Feb. 20, 1951 J. SCHWARCZ 2,542,213

RECIPROCATING FEEDING DEVICE FOR PRESSES

Filed Feb. 21, 1949 2 Sheets-Sheet 1

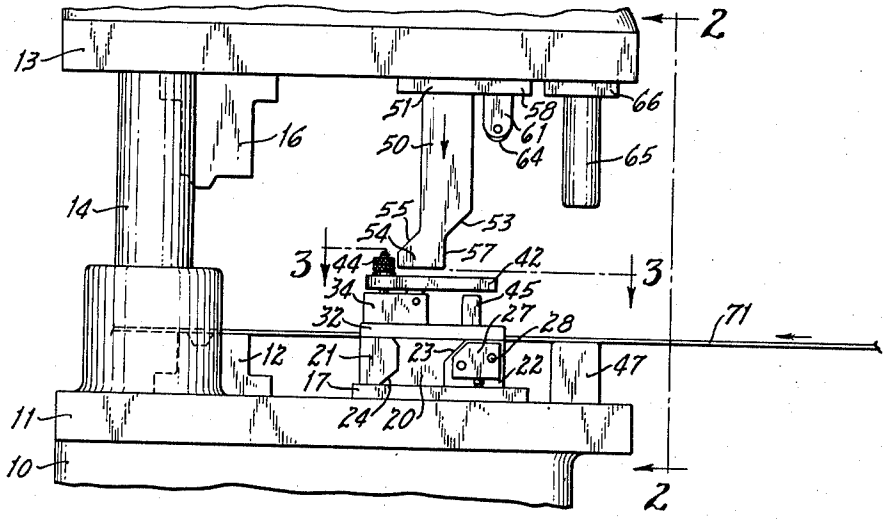


Fig. 1.

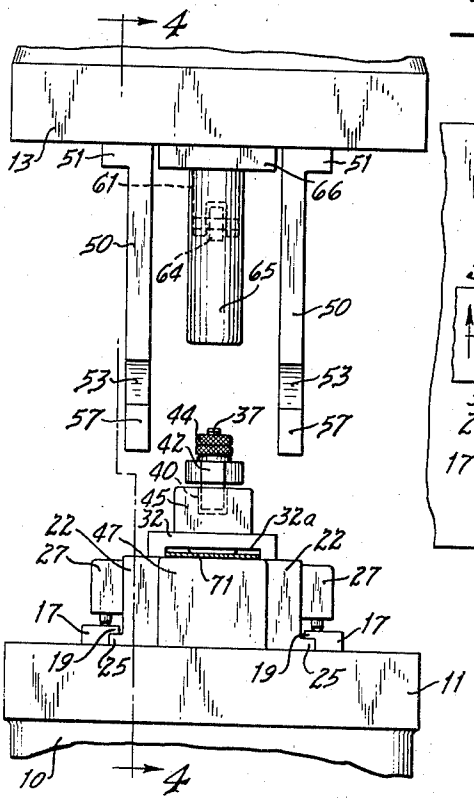


Fig. 2.

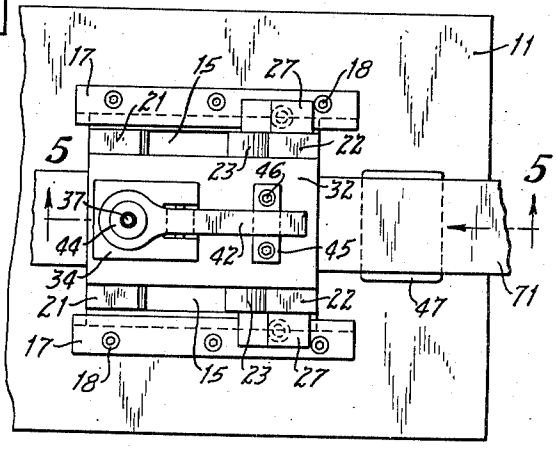


Fig. 3.

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RECIPROCATING FEEDING DEVICE FOR PRESSES

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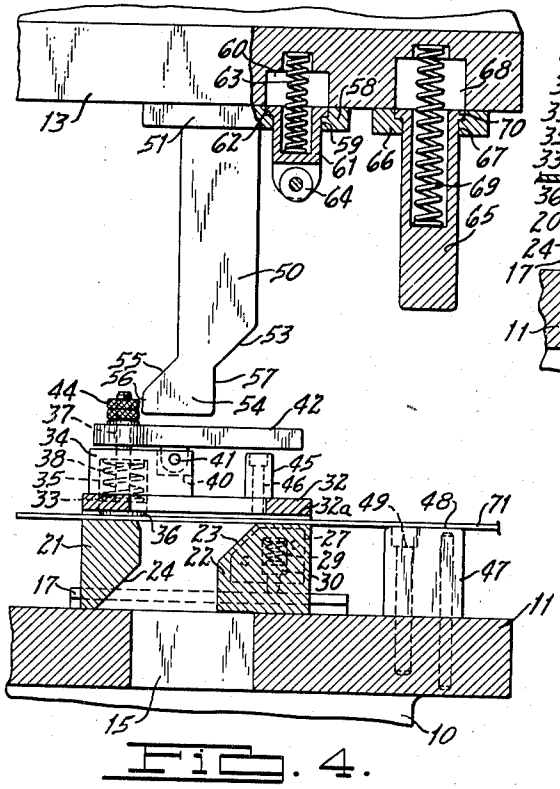


Fig. 4.

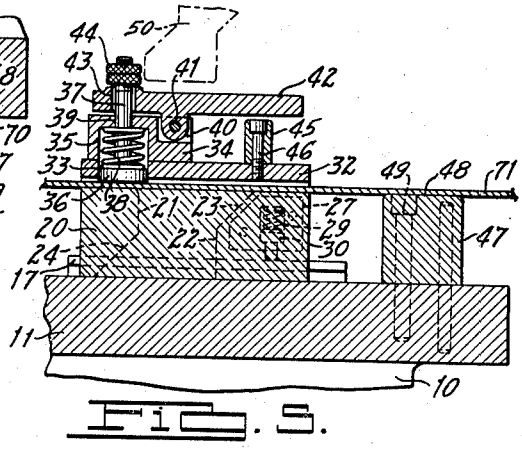


Fig. 5.

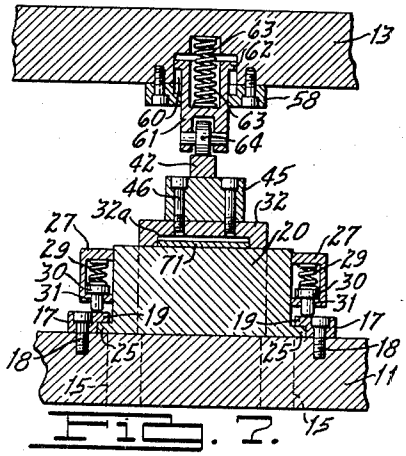


Fig. 7.

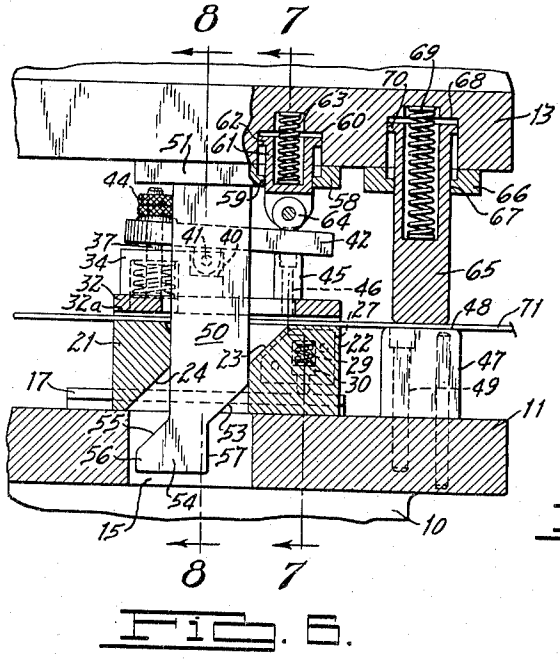


Fig. 6.

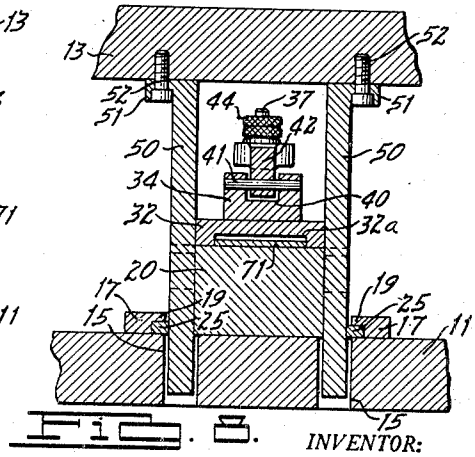


Fig. 8.

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UNITED STATES PATENT OFFICE

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RECIPROCATING FEEDING DEVICE FOR PRESSES

Joseph Schwarcz, Detroit, Mich.

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3 Claims. (Cl. 271—2.5)

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My invention pertains to a device which may be mounted within the framework of a power press in such a manner that stock in sheet form or stock of any other suitable nature may be progressively fed in place for operation thereon by dies mounted within said press. The device as installed in a press comprises two separate assemblies, one mounted upon a stationary plate within the press, the other one mounted on a reciprocally movable ram of the press, the two assemblies coming into operative movement on the movement of the ram towards the stationary plate.

The specific purpose of my invention is to provide a feeding device capable of feeding the stock towards the operative part of the press, that is towards the dies therein, with a great degree of accuracy as to the length of stock so fed for each individual operation. Another object of my improvement is to provide a device of this type, which being fully efficient and reliable, is quite simple in its structural design.

I shall now describe my invention with respect to the accompanying drawings in which:

Figure 1 is a side elevational view of my device as shown mounted on respective parts of a power press, said power press being shown only in fragment;

Figure 2 is an end view of my feeding device with the parts of the press on which the respective assemblies of my device are mounted, the device being viewed from line 2—2 of Figure 1;

Figure 3 is a top elevational view of the lower assembly of my device, as taken from line 3—3 of Figure 1;

Figure 4 is a vertical section view of my device, as taken on line 4—4 of Figure 2;

Figure 5 is a sectional view as taken on line 5—5 of Figure 3;

Figure 6 is a vertical sectional view of my device as taken on line 4—4 of Figure 2, but with parts in different operative positions than shown in Figure 4;

Figure 7 is a sectional view taken on line 7—7 of Figure 6;

Figure 8 is a sectional view taken on line 8—8 of Figure 6.

Similar numerals refer to similar parts throughout the several views.

A part of my device is mounted on the stationary die supporting plate 11 of the press while the complementary elements of my device are mounted on the movable ram 13, which is adapted for reciprocal vertical movement on columns 14, only one of said columns being shown in the drawing. The lower part of my assembly

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is mounted on the stationary plate 11 directly over two spaced slots 15, these being large enough to permit entry of certain elements of my device which will be presently identified, said slots best shown in Figures 6 and 8.

Disposed along each slot, is a rail 17, the two rails straddling said slots. In cross section each rail has the shape of an inverted letter L, one member 19 of the letter formation being spaced from the surface of plate 11 and extending towards the other rail. The rails are secured in place by means of screws 18. Disposed on top of said plate 11 between said rails 17, is a block 20 adapted to carry stock 71 towards the dies of the press, said dies being marked 12 and 16 respectively. Integrally connected to said block, and extending laterally therefrom, are two bevel blocks 21 and 22, the blocks being spaced from each other, as best shown in Figure 1. It will be noted that one of said blocks, namely block 22, includes a sloping face 23 and that the opposite block 21 is provided with an undercut inclined face 24, the two faces 24 and 23 being parallel to each other as shown in Figure 4. Both blocks are provided with flanges at their respective bases. Said flanges, marked 25 on block 22 and 26 on block 21, fit under the projecting members 19 of rails 17, as best shown in Figures 7 and 8.

Affixed to the side of each block 22 is a housing 27 secured to the block by screws 28. The housing, as best shown in Figure 7, contains a coiled spring 29 which bears from above upon a pin 30 passing through an aperture 31 in the bottom of the housing and bearing against the top of rail 17. As will be obvious, the arrangement will prevent any looseness of contact between flanges 25 and 26 and said rails 17, thus preventing loose longitudinal movement of block 20.

Mounted on block 20 is a cover 32 provided on its underside with an oblong recessed passageway 32a for admission of stock 71 at one end, midway between the bevel blocks 21, said cover being provided with a circular opening 33 best shown in Figure 5. Mounted over said opening and secured to said cover 32 is a member 34 which includes a cylindrical chamber 35 in register with said circular opening 33. Disposed within the chamber is a piston 36 mounted upon a stem 37 which rises upwardly through a passageway 39. A spring 38, coiled about the stem, bears upon the piston from above. Fulcrumed in a recess 40 upon a transversely disposed pin 41 is a two-armed lever 42, one of its arms, a shorter one, having a vertically disposed eye 43 for passage of

said stem 37, which stem being threaded at the top is provided with a nut 44. The arm of the lever opposite to that which is provided with the eye is slightly spaced above a stationary cross bar 45 mounted on top of cover 32 as best shown in Figures 1 and 4. The bar is secured to the cover by bolts 46. In a spaced relation to said block 20, at the end remote from the die 12, and secured in place by bolts 49, is a solid stock support 47 provided with a flat surface 48, at the level of the top surface of block 20.

Now I shall describe the elements of my device which are mounted on the underside of the ram 13. The elements include a pair of plungers 50 spaced from each other as best shown in Figure 2, and adapted to enter slots 15 mentioned above and best shown in Figures 6 and 8. Mounted on the underside of ram 13 by means of flanges 51 and bolts 52, they move with said ram. In describing the plungers, I shall confine myself to one of them, it being understood that the other one is made in the same manner and that both come into the same operative engagement with the other elements of my device. It will be noted that the outline of the lower portion of the plunger includes a slanting line 53, and that the plunger terminates with a foot 54, said foot including a slanting line 55 parallel to said slanting line 53. The front of the foot is vertical, as shown by numeral 56, the heel of the foot 57 being parallel to said front, while the bottom of the foot is flat. Adjoining said plungers, but being centrally located with respect to said plungers and rearwardly thereof, is a plate 58 mounted on the underside of said ram 13 and provided with an aperture 59. The aperture is in register with a socket 60 in said ram 13. Retained in place by said plate 58 is a clamping member 61, this being made in the form of a shell provided with an outward flange 62 to prevent displacement of said member 61 downwardly. A coiled spring 63, disposed within the socket and partly within the shell 61, holds said clamping member in a yielding outwardly projecting position. The lower portion of said member 61 is provided with a roller 64. It will be noted that said roller is directly above the lever 42 and the cross bar 45 in the lower assembly of my device. Aligned with said plunger and with the clamping member 61, is another clamping member 65 which is similarly held in place by means of a retaining plate 66 provided with an aperture 67, said aperture being in register with a socket 68 in said ram 13. A coiled spring 69 serves to extend the clamping member 65 to its full extent outwardly, said outward movement being limited by an outwardly turned flange 70 at the top of member 65. It will be noted that said clamping member 65 is directly above the stock support 47, the purpose of the clamping member 65 being to clamp stock 71 against said block 47, as will be presently described.

I shall now describe the operation of my device. It will be assumed that the ram 13 is, in one cycle of its operation, in its uppermost position, as shown in Fig. 4, and that it is about to be brought downwardly. Stock 71, to be fed towards dies 12 and 16, is supported on member 47 and passes over block 20 through the recessed under portion 32A in cover 32. As already described, the cover is provided with a circular opening 33 for admission from above of piston 36. Normally the piston will, under tension of spring 38, clamp the stock against the top surface of block 20. As the ram moves downwardly towards plate 11, roller 64, on clamps 61, will encounter the underlying arm of lever 42, causing the opposite arm of the lever to raise piston 36 off the stock. Simultaneously, however, the stock will be clamped by the longer clamp 65 against the surface of stock supporting member 47.

At this stage the incline 53 on each plunger 50 will engage incline 23 on the respective block 22, causing the whole block 20 to shift its position endwise away from the dies towards the stock supporting member 47. It will be remembered that stock 71, being held in place by clamp 65, will not change its position. At the end of the full downward movement of the plungers 50 the lower part of each plunger, namely, the foot 54, will be in the respective slots 15 in plate 11. Now, as ram 13 will start moving upwardly away from plate 11, the slanting outline 55 of the front of the foot will encounter the incline 24 on block 21, causing said block 20 to move forwardly towards the dies, but at this stage piston 36 will be in a stock clamping position so that stock 71 will be carried by block 20 towards the dies while the longer clamp 65 will be off said stock 71 on its way upwardly from the supporting member 47. It will be thus seen that when the ram travels downwardly block 20, with bevel blocks 21 and 22, will move away from the dies while the stock is clamped against the stock supporting member 47, and that with the movement of block 20 towards the dies the stock will be clamped by piston 36 but released by clamp 65.

This describes a complete back and forth movement of the stock carrying portion of my device, it being understood that such a movement is effected with every complete operative down and up movement of the ram 13.

It will be obvious that some changes may be made in the structure of my device without departing from the inventive principle disclosed herein.

What I therefore wish to claim is as follows:

1. In a power press including a horizontal stationary die-supporting plate and a reciprocally movable ram carrying supplemental dies, a stock feeding device comprising in combination a stationary stock supporting member mounted on said plate, a movable stock supporting block on said plate between said member and the dies of the press, a cover on said block, said cover having underneath a passageway for stock, a pair of bevel blocks at one end extending laterally from said first-named block, each of the bevel blocks having a slanting underface, a pair of bevel blocks extending from said first-named block at the other end thereof, each of said bevel blocks having a sloping upperface, a two armed lever mounted on the cover, a piston supported by one arm of said lever, a coil spring means urging the piston against the surface of said block, a clamp on the underside of the ram, said clamp including a roller adapted to depress the opposite arm of the lever and to raise the piston against the tension of the spring, a clamp vertically opposite the stationary stock supporting member and adapted to clamp the stock against said member, a pair of plungers mounted on the under side of the ram, each plunger including an undercut slanting face and having a foot provided with an inclined top face, said plungers being adapted alternately for engagement with one set of bevel blocks to shift the first named stock supporting block away from the dies, and with another set of blocks to shift said block towards the dies.

2. In a power press including a horizontal sta-

tionary die-supporting plate and a reciprocally movable ram carrying supplemental dies, a stock feeding device comprising in combination a stationary stock supporting member mounted on said plate, a movable stock supporting block between said member and the dies, a set of bevel blocks laterally extending from said first-named block at one end thereof, another set at the opposite end, one set having undercut slanting faces, the other set having sloping upper faces, a cover on said movable block, the cover having a centrally located aperture at one end thereof and having a recessed portion on its underside for admission of stock, a two armed lever mounted on the cover, a piston disposed in said aperture and operatively connected to one arm of said lever, a coil spring urging the piston against the stock supported on said movable block, a clamp on the underside of the ram, said clamp including a roller adapted to depress the opposite arm of the lever and to raise the piston against the tension of the spring, a clamp vertically opposite the stationary stock supporting member and adapted to clamp the stock against said member, a pair of plungers mounted on the under side of the ram, each plunger including an undercut slanting face and having a foot provided with an inclined top face, said plungers being adapted alternately for engagement with one set of bevel blocks to shift the first named stock supporting block away from the dies, and with another set of blocks to shift said block towards the dies.

3. In a power press including a horizontal stationary die-supporting plate and a reciprocally movable ram carrying supplemental dies, a stock feeding device comprising a stationary stock supporting member mounted on said plate, a movable stock supporting block between said member and the dies, a bevel block extending laterally from each side of the movable stock supporting block at one end thereof, remote from the dies,

each block having a sloping face from the top thereof, a bevel block extending laterally from each side of said stock supporting block at its opposite end, each block having on its underside an inclined face disposed parallel to said sloping face, the bevel blocks at one end of the stock carrying block being spaced from the bevel blocks at the other end of said stock carrying block, a cover on said movable block, the cover having a centrally located aperture at one end thereof and having a recessed portion on its underside for admission of stock, a two armed lever mounted on the cover, a piston disposed in said aperture and operatively connected to one arm of said lever, a coil spring urging the piston against the stock supported on said movable block, a clamp on the underside of the ram, said clamp including a roller adapted to depress the opposite arm of the lever and to raise the piston against the tension of the spring, a clamp vertically opposite the stationary stock supporting member and adapted to clamp the stock against said member, a pair of plungers mounted on the under side of the ram, each plunger including an undercut slanting face and having a foot provided with an inclined top face, said plungers being adapted alternately for engagement with the sloping faces of the respective bevel blocks to shift the stock carrying block away from the dies, and with the inclined faces on the under side of the other set of bevel blocks to shift the stock supporting block towards the dies.

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The following references are of record in the file of this patent:

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