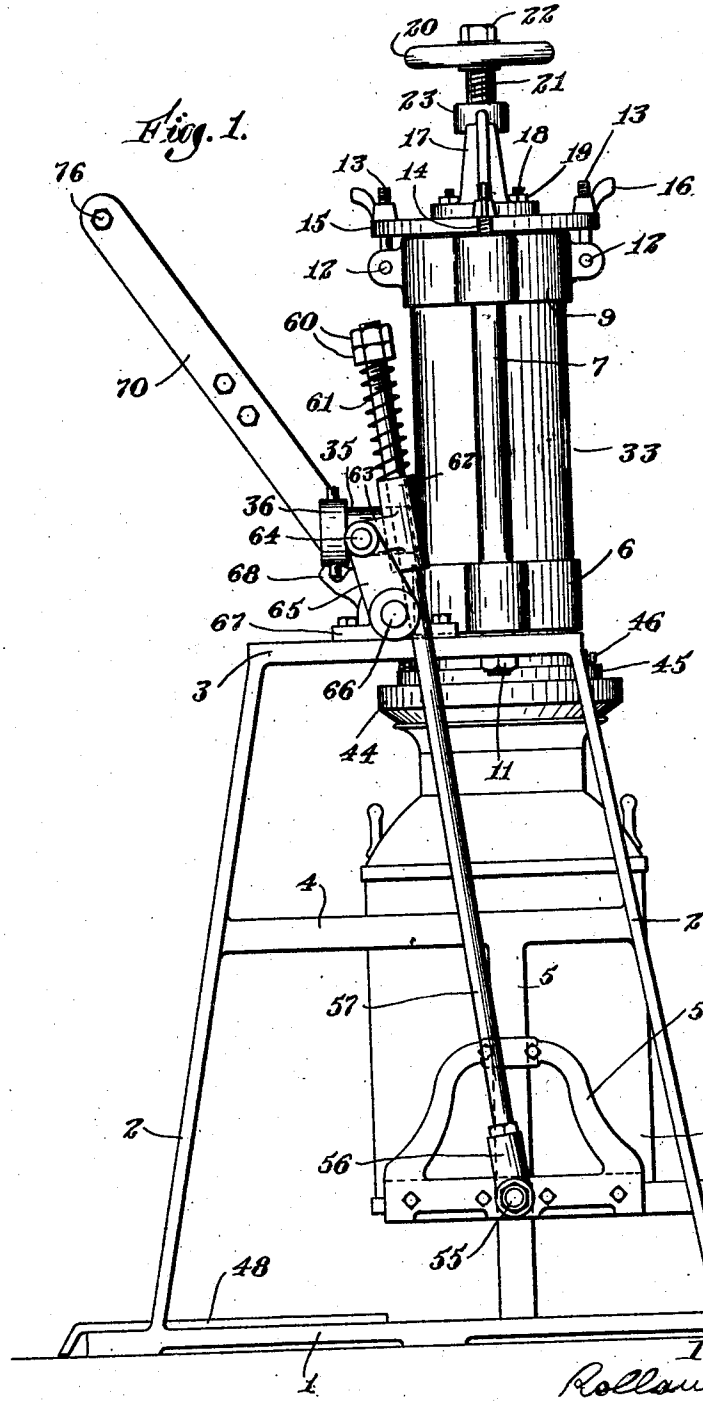
Sept. 22, 1931. R. J. CANTON 1,824,425

CAN FILLING MACHINE

Filed June 27, 1929 3 Sheets-Sheet. 1

Fig. 1.



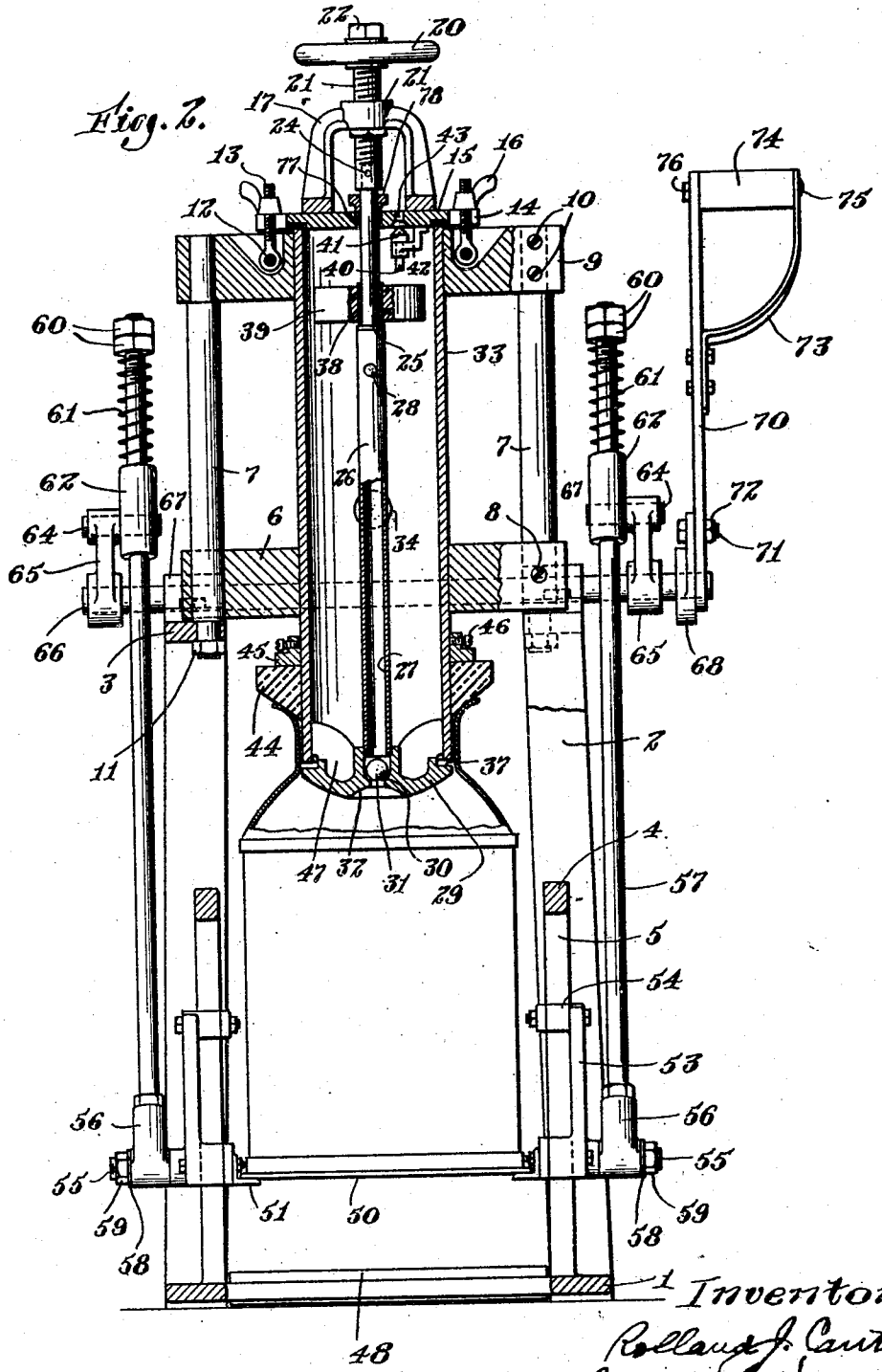
Inventor
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Filed June 27, 1929 3 Sheets-Sheet 2

Fig. 2.



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Filed June 27, 1929 3 Sheets-Sheet 3

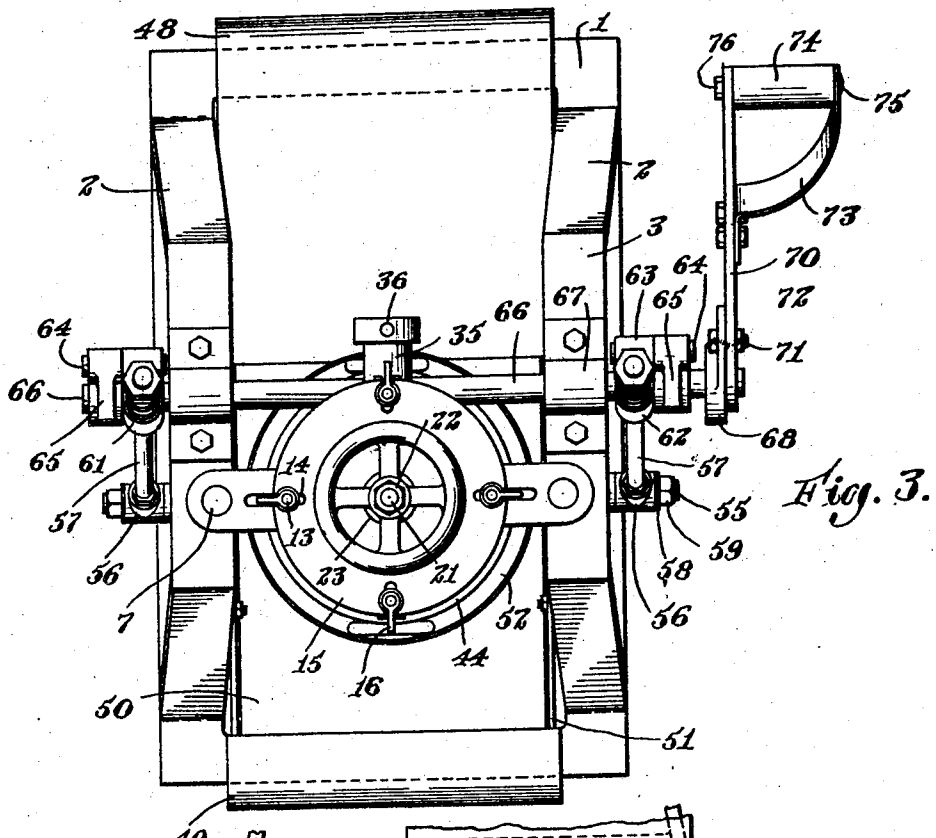


Fig. 3.

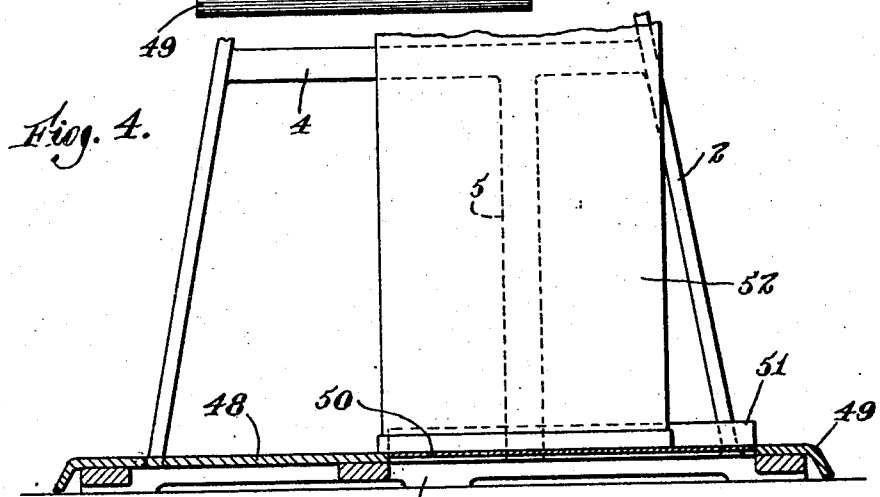


Fig. 4.

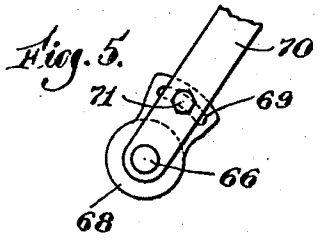


Fig. 5.

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Patented Sept. 22, 1931

1,824,425

UNITED STATES PATENT OFFICE

ROLLAND J. CANTON, OF WORCESTER, MASSACHUSETTS

CAN FILLING MACHINE

Application filed June 27, 1929. Serial No. 374,220.

My present invention relates to machines for filling cans or other containers with milk or other liquids, the primary object of the invention being to provide a milk can filling machine.

An important object of the present invention is the provision of a can filling machine which will be extremely simple to operate, and yet efficient and positive in its filling action.

Another object of the invention is the provision of means to provide a charge or partial charge of milk after each can filling operation, to expedite the filling of the next succeeding can.

Another feature of the invention is the provision of means to apprise the operator when the filling of the can is completed. Thus the operator has positive assurance that each can is completely filled before it leaves the machine.

Another feature of the invention resides in the particular delivery of the milk to the can. This delivery is accomplished in such a manner that the milk will enter the can at the inner sides of the neck thereof, and will flow down the inner side of the can. This will substantially reduce the foaming of the milk in the can being filled, which foaming has heretofore been a cause of inconvenience and inaccuracies. Thus I assure that each can, before it leaves the machine, is full of milk, and that there is no foam in the can, I accomplishing this deirable result without the prior necessary waiting for the foam to settle.

This is accomplished by providing, above the can being filled, a cylinder or chamber, and providing an outlet which leads from the interior of the can being filled to the interior of said cylinder. Thus as the can fills, the air and foam will be forced upwardly through this outlet and into the said cylinder.

During the period of removal of the can being filled and the replacement of the next succeeding can to be filled, this foam will have had an opportunity to settle into liquid, ready for delivery to the next can to be operated upon by the machine.

Another object of the invention resides in the particular mechanism for opening the filling spout or nozzle after the can is raised to filling position, and for closing said nozzle when the filled can is lowered away from said spout.

Other objects and features of the invention consist in the particular construction and arrangement of the various elements and parts thereof, which will be hereinafter more fully described.

I believe that my can filling machine, as above briefly described and as hereinafter more fully described, is novel, and have therefore claimed the same in the present application.

The above and other objects and features of the invention will be hereinafter more fully pointed out, described and claimed.

Referring to the drawings, illustrating a preferred embodiment of the invention,

Fig. 1 is a side elevation of my novel machine with a can in position to be filled;

Fig. 2 is a rear elevation, partly in section, of the machine with a can in filling position;

Fig. 3 is a top plan view of the machine;

Fig. 4 is a fragmentary sectional view of the bottom of the machine, illustrating the platform arrangement; and

Fig. 5 is a fragmentary view of the lifting lever locking mechanism.

Referring now to the drawings, for a particular description of the invention, its construction, assembly and operation, my novel machine comprises a frame consisting of a base 1, standards 2, top braces 3, horizontal webs 4, and vertical webs 5. Mounted on the top braces 3 is a lower head 6 held in position by rods 7 to which said head is secured by set screws 8, said head being adjustable on said rods. On the upper reduced ends of the rods 7 is mounted an upper head 9, secured to said rods by set screws 10. The lower reduced ends of the rods 7 pass through the top braces 3 and are threaded to receive nuts 11 to lock said rods in position. Affixed on pins 12 in the head 9 are a plurality of swing studs or bolts 13, these studs being adapted to swing into recesses 14 in a cylinder head 15, said studs being provided with wing nuts 16 to adjust said cylinder head 15 relatively to the top head 9.

A bracket 17 is secured to the cylinder head 15 by studs 18 and nuts 19. A hand wheel 20 is affixed to a threaded stem 21 by a nut 22, said stem being adapted to be threaded through a threaded boss 23 in the bracket 17. Affixed to the threaded stem 21 by a pin 24 is a valve stem, comprising a solid reduced portion 25 and a tube 26, the tube 26 having a channel 27 extending vertically therethrough and an outlet port 28 adjacent to the top of said tube. Surrounding the stem 25 where it passes through the cylinder head 15 is a gasket or packing 77 retained in place by a gland 78 to prevent leakage at this point.

Threaded to the lower end of the hollow stem 26 is a valve head 29 having a valve seat 30 in which is seated a ball 31, said head being provided with a concave mouth 32 leading to said valve seat.

Fixed in the upper head 6 is an open ended cylinder 33 having therein a port 34, and secured to the cylinder 33 and alined with the port 34 is an inlet 35 having thereon a suitable coupling flange 36, to which a connection from any suitable source of milk supply may be attached. The lower edge of this cylinder 33 is normally engaged by a shoulder 37 on the valve head 29. A gasket, of lead or other suitable material is provided, to prevent the escape of milk or air at the upper end of said cylinder. Around the upper solid end of the valve stem is a sleeve 38 carrying a float 39 of suitable material. As the liquid level in the cylinder 33 is raised, it will raise this float until the same strikes against the stem 40 of a valve plunger 41, said plunger being guided in a bracket 42 and finding a seat in the valve seat 43 in the cylinder head 15. When the valve plunger 41 is seated in the seat 43, the egress of air from the interior of the cylinder will be checked, and will thus prevent the ingress of further milk through the inlet port 34. When the liquid level in the cylinder 33 is lowered, however, the float 39 will drop with said level, and will free the plunger 41 from its seat 43, permitting the milk to again flow through the inlet 34.

Affixed to the cylinder 33 below the lower head 6 is a rubber gasket 44, although it may be desired to utilize other material than rubber for this gasket. This gasket 44 has a tight fit around the cylinder 33, but is held from upward movement thereon by a ring 45 secured to the cylinder by set screws 46. The valve head 29 is guided on the cylinder 33 by fins 47 which form a part of said head. The gasket 44 may be raised or lowered on the cylinder 33 to accommodate cans of varying heights, also to permit the valve head 29 and the lower end of the cylinder 33 to enter a can to a desired extent to displace a desired amount of milk, in order that the volume of milk in the can may conform to legal requirements. The lower head 6 is adjustable on the rods 7 for the same purpose.

Carried by the base is a loading platform 48 and an unloading platform 49, and interposed between these two platforms is a lifting platform 50 carried by angle irons 51 on which a can 52 is positioned with its mouth alined with the valve head 29. In order to raise or elevate the can 52 I provide brackets 53 to which the angle irons 51 are secured, each of these brackets having an offset portion 54 adapted to surround the webs 5 to be guided in a vertical direction. On each of these brackets 53 is a stud bolt 55 to which the lower end 56 of a connecting rod 57 is rotatably mounted, being retained in position by washer 58 and nut 59. The upper ends of the connecting rods 57 are also threaded and carry nuts 60, and on each rod, below these nuts, is a spring 61 which bears against a sleeve 62 surrounding said rod. Each sleeve 62 has a projecting boss 63 having an aperture therethrough and in this aperture is a pin or shaft 64. Also mounted on this pin 64 is the upper end of a link 65, the lower end of said link being fixed to a shaft 66 which is mounted in bearings 67 on the top braces 3. On one end of the shaft 66 is a member 68 having therein a slot 69. A lifting lever 70 is mounted on the end of the shaft 66 adjacent to the member 68, and the lever 70 is adjusted for length of throw by a bolt 71 and nut 72 which will clamp the lever 70 to the member 68 in desired position. A strap 73 is bolted to the lever 70, and said strap and said lever carry a handle 74 by means of a bolt 75 and nut 76.

The operation of my present machine is simple and will be readily understood by those skilled in the art.

When the lifting platform 50 is in lowermost position, the lever 70 will be at the rear of the machine, looking at Fig. 1.

When a can is placed on the platform 50, the lever 70 is then pulled toward the front of the machine, rotating the toggle links 65 and moving the sleeves 62 upwardly on the connecting rods 57. This raising of the sleeves on their rods will effect a compression of the springs 61 against the nuts 60 until the compression of the springs will be sufficient to raise the rods 57 and carry the platform 50 and the can 52 upwardly. Thereupon the rim of the can around its mouth will engage the gasket 44 and constitute a liquid-tight joint. Thereupon rotation of the wheel 20 will lower the valve stem and will leave or provide a space between the bottom of the cylinder and the shoulder 37, this space being determined by manipulation of the hand wheel 20. As the milk enters the cylinder 33 through the port 34, said milk will flow downwardly, through the space between the bottom of the cylinder 33 and the shoulder 37 and will enter the can. Because of the particular arrangement illustrated, the milk will

first engage the sides of the can and flow down said sides, thus greatly reducing, and in fact substantially eliminating foaming of the milk in the can 52. As the milk level in the can is raised, the air, and any foam that may be formed, will be ejected upwardly through the valve head 29, by way of the ball valve 31, through the hollow tube 26, through the outlet 28, and thence outwardly through the valve seat 43 to the open air. As the flow of milk is continued, the milk will encounter the float 39, and will raise said float until it hits the stem 40 and raises the plunger 41 against its seat 42.

This will prevent the entrance of further milk into the cylinder 33, the cessation of air discharge apprising the operator that the can is completely filled with liquid. The operator then closes the valve 29, by manipulation of the wheel 20, raising the valve head 29 until its shoulder engages the bottom of the cylinder 33. The operator then pushes the lever 70 to the rear, dropping the sleeves 62 on their rods 57 and permitting the springs 61 to reach their full length, at which point the platform 50 will be in its lowermost position, the can 52 will be removed over the platform 49 and another can, which may in the mean time have been resting on the platform 48, slid on the platform 50 and the lifting operation again performed. During the interval required for the lowering of the platform, changing of cans, and raising of the platform with an empty can, any foam which is in the cylinder 33 will have had a chance to settle, and as the next succeeding can is raised, there will be a charge of milk in the cylinder ready to be delivered to the can, the charge or volume of milk in the cylinder 33 representing a considerable proportion of the milk which is to be discharged into said next succeeding can.

My novel machine can be readily disassembled for cleaning, repairs, alterations or adjustments. The simplicity of operation, efficiency, and advantages of my novel apparatus will be instantly apparent to those skilled in the art, my novel machine filling large milk cans in a fraction of the time heretofore required, and insuring that each can will have nothing but milk, with a complete absence of foam therein. This means that each can, as soon as the machine indicates that it is filled, may be removed therefrom and capped, with complete assurance that there is no short measure therein.

While I have necessarily described my present invention somewhat in detail, it will be appreciated that I may vary the size, shape and arrangement of parts within reasonably wide limits without departing from the spirit of the invention.

My invention is further described and defined in the form of claims as follows:

1. In a milk can filling machine, a cylinder having a milk inlet therein, a valve stem depending through said cylinder, a valve head fixed to the lower end of said stem, said valve head and stem having a vent channel therethrough, said stem having an outlet vent therein located within said cylinder, a cylinder head on said cylinder having a valve seat therein, a valve located below said seat, a shoulder on said stem adjacent to its upper end, and a float slidable on said valve stem, and normally seated on said shoulder, said float being automatically operated by the liquid level in said cylinder to engage said valve and seat the same in said seat to prevent the discharge of air through said cylinder.

2. In a milk can filling machine, a platform adapted to receive a can to be filled, a cylinder above said platform, a valve head normally engaging the bottom of said cylinder, connecting rods pivotally fixed at their lower ends to said platform, a sliding sleeve on each of said rods, retaining means on the upper ends of said rods, a spring interposed between said retaining means and said sleeve, and means to effect sliding of said sleeves on said rods to compress said springs, the compression of said springs effecting a raising of said platform and contact of said can with said cylinder.

3. In a milk can filling machine, a platform adapted to receive a can to be filled, a cylinder above said platform, a valve head normally engaging the bottom of said cylinder, connecting rods pivotally fixed at their lower ends to said platform, a sliding sleeve on each of said rods, retaining means on the upper ends of said rods, a spring interposed between said retaining means and said sleeve, means to effect sliding of said sleeves on said rods to compress said springs, the compression of said springs effecting a raising of said platform and contact of said can with said cylinder, and means on said cylinder adapted to be engaged by said can during the raising operation to form a liquid tight joint, and means to lower said valve head from said cylinder to provide a space between the bottom of said cylinder and said valve head, whereby milk in said cylinder will flow into said can.

In testimony whereof, I have signed my name to this specification.

ROLLAND J. CANTON.