperating with adjacent blanks, an apertured closure for the receiving end of the trough through which blanks pass, a filled-die holder formed by the outside of the closure and supports associated therewith, means for adjusting one or more of the supports to adapt the holder to different sized dies, and a pusher adapted when moved in its path to force blanks from the die through the aperture in the closure into the trough and toward the follower.

4. In a device of the class described, the combination with a trough shaped to hold blanks on edge, of a follower movable by pressure along the trough and cooperating with adjacent blanks, an apertured closure for the receiving end of the trough through which blanks pass, a filled-die holder formed by the outside of the closure and supports associated therewith, means for adjusting one or more of the supports to adapt the holder to different sized dies, a pusher adapted when moved in its path to force blanks from the die through the aperture in the closure into the trough and toward the follower, and means for regulating the path of the pusher so it will pass through the center of the particular die for which it is adjusted.

5. In a device of the class described, the combination with a trough shaped to hold blanks on edge, of a follower movable by pressure along the trough and cooperating with adjacent blanks, a filled-die holder adjacent one end of the trough, and a pusher adapted when moved in its path to force blanks from the die into the trough and toward the follower, said follower being frictionally engaged and supported by the sides of the trough, for the purpose described.

6. In a device of the class described, the combination with a frame, of a removable trough shaped to hold blanks on edge supported thereon, a follower movable by pressure along the trough and cooperating with adjacent blanks, a filled-die holder adjacent one end of the trough, and a pusher adapted when moved in its path to force blanks from the die into the trough and toward the follower.

7. In a device of the class described, the combination with a frame, of a removable

and reversible trough shaped to hold blanks on edge supported thereon, a follower movable by pressure along the trough and cooperating with adjacent blanks, a filled-die holder adjacent one end of the trough, and a pusher adapted when moved in its path to force blanks from the die into the trough and toward the follower.

8. In a device of the class described, the combination with a trough shaped to hold blanks on edge, of a follower movable by pressure along the trough and cooperating with adjacent blanks, an apertured closure for the receiving end of the trough through which blanks pass, a filled-die holder formed by the outside of the closure and supports associated therewith, means for adjusting one or more of the supports to adapt the holder to different sized dies, a lever having a pusher on its swinging end to force blanks from the die through the apertured closure into the trough and toward the follower, and means for adjusting the fulcrum of the lever, for the purpose described.

9. In a device of the class described, the combination with a trough shaped to hold blanks on edge, of a follower movable by pressure along the trough and cooperating with adjacent blanks, an apertured closure for the receiving end of the trough through which blanks pass, a filled-die holder formed by the outside of the closure and supports associated therewith, means for adjusting one or more of the supports to adapt the holder to different sized dies, a lever having a pusher on its swinging end to force blanks from the die through the apertured closure into the trough and toward the follower, a swinging frame pivoted beneath the trough, a rock shaft journaled in the free end and having the lever secured thereon, and means for securing the frame in any position of adjustment.

10. In a device of the class described, the combination with a trough shaped to hold blanks on edge, of a follower movable by pressure along the trough and cooperating with adjacent blanks, an apertured closure for the receiving end of the trough through which blanks pass, a filled-die holder formed by the outside of the closure and supports associated therewith, means for adjusting one or more of the supports to adapt the holder to different sized dies, a lever having a pusher on its swinging end to force blanks from the die through the apertured closure into the trough and toward the follower, a swinging frame pivoted beneath the trough, a rock shaft journaled in the free end and having the lever secured thereon, and means for securing the frame in any position of adjustment, said means consisting of a sheave, a chain wound thereon and connected at its other end to the frame, a

ratchet disk rotating with the sheave, and a detent pawl cooperating with the disk.

11. In a device of the class described, the combination with a trough shaped to hold blanks on edge, of a follower movable by pressure along the trough and cooperating with adjacent blanks, a filled-die holder adjacent one end of the trough, an empty-die holder, a pusher adapted when moved in its path to force blanks from the filled die into the trough and toward the follower, and means associated and moving with the pusher to transfer the die when emptied from the filled-die holder to the empty-die holder.

12. In a device of the class described, the combination with a trough shaped to hold blanks on edge, of a follower movable by pressure along the trough and cooperating with adjacent blanks, a filled-die holder adjacent one end of the trough, an empty-die holder, a pusher adapted when moved in its path to force blanks from the filled die into the trough and toward the follower, and means associated and moving with the pusher to transfer the die when emptied from the filled-die holder to the empty-die holder, said means consisting of an arm moving with the pusher and having its free end raised to engage the empty die previously to the backward movement of the pusher.

13. In a device of the class described, the combination with a filled-die holder, of an empty-die holder, a rock shaft, a handle for operating said rock shaft, a pusher lever secured on said rock shaft, a die-transferring lever pivoted on the pusher lever, a handle on the hand lever, and connections between said handle and the die-transferring lever whereby the latter will be moved relatively to the pusher lever to lift the die from the filled-die holder.

14. In a device of the class described, the combination with a filled-die holder, of an empty-die holder, a rock shaft, a handle for operating said rock shaft, a pusher lever secured on said rock shaft, a die-transferring lever pivoted on the pusher lever, a handle on the hand lever, and connections between said handle and the die-transferring lever whereby the latter will be moved relatively to the pusher lever to lift the die from the filled-die holder, said connections consisting of a second rock shaft parallel to the first, connections from the handle to the second rock shaft to rock the latter as the handle is swung, a crank arm on the second rock shaft, and slot and pin connections between the crank arm and the die-shifting lever.

In witness whereof, I have hereunto set my hand and affixed my seal, this 18th day of February, A. D. 1918.

LE ROY B. FRASER. [L. s.]