

(No Model.)

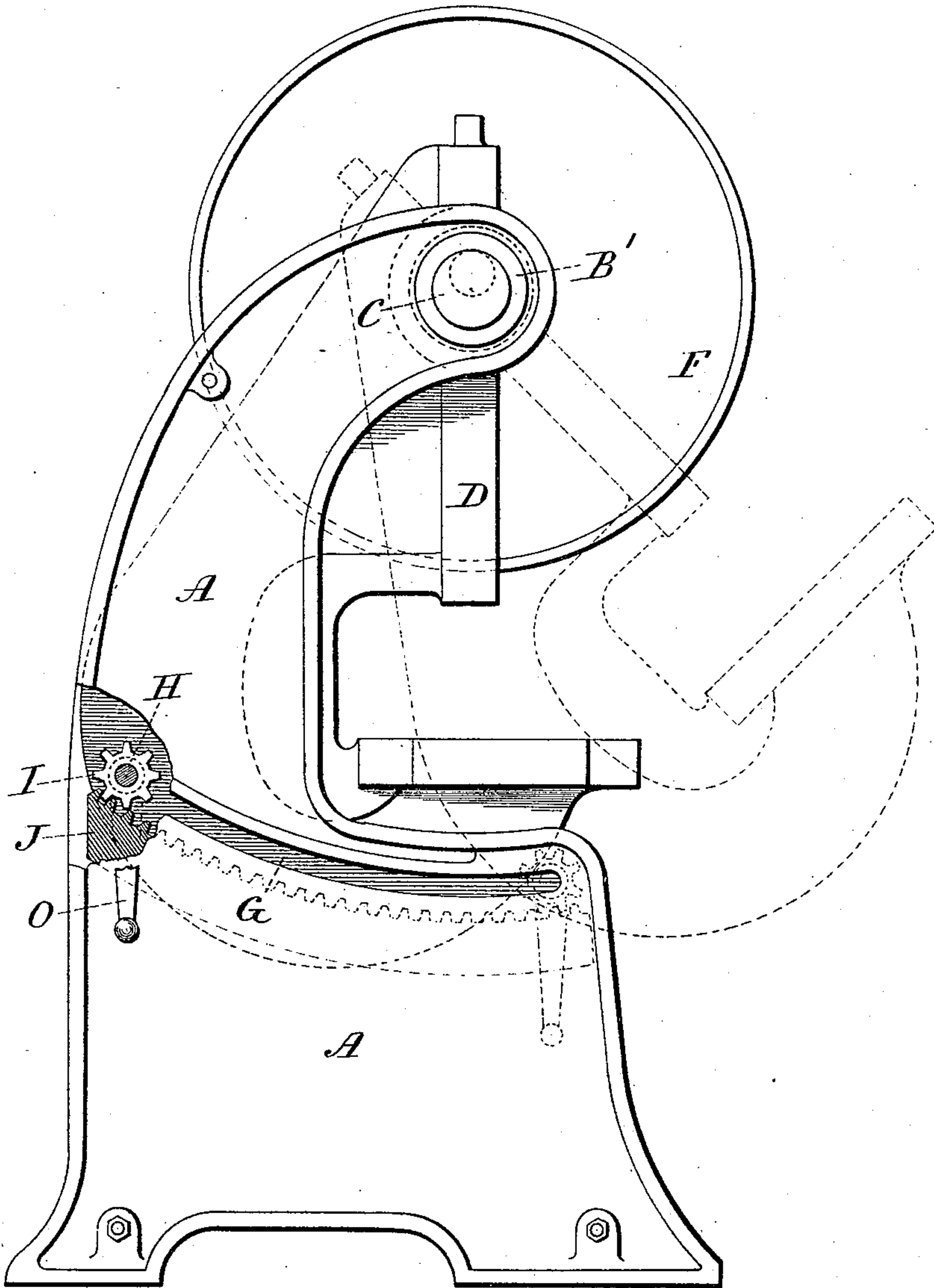
3 Sheets—Sheet 1.

N. C. STILES.
POWER PRESS.

No. 459,597.

Patented Sept. 15, 1891.

Fig 1.



Witnesses.
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L. D. Kelcey

Norman C. Stiles
Inventor.
By atty.
Earle Heyman

(No Model.)

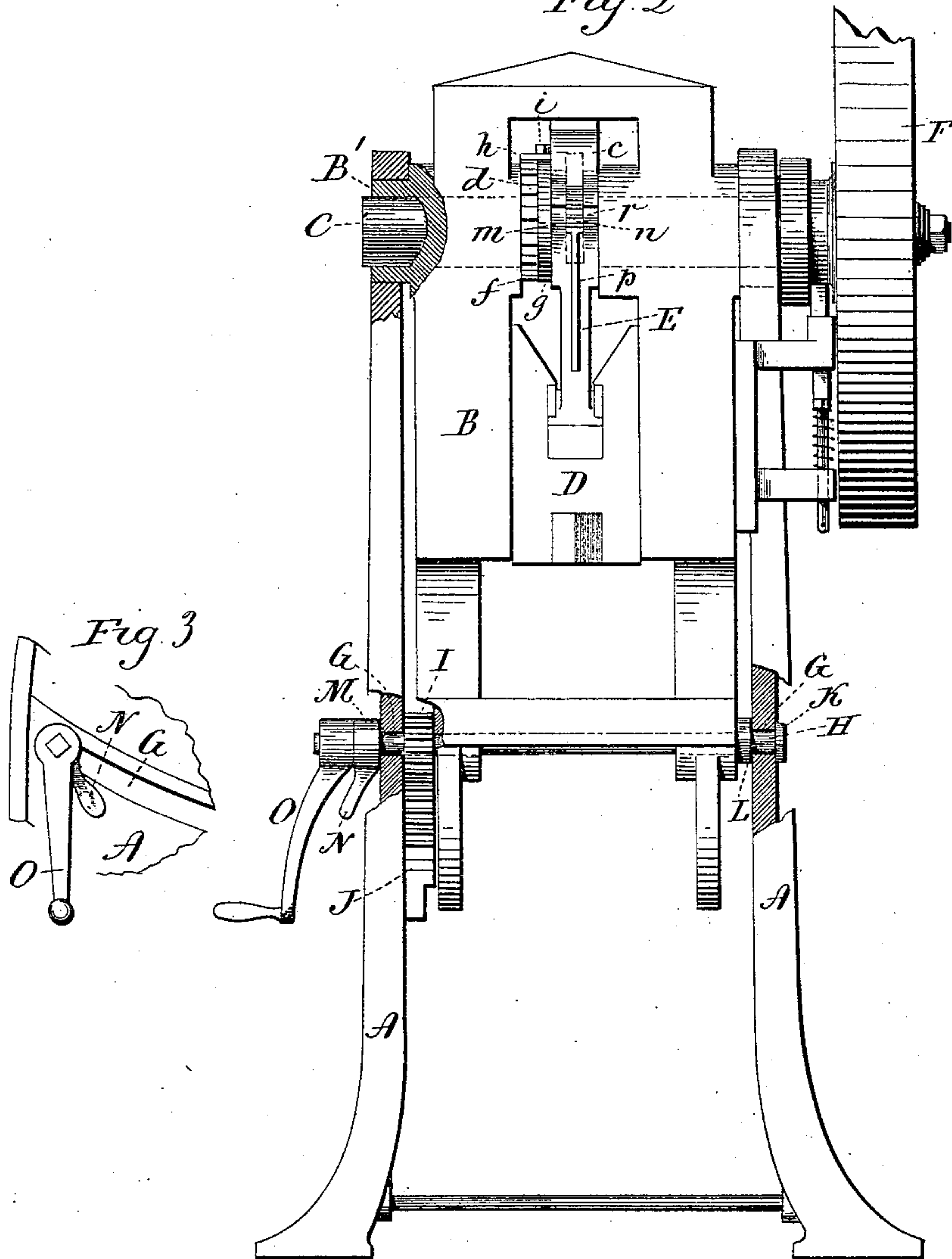
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N. C. STILES.
POWER PRESS.

No. 459,597.

Patented Sept. 15, 1891.

Fig. 2



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Fig. 4

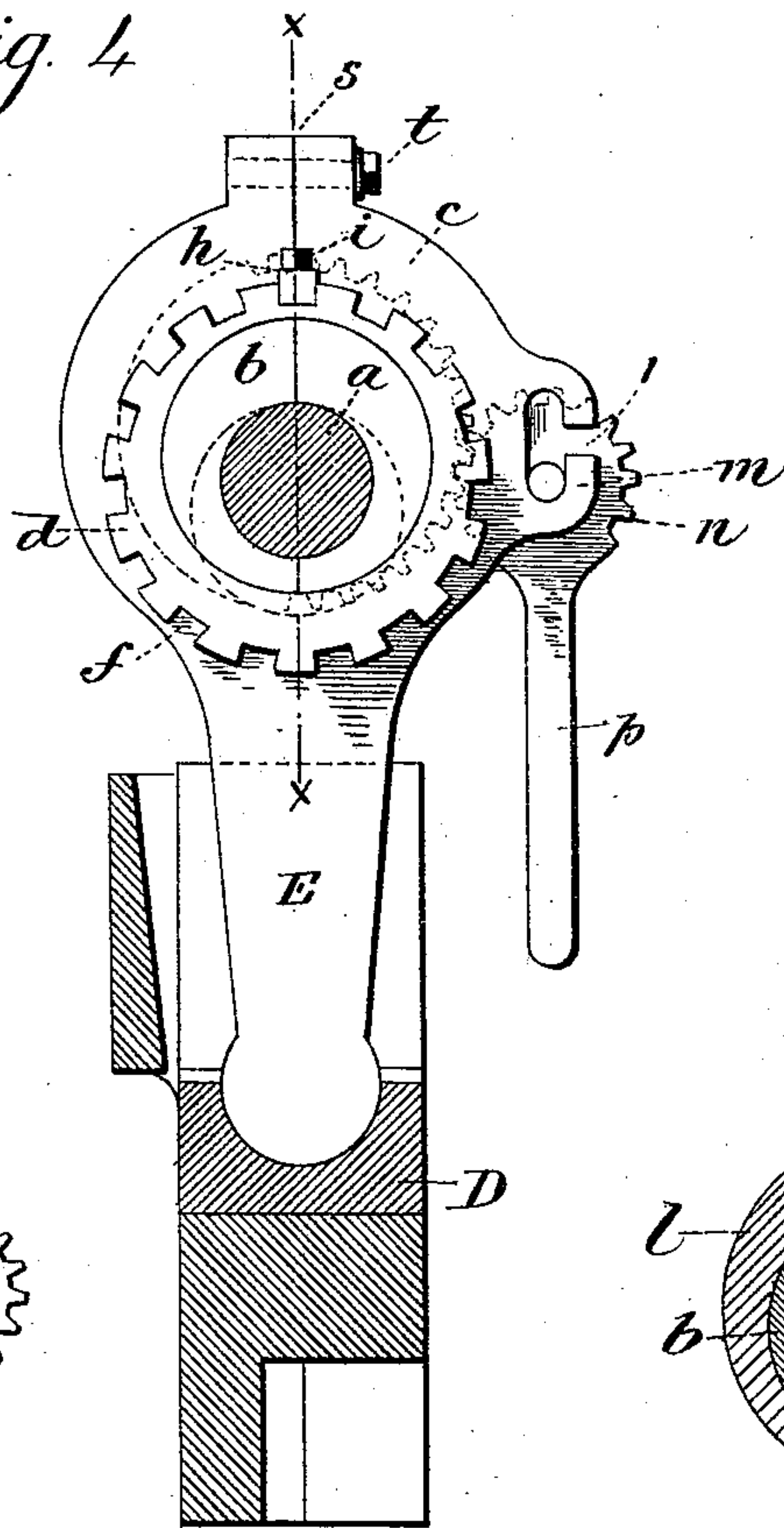


Fig. 5

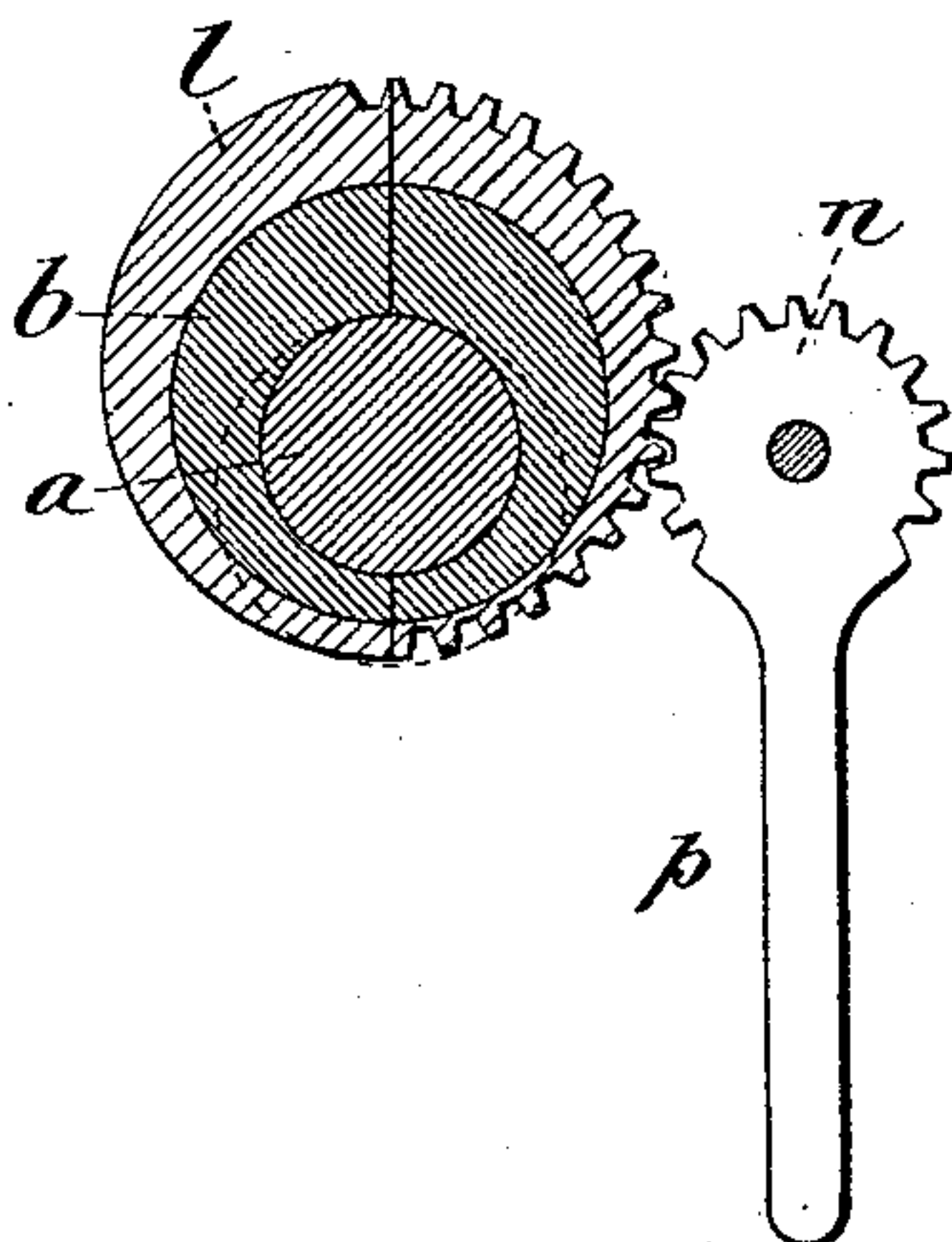


Fig. 6

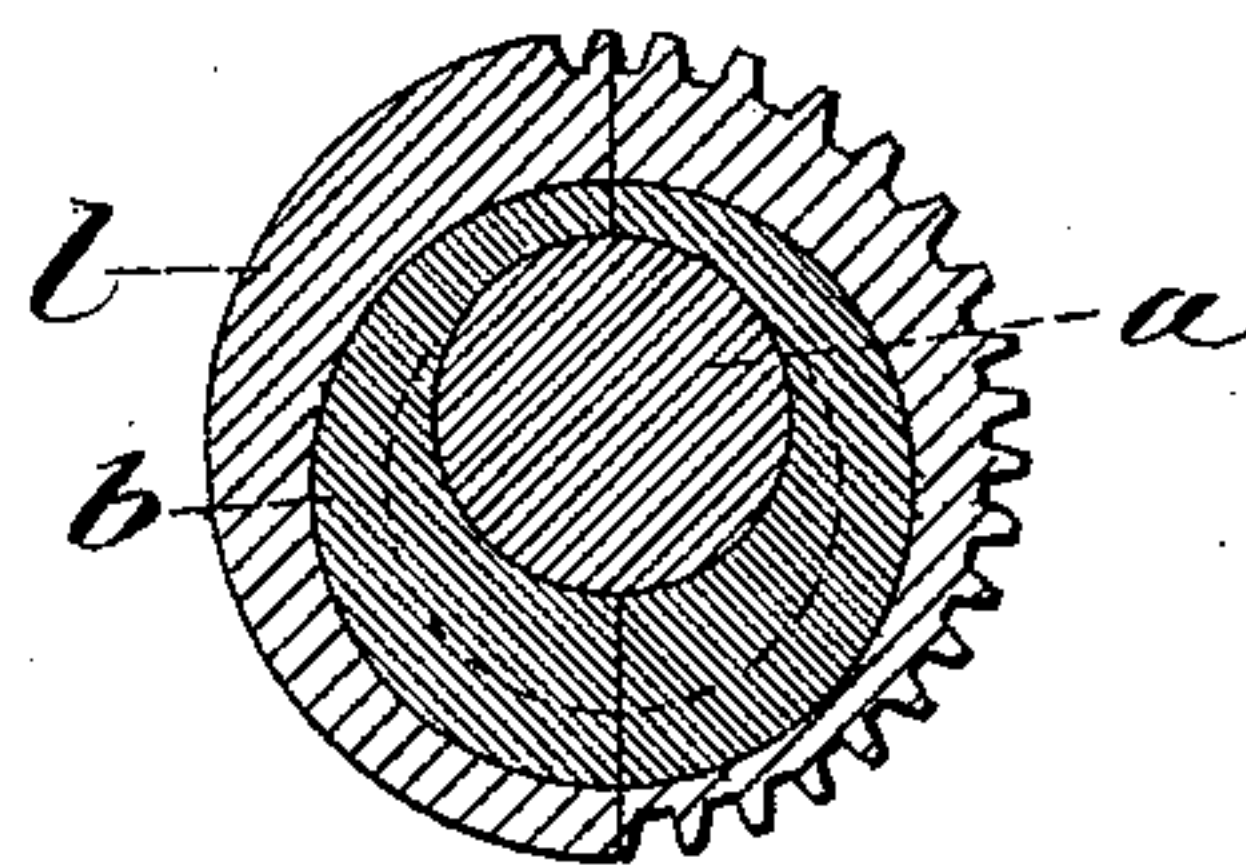


Fig. 7

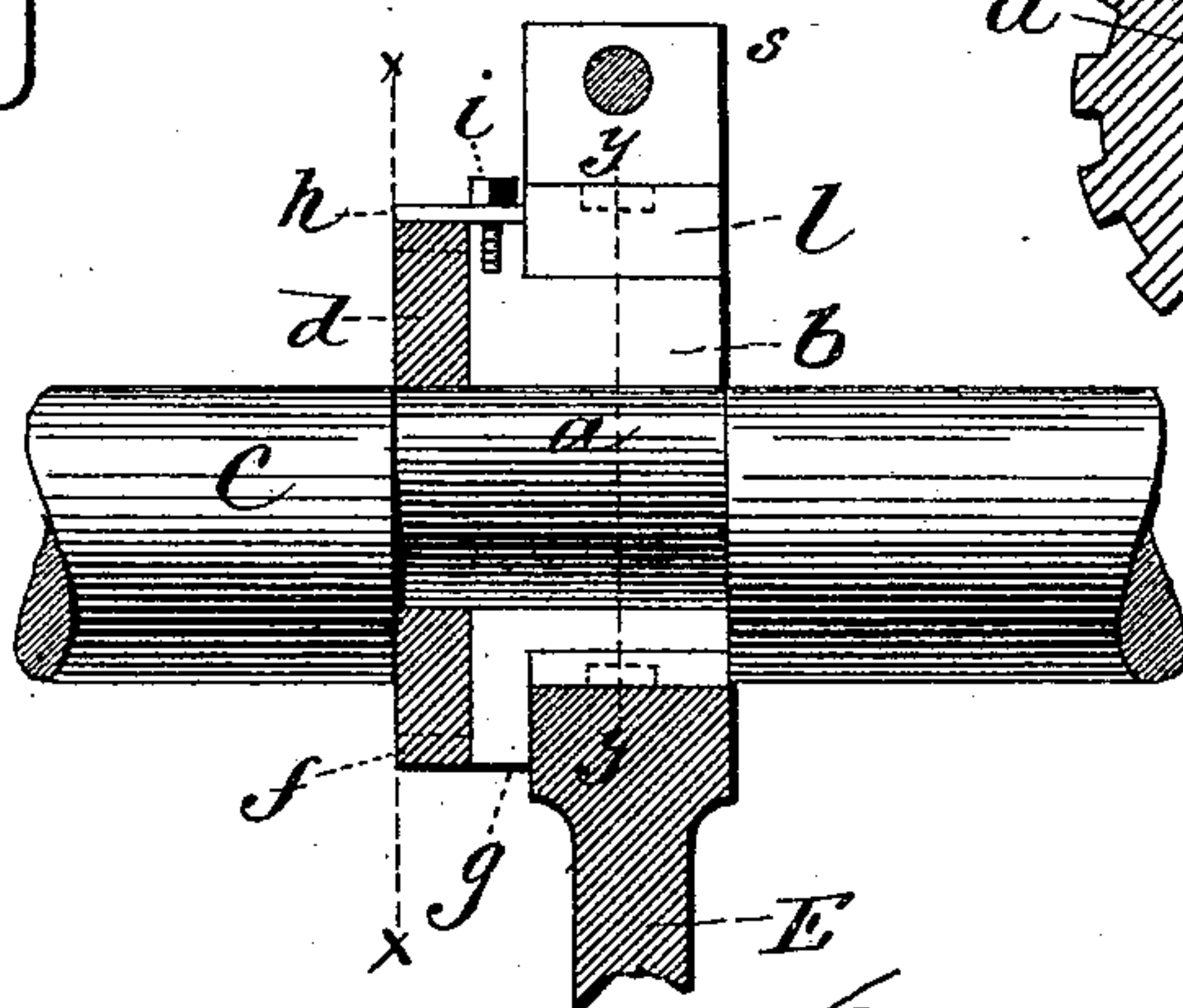
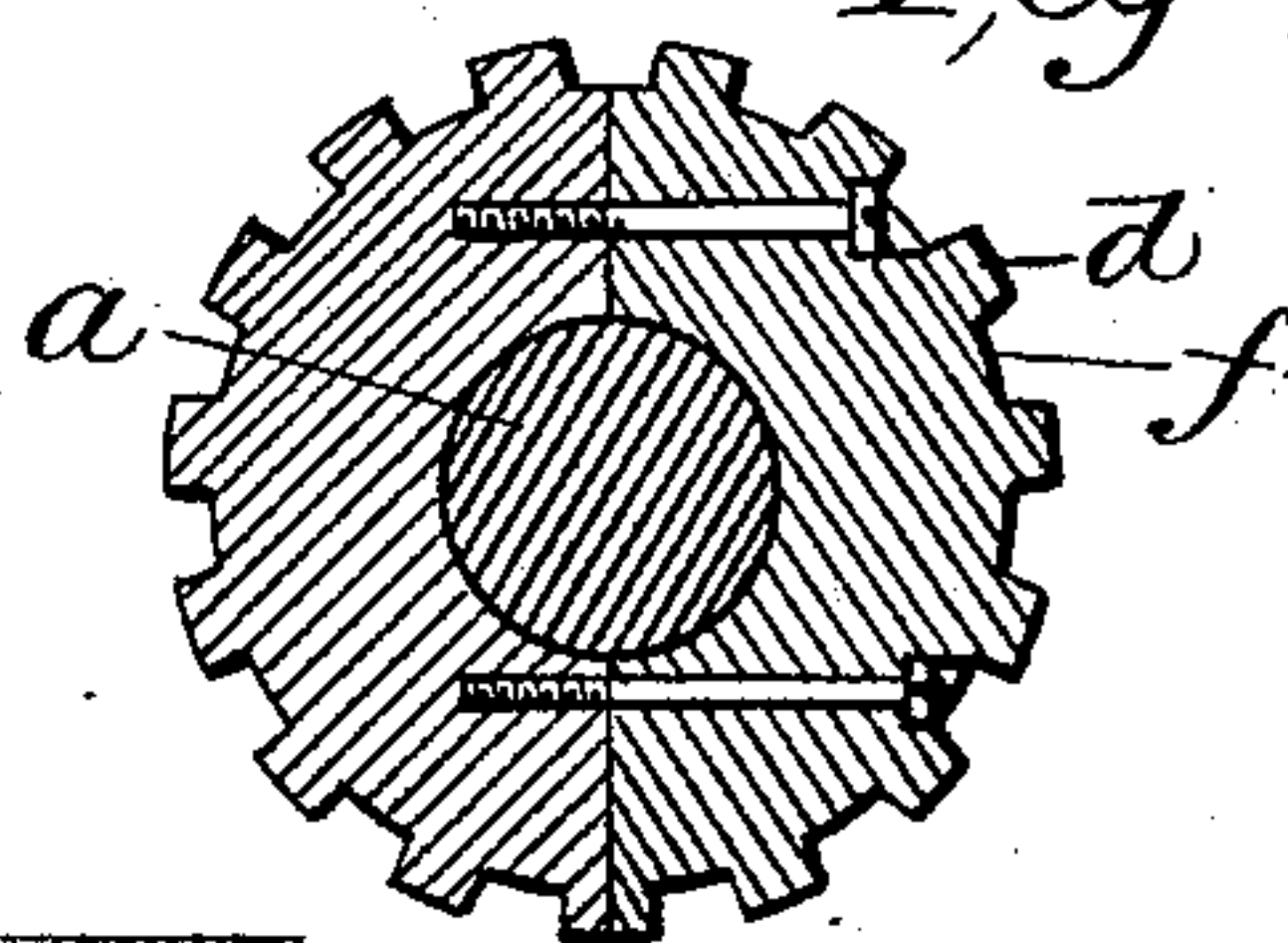


Fig. 8



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UNITED STATES PATENT OFFICE.

NORMAN C. STILES, OF MIDDLETOWN, CONNECTICUT.

POWER-PRESS.

SPECIFICATION forming part of Letters Patent No. 459,597, dated September 15, 1891.

Application filed October 27, 1890. Serial No. 369,417. (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 new Improvements 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 side view of the press, the tilted position being indicated in broken lines, a portion of the frame broken away to show the rack and pinion; Fig. 2, a front view of the same; Fig. 3, a partial side view showing the pinion-shaft and nut-handle; Fig. 4, a transverse section through the slide and shaft on line *xx* of Fig. 7; Fig. 5, a transverse section on line *yy* of Fig. 7, showing the loose eccentric in the position of its extreme throw; Fig. 6, the same as Fig. 5, showing the loose eccentric turned to the opposite position; Fig. 7, a longitudinal central section on line *xx* of Fig. 4, showing side view of the shaft; and Fig. 8, a detached transverse section through the disk *d*, illustrating means for its attachment to the shaft.

This invention relates to an improvement in power-presses—that is, presses for punching, drawing, &c.—with special reference to that class of presses in which the body is arranged to tilt, so that the body, the bed, and the operative mechanism may stand in a vertical or at any desired position which the convenient operation of the presses may demand, parts of the invention, however, being applicable to presses which do not possess this tilting feature.

The object of the first part of the invention is to produce a simple and convenient mechanism for tilting the body of the press and yet clamping it so firmly in the frame as to rigidly hold it when adjusted to the desired position.

The second part of the invention relates to an improvement in the adjustment of the extent of reciprocating movement imparted to the slide of the press.

The invention consists in the construction as hereinafter described, and particularly recited in the claims.

A represents the two sides or frame of the press. These extend upward, and between them the body B is hung upon trunnions B', formed on the body, the said trunnions being supported in the frame and, as represented in Fig. 2, a portion of the body and frame broken away at the left for illustration. The shaft C of the press is supported in the body and extends, preferably, concentrically through the trunnions. The body thus hung between the sides of the frame is adapted to swing backward and forward between the sides, as from the position indicated in Fig. 1 to that indicated in broken lines, same figure; but the invention is not to be understood as limited to this particular construction for supporting the body as upon an axis, for this construction any of the known constructions for a similar movement of the body may be employed, it only being essential that the body shall be adapted to swing or turn in the frame as upon an axis.

In the body the reciprocating slide D is arranged, and movement is imparted to the slide D from an eccentric on the shaft through a connecting-rod E in the usual manner, power being applied to the shaft through a driving-wheel F, adapted to engage and disengage the driving-shaft at predetermined times within the control of the operator in the usual manner, it not being necessary to describe such mechanism in this specification, as that mechanism constitutes no part of this present invention.

In the sides A of the frame segment-shaped slots G are formed, the curve of the slots being from the center on which the body of the press swings. These slots are of a length corresponding to the extent of adjustment which may be desirable for the body of the press. Transversely through these slots a shaft H extends from side to side. This shaft also passes through the body of the press, as indicated in Fig. 1, the shaft taking its bearing in the body so as to revolve freely, and the parts of the shaft which lie within the slots G move through the slots as the press is turned backward or forward.

In Fig. 1 the position of the press is represented as upright—that is, in its extreme rear position—and the shaft H stands at the extreme rear ends of the slots. The shaft H

carries a pinion I between one side of the frame and the corresponding side of the press, as seen in Fig. 2, and the said pinion works into a rack J, fixed to the frame in a curve concentric with the curve of the slot G. Upon one end of the shaft, preferably at the end opposite the pinion, a head K is formed or applied to take a bearing upon the outside of the frame, as seen in Fig. 1, so as to resist the movement of the shaft toward the other end, and on that side between the body of the press and the frame a collar L is arranged. This collar is loose upon the shaft, and in thickness corresponds to the normal distance between that side of the frame and the corresponding side of the body of the press. At the opposite side the pinion I has a position upon the shaft the same as that of the collar L upon the other side, but so as to allow a longitudinal movement of the shaft, the pinion being connected to the shaft, so as to revolve with it, but yet allow such longitudinal movement of the shaft independent of the pinion. Such engagement may be made by the common spline and groove, not necessary to be illustrated.

Upon the shaft outside the frame, opposite to that side where the head K is arranged, a nut M is applied to the shaft, the nut being preferably provided with a handle N as a convenient means for turning the nut, and to the shaft outside the said nut a crank O is applied as a convenient means for turning the shaft. When the body of the press stands at the desired position, the nut M is turned hard up, which brings the head K of the shaft against its side of the press and clamps the collar L between the frame and the press on that side, and correspondingly clamps the pinion I between the side of the body and the frame on that side, thus making a firm rigid binding of the frame and body together at a point near the bottom of the body of the press, so that the press as a whole will stand firm and strong. When adjustment of the body of the press is desired, the nut M is unscrewed to relieve the before-mentioned clamp between the body and the frame. Then the body is free to swing, and the crank O being turned accordingly the pinion I will revolve with the shaft and travel upon the rack J, carrying with it the lower end of the body, until the desired position is attained or until the end of the slot is reached, the extreme tilting position being represented in Fig. 1 in broken lines. Whenever the desired position is attained, the nut M is again turned to produce the before-mentioned clamping between the frame and body, and the body and frame will be held firmly clamped at any position to which it may be adjusted between the two extremes. This arrangement of the rack, pinion, and crank makes the adjustment easily controlled by the operator, and is so simple in its construction and operation as not to be liable to derangement. Good results, so far as the adjustment of the body of the press is

concerned, may be produced without the clamping effect described. This therefore may be omitted.

The second part of the invention is represented in detail in Figs. 4, 5, 6, and 7. The shaft C is constructed with a crank-pin or eccentric *a*, from which the slide D derives its motion by connection therewith through the pitman E, as before described. On this crank-pin *a* an eccentric *b* is arranged loose on the said crank-pin—that is, free for rotation. The eccentricity of this eccentric *b* is or may be the same as that of the crank-pin or eccentric *a*, and as seen in Fig. 4. The eccentric *b* works through the head *c* of the pitman E, and made fast to the shaft is a disk *d*, here represented as divided and clamped upon the shaft, (see Fig. 8,) but for which means of securing any of the known devices may be substituted. The disk *d* is concentric with the crank-pin. The edge of the said disk *d* is constructed with a series of notches *f* on its periphery, (see Fig. 4,) and the eccentric *b* is constructed with a corresponding annular flange *g*, (see Fig. 7,) the disk *g* having a dog *h* made fast to it at one point and adapted to interlock with the corresponding notch *f* in the disk *g*. This dog is held by a screw *i* in such interlocked position. This interlocking of the eccentric *b* with the disk *d* holds the eccentric *b* fast to the shaft, so that it will revolve with the shaft. If the eccentric *b* be thus locked in position with its longest radius in line with the longest radius of the eccentric *a*, as seen in Fig. 5, then the throw of the slide will correspond to the combined eccentricity of the two eccentrics *a b*; but if the eccentric *b* be turned to the opposite extreme, so as to bring the longer radius of the eccentric *b* to coincide with the shorter radius of the eccentric *a*, then the eccentric *b* will be brought into a position concentric with the shaft, and so that in the rotation of the shaft no movement will be imparted to the slide. Consequently any intermediate position of the two eccentrics with relation to each other between these two extremes will impart to the slide a movement corresponding to the eccentricity so produced, and any desired movement of the slide between these two extremes may be produced by adjusting the eccentric *b* accordingly.

I have represented the eccentric *b* as interlocked by means of a dog engaging corresponding notches in the periphery of the disk *d*; but for this dog any of the known equivalents for interlocking may be substituted, it only being essential that provision shall be made for the interlocking of the eccentric *b* at any point to which it may be adjusted with relation to the crank or eccentric *a*.

To adjust the elevation or depression of the slide without change in the extent of its throw, an eccentric *l* is arranged upon the eccentric *b* within the head *c* of the pitman, the eccentricity of this eccentric *l* corresponding to the extreme adjustment of this character re-

quired for the slide. A portion of the periphery of this eccentric l is toothed, as seen in Figs. 5 and 6, and the head c of the pitman is constructed with a bearing m to receive a pinion n , the teeth of which may work into the teeth of the said eccentric l , and, as represented in Fig. 4, the pinion l being provided with a suitable handle p , whereby the said pinion may be rotated when so placed in its bearings, and by such rotation of the pinion the rotation of the eccentric l is produced to adjust the slide. The bearing m is constructed with an opening r into it, so that the pinion may be removed or applied whenever the adjustment is desirable. To clamp the said eccentric l when the proper position is attained, the head C of the pitman is divided at the top, as at s , or any desirable point, and at this division the parts are secured together by a bolt t , and so that by the turning up of the bolt the head C may be so firmly clamped upon the eccentric l as to prevent accidental rotation of the said eccentric. Then when the adjustment of the eccentric l is desired the bolt t is released until the desired position is again attained, when the eccentric will be re-clamped. This adjustment of the eccentric l is a well-known expedient in power-presses known as the "Stiles and Parker Power-Presses."

The mechanism which I have described for adjusting the throw of the eccentric may be applied to presses in which the tilting adjustment does not exist, and this part of the invention is therefore not to be understood as limited to presses having such tilting adjustment.

I am aware that a press has been constructed with the body hung upon the shaft of the frame as an axis upon which the body may swing between the sides of the frame, combined with a concentric segment-rack on the body with a worm in the frame, such construction being shown in patent granted to me, No. 329,236. I therefore do not wish to be understood as herein broadly claiming a press having the body arranged between the two sides and so as to swing upon an axis that the body of the press may be tilted to different inclinations.

I am also aware of the adjusting devices contained in said patents Nos. 329,236 and 105,605, and do not wish to be understood as claiming anything disclosed in either of the said patents.

I claim—

1. In a power-press in which the body is hung in the frame so as to swing backward and forward upon an axis, the sides of the frame constructed with segment-shaped slots concentric with the axis upon which the body of the press swings, a shaft extending through the body but loose therein for free rotation,

said shaft also extending through the said slots in the respective sides of the frame, the frame constructed with a segmental toothed rack concentric with the said slots, combined with a pinion on the said shaft working into said rack, and means for imparting revolution to said shaft, substantially as described.

2. In a power-press in which the body is hung upon an axis in the frame and so as to swing backward and forward, the sides of the frame constructed with segment-shaped slots concentric with the axis upon which the body of the press swings, combined with a shaft through the body and through the said slots, a stationary toothed rack on the frame concentric with the said slots, a pinion on the said shaft working into said rack, the said shaft at one end provided with a head outside the frame and at the other end with a nut outside the frame, with means substantially such as described between the said frame and the body of the press whereby through said nut the frame and body may be clamped together, substantially as specified.

3. In a power-press in which the slide receives a reciprocating movement through a pitman operated by an eccentric on the driving-shaft hung in the press, the combination therewith of an eccentric loose upon said shaft-eccentric, the said loose eccentric constructed with an annular flange concentric with the said shaft-eccentric, a concentric disk made fast to said shaft and adjacent to said annular flange, mechanism substantially such as described between said flange and disk whereby said flange and its loose eccentric may be interlocked with said disk, substantially as and for the purpose described.

4. In a power-press in which the slide receives a reciprocating movement through a pitman operated by an eccentric on the driving-shaft hung in the said body, the combination therewith of an eccentric loose on said shaft-eccentric, mechanism substantially such as described for securing said loose eccentric to the shaft, the pitman through which connection is made to the slide surrounding said loose eccentric, a second eccentric around said loose eccentric and within said head, with means for clamping the said second eccentric within said head, and mechanism substantially such as described for imparting rotation to said second or head eccentric, substantially as and for the purpose specified.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

NORMAN C. STILES.

Witnesses:

FRED B. SCRANTON,
J. E. STILES.