

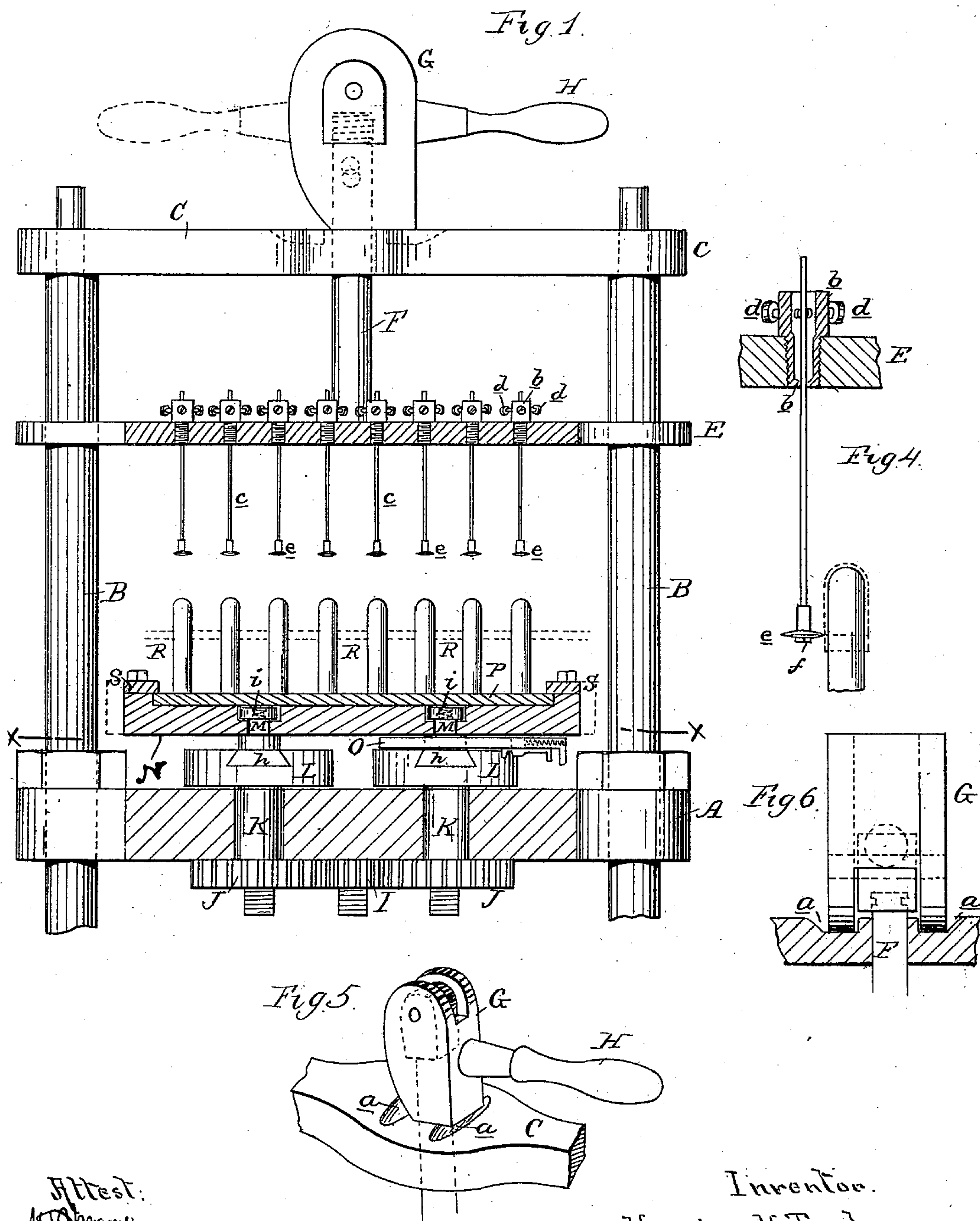
(No Model.)

2 Sheets—Sheet 1.

H. H. TAYLOR.  
CAPSULE MACHINE.

No. 275,092.

Patented Apr. 3, 1883.



Attest:  
H. H. Taylor  
C. Scully.

Inventor.  
Harrison H. Taylor  
Thos. L. Sprague  
Att'y.

(No Model.)

2 Sheets—Sheet 2.

H. H. TAYLOR.  
CAPSULE MACHINE.

No. 275,092.

Patented Apr. 3, 1883.

Fig. 2.

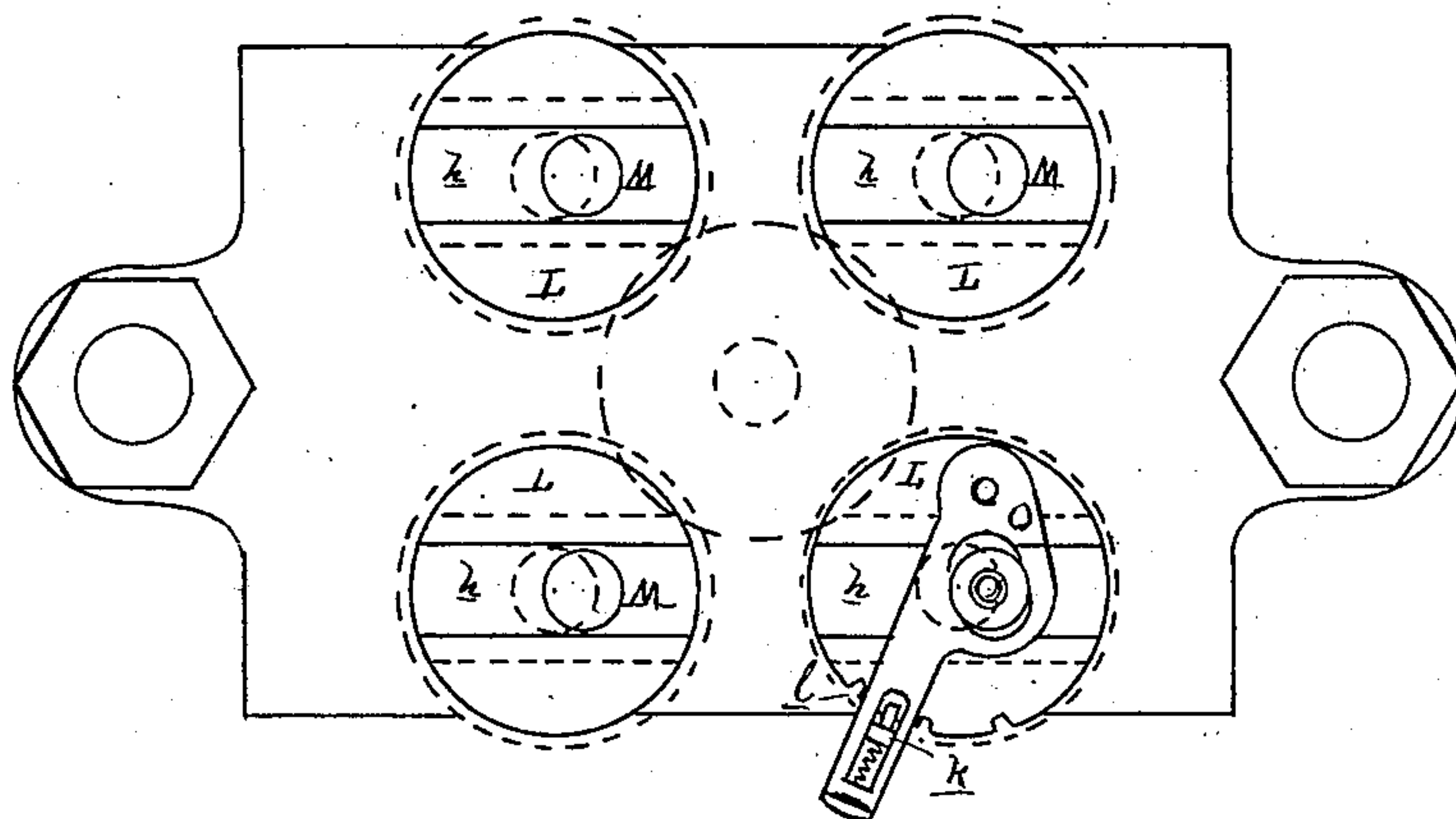
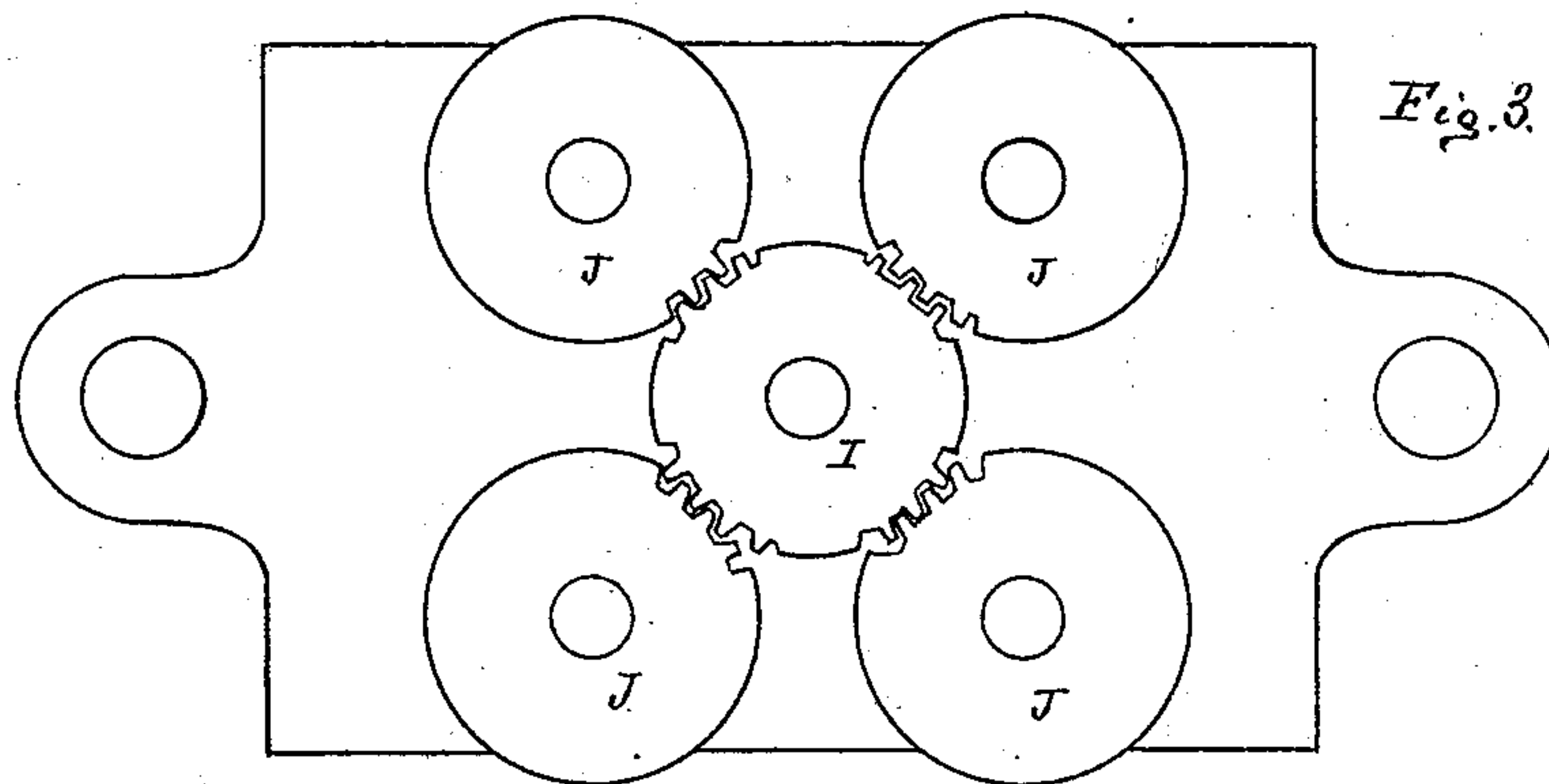


Fig. 3.



Attest:  
H. Sprague  
E. Scully

Inventor:  
Harrison H. Taylor.  
By *Thos. L. Sprague*  
Att'y.



# UNITED STATES PATENT OFFICE.

HARRISON H. TAYLOR, OF DETROIT, MICHIGAN, ASSIGNOR TO FRED. A. HUBEL, OF SAME PLACE.

## CAPSULE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 275,092, dated April 3, 1883.

Application filed March 23, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, HARRISON H. TAYLOR, of Detroit, in the county of Wayne and State of Michigan, have invented new and useful  
5 Improvements in Capsule-Making 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.

10 The nature of my invention relates to certain new and useful improvements in that class of machines employed to cut off, at any required and uniform length, empty gelatine capsules preparatory to their removal from the  
15 molds upon which they are formed.

The invention consists in the peculiar construction, arrangement, and combination of the various operating parts composing the machine, as more fully hereinafter set forth and  
20 claimed.

In order that persons skilled in the art may know how to make and use my invention, I will now proceed to fully describe the same with reference to the accompanying drawings,  
25 in which—

Figure 1 is an elevation of my improved machine; Fig. 2, a plan view taken on the line  $x$   $x$ , Fig. 1; Fig. 3, a bottom plan view of the machine; Fig. 4, an enlarged view in detail,  
30 showing the rotating knife and its shaft as in operation; Fig. 5, a perspective view of the cam-head in position for operation; and Fig. 6 is an elevation of the same in the position occupied after a quarter horizontal turn has  
35 been given it.

A represents the bed or base of the machine, made in any suitable form and united by up-  
rights or standards B to a top plate, C, parallel thereto and of a corresponding size. An  
40 intermediate plate, E, constructed to have a vertical movement, has its ends sleeved upon the standards B. This plate carries the means employed for cutting off the capsules, said means consisting of a series of small rotary  
45 cutters,  $e$ , secured by nuts  $f$  to the lower ends of a series of downwardly-extending rods or arms  $c$ , which pass through a series of flange-sockets,  $b$ , secured to the plate at regular intervals apart, as shown, the rods  $c$  being se-  
50 cured in an adjustable manner within the

flange-sockets by means of radially-arranged set-screws  $d$ . By this arrangement I can readily adjust the arms carrying the cutters to a vertical position, and also elevate or depress them to accommodate any lengths of capsules  
55 to be cut. This plate E is operated and limited in its movements by means of a central shaft, F, secured firmly to it at its lower end and extending through the top plate, C, where it is united to a cam-head, G, being secured  
60 thereto by means of a screw-threaded or swivel joint, as shown. This cam-head is provided with a handle, H, for operating it, and should be made of such form and dimensions as when operated it will cause the plate E and the cut-  
65 ters with which it is provided to be depressed the necessary distance to bring the cutters in proper position to allow the cutting of the capsules. In order to lower the plate E to its  
70 proper position, the cam-head is thrown over until the handle H assumes the position shown in dotted lines in Fig. 1. When plate E is in  
75 this position the cutters with which it is provided will occupy the place of the upper dotted lines in Figs. 1 and 4, this being the limit of the cam movement. When it is desired to  
80 drop the cutters to the place of the lower dotted lines in said figures it is accomplished by giving a quarter horizontal turn to the cam-head, thereby allowing its sides to drop into  
85 transverse recesses  $a$  upon the top piece, C, said recesses being of a proper depth to accomplish the result desired. The object of having the cutters thus arranged, so as to  
90 drop a short distance below the position they occupy while the capsules are being cut, is to afford a ready means whereby the cut-off ends of the capsules can be pressed away from the capsules immediately after the cutting is done.

To the under surface of the base-plate A of  
90 the machine and at its center is secured a pinion, I, which is provided with any suitable device for imparting motion to it. This pinion engages with a group of four pinions, J, arranged around it, as shown in Fig. 3, and se-  
95 cured upon the lower ends, respectively, of a corresponding number of shafts K, suitably journaled through the base-plate A. These shafts project above the base-plate a sufficient  
100 distance to allow the circular cranks L to be



secured to their upper ends. Each one of those circular cranks is provided with a wrist-pin, M, adapted to enter suitable openings made in the supporting-plate N, and arranged  
 5 to correspond in size and position with said wrist-pins, as shown in Fig. 1, and each wrist-pin is provided with a swiveled thimble, i, to prevent wear upon the plate. The wrist-pins, upon motion being given to the pinions below,  
 10 give a horizontal rotary motion to the plate N, said movement being limited by the distance of the wrist-pins from the axis of the shafts K. In order to alter the amount of movement of the plate N, the wrist-pins are secured to plates h, constructed to slide into dovetail or undercut grooves in the face of the cranks L, so that these plates h can be moved to alter the throw of the wrist-pins according to the amount of movement desired.  
 20 In order to accurately make this adjustment, I employ a lever, o, pivoted at one end to the face of one of the cranks and provided with a slot to embrace the wrist-pin, the free end of the lever being provided with a spring-stop, k, to engage with either of a series of notches cut in the periphery of the crank, as shown in Fig. 2. From the above it will be seen that the movement of the lever o will increase or decrease the throw of all of the cranks, and  
 30 consequently of the plate N also.

P is a plate provided with a series of round-ended pins, R, and removably secured to the plate N by means of the ledges S at the edges of said plate. The plate P is made removable  
 35 in order that other plates having either larger pins or pins of the same size may be put in its place. In practice the plate P is removed, the ends of its pins are dipped into gelatine to gather a sufficient thickness of gelatine to  
 40 form the walls and end of the capsule, and is again secured to the plate N. The cam-head G is then thrown over by its handle H, so as to cause the knives to descend to the upper dotted line in Fig. 1, when, rotation being given to the pinions I J, the plate N is moved so as to carry all of its pins or formers bodily around the cutters and all in the same direction, thereby cutting off the capsules at the proper length. In order to separate the  
 45 burr from the capsule proper, the cam-head G is turned partly around, so as to allow its edges to fall into the recesses a in the bar C, thereby causing the knives to fall down to the lower dotted line in Fig. 4, and spread the  
 50 burrs and capsules apart on the pins R. When this has been done the handle is then raised into its first position, so as to raise the knives to the point from which they first started, and the plate P is removed, the capsules taken off,  
 60 and the plates or another plate returned to the machine for repeating the operation described. Plates with smaller or larger pins or formers R are employed, and the lever O can be used to alter the throw of the plate to correspond with the diameter of the different-sized pins used.  
 65

From the above description it will be per-

ceived that the pins or formers R are all moved simultaneously and all in the same direction around the cutters.

I am aware of the capsule-cutting machines of F. A. Hubel, in which the cutters are revolved, some in opposite directions to the others, around fixed capsule-holders, and I do not claim such invention, my device being advantageous over the same in moving all the capsule-formers in the same direction simultaneously, whereby a separate gear-wheel for each capsule cut is rendered unnecessary, only five wheels being used to cut as many capsules at one operation as may be desired, and whereby the pressure of the knives is always on the same side of all the holders.

It will be observed also that by my construction and arrangement a large amount of friction is saved, for in revolving-cutter machines the shank of each and every cutter must rotate independently in a separate bearing requiring lubrication, whereas by my construction neither the cutter-shanks nor the formers rotate in separate bearings, and therefore there is no chance of the oil from the machinery dropping upon the capsules. Moreover, in machines in which the cutters are carried around the formers, the cutters must rotate on their shanks, (again requiring lubrication, with its consequent disadvantages,) or else the wear would come on one part of the edge of the cutter, whereas my cutters may be fixed on their shanks, thus requiring no lubrication, and yet have all of their surfaces in use, because the formers are carried all around the cutters, thus bringing all the circumferences of the latter into use in cutting the capsules, and the rotation of the cutters on their shanks is unnecessary.

The construction of my machine, whereby the capsule-holders are moved, instead of the knives in the Hubel machine, is also advantageous in allowing the knives to be raised or lowered much easier and with less mechanism than would be necessary to move the capsule-holders, and in allowing the main operating parts of the machine to be arranged under the capsule-holders, entirely out of the way, so as to prevent any lubricating-oil or other matter from falling upon the capsules, as would be the case with constantly-moving mechanism above the holder.

What I claim is—

1. The combination, in a capsule-machine, of a plate having a series of round cutters the shanks of which are held at or near one end in a fixed position in said plate, a second plate having a series of formers held stationary therein, and mechanism, substantially as described, constructed to move said plate and cause each of the formers to describe a circle around a corresponding cutter carried by the other plate, whereby all of the edge of each cutter is brought into action, whether the cutters are fixed or turn on their shanks, as set forth.

2. In a capsule-cutting machine, and in com-



5 combination with means, substantially as described, for traveling all of the formers bodily around the cutters, a lever located between the frame carrying the formers and engaging a crank-pin thereon, and provided with a spring-latch engaging depressions in suitable driving-pinions adapted to increase or diminish the throw of the crank operating the formers, as and for the purpose specified.

10 3. In a capsule-cutting machine, the combination, with the formers R and cutters *e*, of the sliding bar E, shaft F, and the turning cam-head G, substantially as and for the purpose specified.

15 4. In a capsule-cutting machine, the combination, with the bar E, of the sockets *b*, cutter-shanks *c*, and the radial set-screws *d*, substantially as and for the purpose specified.

20 5. In a capsule-cutting machine, the combination, with the bar C, having recesses *a*, of the cam-head G, having ears to correspond with said recesses, the shaft F, pivotally secured to the cam-head, the sliding cross-bar E, and the cutters *e*, substantially as and for the purpose  
25 specified.

6. In a capsule-machine, the combination, with the plate N, of the wrist-pins M, the cranks L, shafts K, and means for rotating all of the shafts in the same direction, substantially as described.

30 7. In a capsule-cutting machine, the combination, with the plate N, of the wrist-pin M, slide *h*, crank L, having notches *l*, and the lever O, embracing the wrist-pin, and provided with a spring-catch, *k*, to engage with the  
35 notches *l*, substantially as described.

8. A capsule-cutting machine consisting of a frame, A B C, supporting the pinions I J, the shafts K, the cranks L, wrist-pins M, plates N T, bar E, knives *e*, shaft F, and cam-head  
40 G, all the parts being combined, connected, and operating substantially as and for the purpose specified.

HARRISON H. TAYLOR.

Witnesses:

H. S. SPRAGUE,  
E. SCULLY.