No. 649,577. Patented May 15, 1900.

C. HOHNSBEHN.

MACHINE FOR WEIGHING LIQUIDS.

(Application filed July 20, 1899.)

(No Model.)

Fig. 1.

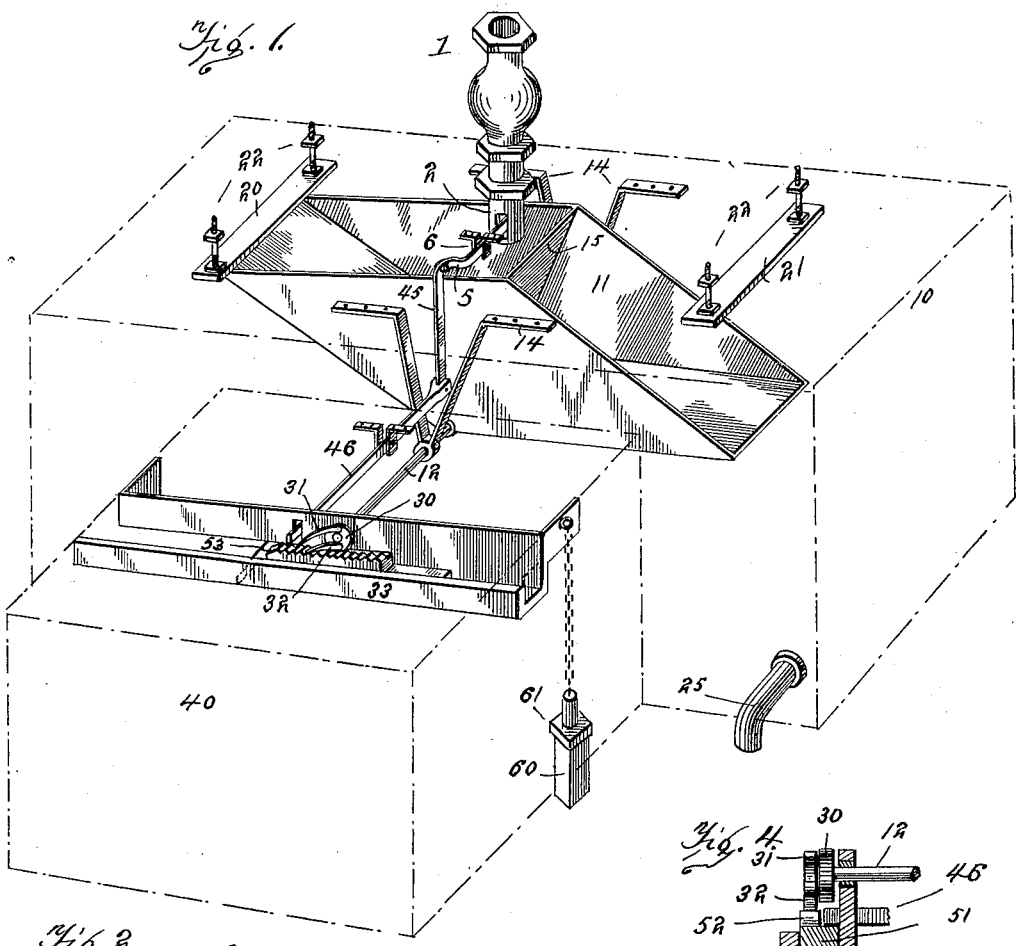

Fig. 4.

Fig. 2.

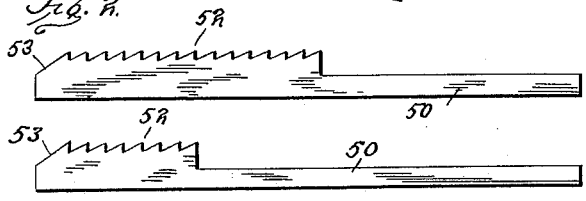

Fig. 5.

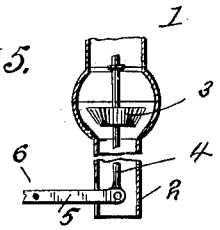

Fig. 3.

WITNESSES

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MACHINE FOR WEIGHING LIQUIDS.

SPECIFICATION forming part of Letters Patent No. 649,577, dated May 15, 1900.

Application filed July 20, 1899. Serial No. 724,549. (No model.)

To all whom it may concern:

Be it known that I, CLAUS HOHNSBEHN, a citizen of the United States, residing at Waverly, in the county of Bremer and State of Iowa, have invented certain new and useful Improvements in Machines for Weighing Liquids, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to machines for delivering liquids in quantities determined by the form of check or actuating device by which the delivery of the liquid is controlled.

The invention is specially applicable for use in delivering skimmed milk from creameries. There are several machines in use having the same general object in view. In all such machines with which I am acquainted a party who delivers milk at the creamery receives a "check" or delivery-controlling device having a determined relation to the quantity of milk delivered by him. This check when applied to the skimmed-milk-delivery mechanism permits the delivery of a definite quantity of the liquid and no more.

The present invention embodies improvements in the check which controls the valve or liquid-delivering mechanism and in the mechanism by which the liquid is measured or weighed under control of the check to deliver a definite quantity of liquid and no more.

The invention also consists in improved mechanical constructions and combinations of the parts, substantially as hereinafter claimed.

Figure 1 is a perspective view of the general working parts of the machine, the boxes in which the mechanism is mainly inclosed being merely outlined by dotted lines, thus showing the boxes as if of transparent material. Fig. 2 is a side view of one of the controlling-checks. Fig. 2ª is a similar view of a check differing only in the size of the operating part, and Fig. 3 a reverse side of one of the same. Fig. 4 is a sectional detail showing the check in guideway and a detail of pawls which work on the check and the lever by which the valve is opened. Fig. 5 is a broken sectional detail of the valve and its connections.

The illustration merely gives one form of mechanism, which may be varied within wide limits.

The numeral 1 indicates a supply-pipe which leads from any suitable storage-receptacle and conveys a supply of liquid toward the spout 2, from which liquid is delivered when there is any in the pipe 1 and when valve 3 is open. The valve 3 is a common lift-valve, and its lifting-stem 4 extends down out of the lower end of the spout 2. A lever 5, pivoted at 6 or in other convenient position, serves as a means for opening or closing the valve, said lever being connected to the valve-stem.

Under the spout 2 there is a box or receptacle 10, and preferably within this box is the tilting or weighing trough or scoop 11. This trough or scoop is a vessel of two compartments and is balanced, or nearly balanced, on the supporting-bar 12, which bar is upheld by suitable hangers or brackets 14 and has bearings, so as to rock therein.

The brackets 14 may be supported from the top of box 10 or in other convenient manner. The partition 15 in the trough or scoop divides the trough into equal parts. When the partition is vertical, its edge comes under the spout 2 and the liquid delivered from said spout would enter both compartments of the scoop; but the scoop normally rocks with the bar 12, so that one or the other of the compartments is under the spout, and when the weight of the liquid in the compartment under the spout is such that the projecting end of this compartment overbalances the empty compartment the scoop rocks on its axis, emptying the filled compartment and bringing the other under the spout. The general principles of such construction are well known.

In Fig. 1 I show above the ends of the trough or scoop stops or detents 20 and 21, by which the extent of the rocking movement of the scoop is determined. These stops may be adjusted as to height by means of the nuts on the bolts 22, and thus the initial position of the trough or scoop may be regulated. By such adjustment the quantity of liquid which will enter the scoop before the same is dumped or emptied may be regulated within limits sufficient to give accuracy to the final measurement. The liquid emptied from the trough

or scoop passes into box 10, and a suitable outlet, as 25, is provided. This outlet is by preference outside the building, and the farmer will place his milk-cans in position to receive the outflow before starting the valve 3.

With the construction described it is apparent that as long as there is a liquid-supply to pipe 1 and valve 3 is kept open the scoop 11 will continue to oscillate or rock and at each oscillation will deliver the regulated amount of liquid necessary to tilt the scoop. For convenience let this amount be called ten pounds, although any other quantity might as well be the unit.

At the end of rock-shaft 12, which oscillates with the scoop, I attach a disk 30, and pawls 31 and 32 are pivoted to this disk. These pawls will be moved alternately, one forward and the other backward, as disk 30 rocks. Under the free ends of pawls 31 and 32 there is a slideway 33. This slideway is preferably a rectangular trough open at the top and inclosed in a box 40, as indicated in dotted lines. The box 40, or the end thereof at which access is had to the trough, is preferably outside the building. A hole in the box permits a check or operating piece to be entered into the trough, but should be so small as to prevent tampering with the internal parts of the device.

Controlling-checks are shown in Figs. 2 and 3. A check, as shown, is a flat bar of metal, as 50, with an enlarged or thickened portion 51 and a toothed rack 52 alongside the part 51. The end of the check is beveled, as shown at 53, and the rack-teeth 52 are in line to engage pawls 31 and 32 when the check is in the slideway.

Valve-lever 5 is connected by link 45 with lever 46, which extends over the slideway 33. As shown in Figs. 1 and 4, the end of lever 46 extends through a notch in the slideway. The levers and link are merely a convenient means for operating the valve from the check.

The length of the enlarged portion 51 of the check will be in proportion to the amount of liquid to be delivered by the action of such check and may vary with each check, while the length of each bar of different checks of a set will be uniform.

To start the machine in operation, a check will be entered in the slideway 33, its beveled end first. The inclosing box does not permit the check to be pressed by hand far enough to engage lever 46. A square pin or push-piece 60, having a flange 61, is supported conveniently for use as a check-inserter. When the end of this pin is pressed against the end of check 50, the check is pushed along its slideway until its front end rides under lever 46 and lifts said lever, the flange 61 stopping further movement of piece 60. The lifting of one end of lever 46, through link 45 and lever 5, raises valve 3 and permits the fluid to flow into the scoop 11. At the same time the thickened end of slide 50 lifts lever 46 the rack-teeth 52 come under pawls 31 and 32, that pawl which is most advanced engaging a rack-tooth and holding the check from being drawn back. When the scoop is filled so as to dump, the dumping movement retracts one pawl and advances the other, thus pushing the check the distance of one tooth along the slideway. The rocking of the scoop and shaft then moves the check forward as long as the pawls engage the teeth 53, each oscillation advancing the check the distance of one tooth along the slideway. When the enlargement 51 has passed from under lever 46, said lever will fall by the action of gravity, and the valve then closes and action of the machine stops. The next check to be entered pushes the first check from the slideway and it falls into box 40. The propulsion of the check along the guideway by propelling mechanism actuated by the fluid itself I consider essentially different from a coin-operated vending device wherein the weight of the coin causes it to operate some delivery device. The check in this case is an essential part of the machine, constructed to coöperate with other parts and having no other function known to me.

The length of that part of pin 60 which enters the box 40 is just sufficient to push in the check to the distance necessary to start the machine. Further movement is effected by the engagement of pawls 31 and 32 with the rack on the check, and the number of oscillations the machine will make under the influence of any particular check depends on the length of the part 51 of the check. This part 51 remains under lever 46 as the check moves along the slideway, and when it passes out from under lever 46 the valve closes. The next check entered pushes the first one from the slideway, and it falls into box 40, from which it can be removed by the person who has the custody of said box.

It is manifest that the power which pushes the check along the slideway is derived from the oscillation of the scoop. If there are ten teeth on the check and the check travels by the movement of the scoop far enough to move the part 51 of the check from under the lever 46 while these teeth are pressed along, the scoop will have been emptied ten times, or one hundred pounds of milk will have been delivered. If the part 51 of the check is of less length, a less number of step-by-step movements will have passed it along to inoperative position. The valve will close when the operative part thereof passes from under the valve-lever.

The rack on the check must not terminate before the check has moved far enough to both open and close the valve lest the valve be left open and all the fluid be permitted to run out; but tampering with the checks can easily be detected by an examination of the checks, which should be numbered, and the number of check delivered can be recorded, so that any person who tampers with a check may be known.

The drawings are intended to merely illustrate a construction which may be adopted. For different locations and different circumstances different constructions may be readily devised by a skilled mechanic.

The checks can be made very cheaply, are convenient for use, and readily show any attempt at alteration.

What I claim is—

1. In an automatic device for delivering liquids, a controlling-check of generally-rectangular form, adapted to lie in a trough, said check having a thickened portion of a length proportioned to the amount of liquid to be delivered under control of such check, and a rack beside said thickened portion of said check, by which the same may be pressed along the slideway or trough.

2. In an automatic device for delivering liquids, a set of controlling-checks, of generally-rectangular form, each check having an operating portion proportioned to its controlling effect on the machine, and each having a rack beside such thickened portion, the rack being for engagement with a mechanical pusher to propel it step by step along a slideway, substantially as described.

3. In a liquid-delivering device and in combination, an oscillating scoop, a rock-shaft connected thereto, pawls on said rock-shaft, a slideway under said pawls, a controlling-check having a rack with which said pawls engage when the check is in operative position on the slideway, a lever movable by said check when in such position, and a valve connected to said lever and controlling the flow of liquid, all substantially as described.

4. In a liquid-delivering device, the combination of an oscillating scoop movable by the weight of liquid, a check-moving mechanism connected to said scoop, a slideway along which the check is propelled by said mechanism, a check, and a valve controlled by the length of the operating part of said check to admit liquid to the scoop, all substantially as described.

5. In a liquid-delivering device, the combination of an oscillating scoop having a check-forcing mechanism connected thereto, a fixed slideway in proximity to said check-forcing device, an elongated check moving in said slideway and having a valve-operating portion proportioned to the amount of liquid to be delivered, and a supply-valve controlled by the operative portion of the check to deliver liquid to the scoop, substantially as described.

6. In a liquid-delivering apparatus, the combination of a fixed slideway, an elongated check movable on said slideway, an inserter-piece by which the check is moved along the slideway to operative position, the valve controlled by the length of the operating part of the check, and means actuated by the flow of liquid to continue the check movement along the slideway, all substantially as described.

7. In a liquid-delivering device, the dumping-scoop connected to a rock-shaft, pawls connected to said shaft and reciprocating as the shaft oscillates, a fixed slideway under said pawls, and a check having rack-teeth engaging said pawls and thereby propelled along the slideway, and means controlled by the check whereby the supply-valve is operated, all combined substantially as described.

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

CLAUS HOHNSBEIIN.

Witnesses:
HENRY C. CLANSING,
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