Dec. 12, 1933. H. H. SMITH 1,939,575

COLLAPSIBLE TUBE REEL

Filed Sept. 14, 1932

Fig. 1.

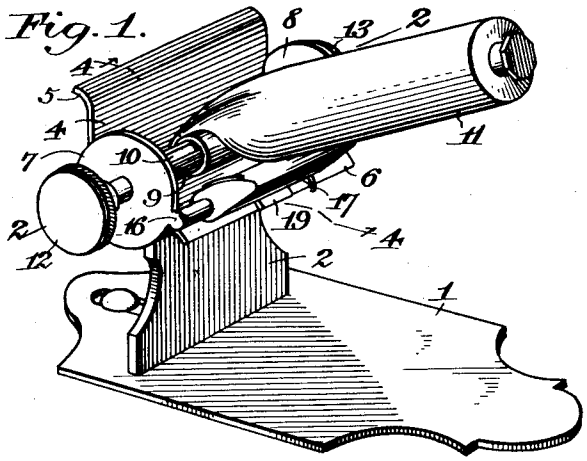


Fig. 2.

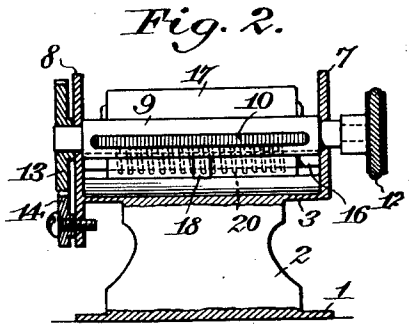


Fig. 3.

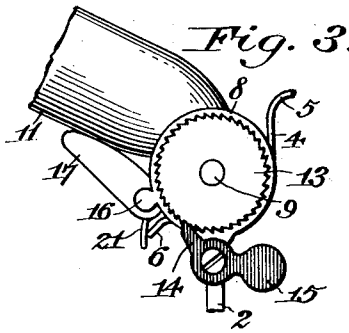


Fig. 4.

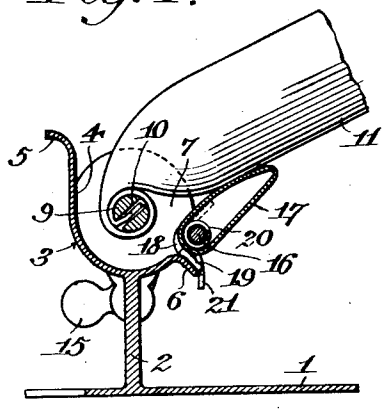


Fig. 5.

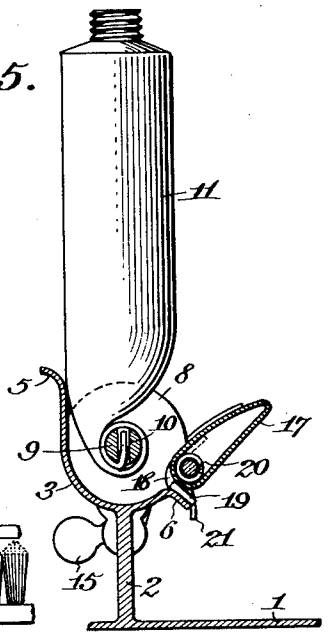
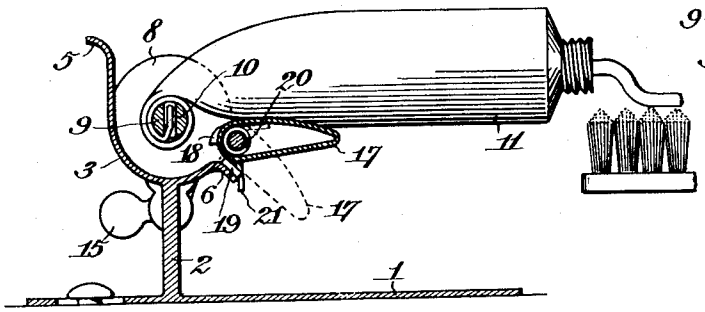


Fig. 6.



WITNESSES

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COLLAPSIBLE TUBE REEL

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Application September 14, 1932
Serial No. 633,165

6 Claims. (Cl. 221—60)

This invention relates to collapsible tube reels and has for an object to provide an improved construction wherein the contents of a collapsible tube may be ejected by using one hand.

Another object of the invention is to provide an improved collapsible tube reel wherein the tube is normally held in operative position and may be actuated at any time for ejecting a small quantity or a large quantity of its contents, the tube being used as a lever during the operation of discharging the contents.

An additional object is to provide a collapsible tube reel wherein the tube is adapted to be wound on a shaft or arbor, the structure being such that the tube acts as a lever to wind itself on the arbor substantially at the time of the discharging action.

In the accompanying drawing—

Figure 1 is a perspective view of a collapsible tube reel disclosing one embodiment of the invention;

Figure 2 is a sectional view through Figure 1 approximately on the line 2—2;

Figure 3 is a detailed fragmentary elevation of one end of the device, the same disclosing the mechanism pressing on the opposite side to that shown in Figure 1;

Figure 4 is a sectional view through Figure 1, approximately on the line 4—4;

Figure 5 is a view similar to Figure 4 but showing the tube in a vertical position and the other parts in a corresponding position; and

Figure 6 is a view similar to Figure 5 but showing the tube moved downwardly sufficiently to cause an ejection of some of the contents of the tube.

Referring to the accompanying drawing by numerals, 1 indicates a base of any desired kind or shape, the same having a standard 2, also of any desired kind or shape. On this standard is mounted a tubular structure 3 which is open at the upper part, the tubular wall 4 flaring at 5 and also at the lower edge 6.

The tubular structure 3 is provided with disc-shaped end members 7 and 8 which are secured by solder, welding or otherwise to the wall 4 so as to be in effect integral therewith. Each of these end members is provided with a centrally positioned aperture, said apertures accommodating a slotted shaft or arbor 9. The slot 10 in the arbor 9 is adapted to receive the end of the tube 11 so that when the arbor 10 is rotated in one direction the tube will be collapsed and wound around the arbor.

A thumb member 12 is secured to one end of the arbor 9 so that it may be rotated in either direction as desired. At the end opposite the thumb member 12 a ratchet wheel 13 is rigidly secured to the arbor 9, said ratchet wheel coacting with a pawl 14 having a counterweight 15 whereby the pawl automatically presses against the ratchet wheel 13 but permits the ratchet wheel to readily rotate in one direction. When it is desired to rotate the ratchet wheel and arbor in the opposite direction, the pawl 14 is desengaged from the ratchet wheel and held disengaged either manually or by some other means until the desired reverse rotation has been completed.

A rod 16 is soldered, welded or otherwise rigidly secured to the disks or end plates 7 and 8 immediately above the flaring edge 6. On this rod there is a loosely and rotatably mounted platform 17 which may be termed a compression platform. This platform is provided with a lug 18 adapted to strike against the projection 19 carried by the flaring edge 6 whereby the platform can be rotated to the left for a certain distance, namely, to the position shown in Figure 4. However, the platform may rotate in an opposite direction to the position shown in dotted lines in Figure 6. A spring 20 surrounds the shaft 16 within the hollow compression platform. One end of the spring presses against part of the platform and the other end, namely, the end 21 presses against the edge 6, whereupon the compression platform is normally held in the position shown in Figures 4 and 5.

When the tube 11 is used as a handle and is forced downwardly, as shown in Figure 6, the compression platform 17 is also swung downwardly against the action of the spring 20. As soon as the tube 11 is released the spring 20 will force the tube and the compression platform to the position shown in Figure 4. When pressed to the position shown in Figure 6, the tube 11 is wound slightly on the arbor 9 as the arbor is held stationary by the ratchet wheel 13 and the pawl 14. This winding of the tube and the pressure of the tube against the compression platform 17 will cause some of the contents to be ejected, as shown in Figure 6, and if there is not a sufficient quantity ejected the hand or fingers of the operator are merely removed from the tube 11 and the tube and platform are moved up to the position shown in Figure 4 under the action of spring 20. The tube is then again depressed so that a second supply will be discharged. This action may be carried out as many times as is desired and in depressing the tube the same may be swung downwardly to a substantially horizontal position as shown in Figure 6, or further downwardly according to the wish of the operator.

The tube may be manually swung upwardly as shown in Figure 5 whenever desired. As the tube is swung upwardly either manually or by the platform 17, the ratchet wheel 13 will be moved so that the pawl 14 will engage in a new tooth

thus causing a gradual winding of the tube 10 as the same is emptied.

It will be noted that the tubular structure 3 is sufficiently open at the top to permit the action just described, and when the tube 11 has been completely wound on the arbor 9, the pawl 14 is held disengaged manually or by some other means and then the arbor rotated in a reverse direction until the tube has been completely unwound and removed. The collapsible end of a new tube is then inserted into the slot and the arbor 9 rotated somewhat, or until the tube is properly gripped. The pawl 14 is then released and the parts are left in a normal position, as shown in Figures 1 and 4.

When the cap of the tube is removed the contents may be readily ejected by an up-and-down movement of the tube. This up and down movement is sufficient to cause the arbor 9 to automatically rotate and wind the tube thereon, but if for any reason an additional turn or part turn is desired the thumb member 12 may be actuated at any time. As shown in the accompanying drawing the platform 17 is swingable and automatically returns the tube 11 to the upper position when released. However, it has been found that if the platform 17 is mounted in a fixed position the desired results are secured, although when this is the case the hand of the operator must swing the tube 11 back and forth as the contents are ejected.

By the use of the spring 20 and associated parts it is only necessary to push downwardly on the tube 11 and the spring and associated parts will automatically return the tube after each actuation. It will be noted that the tube 11, which contains the matter to be ejected, acts as a handle or lever to the device until the tube becomes completely emptied. Preferably the tubular structure 3 is made of an ample length to take tubes of different sizes so that tubes dispensing various materials may be readily used in connection with the device, as, for instance, tooth paste tubes, shaving cream tubes or tubes adapted to dispense other matter.

What is claimed is:

1. A collapsible tube reel including a base, a rotatable arbor, means for rotatably supporting said arbor, said arbor having a slot for the reception of one end of a collapsible tube, means for normally preventing rotation of said arbor in one direction while permitting rotation in the opposite direction, said tube through the end extending into said slot being adapted to be used as a lever for rotating said arbor in one direction as the tube is swung in a given direction and then adapted to be wound around said arbor when swung in the opposite direction, said arbor being held by said rotating preventing means while the tube is being swung in said opposite direction, and means coacting with the arbor for causing the tube to collapse to a certain extent upon each movement thereof.

2. A collapsible tube reel including a rotatable arbor, means for supporting said arbor, a pawl and ratchet associated with said arbor for preventing the arbor from normally moving in one direction, said arbor having a slot therein adapted to receive one end of a collapsible tube which is to be wound on one end of the arbor, and a compression platform spaced from said arbor but extending substantially parallel thereto, means at one end of the platform for rotatably mounting the platform parallel to the said arbor, and in spaced relation therewith said collapsible tube being adapted to swing back and forth whereby said arbor will be intermittently moved in a rotary direction for winding said tube while said tube will be intermittently pressed against said platform for producing a collapsing action of the tube so as to eject some of the contents therefrom.

3. A collapsible tube reel including a support, a rotatable shaft carried by said support and provided with a slot for receiving one end of the tube to be collapsed, means for normally preventing rotation of said shaft in one direction while permitting free rotation in the opposite direction, said tube through the end extending into said slot being adapted to be used as a lever for rotating said shaft in one direction as the tube is swung in a given direction and then adapted to be swung around said shaft when swung in the opposite direction, said shaft being held against rotation by said means during the movement of said tube in said opposite direction, and a swingable platform positioned to be engaged by said tube when the same is swung in a direction for winding the same around said shaft, and spring means for swinging said platform and tube in a reverse direction when the tube has been released.

4. A collapsible tube reel including a base, a supporting member carried by said base formed with a tubular structure having a pair of apertured end plates, a rotatable shaft extending through said end plates, said shaft provided with a slot for receiving the end of a tube to be collapsed, a thumb member connected with one end of said shaft for rotating the same, means connected with the other end of said shaft for preventing rotation of said shaft in one direction, an auxiliary shaft rigidly connected to said end plates, a swingable compression platform swingably mounted on said last mentioned shaft, and a spring continually acting on said compression platform for giving the same a tendency to swing in a given direction.

5. A collapsible tube reel including a rotatable shaft formed with a slot for receiving the end of a tube to be collapsed, said tube adapted to be wound around the shaft as it is collapsed, means for rotatably supporting said shaft, a pawl and ratchet structure for preventing the rotation of said shaft in one direction whereby when the tube is swung in a circumferential path the same will be wound around the shaft to an extent equal to the arc to which the tube has been swung, and resilient means automatically swinging the tube back to its starting point.

6. A collapsible tube reel including a base, a support carried by said base formed with a tubular structure having a pair of apertured end plates, a shaft extending through said apertured end plates, means for preventing said shaft from rotating in one direction, said shaft having a slot for receiving one end of a tube to be collapsed and wound on the shaft, a second shaft rigidly secured to said end plates, a hollow compression platform rotatably mounted on said second shaft, said platform having a projecting lug, said tubular structure having a lug coacting with the lug on said platform for limiting the swinging movement of the platform in one direction, and a spring arranged principally within the platform tending to urge the platform to one of its extreme positions.

HARRY H. SMITH.