July 1, 1958 J. R. DORMAN 2,841,343

DISPENSING DISPLAY STAND

Filed Dec. 9, 1955 2 Sheets-Sheet 1

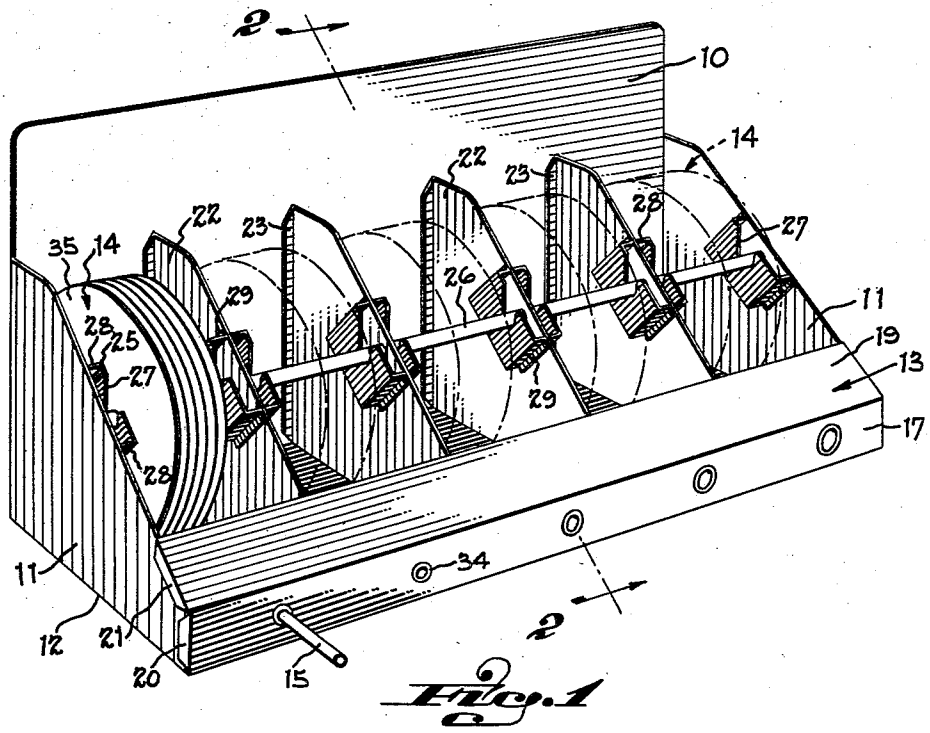


Fig. 1

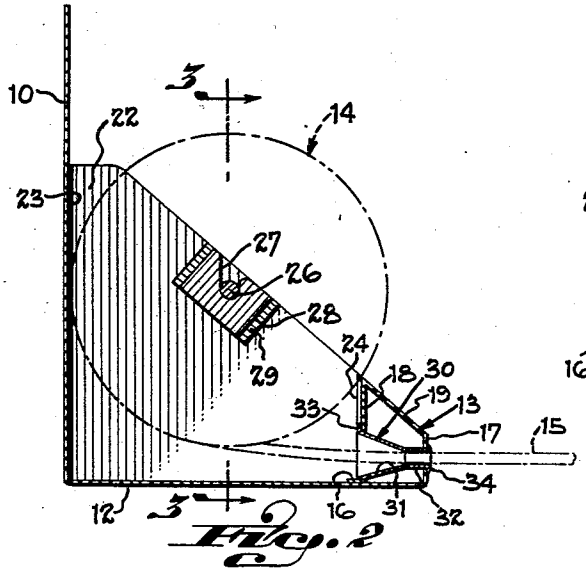


Fig. 2

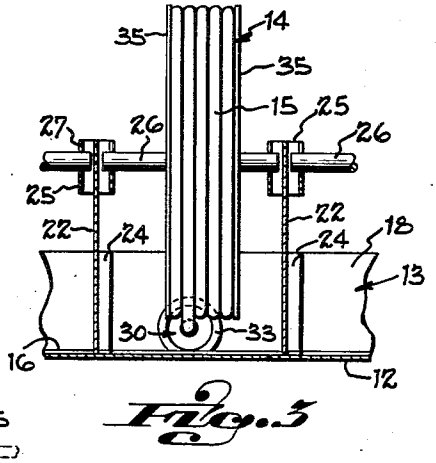


Fig. 3

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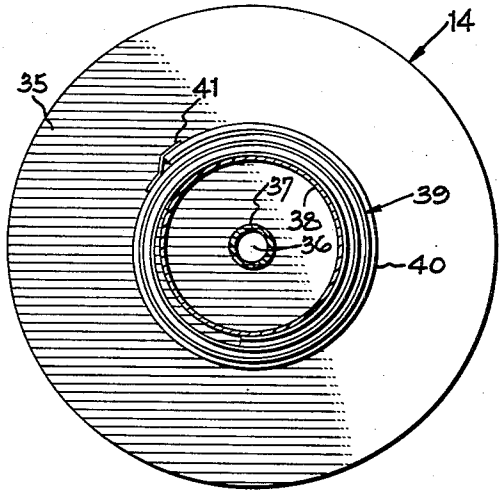


Fig. 4

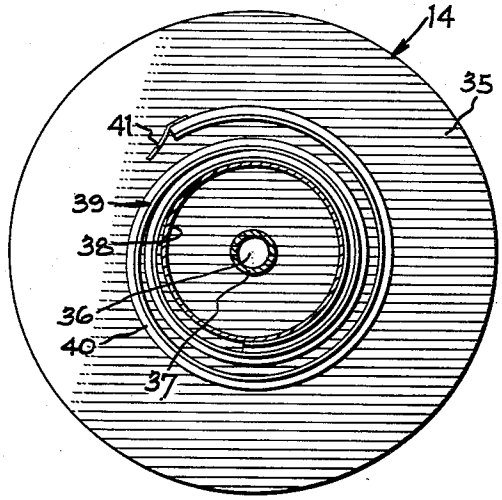


Fig. 5

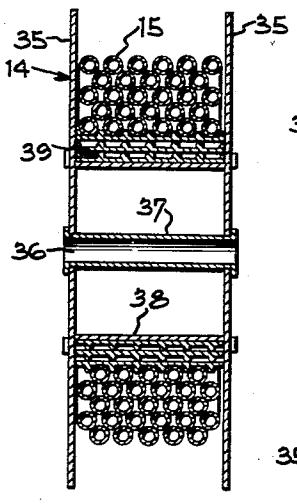


Fig. 6

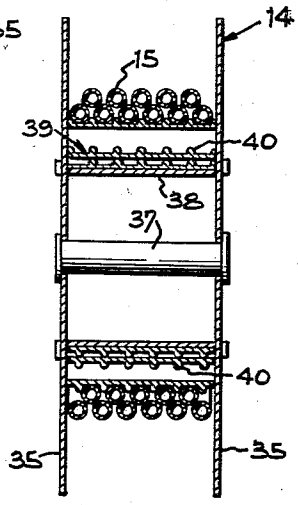


Fig. 7

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DISPENSING DISPLAY STAND

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5 Claims. (Cl. 242—129.6)

This invention relates to dispensers and it is directed in particular to a dispenser for copper tubing, which tubing is wound upon a reel and mounted within the dispenser such that it may be seen readily for display purposes.

The dispenser is designed primarily to be mounted upon a counter and it contains one or more reels of tubing of different sizes. One of the main features of the invention is that the tubing, although it is provided initially in helical form, being wound upon the reel in this form, issues from the dispenser in linear or straight form, which form is the one in which it is most frequently used.

The invention also concerns the construction of the reels which are employed in the dispenser. In the preferred embodiment, the reels are mounted so that they are free to rotate. The tubing is withdrawn from each reel through a straightening guide which is positioned at the front of the dispenser where the tubing may be grasped conveniently and stripped off of the reel in any length desired. When the supply of tubing on the reel gets down to a point where there are just a few turns left upon it, there is a tendency for the turns of tubing on the reel to become loose upon the core of the reel and to become entangled by overlapping one another. In order to present an effective display, the coil should maintain a precisely wound relationship. Furthermore, where several of the coils become entangled, the tubing can be dented or collapsed when being stripped from the reel through the straightening guide. The improved reels provided with the present dispenser are designed to prevent the coils from loosening and they maintain the precise alignment of the turns of the tubing down to the point where the very inner end of the coil of tubing leaves the reel.

Other features of the invention will be readily apparent to those skilled in the art from the following detailed description of the drawings in which:

Figure 1 is a diagrammatic perspective view of a dispenser for copper tubing incorporating the principles of the invention.

Figure 2 is a cross sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a fragmentary cross sectional view taken on the line 3—3 of Figure 2.

Figure 4 is a cross sectional view taken through one of the reels, normal to the central axis thereof, showing the reel prior to the time that the copper tubing is wound thereon.

Figure 5 is a view similar to Figure 4 showing the tensioning device which is provided at the core of the reel to prevent the tubing from becoming entangled.

Figure 6 is a cross sectional view taken laterally through a reel upon which a substantial amount of tubing is shown.

Figure 7 is a view similar to Figure 6 showing the reel with only a few turns of copper tubing thereon.

The dispenser may be made of sheet metal as shown. It comprises a substantially rectangular back panel 10, two side panels 11—11, a bottom 12 and a front which is designated generally by the numeral 13. The two side panels 11—11 slant downwardly from the back panel to the front of the dispenser in order to expose for display purposes a plurality of reels 14 upon which copper tubing 15 is wound. The back, sides and front of the dispenser may be made from one piece of sheet metal if desired. In the instance shown, the back panel projects above the side panels to provide a substantially large area for advertising material and other indicia. The two side panels are turned over at right angles from the back. In a similar manner the bottom 12 is turned over at a right angle to the back panel. The front of the dispenser is formed by turning the forward portion of the sheet metal bottom up at a right angle and then toward the rear on a slant paralleling the slant of the two side panels and then downwardly again toward the bottom. Where the lower end of the last mentioned part of the sheet metal meets the bottom, a flange 16 is turned over into parallelism with the bottom 12 and it may be secured to the bottom by means such as spot welding.

The front part of the dispenser thus constitutes a front wall 17, a rear wall 18 and a slanting cover 19 which with the bottom 12 provide a hollow, beam-like structure extending from one end of the dispenser to the other. At the respective opposite ends of the dispenser, the front wall 17 is turned over toward the rear at a right angle to provide a flange 20 which may be affixed to the adjacent side panel by means such as welding. In like fashion, the opposite ends of the cover portion 19 of the front of the dispenser may be turned over at a right angle to provide a flange or tab such as the one shown at 21 which also may be secured to side panel 11 by means such as welding.

The inside of the dispenser is divided into a plurality of compartments by means such as the partition walls 22. These partition walls match, in profile, the respective side panels 11—11, having the same slant to their exposed edges. The rear edge of each one of the partition walls may be turned over to provide a flange 23 which may be welded to the back wall 10. The front edge of each partition may also have a flange 24 turned over from it at a right angle, which flange may be welded or otherwise fastened to the rear wall 18 of the beam-like front 13 of the dispenser. A pair of mount brackets 25 is provided in each compartment. These brackets receive a shaft 26 and it will be noted that the respective shafts are disposed upon a common axis extending horizontally through the dispenser from one end to the other. The shafts may be made of any suitable material to rotatably support a reel 14. More specifically, each bracket comprises a substantially channel-shaped member having a web portion which is slotted as at 27 to removably receive the shaft 26. The side walls indicated at 28—28 respectively of each channel-shaped bracket have tabs turned therefrom in opposite directions to provide flanges 29—29 which may be spot welded to the compartment wall. Each one of the compartments may be substantially identical in construction including the brackets which are provided. The compartments differ from one another only in the distance between the walls which define them. Furthermore, it will be noted from Figure 3 that each compartment is roughly twice as wide as the reel received therein. The reason for this will be explained below.

The forward end of each compartment mounts a substantially funnel-shaped tubing guide 30 which is mounted within the beam-shaped forward end 13 of the dispenser. In each instance, the guide comprises a conical portion

31 which flares outwardly toward the rear of the dispenser and a substantially cylindrical portion 32 which opens at the front of the dispenser. Preferably, each guide is made in one piece. The rear wall 18 and the front wall 17 both have apertures therein which are just sufficiently large to accommodate the respective outer diameters of the guide. The rearward conical portion of the guide is swaged over as at 33 against rear wall 18 and the forward end of the cylindrical part of the guide is swaged over as at 34 against front wall 17 to lock the guide within the beam-like front structure.

The internal diameter of the cylindrical part 32 of the guide is appreciably larger than the outside diameter of the tubing which is threaded through it. The guide thus does not serve as a swaging guide but rather it serves as an aligning device through which the tubing may be pulled by grasping the exposed end of the tubing. The guide, it will be noted, is located at a level which is adjacent to the lower edge of the reel so that first turns at least of the copper tubing coming from a new reel leave the roll substantially in alignment with the guide. This, plus the straightening effect imparted by the guide, plus the straight line pull on the tubing issuing from the guide causes the tubing to straighten out into linear form as it leaves the dispenser. To facilitate the issuance of the copper tubing it is highly recommended that the tubing which is wound on the reel be of the type referred to in the trade as "dead annealed," that is, that it have little or no flexibility. It is found that the slight amount of cold working which takes place in the tubing as it is being pulled from the dispenser gives the tubing the amount of rigidity required for its intended uses. Obviously, any length of tubing may be withdrawn from the dispenser at any one time up to the limit of the supply carried by the reel. To facilitate measuring desired lengths of tubing, it is recommended that the tubing be marked in inches or in feet or a combination of both during its manufacture. It is also recommended that the display or dispenser have some means for mounting a tubing cutter upon it so that the cutter is handy for cutting the tubing into desired lengths.

Each reel 14 comprises a pair of circular disks 35—35 having central apertures 36—36 therein. The respective apertures receive a sleeve 37 which is of a size to fit loosely upon the shaft 26. The sleeve is secured in place, following conventional practices, by swaging over its opposite ends against the disks as shown in Figure 6. The core of each reel comprises a sheet metal cylinder 38. This cylinder may have a plurality of end tabs upon it which engage through appropriate apertures in the disks 35—35 to secure the core in place. The core of each reel has a tensioning device 39 mounted upon it. Each tensioning device consists of an enlongated strip of material which is just wide enough to fit between the two disks of the reel and long enough to make several turns around cylinder 38. Each tensioning device has a plurality of ribs 40 which are formed on one surface thereof. These ribs extend lengthwise of the strip in parallelism with one another. The strip of tensioning material may be made of extruded plastic, paperboard, or even metal if desired. The important consideration in the tensioning device is that it be elastic to the extent that it tends to spring outwardly after being wound around the core as shown in Figure 4. The ribs 40 which are provided on the tensioning device may be spaced apart in accordance with the diameter of the tubing to be wound on the reel such that the individual turns of the tubing fit between ribs, see Figures 6 and 7. Thus, in a display in which five different sizes of tubing are provided, five different sizes of ribs may be employed on the respective tensioning devices. It is found, however, that the spacing of the ribs does not have to be exactly in accordance with the tubing size and if the ribs are sufficiently well defined, one rib spacing may be adequate to receive and prevent entanglement of as many as five different tube sizes.

In the loading of the reels, one disk is removed to expose the core at a side thereof. The strip tensioning device is then wound tightly around the core and it is fastened thereon under tension by means such as a strip of pressure sensitive tape 41. The pre-rolled copper tubing then may be slipped into place over the core tensioner. The inside diameter of the roll of tubing must be substantially larger than the outside diameter of the secured tensioning device. Once the roll of tubing is in place, the strip of adhesive tape 41 may be snipped or torn from the tensioner to release it so that it tends to expand outwardly as shown in Figure 5. The core thus actually is an expanding one which pushes the ribs on the tensioning device outwardly against the roll of tubing. Hence, when the supply of tubing upon the reel decreases, the turns of tubing cannot become loose and tend to overlap one another, any looseness being taken up immediately by the tendency of the core tensioning device to spring outwardly. In addition to preventing the turns of tubing from becoming entangled over one another, the tensioner also moves the outer turns of tubing out toward the outer periphery of the reel. Going now to Figure 3, it will be seen that such expansion in the core presents the turn of tubing being withdrawn through the guide into a more nearly straight line with the guide to facilitate withdrawal of the tubing through the guide.

As has been pointed out, the individual compartments are substantially twice as wide as the width of the respective reels mounted within them. This permits each reel to move back and forth within its compartment as the tubing is being stripped therefrom. Hence, as shown in Figure 3, the reel is always aligned with respect to the guide in such a way that the turn of the tubing being stripped from the reel is directly in back of the center of the guide. By permitting the reel to move freely back and forth, the tubing is straightened from its circular form into linear form in one plane of bend only. The result is that kinking of the tubing is prevented, and the tubing when withdrawn having been straightened out in one plane only is in true linear form.

It is recommended that the dispensed tubing be cut off at a distance outside of the guide to leave enough tubing to be conveniently grasped the next time an amount is to be dispensed from it. The guide it will be noted provides a support for the tubing during the cutting operation so that this operation does not end to kink the exposed end.

Having described my invention, I claim:

1. A dispenser for copper tubing which is wound upon a reel comprising a stand having a shaft therein to rotatably receive said reel, said shaft being substantially longer than the width of said reel whereby the reel may move back and forth longitudinally of the shaft, a funnel-shaped guide, means to mount said funnel-shaped guide ahead of and below said reel such that the free end of the tubing may be stripped from the reel through said guide, and said reel having an expansible core means therein which expands outwardly as the tubing is stripped from the reel for maintaining said tubing in tightly wound relationship thereon.

2. The dispenser as set forth in claim 1 in which said expansible core comprises a strip of flexible material having a plurality of ribs on one side thereof, said strip of flexible material being wound upon itself at the inside of the roll of copper tubing with the ribs thereon to the outside, and the material of the strip being characterized by its tendency to spring outwardly thereby maintaining tension against the inside of the roll of copper tubing to press the ribs on the strip against the inner turns of the roll of tubing for preventing said turns of tubing from overlapping one another when said last turns of tubing are exposed.

3. A dispenser for copper tubing which is wound upon a reel comprising a stand, means to rotatably mount said reel in said stand, said means permitting said reel to move freely back and forth longitudinally of the central axis of the reel, a funnel-shaped guide, and means to mount said guide ahead of said reel and adjacent to a line tangent to the lower edge of said reel such that tubing being stripped from the reel through said guide is unwound from said reel and straightened out in one plane as it passes through the guide by virture of the free side to side movement of the reel.

4. In a dispenser for copper tubing, said tubing being wound into a roll, a reel for said tubing comprising a core of fixed diameter which is substantially smaller than the inside diameter of the roll of copper tubing, a strip of elastic material wound upon said fixed core, said strip of material being sufficiently wide to substantially fill the space between the sides of said reel and being sufficiently long to be wound around said fixed core a plurality of times, said strip of material having a plurality of longitudinal ribs thereon, and the material of the strip being characterized by its ability to tend to spring outwardly from said fixed core to press said ribs tightly against the inner turns of a roll of copper tubing on the reel, thereby to maintain said inner turns in tightly wound fashion with respect to the reel when said turns are exposed during the dispensing of said tubing.

5. A dispenser for copper tubing wound into a roll, said dispenser comprising a stand, a reel for said roll, means to mount said reel for rotation, said reel having a core of fixed diameter which is substantially smaller than the inside diameter of the roll of copper tubing, a strip of elastic material wound upon said fixed core, said strip of material being sufficiently wide to substantially fill the space between the sides of said reel and being sufficiently long to be wound around said fixed core more than once, said strip of material having a plurality of longitudinal ribs on the outside thereof, and the material of the strip being characterized by its ability to spring outwardly from said fixed core to press said ribs tightly against the inner turns of the roll of copper tubing, thereby to maintain said inner turns in tightly wound fashion with respect to the reel when said turns are exposed during the dispensing of said tubing.

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