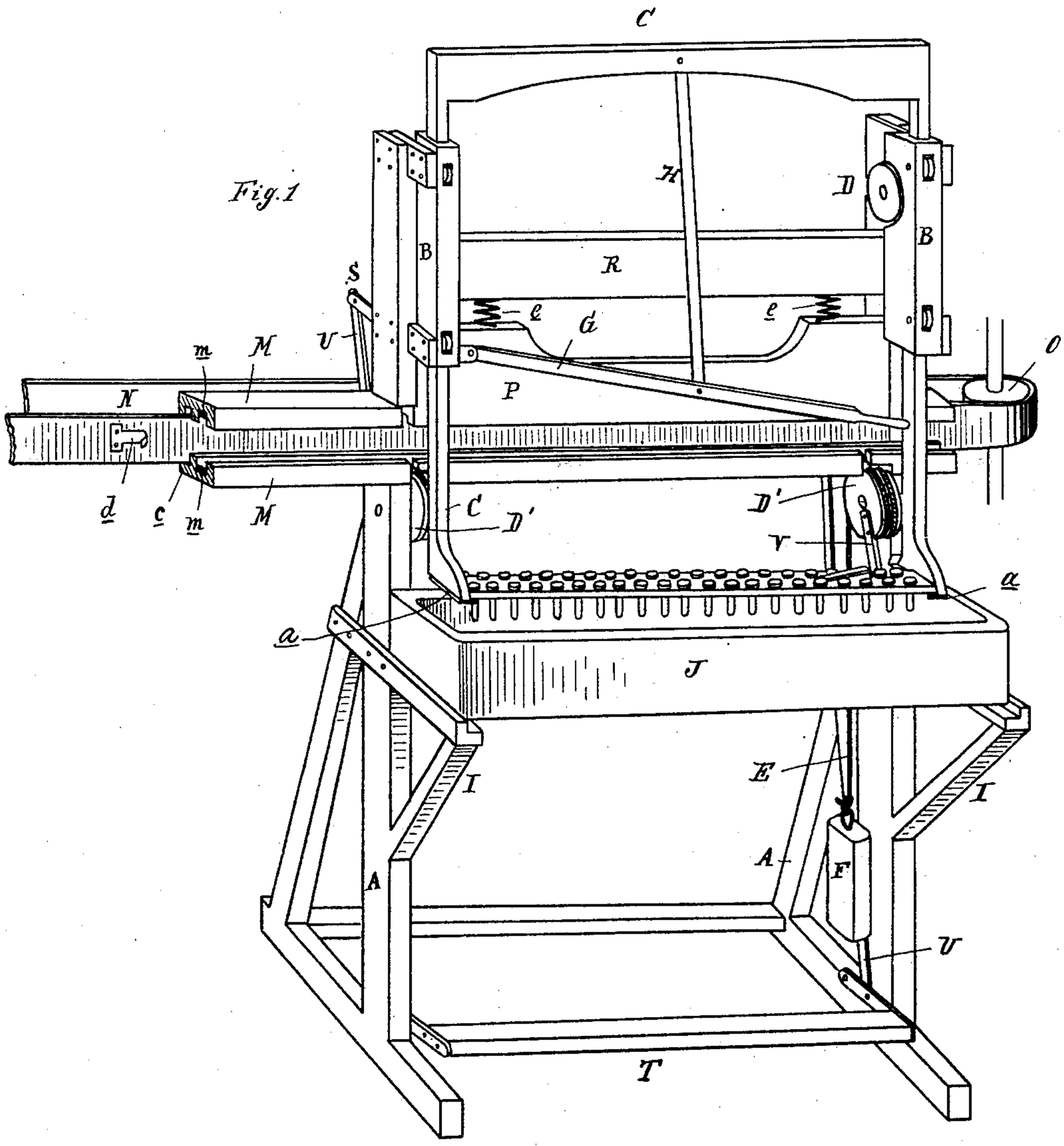
(No Model.) 2 Sheets—Sheet 1.

O. C. MELLICK.

CAPSULE MACHINE.

No. 341,267. Patented May 4, 1886.

Fig. 1



Attest:
John Schuman.
Edmond F. Scully.

Inventor:
Orlando C. Mellick.
by his Atty
Thos. S. Sprague.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 2

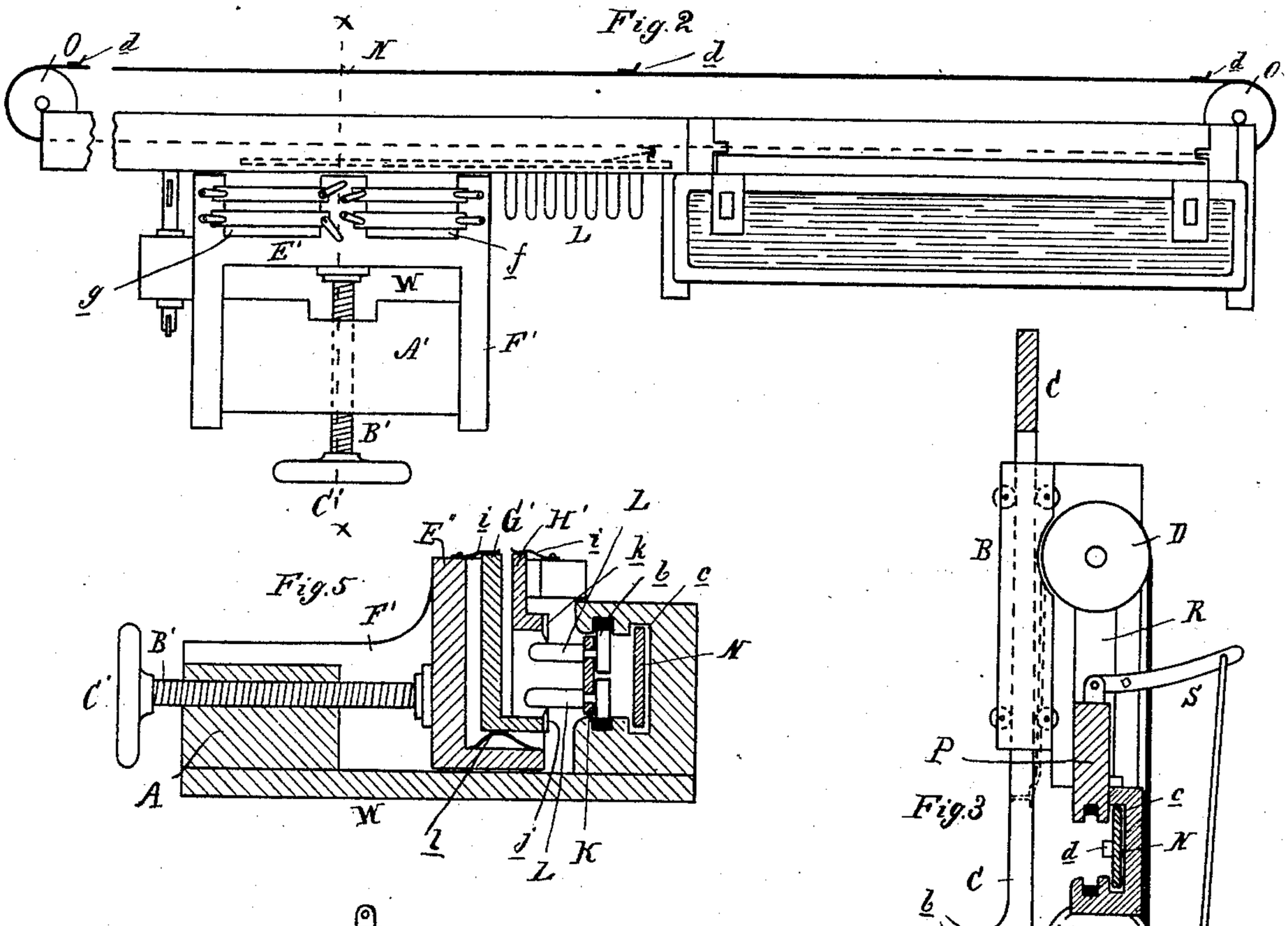


Fig. 5

Fig. 3

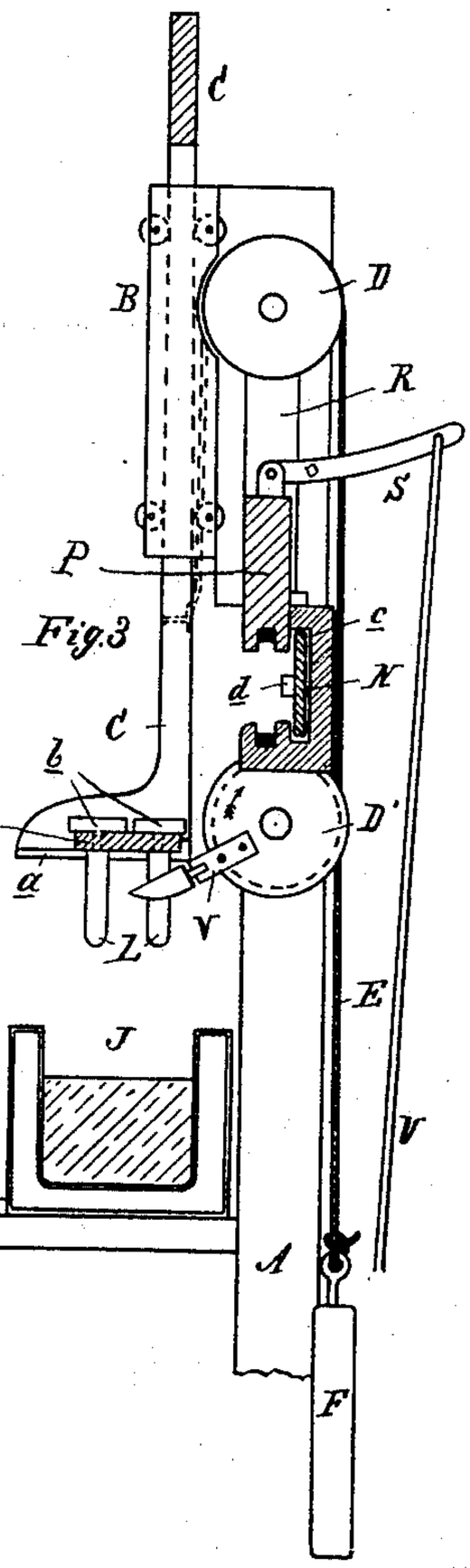


Fig. 4

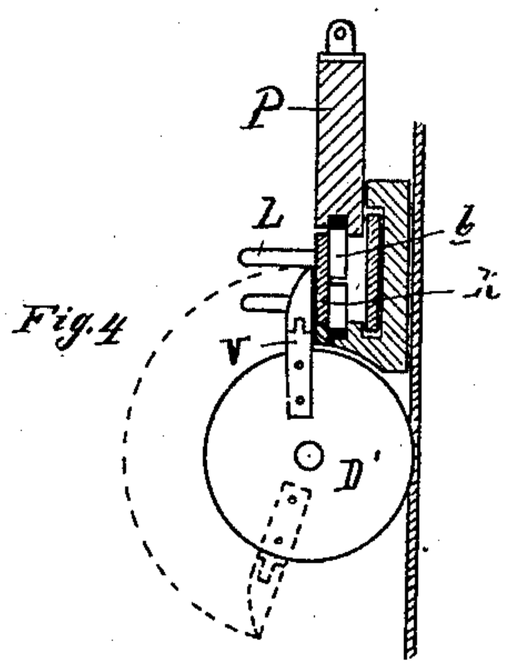


Fig. 6

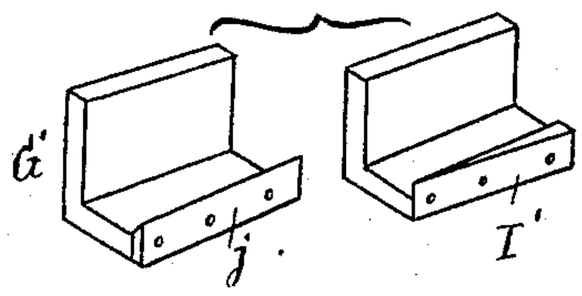
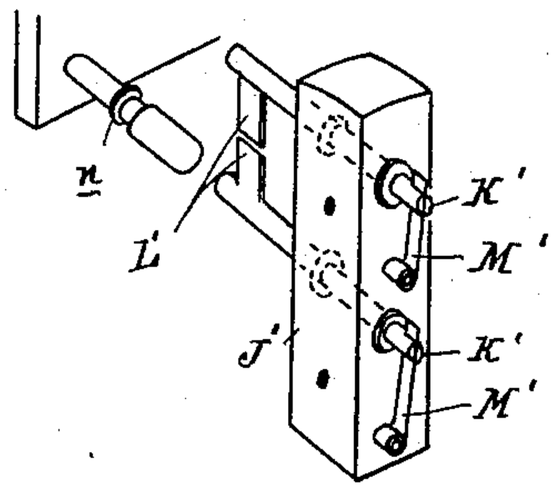


Fig. 7



Attest:
John Schuman.
Edmund J. Sauly.

Inventor:
Orlando C. Mellick.
by his Atty
Thos. S. Sprague

UNITED STATES PATENT OFFICE.

ORLANDO C. MELLICK, OF DETROIT, MICHIGAN, ASSIGNOR TO LYMAN E. STOWE, OF SAME PLACE.

CAPSULE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 341,267, dated May 4, 1886.

Application filed September 10, 1885. Serial No. 176,679. (No model.)

To all whom it may concern:

Be it known that I, ORLANDO C. MELLICK, of Detroit, in the county of Wayne and State of Michigan, have invented new and useful Improvements in Capsule-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to certain new and novel improvements in combined machines for dipping, cutting, and separating gelatine capsules.

The invention consists in the peculiar construction of the dipping mechanism; in the means employed for automatically delivering the mold-plate to the cutting mechanism; in the peculiar construction of the cutting mechanism; in the peculiar construction and application of devices for separating the body of the capsule from the burr, and in the peculiar construction, arrangement, and combinations of the various parts, all as more fully hereinafter set forth.

Figure 1 is a perspective view of the dipping mechanism and a section of the runway or guides of the cutting mechanism. Fig. 2 is a plan view of the machine. Fig. 3 is a central vertical section. Fig. 4 is a detached sectional view showing operation of pulleys in delivering the mold-plate to the runway. Fig. 5 is a vertical section on the line *x x*, Fig. 2. Fig. 6 is a perspective view of one of the cutters and one of the separating-plates. Fig. 7 is a perspective view of one of the burr-removing devices.

In the accompanying drawings, which form a part of this specification, A represents a suitable frame, which supports and carries the operating parts of the device. To the upper ends of the main standards of this frame are rigidly secured the guide-blocks B, through which the vertical or side bars of the dipping-frame C have a vertical movement. The lower ends of such bars are provided with inwardly-projecting flanges or rests *a*, to receive the mold-plate, as hereinafter described.

Properly journaled or pivotally secured to the inner faces of the standards of the frame A, and near their upper ends, are the grooved pulleys D, and at a proper distance below them are similar pulleys, D′, the latter being provided with fingers or arms V, the one at the left of the drawings being jointed, as shown in Figs. 3 and 4. Ropes E, secured at one end to each of the vertical bars of the frame C, pass up to and over the pulleys D, thence down to and around the pulleys D′, having weights F secured to their free ends. These weights should be sufficiently heavy to retain the frame C and a mold-plate in an elevated position.

G is a lever, one end of which is properly pivoted to the frame A, and is connected to the frame C by a link, H.

I are brackets projecting from the frame A, upon which to rest the receptacle J, designed to contain the liquid gelatine.

K is the mold-plate, in which are rotatably secured two rows of mold-pins, L, there being secured to these pins at the back of the plate friction-disks *b*.

M is a double runway, one end of which is rigidly secured to the frame A, while the opposite end is supported by the frame-work that carries the cutting mechanism, hereinafter described.

In the rear groove, *c*, of the runway an endless belt or conveyer, N, travels, passing over pulleys O at each end of the device, and arranged to be driven from any convenient power. To the outer face of this belt N are secured at equal distances apart hooks *d*. The front portion of the runway M, having the groove *m* located between the standards of the frame A, is made in the form of a gate, P, and has a vertical movement between such standards. This gate P is kept in its lowered and normal position by means of springs *e*, interposed between its top and the girt R of the frame A, and it is raised by means of the levers S, one at each end, which are connected to a treadle, T, by rods U.

W is a plate supported upon a suitable frame-work erected in front of and supporting the projecting end of the runway M. This plate is secured rigidly to the runway, and secured to its front end is a block, A′, through which is threaded a screw, B′, provided with a hand-wheel, C′, upon its outer end, while its inner end is rotatably secured to the girt F′ of the frame F′ in any such man-

ner that the said frame F′ may be adjusted horizontally upon the plate or bed W. The portion of the frame F′ that is next the guideways is divided into two chambers, *f g*, and in the side walls of the chamber *f* vertical grooves are cut to receive the cutting-knives G′ and H′, which are held in their respective positions by buttons *i*. These knives consist of angle-irons, as shown in Fig. 6, the horizontal portions of which have removably secured to them the cutting-edges *j k*, respectively, the edge of the former projecting upwardly, while that of the latter projects downwardly. The bottom of the knife G′ rests upon a spring, *l*, which keeps its cutting-edge in contact with the lower pins of the mold-plate, while the knife H′ is held in contact with the upper row of pins by the spring-button, that holds it in place. The chamber *g* is similarly constructed and arranged; but instead of the angle-irons carrying cutting-edges they have secured to them the wedge-blocks I′, the outer and straight faces of which are upon the same line as their respective cutters.

J′ is a block secured to the side of the frame F′. In this block rods K′ are pivotally secured, one end of each of which is provided with springs M′, while the inner or longer ends are provided with arms L′. The springs M′ are preferably secured to said rod by passing through slots in their inner ends, as shown in Fig. 7, and are designed to keep the arms L′ of the rods in vertical line with each other, as is shown in Fig. 7. There should be two of these devices—one for each row of mold-pins.

In practice, the parts being constructed and arranged substantially as herein described, the operation is as follows: The gelatine being in liquid form in the receptacle J, the operator places the plate of molds upon the rests *a* of the dipping-frame, and at the front. He now grasps the lever G and pulls the frame down, the arms V on the pulleys D′ being below the mold-plate, as shown in Fig. 3, the pulleys D′ revolving in the direction opposite to that represented by the arrow in said figure, carrying the arms V down, as shown in dotted lines in Fig. 4, thus allowing the free downward movement of the mold-plate. The mold-plate is now pushed to the rear side of the dipping-frame, and the lever still further depressed until the pins have been immersed in the gelatine the required distance to form a given-sized capsule. The operator now places his foot upon the treadle T, thereby raising the gate P, Fig. 3, at the same time releasing the lever G. The weights F thereupon by gravity retract the frame C with the mold-plate, partially rotate the pulleys D D′, and the fingers V of the latter come in contact with the under side of the mold-plate, raise it, and deliver it to the front groove, *m*, of the runway beneath the gate P. By now releasing the treadle the gate is forced down upon the upper row of friction-disks of the pins on the mold-plate. The belt N being in motion, one of its hooks engages with a suitable stop on the back of the mold-plate, compelling such plate to travel in the groove *m* of the guideway, toward the cutting mechanism, the mold-pins being rotated by frictional contact of their disks with the runway, in the grooves of which strips *b*, of rubber or other suitable material, may be placed to compel a more positive action of the parts. In the continued travel of the mold-plate the pins are presented to the knives, which have been previously adjusted to cut the desired length of capsule, the knife G′ operating upon the lower row of pins, and the knife H′ upon the upper row. The pins are next presented to the separating devices, the points of the wedges entering the cuts made by the knives, forcing the burr back upon the pin, and separating it from the body of the capsule. In the still further travel the mold-plates pass between the arms L′, which scrape the burr *n* off the pins. The mold passes off at the end of the machine, where it is taken by an operator and placed upon a proper rack.

It will be observed that by lifting the mold-plate vertically, and then imparting to the mold-pins a rotary motion, the gelatine must necessarily set evenly upon the pins, forming capsules of uniform thickness.

What I claim as my invention is—

1. A capsule-machine comprising the following elements in combination: a mold-plate bearing rotatable pins, a lever and connections for raising said mold-plate after being dipped, a conveyer, as N, and means, D′ V, for delivering said mold-plate to said conveyer, as set forth.

2. In a capsule-machine, the combination of a mold-plate bearing rotatable pins, a lever and connections for raising said mold-plate vertically after being dipped, a horizontal traveling belt, and a horizontal runway which imparts a rotary movement to said pins, and means, as D′ V, substantially as described, for delivering the mold-plate, after being raised, to said belt, as and for the purposes specified.

3. In combination with a mold-plate having two rows of rotatable pins, a vertically-moving dipping-frame, and the means, as the pulley D′, fingers V, carried thereby, and connections, substantially as described, for automatically delivering such mold-plate to a horizontal runway, substantially as set forth.

4. In a capsule-machine, the combination of a horizontal runway, provided with a vertically-moving gate and a traversing belt, with a mold-plate provided with rotatable pins, substantially as and for the purposes described.

5. In a capsule-machine, the combination of a mold-plate provided with rotatable pins, and a horizontal runway carrying an actuating endless belt, and provided with a vertically-moving gate, with adjustable knives or cutters arranged to cut the gelatine coating upon the pins, substantially as set forth.

6. In a capsule-machine, the combination of a mold-plate, provided with rotatable pins arranged to move horizontally in a stationary

runway, with spring-actuated knives and an adjustable wedge block or blocks carried by said knives, for separating the burr from the body of the capsule, substantially as described.

7. In a capsule-machine, the combination, with the runway M, having grooves *m c*, of the endless belt N, running in the groove *c*, and the mold-plate bearing rotatable pins and adapted to run in the groove *m*, as set forth.

8. In a capsule-machine, the combination, with the runway M, having grooves *c m*, and provided with a vertically-moving gate, and the springs *e*, arranged between said gate and the girt R, of the endless belt N, provided with hook *d* and traveling in the groove *c*, and a mold-plate bearing rotatable pins revolved by contact with a portion of the runway between said grooves, substantially as and for the purpose specified.

ORLANDO C. MELLICK.

Witnesses:
H. S. SPRAGUE,
EDMOND I. SCULLY.