

July 16, 1929.

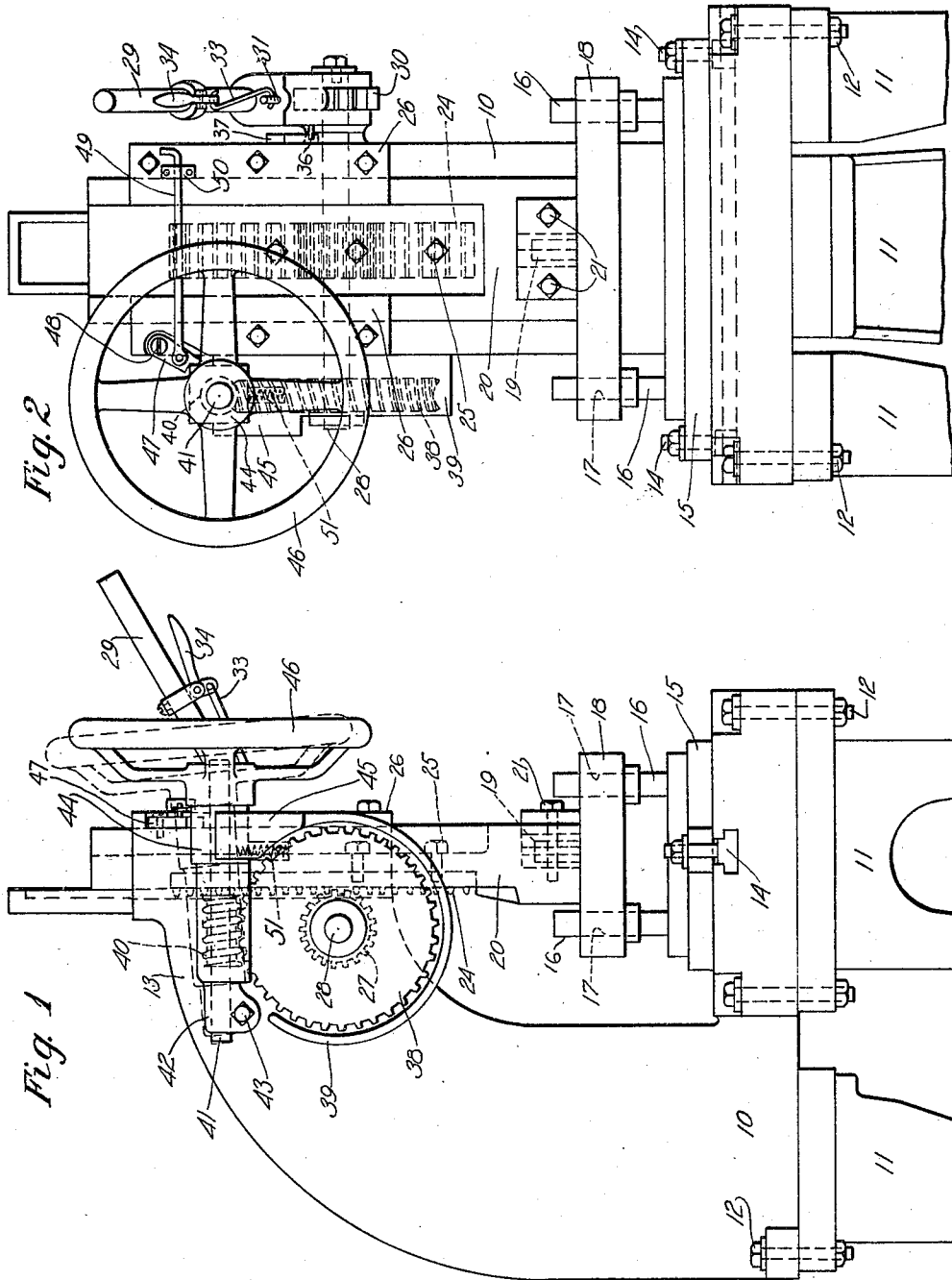
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1,721,276

DIE SHEARING PRESS

Filed Sept. 26, 1927

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

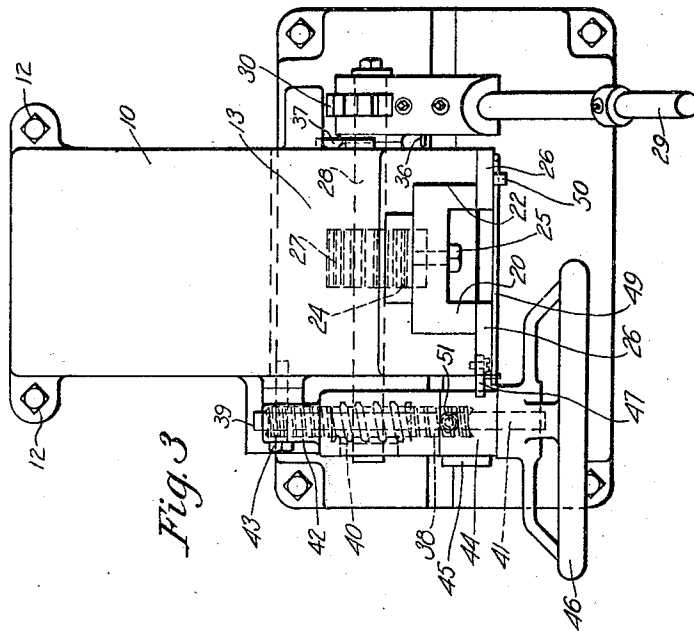


Fig. 3

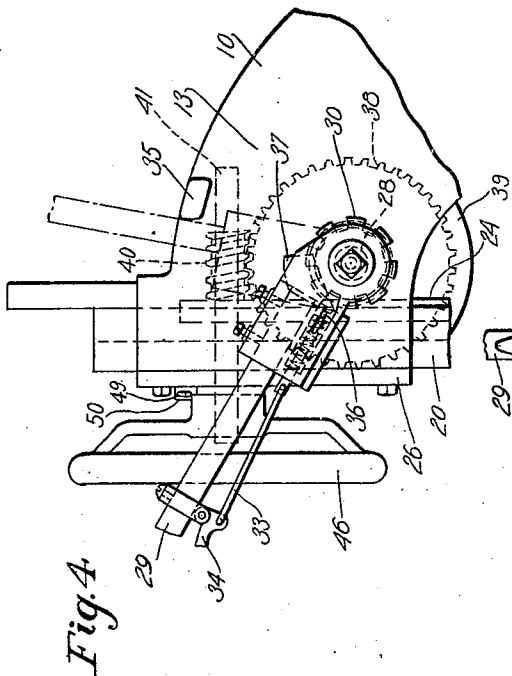


Fig. 4

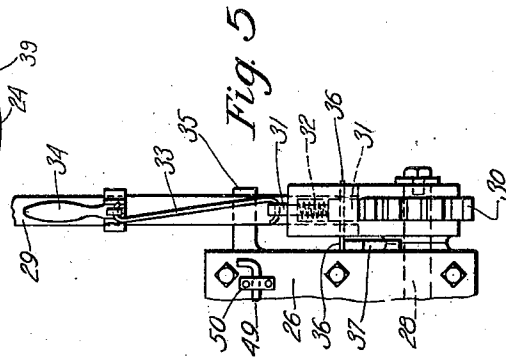


Fig. 5

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# UNITED STATES PATENT OFFICE.

NEWMAN M. MARSILIUS, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE PRODUCTS MACHINE COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT.

## DIE-SHEARING PRESS.

Application filed September 26, 1927. Serial No. 221,933.

This invention relates to new and useful improvements in die shearing presses such as are adapted for finishing and perfecting dies and the object of the invention is to provide a simple and inexpensive machine of the above type which is provided with two means of operation, namely: ratchet device for the quick operation of the slide, a worm and gear and hand wheel for operating the slide at a slower speed and increased force.

While the machine is especially designed and adapted for shearing dies as above suggested, it is also well adapted for other uses, where a relative rapid feeding movement of a slide is to be combined with slower and more powerful pressing movement.

With these and other objects in view, the invention resides and consists in the construction and novel combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion, size, and minor details of construction within the scope of the claims may be resorted to without departure from the spirit, or sacrificing any of the advantages of the invention.

Similar characters of reference denote like or corresponding parts throughout the several figures of the accompanying drawing forming a part of this specification and upon which

Fig. 1 shows a side elevation of my improved press, the legs being broken away and having a die set positioned therein;

Fig. 2 shows a front elevation of the machine illustrated in Fig. 1;

Fig. 3 is a top plan view of the machine shown in Fig. 2;

Fig. 4 is a side elevation, as seen from the opposite side of Fig. 1, of the upper portion of the machine and further illustrating the lever mechanism shown in Fig. 2; and

Fig. 5 is a bottom plan view of the ratchet shown in Figs. 2 and 4.

Referring in detail to the characters marked upon the drawings, 10 represents the bed of the machine, 11 legs therefor which are secured to the bed by means of bolts 12. The bed 10 includes an upwardly and forwardly extended column 13 that carries

the operative mechanism of the machine while the forward portion of the bed is provided with slots and T-bolts 14 for the attachment of the base 15 of the die set.

The die set shown in Figs. 1 and 2, as positioned in the press is of a commercial type manufactured by applicant and includes the base 15 heretofore mentioned, having suitable slots conveniently positioned therein for securing the base to the bed of the machine by means of bolts 14 heretofore mentioned. This base is provided with a series, preferably four, round guide posts 16 which are secured in the base. The upper end portions of these guide posts are fitted to holes 17 in the upper or reciprocatory member 18 of the die set, said member 18 being provided with an upwardly extended and centrally disposed shank 19 that fits into a suitable recess of the press slide 20 and is secured therein by a plate and bolts 21 as shown in the drawings.

The machine is obviously not limited to this particular style of die set but may be used for shearing other forms of dies, and in fact for operations upon other devices and is adapted to receive other forms of tools for performing various operations as occasion may require.

The upper forward end of the column is provided with a central vertical recess 22 forming a way to receive the vertically reciprocatory slide 20 and a rack 24 attached to the slide by means of screw bolts 25. The slide and rack being held in their vertically operative positions by means of guide plates 26 secured to the front of the column. This slide is connected for vertical reciprocatory movement with a pinion 27 secured on a cross shaft 28 journaled in the column and having its opposite end portions projected therefrom for the connection of power operating means for the rotation of the shaft and the vertical reciprocation of the slide. These power operating means applied to opposite end portions of the shaft are separate and distinct and are not intended to be used simultaneously, and are therefore provided with lock means whereby one cannot be operated without first disconnecting the other.

Upon one end of the shaft is provided a pawl and ratchet operator for the rotation of the shaft and its gear, to impart a relatively fast movement to the slide and in

cludes an operating arm 29 having a forked inner end that is hingedly mounted upon the shaft 28 and is pocketed to receive a ratchet wheel 30 and secured to the shaft and adapted to turn within the pocket of the arm. A pawl 31 is slidably mounted in a pocket of the arm and is provided with a spring 32 to normally hold it in engagement with the before mentioned ratchet wheel and is connected by a link 33 with a trigger 34 whereby it may be drawn out of engagement with the ratchet wheel against the action of the spring for the disengagement and operation of the arm. A projection 35 is formed on the side of the upright and serves as a rest against which the arm 29 may be positioned, see dotted lines Fig. 4, when not in use. It will also be observed that a pin 36 carried by the pawl 31 projects through a slot in the side of the arm 29 for engagement with a cam 37 on the side of the upright so as to insure the withdrawal of the pawl 31 from the ratchet wheel when the arm is not in use and laid back against the stop 35.

Upon the other end of the shaft is provided a worm gear 38 which may be in part enclosed by a covering 39, and positioned to be engaged by a worm 40 upon a shaft 41 mounted in a bearing 42 pivotally connected to the side of the column as upon a stud 43. Sleeve 44 is mounted upon the shaft 41 to form a housing for the worm 40 and a bearing for the forward end of the shaft. This sleeve is normally positioned in a pocket formed by bracket 45 secured to the side of the upright. An operating hand wheel 46 is mounted upon the forward end of the shaft 41 and serves as means for the rotation of the shaft, its worm and the worm gear wheel and also serves as means for raising and lowering the shaft to disengage and engage its worm with the worm wheel, it being obvious that the said engagement is made at a time when the ratchet operating means is disengaged. When the operator raises the hand wheel 46, the shaft and sleeve swings upon the pivot 43 as indicated by dotted lines in Fig. 1. A pawl 47 is pivotally connected as at 48 to the face of the column and its lower end is notched to engage the squared forward end portion of the sleeve 44 that rests in the pocket of the bracket 45. This pawl has hingedly connected thereto, an operating rod 49 which is slidably mounted in a bracket 50 and has an upturned handle portion by means of which the pawl is shifted into and out of engagement with the sleeve of the shaft and whereby the same is locked down in the positions shown in Figs. 1, 2 and 3.

From the foregoing it will be seen that the machine as illustrated in Figs. 1 and 2 is in position to be operated by the hand lever 46 and whereby the slower but more powerful movement is obtained for the shear-

ing of the die set. For the preliminary shearing operation, the pawl 47 would be disengaged so that the spring 51 seated beneath the housing of the shaft could act to lift the shaft wheel housing up and disengage the worm, whereupon the ratchet mechanism would be brought into use and the slide operated faster but less effectively.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In a die set shearing press, the combination with a bed and column, a slide mounted in the column, a die set, one part of which is secured to the bed and another part to the slide, means for reciprocating the slide comprising a shaft, a rack and pinion connection of the shaft with the slide, a worm and worm gear connection for operating the shaft upon which the worm is mounted, a bearing for the worm shaft hingedly connected to the column, means for normally holding the worm into engagement with the worm gear for the rotation of the latter and spring actuated means for disengaging said worm connection when said holding means is released.

2. In a press, the combination with a frame, a reciprocating slide mounted therein and bearing a longitudinally disposed rack, a shaft and pinion for operating the rack and slide, a manually operatable ratchet means mounted upon one end of the shaft for rotating the same, a manually operatable worm and gear upon the other end of the shaft for operating the same, means for normally disengaging the worm from the worm gear to permit the shaft to be operated with the ratchet, means for disengaging the ratchet operating means from the shaft to permit the latter to be operated by the worm and worm gear, and locking means to allow the operation of the shaft by but one operating means at a time.

3. In a press, the combination of a frame, a slide bearing a rack, a shaft and gear for moving the rack, a worm gear carried by the shaft, a hingedly mounted bearing adjacent to the worm gear, a shaft and worm gear rotatably mounted in the bearing and adapted to engage the worm gear, a guide means for supporting the worm shaft bearing, a spring in engagement with said bearing for holding the same up and its worm out of engagement with the worm gear, and a hand wheel mounted upon the worm shaft for rotating the same and holding means for normally retaining the worm in mesh with the worm gear, whereby the latter may be operated by the former.

Signed at Bridgeport, in the county of Fairfield and State of Connecticut, this 13th day of September, A. D. 1927.

NEWMAN M. MARSILIUS.