J. JANISH, JR.

TUBE COMPRESSOR.

APPLICATION FILED APR. 14, 1917.

1,238,521. Patented Aug. 28, 1917.

Fig. 1

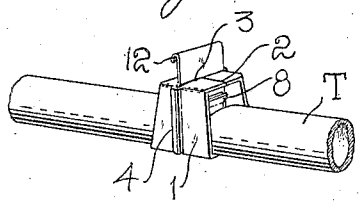


Fig. 2

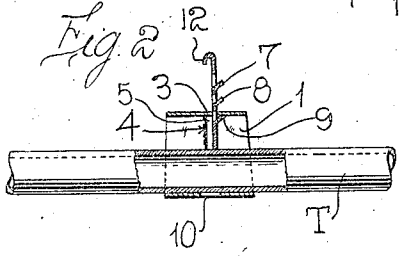


Fig. 3

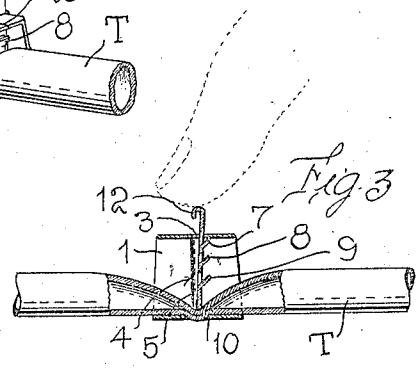


Fig. 4

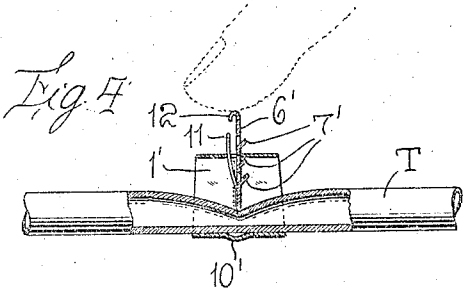


Fig. 5

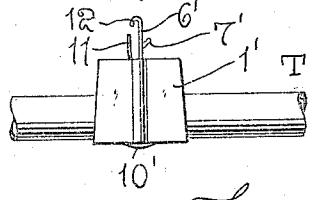


Fig. 6

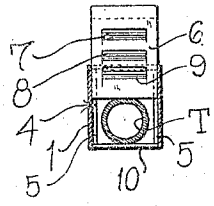


Fig. 7

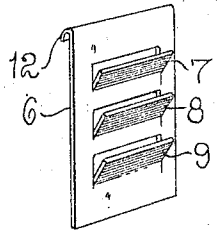
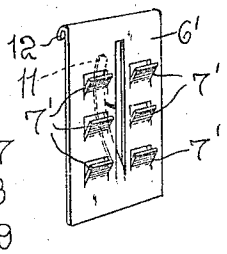


Fig. 8



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TUBE-COMPRESSOR.

1,238,521. Specification of Letters Patent. Patented Aug. 28, 1917.

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To all whom it may concern:

Be it known that I, JOSEPH JANISH, Jr., a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Tube-Compressors, of which the following is a specification.

This invention comprehends certain new and useful improvements in tube clamps, and relates particularly to a device for controlling the flow of fluids and other substances through flexible tubes such as are used in connection with fountain syringes and the like, although it is to be understood that the invention is not limited in this regard.

The invention has for one of its primary objects a simple, durable, practical and efficient device of this character embodying only two parts that may be easily and cheaply manufactured and capable of being readily assembled and not liable to get out of order or require any attention.

A further object of the invention is an improved tube compressing device in which improved means are provided for regulating or varying the amount of flow of fluid or other substance through the tube or for completely cutting off the flow, means being further provided whereby all excess pressure upon the tube at the time of complete compression due to variations of dimensions of the tube to be compressed, will be relieved.

A still further object of the invention is a device of this character in which the clamping device is in the form of a plate having struck up therefrom any desired number of locking members or teeth, the lowermost tooth in the series being designed to engage one wall of the casing through which the flexible tube passes so as to preclude the liability of the accidental detachment of said clamping device or plate.

The invention also has for one of its objects to provide an improved construction and arrangement of parts, in a device of this kind, whereby when the clamping device or plate is at the outward limit of its movement, the tube extending through the casing will be engaged by said clamping device or plate with sufficient friction so that it will be held therebetween and the opposing wall of the casing itself, and the clamp, as a whole, be retained on the tube at any point thereon it may be placed and without being liable to slip down or along to some inconvenient point.

The invention also aims to provide a device in which one embodiment thereof is provided with a spring tongue designed to urge the clamping device or plate toward its locking position whereby the liability of said clamping device becoming accidentally loosened and moving to its outward or release position will be reduced to a minimum.

And the invention also aims to generally improve devices of this class so as to render them more useful and commercially desirable.

With these and other objects in view, as will more fully appear as the description proceeds, the invention consists in certain constructions, arrangements and combinations of the parts that I shall hereinafter more fully describe and claim.

For a full understanding of the invention reference is to be had to the following description and accompanying drawing, in which—

Figure 1 is a perspective view of my improved tube compressor in applied position,

Fig. 2 is a longitudinal sectional view through the device, a portion of the inclosed tube being also shown in section and uncompressed,

Fig. 3 is a similar view of the parts in the position they assume when the tube is compressed,

Fig. 4 is a vertical longitudinal sectional view through another embodiment of the invention hereinafter specifically described,

Fig. 5 is a side elevation thereof,

Fig. 6 is a transverse sectional view of that embodiment of the invention which is illustrated in Figs. 2 and 3,

Fig. 7 is a detail perspective view of one form or clamping device or plate that may be employed as illustrated in Figs. 2, 3 and 6, and

Fig. 8 is a similar view of another form of plate such as shown in Figs. 4 and 5.

Corresponding and like parts are referred to in the following description and designated in all of the views of the accompanying drawing by like reference characters.

Referring to the drawing, the numeral 1 designates a casing which may be of any desired size or shape, and formed of any desired metal or other material or substance, said casing being designed to receive the tube T to be compressed and being preferably formed of a single piece of sheet metal stamped and struck up to approximately the

form illustrated in Fig. 1, the edges of the strip meeting, as at 2, and being preferably devoid of seams or solder or the like, as the metal itself that is selected is sufficiently stiff to maintain the shape of the casing and without liability to deformation.

The casing 1 is formed in one of its walls with a transversely extending opening 3 which defines one end of a guide-way 4, said guide-way, in the present embodiment of the invention, comprising two transversely alined grooves 5 that are formed by crimping or bulging the metal as clearly illustrated in the drawing.

The opening 3 and guide-way 4 are designed to receive and accommodate a clamping device 6 which, in that embodiment of the invention illustrated in Figs. 1, 2, 3, 6 and 7, is also formed of a strip of sheet metal having a plurality of locking members or teeth struck up therefrom and preferably extending in inclined relation to the plane or face of the plate. In the present embodiment of the invention, there are three of these locking members or teeth designated 7, 8 and 9 respectively, although it is to be understood that one or any other desired number may be employed; and said teeth are designed to engage with one wall of the casing 1, as shown, so as to hold the clamping device or plate 6 in any desired adjusted position. In the present instance, the lowermost locking member or tooth 9 (see Fig. 2) is designed to engage the wall of the casing 1 when the said plate is in fully released position; the uppermost locking member or tooth 7 is engaged with said wall when the clamping device or plate 6 is in fully operative or closed position with the tube T fully compressed, as shown in Fig. 3; and when the locking member or tooth 8 is in engagement with the wall of the casing 1 the clamping device or plate 6 is midway between fully applied and fully released positions, and the tube T partly compressed but not entirely closed, permitting some flow of liquid or the like therethrough.

Preferably the casing 1 is formed in its wall opposite the opening 3 and in alinement therewith, with an opening which may be in the form of a transversely extending slot 10 extending entirely through the wall, as clearly illustrated in Figs. 2 and 3, or in the form of a depression 10′ as clearly shown in Figs. 4 and 5, whereby excess pressure upon the tube (at the time of complete compression) is relieved and the edges of the opening 10 being preferably rounded or otherwise formed so as not to injure the tube. If desired, the clamping device or plate may be formed of a spring tongue 11 struck up therefrom, as best illustrated in Fig. 8, said tongue being designed to engage one wall of the opening 3 so as to urge the clamping device or plate (designated 6′ in Figs. 4, 5 and 8) in a direction to hold the locking members or teeth against accidental detachment or release caused by any accidental jarring of the device. In this embodiment of the invention, the locking members or teeth are shown as arranged in two series, and are designated 7′, the locking tongue being located between the two sets or series of teeth but projecting outwardly from that face of the plate 6′ which is opposite to the face from which the teeth project. In this embodiment of the device, the casing is designated 1′ to distinguish it from the embodiment of the invention illustrated in Figs. 1, 2, 3, and 6.

Preferably the outer edge of the clamping device or plate 6 (or 6′) is curled over as indicated at 12, to avoid presenting any sharp edge to a person's thumb or finger, and to indicate by the direction of the curve or bend the lateral movement of the clamping device or plate necessary to effect the release of the locking teeth.

From the foregoing description in connection with the accompanying drawing, the operation of my improved tube compressor will be apparent. In the practical use of the device, the tube T is inserted in and through the casing and is held with sufficient friction therein so as to avoid any accidental movement of the casing along the tube. Whenever it is desired to completely close the tube, it is only necessary for the operator to press inwardly upon the plate 6 or 6′ and effect the engagement of the outermost tooth with the wall of the casing, as clearly illustrated in Fig. 3, whereupon the tube will be tightly compressed and the flow therethrough completely shut off. If it be desired to allow some flow through the tube, the intermediate tooth of the plate is engaged with the casing wall, as clearly illustrated in Fig. 4, and when it is desired to fully release the tube from compressive action, the plate is moved so as to release the intermediate tooth or the outermost tooth as the case may be, and the expansion of the tube itself, without the necessity of employing springs or similar accessories, will move the plate outward until the innermost tooth engages the casing wall, said tooth preventing the plate from being accidentally entirely withdrawn.

It will thus be seen that I have provided a very simple tube compressor formed of only two parts that may be very easily and quickly struck up from sheet metal and readily assembled in operative relation with each other, the parts being so constructed and arranged that they will not be liable to get out of order.

While the accompanying drawing illustrates what I believe to be the preferred embodiment of my invention, it is to be un-

derstood that the invention is not limited thereto but that various changes may be made in the construction, arrangements and proportions of the parts without departing from the scope of the invention as claimed.

What is claimed, is:

1. A tube compressor comprising a casing for the tube, said casing having an opening formed therein and a tube clamping device extending into said casing through said opening and formed with a locking tooth engageable with the casing, said tube clamping device being further provided with a spring tongue urging it in a direction to effect the engagement of its tooth with the casing.

2. A tube compressor, comprising a casing for the tube, said casing being formed in one wall with an opening extending therethrough and in its opposite wall with an opening, and a plate movable through the first named opening into the casing and designed to press the tube into the second named opening, said plate being formed with a locking tooth, for the purpose specified.

3. A tube compressor, comprising a casing for the tube, said casing being formed in opposite sides with grooves constituting a guide-way and in one wall between said sides with an opening defining one end of the guide-way, the casing being further formed with an opening in the wall opposite the first named opening, and a plate movable in said casing through said first named opening and designed to press the tube into the second named opening, said plate being formed with a plurality of teeth engageable with the first named wall of the casing, for the purpose specified.

4. A tube compressor, comprising a casing for the tube, and a clamping plate mounted therein and formed with teeth engageable with the casing to hold the plate in engagement with the tube at varying degrees of compression of the latter, said plate being formed with a spring tongue urging the plate in a direction to effect the engagement of its teeth with the casing.

5. A tube compressor, comprising a casing for the tube, said casing being provided with a guide-way and formed in one wall with an opening defining one end of the guide-way, and a clamping plate movable in the casing through said opening, said plate being formed with a plurality of teeth struck up therefrom and engageable with the casing and being further formed with a spring tongue struck up therefrom and extending in a direction opposite to the teeth and designed to urge the plate in a direction to effect the engagement of the teeth with the casing, as and for the purpose set forth.

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

JOSEPH JANISH, Jr.

Witnesses:

Howard D. Adams,

William H. Price, Jr.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."