(No Model.)

N. C. STILES.

POWER PRESS.

No. 329,236. Patented Oct. 27, 1885.

Fig. 1

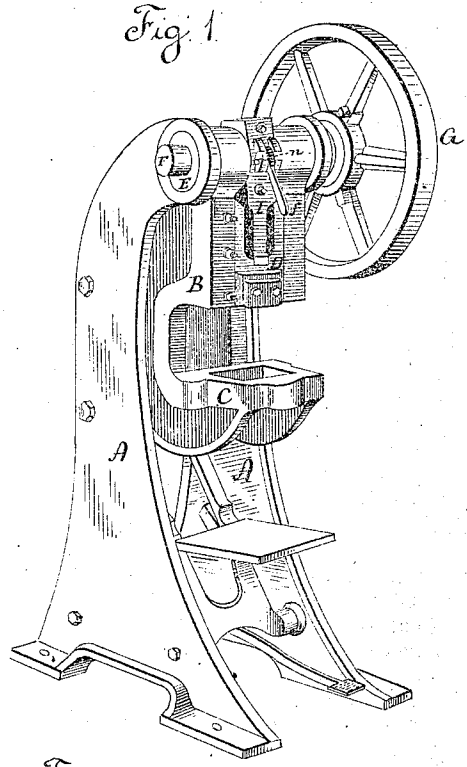


Fig. 2

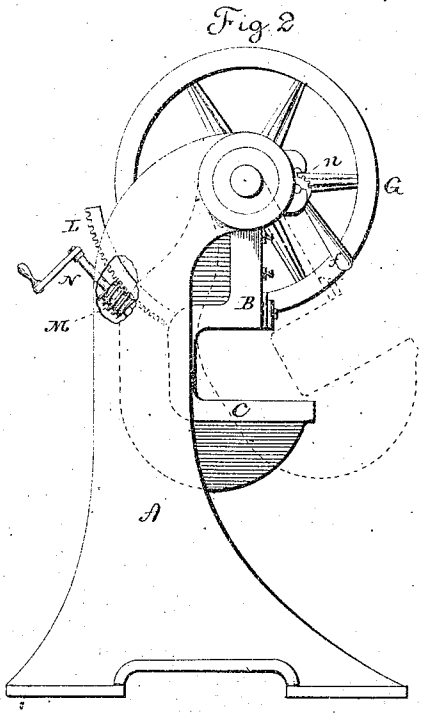


Fig. 5

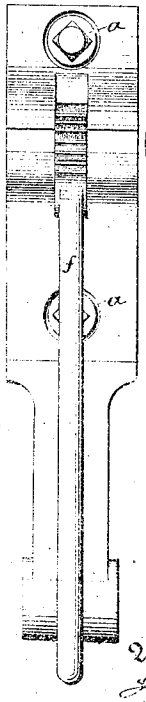


Fig. 4

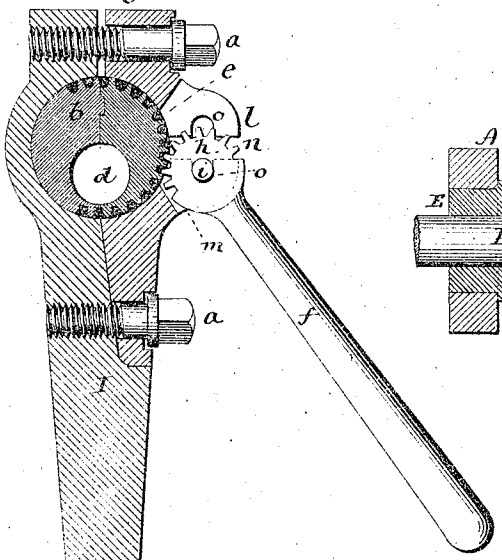
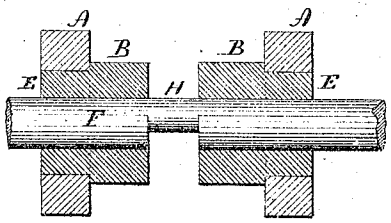


Fig. 3



Witnesses.
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NORMAN C. STILES, OF MIDDLETOWN, CONNECTICUT.

POWER-PRESS.

SPECIFICATION forming part of Letters Patent No. 329,236, dated October 27, 1885.

Application filed August 31, 1885. Serial No. 175,710. (No model.)

To all whom it may concern:

Be it known that I, NORMAN C. STILES, of Middletown, in the county of Middlesex and State of Connecticut, have invented a new Improvement in Power-Presses; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a perspective view of the press complete; Fig. 2, a side view of the same, illustrating the adjustment; Fig. 3, a longitudinal section through the trunnion supporting the shaft, enlarged; Fig. 4, a vertical central section of the pitman at right angles to the axis of the eccentric or crank-pin driving it, showing side view of the adjusting-lever, enlarged; Fig. 5, a face view of the same.

This invention relates to an improvement in machines used for punching and drawing sheet metal, and in which a bed is provided to support the fixed die, and a slide above, arranged for vertical reciprocation, carrying a punching or drawing die, commonly called "power-presses," and particularly to that class in which the bed is made adjustable, so as to stand at different angles for the convenience of the workman.

As heretofore constructed the whole mechanism of the press has been arranged to swing or rock upon bearings below the bed, and such movement has been upon an axis below the axis of the driving-shaft, and so that the shaft itself necessarily moves, with the rest of the press, in an arc of the circle from such center. Such movement of the shaft and its pulley necessarily produces a change in the tension of the belt, occasioning difficulties which are too apparent to require particular description.

The object of the first part of my invention is to produce the swinging or angular adjustment of the press without disturbing the position or center of the shaft—that is to say, to make the swinging movement about the shaft as its center; and this part of my invention consists in hanging the frame which supports the bed and slide upon bearings concentric with the shaft, and about which the said frame may swing as a center of motion without disturbing the axial center of the driving-shaft.

The second part of my invention relates to an adjustment of the slide with relation to the bed, whereby it may be set at different distances from the bed in the adjustment of the dies, and without changing the throw of the eccentric; and this part of my invention consists in a circular disk arranged in the head of the pitman, the said disk adapted to eccentrically embrace the eccentric in the driving-shaft, the axis of the driving-eccentric and of the disk parallel, the said disk in the pitman-head constructed with teeth upon its periphery, and with a lever hung in the pitman, and so as to swing in a plane parallel with the plane of the disk, the lever having a toothed segment corresponding to the teeth in the disk and so as to work therein, all as more fully hereinafter described.

A A represent two uprights, which form the general support for the press; B, the frame which carries the bed C as an integral part of it, and upon which bed the fixed dies may be arranged in the usual manner. The frame B is constructed with guides for the arrangement and movement of the slide D, also in the usual manner. At the upper end the frame is constructed with a trunnion, E, at each side, larger than the shaft through which the press is to be operated. These trunnions take bearings, respectively, in the uprights A A, and so that the frame, with the bed and the slide it carries, may swing on said eccentrics as the center of motion, and as indicated in Fig. 2, and so that the bed may stand at any desired angle. Longitudinally through the upper portions of the frame, and concentric with the trunnions E, the shaft F is arranged in the usual manner, and provided with the usual driving-wheel, G, and the connections therewith. Between the two parts of the frame the shaft is constructed with the usual eccentric, H, which, through the pitman I, communicates reciprocating movement to the slide D, the eccentric operating through said pitman in substantially the usual manner. The frame is adjusted to its different angles by means of a toothed segment, L, on the back of the frame,

and into which a worm, M, works, and so that by turning the worm—say as by a crank, N—the frame may be thrown outward, as indicated in broken lines, or in the opposite direction, and to any extent to which it is desirable to incline the press. This device affords an easy and convenient means of adjusting the press; but I do not wish to be understood as limiting this part of my invention to such means of adjustment.

While I prefer to construct the frame with trunnions to take bearing in uprights, and so as to swing independent of the shaft, the frame may be hung directly upon the shaft—that is, the trunnions may be dispensed with, as indicated in broken lines, Fig. 3. The pitman I is constructed with a divided head, the division being parallel with the axis of the shaft, the two parts secured together by screws *a a*. In the head between the two parts a circular recess is formed to receive a disk, *b*, which disk is considerably larger than the eccentric H on the shaft. For convenience this disk is made in two parts, the two parts interlocked by rib and grooves, or otherwise, as shown in Fig. 4. The axis of the disk *b* is parallel with the axis of the shaft, and through the disk *b* is an eccentric opening, *d*, corresponding to the eccentric H on the shaft. The disk is constructed with gear-teeth *e* on its periphery. The disk is adjustable in the head, or it may be firmly clamped and placed so as to be fixed in the head by the screws *a a*. On one side, preferably the front, of the pitman a lever, *f*, is arranged to swing in a plane parallel with the disk, constructed with a toothed segment, *h*, the teeth of which correspond to the teeth *a* in the disk *b*. It is also constructed with a trunnion, *i*, upon each side concentric with the segment *h*. On the front side of the pitman projections *l m* are formed, one above the other, but distant from each other somewhat more than the diameter of the trunnions *i*, and upon the adjacent faces of the projections *l m* a seat, *o*, is made to receive the trunnion *i* of the lever, and so that resting, say, in the lower bearings, a downward movement of the lever will turn the disk *b* accordingly, or an upward movement of the lever will throw it into the bearing *o* above and turn the disk in the opposite direction; or, if the lever be lifted to take the trunnions from the lower bearings, it may be removed through the opening *n* between the two bearings, so that when not required for use in the adjustment of the disk *b* the lever may be removed. The adjustment of the disk *b* lengthens or increases the pitman accordingly as the center of the opening *d* is moved upward or downward—a well-known adjustment in pitmen.

By making the disk *b* in two parts, as shown, it is readily applied to the eccentric H between the two parts of the frame. This division is necessitated because the shaft is parallel with the plane of the slide, instead of at right angles thereto, as in the more general construction of power-presses.

I claim—

1. In a power-press, the frame of the press carrying the bed and slide, constructed with trunnions projecting at each side at the upper end in a plane parallel with the slide, the said trunnions supported in bearings in uprights, and whereby the bed and all it carries may swing on said trunnions as a center of motion, combined with the driving-shaft concentrically through said trunnions, the said shaft constructed with an eccentric, and with a pitman from said eccentric to said slide, substantially as described, and whereby the said swinging movement of the frame is made concentric with the driving-shaft.

2. In a power-press, the combination of the uprights forming bearings through which the driving-shaft extends, the frame carrying a slide and die-bed hung between said uprights, with the said driving-shaft as its center of motion, the said shaft being parallel with the slide carried by the frame, and about which said shaft said frame and all it carries may swing as its center of motion without changing the relation of the slide to the die-bed, substantially as described.

3. In a power-press, the frame of the press carrying the bed and slide, constructed with a trunnion projecting at each side at the upper end in a plane parallel with the slide, the said trunnions supported in bearings in uprights, whereby the bed and all it carries may swing on said trunnions as a center of motion, combined with the driving-shaft concentrically through said trunnions, the said shaft constructed with an eccentric, and with a pitman from said eccentric to said slide, substantially as described, and whereby the said swinging movement of the frame is made concentric with the driving-shaft, and a mechanism, substantially such as described, for adjusting the inclination of the said frame.

4. In a power-press, the combination of the uprights forming bearings through which the driving-shaft extends, the frame carrying a slide and die-bed hung between said uprights, with the said driving-shaft as its center of motion, the said shaft being parallel with the slide carried by the frame, and about which said shaft said frame and all it carries may swing as its center of motion without changing the relation of the slide to the die-bed, and the mechanism, substantially such as described, for adjusting the inclination of the said frame, substantially as described.

5. A pitman having a circular recess at its head, the axis of which is parallel with the axis of the driving-shaft, combined with a circular disk, *b*, arranged in said recess, the said disk constructed with an eccentric opening, *d*, parallel with its axis, and the said disk also divided in two parts in the plane of its axis and of the axis of the said eccentric opening, and the said disk also constructed with teeth

upon its periphery, with a lever, *f*, hung in said pitman, and arranged to swing in a plane parallel with the plane of said disk, the said lever constructed with a toothed segment, *h*, corresponding to the teeth on the periphery of the disk, substantially as described.

6. A pitman having a circular recess in its head, the axis of which is parallel with the axis of the driving-shaft, combined with a circular disk arranged in said recess, the said disk constructed with an eccentric opening, *d*, the axis of which is parallel with the axis of the disk, and the disk also constructed with teeth upon its periphery, the pitman constructed with projections *l m* in the plane of said disk, and so as to leave a space, *n*, between said projections, each of said projections constructed with bearings *o*, parallel with the axis of said disk, the lever *f*, constructed with trunnions *i*, adapted to rest in either of said bearings, as also to pass in and out through the said space *n*, the said lever also constructed with a toothed segment, *h*, corresponding to the teeth on the periphery of the disk *b*, substantially as described.

NORMAN C. STILES.

Witnesses:
H. R. CLARK,
J. B. WETHERBEE.