

No. 633,295.

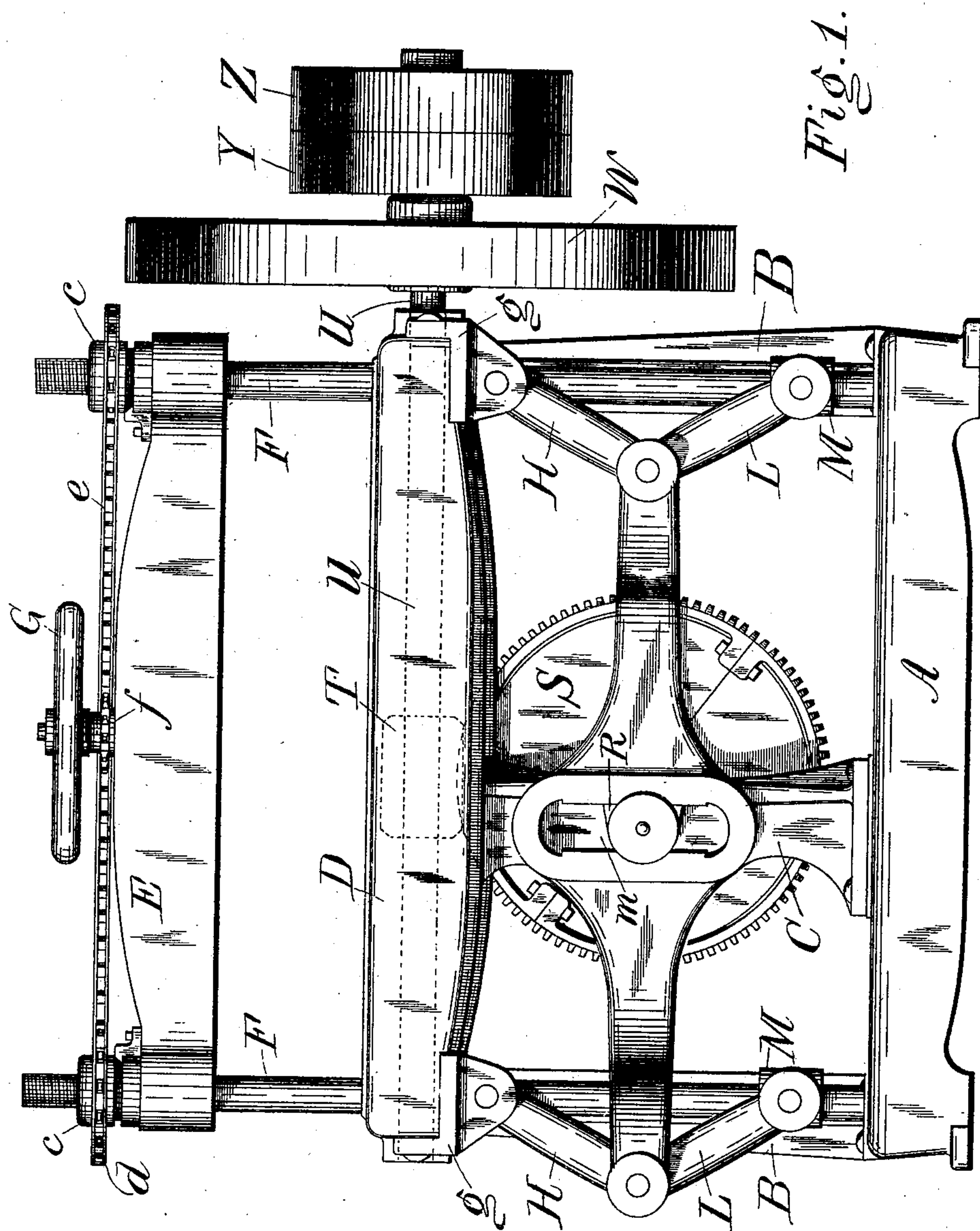
Patented Sept. 19, 1899.

C. SEYBOLD.
DIE PRESS.

(Application filed May 13, 1898.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses.

J. G. Edwards.

O. M. Rogers

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3 Sheets—Sheet 2.

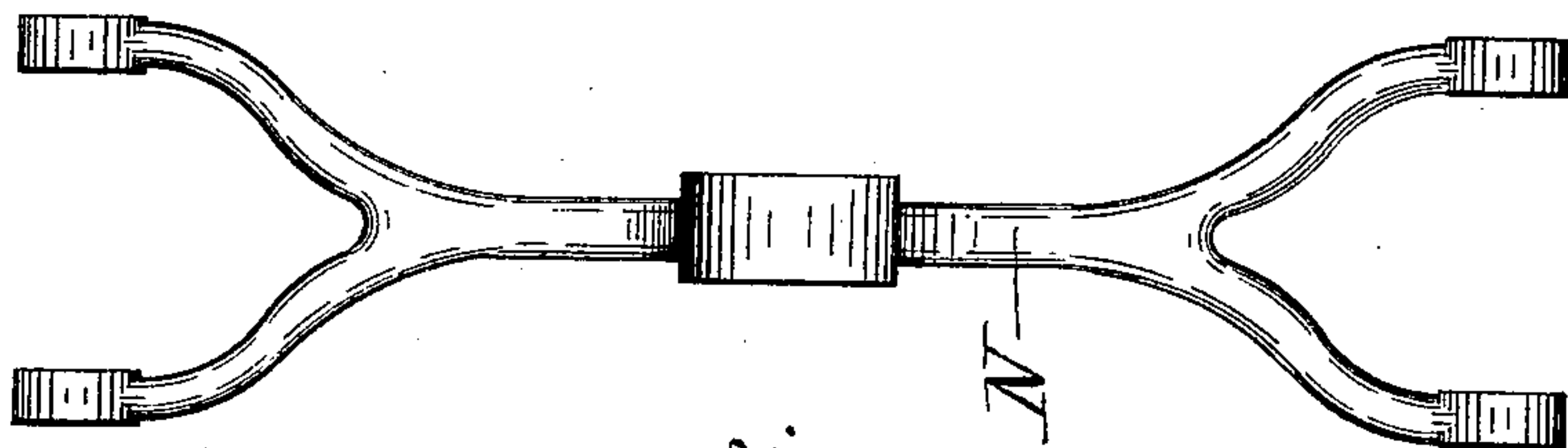


Fig. 6.

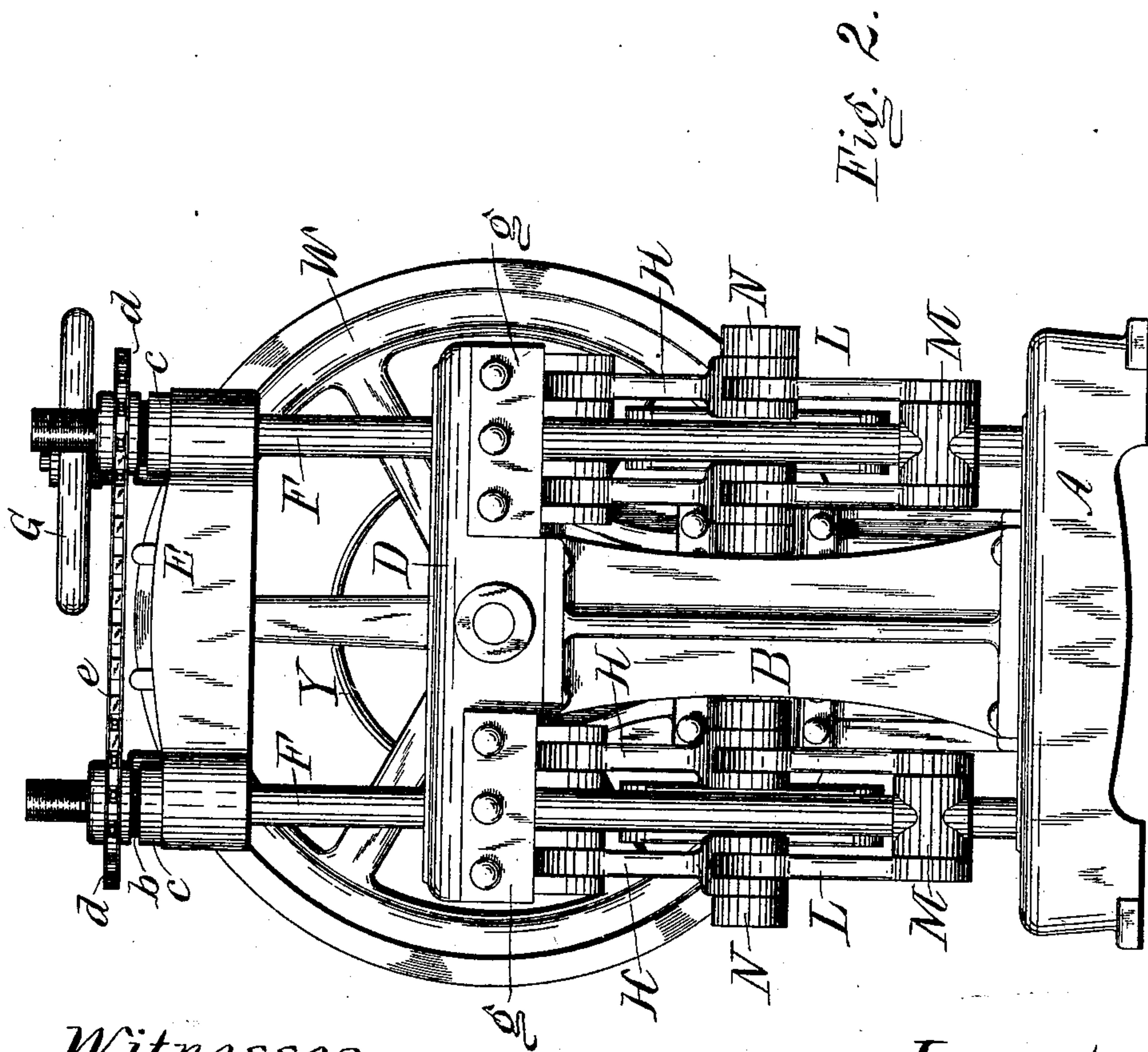


Fig. 2.

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3 Sheets—Sheet 3.

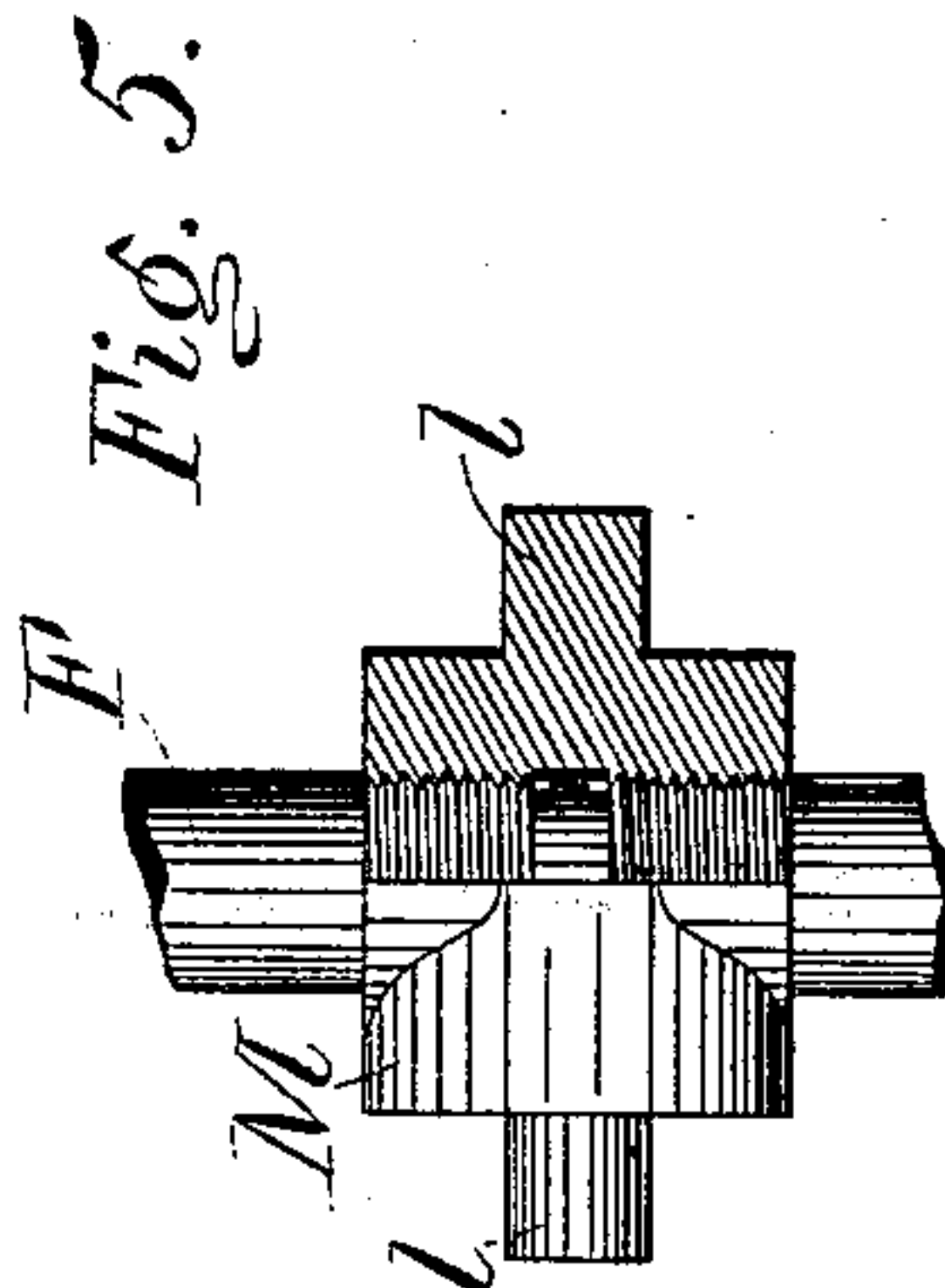
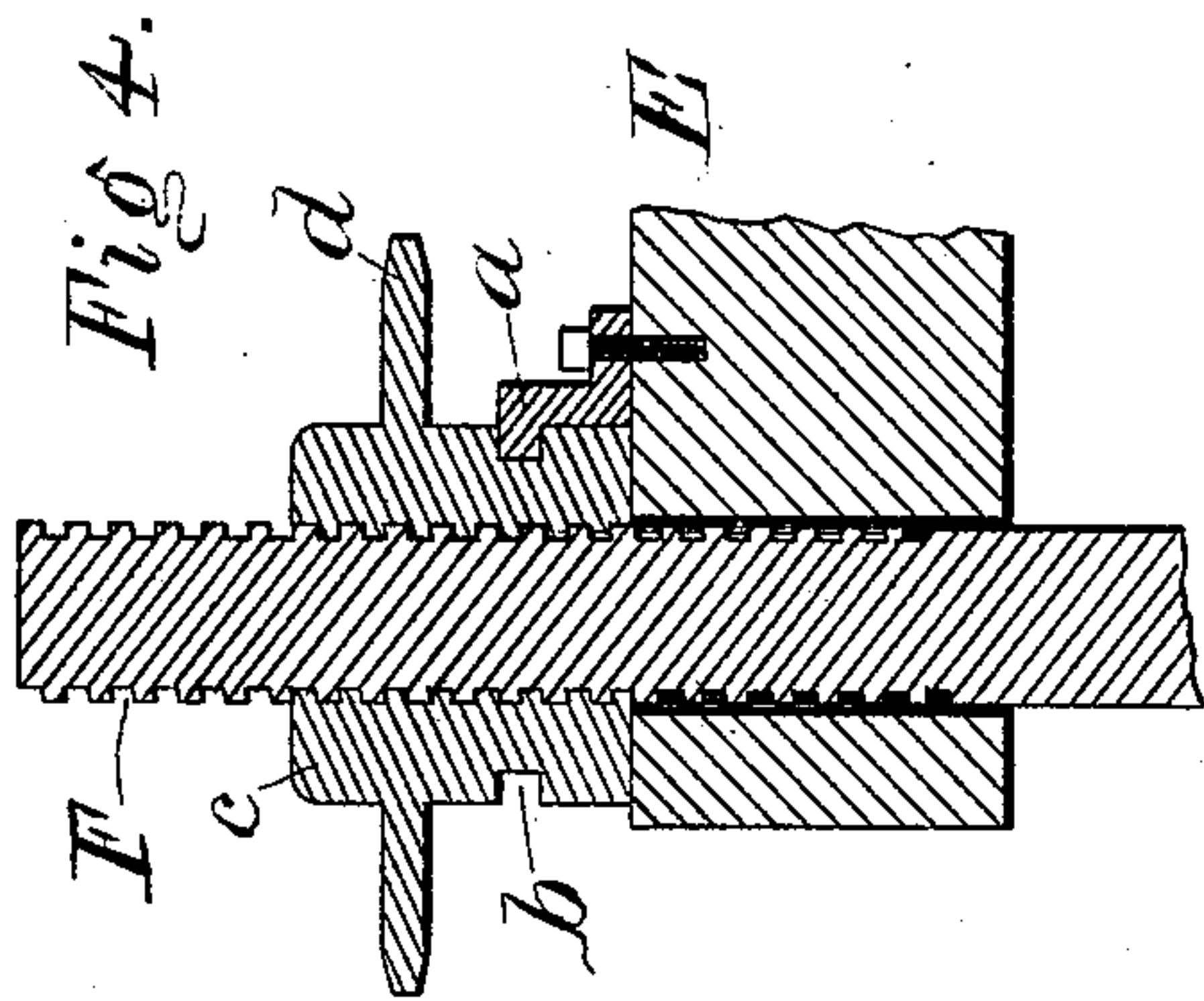
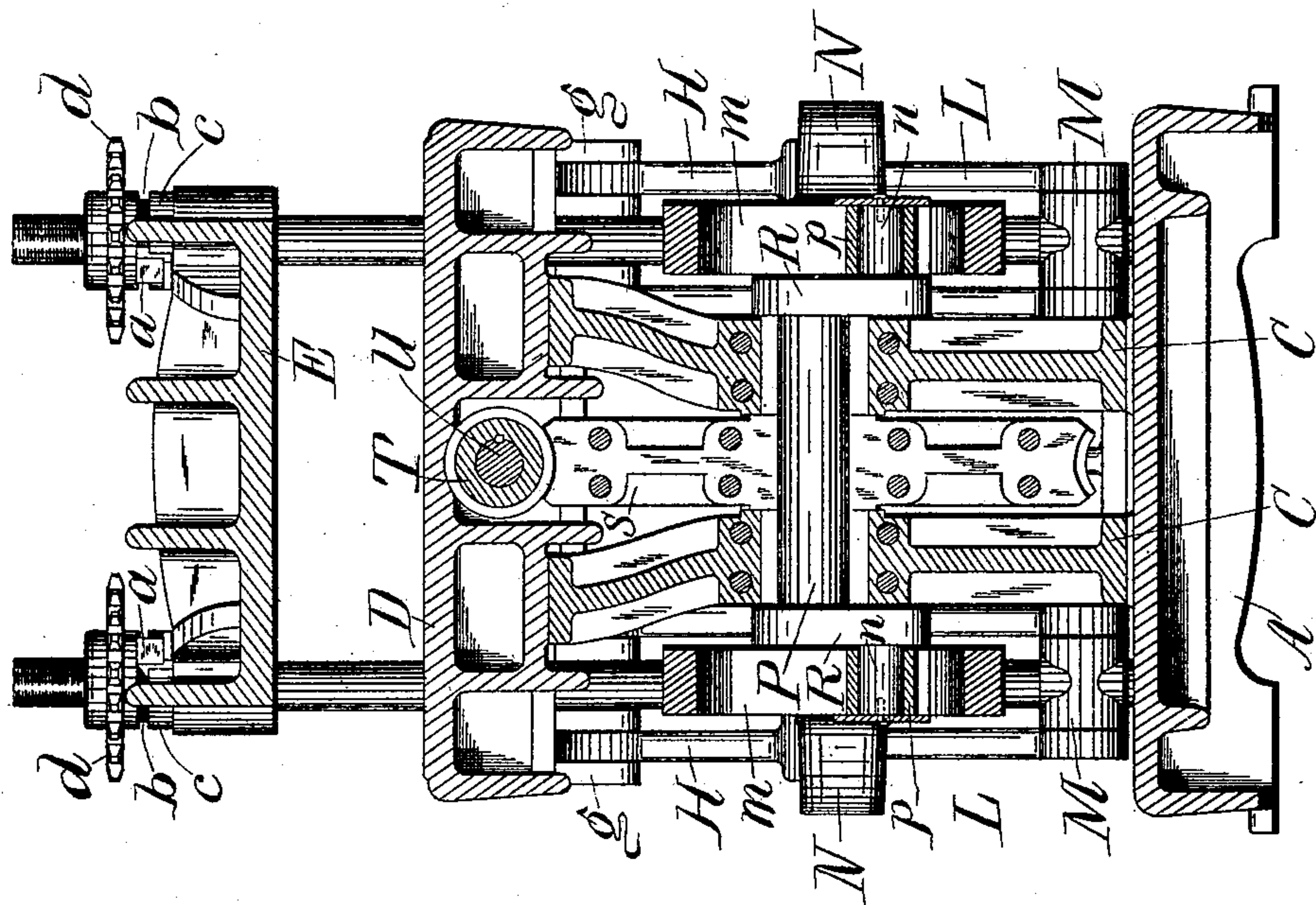


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES SEYBOLD, OF DAYTON, OHIO.

DIE-PRESS.

SPECIFICATION forming part of Letters Patent No. 633,295, dated September 19, 1899.

Application filed May 13, 1898. Serial No. 680,631. (No model.)

To all whom it may concern:

Be it known that I, CHARLES SEYBOLD, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Die-Presses for the Cutting of Blanks and the Like, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to that class of machines in which various shapes and forms are cut from paper blanks by the means of dies which are placed on the paper-stock and driven through the paper by the movement of a platen acting on the dies. The general construction heretofore of such presses has been to provide a suitable table with a movable platen driven by gearing, the power being applied at the middle portion of the platen and the dies being moved from place to place on the pile of paper-stock as each set of blanks is cut out. As the die-cutting knives are expensive, it is not usual to provide more than one die for each blank to be cut, and in order to use up all of the paper-stock the die is moved from place to place on the paper-stock as each set of blanks is cut. It will be evident, therefore, that, inasmuch as the power is applied at the middle portion of the platen, when the die is located at any point under the platen except at or near the middle portion there will be more or less strain on the platen and its guides. When the blanks are being cut from the edges of the paper-stock, this strain is very great and, no matter how perfectly adjusted, the guiding-surfaces of the platen soon wear, so that the platen will tip to greater or less extent, depending on the amount of wear and distance of the die from the application of the power. The pressure on the dies in such presses is therefore not uniform, and as a result portions of the last few sheets of paper-stock are not cut through, causing waste of material, as well as great wear and strain on the press. It is to overcome these objections that my invention is directed; and it consists in the main of that certain novel construction and arrangement of parts, to be hereinafter particularly pointed out and claimed, whereby the power may be applied to the platen at the four corners

thereof, obviating wear on the bearings and insuring uniform pressure at every point. The mechanical construction is in addition designed, as will also be pointed out and claimed, to obtain great power with much economy of space by the mechanical movements employed and by the location of all the working parts underneath the table, whereby there is provided a swift noiseless press of enormous power and maximum wear-resisting qualities.

In the drawings, Figure 1 is a front elevation of my improved press. Fig. 2 is a side elevation. Fig. 3 is a vertical cross-section of same. Fig. 4 is a detail vertical section of the upper end of one of the pulling-bars, showing the method of hanging the platen thereto. Fig. 5 is a similar section, partly in elevation, of the lower end of one of the pulling-bars. Fig. 6 is a top plan view of one of the toggle-connecting bars.

A is the metallic base-plate of the machine, upon which are mounted the end standards B B and the crank-standards C C, which standards support the table D, all these parts being firmly and rigidly bolted together to form a suitable and substantial framework for the working parts.

E is the platen, a substantially metallic plate, provided with openings at each of its four corners and being hung by means of the lugs *aa*, bolted thereto in the grooves *bb* of the nuts or collars *c c*. These nuts are provided with the sprocket-wheels *d*, integral therewith, and are screw-threaded and mounted on the screw-threaded ends of the four pulling-bars F F. A sprocket-chain *e* engages these four sprocket-wheels, and by means of the hand-wheel G, mounted on the platen, also carrying a sprocket *f* in engagement with the chain, the four corner-sprockets and the nuts *cc*, carrying the platen, can be simultaneously adjusted up and down on the pulling-bars F F, thus giving the platen a uniform and perfect horizontal adjustment to correspond with the thickness of the pile of paper-stock to be cut by the dies. The four pulling-bars pass vertically downward through suitable openings in the table D and play up and down with the operation of the machine in suitable sockets in the base-plate A.

Securely bolted to the four corners of the

table D, on the outside, are the brackets *g g*, within which are pivoted the upper toggle-links *H H*, a pair of links for each corner. These upper links are bifurcated at their lower ends, and between the bifurcations are pivoted the lower toggle-links *L L*, arranged in corresponding pairs.

Mounted on the lower ends of the pulling-bars *F F* are the nuts *M M*, screw-threaded so as to be adjustable thereon and carrying the horizontal studs *l l*, upon which studs the lower ends of the links *L L* are pivoted.

N N are the two cross-heads or connecting-bars, bifurcated at each end and pivoted to the pairs of toggle-links at their inner ends and connecting the corresponding toggles on opposite sides of the machine, the pivoted connection being made between the bifurcated ends of the connecting-bars, as shown.

Mounted in suitable boxes on the crank-standards *C C* is the crank-axle *P*, carrying at each end the cranks *R R*. The central portions of the connecting-bars *N N* are enlarged and formed with vertical slots *m m*, within which the studs *n n* on the cranks *R R* engage, the studs being mounted in boxes *p p*, which slide up and down in the slots. Keyed on the crank-shaft at its middle is a worm-gear *S*, made in two parts so that it can be mounted on the axle. This worm-gear meshes with the worm *T*, mounted and keyed on the horizontal driving-shaft *U*, journaled in suitable bearings in the table *D*. One end of this shaft carries the fly-wheel *W* and the usual tight and loose pulleys *Y Z*, by means of which power is applied for driving the shaft *U*.

It will be understood that for a convenient support for the piles of paper-stock before they are placed in the press a bracket-frame and table is usually supplied, attached to the table of the press at the front. This bracket-frame, however, I have not shown, as the construction thereof forms no part of my present invention and this support can be arranged in any of the well-known ways as a supplement to the machine.

From the above description the operation of the press can be readily understood.

The platen *E* being adjusted to the proper height by the hand-wheel *G*, the paper-stock, with the die on top, is placed on the table, and the driving power being applied to the driving-shaft *U* the crank-axle *P* is rotated. The crank-axle studs and their boxes sliding in the toggle-connecting bars *N* shift them horizontally and straighten out the toggles *H* and *L*. The effect of this is to apply the full power of the toggles through the nuts *M M* to pull down the pulling-bars *F F*, thus causing the platen to descend and forcing the dies through the paper-stock. The movement of

the platen will thus be absolutely uniform. No matter where the die may be placed on the paper, the pull on the platen being uniform at each corner the application of the power is directly over the die and the strain on the platen is reduced to a minimum. There can be no tipping of the platen and no consequent rack and strain with wear on the platen-guides, as is inevitable when the application of the power is at the center of the platen, as in older presses of this class. The leverage, moreover, is less at the start, when the least resistance is met, and greatest as the paper blanks are cut through, the toggle-levers reaching their maximum power at the end of the stroke, thus insuring an absolute cut of the bottom sheets. This construction, therefore, also serves to prevent wear and strain on the working parts, while in addition thereto I am enabled to place all of the working parts below the table, and thus out of the way and nearer the solid and substantial base of the press.

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

1. In a die-press, the combination, with a table and platen mounted above same, of bars attached to the four corners thereof, toggle-levers pivoted to said bars, connecting-bars coupling together the opposite toggle-levers and mechanism for shifting said connecting-bars to actuate said levers and to force said platen uniformly toward said table, substantially as shown and described.

2. In a die-press, the combination, with a table and platen mounted above same, of bars attached to the four corners thereof, toggle-levers pivoted to said bars, connecting-bars coupling together the opposite toggle-levers, double-crank shaft, with cranks engaging said connecting-bars, and means for driving said crank-shaft to shift said connecting-bars and operate said levers to force said platen uniformly toward the table, substantially as shown and described.

3. In a die-press, the combination, with a table and platen mounted above same, of bars attached to the four corners thereof, toggle-levers pivoted to said bars and to the table, connecting-bars coupling together the opposite toggle-levers, double-crank shaft with cranks engaging said connecting-bars, driving-shaft, with worm thereon, and worm-gear keyed to said crank-shaft meshing therewith, whereby the rotation of said driving-shaft will force said platen uniformly toward said table, substantially as shown and described.

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Witnesses:

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