(No Model.)

2 Sheets—Sheet 1.

V. BARKER.

CAN FILLING MACHINE.

No. 266,077. Patented Oct. 17, 1882.

Fig. 1.

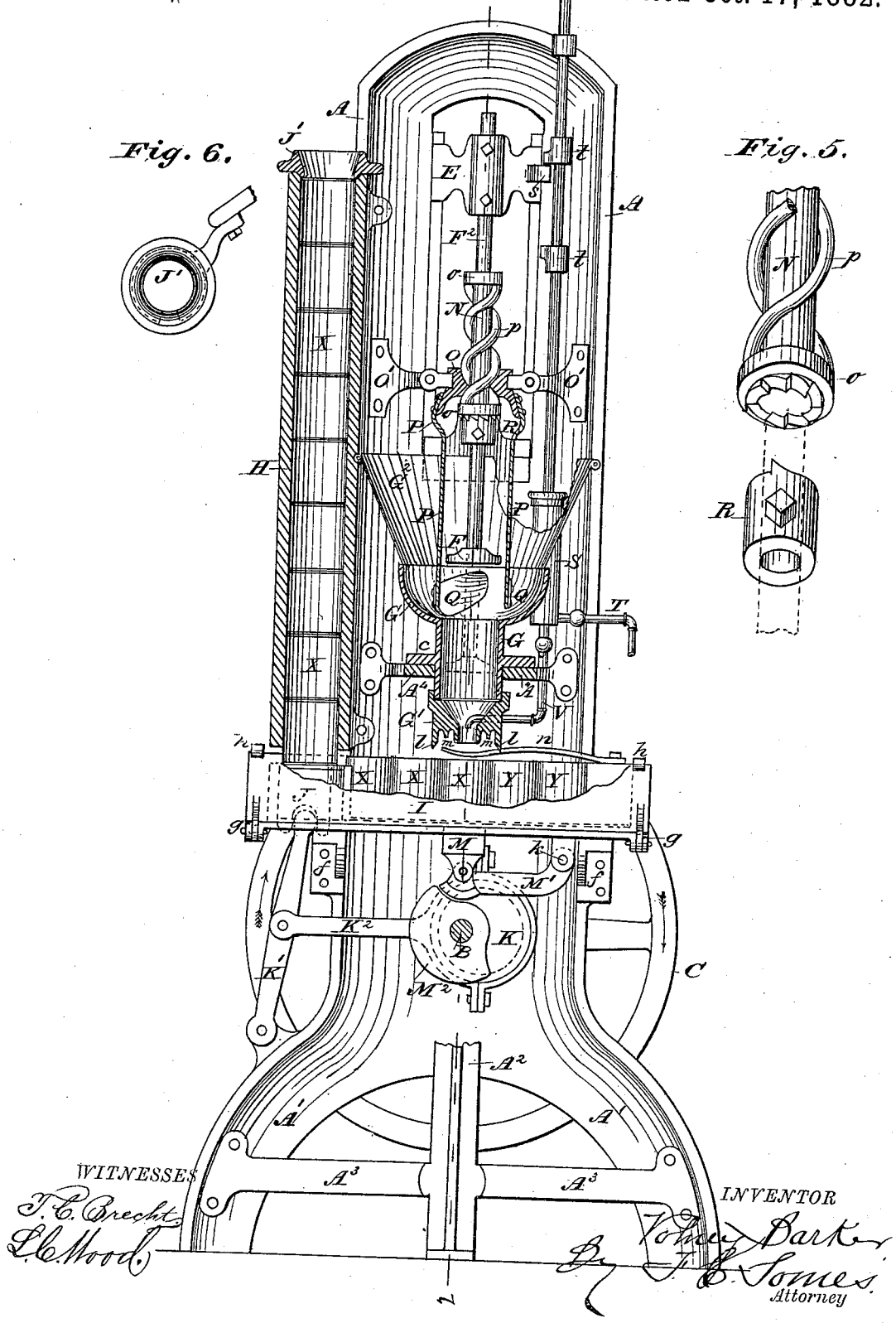

Fig. 6.

Fig. 5.

WITNESSES

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2

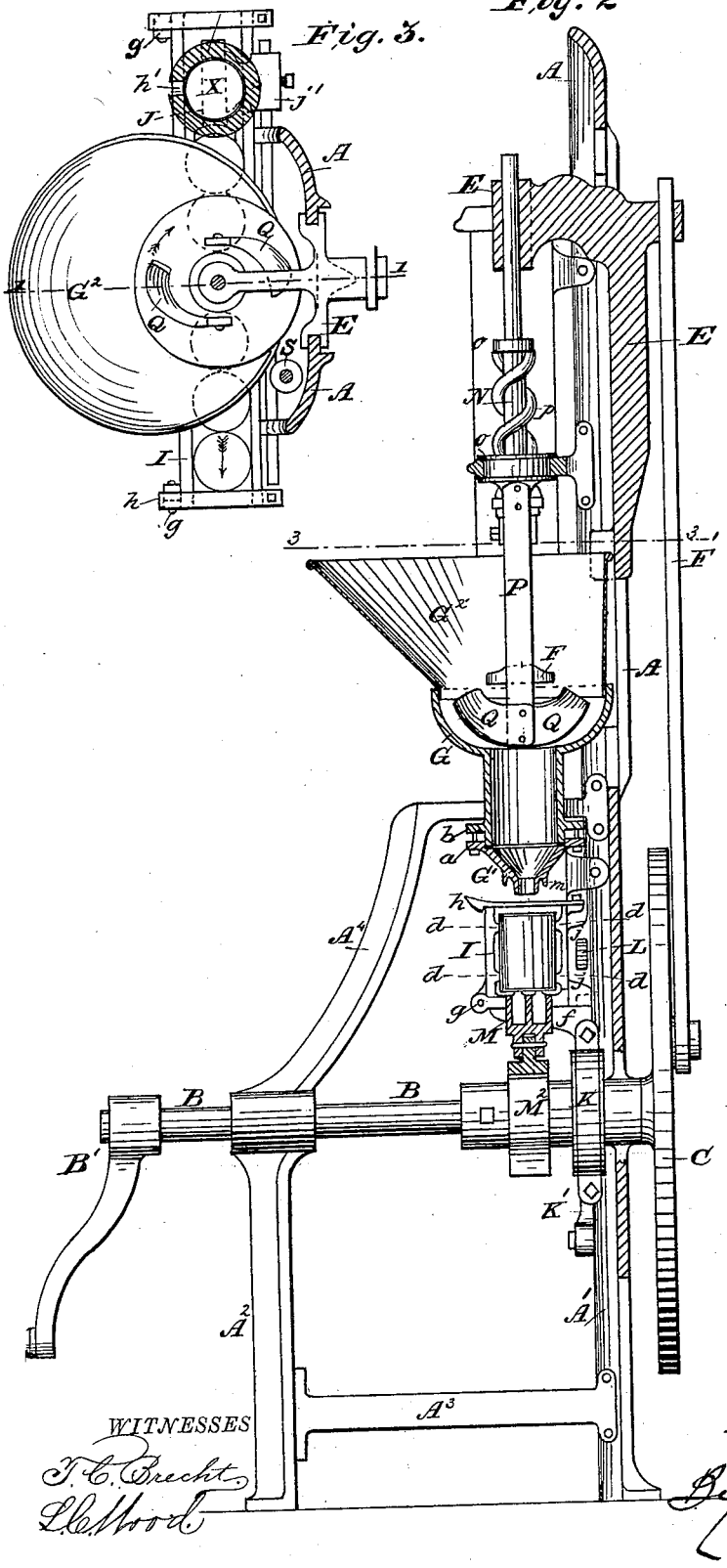


Fig. 3.

Fig. 4.

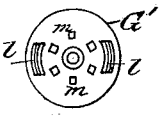


Fig. 7.

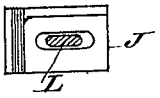


Fig. 8.

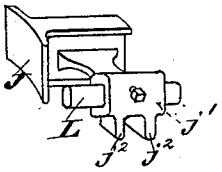
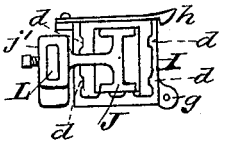


Fig. 9.



WITNESSES

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UNITED STATES PATENT OFFICE.

VOLNEY BARKER, OF PORTLAND, MAINE.

CAN-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 266,077, dated October 17, 1882.

Application filed July 3, 1882. (No model.)

To all whom it may concern:

Be it known that I, VOLNEY BARKER, a citizen of the United States of America, residing at Portland, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Can-Filling Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This machine is designed principally for use in canning green corn; but it may also be used in canning other articles.

The invention relates to an organized machine which embraces mechanism for supplying the cans to be filled, mechanism for supplying a determinate quantity of corn to each can, and mechanism for injecting a regulated quantity of liquid into each can with the corn, the several mechanisms being so connected as to work in harmony with each other.

The invention consists in certain improvements in each of the several mechanisms and their combinations, as hereinafter set forth and claimed.

In the accompanying drawings, Figure 1 represents a front elevation of this improved machine, partly in section on line 1 1 of Fig. 3. Fig. 2 represents a side elevation, partly in section on line 2 2 of Fig. 1. Fig. 3 represents a top plan, partly in section on line 3 3 of Fig. 2. Fig. 4 is a plan view of the tunnel-nozzle inverted. Fig. 5 is a perspective view of the screw-sleeve, which forms a part of the corn-feeding mechanism. Fig. 6 is a top view of the can-spout. Fig. 7 is a side elevation of that portion of the can-pusher which is within the can-channel. Fig. 8 is a perspective view of the can-pusher and the boss by which it is connected to the sliding rod. Fig. 9 is an end view of the pusher within the can-channel.

The operative parts of this machine are mounted upon any suitable supporting-frame. The frame shown is a portable stand constructed of metal, and consists of a long slotted or double upright standard, A, having legs A′ A′, and a short standard or front leg, A^2, connected to the standard A by braces A^3 A^3 and arm A^4. The part A of the frame is made concave to give it strength. A driving-shaft, B, to which a crank, B′, driving-pulley, or other suitable actuating mechanism is applied, is supported in suitable bearings of the frame. A cross-head, E, carrying a plunger, F, is adapted to slide in vertical ways of the frame, and is operated by any suitable means. The means shown are the connecting-rod F′ and a balance crank-wheel, C, on the driving-shaft B.

A tunnel, G, for guiding the corn or other material into the cans, is arranged in line with the movement of the plunger. The hopper of this tunnel is preferably curved or arc-shaped in vertical section, and the tube thereof is of uniform diameter, and is provided at its lower end with a conical discharge-nozzle, G′. This nozzle is preferably detachable, being provided with attaching-lugs *a*, through which it is bolted to lugs *b* of the tunnel-tube. Surmounting the hopper of the tunnel is a supplementary hopper, G^2. The tunnel is supported by means of lugs *c*, attached thereto or cast therewith, which lugs rest upon and are bolted or otherwise fastened to the bent bifurcated arm A^4. The supplementary hopper G^2 has a flange, which fits into the hopper of the tunnel. Other means may be adopted for supporting these parts.

The mechanism for supplying the cans to be filled embraces a vertical spout, H, into which the empty cans are dropped, a horizontal channel, I, through which they are guided under the nozzle of the tunnel, a sliding pusher, J, in said channel for pushing them into position, and suitable mechanism for operating the pusher. The vertical spout H is provided along its length with an open slot, *h*′, to enable the cans to be seen, and at its top with a flaring collar, J′, the opening through which is slightly smaller than the internal diameter of the spout. The slot enables the operator to readily determine what supply of cans is in the spout, and the collar serves as a guard to prevent any jammed cans which would be liable to stick in the spout or channel from entering the machine. Any cans which will go through the guard-collar will pass through the machine without causing trouble. The sides of the horizontal channel I are provided with longitudinal ribs *d* near the top and bottom. When the cans are jammed or dented they generally bulge out slightly at the center, and this construction of the channel enables such cans to pass freely through the same. The bottom of

the channel may also be ribbed. The can-channel is supported by brackets *f* or otherwise. The front side of this channel is adapted to be opened to facilitate the removal of the cans and the cleaning of the machine, being connected to the other parts by means of hinges *g* and snap-springs *h*.

The pusher J is provided with flanges at its top and bottom, the former of which serves as a rest for the cans in the spout when the pusher is beneath the same, while the latter serves as a bearing for the pusher upon the bottom ribs of the can-channel. This pusher is provided with a laterally-projecting web, which passes through and slides in a slot in the rear side of the can-channel, said web being provided at its outer end with a boss, *j'*. The boss is provided with a set-screw, by means of which the pusher is adjustably fastened to the sliding rod L, which slides in bearings *j* of the frame, and with downwardly-projecting lugs j^2 j^2.

The mechanism for operating the pusher J consists of an eccentric, K, on the main shaft B, a lever, K', pivoted to the frame, and a connecting-rod, K^2, between the eccentric and the lever. The eccentric is so adjusted on the shaft as to cause the forward motion of the pusher to take place during the upward or return stroke of the plunger F. The upper end of the lever K' engages with the pusher by means of the lugs j^2 j^2 on the boss, or otherwise. The pusher has reciprocatory motion a little greater than the width of a can, so as on its forward stroke to make the last can entirely free from the column of cans in the spout, and on its backward stroke to clear itself of said column and permit the falling of the latter; but its movement is so regulated as to cause one can to come under the nozzle of the tunnel on each upward stroke of the plunger.

Means are provided for steadying the cans during the process of filling, consisting of mechanism for raising each can into contact with the tunnel-nozzle and certain peculiarities of construction in said nozzle.

Underneath the channel I, in line with the tunnel, is a can-lifter, M, pivoted to and supported by the lever M', which latter is pivoted to the frame at *k*. This lifter is preferably forked, as shown, the forks projecting through slots in the bottom of the can-channel. A cam-wheel, M^2, on the shaft B, impinges against the outer end of the lever and raises the latter, carrying up the can-lifter. The forks of the lifter come in contact with the bottom of the can, which is in line with the tunnel, and raise said can into contact with the tunnel-nozzle. This nozzle is provided with two or more flaring downwardly-projecting lugs, *l l*, which serve to guide the can to the nozzle, and with a series of studs, *m m*, which come in contact with the head of the can and prevent any tendency of the latter to bulge outward by reason of the sudden pressure caused by the injection of the material. The nozzle proper projects into the opening in the center of the can-head, and the can is held firmly until the plunger has completed its downward stroke. On the upstroke of the plunger the cam M^2 releases the lever, and the can-lifter drops below the bottom of the can-channel. Springs *n n* press upon the top of the can being filled and hold it upon the can-lifter during the up and down strokes.

In order to insure the sudden and complete filling of the tunnel-tube with the material to be canned at each upstroke of the piston, a force-feed mechanism auxiliary to the plunger is employed. Any suitable force-feed mechanism auxiliary to the plunger may be used in connection with the other improvements herein described, or said improvements may be used without such auxiliary mechanism. An auxiliary rotary force-feed mechanism is shown herein.

A sleeve, N, provided with collars *o* at each end and with two spiral threads, *p*, between the collars, is loose on the plunger-rod F^2. A loose rotary nut, O, adapted to fit the sleeve, has bearings in brackets O', attached to the frame. Two vertical arms, P, depending from the rotary nut, extend into the tunnel-hopper to near the mouth of the tunnel-tube. These arms carry spirals wings or blades Q, adapted to move around within the tunnel-hopper. Upon the plunger-rod, below the spirally-threaded sleeve, is an adjustable fast collar, R, provided with two upwardly-projecting teeth. The spirally-threaded sleeve is provided with a series of downwardly-projecting ratchet-teeth at its lower end. At each upstroke of the plunger the teeth of the fast collar engage with the ratchet-teeth on the loose spirally-threaded sleeve, which latter, being thus held from turning back while moving upward with the plunger, causes the collar to rotate in its bearings, and thence the wings Q to move around in the tunnel-hopper. These wings graze the inside of the hopper, and are so formed as to gather the corn or other material in the tunnel-hopper and throw it inward and downward to the tunnel-tube. On the downstroke of the plunger the fast collar is disengaged from the spirally-threaded sleeve. The sleeve descends by its own weight, and, being free, whirls back to its former position without moving the rotary collar and wings. If the weight of the sleeve is insufficient to cause its descent, the cross-head will push it down.

When the machine is started the tunnel-tube is filled with corn and the plunger descends a sufficient distance to displace such a quantity thereof as will exactly fill a can, a surplus being left in the lower end of said tube. This surplus forms a temporary bottom for the tunnel-tube, and space just sufficient for the next canful is left in the tube above this temporary bottom, which space is filled on the upstroke of the plunger.

I have found by practical test that when the nozzle of the tunnel is of minimum size

consistent with the easy working of the machine, and the tunnel-hopper at the mouth of the tunnel-tube is of shallow form, as shown, the corn in the hopper above the tunnel-tube will be pressed aside from under the plunger, and no corn will be pressed through the nozzle on the downstroke until the plunger enters the tunnel-tube, so that practically this constitutes a good arrangement for measuring the quantity of corn discharged into the can. The plunger-rod is adjustable in the cross-head by means of set-screws, so that the plunger may be raised or lowered, whereby the quantity of corn discharged at each stroke of the plunger may be varied at will. The plunger-rod is preferably graduated to indicate the number of ounces of corn which will be discharged when the rod is fixed at certain points.

As the practice obtains among packers of adding a little liquid in the form of sweetened or salted water to the corn being packed, a mechanism for injecting a suitable quantity thereof into each can is connected with this machine and adapted to operate in harmony with the other parts. This mechanism is similar to that heretofore patented to me by Letters Patent of the United States No. 245,270, dated August 9, 1881, and consists of a pump, S, the piston of which operates by a lug, *s*, on the cross-head E, in connection with adjustable collars on the piston-rod, a valved induction-pipe, T, leading to the liquid-receptacle, and a valved eduction-pipe, V, leading into the tunnel-tube. The piston is thus made to operate in unison with the plunger, and its movement is regulated by the adjustable collars. The piston-rod is also graduated to facilitate the accurate adjustment of the collars. The size of the pump and the adjustment of the collars *t* are preferably such that no liquid is injected into the can until the plunger has entered the tunnel.

The operation is as follows: The several parts being in the relative positions shown in Fig. 1, the tunnel is filled with corn or other material to be packed and the can-channel and can-spout with empty cans X to be filled. The machine being then started, the plunger begins to descend, and the can beneath the tunnel is immediately raised into contact with the tunnel-nozzle. As the plunger passes through the tunnel-hopper the soft juicy corn therein is pressed aside or into the tunnel-tube. As soon as the plunger enters the tunnel-tube the corn in the lower part thereof is forced through the tunnel-nozzle into the can in contact with the nozzle. The plunger descends a sufficient distance to force out through the nozzle and into the can the quantity of corn required to fill the latter. Just before the plunger reaches the end of its downstroke the liquid-pump is brought into action and injects a regulated quantity of liquid into the can with the corn. On the upstroke of the plunger the auxiliary force-feed mechanism is operated, as hereinbefore described, the liquid-pump sucks up the quantity of liquid which is to be injected into the can on the downstroke, and the can-pusher shoves the line of cans along the space of one can, bringing an empty can under the nozzle and delivering a filled can, Y, onto an adjoining table (not shown) or into the hand of the operator. The hopper will be kept half or two-thirds full of corn or other material. Thus all the parts work in harmony with each other, and the operator has simply to see that the material and cans are supplied to the machine in proper quantity.

What is claimed as the invention is—

1. The combination of a tunnel, a plunger, a force-feed mechanism auxiliary to the plunger, a can-supplying mechanism, and suitable actuating mechanism, substantially as set forth.

2. The combination of a tunnel, a plunger, a force-feed mechanism auxiliary to the plunger, mechanism for supplying a determinate quantity of liquid to each can, and suitable actuating mechanism, whereby the several parts are made to operate in unison, substantially as set forth.

3. The combination of a tunnel, a plunger, a force-feed mechanism auxiliary to the plunger, a can-supplying mechanism, mechanism for supplying a determinate quantity of liquid to each can, and suitable actuating mechanism, whereby the several parts are made to operate in unison, substantially as set forth.

4. The combination of a tunnel, a plunger, a rotary force-feed mechanism auxiliary to the plunger within the hopper, and suitable actuating mechanism, substantially as set forth.

5. The combination of a tunnel, a plunger, means for operating the plunger, a spirally-threaded sleeve loose on the plunger-rod, a rotary nut supported in bearings and actuated by the sleeve, arms depending from said nut, wings attached to said arms, and means for locking and releasing the sleeve on the up and down stroke of the plunger, substantially as set forth.

6. The combination of a tunnel, a plunger, means for supporting and operating the plunger, and a can-supplying mechanism, whereof the can-receiving spout is provided at its mouth with a collar, the opening through which is of less diameter than the diameter of the spout, substantially as set forth.

7. The combination of a tunnel, a plunger, means for operating the plunger, a channel for guiding the cans beneath the tunnel, the inner vertical sides of said channel being provided with longitudinal ribs, and means for forcing the cans along the channel, substantially as set forth.

8. The combination of a tunnel, a plunger, means for operating the plunger, a channel for guiding the cans beneath the tunnel, a sliding pusher for forcing the cans along the tunnel-channel, and means for operating the pusher, consisting of a lever pivoted to the frame, a cam on the driving-shaft, and a rod connect-

ing the lever and cam, substantially as set forth.

9. In a can-filling machine, a tunnel having a shallow hopper, a straight tube, and a contracted nozzle, substantially as set forth.

10. In a can-filling machine, a can-channel one side of which is connected to the other parts by means of hinges and suitable fastening devices, whereby the channel may be readily opened, substantially as described.

11. A tunnel for can-filling machines, provided with a nozzle the mouth of which is surrounded by short downwardly-projecting studs, which protect the heads of the cans from bulging while being filled, substantially as described.

12. A tunnel for can-filling machines, provided with a nozzle adapted to enter the opening in the head of a can, and with downwardly-projecting lugs which serve to guide the can to the nozzle, substantially as described.

13. A tunnel for can-filling machines, provided with a nozzle constructed with short studs near its mouth and longer guiding lugs beyond the studs, substantially as described.

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

VOLNEY BARKER.

Witnesses:
A. B. CASWELL,
JOHN W. THOMPSON.