

No. 675,181.

Patented May 28, 1901.

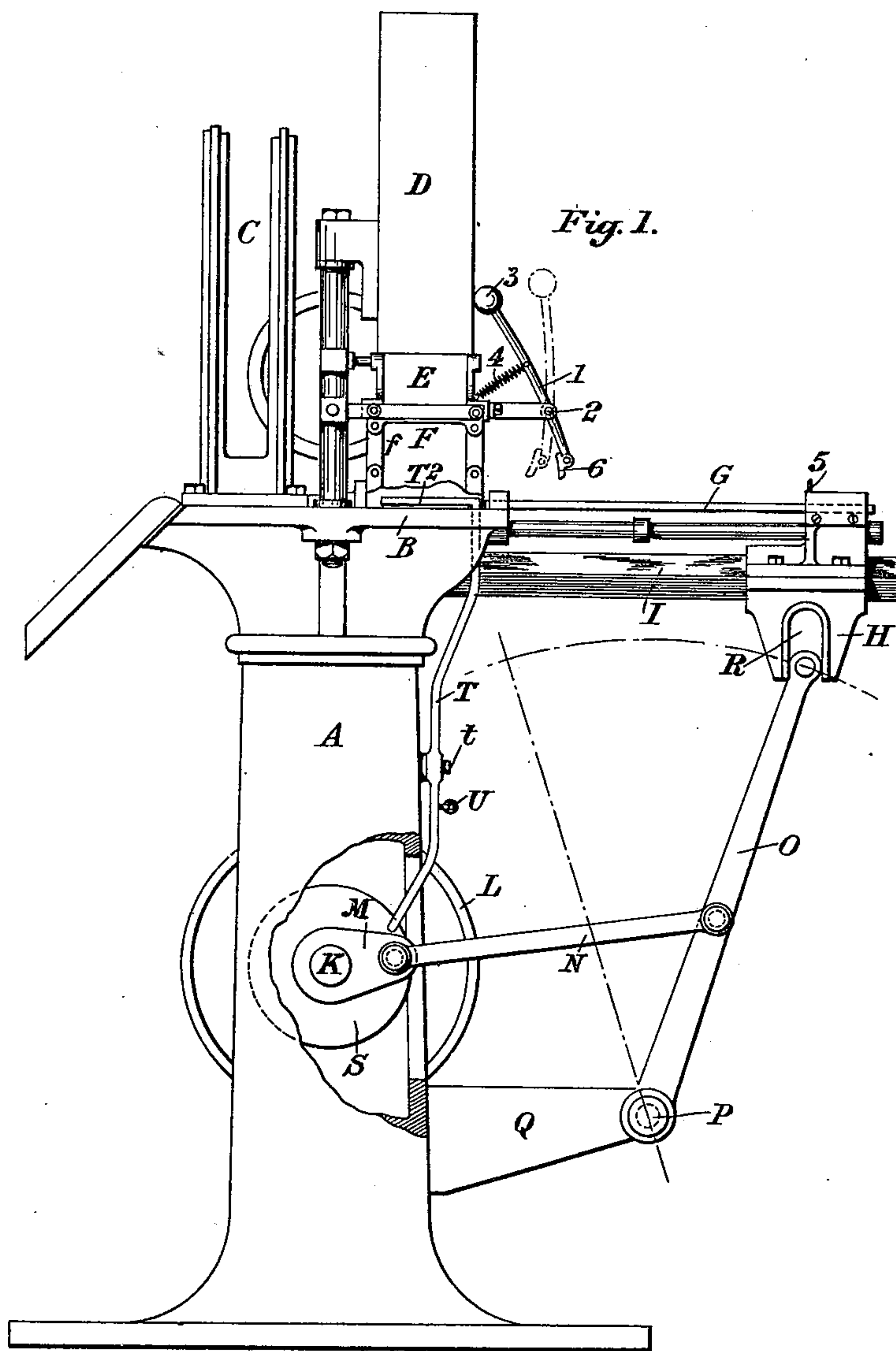
H. H. WILLS.

MACHINE FOR PACKING CIGARETTES.

(Application filed Feb. 2, 1901.)

(No Model.)

4 Sheets—Sheet 1.



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HIS ATTORNEYS.

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Fig. 3.

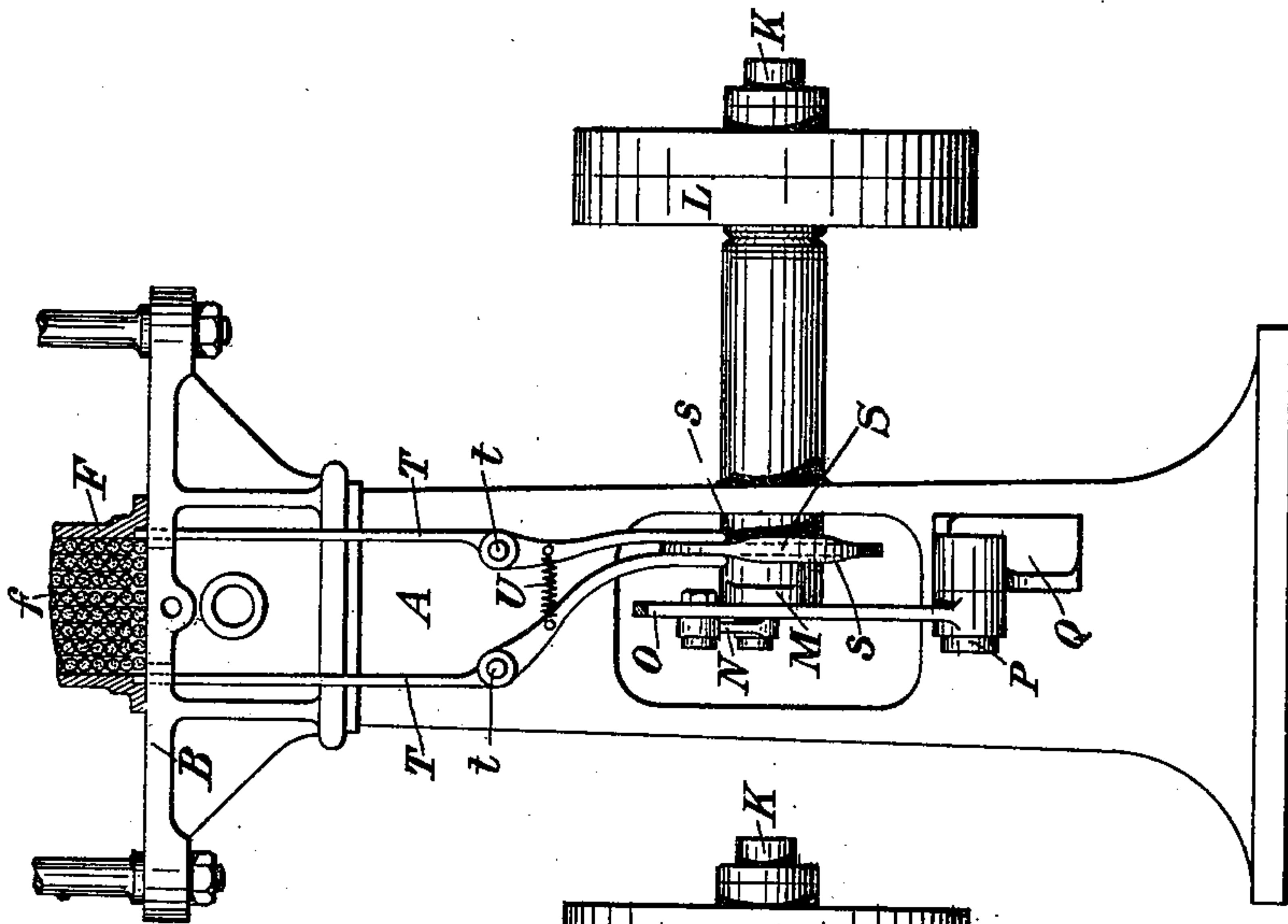
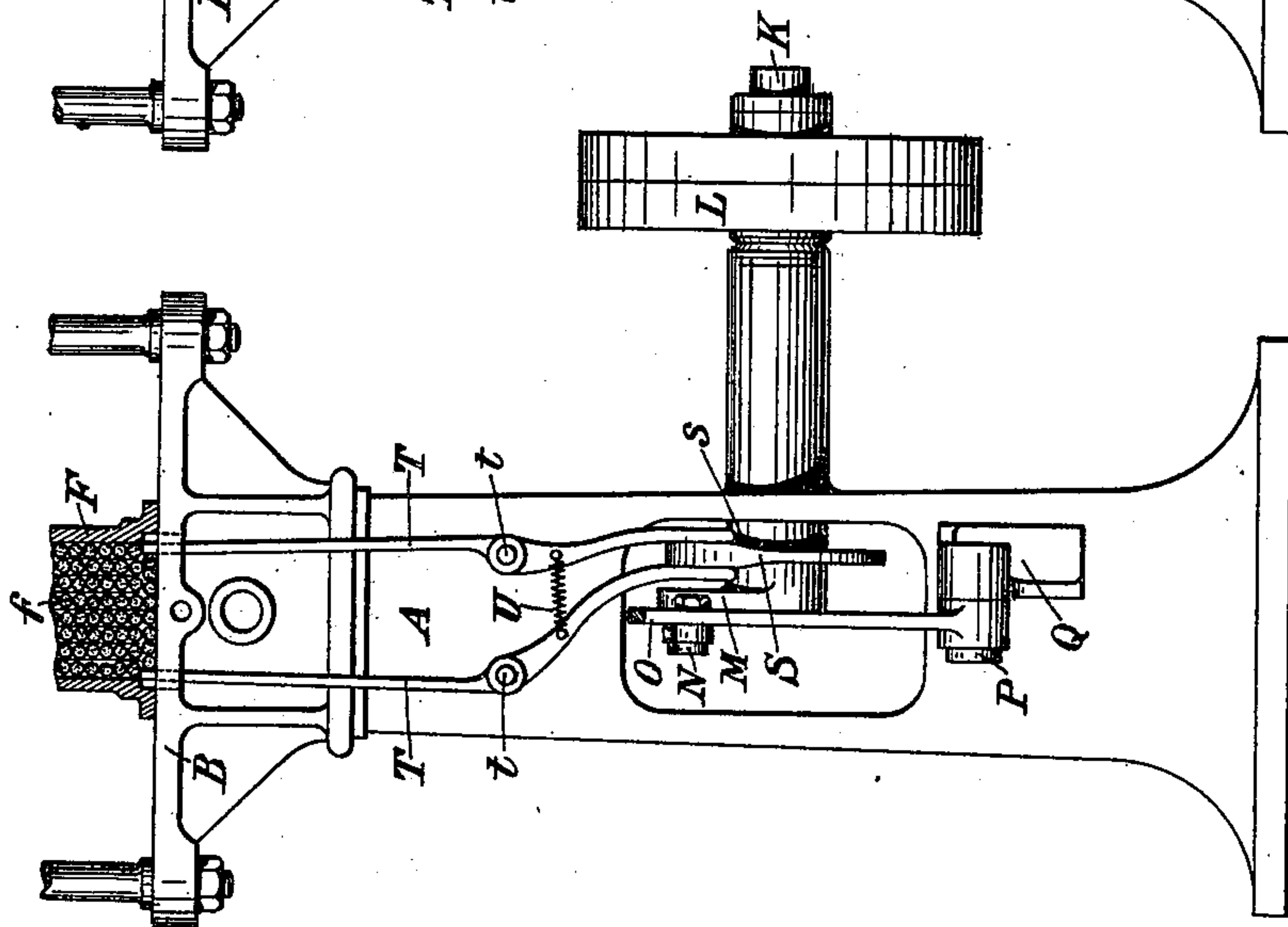


Fig. 2.



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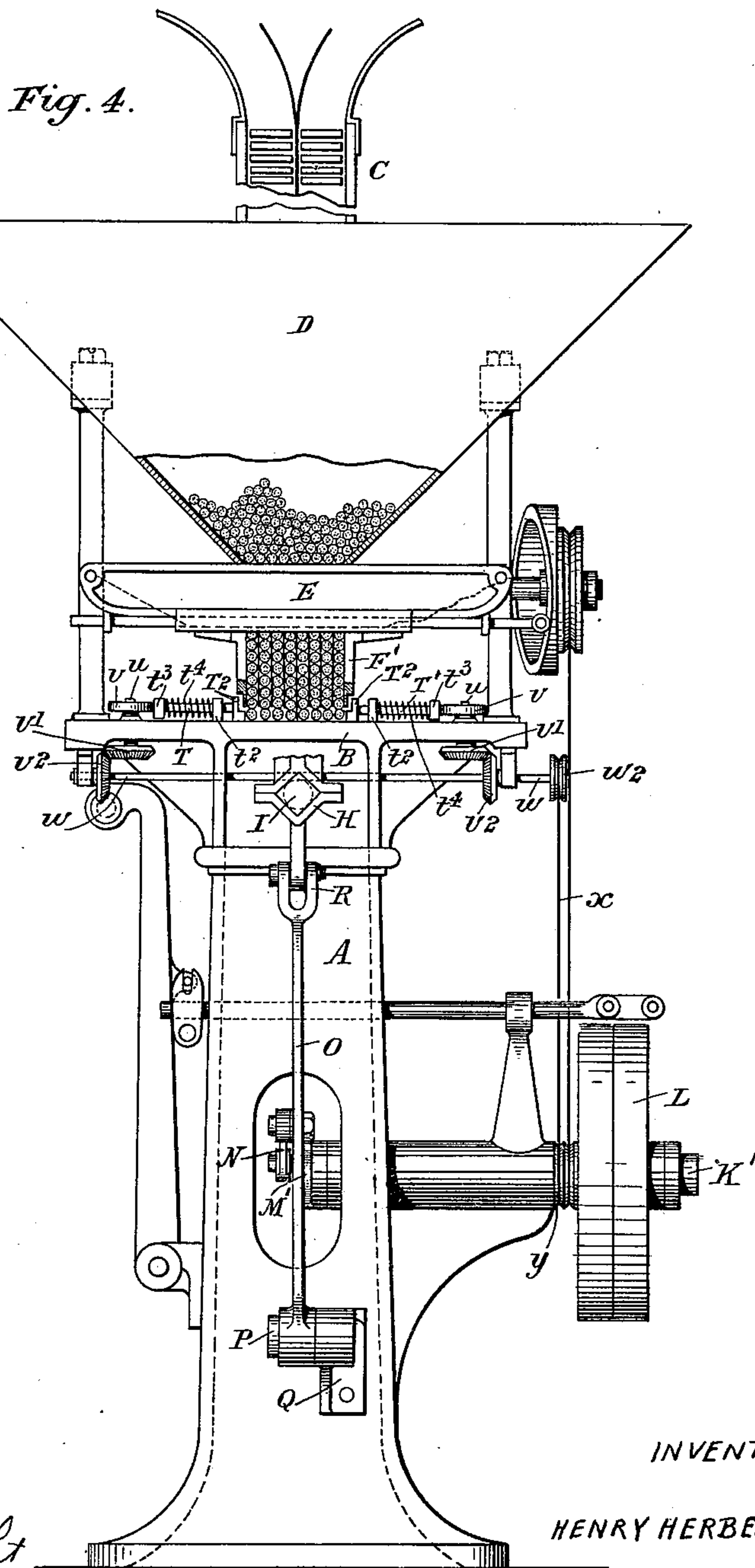
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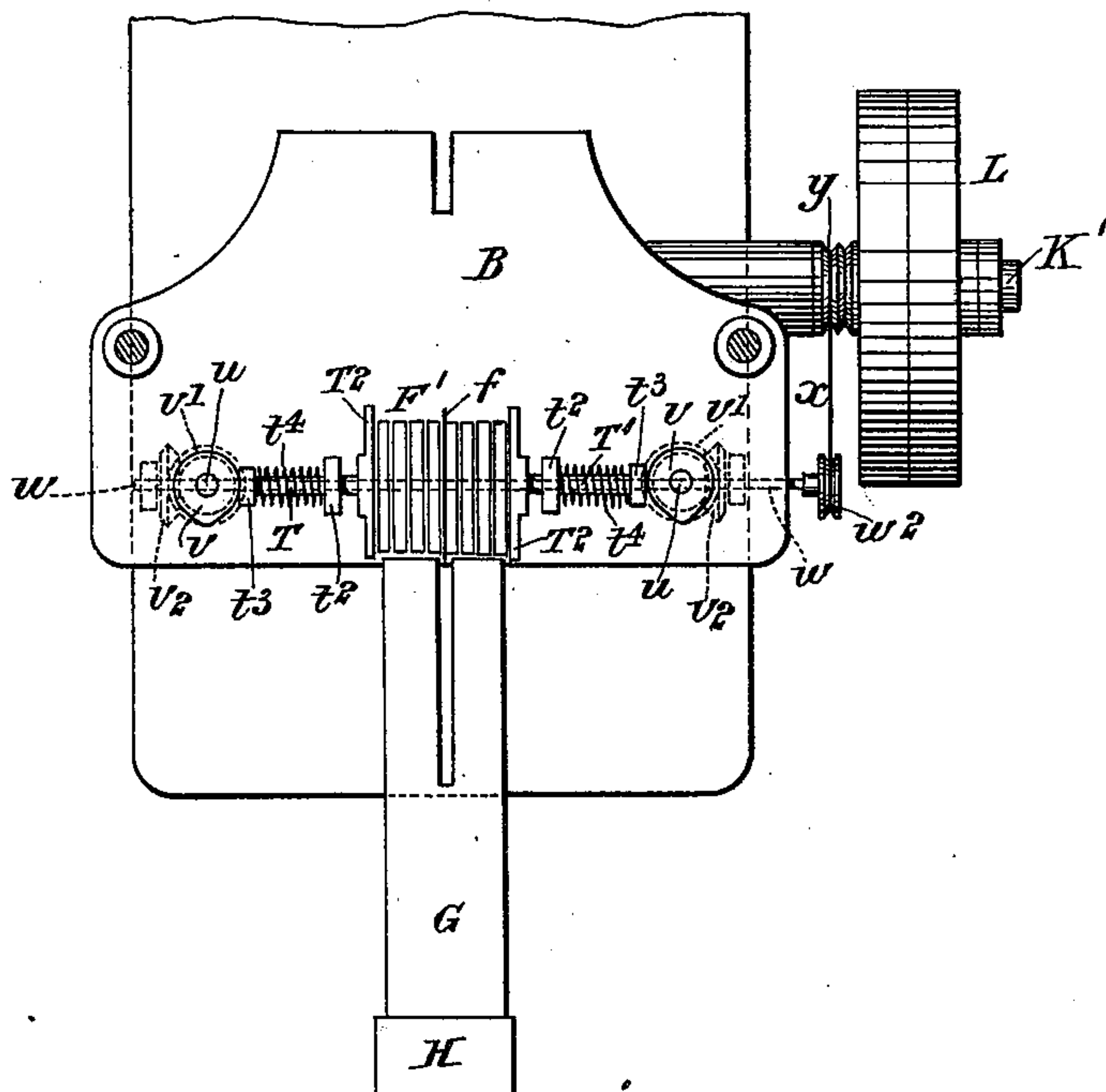
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Fig. 5.



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UNITED STATES PATENT OFFICE.

HENRY HERBERT WILLS, OF WRINGTON, ENGLAND.

MACHINE FOR PACKING CIGARETTES.

SPECIFICATION forming part of Letters Patent No. 675,181, dated May 28, 1901.

Application filed February 2, 1901. Serial No. 45,702. (No model.)

To all whom it may concern:

Be it known that I, HENRY HERBERT WILLS, gentleman, a subject of the Queen of Great Britain and Ireland, residing at Barley Wood, Wrington, in the county of Somerset, England, have invented certain Improvements in Machines for Packing Cigarettes, of which the following is a specification.

My invention relates to machines for packing cigarettes into cases, the said machines being of the kind wherein the cigarettes are fed from a hopper into a magazine divided into vertical or, if desired, slightly-inclined channels in number according to the number of cigarettes in each row to be packed into each case, the said cigarettes as they emerge from the channels being forced toward and into the cases.

My invention is, for example, applicable to the machine described in the specification of British Letters Patent No. 4,871 of 1900, granted to Henry Rankin.

The object of my invention is to provide means whereby the cigarettes are fed forward with certainty and regularity and the necessity for the use of the complicated plunger or pusher described in connection with the said Rankin machine is obviated. According to my invention I provide a side plunger or presser or side plungers or pressers to press together the series of cigarettes as they are about to be passed from the magazine into the cases, so as to bring all the cigarettes of each series within range of the action of the pusher or pushers, by which the cigarettes are forced toward the cases. The side presser or pressers can be operated from any suitable moving part of the machine. For example, when two side pressers are used they can be arranged at the ends of levers whose other ends are acted upon by a cam or incline, so as to force them outward, and consequently force the ends carrying the pressers inward to press the cigarettes together. If only one presser be employed, it can be similarly acted upon by a cam or incline, so as to press the cigarettes between the said plunger or presser and the lower end of the side wall of the magazine. In order to insure the proper discharge of the cigarettes from the hopper and to prevent arching of the cigarettes in the said hop-

per, I provide means whereby one or both of the sides of the said hopper can be vibrated, such vibration being effected, for example, by hinging the said side or sides and operating it or them by a cam or other device actuated from any suitable moving part of the machine.

In order that my invention and the manner in which it can be performed may be clearly understood, I will describe, with reference to the accompanying drawings, arrangements according to my said invention.

Figure 1 is a side elevation of so much of a machine described in the specification of Rankin's patent, hereinbefore referred to, as is necessary to illustrate the application thereof to arrangements according to my invention; and Figs. 2 and 3 are front elevations, partly in section, of part of Fig. 1, showing the cigarette-pressing mechanism in different positions. Figs. 4 and 5 represent, in elevation and plan, respectively, another arrangement for pressing the cigarettes according to my invention.

Referring to Figs. 1, 2, and 3, A is a pedestal or standard provided at top with a table or platform B, which carries the hopper C to contain the cigarette-cases and the hopper D to contain the cigarettes to be inserted into the said cases. E is a supplementary hopper into which the cigarettes pass from the hopper D, the said supplementary hopper having flexible sides or ends operated in the manner described in the aforesaid specification of Rankin's patent for the purpose of agitating the cigarettes contained in the said hopper to insure them entering the magazine F, arranged beneath the said hopper E, and divided by vertical (or it may be somewhat inclined) plates *f* into a number of compartments, as shown in Figs. 2 and 3, each compartment containing a single pile of cigarettes, space being left between the lower edges of the dividing-plates *f* and the table B, into which space the lowermost cigarette of each pile of cigarettes enters from the magazine F, forming a horizontal row of cigarettes. If desired, the space between the lower edges of the division-plates *f* and the table B may be equal to the height of two or more cigarettes, so that two or more cigarettes of

each pile of cigarettes in each compartment can be forced by a pusher of sufficient width from the said space at each forward stroke of the pusher. The front and rear sides of the magazine F have each an opening in the lower end to admit of the passage of the pusher to force the cigarettes from beneath the lower edges of the division-plates *f* into the case or cases, which are in position to receive them. The pusher G is connected at its outer end to a slipper H, fitted to slide on a square or equivalently-shaped bar I, secured to and projecting from the pedestal or standard A. K is the main driving-shaft, carrying fast and loose pulleys L, around which passes a driving-strap from any suitable motor. On the shaft K is a crank-arm M, connected by a rod N to a lever O, centered at P to a bracket Q on the pedestal or standard A, the upper end of the said lever O engaging in a slot R in the under side of the slipper H, so that by the rotation of the crank M reciprocating movements will be given to the slipper H, and consequently to the pusher G. Fast on the shaft K is a disk S, having cam-surfaces *s* on both sides, and against the sides of this cam-disk the lower arms of two levers T are maintained in contact by a spring U. The levers T are centered on studs *t* on the pedestal or standard A, and the upper ends of the said levers are provided with horizontal extensions T², constituting the pressers, these extensions being of a length equal or about equal to that of the cigarettes and of a width to bear on the sides of the outermost of the horizontal row or superposed rows of cigarettes in the space beneath the magazine F. The cam-surfaces *s* on the disk S are situated with reference to the throw of the crank M, so that just before the pusher G moves forward to expel the cigarettes from the space beneath the magazine F the cam-surfaces *s* will enter between the lower ends of the levers T, thereby forcing the said lower ends apart and causing the horizontal extensions T² on the upper ends of the said levers to move toward each other and press together the row or superposed rows of cigarettes between them and the central plate *f*, (which is extended down to the surface of the table to form an abutment for the cigarettes,) so as to bring the said cigarettes within the range of the action of the pusher G, and thereby insure that they are properly and readily inserted into the case or cases in position to receive them without damaging the cigarettes or the case or cases and without danger of the pusher coming into contact with the edges of the open end of the said case or cases. If desired, the row or rows of cigarettes may be pressed from one side only, one only of the levers T, with its extension T², being used and the spring U being connected at one end to the said lever and at the other end to the frame of the machine, the central plate *f* in this case not being ex-

tended below the others, the side of the magazine opposite that at which the lever operates forming an abutment for the cigarettes when they are pressed by the extension T² of the single lever employed.

Figs. 4 and 5 illustrate another arrangement by which the row or rows of cigarettes in the space beneath the magazine F' are pressed together according to my invention. In this arrangement this is effected by plates or bars T², carried on rods T', arranged to slide horizontally in guides *t*² on opposite sides of the space beneath the magazine F', the said rods T' being each provided with a head *t*³, between which and the guide *t*² is interposed a spring *t*⁴, which acts to force the plate or bar away from the cigarettes. Each plate or bar is operated by a cam *v*, carried on a short vertical shaft *u* and bearing on the head *t*³ on the rod T', so as to act in opposition to the spring *t*⁴. On the short shafts *u* are bevel-wheels *v*', gearing with corresponding wheels *v*², fast on a horizontal shaft *w*, which shaft also carries a pulley *w*², around which passes a driving band or strap *x* from a pulley *y* on the main driving-shaft K'. Rotary motion is given to the cams through the gearing described, the movements of the pusher G' being imparted by the crank M', as in the arrangement first described, the cams being timed with reference to the movements of the pusher, so as to operate the plates or bars T² to press the cigarettes together just before the pusher comes into contact therewith to expel them from the space beneath the magazine.

Instead of employing two plates or bars T² for pressing the cigarettes between them, one such plate or bar T² and gear for operating it only may be used, it pressing the cigarettes between itself and the lower part of the opposite side of the magazine F'.

To prevent the cigarettes from arching or jamming in the hopper D, vibration is imparted to the cigarettes in the said hopper. For this purpose a knocking arrangement may be provided, as shown, for example, in Fig. 1, in which 1 is a lever or hammer, centered at 2 to a bracket on the lower hopper E, the head or striker 3 of the lever or hammer being normally held in contact with one side of the hopper D by a spring 4. On the slipper H is a projection 5, which at each forward movement of the slipper comes into contact with a trip-piece 6 on the lower end of the lever or hammer 1, causing the said lever or hammer to turn on its center 2 into the position shown by dotted lines, pulling the spring 4 into tension. After the projection 5 passes the trip-piece 6 the spring 4 acts to cause the lever or hammer to strike the side of the hopper D, and thereby impart vibration to the cigarettes contained therein and insure their being properly discharged into the hopper E.

I do not restrict myself to the precise de-

tails of the arrangements described, as they may be varied without departing from the nature of my invention.

I claim as my invention—

5 1. A machine for packing cigarettes into boxes comprising a feeding-hopper, a table, means for feeding a number of cigarettes in horizontal rows to the table, means for compressing the cigarettes of the rows horizontally and at the same time maintaining their
10 alinement, in combination with means for projecting said rows of cigarettes into a box while compressed and operating means timed to cause the compression to precede the projec-
15 tion, as and for the purpose described.

2. In a machine for packing cigarettes in cases, the combination with a hopper containing the cigarettes to be packed, of a magazine divided by vertical plates into separate
20 vertical compartments so that the cigarettes pass thereinto in vertical separate series, a space being left beneath the said plates, and a horizontal reciprocating pusher to project the cigarettes from the space, a compressor
25 operating in the said space at right angles to

the said pusher, and means for operating first the said compressor and afterward the said pusher, substantially as described.

3. In a machine for packing cigarettes in cases, the combination with a hopper containing the cigarettes to be packed, and provided
30 with means for agitating the cigarettes in the said hopper, of a magazine divided by vertical plates into separate vertical compartments, so that the cigarettes pass thereinto in vertical
35 separate series, a space being left beneath the said plates, and a horizontal reciprocating pusher to project the cigarettes from the space, and a compressor operating in the said space
40 at right angles to the said pusher, and means for operating first the said compressor and afterward the said pusher, substantially as described.

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

HENRY HERBERT WILLS.

Witnesses:

ANDREW W. WILKINSON,
JAMES PERRY COOMBE.