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H. GOLLOMB
TUBE COMPRESSOR

Filed Aug. 21, 1926

Fig. 1.

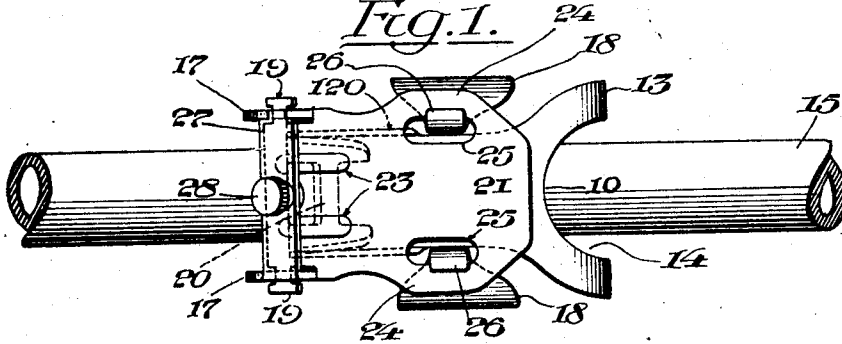


Fig. 2.

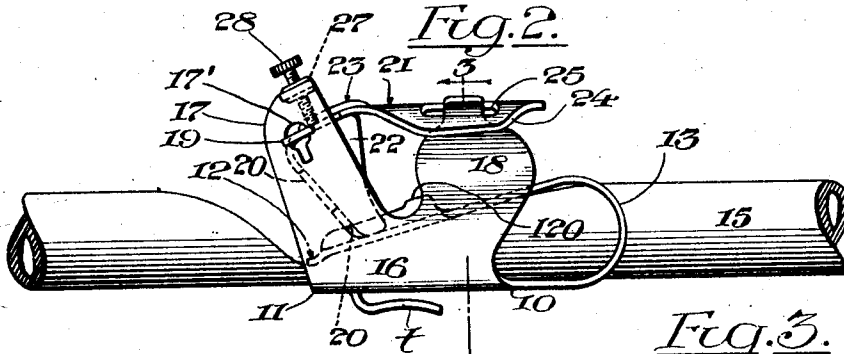


Fig. 4.

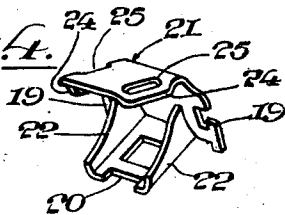


Fig. 3.

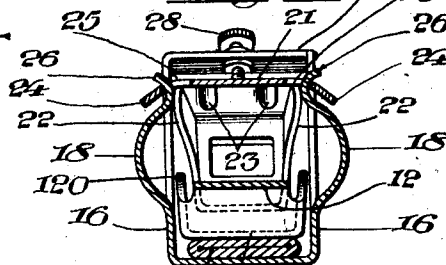


Fig. 5.

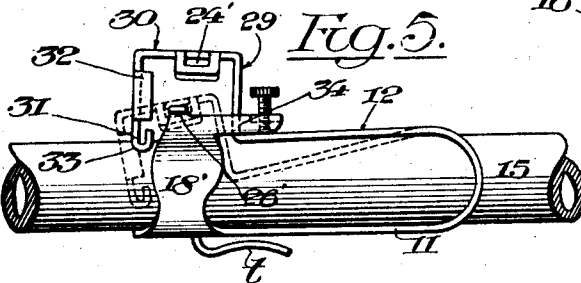


Fig. 7.

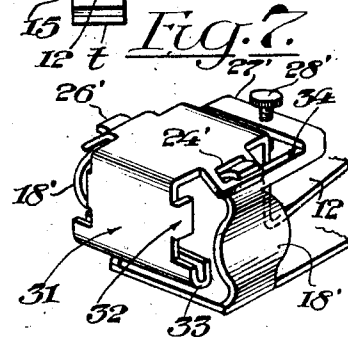
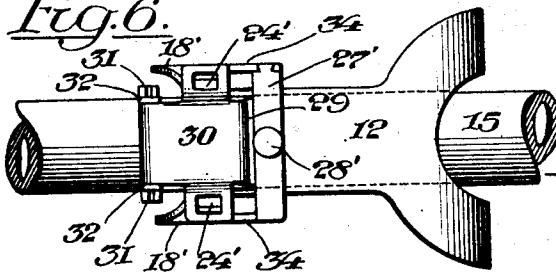


Fig. 6.



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UNITED STATES PATENT OFFICE.

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TUBE COMPRESSOR.

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This invention relates to that class of devices termed "tube compressors" whereby the flexible tube of a syringe, for example may be compressed or released to prevent or to permit the flow of liquid therethrough, as desired.

An object of my invention is to provide a device of simple and inexpensive construction whereby a reliable clamping of the tube is effected and maintained, and whereby the release of the tube can be readily and easily accomplished at the will of the user.

With this and other objects in view the invention comprehends a tube compressor comprising normally-open clamping members adapted to embrace the tube, and latching means whereby the said members are automatically locked in closing relation upon the tube, which means can be readily and conveniently actuated by lateral pressure to effect the release of said members and permit their normal separation and the opening of the tube.

My invention in its preferred form, comprises a body constructed to receive a flexible tube, a lever member on said body operable in conjunction therewith to effect the closing or to permit the opening of said tube, and a latch member arranged on said body to engage said lever member and lock it in tube-closing position, and being inwardly movable by lateral pressure to effect its disengagement from the lever member,

The invention also comprises features of construction and combinations of parts which will be hereinafter described and claimed.

In the drawings—

Figure 1 is a plan of a tube compressor embodying the preferred form of my invention, showing the device as applied to a flexible tube or hose, and the parts as locked in clamping relation.

Fig. 2 is a side elevation of the same.

Fig. 3 is a transverse vertical section, as on the line 3—3 of Fig. 2.

Fig. 4 is a perspective view of the clamping lever detached.

Fig. 5 is a side elevation of a modified form of the device as in use.

Fig. 6 is a plan of the same.

Fig. 7 is a partial perspective of the modification.

Referring to Figs. 1 to 4, inclusive, of the drawings, 10 designates a body of spring

metal bent to U-form to present a pair of normally-open resilient jaw members 11, 12 having at one end a curved connecting portion 13 which is perforated, as at 14, for the free passage of a flexible tube, 15, to which the device is applied, such tube being longitudinally embraced by the members 11, 12, as shown.

The metal constituting the lower member 11 is laterally extended and bent upward to provide reinforcing side walls 16 having pairs of up-standing forward and rearward lugs 17, 18, respectively. The lateral edges of the upper member 12 are also provided with stiffening flanges 120.

The forward lugs 17 are perforated, as at 17', to receive and pivotally support the pintles 19 of an angular clamping lever, the perforations 17' being preferably of key-hole formation to facilitate the application and ensure the retention of the pintles. (See Fig. 2). One arm 20 of this lever constitutes, in effect, a cam which is movable upon and from the upper jaw member 12, and the other arm 21 extends rearwardly and constitutes a convenient thumb-piece by the manipulation of which the cam can be forcibly moved against the upper jaw in a manner to press the latter down upon the tube 15 and thus collapse the tube to a greater or less extent between the two jaws, thereby closing or partially closing the duct of the tube in order to check or to regulate the flow of liquid therethrough. The clamping lever is preferably an integral sheet metal stamping, and the arm 20 thereof is formed with upwardly bent and tapering edge stiffening flanges 22, the larger ends of which bear against and effectually brace the upper arm 21 of the lever adjacent its pivotal portion. This portion of the arm 21 is also preferably provided with stiffening ribs 23. The arm 21 is formed with lateral extensions 24 having suitably-disposed slots or openings 25 which constitute latch-engaging portions.

The rearward up-standing lugs 18 underlie the extensions 24 and are provided at their upper ends with latch members, preferably in the form of outwardly extending lips 26. These lips are so located that when the clamping lever is fully depressed, as above mentioned, the extensions bear against the respective lips 26 and force them inward in opposition to the inherent elasticity of the lugs 18, which lips thereupon enter and

engage the slots or openings of the extensions 24 in a manner to lock the upper jaw 12 of the lever in clamping relation to the tube.

The extensions 24 are preferably inclined or curved downwardly and the lips 26 are curved outwardly as shown, so that the efficient inward and outward movement of the resilient lugs 18 will be attained when the lever is forcibly depressed, thereby insuring the efficient interlocking of the complementary latch portions. To disengage such latch portions, and thus release the upper jaw member and permit the automatic raising thereof in a manner to free the tube from compression, it is merely required to press the latch lugs 18 toward each other against their inherent elasticity, until the lips 26 shall escape the openings 25 of the lever. When the pressure is removed from the lugs 18 they resume their normal outer position in readiness for a succeeding operation.

Preferably the lugs 18 are curved or bulged outwardly, as shown, to facilitate the application of releasing pressure thereto by the fingers of the user. Preferably also the tops of the pivot supporting lugs 17 are connected by a bridge piece 27 having a centrally tapped orifice in which is fitted a set-screw 28 which extends into the path of the arm 21 and may be manipulated to serve as an adjustable stop to vary the upward movement of the clamping lever in respect to the tube and thus enable the maximum flow of liquid through the latter at any time to be nicely regulated.

A tongue *t*, struck outwardly from the lower jaw member, affords a convenient suspension hook for the tube to which the compressor is applied.

In Figs. 5, 6 and 7 I have shown a modified form of my improved tube compressor. In this form the separate lever for actuating the upper clamping jaw is dispensed with, the metal constituting the lower jaw member 11 is laterally extended and bent upward at or adjacent its forward end to provide a pair of spaced-apart resilient lugs 18', and the metal constituting the upper member 12 is arched at its forward end, that is to say, the metal of the upper member is bent upward at 29, forward at 30 and downward at 31. The upper member 12 constitutes in effect a lever and the downward terminal bend 31 provides a clamping jaw thereon, which jaw, by pressure directly applied to the raised part 30 of the lever by means of the thumb or finger of the user, may be forced downward in such a manner as to compress the tube against the opposing lower member 11 and thus check the flow of liquid through the tube. The jaw is preferably formed along its vertical edges with stiffening flanges 32, and along its lower edge with a curved or rolled bearing flange 33.

The upper part 30 of the arched portion is provided with slotted latch engaging portions 24', and the upper ends of the resilient lugs 18' are provided with latch members 26' which are adapted to engage the slotted portions when the arched portion is depressed as previously mentioned. The latch members thus effectually lock the arched portion, including its jaws 31, in clamping relation to the tube. To release the locked parts it is merely necessary to press the latch lugs toward each other as in the first described construction. In this modified device the upper portions of the lugs are provided with rearward extensions 34 which are connected at their outer ends by a cross-piece 27' having a tapped orifice in which is fitted a set-screw 28' that serves as an adjustable stop to vary the upward limit of movement of the member 12 and its terminal jaw in respect to the tube.

It is to be understood that my invention is not limited to the details of construction herein disclosed, as the structure may be modified within the principle of the invention and the scope of the appended claims.

I claim—

1. A tube compressor comprising relatively-movable members adapted to embrace a tube, a laterally-resilient latch on one of said members, and a latch engaging portion on the other member, said latch being inwardly moveable to release the engaging portion by pressure applied to the outer side of the latch against the elasticity of the latter.

2. A tube compressor comprising relatively-movable members adapted to embrace a tube, laterally-resilient latch lugs on one of said members, and latch engaging portions on the other member, said lugs having pressure projections affording means whereby inward releasing force can be applied to the lugs against the elasticity of the latter.

3. A tube compressor comprising relatively-movable members adapted to embrace a tube, a laterally-resilient lug on one of said members, said lug having an outer lip at its free end, and the other member having a slotted portion with which said lip engages when one member is moved toward the other, said lug being inwardly movable by lateral pressure on the outer wall thereof to disengage the lip from said slotted portion.

4. A tube compressor comprising a body constructed to receive a flexible tube and extending longitudinally thereof, a lever member on said body operable in conjunction therewith to effect the closing or to permit the opening of said tube, a pair of latch members on said body laterally movable toward and from the longitudinal axis of the latter and arranged to engage said lever member and lock it in tube closing position,

and means laterally of said body for moving said latch members inwardly toward the tube to effect the release of the lever member, said means being normally projected and being simultaneously movable by inward pressure applied to the outer sides thereof.

5 5. A tube compressor comprising a body bent to U-form to provide a pair of jaw members adapted to embrace a flexible tube, one of said members having laterally resilient lugs provided with latch lips, and also having a lever support, and a lever fulcrumed in said support and operable to
10 move the other member to tube closing position, said lever having openings with which the latch lips interlock when the two members are in closing relation.

20 6. A tube compressor comprising a body bent to U-form to provide a pair of jaw members adapted to embrace a flexible tube, one of said members having laterally resilient lugs provided with outwardly deflected latch lips, and also having a lever support,
25 and a lever fulcrumed in said support and operable to move the other member to tube

closing position, said lever having downwardly inclined slotted portions with which the latch lips interlock when the two members are in closing relation.

30 7. In a tube compressor, a body having normally-open upper and lower jaw members, and a pair of lateral upstanding lugs on the lower member, said lugs being connected by a bridge-piece, a cam lever pivoted in and between said lugs and operable to close or permit the opening of the jaws, and a stop mounted in the bridge-piece and adjustable toward and from the operating arm of the lever.

40 8. An angular lever for tube compressors, said lever being stamped from sheet metal and comprising an operating arm and a cam arm, the side edges of said latter arm having upwardly bent reinforcing flanges
45 which bear at their inner ends against the operating arm at the juncture of the arms.

Signed at New York, in the county and State of New York, this 19th day of August, A. D. 1926.

HERMAN GOLLOMB.