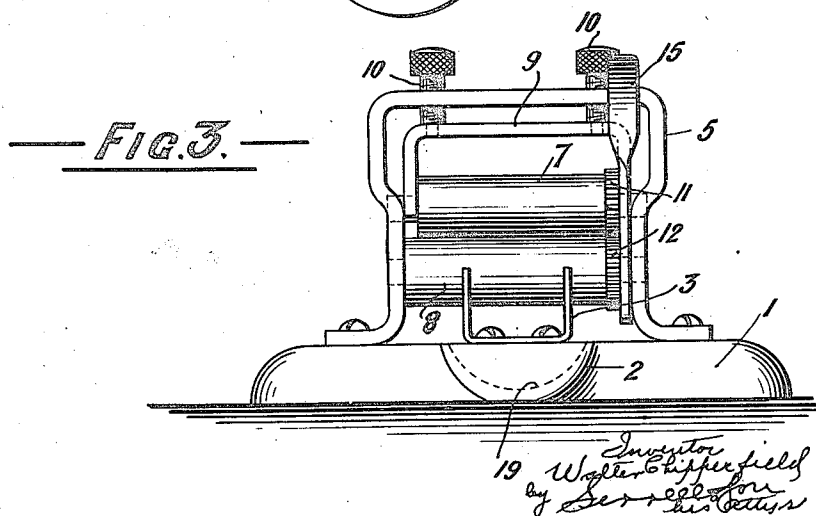
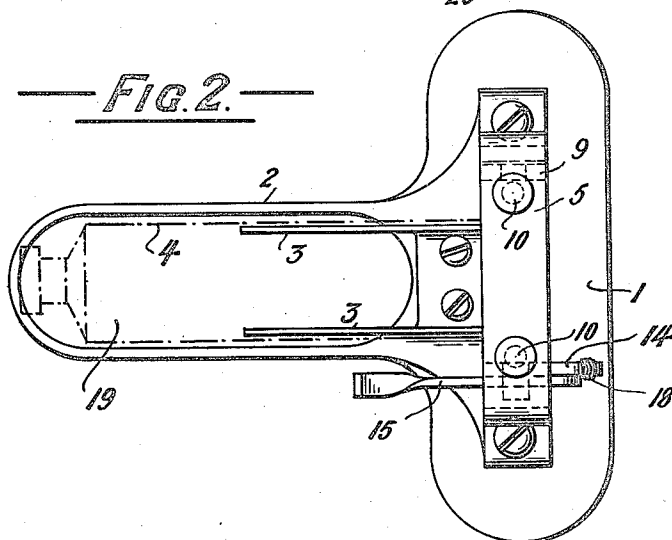
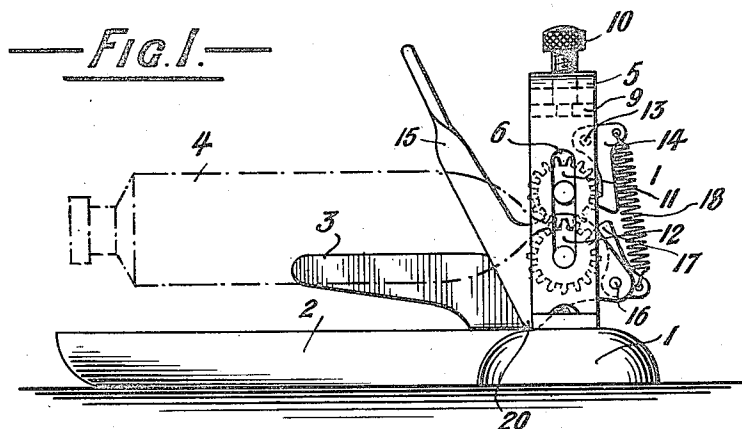


W. CHIPPERFIELD,
 APPLIANCE FOR EXPRESSING THE CONTENTS OF COMPRESSIBLE TUBES.
 APPLICATION FILED AUG. 24, 1918.

1,295,433.

Patented Feb. 25, 1919.



UNITED STATES PATENT OFFICE.

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APPLIANCE FOR EXPRESSING THE CONTENTS OF COMPRESSIBLE TUBES.

1,295,433.

Specification of Letters Patent.

Patented Feb. 25, 1919.

Application filed August 24, 1918. Serial No. 251,233.

To all whom it may concern:

Be it known that I, WALTER CHIPPERFIELD, a subject of the King of Great Britain, residing at Great Nelmes, Hornchurch, Essex, England, have invented certain new and useful Improvements in Appliances for Expressing the Contents of Compressible Tubes, of which the following is a specification.

Compressible tubes, generally of metal, for holding tooth paste, ointment, adhesive material and the like, are at present in common use, and such tubes are closed at one end and at the opposite end fitted with a nozzle having a delivery aperture through which the material contained in the tube is expelled by pressure on the tube; and in the proper and economical use of such tubes of material it is desirable that the tube should be compressed at its closed end and should be so compressed progressively toward the nozzle end, in order properly to expel the contents, without waste and without bursting or fracturing the tube. Commonly such tubes are compressed by the fingers of the user with considerable liability of damage to the tube and usually considerable waste of the contents occurs.

Now the object of the present invention is to provide an improved appliance by which the contents of such tubes are expressed mechanically, and moreover by which the amount or quantity of the contents so expressed is accurately regulated.

According to this invention the appliance comprises two parallel rollers in combination with operating mechanism to be actuated by the user whereby the rollers can be rotated about their axes in opposite directions, and with a step by step motion, while the distance between the peripheries of the rollers can be regulated so that the flattened closed end of a soft metal tube containing the material, which is to be expressed therefrom, can be inserted between the two rollers, which can then be given the described motion whereby the tube is drawn between the rollers and the material within the tube thereby expressed from the aperture at the opposite end of the tube, the amount so expressed being regulated according to the number of movements given to the operating mechanism by the person manipulating the device.

The invention will be further described

with reference to the example of construction shown on the accompanying drawings, whereon Figure 1 is a side elevation of the appliance, and Fig. 2 is a plan view, while Fig. 3 is a front elevation of the same.

The appliance consists of a base plate 1 which may be composed of a metal casting, the base plate being provided or formed with a forward extension 2 shown in the example as constructed with guide rails 3 to support the compressible tube 4 (shown by dotted lines) in a horizontal position during its manipulation by the appliance.

The base plate 1 is formed with a surface to receive and to which can be conveniently secured the lower ends of a loop frame 5, the frame being formed with vertical slots 6 to receive the trunnions of two superposed rollers 7 and 8, and to permit of the convenient insertion and removal of the rollers 7, 8 from the frame 5 said frame is outwardly bent as shown at Fig. 3.

A pressure frame 9 is provided, consisting of a U-shaped member, the ends of its arms being forked so that the pressure frame 9 can be inserted within the loop frame 5 and the ends of its arms embrace the trunnions of the upper roller 7, while pressure screws 10 pass through the upper member of the loop frame 5 and bear upon the pressure frame 9; the ends of the pressure screws 10 may be reduced in diameter to enter holes drilled in the pressure frame 9 so as to hold the same steadily, while the requisite pressure between the rollers can be obtained by adjustment of the pressure screws 10.

Each roller 7 and 8 is fitted at one end with a toothed wheel 11 and 12 which is so proportioned that when the rollers are brought together the teeth of the wheels 11 and 12 engage.

Pivoted at 13 to the inner side of one of the downwardly extending arms of the pressure frame 9 is a retaining pawl 14, the tooth of which engages the teeth of the toothed wheel 11. Freely pivoted on the trunnion of the roller 8 on the same side of the appliance as the retaining pawl 14, is a two-armed lever 15, upon the rearwardly extending arm of which is pivoted at 16 an operating pawl 17, and rearward extensions of the pawls 14, 17 are connected together by a tension spring 18; the opposite arm of the lever 15 extends upward and is fitted or formed at its end so that it can be con-

veniently manipulated by the user of the appliance.

To bring the appliance into use the compressible tube to be dealt with, such as 4, is flattened at its rear end, and in fact such tubes are generally formed with a flattened rear end, and such flattened rear end is inserted between the rollers 7 and 8 and the body of the tube rests upon the guide rails 3 as indicated by the dotted lines, the distance apart of the rollers being adjusted by means of the pressure screws 10.

The appliance is operated by pressing the upper end of the lever 15 in the direction of the front of the loop frame 5, and it will be observed that for each such upward pressure the rollers 7 and 8 are revolved through a definite angle of rotation, and consequently the compressible tube 4 is drawn through the rollers and compressed to a degree corresponding with such motion of the rollers, with the result that a definite quantity or volume of material is expelled through the exit nozzle of the compressible tube, and therefore not only is the material completely expelled and compressed from the rear end of the tube 4 in a manner which is calculated not to damage the tube, but also the quantity of material which it is desired to be delivered is regulated in accordance with the number of operative motions which the user gives to the lever 15.

The above is a description specific to the example illustrated, but it will be readily understood that the design of the appliance can be varied as required, as for instance the whole frame comprising the base plate, the extension, the rails 3, and the loop frame 5, might consist of a single casting. Further the design of the retaining and operating pawls might be varied, as for instance the operating pawl might be fitted with its own spring, as also the retaining pawl, instead of the two being connected together, and in some cases the retaining pawl might be dispensed with.

The material expressed from the tube 4, when consisting for instance of tooth paste, may be received upon a tooth brush or the like.

Preferably the cylindrical surfaces of the rollers are knurled or serrated to insure the tube being regularly drawn through between the rollers.

In some cases, as shown in the drawings, the forward extension 2 of the base plate is formed so as to compose an open trough which is thus easily capable of being cleaned, and which trough would receive any material expressed from the nozzle of the tube 4 and which may be allowed to fall purposely or otherwise from the nozzle of the tube 4; for instance when the compressible tube 4 contained such material as liquid glue, the receiving trough indicated

at 19 and formed as aforesaid in the forward extension 2, would be particularly useful.

In the construction illustrated and clearly seen at Fig. 1, the lever 15 may be formed with a kind of knuckle extension 20 which, when the lever is at rest, sits upon the base plate 1 and forms a stop for the lever. Further the guide rails 3 for convenience of construction may be, as shown, formed as a separate part and may be screwed onto the base plate 1.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In an appliance for expressing the contents of compressible tubes; the combination with a base plate, a frame upstanding therefrom, two parallel rollers to receive between them the flattened rear end of the compressible tube containing the material to be expelled, said rollers each having end trunnions, means for supporting said trunnions in said frame, means for limiting the distance apart of the peripheries of said rollers, and means for supporting said compressible tube; of an operating lever, means for pivotally supporting said operating lever, a toothed wheel on one of said rollers, a pawl pivotally carried on said operating lever to engage said toothed wheel on said roller to communicate a step-by-step rotation to said roller at each hand operation of said lever, and a spring to retain said pawl in engagement with said wheel and to return said operating lever to its rest position.

2. In an appliance for expressing the contents of compressible tubes; the combination with a base plate, a frame upstanding therefrom, two parallel rollers to receive between them the flattened rear end of the compressible tube containing the material to be expelled, said rollers each having end trunnions, means for supporting said trunnions in said frame, means for limiting the distance apart of the peripheries of said rollers, and means for supporting said compressible tube; of a two-armed operating lever pivotally mounted on the trunnion of one of said rollers, a toothed wheel on one of said rollers, a pawl pivotally carried on the rear arm of said operating lever, a spring to cause said operating pawl to engage the teeth of said toothed wheel on said roller to communicate a step-by-step rotation to said roller by the movement given by the user to the forward arm of said operating lever to expel a definite quantity of material from said compressible tube by each operative movement of said operating lever, and means for returning said operating lever to its rest position.

3. In an appliance for expressing the contents of compressible tubes; the combination with a base plate, a frame upstanding there-

from, two parallel rollers to receive between them the flattened rear end of the compressible tube containing the material to be expelled, said rollers each having end trunnions, means for supporting said trunnions in said frame, means for limiting the distance apart of said rollers, and means for supporting said compressible tube; of two engaging toothed wheels one fixed at the end of each roller, a detent pawl pivotally mounted on said frame and engaging the toothed wheel of the upper roller, an operating lever pivotally mounted on the trunnion of the lower roller, a pawl pivotally carried on a rear arm of said operating lever to engage the toothed wheel on said lower roller, a spring connecting said lever-carried pawl and said detent pawl to hold said pawls in engagement with said toothed wheels and to return said operating lever to its inoperative position, and a forwardly extending operating arm on said lever to rotate said rollers about their axes in opposite directions with a step-by-step motion to expel a definite quantity of material from said compressible tube at each operative movement of said lever.

4. In an appliance for expressing the contents of compressible tubes; the combination with a base plate, a frame upstanding therefrom, two parallel rollers to receive between

them the flattened rear end of the compressible tube containing the material to be expelled, said rollers each having end trunnions, means for supporting said trunnions in said frames, means for limiting the distance apart of the peripheries of said rollers, guide rails extending forwardly from said base plate to support said compressible tube in a practically horizontal position, and a forward extension of said base plate extending beneath the length of said compressible tube said forward extension having a trough formed therein to receive material dropped from said compressible tube; of an operating lever, means for pivotally supporting said operating lever, a toothed wheel on one of said rollers, a pawl pivotally carried on said operating lever to engage said toothed wheel on said roller to communicate a step-by-step rotation to said roller at each hand operation of said lever, and a spring to retain said pawl in engagement with said wheel and to return said operating lever to its rest position.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

WALTER CHIPPERFIELD.

Witnesses:

THOMAS WILLIAM ROGERS,
WILLIAM A. MARSHALL.