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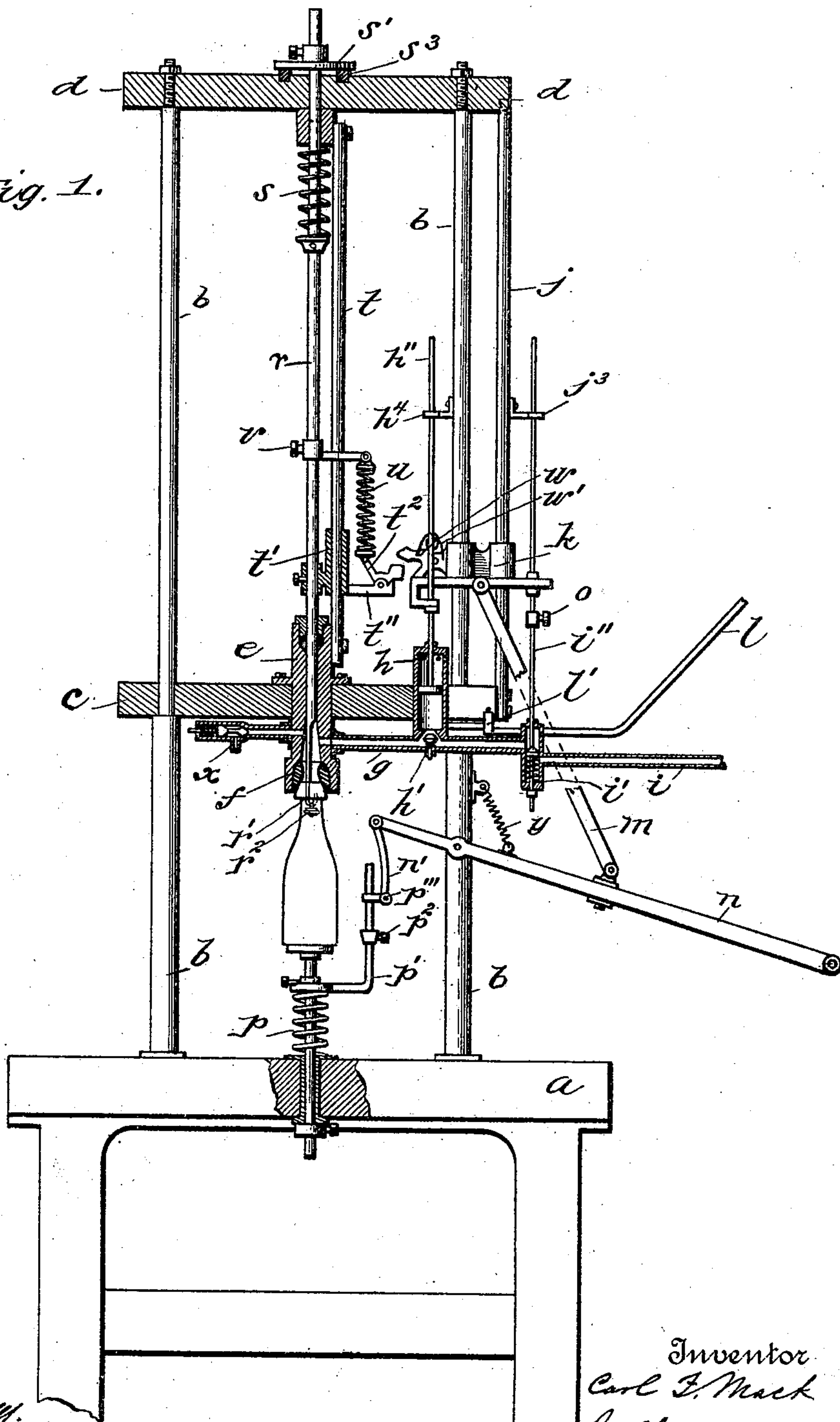
2 Sheets—Sheet 1.

C. F. MACK.
BOTTLING MACHINE.

No. 503,094.

Patented Aug. 8, 1893.

Fig. 1.



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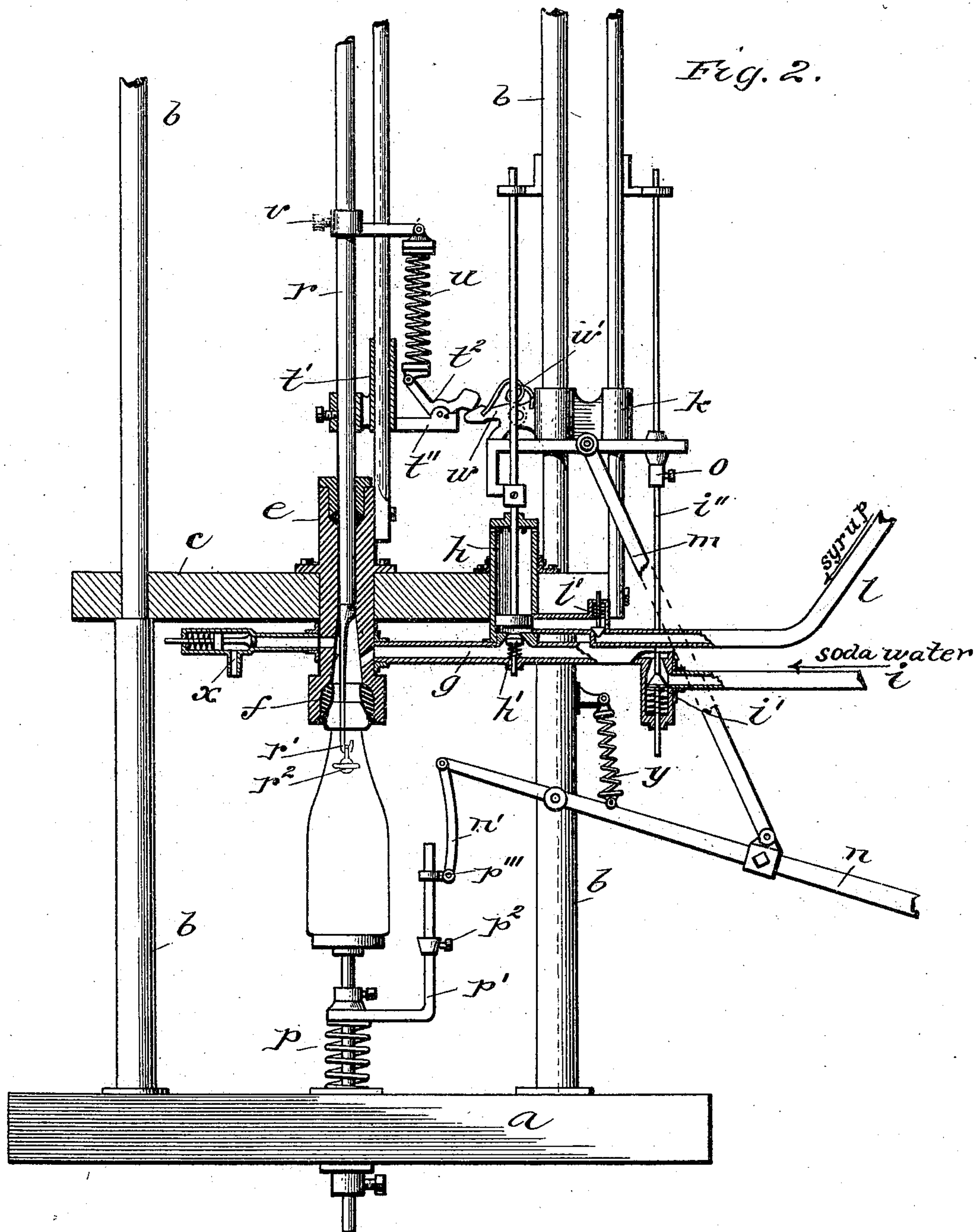
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BOTTLING MACHINE.

No. 503,094.

Patented Aug. 8, 1893.



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UNITED STATES PATENT OFFICE.

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BOTTLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 503,094, dated August 8, 1893.

Application filed March 23, 1893. Serial No. 467,319. (No model.)

To all whom it may concern:

Be it known that I, CARL FRED. MACK, a citizen of the United States, residing at York, in the county of York and State of Pennsylvania, have invented certain new and useful Improvements in Bottling-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to a new and improved bottle filling machine, particularly to that class of machines which are adapted for filling bottles with aerated liquids, and it has for its object to provide means whereby the filled bottles will be automatically corked, said corking device being adapted for use with that class of stoppers which are drawn from the interior of the bottles up into the necks thereof when it is desired to fasten or close them. All of which is hereinafter fully explained, and particularly pointed out in the claims appended.

25 In the drawings:—Figure 1 is a vertical sectional view showing a bottle being filled. Fig. 2 is a similar view on an enlarged scale, parts of the frame being broken away, showing the bottle filled, and the mechanism in position to begin the corking operation.

30 In the drawings, *a* designates the main table or support.

b b are vertical rods which are mounted on the main table, and support the mechanism.

35 *c* is an intermediate table or platform which is supported by the rods *b*, and on which a part of the mechanism is mounted.

d is a cross-bar which connects the upper ends of the rods *b*.

40 *e* is a vertical cylinder supported by the table *c*, its lower end projecting below the table, and being formed with a flaring mouth in which is seated a packing *f*, against which the mouth of the bottle to be filled is forced.

g is a pipe which enters the cylinder *e* immediately above the packing *f*.

45 *h* is a sirup pump which is connected to the pipe *g*, and *i* is a pipe which is connected to the outer end of pipe *g* and conveys the aerated liquid.

50 *h'* is an outlet valve which permits the sirup to flow from cylinder *h* into pipe *g*, said valve being normally closed by a spring.

i' is an inlet valve which when open permits the liquid to flow from pipe *i* into pipe *g*, this valve being also normally closed by a spring.

55 *i''* is an upwardly extending valve-stem connected to valve *i'*, its upper end being guided by a keeper *j*³ secured to a vertical rod *j*. This rod *j* is parallel with, and adjacent to, one of the rods *b*, and sliding on it and on the rod *b* is a cross-head *k* through which the valve-stem *i''* passes loosely.

60 *h''* is the piston-rod of the sirup pump, and said piston rod is rigidly secured to the cross-head *k*, its upper end sliding through a keeper *h*⁴ secured to the rod *b*.

65 *l* is the sirup-conveying pipe which connects with the lower end of the sirup pump, and said pipe is provided with the spring-controlled inlet valve *l'*.

70 *m* is a pitman connected at its upper end to the cross-head *k* and at its lower end to the operating lever *n*.

75 *o* is an adjustable stop secured on the valve stem *i''*.

p is a spring-supported, adjustable bottle support mounted in the table *a*, directly below the cylinder *e*.

80 *p'* is an angle arm mounted on the vertical rod of the support *p*, its vertical member being provided with a stop *p*².

p''' is a sleeve sliding on the vertical member of arm *p'*, said sleeve being connected by link *n'* to the inner short arm of lever *n*.

85 The operation of this part of the mechanism is as follows:—When the lever *n* is raised the cylinder of the sirup pump is filled, the sirup being drawn into the cylinder thereof by its piston, through the inlet valve *l'*; the bottle is now placed in position, and the lever *n* is depressed, forcing the sirup through the valve *h'* into pipe *g* and through said pipe and the cylinder *e* into the bottle. When nearly all of the sirup has been forced out of the cylinder *h* the cross-head *k* comes in contact with stop *o* on the stem *i''* of valve *i'*, and the continued downward movement of the cross-head opens said valve, permitting the aerated liquid to flow through pipe *g* into the bottle. The lever *n* is held in its depressed position until the bottle is filled, and is then raised, again filling the cylinder *h* with sirup, 100

and permitting valve *i* to close automatically by the action of its spring. While the lever *n* is being raised it operates the bottle-corking mechanism, and said mechanism is constructed as follows:—

r is a vertical rod which fits closely within the cylinder *e*, and said rod for a portion of its length at its lower end is reduced in diameter, a hook *r'* being formed at the extreme lower end of this reduced portion. The reduced lower end of this rod enters the bottles, when they are in position to be filled, and the corks *r*² are hung by their attached staples on the hook *r'*. The upper end of this rod is supported in a bearing in the cross-bar *d*.

s is a spring which surrounds the rod *r* near its upper end and returns it to its normal or lowered position after it has been raised.

s' is a plate which is secured to the upper end of rod *r* and is designed to limit the downward movement of the rod, and said plate operates on a rubber buffer *s*³ which receives the jar and strain caused by spring *s* when it returns said rod to its normal position.

t is a vertical rod supported by the frame of the machine, adjacent to and parallel with the rod *r*.

t' is a long sleeve mounted to slide on rod *t* and said sleeve is adjustably connected to rod *r*.

t'' is a forwardly extending bracket carried by said sleeve at its lower end.

*t*² is a vertically-rocking angle-lever mounted on the bracket *t''*, one arm of said lever extending forwardly in an approximately horizontal position and having formed on its end an arrow shaped head, and the other arm thereof extending upwardly and having secured to its end the lower end of a strong contractile spring *u*.

v is an adjustable arm carried by the rod *r*, and to the forward end of this arm the upper end of spring *u* is secured.

w is an angle lever which is pivoted on the cross-head *k*, one arm of said lever extending rearwardly in an approximately horizontal position, its rear end engaging the forward end of lever *t*² as the cross head *k* is reciprocated, as will presently appear. The other arm of the lever *w* extends downwardly, and its lower end bears on the cross-head *k*; and *w'* is a spring which normally holds this arm of lever *w* down to said cross-head.

x is a safety valve connected to the cylinder *e* to relieve the pressure in the cylinder when the corks are drawn into the necks of the bottles.

y is a spring which returns the lever *n* to its raised position.

The operation of the corking mechanism is as follows:—When the cross-head *k* is carried down during the operation of filling the bottle, the horizontal arm of lever *u*, comes in contact with the horizontal arm of lever *t*² and is caused to turn on its pivot sufficiently to pass said lever, the spring *w'* returning the le-

ver *w* to its normal position after it has passed the lever *t*². When the bottle is full, the cross-head is raised by the lever *n* and its connecting rod *m* and the horizontal arm of lever *w* comes in contact with the under side of lever *t*² and carries said lever and its supporting bracket up with it, the sleeve *t'* sliding up on the rod *t* and carrying with it the rod *r*. The lever *w* is prevented from turning down on its pivot by its lower arm. As this rod is carried upward, the stopper or cork *r*² carried at its lower end is drawn up into the neck of the bottle, and when it reaches its closed position it almost acts as a positive stop for the rod *r*, because of the hooked connection of said rod with the stoppers, and as the resistance of the stopper in the neck of the bottle is now greater than the strength of the spring *u*, the continued upward movement of the cross-head will cause the lever *t*² to turn on its pivot (the spring *u* yielding sufficiently) and permit the lever *w* to pass said lever *t*², and as these levers are released from each other the spring *s* forces the rod *r* down to its normal position. Simultaneously with the release of the levers *t*² and *w* from each other the sleeve on the rod *p'* comes in contact with the stop *p*² and forces the bottle support downwardly and as the filled bottle follows its support it is released from the cylinder *e* and is in such a position that the staple of the cork *r*² may be readily removed from the hook of the rod *r*. The machine is then in position to receive another bottle, and operation is continued.

The various parts are made adjustable in order to adjust the machine for filling bottles of different sizes; for securing the proper operation of the devices, and to provide for the taking up of the wear of the parts.

Having thus fully described my invention, what I claim is—

1. A bottle filling machine consisting of a support, a cylinder mounted thereon, means for holding the head of a bottle in one end of the cylinder, means connected to the cylinder for charging the bottle, a reciprocating rod, one of its ends passing through the cylinder and into the bottle and adapted to carry a stopper therein, a reciprocating slide, means connected to this slide whereby the charging mechanism is operated on one stroke of said slide, devices connected to said slide for automatically engaging the stopper-carrying rod whereby said rod is operated and the bottle corked on the reverse movement of the slide, and means for operating this slide, substantially as described.

2. A bottle filling machine consisting of a support, a vertical cylinder mounted thereon, means for holding the head of the bottle in the lower end thereof, means for charging the bottle connected to this cylinder, a vertically moving rod supported by the frame, its lower end passing through the cylinder into the bottle and adapted to carry a stopper therein, a vertically reciprocating slide carried by the frame, said slide operating the bottle charg-

ing mechanism on its downward stroke, and raising the stopper carrying rod on its upward stroke, and trip mechanism connected to the rod, whereby it is automatically released from the slide when the bottle is corked, substantially as described.

3. A bottle filling machine consisting of a support, a vertical charging cylinder supported thereon, a spring controlled bottle support for forcing the head of the bottle into the lower end of the cylinder, a vertically moving rod constructed as described and adapted to carry a stopper at its lower end within the bottle, a vertically moving slide carried by the frame, said slide operating to raise the stopper carrying rod, trip mechanism connected to said rod whereby it is automatically released when the bottle is corked, and devices connecting the slide and the bottle support whereby the bottle is released from the cylinder simultaneously with the release of the stopper carrying rod, substantially as described.

4. A bottle filling machine consisting of a support, a cylinder *e*, a bottle support, charging mechanism connected to the cylinder, a stopper-carrying rod *r* its lower end extending into the bottle and adapted to carry a stopper therein, a slide *k* carried by the frame, said slide on its upward movement raising the stopper carrying rod, tripping mechanism connected to and carried by said rod, said trip mechanism consisting of a pivoted two-armed lever, one arm of which is engaged by devices carried by the slide, its other arm being connected to a spring which is carried by the rod, substantially as described and for the purpose set forth.

5. A bottle filling machine consisting of a support, a charging cylinder, as *e*, a spring supported bottle support, charging mechanism connected to the cylinder *e*, the stopper carrying rod *r*, the cross-head or slide *k*, said slide operating the charging mechanism on its downward stroke, trip mechanism carried by the stopper carrying rod and operated on by devices carried by the slide *k*, a lever pivoted on the frame and connected on one side of its pivot to the slide *k* and on the other side thereof to the bottle support, whereby on the downward stroke of said lever the charging mechanism will be operated, and on its upward stroke the bottle corking mechanism,

and simultaneously with the release of the stopper-carrying rod, the bottle support will be depressed, substantially as described.

6. A bottle filling machine consisting of a supporting frame, cylinder *e*, a bottle support, a corking device, charging mechanism connected to the cylinder *e*, said mechanism consisting of pipe *g*, a pipe *i* connected thereto, a valve *v'* placed at the connection of said pipes, the stem of this valve extending upwardly and carrying an adjustable stop, a sirup pump connected to pipe *g* between valve *v'* and cylinder *e*, a cross head or slide mounted in the frame, said slide being connected to the piston of the pump, and adapted to strike the stop on the stem of the valve *v'*, and means for reciprocating said slide, substantially as described.

7. A bottle filling machine consisting of a supporting frame, a charging cylinder, and charging mechanism connected thereto, a bottle support, the stopper carrying rod *r*, a vertically reciprocating cross-head mounted in the frame, tripping mechanism carried by the rod *r* and the cross-head, said mechanism consisting of the lever *w* carried by the cross-head the lever *t*² carried by the rod *r*, and the spring *u* connected to the lever *t*² and to the rod *r*, substantially as described and for the purpose set forth.

8. A bottle filling machine consisting of a supporting frame, a charging cylinder mounted therein, and charging mechanism connected to said cylinder, a bottle support, a stopper carrying rod, its lower end extending into the bottle and carrying a stopper therein, a vertically reciprocating slide, said slide operating the charging mechanism on its downward stroke and raising the stopper carrying rod on its upward stroke, and yielding trip mechanism connected to said rod and operated by the slide whereby when the stopper has been drawn into the neck of the bottle and the bottle is corked, the trip mechanism will yield to the resistance caused by said stopper in the neck of the bottle and release the stopper carrying rod substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CARL FRED. MACK.

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