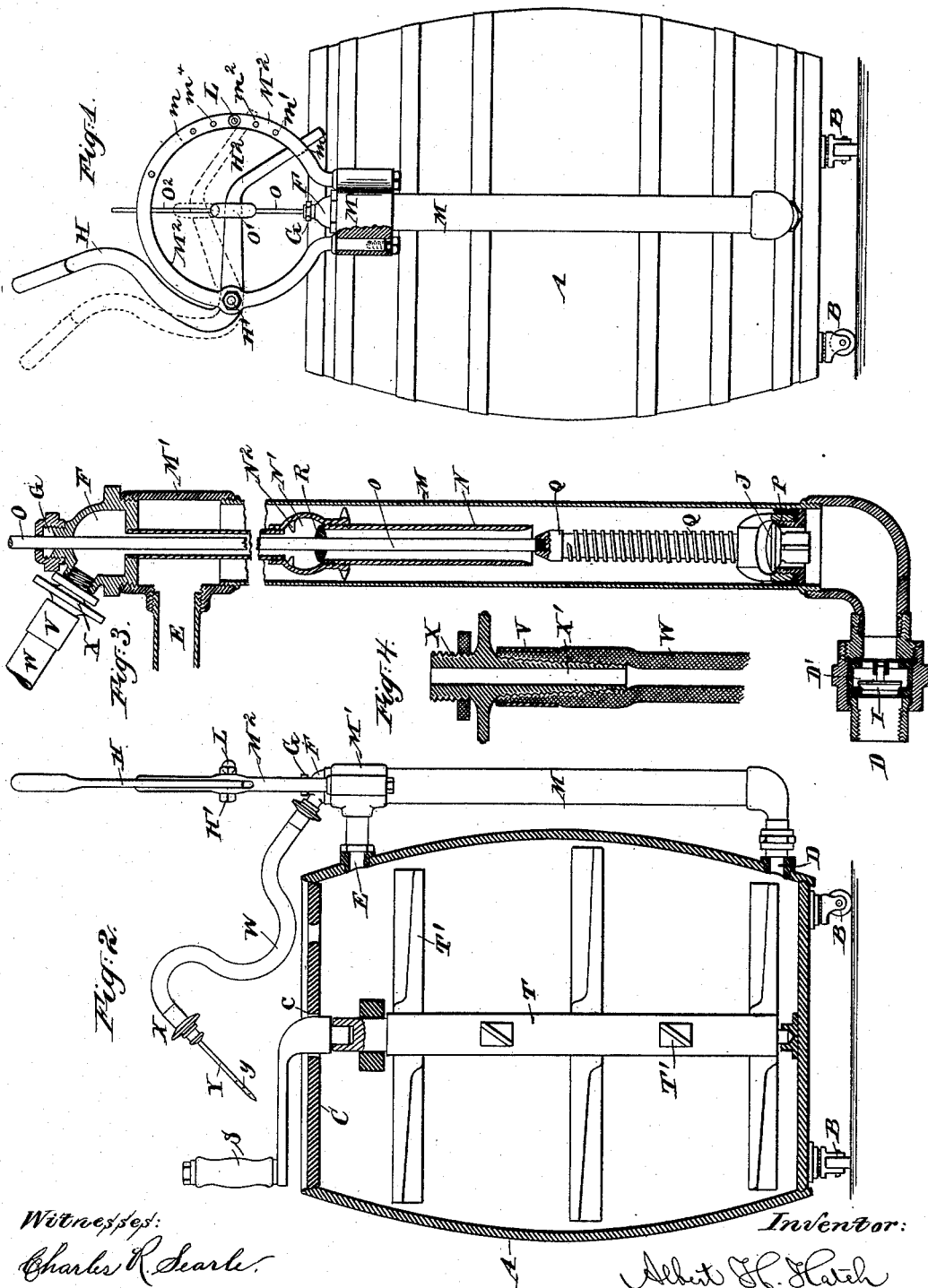


(No Model.)

A. H. HATCH.
APPARATUS FOR PRESERVING HAMS, &c.

No. 522,939.

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Witnesses:
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UNITED STATES PATENT OFFICE.

ALBERT H. HATCH, OF NEW YORK, N. Y.

APPARATUS FOR PRESERVING HAMS, &c.

SPECIFICATION forming part of Letters Patent No. 522,939, dated July 10, 1894.

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To all whom it may concern:

Be it known that I, ALBERT H. HATCH, of the city and county of New York, in the State of New York, have invented a certain new and useful Improvement in Apparatus for Preserving Hams and other Meats, of which the following is a specification.

The apparatus works on the long-approved principle of injecting a suitable semi-fluid agent, which I will designate as the solution, into each piece of meat at one or more points.

The invention is especially useful in aiding in the curing and preservation of hams, and I will describe it as thus applied. The portions most requiring such treatment are near the bone. A suitable hollow needle, having perforations through which the solution is injected is thrust into the meat at the required points and the fluid forced in through a connected hose. The operation may be rapidly repeated on a number of hams, or other provisions. The small quantity of the preservative agent required under the varying conditions, can be easily forced by the movement of a hand lever, and may be caused to move with promptness and certainty through the apparatus, including the several valves, the hose and the needle, notwithstanding its thick and semi-fluid condition. I have devised improvements in the pumping mechanism whereby the quantity injected may be conveniently adjusted according to the varying condition of the hams. I operate by the same hand-lever another more capacious pump, constructed in one therewith, which agitates the liquid and keeps it in proper condition while the work proceeds.

The accompanying drawings form a part of this specification and represent what I consider the best means of carrying out the invention.

Figure 1 is a side elevation of the entire apparatus. Fig. 2 is a central vertical section partly in elevation. The remaining figures are on a larger scale. Fig. 3 is a central vertical section through the duplex pump. Fig. 4 is a central section through the end of the hose.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

A is a cask standing on end, B stout cas-

ters on which it is supported and may be moved, C an easily removable cover, and D and E pipes connecting near the bottom and top respectively and extending horizontally outward one above the other. M is a vertical tube connected to these pipes, and accurately bored in its lower portion to receive a vertically moving piston P, to which is connected a smaller plunger Q, which plays tightly within an interior pump barrel N, mounted concentrically within the barrel M, and is held firmly at the upper portion of the apparatus.

W is a hose of sufficient length and flexibility, and X is a coupling connecting the hose with a hollow needle Y having the proper pointed form and provided with perforations near its point, adapted to properly distribute the thick preservative material in the interior of the ham.

R is the delivery valve fitted in a seat in a chamber N' formed by an enlargement of the small pump-barrel N. The rod O plays with tolerable tightness through a hole in the center of this valve. The friction of the rod O tends to lift the valve by each movement upward, and to depress it promptly again by each movement downward. The lift of the valve is limited by winged stops N² in the interior of the chamber N'. The plunger Q with the connected piston P, is reciprocated by the rod O, which extends out through a stuffing box G, and is equipped with a slotted enlargement O' and an extension O².

The coupling M' which connects the horizontal pipe E and the upper end of the pump M, supports also the chamber F which carries the stuffing box G and is equipped with an inclined nozzle for attachment to the hose W. This coupling supports also a slotted yoke M², which performs important functions.

H is a hand lever turning on a pin H'; the lower arm H² of this lever extends through a slot in the piece O' and thence through a slot *m* in the opposite side of the yoke M². The yoke is provided opposite this latter slot with a series of holes *m'*, *m*², &c., adapted to receive a removable pin L. By shifting this pin successively into different holes in the series *m'*, *m*², &c., the play permitted to the hand lever H H², is limited and consequently the quantity of preservative which is pumped

at each movement may be adjusted with certainty.

I is a foot-valve mounted in a chamber D' in the connection between the pipe D and the bottom of the pump M. At each depression of the piston P and its connections this foot-valve I closes, and the valve J in the piston rises to allow the piston to sink through the preservative solution. This movement downward must always be carried so far that the tapered upper end of the plunger Q will be presented below the bottom of the inner barrel N. There is no provision for induction into the interior of the inner barrel N during the descent of this plunger, and a more or less complete vacuum is formed in this small chamber during the descent. So soon as the plunger emerges from the bottom of the barrel N the semi-fluid material, of which there is a liberal supply in the barrel M, is free to move inward under the pressure of the atmosphere, and it promptly makes such movement, notwithstanding its thick condition.

On the ascent of the plunger and the piston, two results are attained:—first, the plunger Q forces strongly upward the small quantity of fluid in the barrel N above it, and in proportion as the extent of its motion is gaged it forces a corresponding quantity of the preservative material upward past the delivery valve R and outward through the upper chamber F, through the hose W, coupling X and needle Y, to be left in the meat to perform its useful purpose there. Another and subordinate but very important end is attained by the lifting of the piston P, carrying upward a large quantity of the solution in the annular space within the pipe M exterior to the pump N. This movement involves only the very slight resistance due to the lifting of the material. It is discharged through the pipe E and projected with some velocity into the upper portion of the cask A. This constantly repeating operation keeps the material in the cask agitated. It has the advantage over any mere mechanical agitator that it is not liable to be obstructed by any settling of solid material in the cask during a long intermission in the work. It will now be seen that the pump is duplex. The outer and larger portion M maintains always a supply at the proper level to be promptly received in the inner pump so long as there is a sufficient quantity of solution remaining in the cask to keep the pipe filled, and also agitating and maintaining the proper condition of the solution in the cask so long as the pump is actively operated, while the smaller pump composed of the small plunger Q and the closely fitted small barrel N with the delivery valve R, and the peculiar provision for induction by the vacuum at the termination of the down-stroke, serves as a forcing pump to urge the thick fluid through the hose into the meat. In case the meat shall be judged to require a smaller quantity of the solution, the pin L is shifted successively into lower

holes m^2 , m^3 , &c., and thus the motion of the lever H and the rise of the plunger Q is limited while the depth to which it descends at each movement remains unaffected.

Under ordinary conditions of constant working the agitation produced by the active movement of a liberal quantity of the solution outward through the pipe D, upward through the main barrel M, and into the cask again through the pipe E, keeps the contents of the cask sufficiently agitated, but I provide an additional device *w* which may be used at intervals when required. This is an upright shaft T supported in bearings in the axial line of the cask, and having a squared upper end.

S is a crank having a corresponding squared socket at the center which can be inserted through the hole *c*, and matched on the end of the shaft and employed to oscillate or rotate the shaft, and by means of wings T' carried thereon, can efficiently agitate the entire contents preliminary, or additional, to the agitation which it receives through the other means.

The couplings X are peculiarly adapted for the high pressures and thick and slippery quality of the solution. At each junction the metallic part is extended into the interior of the hose, the prolongation X' having a smooth cylindrical bore and presenting a tapering screw-threaded interior, and a sufficiently thick metallic band V encircles the exterior of the hose at this point. In applying the parts together, the band is fitted fairly close upon the exterior of the hose at each junction, and the coupling X X' is turned and the extension M' is screwed forcibly in until it can go no farther. The junction is strong, tight, reliable and durable.

My apparatus insures that the small quantity of the preservative agent required under the varying conditions, is easily forced with promptness and certainty by the movement of the hand lever, through the apparatus, including the several valves, the hose and needle, into the hams or other meats being treated, notwithstanding its thick and viscid condition, and that by reason of the small pump being within the larger upright pipe M it is always completely immersed so long as the solution is lifted by the large pump, and thus the risk of forcing air into the meats when the solution gets low is avoided.

I attach importance to the fact that the passage D communicates with the bottom of the cask, so that the solution is taken from that point where it is the most dense, and that the pipe E through which the main quantity is returned into the cask to agitate the contents, communicates at the top, where the solution tends to become the most thin. The action is, for this reason, more efficient in maintaining a practically uniform density in the liquid so long as the apparatus is actively worked.

Modifications may be made without depart-

ing from the principle of sacrificing the advantages of the invention. I have shown the plunger Q as screw-threaded with the effect to perform the function of packing and retarding the escape of the semi-fluid solution past it. Rings may be turned in the plunger instead of the screw threads *m*, and such may be in some cases, easier to produce and equally or more effective.

10 I claim as my invention—

1. In apparatus for preserving meats by the use of liquid containing solid particles liable to settle, the combination of a cask or reservoir in which the preserving solution
15 may be held, with two pumps and connecting pipes, one pump M and pipes E arranged to take the material from the bottom of the vessel and return it to the vessel near the top under no pressure except that required to
20 induce motion, and the other pump N, and delivery pipe W and needle Y arranged to take a small quantity of the agitated mixture and force it at high pressure into the meat, all substantially as herein specified.

25 2. In apparatus for preserving meats, the

cask A, horizontal pipes D and E, the external tube or pump barrel M, piston P and valves I and J, in combination with each other and with the internal pump barrel N, plunger Q and the delivery valve R, and with the recip- 30
rocating rod O, and means for communicating motion therethrough, and the delivery chamber F, hose W and needle Y, arranged for joint operation, substantially as herein specified.

3. In apparatus for preserving meats the 35
combination with a forcing pump operated by a hand lever, of the yoke M² having the series of holes *m'* *m*² &c. and the removable pin L to arrest the upward motion of the pump plunger at different points and thereby gage 40
the quantity of the solution injected at each stroke, substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

ALBERT H. HATCH.

Witnesses:

M. F. BOYLE,

CHARLES R. SEARLE.