

(No Model.)

F. M. LEAVITT.

ADJUSTING SCREW FOR DIE PRESSES.

No. 330,791.

Patented Nov. 17, 1885.

Fig. 1.

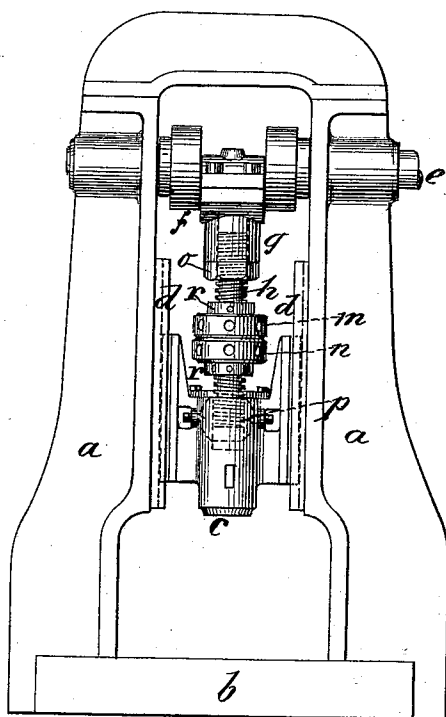


Fig. 5.

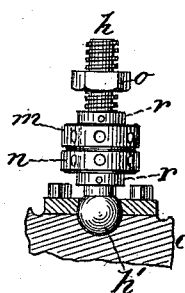


Fig. 2.

Fig. 3.

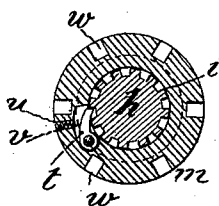
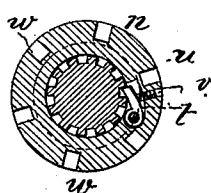


Fig. 4.



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ADJUSTING-SCREW FOR DIE-PRESSES.

SPECIFICATION forming part of Letters Patent No. 330,791, dated November 17, 1885.

Application filed August 17, 1885. Serial No. 174,550. (No model.)

To all whom it may concern:

Be it known that I, FRANK M. LEAVITT, of Brooklyn, Kings county, New York, assignor to E. W. BLISS, of New Utrecht, Kings county, New York, have invented certain new and useful Improvements in Adjusting-Screws for Die-Presses and other Machinery, of which the following is a specification.

My improvement applies more especially to that class of die-presses in which a reciprocating cross-head is driven from a rotary crank-shaft through the intervention of an adjustable screw connecting-rod, which may be screwed in or out to lengthen or shorten the connection, and thus adjust the movement of the die in reference to the die-table. Usually the connecting-screw is provided with a solid nut-shaped boss for the reception of a movable wrench, or with a series of radial holes for the insertion of a wrench-bar; but this wrench requires to be applied and removed intermittently, in order to adjust the screw to the desired extent, which is inconvenient and objectionable, and which my improvement obviates. According to my improvement, therefore, I provide the screw with a ratchet, or the equivalent of a ratchet, which is encircled by two pawl rings or collars, each carrying a pawl, which engages the ratchet in opposite directions, and these collars are adapted for the application of a wrench-bar, and when so applied it is only necessary to sway the bar to and fro, so as to impart a partial rotary motion to either of the pawl-collars in opposite directions, which will ratchet around the screw in the required direction, and thereby adjust the screw to the required extent without removing the wrench-bar during the operation, or altering the grasp of the hand on the wrench-bar, which thus enables the adjustment to be effected very quickly and conveniently.

My invention therefore consists, mainly, in the features here outlined, as hereinafter fully set forth.

In the drawings annexed, Figure 1 presents a front elevation of an ordinary die-press of the described character provided with my improvement. Fig. 2 is an enlarged sectional

elevation of the adjustable connecting-screw, with its ratchet and pawl-rings. Fig. 3 is a sectional plan on *xx* through the upper collar, and Fig. 4 a similar section on *yy* through the lower collar to show the opposite engagement of the pawls. Fig. 5 is a view similar to Fig. 2 of the screw-connection to show a modification thereof.

In Fig. 1, *a* indicates the frame or standard of the press, and *b* the die-table.

c indicates the cross-head, which slides in the guides *dd*, and is adapted to receive the die, or, rather, the upper half of the die, on its lower end in the usual way.

e is the rotary crank-shaft, to which power is applied; and *f* is the short powerful crank or eccentric, which is connected by the connecting-rod *g h* with the cross-head *c* in about the usual manner. The connecting-rod is made, as usual, in the two parts shown—the strap or box *g*, at the head of the rod, which engages the crank-pin, and the powerful screw *h*, which extends therefrom and connects to the cross-head. The screw *h* is preferably made with a right-hand thread at its upper end, which screws into the box *g*, and is provided with a jam-nut, *o*, while the lower end has a left-hand thread and screws into a nut, *p*, which is swiveled in a socket, in the top of the cross-head *c*, as shown in Fig. 1, so as to allow the necessary articulation in the angular movements of the rod, but is prevented from rotating in its socket, so as to allow the rotary adjusting motions of the screw in the nut, as will be understood. Now, according to my improvement I provide the screw, at or about the middle, with a small gear wheel or pinion, *i*, preferably made integral with the screw, and which, as will be seen, serves in effect as a double ratchet-pinion. This pinion *i* is encircled by two loose pawl rings or collars, *m n*, which are independent of each other and are retained in place by the two small outside retaining-collars, *r r*, which are clamped on smooth parts of the screw above and below the pinion *i*, as well shown in Fig. 2. Each of the pawl-rings is provided with a pawl, *t*, which pawls are, however, turned in opposite directions, and hence engage the pinion *i* in reverse

directions. The pawls *tt* are pivoted in cavities in the rings *mn*, and are pressed into action by spiral springs *u*, arranged in tubular sockets in the rings and held in place by screw-plugs *v*. Each ring is also provided with a peripheral series of radial holes or sockets, *w*, in which a wrench bar or pry may be inserted.

The general construction having been now described, it may now be seen that if a wrench-bar is engaged with the upper pawl-collar and swayed to and fro its pawl will engage the pinion *i* in one direction, and thus ratchet the screw around in that direction, and thereby turn the screw out of its nuts, and thereby increase the length of the connecting-rod, and adjust the cross-head *c* and its die toward the die-table to the required distance. If, on the other hand, the wrench is engaged with the lower ring, *n*, and swayed in the same manner, its pawl will engage the pinion *i* in the reverse direction, and the screw will be turned so as to screw into its nuts, and thus shorten the connection between the crank and cross-head, and thus retract the die from the die-table the desired distance. In this way it will be seen that the desired adjustment of the screw may be made without repeatedly applying and removing the wrench-bar, and without altering the grasp of the hand on the wrench during the operation, as has been the case heretofore, thus enabling the adjustment to be made in a much quicker, more convenient, and more accurate manner, which is very desirable. The jam-nut *o* is of course loosened and tightened, respectively, before and after these adjustments, as will be understood.

In the modification shown in Fig. 5 the construction is the same as in the other figures, with the exception that the screw *h* is threaded at the upper end only, while the lower end is provided with a spherical head, *h'*, which is held in a spherical socket in the cross-head, as

shown, thus leaving the screw free to tilt and turn in said socket. I of course prefer to employ the two collars *mn*, with their pawls, as shown, to provide for turning the screw in either way, but only one may be used without departing from my invention. Furthermore, one collar only might be used with a reversible pawl to act in either direction, as required, or with two reverse pawls, one of which might be thrown out of gear when the other was in action; but the arrangement shown is considered simpler and more efficient.

Instead of employing a positive ratchet-and-pawl device, friction-pawl devices, which are the well-known equivalents thereof, may be employed.

What I claim is—

1. In a press, the combination, with a crank or eccentric, *f*, and cross-head *c*, and an adjustable screw, *h*, in the connection between the two, of a pinion, *i*, collar *m*, and pawl *t*, substantially as and for the purpose set forth.

2. The combination, with an adjustable connecting-screw, *h*, provided with a pinion or ratchet, *i*, of two loose collars, *mn*, and reversely-acting pawls *t*, arranged and operating substantially as shown and described.

3. The combination, with the screw *h*, having the pinion *i*, of collar or collars *mn*, encircling said pinion, pawl or pawls *tt*, engaging said pinion, and retaining-collars *rr*, substantially as shown and described.

4. In a press, the combination, with crank or eccentric *f* and cross-head *c*, of the parts *gh*, jam-nut *o*, pinion *i*, collar *m*, and pawl *t*, arranged and operating substantially as and for the purpose set forth.

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