

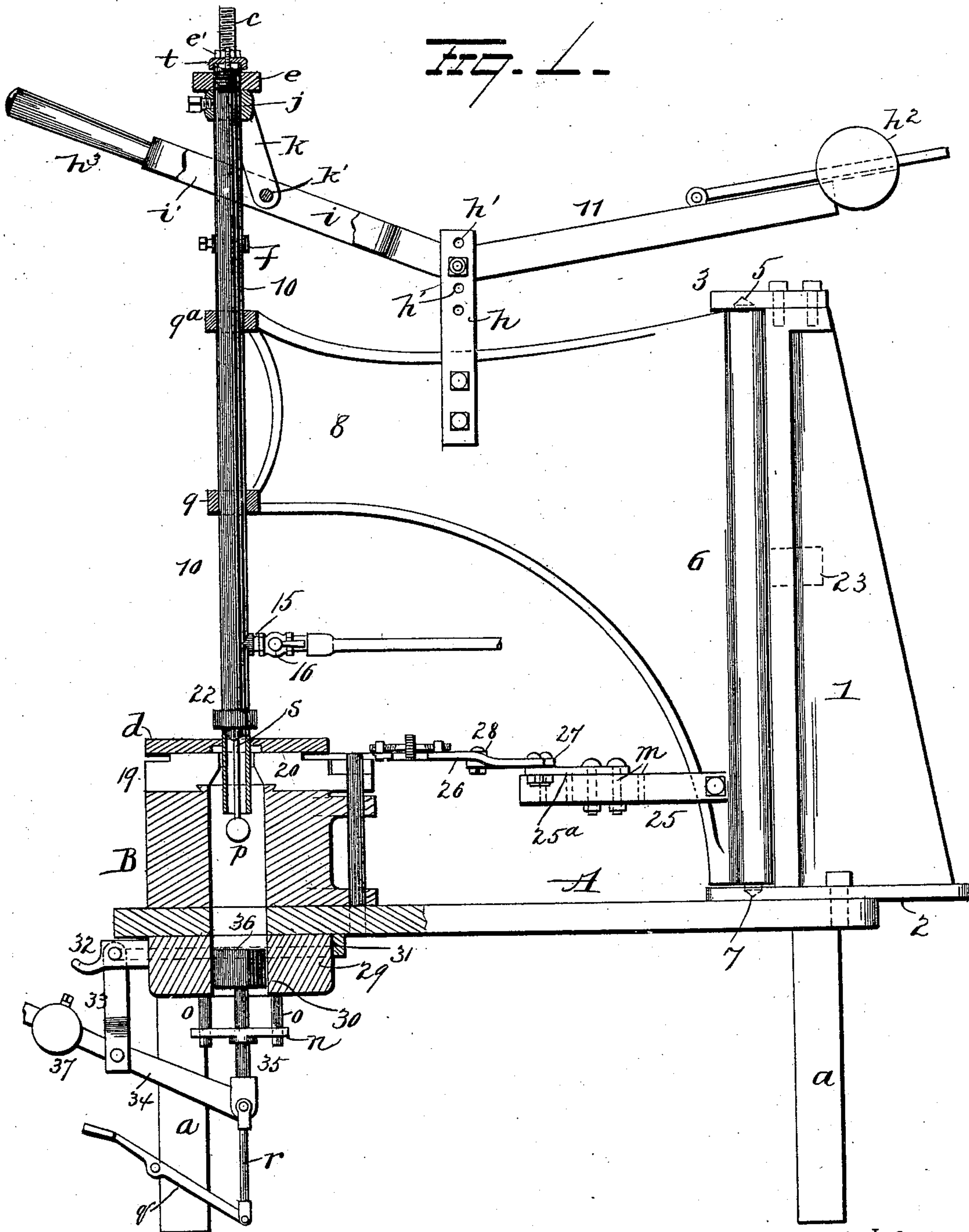
(No Model.)

2 Sheets—Sheet 1.

A. S. REEVES & F. J. MAURADER.  
BOTTLE MAKING MACHINE.

No. 581,083.

Patented Apr. 20, 1897.



Witnesses  
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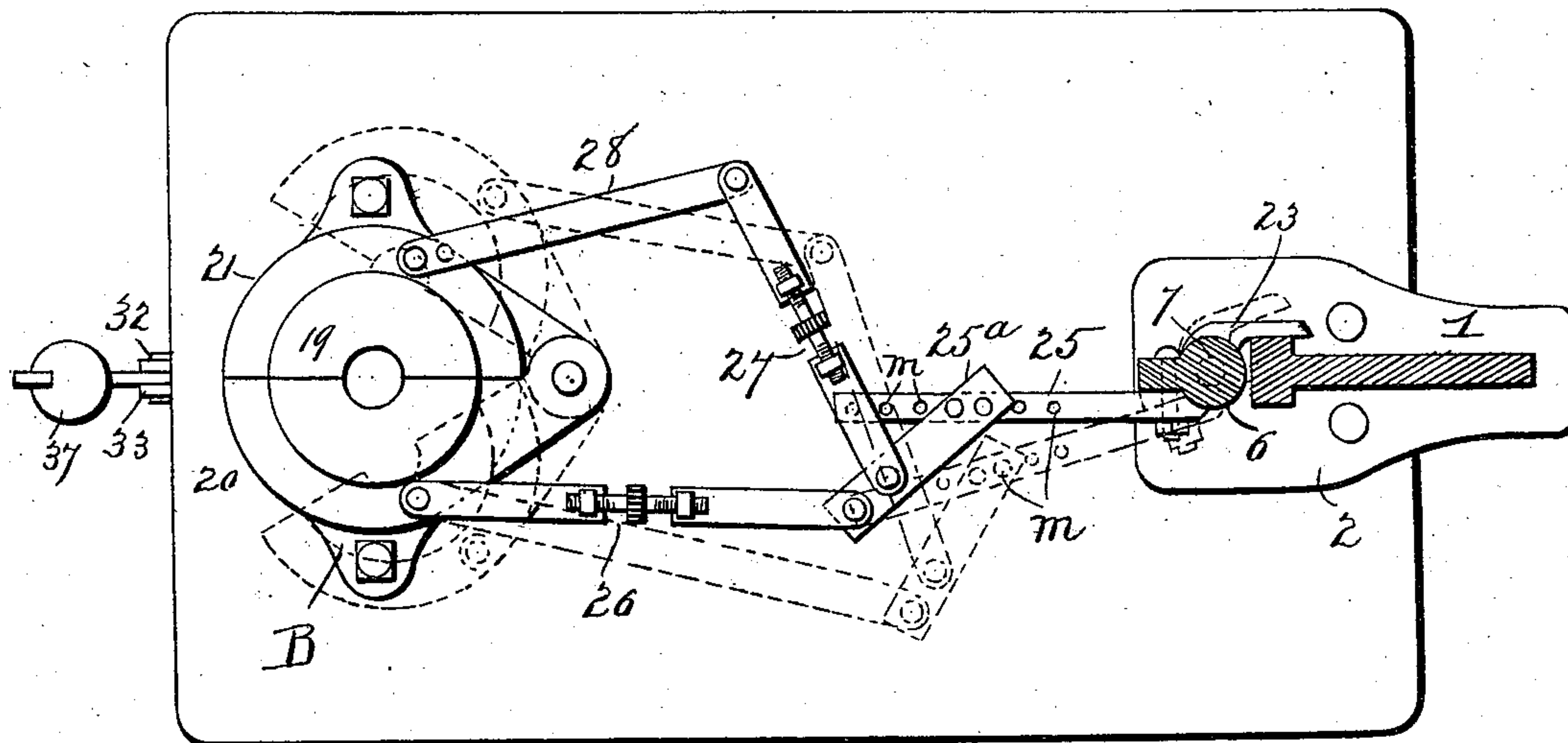
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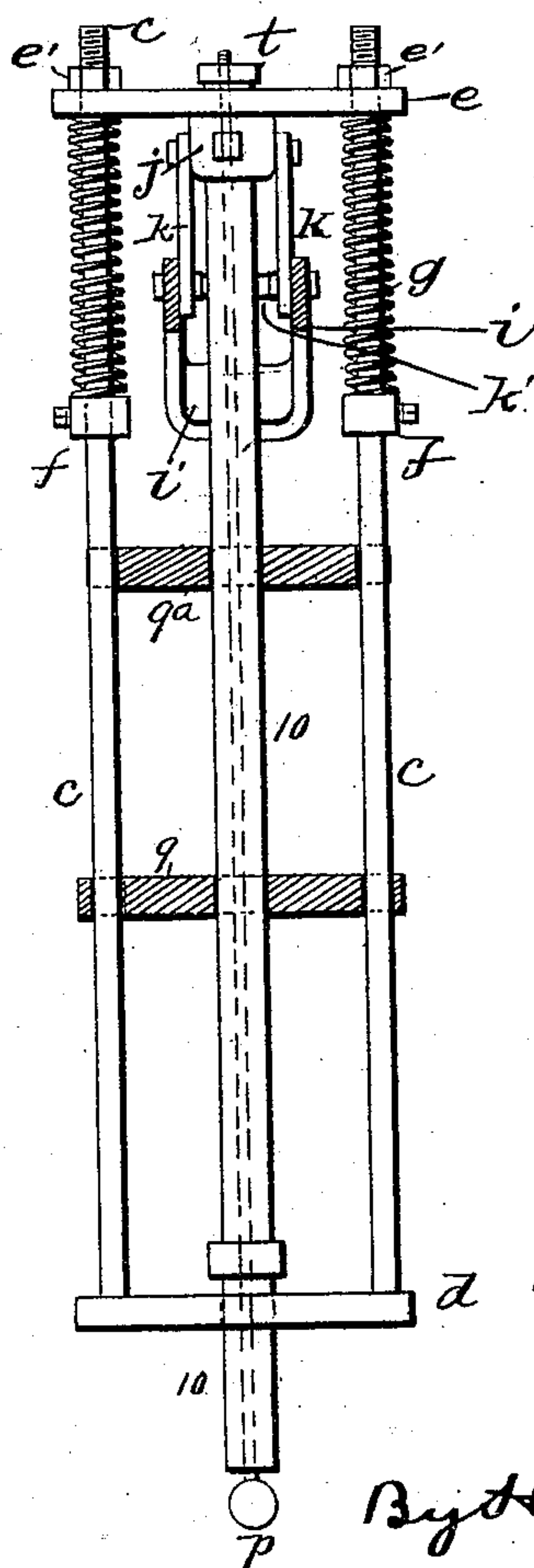
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# UNITED STATES PATENT OFFICE.

ALBERT S. REEVES, OF BRIDGETON, AND FREDRICK J. MAURADER, OF  
MILLVILLE, NEW JERSEY.

## BOTTLE-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 581,083, dated April 20, 1897.

Application filed July 14, 1896. Serial No. 599,152. (No model.)

*To all whom it may concern:*

Be it known that we, ALBERT S. REEVES, of Bridgeton, and FREDRICK J. MAURADER, of Millville, in the county of Cumberland, State of New Jersey, have invented certain new and useful Improvements in Bottle-Making Machines; and we do hereby 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 appertains to make and use the same.

Our invention relates to an improvement in bottle-molding machines, the object of the invention being to provide simple and efficient means for molding bottles and to so construct the devices by means of which air is forced into the glass that the molten glass will be effectually prevented from entering the pipe or tubular rod through which the air passes.

A further object is to provide devices for opening and closing the "neck portion" of the mold and to so construct said devices that they can be readily adjusted, whereby to insure the complete closing of said neck portion of the mold.

A further object is to so connect the operating-lever with the tubular rod which forms the opening in the neck of the bottle and conveys air to the molten glass for forming the body of the bottle that the free vertical movements of said tubular rod will be insured.

A further object is to so construct the machine that it will operate freely and effectually to perform its functions.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of our machine, partly in section. Fig. 2 is a horizontal cross-section showing the devices for operating the neck-mold in plan. Fig. 3 is a view illustrating details.

A represents a table supported on legs *a* and provided on its top with a mold B. A standard 1 is disposed at or near one end of the table A, or, more properly, projects upwardly from a base-plate 2, secured to said

table. The standard 1 is provided at or near its top with a forwardly-projecting arm 3, having a socket in its under face, in which socket a pintle 5 at the upper end of a bracket 6 loosely enters, the lower end of said bracket being provided with a pintle 7, mounted in a suitable socket in the base-plate 2, said bracket being thus mounted to swing, for a purpose which will be hereinafter explained.

The bracket 6 is made with an outwardly-projecting arm 8, provided at its free end with two cross-heads 9 9<sup>a</sup>, the lower cross-head 9 being made longer than the upper one and provided with holes for the accommodation of two rods *c c*, which latter are also guided in their movements in recesses in the ends of the cross-head 9<sup>a</sup>. The lower ends of the rods *c* carry a follower-plate *d*, and between said rods a tubular rod or pipe 10 is disposed and adapted to pass freely through holes in the cross-heads 9 9<sup>a</sup>. The upper end of the pipe or rod 10 is screw-threaded for the reception of a cross-head *e*, the ends of which are provided with holes through which the rods *c c* pass. The upper ends of the rods *c c* are also screw-threaded for the reception of nuts *e'*, which serve to prevent said cross-head *e* from moving upwardly on said rods. Collars *f* are also secured to the rods *c c* some distance below their screw-threaded portions, and between said collars and the ends of the cross-head *e* springs *g* are located on said rods *c c*. Thus it will be seen that the rods which carry the follower-plate are yieldingly connected with the tubular rod or pipe 10, so that when the latter is moved vertically the follower-plate is moved also.

A post or standard *h* is secured to the arm 8 of bracket 6 and projects upwardly therefrom. The post or standard *h* is made with a series of perforations *h'*, whereby a lever 11 can be adjustably pivoted thereto. The lever 11 is preferably made angular in form and provided at one end with a weight *h*<sup>2</sup> and at the other end with a handle *h*<sup>3</sup>. Between the handle *h*<sup>3</sup> and the pivotal support of the lever 11 the latter is widened, as at *i*, and this widened portion is made with an opening *i'*, through which the tubular rod or pipe 10 freely passes. The pipe or rod 10 is provided at or near its upper end with a col-



lar  $j$ , from which arms  $k$   $k$  depend, the lower ends of said arms being pivotally connected to a rod  $k'$ , passing through the opening  $i'$  of lever 11. From this construction it will be

5 seen that when the lever 11 is operated the tubular rod or pipe 10 will be moved vertically without danger of binding in its guides.

A laterally-projecting pipe 15 communicates with the tubular rod 10 and is adapted

10 to receive a flexible or other pipe connected with an air-compressor, said pipe 15 being provided with a valve 16.

The portion 19 of the mold (by means of which the neck of the bottle is formed) is

15 made in two parts 20 21, hinged together, and the pintle of said hinge serves to pivotally connect said part 19 to the top of the main portion B of the mold. The respective parts

20 of the part 19 of the mold are recessed centrally to form an opening for the admission of the lower end of the tubular rod 10, the latter being limited in its downward movement by means of a collar 22 thereon. The

25 bracket 6 being pivotally supported as above explained it can be swung so as to move the parts carried thereby laterally in one direction, but will be prevented from moving laterally in the other direction by means of an

30 arm or stop 23, secured at one end to said bracket and adapted at its other end to engage the standard 1. Thus it will be seen that when the bracket is swung into operative position it will be prevented from moving farther than is necessary to cause the rod 6

35 to properly aline with the hole in the mold by means of the arm or stop 23. The part 19 of the mold is provided with means whereby the same can be operated automatically when the bracket is swung laterally. To accom-

40 plish this, the devices now to be explained will be employed. An arm 25 is secured to and projects forwardly from the lower portion of the bracket 6, said arm being provided with a series of perforations  $m$ , whereby to

45 adjustably attach thereto a forwardly and laterally projecting arm 25<sup>a</sup>.

To the free end of the arm 25<sup>a</sup> one end of a link 26 is pivotally connected, the other end of said link being pivoted to the part 20 of the

50 mold. Another link 27 is pivoted at one end to the arm 25<sup>a</sup> at a point rearwardly from its end, and the other end of link 27 is pivoted to another link 28, the other end of the latter being secured to the part 21 of the mold. The

55 links 26 and 27 are each made in two parts, adjustably connected together by means of turnbuckles. From this construction and arrangement of parts it will be seen that when the bracket is swung in one direction parts

60 20 21 will be moved outwardly in opposite directions and release the neck of the bottle. When the bracket is moved in the other direction to bring the tubular rod 10 to its operative position, the parts 20 21 will be brought

65 together, and by making the links 26 27 adjustable the close fitting of the parts 20 21 can be insured.

The mold B extends through the table A, and on the under side of said table a movable plate or block 29 is located and made with an

70 opening 30, adapted to aline with the opening in the mold, said plate or block being supported by guides 31, and to said plate or block an arm or handle 32 is secured by means of

75 which to operate it. The arm 32 is provided with a depending arm 33, (made in two parts, pivoted together,) to the lower end of which a lever 34 is pivoted at a point between its ends.

To the inner end of the lever 34 a plunger-rod 35 is pivoted, and said plunger-rod is pro-

80 vided at its upper end with a plunger 36, adapted to operate in the hole in the plate or block 29. In order to insure the free movement of the plunger 36 and prevent the same from any liability to bind, a cross-head  $n$  is

85 secured between its ends to the plunger-rod 35 and provided with holes near its ends, through which holes guide-rods  $o$ , secured to the block 29, freely pass. The free end of the lever 34 is provided with a weight 37, adapted

90 to counterbalance the inner end of the lever and the plunger and plunger-rod carried thereby.

In operating the apparatus the plate or block 29 may be swung out of line with the

95 mold B for the insertion of glass into it, after which said plate or block will be moved in line with the mold B, and the free end of the lever 34 will then be depressed to cause the plunger 36 to ascend and force glass into the

100 portion 19 of the mold, whereby to form the neck.

Instead of moving the plunger upwardly by manipulating the lever 34, a foot-lever  $q$  may be employed, one end of said foot-lever

105 being connected by a rod  $r$  with the plunger-rod or with the inner end of the weighted lever 34.

When the glass shall have been forced upwardly within the mold B, as above explained,

110 the free end of the lever 11 will be lowered to cause the tubular rod or pipe 10 to enter the mold and form the opening in the molten glass for the neck of the bottle. The follower-

115 plate will also be lowered when the lever 11 is depressed, whereby to form the mouth of the bottle, the under face of said follower-plate being made with a recess into which the glass will enter for this purpose. When the tubular rod or pipe 10 shall have entered the

120 mold and passed through the neck portion thereof, the valve 16 will be opened and compressed air permitted to escape through the pipe 10 and form or blow the glass within the mold B to form the body portion of the bottle. 125 The lever 11 will then be raised to remove the tubular rod and follower-plate. A lateral movement of the lever 11 will now cause the bracket 6 to swing laterally and open the portion 19 of the mold, as above explained. 130

It has been found that should the lower end of the tubular rod or pipe 10 be unguarded the molten glass will be apt to enter the same and clog it when said rod or pipe is projected into



the mold. To remedy this, we provide a guard *p*, disposed a short distance below the outlet of said tubular rod or pipe, said guard serving to prevent the entrance of glass into the tubular rod or pipe without preventing the proper escape of compressed air through the latter. In constructing the guard *p* we prefer to make the same spherical, so that the compressed air will be discharged laterally and downwardly from the end of pipe or tubular rod 10 and operate effectually to form the glass into a bottle. The spherical guard *p* is supported in a fixed position a short distance below the outlet of pipe or tubular rod 10 by means of a rod *s*, passing upwardly through the latter and secured at its upper end to a cap *t*, adapted to screw on the upper end of pipe or tubular rod 10. In this manner the guard will be held in a normally-fixed position, but can be removed for repair, if necessary, by removing the cap *t*.

Our improvements are simple in construction, easy to manipulate, and are effectual in all respects in the performance of their functions.

Slight changes might be made in the details of construction of our invention without departing from the spirit thereof or limiting its scope, and hence we do not wish to limit ourselves to the precise details herein set forth.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a bottle-making machine, the combination with a mold and a swinging bracket, said mold having a sectional neck portion, of an arm projecting from the swinging bracket, a bar adjustably secured to said arm, a longitudinally-adjustable link pivoted at its respective ends to said bar and one section of the neck portion of the mold, a longitudinally-adjustable link pivoted to the bar inwardly from its end, and a link pivoted at one end to the last-mentioned link and at the other end rigidly secured to the other section of the neck portion of the mold, substantially as set forth.

2. In a bottle-making machine, the combi-

nation with a mold and a tube adapted to enter said mold, said tube being entirely open at its lower end, of a guard disposed in a fixed position below the outlet of said pipe, substantially as set forth.

3. In a bottle-making machine, the combination with a mold and a pipe adapted to enter the same, of a rod fixed in said pipe and terminating below the outlet end of the pipe, and a spherical guard fixed to the free lower end of said rod and adapted to prevent the entrance of glass into said pipe, substantially as set forth.

4. In a bottle-making machine, the combination with a mold and a pipe, of a cap adapted to screw on the upper end of said pipe, a rod secured to said cap, said rod extending through the pipe and terminating a short distance below the outlet of said pipe and a guard fixed to the free end of said rod, substantially as set forth.

5. In a bottle-making machine, the combination with a mold and a sliding block having an opening to communicate with said mold, of a plunger in said block, a cross-head secured to the rod of said plunger, said cross-head having holes therein, guide-rods projecting from said block and passing through the holes in said cross-head, and means for operating said plunger, substantially as set forth.

6. In a bottle-making machine, the combination with a mold, of a sliding block having a hole to aline with said mold, a plunger in said block, a jointed arm depending from said sliding block, a weighted lever pivoted between its ends and attached at one end to the rod of said plunger and a foot-treadle connected with said plunger-rod, substantially as set forth.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

ALBERT S. REEVES.  
FREDRICK J. MAURADER.

Witnesses:

GEO. HAMPTON,  
GEO. EBNER.