

(No Model.)

G. W. CROWELL.
MACHINE FOR COATING THE INTERIOR OF VESSELS WITH WATER PROOF
LINING.

No. 360,952.

Patented Apr. 12, 1887.

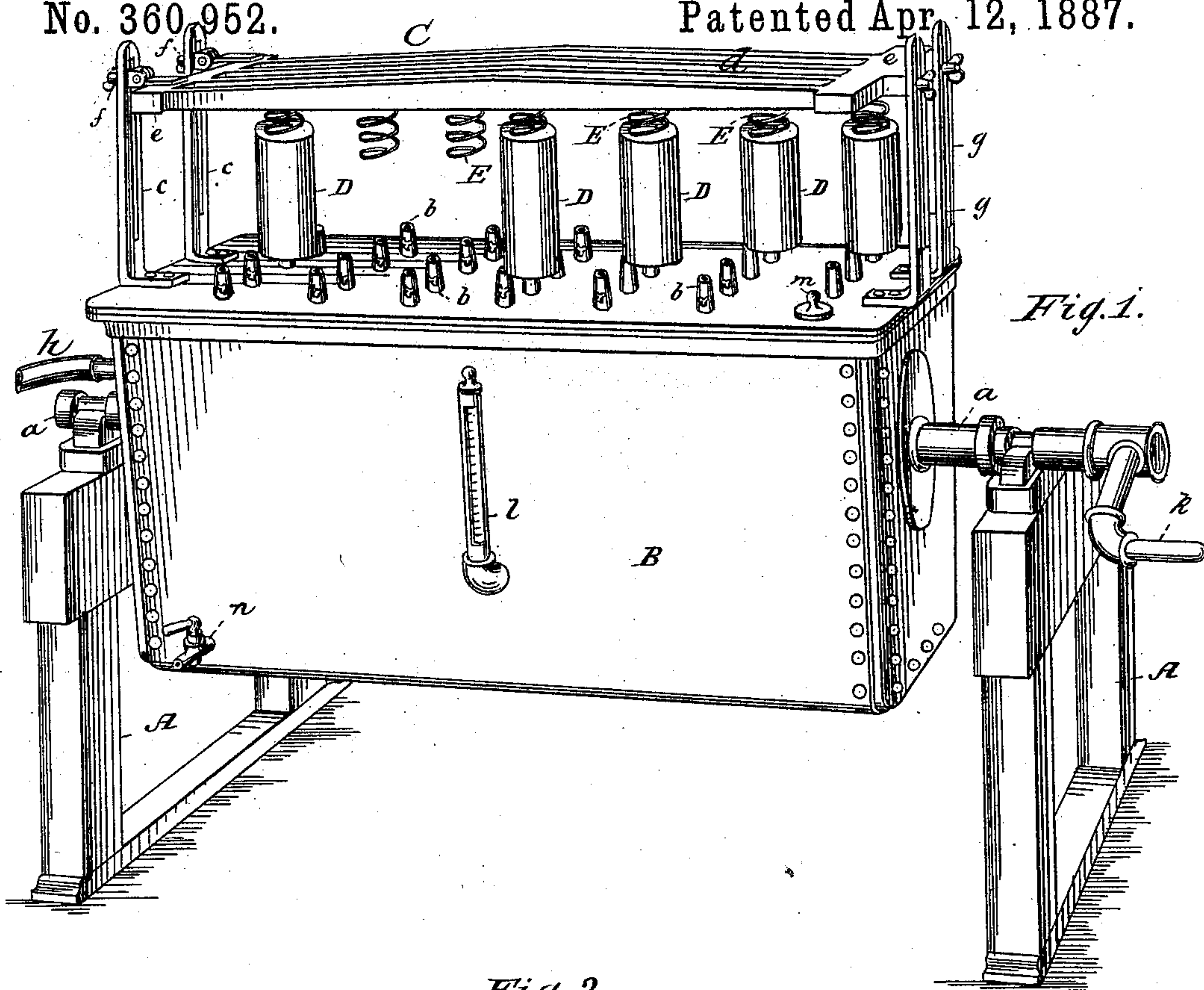
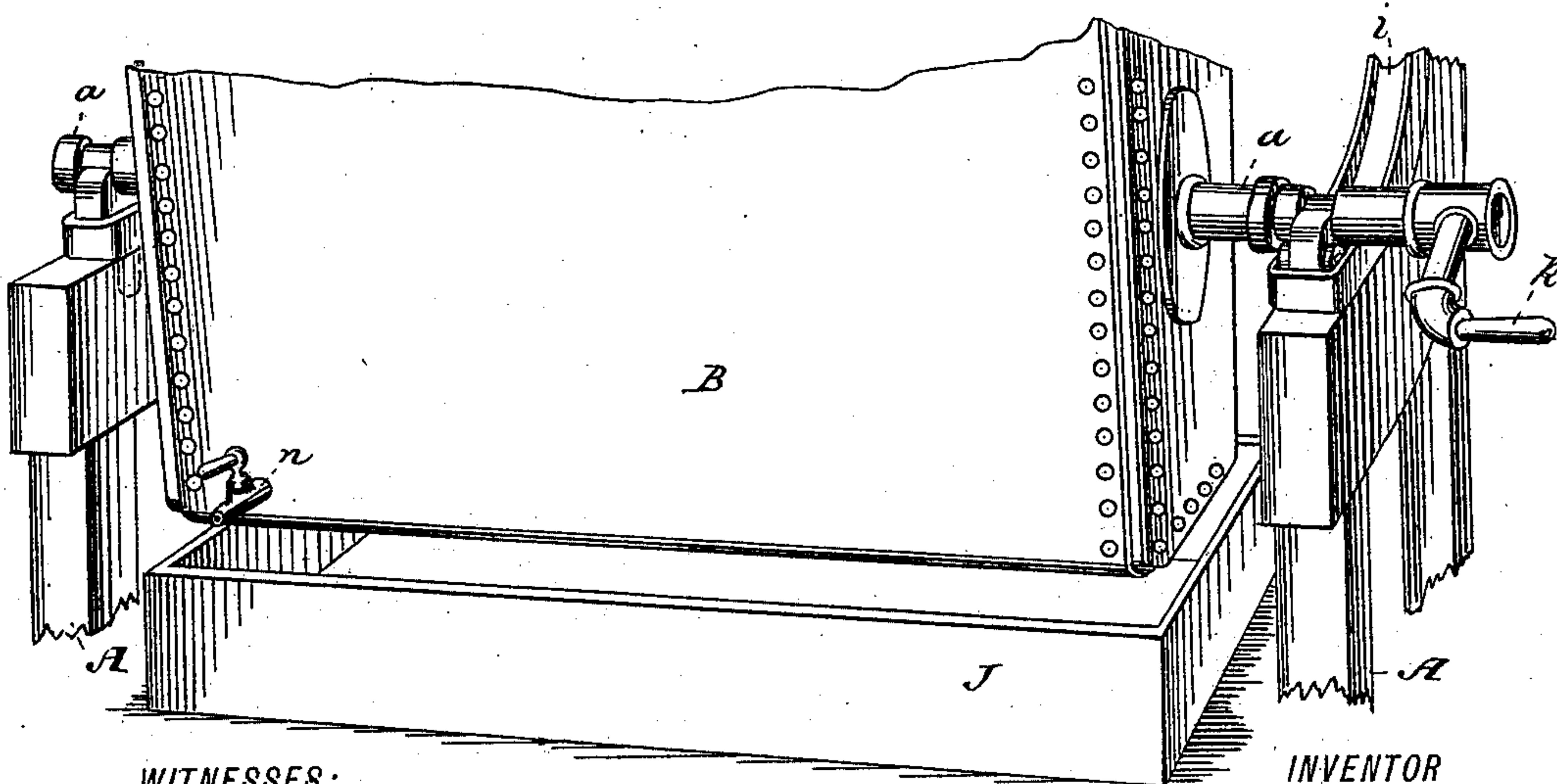


Fig. 2.



WITNESSES:

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MACHINE FOR COATING THE INTERIOR OF VESSELS WITH WATER-PROOF LINING.

SPECIFICATION forming part of Letters Patent No. 360,952, dated April 12, 1887.

Application filed March 3, 1886. Renewed December 13, 1886. Serial No. 221,421. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. CROWELL, a citizen of the United States, and a resident of Rogers Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machines for Coating the Interior of Vessels with Water-Proof Lining, of which the following is a specification.

My invention relates to a machine for coating the interior of boxes, bottles, or other vessels, the object being to provide a device of this character which shall be capable of being easily and readily manipulated, and which shall be so constructed and arranged that it will impart to the vessel an even and uniform coating and without any loss or waste of the coating material.

A further object is to so construct a device of the character set forth that any number of vessels may be treated at one time and without injury from the machine and without smearing or defacing their outer surfaces with the coating substance.

A further object of my invention is to provide a machine for coating the interior of vessels with a water-proof lining which shall combine simplicity and economy in construction with durability and efficiency in use.

In the accompanying drawings, Figure 1 is a view of my improved device in perspective, a number of the bottles or vessels being removed from the top of the reservoir for the purpose of showing the nozzles or vents through which the material is passed into the vessels; and Fig. 2 is a modification.

A represents a frame constructed in any suitable manner and adapted to support the reservoir B, which is preferably made of metal and provided on its ends with the shafts *a*, adapted to fit in bearings on the frame A. This reservoir is constructed of any suitable size or dimensions and adapted to contain the material with which the vessels are internally coated. The top of the reservoir is provided with a number of small nozzles or vents, *b*, extending upwardly and preferably funnel or cone shaped, arranged in rows and at suitable intervals apart. To one end of the

reservoir are rigidly secured the uprights or standards *c*, to which is hinged the follower C, constructed of the horizontal pieces *d* and the end pieces, *e*. The hinges are preferably secured to the end pieces, *e*, and extend through the vertical elongated slots formed in the standards *c*, and are held rigidly therein by means of the thumb-screws *f*, which, when adjusted, impinge against the standards. By means of this construction it will be readily seen that by proper manipulation the follower C may be adjusted toward or away from the top of the reservoir and held rigidly in any desired adjustment. On the opposite side of the reservoir are secured the standards *g*, to which the free end of the follower C may, when in proper position, be locked in any suitable manner.

D represents the boxes, bottles, or vessels to be treated, which, as will be seen by reference to the drawings, are inverted and placed upon the cone-shaped nozzles or vents *b*, the latter extending up into the vessels, into which they fit, thus preventing any leakage or escape of the material during the operation of filling the vessels and avoiding any smearing or defacing of the outer sides or surfaces thereof.

To the under side of the follower C are secured the coil-wire springs E, so arranged that when the follower is in its normal or horizontal position they will press upon the bottoms of the vessels and thereby operate to hold the latter tightly on the nozzles *b*. A further function of these springs is to compensate for irregularities in the length of the vessels or bottles. By vertically adjusting the follower with reference to the reservoir, vessels or bottles of different sizes may be treated and the tension or pressure of the springs upon the same be easily and readily regulated.

To one end of the reservoir B is connected a steam-pipe, by means of a flexible pipe or coupling, *h*, said pipe or coupling being constructed of flexible material for the purpose of allowing the rotation or partial rotation of the reservoir, as hereinafter described.

Within the reservoir the steam-pipe is constructed of metal, outlet-pipes being provided in connection with the above for the purpose

of conducting the steam from the reservoir. The function of the steam admitted into the pipe or pipes within the reservoir is to keep the coating material within the latter in a liquid state, or of such consistence as will permit it to freely and readily flow through the nozzles into the vessels. Instead, however, of employing steam as a heating agent, as above described, the device may be constructed to operate in the manner indicated in Fig. 2, wherein is shown a fire-box or heater, J, located below the reservoir, whereby the material, in consequence of the heat applied below the same, will be kept in the proper condition as before. In such cases, where the heat is imparted from below, it is desirable, and even necessary, to move the reservoir to a position where, when the latter is inverted, the fire will not come in contact with the vessels being treated. I have therefore pivoted one of the trunnion-bearings to the frame A, and at the opposite end of the reservoir provided a circular track or bearing, *i*, whereby one end of said reservoir may be moved around to such an extent as to remove the same a sufficient distance from the fire, the track *i* serving as a bearing or support for the shaft or trunnion on the end of reservoir and operating to hold the same in a horizontal position.

After the vessels to be treated have been properly arranged on the nozzles the follower is lowered and clamped tightly in position, the springs bearing on the bottoms of the vessels, and the reservoir then inverted or partially rotated by means of the crank *k*, formed on the shaft *a*, or by other suitable means, and held in that position until the vessels have been filled with the material, the length of time required depending upon the size of the vessels.

If the device shown in Fig. 2 is employed, the use of which I would recommend, the reservoir, as before stated, is moved around to a position at a sufficient distance from the fire and the operation then continued, as in the above-described machine. The reservoir, after having remained in its inverted position a suitable length of time, is then righted, and the material contained in the vessels allowed to flow back through the nozzles into the reservoir. The follower can then be raised and the vessels removed from their positions on the nozzles, and, after having stood for a few minutes to allow the coating on the interior thereof to harden, are in condition to be filled or otherwise disposed of.

It is essential that the material within the reservoir be kept in a proper condition, and I have therefore found it desirable to attach a thermometer, *l*, to the reservoir for indicating the temperature of the contents thereof, in order to avoid the danger of allowing the material to become too hot, in which case it would operate to injure the material of which the vessels are constructed, or of allowing it to become too cool, in which case it would not readily flow into the vessels nor properly

adhere to the interior surfaces thereof. I have also found it desirable to provide the nozzles with valves, which, when only a portion of the nozzles are used, may be closed to prevent the escape of the material from those not in use when the reservoir is inverted.

The top of the reservoir is provided with an opening, in or on which is fitted a plug or cap, *m*, and through which the material is passed, preferably in a liquid form, being first heated to the proper degree in a separate reservoir (not shown) provided for the purpose.

The side of the reservoir is provided with an air-cock, *n*, which, when the reservoir is inverted, is opened to allow the ingress of air and facilitate the filling of the vessels.

From the above description it will be readily seen that my improved device may be so constructed that any number of vessels and of any size or dimensions may be treated at one time, and that, although very simple and economical in its construction and arrangement of parts, it operates to line or coat the interior of the vessels without any loss of material and without in the least degree injuring or defacing the outer surface thereof from the escape or leakage of the material.

It is plain that the mechanical features may be varied in many unimportant respects without changing the result of their operation; and it is also plain that the appliances for heating the contents of the reservoir may be used or not, as preferred. Thus the reservoir may be filled with a liquid and the vessels attached and coated the same as when the liquid condition of the coating material is the result of the action of heat.

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

1. A device for coating the interior of vessels, which consists of a rotating reservoir loosely mounted in a frame, and to which the vessels are detachably secured, and a heating device adapted to keep the contents of the reservoir at the proper temperature, substantially as set forth.

2. A device for coating the interior of vessels, which consists of a rotating reservoir provided with nozzles or vents for the attachment of the vessels, whereby when the reservoir is inverted the vessels will be filled and when righted the vessels will be emptied, a coating remaining on the interior surfaces thereof, substantially as set forth.

3. A machine for coating the interior of vessels, which consists of a rotating reservoir provided with cone or funnel shaped nozzles adapted to enter the mouths of the vessels, and through which the material flows into the latter, substantially as set forth.

4. A machine for coating the interior of vessels, which consists of an invertible reservoir provided with nozzles or vents adapted to fit in the mouths of the vessels and a follower adapted to hold the vessels in position when the reservoir is inverted, substantially as set forth.

5. A machine for coating the interior of vessels, which consists of a reservoir provided with nozzles or vents adapted to fit in the mouths of the vessels and a follower located above the vessels and having springs secured thereto adapted to bear on the bottoms of the vessels and retain them in their proper positions on the nozzles, substantially as set forth.

6. A machine for coating the interior of vessels, which consists of a reservoir having a series of nozzles adapted to fit in the mouths of the vessels and a vertically-adjustable follower located above the inverted vessels and hinged at one end and provided with a clamping device on the opposite end, and springs secured to the under side thereof, which, when the follower is lowered, bear on the bottoms of the vessels, substantially as set forth.

7. A machine for coating the interior of vessels, consisting of a rotating reservoir, cone or funnel shaped nozzles secured thereto and adapted to fit within the mouths of the vessels, a follower for holding the vessels in position, and a heating device for keeping the coating material in the reservoir in a fluid condition, substantially as set forth.

8. A machine for coating the interior of vessels, consisting of a rotating reservoir, cone or

funnel shaped nozzles secured thereto and adapted to fit within the mouths or openings in the tops of the vessels, a follower for holding the vessels in their inverted positions, and a steam-pipe located within the reservoir and connected with a steam-supply by a flexible coupling, substantially as set forth.

9. A machine for coating the interior of vessels, consisting of a rotating reservoir mounted in a frame and provided with nozzles on which the vessels fit, a vertically-adjustable follower located above the vessels and having springs secured thereto bearing on the bottoms of said inverted vessels, a heating device for retaining the material within the reservoir at the proper temperature, a thermometer attached to said reservoir for indicating the temperature of the material, and an air-cock for admitting air during the process of filling the vessels, substantially as set forth.

Signed at Rogers Park, in the county of Cook and State of Illinois, this 17th day of February, A. D. 1886.

GEORGE W. CROWELL.

Witnesses:

A. B. FLAGG,
L. STEESE.