

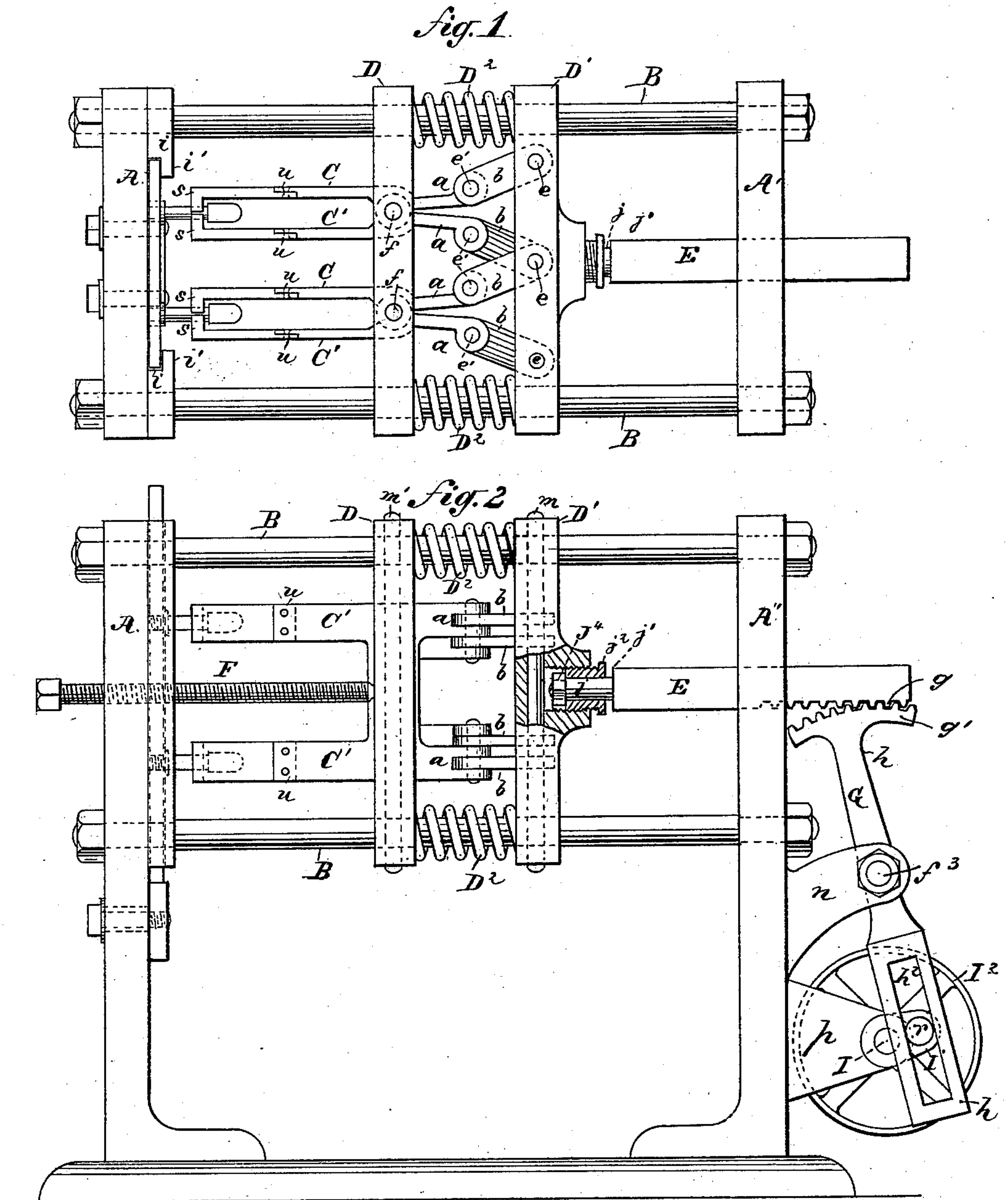
(No Model.)

2 Sheets—Sheet 1.

W. A. TUCKER.  
CAPSULE STRIPPING MACHINE.

No. 296,895.

Patented Apr. 15, 1884.



Witnesses:  
Henry Eichling  
ag. ver. milys

Inventor  
William A. Tucker,  
by J. P. French  
his Atty.

(No Model.)

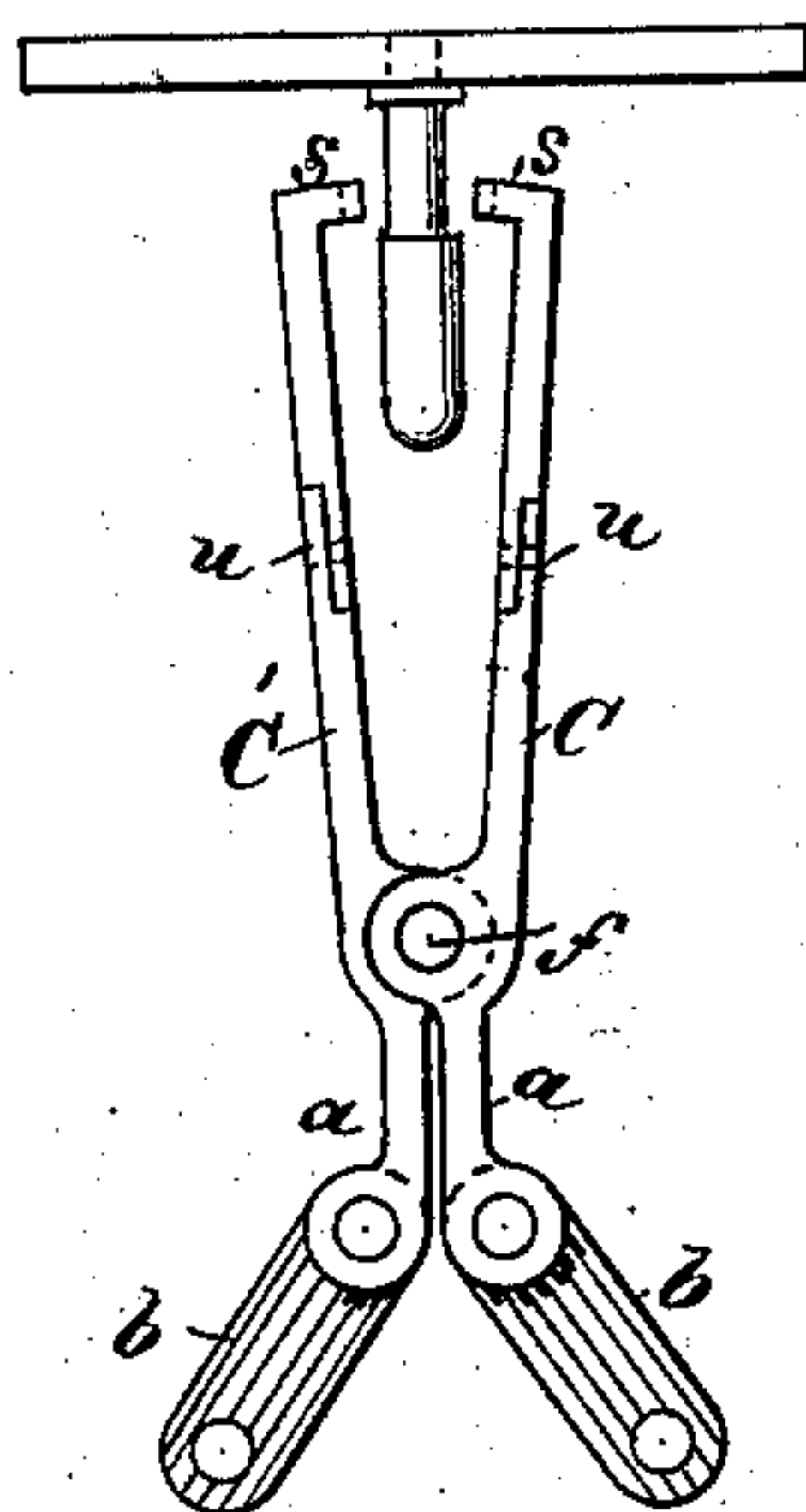
2 Sheets—Sheet 2.

W. A. TUCKER.  
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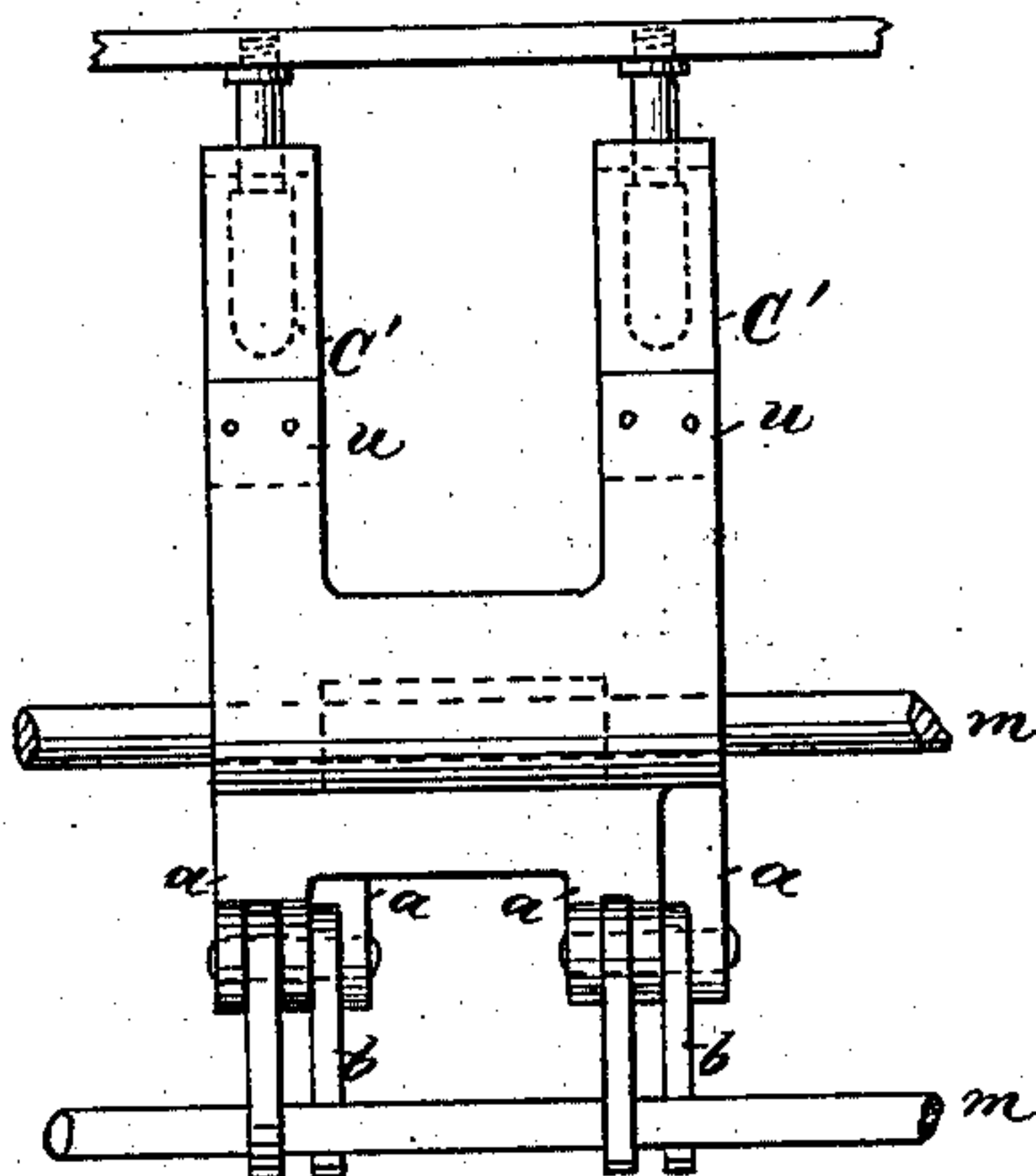
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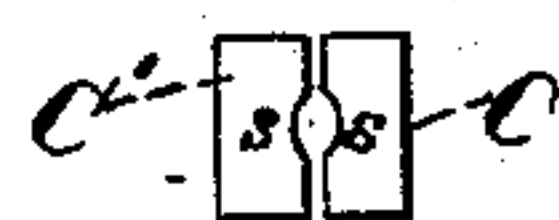
*Fig. 5.*



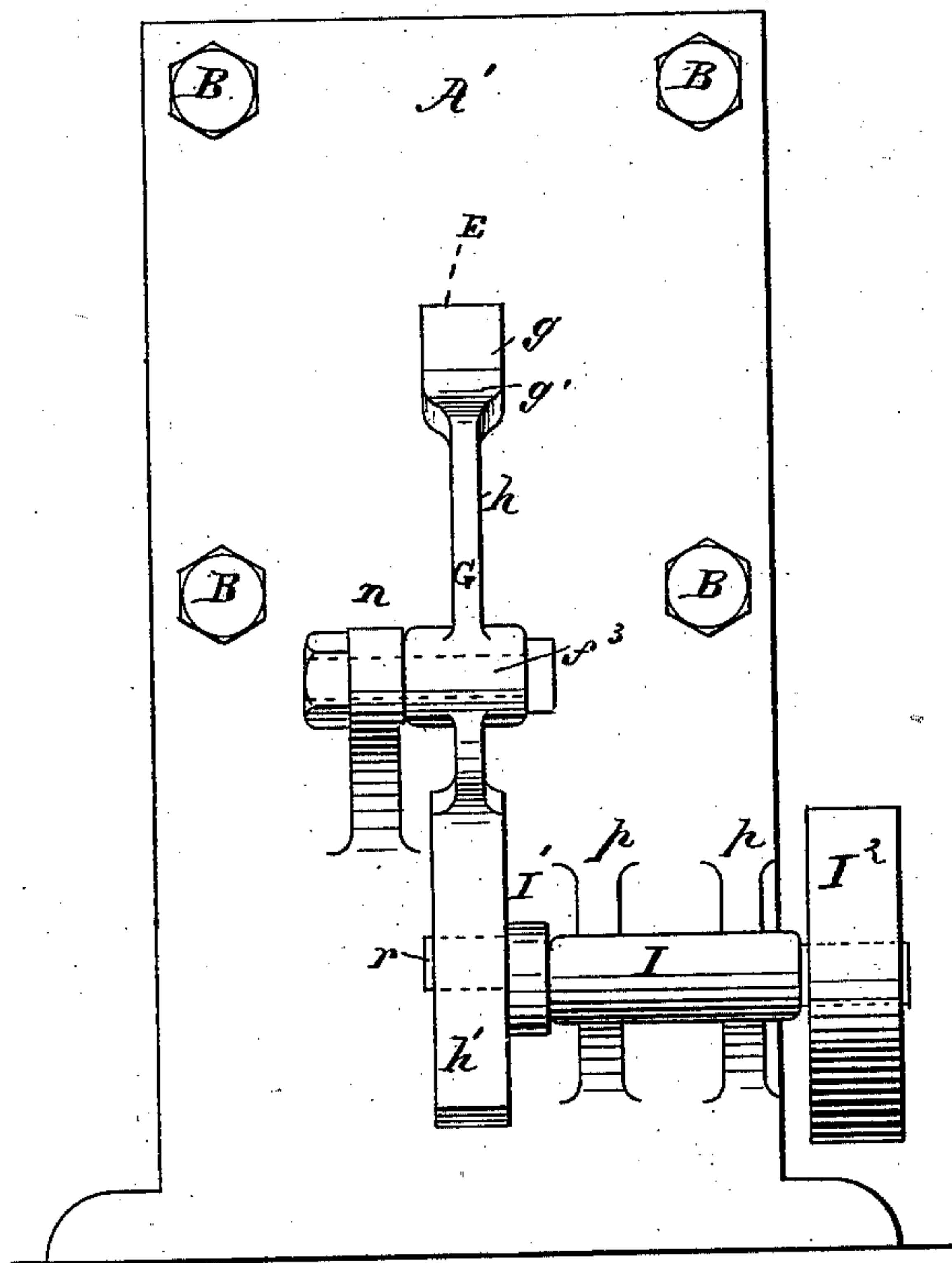
*Fig. 7.*



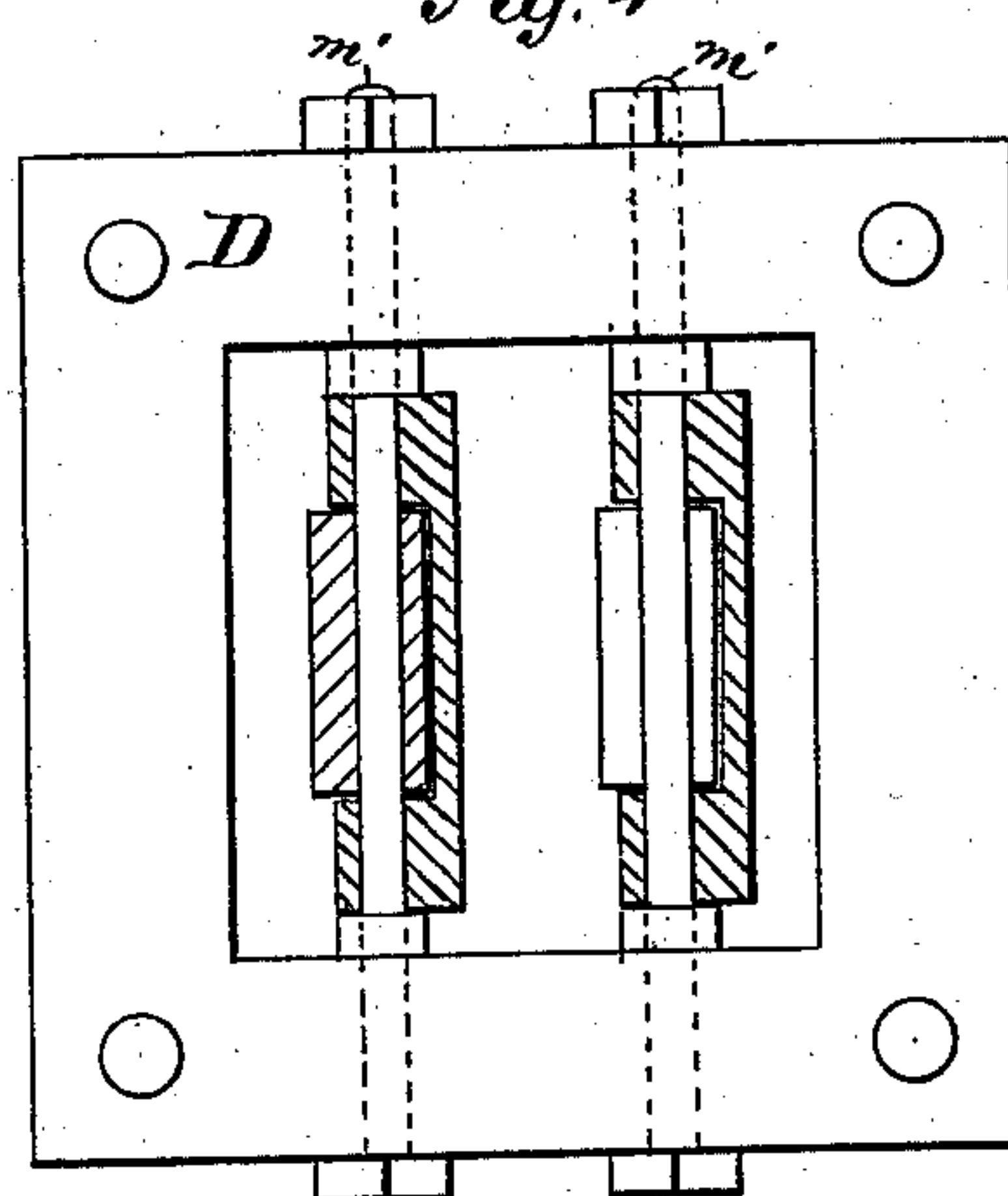
*Fig. 6.*



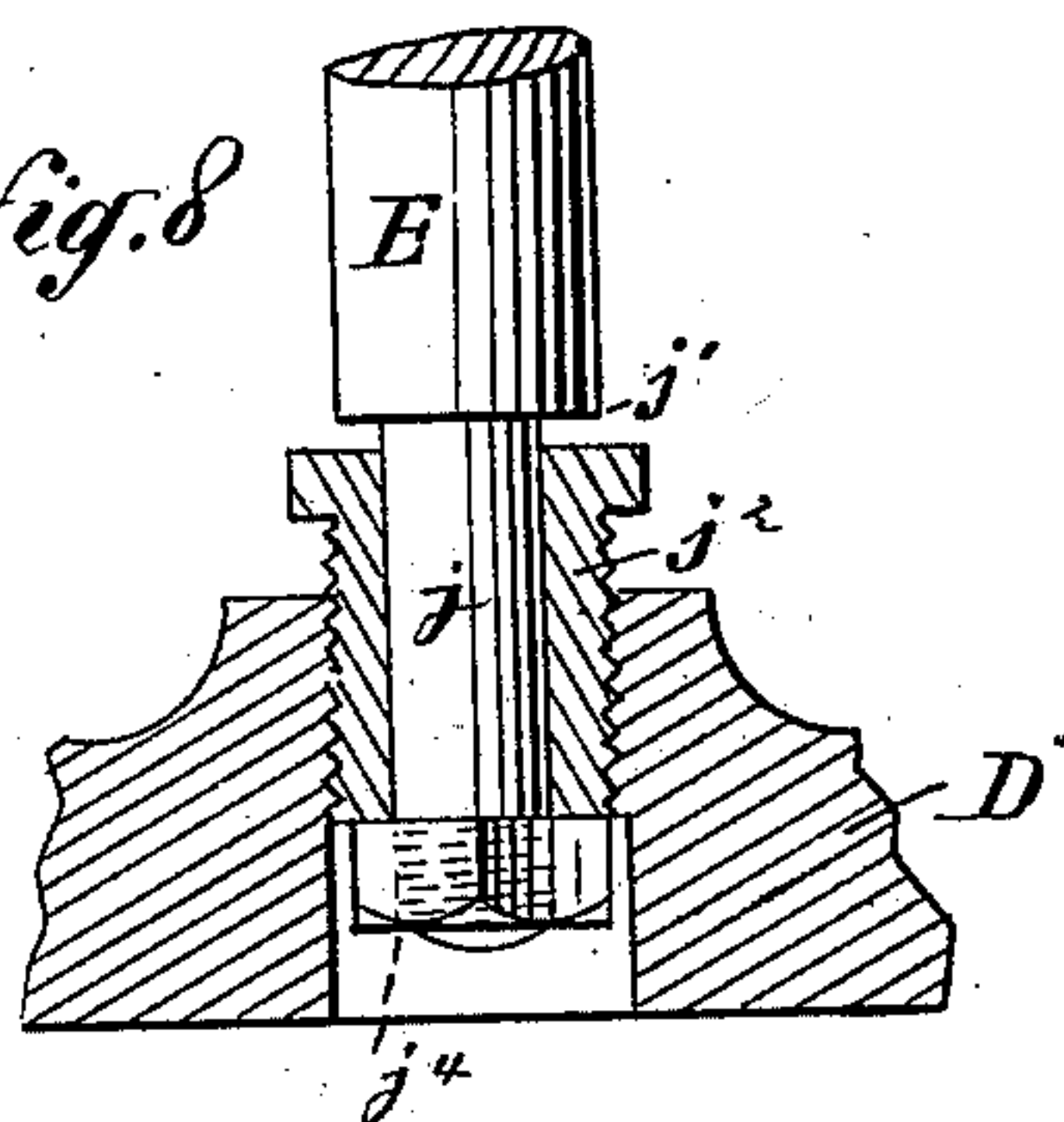
*Fig. 3.*



*Fig. 4.*



*Fig. 8.*



Witnesses:

*Henry Eichling*  
*A. W. Vermilye*

Inventor

*William A. Tucker*  
by *H. F. Fitch*  
his atty.



# UNITED STATES PATENT OFFICE.

WILLIAM A. TUCKER, OF NEW YORK, N. Y.

## CAPSULE-STRIPPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 296,895, dated April 15, 1884.

Application filed July 27, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM A. TUCKER, of the city of New York, in the county and State of New York, have invented a new and useful Improvement in Gelatine Capsule-Stripping Machines, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a plan or top view of a machine embodying my invention. Fig. 2 is a side elevation, and Fig. 3 an end elevation, of the same. Fig. 4 is a face view of the carrying-plate particularly described hereinafter. Fig. 5 is an edge view of one of the strippers, formed of a pair of jaws hinged together, and pivoted to links that are to connect them to the plate in the machine, by which they are actuated, showing also a capsule-mold fixed in the mold-plate between the open jaws. Fig. 6 is an end view of one of the strippers. Fig. 7 is a side view of two such strippers and two molds; and Fig. 8 is a detail view, described hereinafter.

My invention relates to a machine for stripping from the molds on which they are formed gelatine capsules; and it consists in the devices and combinations of devices hereinafter described and claimed.

The frame on which the working parts are mounted consists of metal end plates, A A', secured together by four strong rods, B B B B. Upon these rods are mounted, so as to slide back and forth thereon, two plates, D D', the said rods passing through holes in the corners of the plates. The interior of the plate D is cut away, so as to form a wide opening, as represented in Fig. 4.

C C' represent the two jaws forming a stripper. They consist of rigid metal bars hinged together intermediate their ends, and the inner ends formed to grasp the capsule-mold, which may be done by bending their extremities inward toward each other, as seen at S, Figs. 1 and 5. Fig. 6 represents an end view of a pair of these jaws, showing a slight curved notch in each to give them a greater hold on the capsule-mold. The jaws of each stripper are pivoted at their hinge in plate D at *f*. The ends *a* of these jaws are hinged to links *b*, which are pivoted at *e* in the plate D'. Recesses or holes are made in said plate to receive the ends of said links, and pivotal rods

*m* pass vertically through holes drilled through from edge to edge of said plate, and through holes in the ends of said links. A similar rod, *m'*, passes through the plate D and the joints of the jaws, hinging them together at *f*. The arrangement as shown in Fig. 2 is such that when the said plates D D' are made to approach each other, the free or gripping ends of the jaws will be thereby opened, as shown in Fig. 5, which represents the said jaws open and also a capsule-mold placed between them; and when said plates are forced apart, the jaws will be closed. Also, when force is applied to slide outward said plate D' against resistance at the gripping end of the jaws, the tendency is to close the jaws in proportion to the force so applied.

E is a bar attached at its inner end to the center of the plate D', the opposite end extending out beyond the side of the plate A' through an opening therein, and having on its under face a toothed rack, *g*.

G is a lever, pivoted at *f*<sup>3</sup> in a bracket, *n*, which projects from the plate A'. On the upper end of the arm *h* of this lever is a toothed segment, *g'*, which meshes into the rack *g*. In the opposite arm, *h'*, of the lever is a slotted opening, *h*<sup>2</sup>. In brackets *p*, projecting from the plate A', is journaled a shaft, I, carrying on its inner end a crank, I', the crank-pin *r* of which works in the said slotted opening *h*<sup>2</sup>, and on its outer end a driving-pulley, I<sup>2</sup>. By means of this lever G, when actuated by the said crank, the bar E, together with the plates D D' and the strippers C C', are operated, the said plates sliding back and forth on the rods B.

F is a set-screw working in a female screw in the end plate, A; of the frame, whereby the inward movement of the plate D is limited. In the end plate, A, of the frame provision is made for holding a plate in which are fixed capsule-molds in the ordinary way, which consists in grooves *i*, made on the inner edge of ways *i'*, secured on the inner face of the plate A. The said mold-plates are fitted to drop down into these grooves and to be held firmly therein by any suitable means.

D<sup>2</sup> indicates spiral springs placed on the rods B, which act to force the said plates apart, and thus close the strippers.

In the connection of the bar E with the plate D' provision is preferably made for a



little lost motion, which may be done by forming a boss on the outer face of the plate D and drilling a hole through this boss into the plate, and cutting therein a screw-thread, then turning down the inner end,  $j$ , of the bar E, leaving a square shoulder,  $j'$ , and cutting a screw-thread on the end  $j$ , thus providing a thimble or sleeve,  $j^2$ , which fits onto the part  $j$  with a screw-thread on it, which works in the screw-thread in the hole or recess in the plate D'. A round nut,  $j^4$ , is then screwed onto the threaded end of  $j$ , the nut being of no larger diameter than the sleeve  $j^2$ . The part  $j$ , with its nut, is then inserted in the recess in D', and the sleeve  $j^2$  is screwed down into the recess, so as to make it fast therein and leave a little space between the ends of the sleeve  $j^2$  and the nut  $j^4$  and shoulder  $j'$ . It is evident that the part  $j$  may now move back and forth in the said sleeve a distance equal to the difference between the length of the part  $j$ , between the shoulder  $j'$  and the nut  $j^4$  and the length of the sleeve  $j^2$ . The lost motion thus provided permits the ends of the jaws of the stripper when they reach the end of the capsule-mold, which is rounded off, as shown in the drawings, to slide suddenly off over the said rounded end, moving a little in advance of the movement of the plate D', instead of dragging slowly over the said end, thus decreasing the liability to the cutting or scratching of the end of the mold by the edges of the jaws, also giving a sudden motion, which tends to throw the capsule clear from the jaws.

To operate this machine the plates D and D' are carried inward until the plate D is stopped against the set-screw F. The plate D' being then forced still farther against the stress of the springs D<sup>2</sup>, the jaws of the strippers are thereby thrown open. When in this position the mold-plate carrying molds on which capsules have been formed is dropped down into the grooves  $i$ , the molds passing down between said jaws, and being stopped in position where the jaws upon being closed will grasp them. Then the motion of the plate D' is reversed, and instantly the action of the springs D<sup>2</sup> is to close the jaws upon the mold

before the plate D is taken off from contact with the set-screw F. The movement of the plate D' being continued, the jaws will be made to grip the mold still tighter and strip off the capsule that is on it, the required movement, as described, being given to the said plates D and D' by the rack and segmental lever before described. Practically, a number of these strippers equal to the number of capsule-molds fixed in the mold-plate is provided, the same being arranged and held in position, with spaces between them corresponding to the spaces between the molds, so that when the mold-plate is inserted into the machine, as before described, the several rows of molds will pass down between the corresponding rows of open jaws, and when the plate is fully in position in the machine a mold will stand between each pair of jaws.

It is preferable to make the grasping ends of the stripper-jaws of separate pieces of metal from the main bodies of the jaws, and rivet or otherwise attach them to such main bodies, as seen at  $u$ .

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in a gelatine-capsule-stripping machine, of the plates D D', arranged to slide on the rods B, the springs D<sup>2</sup>, acting to force or hold said plates apart, the stripping-jaws C C', hinged together at  $f$  in the plate D, and the links  $b$ , pivoted at their outer ends in the plate D' at  $e$ , and at their inner ends to the outer ends of the said jaws, at  $e'$ , and the set-screw F, all as and for the purpose described.

2. In a capsule-stripping machine, the combination of the plates or frames D D', jaws C C', links  $b$ , rod E, provided at its outer end with the rack  $g$ , the rocking lever G, provided with the toothed segment  $g'$ , and the crank I', provided with the crank-pin  $r$ , arranged to work in the opening  $h^2$  in said lever, all as and for the purpose described.

W. A. TUCKER.

Witnesses:

A. S. FITCH,

A. G. N. VERMILYA.