

(No Model.)

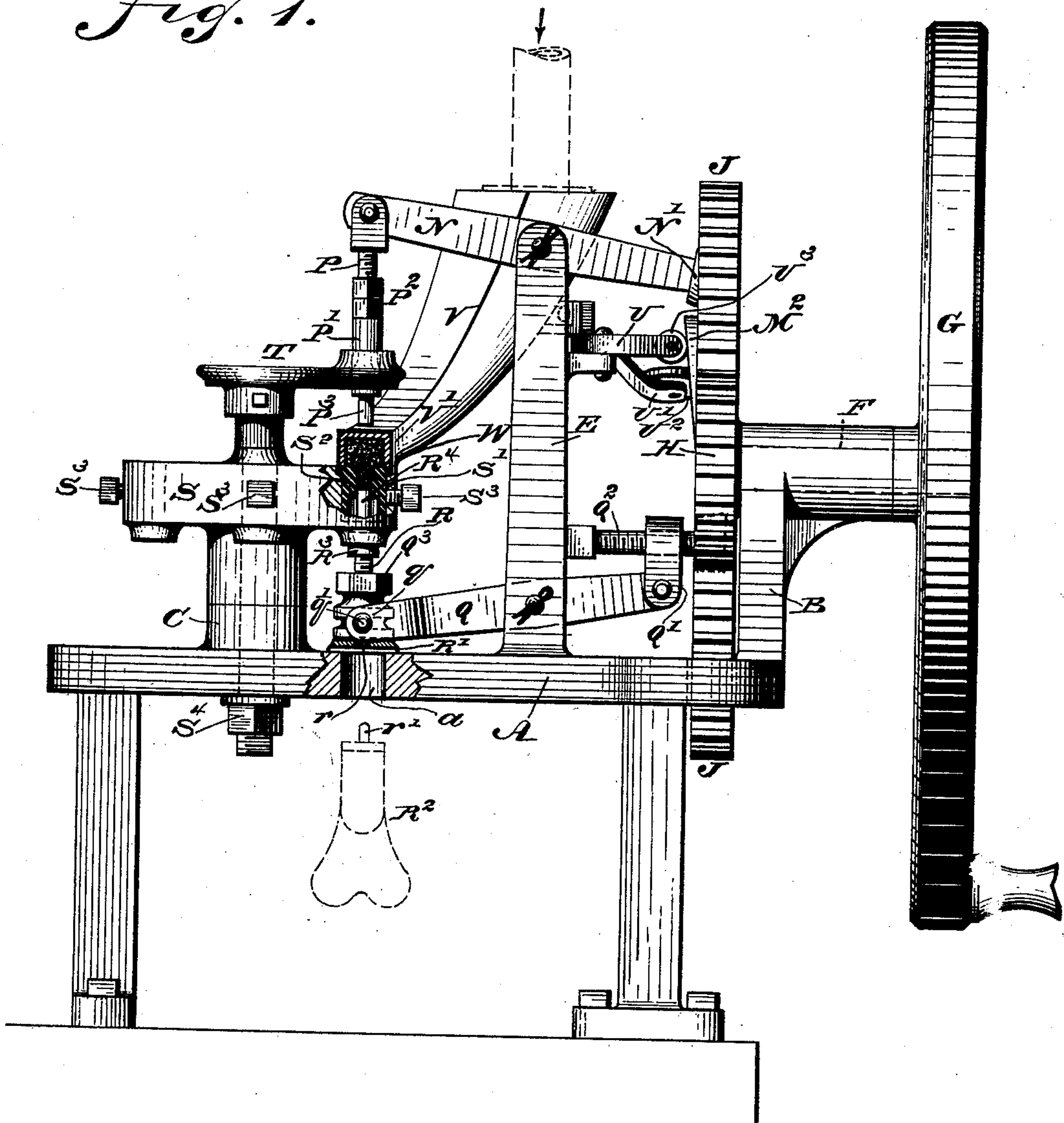
3 Sheets—Sheet 1.

A. G. WRIGHT.  
PILL MACHINE.

No. 432,502.

Patented July 15, 1890.

*fig. 1.*



WITNESSES:

*L. Dorrville,*  
*P. H. Dagle.*

INVENTOR  
*Alfred Wright*  
BY *John A. Dederheim*

ATTORNEY.

(No Model.)

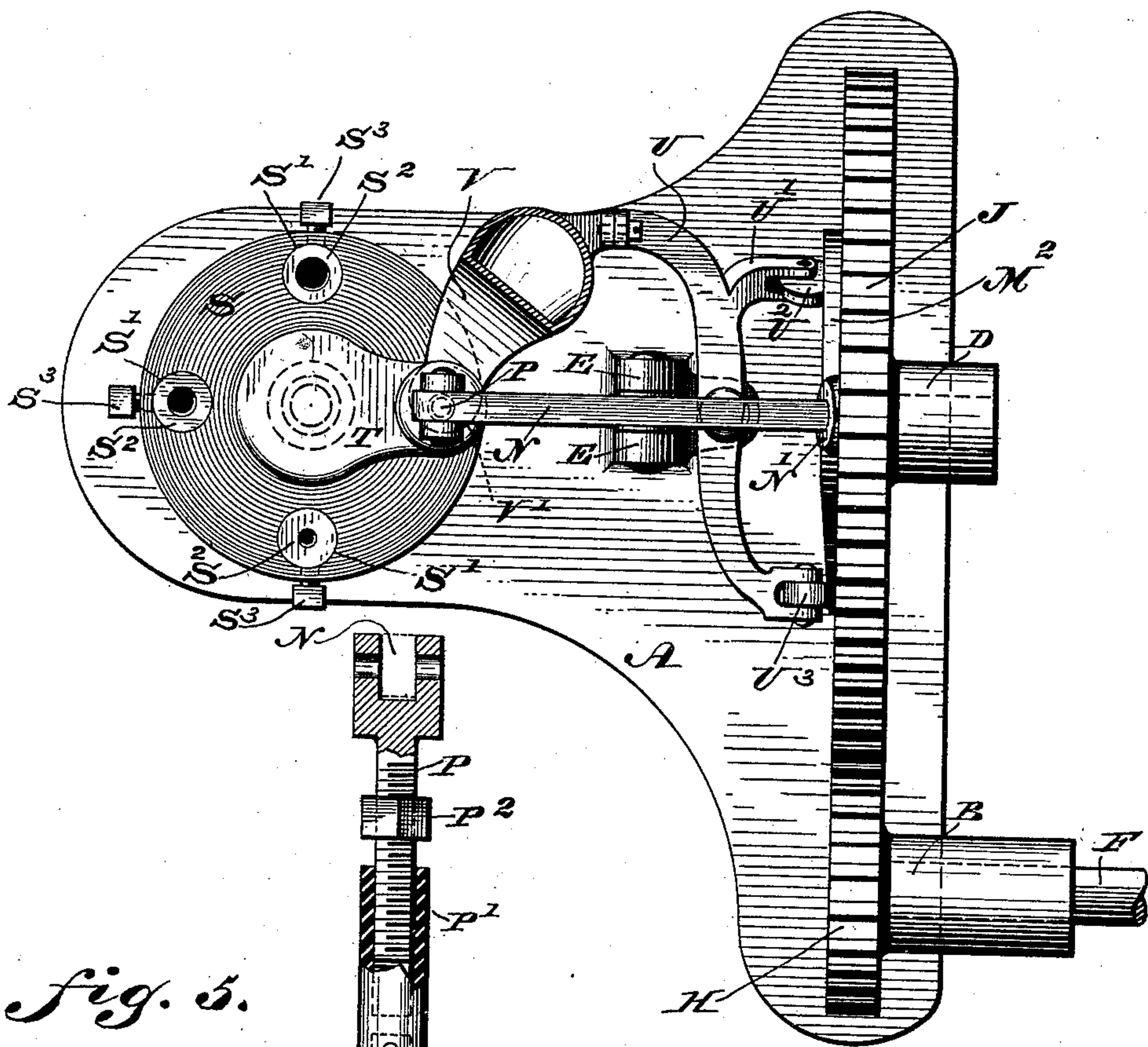
A. G. WRIGHT.  
PILL MACHINE.

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No. 432,502.

Patented July 15, 1890.

*fig. 2.*



*fig. 5.*

WITNESSES:  
*L. Dowdle, q<sup>r</sup>*  
*P. F. Ingle*

INVENTOR  
*Alfred G. Wright*  
BY *John D. Diederichsen*  
ATTORNEY.

(No Model.)

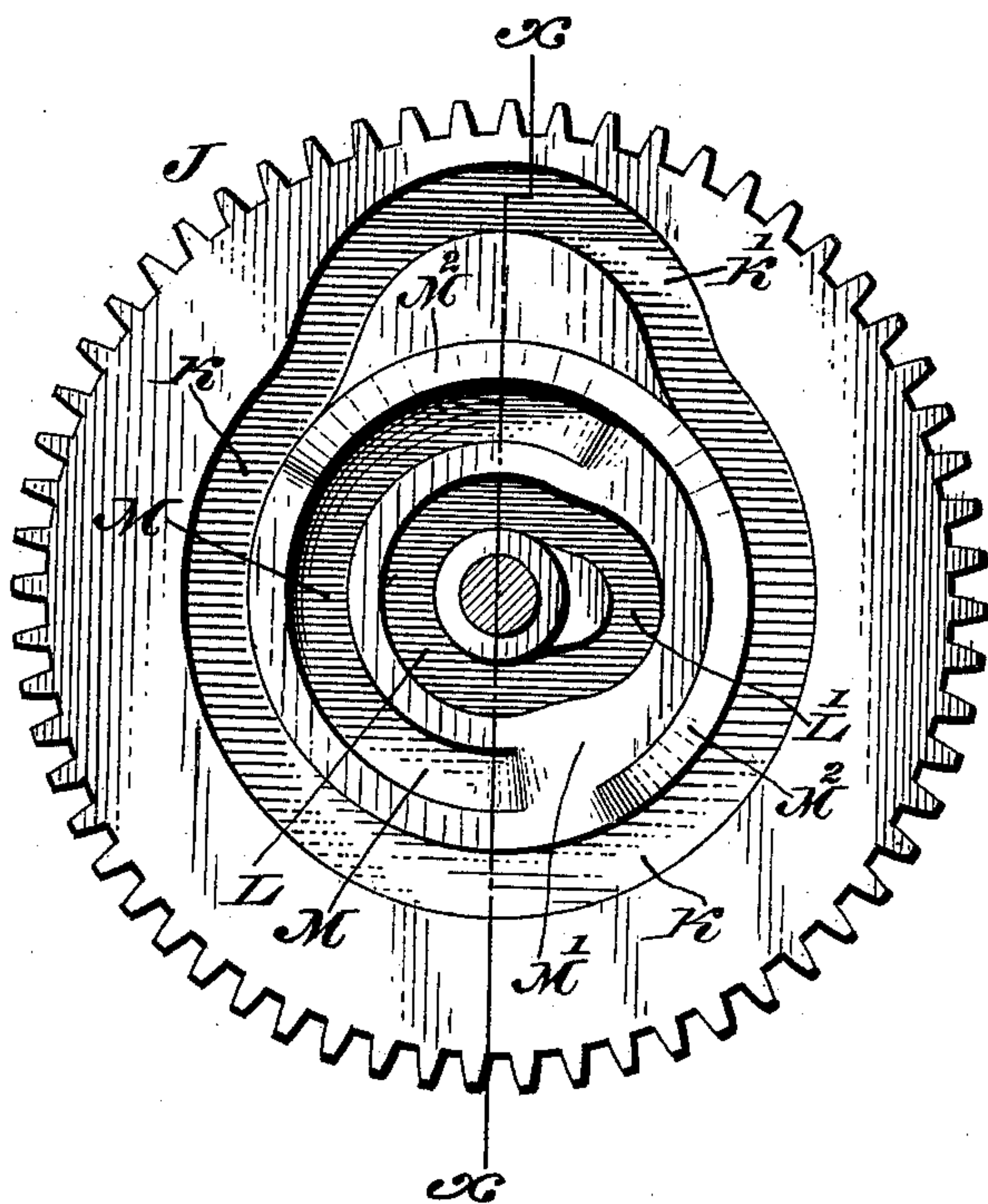
A. G. WRIGHT.  
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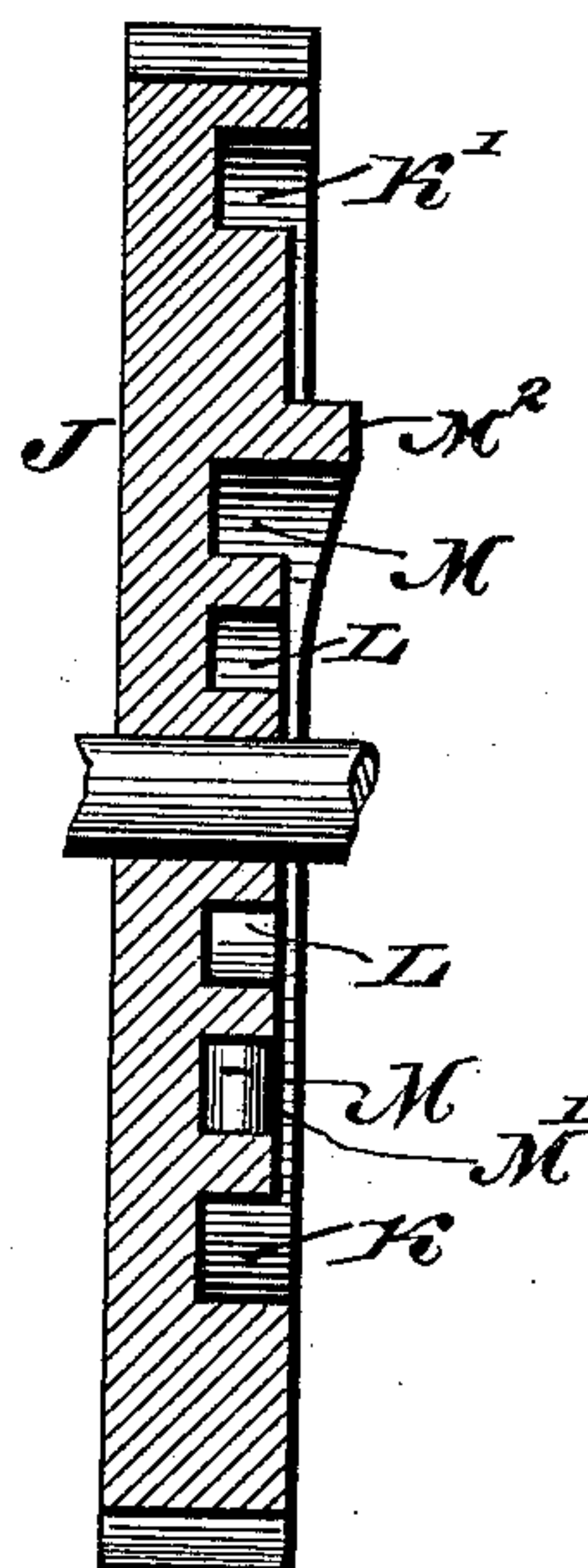
No. 432,502.

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*fig. 3.*



*fig. 4.*



WITNESSES:

*L. Douville,*  
*P. H. Sage*

INVENTOR  
*Alfred G. Wright*  
BY *J. W. Dierckheim*

ATTORNEY.



# UNITED STATES PATENT OFFICE.

ALFRED G. WRIGHT, OF WILMINGTON, DELAWARE, ASSIGNOR OF ONE-HALF  
TO WILLIAM A. MCCOWEN, OF SAME PLACE.

## PILL-MACHINE.

SPECIFICATION forming part of Letters Patent No. 432,502, dated July 15, 1890.

Application filed December 28, 1889. Serial No. 335,200. (No model.)

*To all whom it may concern:*

Be it known that I, ALFRED G. WRIGHT, a citizen of the United States, residing at Wilmington, in the county of New Castle and State of Delaware, have invented a new and useful Improvement in Pill-Machines, which improvement is fully set forth in the following specification and accompanying drawings.

This invention relates to a pill or tablet machine; and it consists of an automatically-operating feed-hopper and devices for controlling the movement of the same, together with mechanism for adjusting the several parts and the general construction and arrangement, as will be more fully hereinafter set forth.

Figure 1 represents a front elevation of a pill or tablet machine, partially broken away and embodying my invention. Fig. 2 represents a top plan view thereof. Fig. 3 represents a front elevation of the cam for operating the several parts. Fig. 4 represents a section on line  $x x$ , Fig. 3. Fig. 5 represents an enlarged detail sectional elevation of the upper and lower plunger, showing the adjusting mechanism therefor.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates a table or rest having posts B, C, and D, and standards E for supporting the mechanism. The post B has a journal-bearing at its upper end, in which is mounted a drive-shaft F, operated by a hand wheel or pulley G, and on the inner end of said drive-shaft is keyed a pinion H, meshing with a gear-wheel J, situated on a stub-shaft supported by the post D. As seen in Figs. 3 and 4, said gear-wheel J is formed with an outer cam-groove K, the greater portion of which is concentric with the said wheel and merges into an eccentric extension K' thereof. In the central part of the wheel J is a cam-groove L, having an extension L', being smaller but similar to groove K, with the exception that the extension L' is at a right angle to the extension K'. Outside of and adjacent to groove L is a concentric groove M, extending partially around the

wheel and merging into a table M', and formed on the wall between the said grooves K and M is a raised rib M<sup>2</sup>, merging into said wall.

In the upper part of the standards E is mounted a rocking lever N, having a roller N' on its one end engaging the groove K of the wheel J. The opposite end of said lever is pivotally connected to a yoke on the upper end of a screw-rod P, having a sleeve P' fitted on the lower end thereof. The said screw-rod P has set and jam nuts P<sup>2</sup> mounted thereon for the purpose of adjustment, and the lower end of the sleeve P' has secured therein a former or cavities plunger P<sup>3</sup>.

In the lower part of the standards E is pivotally supported a rocking lever Q, pivotally attached at one end to a collar Q', having an adjusting-screw Q<sup>2</sup> passing therethrough, with a roller thereon engaging the groove L of wheel J. The opposite end of the lever Q is formed with a yoke q, having pins q' fitting a groove in a sleeve Q<sup>3</sup>, in which is adjustably situated a screw-rod or post R, having a slotted head R' with an opening r therein, said head being adapted to receive a key or analogous device R<sup>2</sup>, (shown in Fig. 1,) having a pin r' to fit the opening r and adapted to be inserted through an opening a in table A.

On the upper end of the post R is mounted a screw-threaded sleeve R<sup>3</sup>, to which is secured a former or cavities plunger R<sup>4</sup> similar in construction and configuration to the plunger P<sup>3</sup>.

On the post C is revolvably mounted a table S, preferably of circular form, having a series of openings S' therein, in which are removably fitted die or compressing blocks S<sup>2</sup>, held stationary by set-screws S<sup>3</sup>, a series of said blocks being employed with openings varying in dimension, so as to provide for the formation of different sizes of pills or tablets. The plunger R<sup>4</sup> extends upward through the bottom of the said openings in the table S and block S<sup>2</sup>, the latter being in position over the said plunger, and the plunger P<sup>3</sup> moves into the said block S<sup>2</sup> from above.

The table S is held in stationary adjust-



ment by a clamping rod and nut  $S^4$ , on the upper end of which is secured a guide-plate T for the plunger  $P^3$ .

A horizontally-oscillating arm U is pivotally supported to one side of the standards E, and is constructed with an ear  $U'$ , in which is mounted a roller  $U^2$ , adapted to move in the depression or groove M of wheel J. In one end of the said arm U is also located a roller  $U^3$ , adapted to engage the rib  $M^2$  of the said wheel J. The rollers  $U^2$  and  $U^3$  are arranged at such an angle as to properly engage the groove M and rib  $M^2$ . To the end of the arm U, opposite to the roller  $U^3$ , is attached a hopper V, preferably of the form shown, and having a lower reduced bent end  $V'$  to fit snugly against the table S and move thereover, the said end  $V'$  thereof being formed with a feed-opening W in its under side.

As shown in dotted lines, the hopper V may be supplied with a suitable agitator or feeder therein to force the material down to the opening W.

In operation the plungers  $P^3$  and  $R^4$ , having been previously adjusted, the arm U is given an oscillating movement by the rollers  $U^2$  and  $U^3$  thereof respectively engaging the depression or groove M and the rib  $M^2$  of wheel J, and the opening W in the bottom of the said hopper is alternately moved over and drawn away from the opening in the die-block  $S^2$  in position for engagement thereby. By this means a predetermined quantity of the material to be compressed is deposited in the said die-block. After making said deposit the hopper is drawn away from said die-block, and the roller  $N'$ , having reached the extension  $K'$  of the groove K of said wheel J, the arm N is oscillated to move the plunger  $P^3$  downward into the die-block  $S^2$  and compress the material in said block against the end of the lower plunger  $R^4$ . The said plunger  $R^4$  remains immovable during the operation above set forth until just as the plunger  $P^3$  rises said lower plunger  $R^4$  is given an upward movement to force the pill or tablet upward out of the die-block, and is held elevated to support the pill or tablet until removed therefrom by the return of the end of the hopper V, which pushes the pill onto the table A. This operation of the said plunger  $R^4$  is accomplished by means of the roller on the end of the screw-rod  $Q^2$  engaging the extension  $L'$  of the groove L in wheel J, thereby oscillating the arm Q. This operation becoming successive, the pills or tablets are rapidly formed.

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

1. In a pill-machine, a feed-hopper having

a vibrating movement in the arc of a circle over and in contact with a die-support, and a horizontally-oscillating arm for operating said hopper, substantially as described.

2. In a pill-machine, a feed-hopper having a vibrating movement over and in contact with a die-support, a horizontally-oscillating arm for operating said hopper, and a cam for actuating said arm, substantially as described.

3. In a pill-machine, a table having one or more die-blocks therein, upper and lower adjustable plungers operated by rocking arms, a vibrating hopper, and a horizontally-oscillating arm for operating said hopper, substantially as described.

4. In a pill-machine, a table having one or more die-blocks therein, a vibrating feed-hopper attached to a horizontally-oscillating arm, adjustable plungers having rocking arms attached thereto, and a wheel having cam grooves and projections for operating said parts, substantially as described.

5. In a pill-machine, the combination of a rotatable table having a die-block therein, a feed-hopper vibrating in the arc of a circle and having a lower end curved to one side of the supply-opening of said hopper and provided with a lower feed-opening, the plungers, and the devices for operating said parts, substantially as described.

6. In a pill-machine, the combination of a table having a die-block, a hopper having a lower bent end with a bottom feed-opening, an oscillating arm having rollers thereon, a wheel with cam grooves and projections between said grooves, the plungers, and the connections for said parts, substantially as described.

7. In a pill-machine, a table A, a table S, with one or more die-blocks  $S^2$ , the adjustable plungers  $P^3$  and  $R^4$ , attached to rocking levers N and Q, standards E, supporting said levers, the screw-rod  $Q^2$ , for adjusting lever Q, the oscillating arm U, having rollers  $U^2$  and  $U^3$ , a hopper V, attached to said arm U, and a wheel J, having cam grooves and projections, substantially as described.

8. In a pill-machine, the combination of a table supporting die-blocks, a feed-hopper vibrating in the arc of a circle over and in contact with said table, an upper plunger, and a lower plunger adapted to be held elevated to support the formed pill or tablet in position to be removed by the hopper, and means for operating said parts, substantially as described.

ALFRED G. WRIGHT

Witnesses:

JOHN A. WIEDERSHEIM,  
A. P. JENNINGS.