

(No Model.)

3 Sheets—Sheet 1.

A. COLTON.
PILL MACHINE.

No. 513,986.

Patented Feb. 6, 1894.

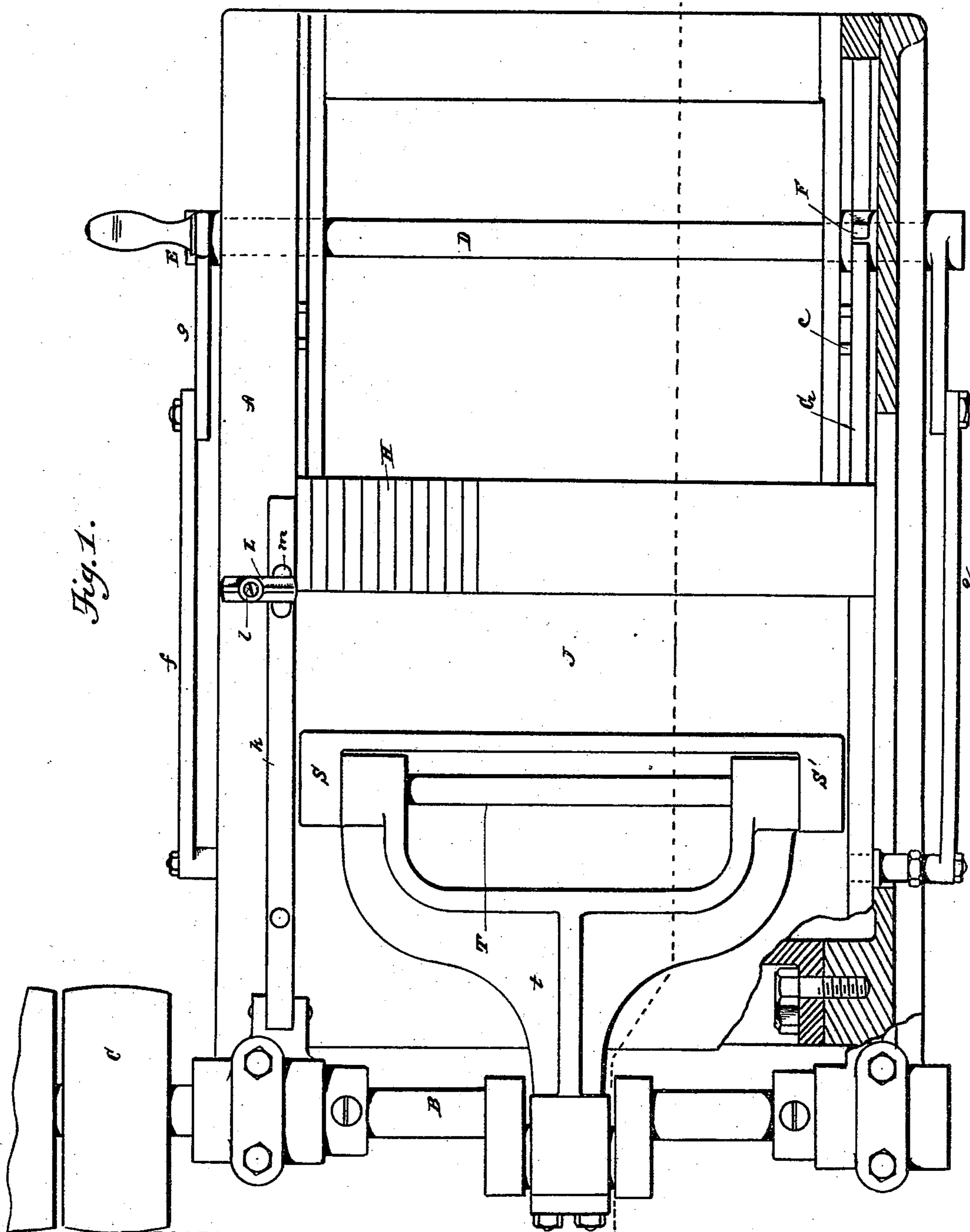


Fig. 1.

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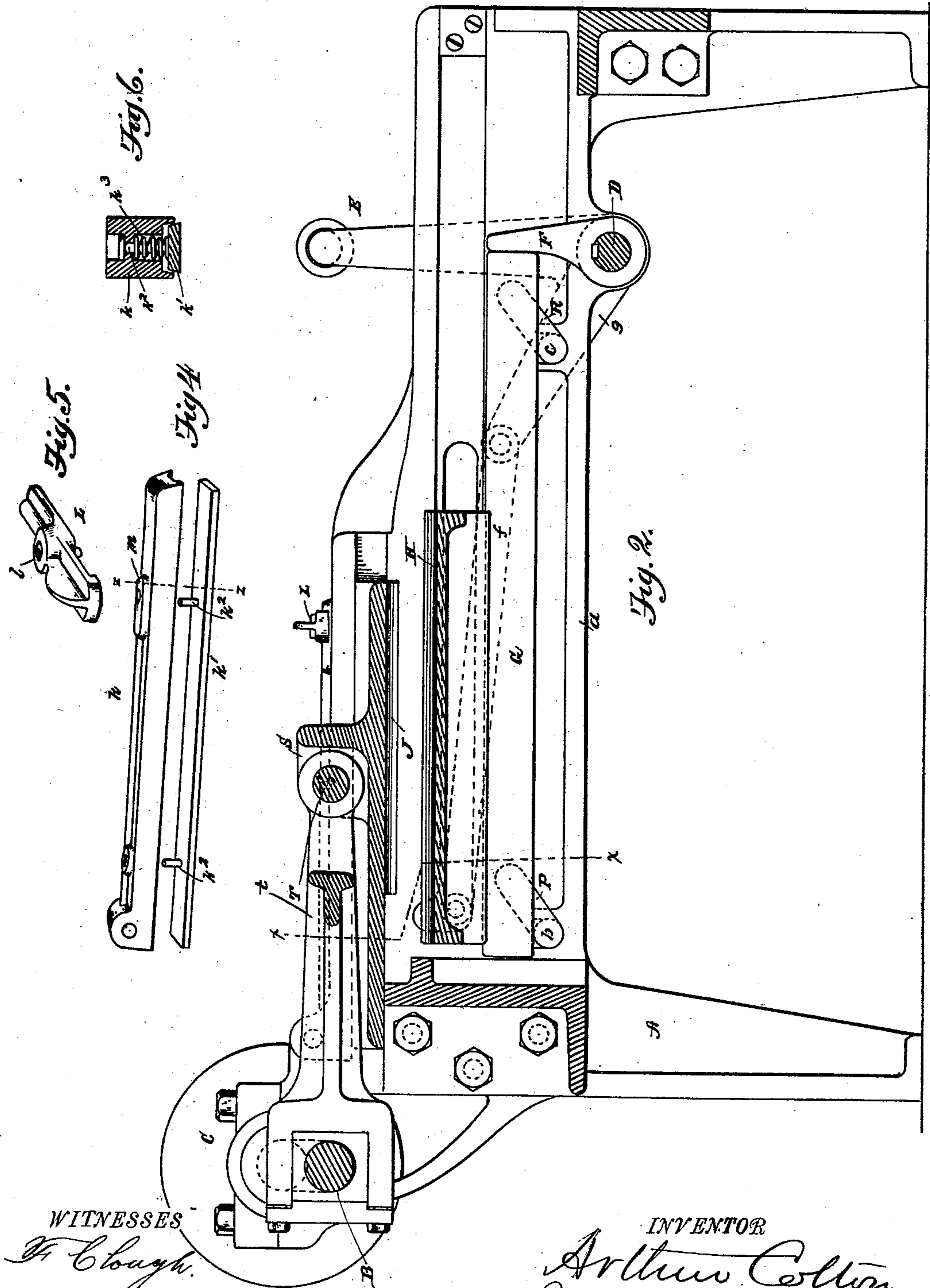
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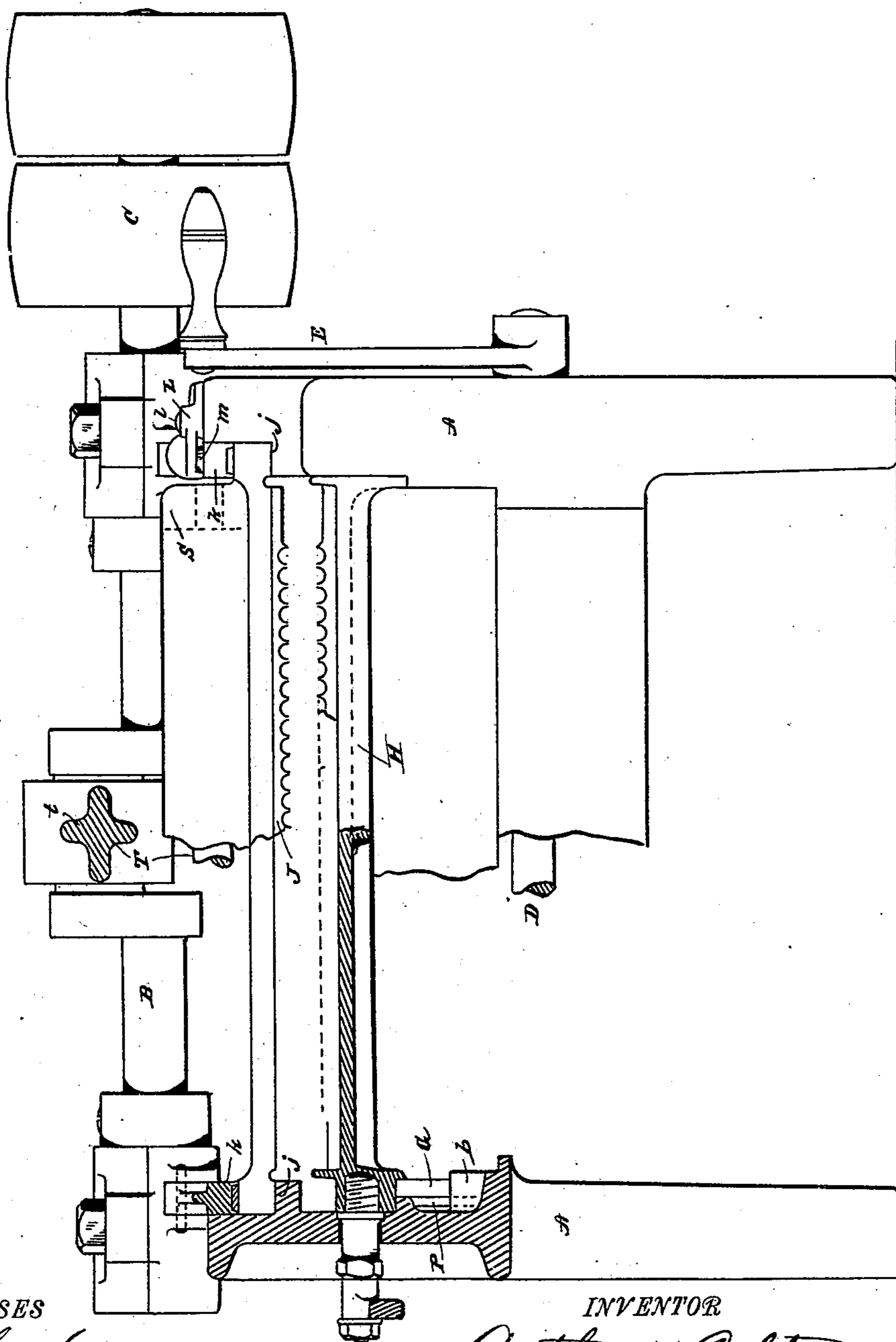
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Fig. 3.



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UNITED STATES PATENT OFFICE.

ARTHUR COLTON, OF DETROIT, MICHIGAN.

PILL-MACHINE.

SPECIFICATION forming part of Letters Patent No. 513,986, dated February 6, 1894.

Application filed September 19, 1893. Serial No. 485,844. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR COLTON, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented certain new and useful Improvements in Pill-Machines; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to pill machines, and has for its object an improvement in that class of machines in which the completed, round pill, or oval pilloid, is finished to its round or oval form from a pipe of dough or mass that has been prepared for it and placed in the machine for treatment. In this machine, I employ a lower table or plate in which there are flutings running endwise of the machine, and an upper table or plate in which there are also flutings endwise of the machine. The flutings are half round or half oval, according as it is desired to form the finished pill in the form of a globe or in the form of an oval (sometimes termed a pilloid.)

In the machine embodying my invention, the lower plate has a shifting motion which is made use of to move the plate from its usual place of work to a position such that the pipe or mass to be treated can be placed upon it readily. It is then shifted back to its place of work, and is slowly lifted until the meeting edges of the flutings come in contact with the meeting edges of the flutings of the plate above it, and the openings between the plates take the appearance of a number of parallel, cylindrical holes. The upper plate is mounted on runners, and is rapidly vibrated in a direction lengthwise of the machine, while the lower plate is lifting toward it.

In the drawings, Figure 1 is a plan view of the machine. Fig. 2 is a longitudinal view, in section on line $y-y$ of Fig. 1. Fig. 3 is an end view, partly in section and partly in elevation, the section being at line $x-x$ of Fig. 2. Fig. 4 is a detail of the cap by which the upper plate is held to the runner. Fig. 5 is a button, holding the cap of Fig. 4 in place.

Fig. 6 is a section across Fig. 4 at the line $z-z$.

A indicates the main frame-work, supporting at one end a crank shaft B, on the outer end of which is the main driving wheel C. Near the opposite end of the frame-work, and lying across it, is a rock shaft D, on one end of which is a crank and handle E, and on the other end of which is an arm F, employed to raise the lower table.

In the main frame A, just above the main or lower bed-piece a , on each side of the machine, is a pair of Y's, furnishing the bearings for the pivots b and c of two pair of parallel bars P and R. The upper ends of the parallel bars on each side are pivoted to a frame G. The frame G, swinging on the parallel supports, has a slight movement lengthwise of the frame A, and a slight vertical movement. One end of the frame G engages with the arm F, rising from the rock shaft D, and the entire frame is pushed by the arm F lengthwise of the frame, and at the same time lifted. On the upper side of the frame G travels the plate H, which is the lower one of the two fluted plates referred to in the former part of the description. To the end of the plate H which is farthest removed from the rock shaft D, are hinged two draw bars e and f . These draw bars or links are also hinged to the arm g , which springs from the rock shaft D. The two draw bars e and f are used in place of a single, central draw bar, in order that they may be placed at the side and outside of the machine, where they will have freedom of movement.

As shown in Fig. 2, the outer or free end of the crank and handle E appear thrown toward that end of the machine which contains the main driving shaft as far as it will go; the further movement of the crank E being prevented by the engagement of the frame G with the main frame-work at one end and with the arm F at the other end; a quarter turn of the crank E in a direction to carry its free end away from the driving end of the machine will draw the plate H toward the shaft of the crank E sufficiently to expose a portion of the upper surface of the table H, at the same time the frame G swinging on the parallel hangers b and c drops by gravity slightly downward,

and on the exposed upper surface I place a pipe of the mass to be formed into pills. A quarter turn in the reverse direction returns the plate H to its place of work, and brings the arm F into engagement with the end of the frame G. A still further continuation of the motion of the crank E in the direction it was given in the last instance, pushes the frame G in a direction away from the shaft of crank E, and at the same time raises it toward the plate J.

Above the plate H, and at the sides of the machine, are ways or tracks *jj*, on which rest the side flanges of a grooved plate J. Above the ways *jj*, spaced by a distance sufficient to permit of the introduction under them of the side flanges of the plate J, are two cap pieces *kk*. Each of these consists of the cap piece proper, *k*, which is shown in detail in Fig. 4, and the fillet piece *k'*. The cap piece *k* is hinged to the main frame-work at that end of it which is nearest the crank shaft B, and is held in place at the opposite end by a button L that is held to the main frame by a pin *l*, and is arranged to turn over the cap piece *k* and catch over a lug *m*. The fillet *k'* lies loosely under the concave under side of the cap *k*. It is held from escaping therefrom by pins *k² k²*. Within the cap *k*, above the fillet *k'* and surrounding the pins, are cavities, which form seats for light springs *k³*, that serve to press the fillet *k³* against the upper bearing surface of the plate J. The object of the fillet is to hold the plate J firmly down against the under bearing surface, and to furnish an upper bearing surface that adjusts itself to the bearing edge of the plate J, compensating for any wear that may take place in either the upper or the lower bearing surface, or in the plate itself. On the upper or back part of the plate J are two lugs S, S', between which extends a trunnion rod T; and from the trunnion rod to the crank of the crank shaft B extends a pitman *t*. The rotation of the main driving wheel C, acting through the crank and pitman, reciprocates the upper plate J over the lower plate H, and the operator, during the time of this reciprocation, slowly raises the lower plate H toward the upper one J, until the edges between the flutings meet. During this time, the mass of pill material interposed between the plates has been

cut from the pipe, formed into short sections, and each section rolled between the fluted sections, and the completed pill is left on the lower table having the shape which has been given to it by the special form of fluting used in the plates.

What I claim is—

1. In a pill forming machine, the combination of a main supporting frame, a swinging frame supported thereby, a fluted plate carried on said swinging frame and adapted to slide longitudinally thereon, a second fluted plate with flutings opposed to those of the first plate, means for reciprocating said last mentioned plate, and means for gradually closing the plates together during the reciprocating movement.

2. In a pill forming machine, in combination with the main framework, a swinging frame hung to the main frame by parallel bar links, a fluted plate supported on said swinging frame, means adapted to move the supported fluted plate along the swinging frame, means for changing the elevation of the swinging frame, a second fluted plate with flutings opposed to those of the first, and means for giving to the second plate a reciprocating movement, substantially as described.

3. In a pill forming machine, in combination with a main frame, a fluted plate and means for reciprocating it longitudinally of its flutings, a second fluted plate and means adapted to give to it a movement toward the first plate and bring the edges between the flutings of one plate into engagement with the edges between the flutings of the other plate, and means adapted to shift one plate with respect to the other, substantially as and for the purpose described.

4. In a pill forming machine, the combination of the fluted plates H, J, the frame A, the swinging frame G, the arm F adapted to engage with the frame G, the arm *g* and link connecting it with plate H, the hinged cap *k* and fillet *k'*, and driving mechanism adapted to actuate plate J, substantially as and for the purpose described.

In testimony whereof I sign this specification in the presence of two witnesses.

ARTHUR COLTON.

Witnesses:

MARION A. REEVE,
R. A. PARKER.