Dec. 6, 1955 H. J. POOCK 2,726,015

DEVICE FOR DISPENSING MATERIAL FROM A COLLAPSIBLE TUBE

Filed Dec. 30, 1952

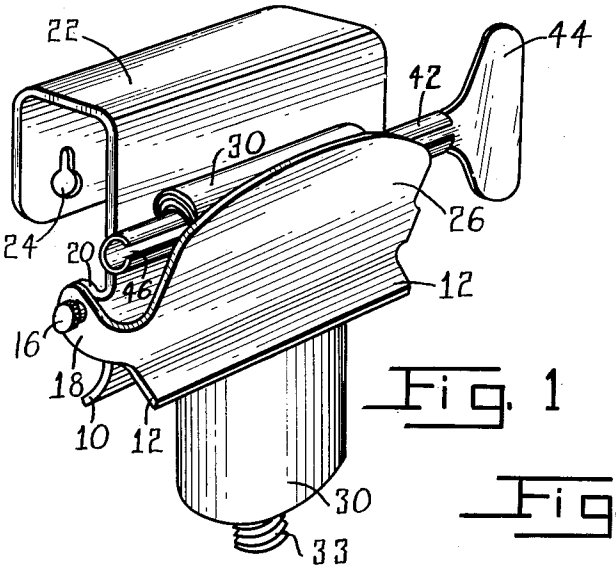


Fig. 1

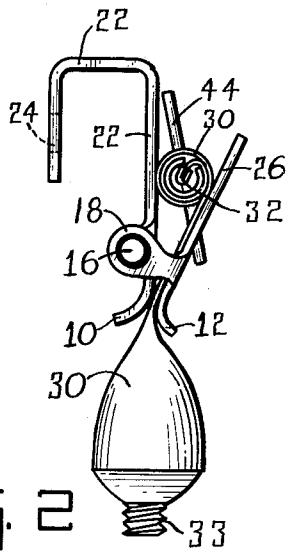


Fig. 2

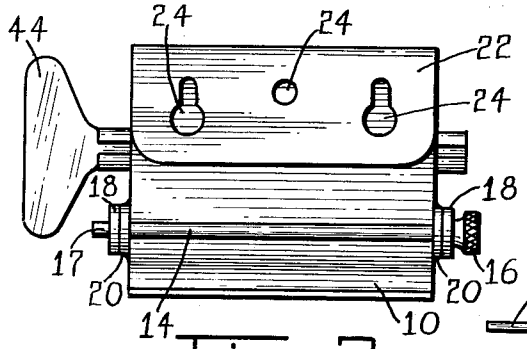


Fig. 3

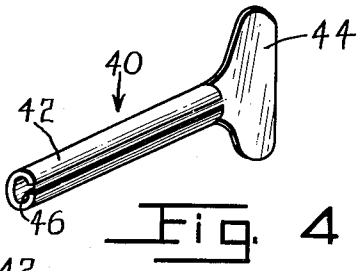


Fig. 4

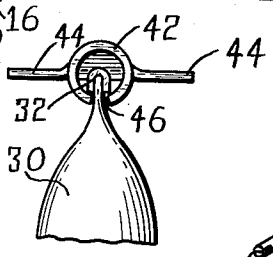


Fig. 5

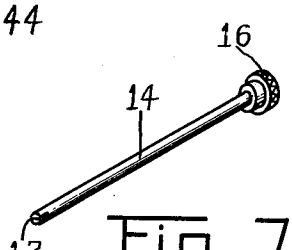


Fig. 7

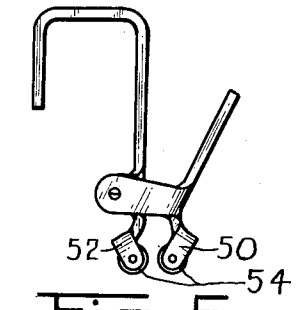


Fig. 6

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DEVICE FOR DISPENSING MATERIAL FROM A COLLAPSIBLE TUBE

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10 Claims. (Cl. 222—98)

This invention relates to a device for dispensing material contained in a collapsible tube. Fluids of many types are sold in collapsible tubes. Materials contained in collapsible tubes serve many home and industrial purposes.

It is very desirable to be able to dispense all of the fluid from within the tube. It is usually desirable to be able to dispense only a small amount of the material upon each occasion in which the material is used. It has always been difficult by manual squeezing of a tube to obtain exactly the desired amount of fluid from a collapsible tube. Usually more material than is needed is squeezed out when the tube is held in a person's hands. Of course, that method results in a considerable waste of the material. It is, also, desirable to have a dispenser which also acts as a holder or a place to keep the collapsible tube whether the tube is in use or not in use.

It is an object of this invention to provide a device for holding a collapsible tube and for dispensing material from the collapsible tube.

Another object of this invention is to provide a device for dispensing fluid from a collapsible tube, which device is easily operated.

Another object of this invention is to provide a device which dispenses material "cleanly" from the tube, leaving only a negligible amount of material remaining in the tube.

Another object of this invention is to provide a device which can be easily operated to control the amount of fluid emanating from the collapsible tube.

Other objects and advantages reside in the construction of parts, the combination thereof and the mode of operation, as will become more apaprent from the following description.

Referring to the drawings, Figure 1 is a perspective view of the dispensing device with a collapsible tube partially empty retained by the device.

Figure 2 is a side elevational view showing the device holding a collapsible tube partially empty.

Figure 3 is a rear elevational view of the device.

Figure 4 is a perspective view of the key member which is part of the dispensing device.

Figure 5 is an end view of the key member engaging the sealed end of a collapsible tube.

Figure 6 is a side elevational view of a preferred modification of the dispensing device.

Figure 7 is a perspective view of a pin member used in holding together the two clamping members of the dispensing device.

The preferred embodiment of the dispensing device disclosed in the drawings includes two arcuate clamping members **10** and **12**. The clamping members **10** and **12** are pivotally attached together by means of a retaining pin **14**. The retaining pin **14** has a knurled head **16**. The retaining pin **14** is inserted through aligned apertures in arms **18** and flanges **20**. The end of the retaining pin **14** which is opposite the head **16** is split by a slot **17** and spread slightly so that the pin **14** may

be held in the inserted position. The arms **18** are located at either end of the clamping member **12** and are integral with the clamping member **12**.

The flanges **20** are located at either end of the clamping member **10** and are integral with the clamping member **10**. Also, integral with the arcuate clamping member **10** is a mounting bracket **22** which is a plate having two substantially right angle bends therein. In one portion of the mounting bracket **22** are formed a plurality of mounting holes **24** adapted to receive nails, hooks or screws for mounting of the dispensing device. Integral with the arcuate clamping member **12** is a plate **26** which diverges from the bracket **22**.

A conventional collapsible tube **30** containing a fluid material has a sealed end formed by a joint **32**. The tube **30** has an uncapped mouth **33**. The end having the joint **32** is inserted through the slot formed between arcuate clamping members **10** and **12**.

A key member **40** having a tubular portion **42** and a wing **44** serves several purposes. One of the purposes is to aid in holding the collapsible tube in position. The tubular portion **42** is provided with a longitudinal slot **46**. The slot **46** is so positioned that by longitudinal movement of the key member, the tubular portion **42** may be moved over the joint **32** so as to encircle the joint **32**, as best shown in Figure 5. However, in Figure 5, the clamping members **10** and **12** are not shown. The jointed end of the tube **30** is always inserted between the clamping members **10** and **12** before the tubular portion **42** is inserted over the joint.

When it is desired to dispense some of the fluid in the tube **30**, the key member **40** is rotated. Rotation of the key member **40** winds the tube **30** upon the tubular portion **42**. As the tube **30** is wound upon the tubular portion **42**, the tube is pulled through the slot formed by the opening between the arcuate clamping members **10** and **12**. As the tube **30** is wound upon the tubular portion **42**, the plate **26** is forced farther from the bracket **22**. As the plate **26** moves farther from the bracket **22**, which increases the angle of divergence of the plate **26** with respect to the bracket **22**, the opening between the arcuate clamping members **10** and **12** becomes smaller. In fact, the opening between the clamping members **10** and **12** becomes so small that only the walls of the tube are allowed to pass through the opening.

So it may be understood that as the tube **30** is wound upon the tubular portion **42** of the key member **40**, the winding action increases the size of the coil formed by winding of the tube **30** upon the tubular portion **42** betwen the plate **26** and the bracket **22**. The coil forces the plate **26** from the bracket **22**, thus squeezing the tube in the slot between the arcuate clamping members **10** and **12**. The winding action of the key member **40** also pulls the tube through the slot between the arcuate clamping members **10** and **12**.

As the coil of the tube material becomes greater upon the tubular portion **42**, the coil moves outwardly farther toward the end of the plate **26**. Thus, constant pressure is exerted between the clamping members **10** and **12**. The same pressure is exerted between members **10** and **12** when the coil of material between the plate **26** and the bracket **22** is small or when the coil is large. The pressure exerted is always sufficient to force all of the fluid material from between the walls of the tube **30** when the walls are clamped between the clamping members **10** and **12**. In other words, the pressure required to force the fluid material outwardly from between the clamping members **10** and **12** is always maintained.

It is a simple matter to obtain a desired amount of fluid from the collapsible tube **30** by means of the dispensing device. Rotation of the key **40** by a few degrees causes fluid material to flow. The leverage offered by

the wing 44 in turning the key member 40 provides a means which is easy to operate. The amount of fluid emanating from the mouth 33 of the tube 30 is controlled simply and easily.

After the supply of fluid material in the tube 30 has been exhausted, the walls of the tube are completely wound upon the tubular portion 42 of the key member 40. The mouth 33 and a small portion of the tube 30 adjacent the mouth 33 of the tube 30 are all that remains on the outside of the clamping members 10 and 12.

The empty tube is removed from the dispensing device in two steps. The key member 40 is first removed from the tube 30. The retaining pin 14 is then removed, disengaging the two clamping members 10 and 12. The coiled empty tube is then easily removed.

Another method of removing an empty tube 30 from the dispensing device is by removal of the key member 40 from within the coiled walls of the tube 30. The mouth 33 of the tube 30 may then be grasped to pull the tube and to uncoil the tube as it is moved in a reverse direction through the slotted opening formed between the arcuate clamping members 10 and 12. The second method of removal of the empty tube requires only withdrawal of the key member 40 from within the rolled walls of the tube. No other disassembly is necessary.

If a material is contained within the tube 30 which is hard to force out of the tube, the rotation of the key 40 is more difficult. As the rotation becomes more difficult, the coil of the empty portion of the tube pulls itself or moves toward the arcuate clamping members 10 and 12. As this occurs, there is a greater clamping force of the clamping members. Thus, there is automatic pressure control of the clamping members. If the material in the tube is hard to force out of the tube, the clamping action becomes greater. If the material in the tube is easily forced from the tube, the clamping action of the clamping members is not so great. By this means, the proper amount of pressure required to 'cleanly" force the material from the tube is maintained.

Figure 6 discloses a preferred modification of the dispensing device. The modification is similar to the preferred embodiment except that clamping members 50 and 52 are provided with rotatably mounted cylindrical rollers 54. The rollers 54 reduce the frictional forces caused by the clamping and pulling of the walls of the tube 30 as the tube is wound upon the key member 40.

The preferred embodiment and the preferred modification of the dispensing device may be used mounted upon a wall or other object. The device may also be adapted to be held in a person's hands during the dispensing operation. The device may be operated and used equally well as a mounted dispensing device or as a manually retained dispensing device.

Although the preferred embodiment of the device has been described, it will be understood that within the purview of this invention various changes may be made in the form, details, proportion and arrangement of parts, the combination thereof and mode of operation, which generally stated consist in a device capable of carrying out the objects set forth, as disclosed and defined in the appended claims.

Having thus described my invention, I claim:

1. A dispenser for use in dispensing material from a collapsible tube having an opening in one end thereof, said dispenser including a main frame member terminating in an arcuate marginal portion, a second frame member having an arcuate marginal portion adjacent the arcuate portion of the main frame member, said frame members being pivotally attached to each other adjacent the arcuate margins, the frame members having portions diverging from the pivotal attachment, and means for engaging the end of the tube opposite its opening for winding the tube while the tube extends between the arcuate margins of the frame members, said means being located between the diverging portions of the frame members so that as the tube is wound the wound portion exerts pressure against the diverging portions to firmly clamp the arcuate marginal portions against the sides of the tube.

2. A dispenser according to claim 1, wherein the main frame member is provided with apertured marginal flanges extending at substantially right angles to the main body of the frame member, the other frame member having apertured arms overlapping the flanges and a pin extending through the apertures in the flanges and the arms to pivotally interconnect the frame members.

3. In a dispensing device for dispensing fluid material from a collapsible tube having a jointed sealed end, said dispensing device including the combination of a pair of clamping members, a pin pivotally attaching one clamping member to the other, the clamping members having diverging portions extending from the pin, and a key member having a tubular portion, the tubular portion having a longitudinal slot, the tubular portion being adapted to receive the jointed sealed end of the collapsible tube, the key member being adapted to fit between diverging portions to wind the collapsible tube upon the tubular portion of the key member.

4. In a device for dispensing material contained in a collapsible tube, said device including a pair of clamping members pivotally attached one to the other and having diverging extended portions, and a key member positioned between the extended portions and adapted to wind the collapsible tube and to pull the collapsible tube between the clamping members, the winding of the collapsible tube forcing the clamping members one toward the other.

5. In a device for dispensing material contained in a collapsible tube, said device including movably attached clamping means provided with diverging extended portions, and winding means positioned intermediate the extended portions and adapted to wind the collapsible tube pulling the collapsible tube through the clamping means, the winding of the collapsible tube actuating exertion of pressure by the clamping means upon the collapsible tube.

6. In a device for supporting a collapsible tube containing fluid material and for dispensing fluid material from the collapsible tube, said device including a pair of clamping members pivotally attached one to the other, a mounting bracket attached to one of said clamping members, a plate attached to the other of said clamping members, and a key member positioned between the mounting bracket and the plate engageable with the collapsible tube to wind the collapsible tube, the clamping members being forced into clamping action by the positioning of the collapsible tube upon the key member.

7. In a device for supporting a collapsible tube containing fluid material and for dispensing material from the collapsible tube, said device including a pair of clamping members pivotally movable one with respect to the other, a mounting bracket attached to one of said clamping members, a plate attached to the other of said clamping members, and a key member positioned between the mounting bracket and the plate to wind the collapsible tube, the key member being adapted to pull the collapsible tube between the clamping members and to coil the collapsible tube between the mounting bracket and the plate.

8. A device for supporting a collapsible tube containing fluid material and for dispensing material from the collapsible tube, said device including a pair of clamping members pivotally attached one to the other and adapted to receive the collapsible tube between them, each of said clamping members including a cylindrical roller rotatably attached to the clamping member, a mounting bracket attached to one of said clamping members, a plate attached to the other of said clamping members, and a key member positioned between the mounting bracket and the plate engaging the collapsible tube to wind the col-

lapsible tube between the mounting bracket and the plate, the clamping members being forced into clamping action by the engagement of the collapsible tube by the key member between the mounting bracket and the plate.

9. A dispenser for use in dispensing material from a collapsible tube, said dispenser including a main frame member terminating in an arcuate marginal portion, a second frame member having an arcuate marginal portion adjacent the arcuate portion of the main frame member, said frame members being pivotally attached one to the other, the frame members having extending portions diverging from the pivotal attachment, and winding means for engaging the collapsible tube while the tube extends between the arcuate marginal portions, said winding means being positioned between the extending portions of the frame member so that as the tube is wound the wound portion of the tube exerts pressure against the extending portion of the frame member firmly clamping the arcuate marginal portions against the sides of the tube.

10. A dispenser for use in dispensing material from a collapsible tube, said dispenser including a main frame member terminated in an arcuate marginal portion, a

second frame member having an arcuate marginal portion adjacent the arcuate portion of the main frame member, a roller attached to each of the marginal portions, said frame members being pivotally attached one to the other, the frame members having extending portions diverging from the pivotal attachment, and means for engaging the collapsible tube while the tube extends between the arcuate marginal portions and the rollers of the frame member, said means being positioned between the extending portions of the frame members so that as the tube is wound the wound portion of the tube exerts pressure against the extending portions to firmly clamp the rollers of the arcuate marginal portions against the sides of the collapsible tube.

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