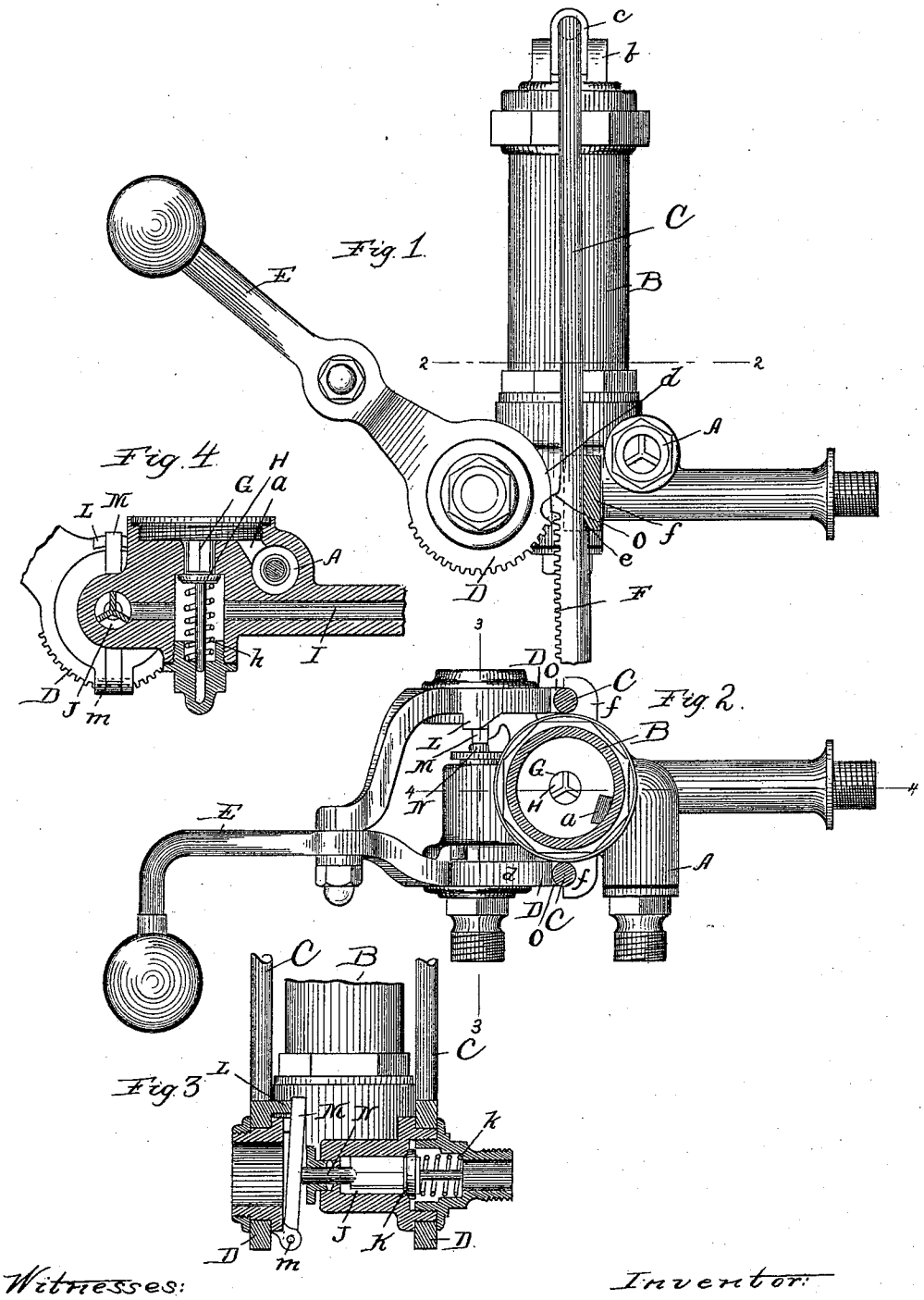
(No Model.)

J. E. JACOBS.

SIRUP GAGE.

No. 478,330. Patented July 5, 1892.



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UNITED STATES PATENT OFFICE.

JOHN E. JACOBS, OF CHICAGO, ILLINOIS.

SIRUP-GAGE.

SPECIFICATION forming part of Letters Patent No. 478,330, dated July 5, 1892.

Application filed October 29, 1891. Serial No. 410,166. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. JACOBS, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Sirup-Gages, of which the following is a specification.

This invention relates to the sirup-gages used in bottling operations, and is adapted to charge the bottle being filled with a measured quantity of flavoring sirup and afterward to admit the water or other fluid with which it is filled. Gages of this kind are now in use; and my invention consists in the improvements hereinafter set forth and claimed, the object of the invention being to improve the construction and operation of the device.

I show in the accompanying drawings, at Figure 1, a plan view of my improved gage; at Fig. 2, a section of the same on the line 2 2 of Fig. 1; and at Figs. 3 and 4 sections upon the lines 3 3 and 4 4, respectively, of Fig. 2.

In said drawings, A represents the sirup-supply pipe having a proper check-valve (not shown) and leading at *a* into the graduating sirup-chamber B, in which works a plunger having a throw imparted to it by the yoked arms C, passing through a head *c*, secured to the outer end of the plunger by the ears *b*. The arms C are located upon opposite sides of and move vertically in the plane of the axis of chamber B, so that the power is not applied to the plunger in a direction calculated to rack it or wear the chamber or plunger more upon one side than another, as is the case with prior constructions wherein the plunger is actuated by power applied in an angling instead of a parallel direction. The evil attending the angling application of power is, of course, intensified when the plunger is given the long strokes, and soon causes an uneven wear of the parts and an imperfect action by them. This evil I overcome by giving the arms C a movement in which they never depart from their parallelism to the line of the sirup-chamber, whether the stroke be long or short.

For the actuation of the arms C, I employ rotating toothed segments D, receiving power from the hand-lever E and meshing with the racks F upon the lower ends of the arms C. This method of imparting motion to the arms does not destroy the parallelism between the arms and the chamber. The racks are supported at their rear by stationary guides *f*. The stroke of the lever E and the resultant rotation of the segments may be limited and regulated in the ordinary manner, so that the plunger may be raised only the requisite distance necessary to admit the desired amount of sirup into the sirup-chamber through the passage A. When the chamber has been charged, as just stated, the lever E is moved to the position given in Fig. 1, so as to force the plunger inward and drive the charge of sirup into the bottle being filled. In this movement the sirup passes from the chamber B into the outlet-passage G, containing an automatic valve H, normally closed by the spring *h*, and from said passage G into the passage I, by which it is carried on its way to the bottle. When the sirup has been thus discharged and the pressure caused by the movement of the plunger has ceased, the valve H closes, and the valve controlling the entrance of the water or other fluid which completes the filling of the bottle, is opened, as hereinafter more particularly stated.

Into the passage I opens another passage J, leading from the source of water-supply, and in which is a valve K, which is acted upon by a spring *k*, so as to be normally closed. This valve is opened momentarily at each stroke of the lever E after the inward movement of the plunger has been completed, the lever E being adapted to continue its stroke for the purpose of opening this valve without, however, affecting or moving the plunger by such continuance of motion. The construction by which I accomplish this result is as follows: One of the segments D carries upon its side face a cam projection L, which when the lever E nears the end of its stroke comes in contact with an arm M, hinged at one end to a stationary point, as shown at *m*. The valve K upon that side opposite its stem and spring is provided with a second stem N, which projects through a stuffing-box in the end of the valve-case and into such position that the arm M, when actuated by the cam L, will bear against the stem N and force the valve K into the open position. This per-

mits the entrance of the water, which is usually under considerable pressure and completes the filling operation. The continued motion of the lever E is prevented from exerting any effect upon the plunger or the racks by the cessation of contact between the teeth of the segments and racks, such cessation being followed by a non-operative contact between the rounded part *d* of the segments and the projections O just above the racks. The projections O are calculated, however, to engage the first tooth of the segments when the motion of the lever E is reversed and the plunger is to be raised.

For the sake of simplicity I prefer that the passage I should enter through the axis of one of the segments, as shown. Room is economized in this manner and the gage is rendered less cumbersome and more simple.

The manner of operating the water-valve is not only very simple but very desirable, but because there is very little wear upon any part of it or its actuating devices, and it is not likely therefore to need repairs or become defective. By positioning the plunger-operating arm C parallel to the chamber B, I reduce the power necessary to operate the plunger very considerably, the friction being greatly reduced over the old construction.

It will be noticed that the water-valve is not opened until the valve controlling the outlet-passages from the sirup-chamber has had time to close completely, and, moreover, the construction is such that the admission of the water to the passage I will tend to tighten said valve upon its seat by increasing the pressure upon its rear side. This result is important, as it prevents any danger of access by the water to the interior of the sirup-chamber.

The racks may, if desired, be provided with cam projections *e*, which, in conjunction with guides *f*, will act, when the racks are in the position illustrated at Fig. 1, and with the portions *d* of the segments bearing against them to lock the racks against any reverse movement. This locking action is removed, however, as soon as the teeth begin to engage, as the racks are then permitted to swing the slight amount required to clear the guides. This feature prevents any action by the water upon the plunger, should the valve in the passage connecting from the passage I with the bottom of the sirup-chamber fail to do its duty.

I claim—

1. In a sirup-gage, the combination, with the graduating sirup-chamber and its plunger, of arms C for actuating said plunger, said arms being located at opposite sides of said chamber and parallel with the plane of the plunger-axis and carrying racks, and segments meshing with such racks and acting to impart simultaneous movement to said arms without destroying their parallelism with said axis, substantially as specified.

2. In a sirup-gage, the combination, with a water-passage, of a valve K, having a rear stem *m*, extending through the valve-case, a cam moved by the operating-lever, and a hinged arm M, actuated by the cam, substantially as set forth.

3. In a sirup-gage, the plunger of the sirup-chamber, the arms carrying power to said plunger, the racks and projections O upon said arms, and the water-valve having the projecting stem N, in combination with the segments, their operating-lever and cam L, the contact between the teeth of the segments and racks ceasing at the completion of the inward movement of the plunger and the continuing movement of the lever serving to open the water-valve, substantially as set forth.

4. The combination, in a sirup-gage, of a graduating-chamber and plunger, arms C for actuating said plunger, racks F upon the arms, the operating-lever, the segments rotated by the lever and meshing with the racks, the cam L upon one of the segments, the projections O above the racks, and the water-valve, substantially as specified.

5. The combination, in a sirup-gage, of the sirup-chamber and plunger, the arms and racks for giving motion to the plunger and the water-valve, with hand-lever and segments rotated by the lever and meshing with said racks, said segments and racks being in non-operative contact during the latter portion of the lever-stroke, and one of the segments having a cam adapted to actuate said valve during such latter portion of the lever-stroke, substantially as specified.

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