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 DEVICE FOR ATTACHING SLIDE VALVES
 TO LIQUID DELIVERY TUBES
 Filed May 14, 1948

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Fig 3

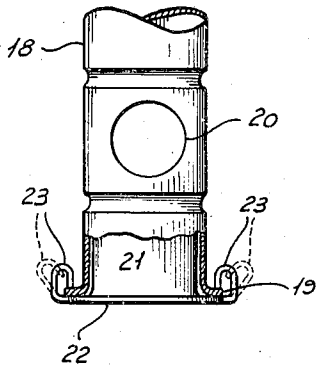


Fig 1

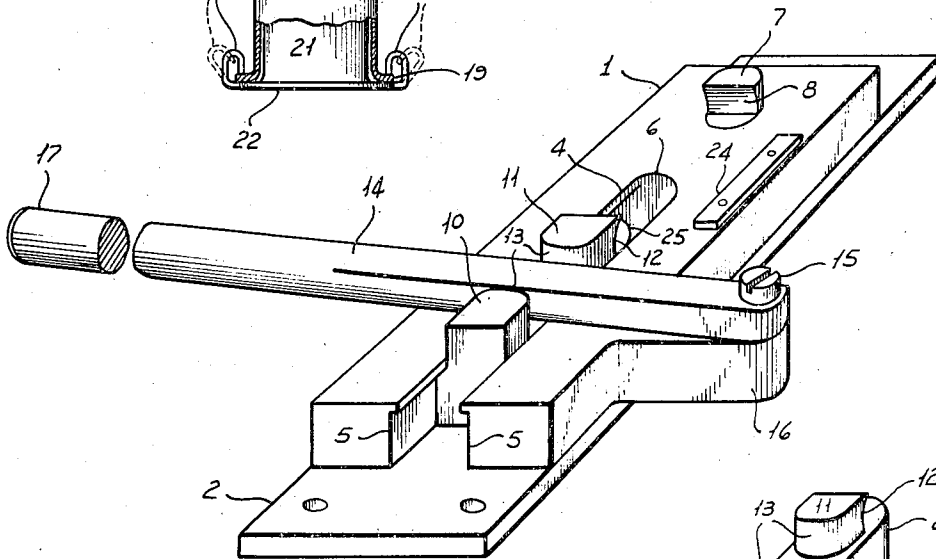


Fig 2

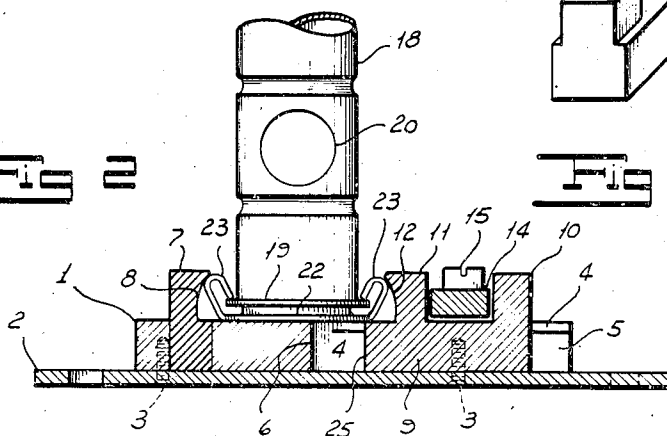


Fig 4

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DEVICE FOR ATTACHING SLIDE VALVES TO
LIQUID DELIVERY TUBES

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3 Claims. (Cl. 153—21)

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This invention is a device for attaching a slide valve to a delivery tube and is adapted more particularly for use in connection with such valves and tubes as are disclosed in United States Patent No. 2,186,083, issued January 9, 1940, to Monitor Process Corporation, as assignee of William Tammenga. In accordance with the disclosure of that patent a delivery tube is slidably supported in a milk can and the flow of such milk through the dispensing tube is controlled by a slide valve. The movement of the valve longitudinally of the tube serves to seal or unseal a port in the tube and thus control the delivery of the milk.

Milk cans equipped with such delivery tubes leave the creamery or other source of milk supply with the valve temporarily locked in port closing position. To permit of this temporary lock, each slide valve is provided with radially projecting bendable metallic tongues adapted to be bent over a peripheral flange at the outer end of the tube. The engagement between the tongues and the flange securely holds the valve in port sealing condition until the can of milk is delivered to the consumer. The tongues are then bent outwardly to free them from the flange and the valve is thereafter manually operated through appropriate mechanical dispensing means to permit of the flow of milk from the can into a tumbler or other receptacle.

It is essential, when the valve is temporarily locked in position, that the lock be tight and firm and that the valve be fully sealed. Experience has shown that this cannot be satisfactorily accomplished without an appropriate device for bending the tongues into locking position. My Patent No. 2,440,772, issued May 4, 1948, discloses a device which I have used for this purpose. It serves to lock the valve in place upon the delivery tube much better than could possibly be accomplished by pliers or other implements which operate upon the tongues individually and in succession. That device, however, was expensive and not altogether satisfactory. The present invention is a marked improvement upon my prior device and provides a structure which can be much more economically manufactured and which does a much better job in locking the valve to the tube. It operates positively with minimum lost motion and effects a highly satisfactory lock.

Speaking generally, the device of the present invention comprises a guide plate provided with a longitudinal undercut slot extending from one end thereof for the greater portion of the length of the block and aligned with the slot and near the opposite end of the block is an upstanding under-

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cut boss which constitutes one bending jaw. Within the slot is positioned a traveller embodying two upstanding posts spaced apart. The post facing the blind end of the slot is undercut and forms the other bending jaw. Between the posts extends a lever, one end of which is pivoted to a fulcrum bracket at one lateral edge of the block while the other end of the lever constitutes a handle which, when oscillated about its fulcrum, serves to move the traveller longitudinally of the slot and into and out of cooperative relation with the tongues of a slide valve positioned between the jaws. The stop is provided on the upper surface of the block to facilitate accurate positioning of the valve between the jaws while the under side of the block rests upon and is secured to an attaching plate, perforated to permit it to be readily attached by screws to any appropriate firm support. The device is extremely simple yet operates with remarkable efficiency in the performance of its intended functions.

Features of the invention, other than those adverted to, will be apparent from the hereinafter detailed description and claims, when read in conjunction with the accompanying drawing.

The accompanying drawing illustrates one practical embodiment of the invention, but the construction therein shown is to be understood as illustrative, only, and not as defining the limits of the invention.

Figure 1 is a perspective view showing a device embodying the present invention.

Figure 2 is a longitudinal vertical section through the device shown in Figure 1.

Figure 3 shows a delivery tube and associated valve of the type to be operated upon by the device of this invention.

Figure 4 is a perspective view showing a traveller which carries one of the bending jaws.

In the accompanying drawing, 1 designates a guide block which is generally of elongated rectangular form. It is seated upon an attaching plate 2 to which it is secured by four attaching screws 3 extending upwardly through countersunk holes in the plate 2 and threaded into tapped holes in the under side of the block 1.

Extending longitudinally of the block 1 from one end thereof is a slot 4, undercut as shown at 5, although this slot may be of dove tail form if desired. It extends for the greater portion of the length of the block and terminates in a rounded end shown at 6. Spaced from the end of this slot and aligned therewith is an upstanding post 7 which may, if desired, be made integral with the block 1, although in practice I preferably form

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this post 7 from a pin of hardened steel set into a circular hole bored through the block 1. That portion of the pin which projects above the block has its side cut away, so that it has an undercut surface 8 of arcuate form. This post 7 constitutes a fixed bending jaw.

Positioned for sliding movement within the slot 4 is a traveller 9 of elongated form and of such size that it snugly fits into the undercut portion 5 of the slot to adapt it for sliding movement longitudinally of such slot. This traveller 9 is of hardened steel and carries two spaced apart upstanding posts 10 and 11 which extend upwardly through the constricted mouth of the slot 4. The forward post 11 has an undercut concave surface 12 whereby it is adapted to function as the movable clamping jaw of the device.

The adjacent surfaces 13 of the posts 10 and 11 are rounded as shown to better adapt them for cooperation with a lever which extends between them. This lever 14 is secured by a fulcrum pin 15 to a fulcrum bracket 16 which projects from one lateral edge of the guide block 1. The bracket may be rigidly attached to the block or integrally formed therewith as shown. The lever 14 passes between the posts 10 and 11, as stated, and for some distance beyond the latter to form a handle 17 which may be grasped to oscillate the lever about its fulcrum 16 and thus cause the traveller to move longitudinally of the slot and shift the movable jaw 11 toward and away from the fixed jaw 7.

Figure 3 shows a milk delivery tube 18 provided at its outer end with a peripheral flange 19 and having an opening 20 through which milk may be delivered. Into the end of this tube is fitted the cylindrical portion 21 of a slide valve provided at its outer end with a circumferential flange 22 adapted to substantially seat against the outer surface of the flange 19 when the slide valve is seated in the tube 18. At diametrically opposite sides of the flange 22 are a pair of bendable tongues 23. These tongues normally occupy the partially bent condition shown in dotted lines in Figure 3, but, when the valve is fully seated in the tube, it is adapted to be locked in this position by bending the tongues from the dotted line position of this figure into the full line position. When in the full line position, the ends of the tongues bear against the back of the flange 19 and lock the valve seated.

The purpose of the device of this invention is to move the tongues from the dotted line position to the full line position and to do this uniformly so that the valve will uniformly engage its seat throughout the entire circumference of the latter. To accomplish this result the tube, such as shown in Figure 3, with its tongues 23 in dotted line position is placed on the upper surface of the block 1 with the tongues between the jaws 7 and 11, the traveller being retracted to allow space for this operation. A raised stop 24 positions the valve, so that the tongues are aligned with the jaws.

After the tube and assembled valve have been brought into this position on the plate 1, the handle 17 of the lever is grasped and the handle is moved in a clockwise direction. This causes the traveller 9 to move in the direction of the blind end of the slot. As a result, the movable jaw 11 engages with the adjacent tongue 23 and moves the assembled valve and tube in the direction of the fixed jaw 7 until the tongues are engaged by both of the jaws. Further move-

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ment of the lever will cause the tongues 23 to be bent from the dotted line to the full line position and this operation will be accompanied by a forcing of the tube downwardly, so that the valve is firmly engaged with its seat in the tube. Figure 3 shows the parts in an intermediate position of the bending operation. When the bending operation is completed, the valve will be firmly seated and both tongues will be uniformly bent so that there is no tendency to seat one side of the valve more firmly than the opposite side. The engagement of the valve with its seat will be uniform throughout. A single continuous movement of the lever in the manner described will effect the attachment of the valve to the tube and when the attachment is completed, the movement of the lever is reversed to retract the traveller, so that the assembled valve and tube may be removed and the next assembly operated upon in the same manner.

The device of this invention functions positively and effectually to secure valves to tubes as stated without unduly deforming or overbending the tongues. In fact the forward end of the follower may be rounded as shown at 25 and the slot may be of such length that this rounded end of the traveller will engage with the rounded end of the slot at just the right time to insure proper seating of the valve without a bending or deformation of the tongues. It is important that the tongues be not overbent or deformed for these tube and valve assemblies are adapted to be used with the dispensing mechanism of the aforesaid Tamminga patent which is provided with means to engage with the bent tongues and unbend them into dotted line position after the valve has been connected to the dispensing mechanism.

The foregoing detailed description sets forth the invention in its preferred practical form, but the invention is to be understood as fully commensurate with the appended claims.

Having thus fully described the invention, what I claim as new and desire to secure by Letters Patent is:

1. In a device for attaching a slide valve, provided with bendable tongues, to a liquid delivery tube having a flanged outer end: a guide block provided near one end with a fixed upstanding undercut jaw and having an undercut slot spaced from and extending away from said fixed jaw, a traveller slidable in the undercut slot and having two spaced apart upright posts projecting above the surface of the block one of which is undercut to function as a movable jaw, a bracket extending laterally of said block, and a lever pivoted on said bracket and extending through the space between the posts of the traveller, whereby oscillation of the lever about its fulcrum will move the movable jaw toward and away from the fixed jaw.

2. In a device for attaching a slide valve, provided with bendable tongues, to a liquid delivery tube having a flanged outer end: a guide block provided near one end with a fixed upstanding undercut jaw and having an undercut slot spaced from and extending away from said fixed jaw, a traveller slidable in the undercut slot and having two spaced apart upright posts projecting above the surface of the block one of which is undercut to function as a movable jaw, a bracket extending laterally of said block, a lever pivoted on said bracket and extending through the space between the posts of the traveller, whereby oscillation of the lever about its fulcrum will move the movable jaw toward and away from the fixed jaw, and an

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attaching plate secured to the bottom of said block.

3. In a device for attaching a slide valve, provided with bendable tongues, to a liquid delivery tube having a flanged outer end: a guide block one end of which is bifurcated to provide an undercut slot, a traveller mounted in said slot for sliding movement longitudinally thereof and having upstanding posts projecting through the constricted top of the slot, one of said posts having a concave undercut surface and constituting a movable jaw, a bracket extending laterally from said block and carrying a fulcrum at its outer end, a lever pivoted on said fulcrum and extending between said posts, and a fixed jaw aligned with and spaced from the blind end of the slot,

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said fixed jaw being in the form of a pin firmly seated in an aperture in the block and having an undercut concave surface facing toward the movable jaw.

JOHN A. HOPWOOD.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
146,946	Perkins	Jan. 27, 1874
299,069	Hagerty	May 20, 1884
2,440,772	Hopwood	May 4, 1948