July 14, 1942. D. KARRON 2,289,841

METAL PRESS

Filed Dec. 16, 1941 3 Sheets-Sheet 1

Fig. 1.

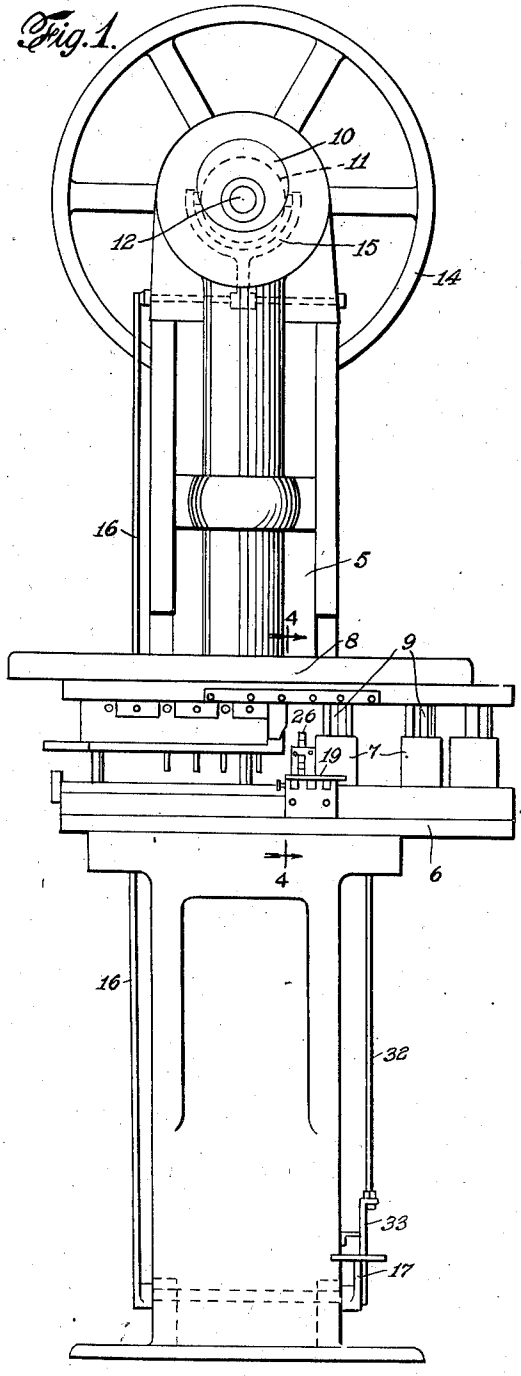
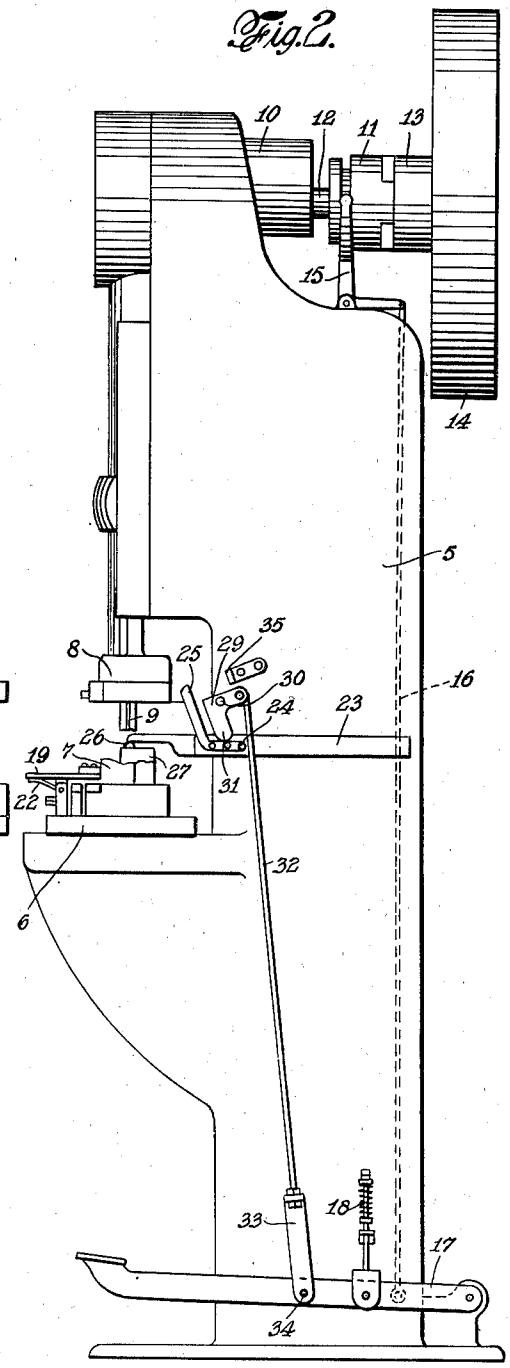


Fig. 2.



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Filed Dec. 16, 1941 3 Sheets-Sheet 2

Fig. 3.

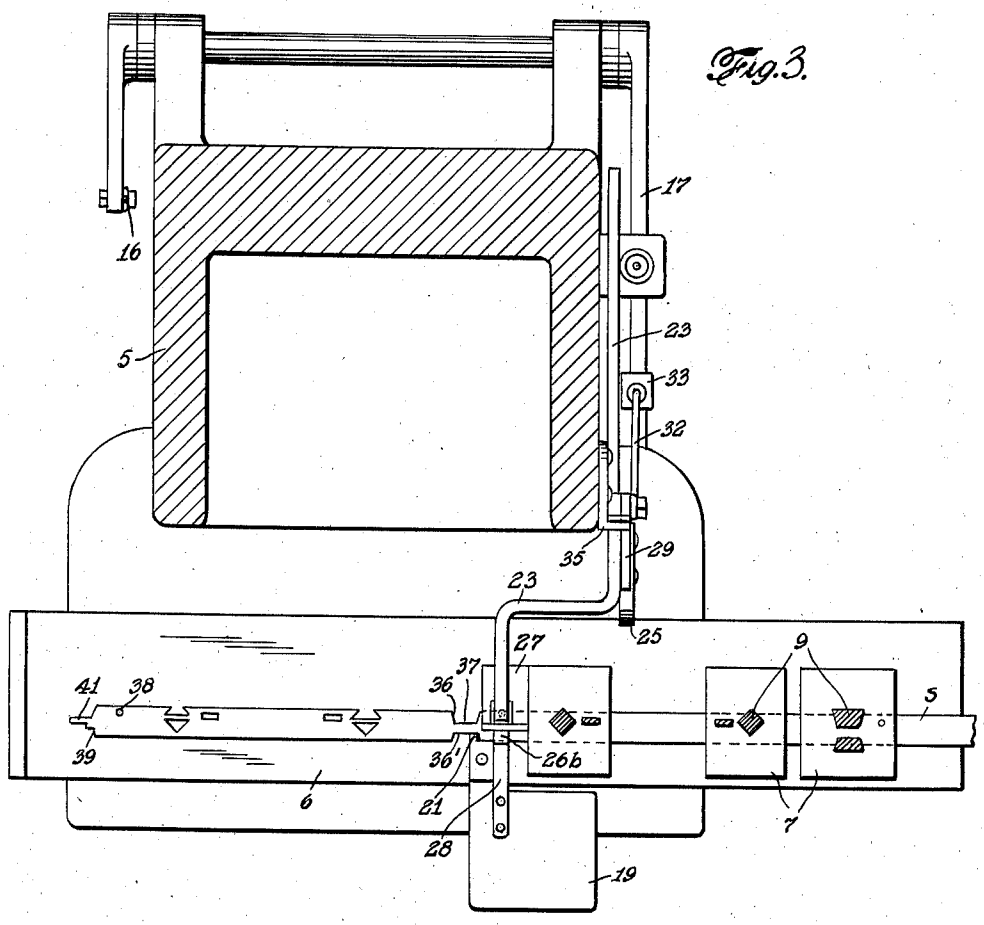
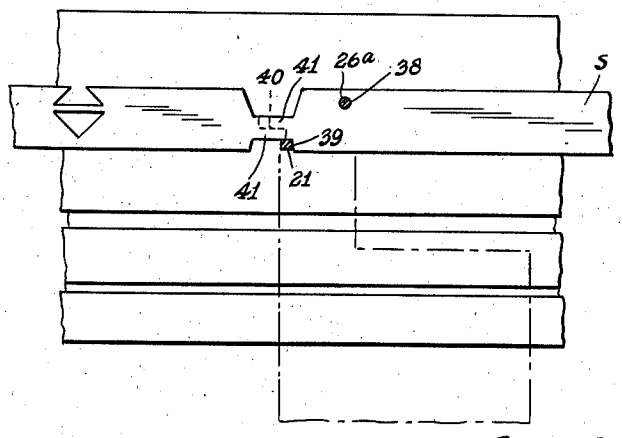


Fig. 5.



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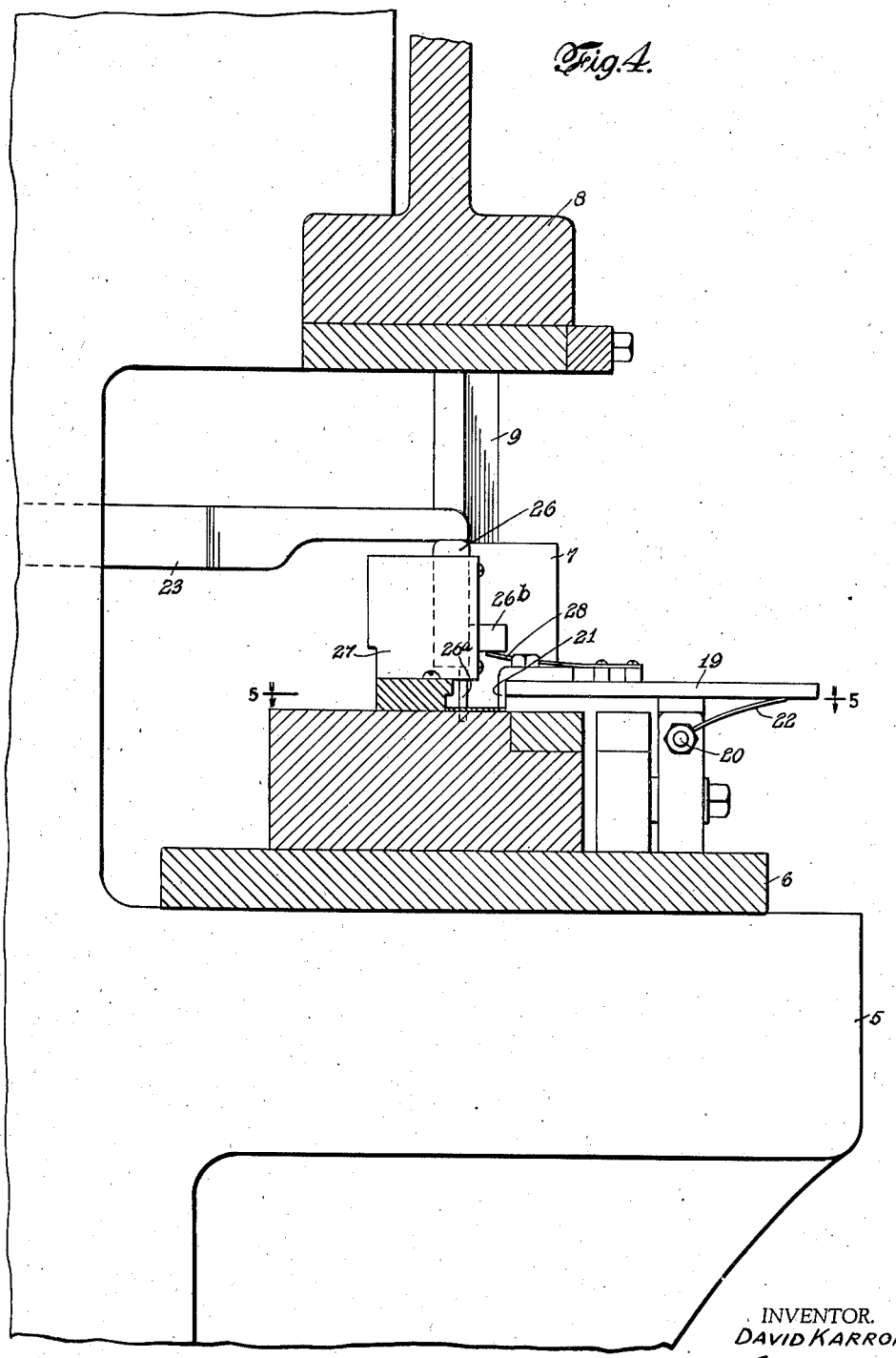
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Filed Dec. 16, 1941 3 Sheets-Sheet 3

Fig. 4.



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Patented July 14, 1942

2,289,841

UNITED STATES PATENT OFFICE

2,289,841

METAL PRESS

David Karron, Brooklyn, N. Y.

Application December 16, 1941, Serial No. 423,166

8 Claims. (Cl. 164—19)

This invention relates to metal presses, and more particularly to a press for die cutting and stamping sheet metal, the primary object and purpose of the invention being to provide simple and reliably functioning means for controlling the operation of the movable die carrying head of the press to insure a high degree of accuracy and uniformity in the cutting and stamping of sheet metal parts and to reduce spoilage or waste of material to a minimum.

A more particular object of the invention is to provide means automatically controlled by spaced parts of the sheet metal work strip as it is fed to the press for governing the effective operation of a shiftable power transmitting clutch element for the movable die carrying head.

It is a further object of the invention to provide a device for the above purpose, the several parts of which are of comparatively simple structural form, and may be readily applied to various standard types of die cutting and stamping presses used in the manufacture of commercial articles embodying parts of sheet metal construction.

With the above and other objects in view, the invention consists in the improved metal press, and in the form, construction and relative arrangement of its several parts as will hereinafter be more fully described, illustrated in the accompanying drawings and subsequently incorporated in the subjoined claims.

In the drawings wherein I have illustrated one simple and practical embodiment of the invention and in which similar reference characters designate corresponding parts throughout the several views:

Fig. 1 is a front elevation of one type of metal press to which the present invention is applied.

Fig. 2 is a side elevation thereof.

Fig. 3 is a top plan view.

Fig. 4 is a detail vertical section taken on the line 4—4 of Fig. 1, and,

Fig. 5 is a fragmentary plan view on an enlarged scale as indicated by the line 5—5 on Fig. 4.

For the purposes of illustration, I have shown my present invention as applied to a cutting and stamping press of the type used in the manufacture of handbag frames, where a high degree of accuracy and uniformity in the cutting and stamping of the individual frame members from continuous sheet metal strip is required. As shown, the press includes the usual frame 5 having a bed 6 over which the sheet metal strip stock is fed from a reel (not shown), beneath the female die members indicated at 7. The vertically reciprocating head or carrier 8 for the male cutting dies 9 and the stamping or forming die is actuated by the eccentric 10. A shiftable clutch member 11 is keyed to the eccentric drive shaft 12 to engage a complementary clutch member 13 on the wheel 14 driven by a belt from a motor or other convenient source of power.

The shiftable clutch member 11 is actuated by the pivoted bell crank lever 15, one arm of which is connected by rod 16 with a foot operated pivoted lever 17. This lever is yieldingly urged to the position shown in Fig. 2 by means of the spring 18 to maintain the clutch member 11 in normally disengaged relation to the clutch member 13. It will be understood that the foregoing is conventional press construction and that my present improvements, which will now be described, are applicable as well to various other types of metal presses.

At one side of the series of female cutting dies 7, a horizontally disposed lever 19 is pivotally mounted intermediate of its ends, as at 20, upon the press bed. This lever is disposed transversely relative to the line of feed of the sheet metal stock and at its inner end is provided with a vertically positioned downwardly extending finger 21 which is adapted for contact with the surface of the sheet metal strip adjacent one edge thereof. The lever 19 is yieldingly urged to its normal position by means of a suitable spring 22.

Upon the press frame, a second transversely positioned lever 23 is pivotally mounted intermediate of its ends, as at 24, and adjacent to said pivot and in advance thereof carries an upwardly extending inclined cam arm 25. At its forward end the lever 23 bears upon the upper end of a member 26 vertically movable in the fixed guide 27. This member carries a downwardly extending pin 26a and a lug 26b, with which the free end of a leaf spring 28 has upward bearing contact to yieldingly retain said member in normal position with the pin 26a disposed above and out of the path of movement of the sheet metal strip. This spring 28 is preferably carried by the lever 19.

Above the lever 23 and rearwardly of the arm 25 thereon, a bell crank lever 29 is pivoted as at 30. The downwardly extending arm 31 of this lever has a rounded terminal for contact with the adjacent inclined face of the arm 25 on lever 23. The other bell crank arm is connected by the rod 32 with a metal strap 33, pivotally connected at its lower end as at 34 with the foot operated lever 17. Above the bell crank lever 29 a suit-

able stop 35 is fixed to the frame 5 to limit movement of said lever in one direction.

Referring now to Figs. 3 and 5 of the drawings, in each operation of the press upon the sheet metal strip S, in one section of the strip the cutting dies operate thereon to cut out portions of the sheet metal stock. Recesses 36 and 36' are formed in opposite longitudinal edges of the strip, leaving a narrow neck of metal 37 connecting adjacent strip sections. Adjacent to this connecting neck, and near one edge of the strip, a circular opening 38 is cut therethrough. In each manual feed of the metal strip through the press, the operator presses downwardly on the outer end of the lever 19 and then releases the same so that the part 21 will bear on the upper surface of the strip. As the strip is progressively fed after each cutting and stamping operation, at the end of the strip movement, the finger 21 of lever 19 enters the notch or recess 37 to contact shoulder 39 at one side of said recess and limit the movement of the strip so that the opening 38 will be accurately positioned in alignment with the pin 26a. When the operator now presses downwardly with his foot on the lever 17, the bell crank arm 31 cooperates with the cam arm 25 to force the forward end of lever 23 downwardly and thus depress the member 26 against resistance of spring 28 so that the pin 26a passes downwardly through the opening 38 of the work strip. This permits of the transmission of axial movement to the clutch member 11 through the rod 16 and lever 15 so that it is engaged with the driven clutch member 13, whereby the die carrying head 8 is actuated to stamp or form the strip section shown at the left in Fig. 3 in the required shape and sever said strip section from its connection with the strip body. This is done by cutting the neck 37 in the manner indicated by the dotted lines 40 in Fig. 5 of the drawings to form the longitudinal projections 41 on adjacent strip sections which are subsequently bent into cylindrical tubular form to provide hinge pintle receiving knuckles.

It will be evident from the foregoing description that unless the opening 38 in the metal strip is in accurate alignment with the pin 26a, the lever 23 cannot be moved from its normal position in the operation of bell crank lever 29 and the movement of the arm 31 of this lever through its arcuate path will be prevented by the cam arm 25. Thus the foot lever 17 cannot be actuated by the operator and the clutch member 11 shifted into driving engagement with the clutch member 13. In this manner, the present invention insures absolute accuracy in the die cutting and stamping operations and uniformity in the length of the individual frame members cut from the sheet metal strip stock. In view of the fact that this stock is comparatively thin, the use of a fixed stop on the machine bed with which the end section of the metal strip engages, has been found unsatisfactory since in the manual feed of the strip, the strip may buckle or give so that in the rapid operation of the press, the individual frame members would be of non-uniform length, and a greater amount of spoilage and waste results. In the practical operation of my present invention, the latter has been found to practically completely eliminate such waste or spoilage, while at the same time permitting of the operation of the press at maximum speed, and thus increase production output of the finished product.

From the foregoing description considered in connection with the accompanying drawings, the construction, and manner of operation of my present invention may be clearly and fully understood. It will be seen that the several cooperating parts of the device are of very simple structural form and may be easily and quickly applied to and mounted upon a standard press of this type without necessitating any material alterations thereof. While I have herein disclosed one practical embodiment of my present improvements, it is, nevertheless, to be understood that the same are susceptible of more or less modification in the form, construction and relative arrangement of the several elements and I, therefore, reserve the privilege of embodying the essential features of the present disclosure in such other alternative applications thereof as may be fairly considered to be within the spirit and scope of the appended claims,

I claim:

1. In combination with a metal press having a movable die carrying head and operating means therefor including a shiftable clutch member; manually operable means for actuating said clutch member to engaged position, and means for controlling the effective operation of said manually operable means, including spaced apart members mounted on the press and adapted to engage spaced parts of the work stock fed to the die carrying head.

2. In combination with a metal press having a movable die carrying head and operating means therefor including a shiftable clutch member; manually operable means for actuating said clutch member to engaged position, and means for controlling the effective operation of said manually operable means, including a member adapted to engage a part on sheet metal strip stock to limit feeding movement thereof with respect to the die carrying head, and a second member operatively controlled by said actuating means adapted to engage a part of the strip in adjacent spaced relation from said first named member.

3. In combination with a metal press having a movable die carrying head and operating means therefor including a shiftable clutch member; manually operable means for actuating said clutch member to engaged position, and means for controlling the effective operation of the last named means including a vertically movable pin, means yieldingly supporting said pin above the path of movement of metal strip stock fed to the die carrying head, an actuating lever for said pin, a member operatively connected with the actuating means for said clutch member and adapted to coact with means on the lever to actuate the latter only when a part of the strip stock is positioned in predetermined relation to said pin.

4. In combination with a metal press having a movable die carrying head and operating means therefor including a shiftable clutch member; manually operable means for actuating said clutch member to engaged position, a vertically movable member and means yieldingly supporting the same normally above the path of movement of metal strip stock fed to the die carrying head, said member adapted to be received in an opening in the metal strip, and means for actuating said member including a movable element connected with and operatively controlling the effective operation of said clutch shifting means.

5. In combination with a metal press having a movable die carrying head and operating means

therefor including a shiftable clutch member; manually operable means for actuating said clutch member to engaged position, a vertically movable member and means yieldingly supporting the same normally above the path of movement of metal strip stock fed to the die carrying head, said member adapted to be received in an opening in the metal strip, and means for actuating said member including a pivoted lever engaged with said member and having a cam arm, and a pivoted member adapted to coact with said arm and operatively connected with the clutch actuating means.

6. In combination with a metal press having a movable die carrying head and power means for operating said head including a movable control member; manually operable means for actuating asid member, means connected with a part of said actuating means, and means controlled by the metal stock fed to said die carrying head and cooperating with said last named means for locking the actuating means for the power control member against effective operation to power transmitting position when the stock is in other than a predetermined position with relation to the die carrying head.

7. In combination with a metal press having a movable die carrying head and power means for operating said head including a movable control member; means for controlling the operation of said press in the intermittent feed of work stock thereto comprising manually operable means for moving said member to power transmitting position, and means for locking said last named means against effective operation when the stock is in other than a predetermined position with relation to the die carrying head, including a movable member mounted on the press in the vertical plane of the work stock and having contact with the stock to prevent movement of said member when the stock is not in such predetermined position at the end of each feeding movement thereof.

8. In combination with a metal press having a movable die carrying head and power means for operating said head including a movable control member; means controlling the operation of said press in the intermittent feed of work stock thereto comprising manually operable means for moving said member to power transmitting position, and means for limiting the intermittent movements of the stock and for locking said last named means against effective operation when the stock is in other than a predetermined position with relation to the die carrying head, including means mounted on the press and adapted to engage spaced parts of the work stock at the same time.

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