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RETRACTING MECHANISM FOR SWITCHBOARDS AND THE LIKE

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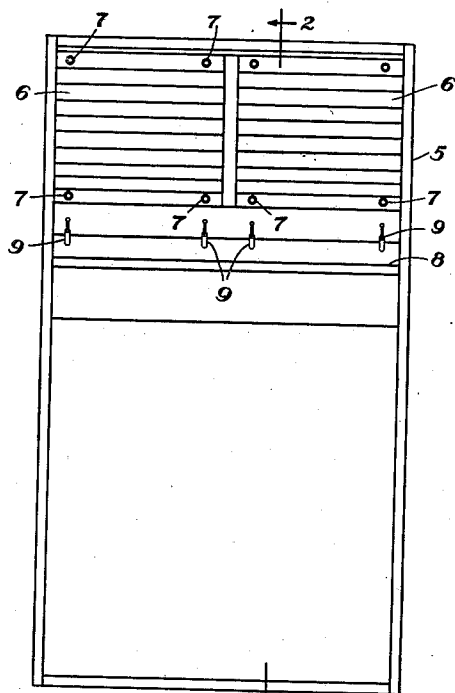


Fig. 1

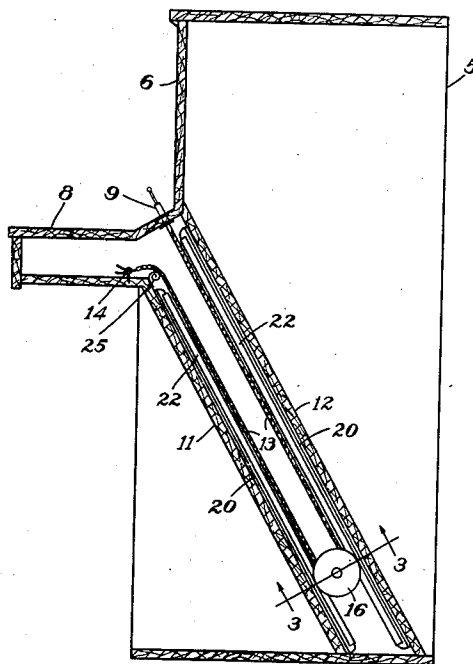


Fig. 2

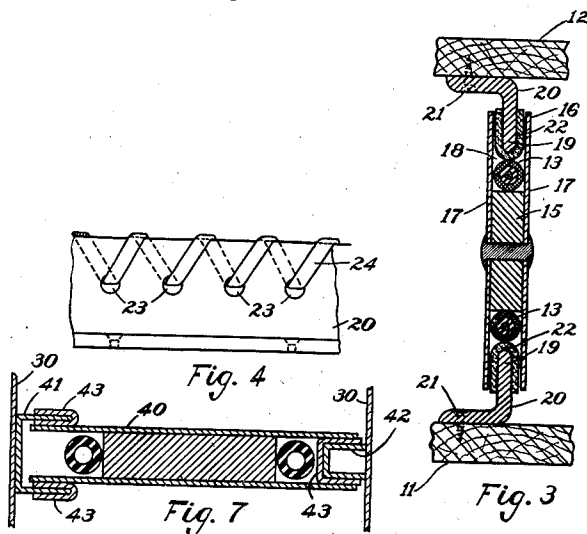


Fig. 3

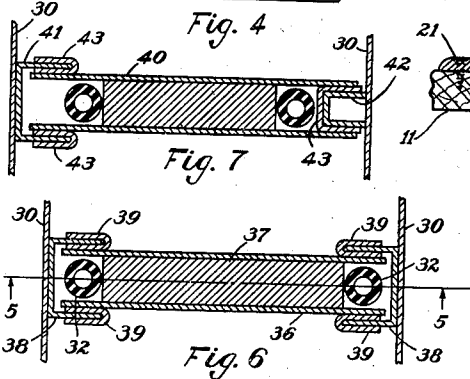


Fig. 4

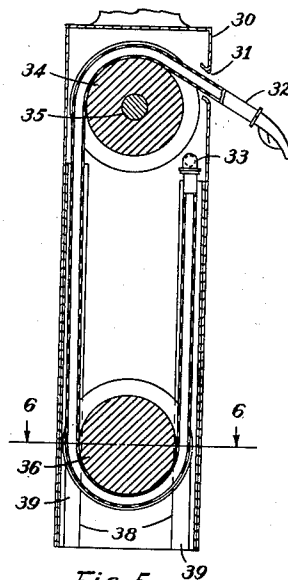


Fig. 5

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## UNITED STATES PATENT OFFICE

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RETRACTING MECHANISM FOR SWITCH-  
BOARDS AND THE LIKE

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7 Claims. (Cl. 179-95)

This invention relates to retracting mechanisms for flexible conductors, and particularly for use with the cords of telephone switchboards.

In making switchboards, particularly those of the multiple type wherein the operator in addition to completing calls upon her own section must complete calls on adjacent sections, thereby necessitating the use of long cords, the manufacturer is confronted with the problem of providing suitable retracting means for drawing the cords into the switchboard cabinet and storing them while not in use. This problem is particularly acute in low switchboards having the plug shelf at desk height. It will be appreciated that in this type of switchboard, the relatively small vertical space available below the plug shelf tends to limit the length of the cord which may be used so that the effective area over which any particular cord may be used is somewhat restricted. Also, certain of the retracting means heretofore used for drawing the cords into the switchboard cabinet have comprised unrestrained weights which descended so rapidly as to put a severe strain on the cord, materially shortening the life of the cord. It is a purpose of the present invention to overcome the defects present in known retracting mechanisms for telephone cords and to provide a retracting mechanism which is particularly suitable for switchboards having the plug shelf at desk height.

It is accordingly an object of this invention to mount a cord retracting mechanism in such a manner within a switchboard cabinet that a cord of maximum length may be used therewith.

It is a further object of the invention to provide a retracting mechanism for telephone cords which at all times guides the cord in a fixed path within the switchboard cabinet to thereby substantially eliminate kinking or twisting of the cord.

It is another object of the invention to provide a retracting mechanism for telephone cords and the like in which the speed of retraction of the cord or the like is kept at a reasonable rate by the frictional engagement of a weighted disk with the guide rails on which the disk is mounted.

It is still a further object of the invention to provide an improved retracting mechanism for telephone cords and the like which is substantially noiseless in operation and which reduces the wear on the cord or the like to a minimum thereby prolonging the useful life thereof.

The present invention is also useful for retracting other flexible conductors such as hoses or the like used for the distribution of gases and liquids.

These and other features of the invention will appear from the detailed description and claims when taken with the drawing in which:

Fig. 1 is a front view of a conventional switchboard cabinet to which the invention may be applied;

Fig. 2 is a vertical section taken on line 2-2 of Fig. 1; illustrating one manner of applying the retracting mechanism of the present invention to the cabinet;

Fig. 3 is a fragmentary section taken on line 3-3 of Fig. 2, illustrating particularly the relation of the disk and guide rails with respect to the telephone cord;

Fig. 4 is a face view of a portion of one of the guide rails, illustrating an alternative manner of securing the cushioning or frictional material thereto;

Fig. 5 is a vertical cross-section through a gasoline pump casing illustrating the application of the invention thereto, the section being taken on substantially line 5-5 of Fig. 6;

Fig. 6 is a horizontal section taken on line 6-6 of Fig. 5; and

Fig. 7 is a section similar to Fig. 6 illustrating a further modification of the invention.

In Figures 1 and 2 of the drawing, there is shown a conventional switchboard cabinet generally designated 5 which includes the panel section 6 having jacks 7 mounted therein. A plug-shelf 8 projecting from the front of the cabinet is provided with suitable openings from which the plugs 9 extend in a convenient position to be reached by the operator. For the purpose of simplifying the disclosure of the present invention there have been illustrated but eight jacks and four plugs, it being understood that the switchboard may have any desired number of plugs and jacks. Since the retracting mechanism to be hereinafter described is the same for each cord, the description will be limited to the mechanism for retracting one cord, it being understood that similar means will be provided for each cord of the switchboard.

Secured within the cabinet 5 are a pair of spaced partitions 11 and 12 which may be made of metal, wood or the like and preferably extend across the width of the cabinet to support the retracting mechanism for each of the plug cords. These partitions may be disposed at an angle to the vertical in the manner shown in Fig. 2 to provide additional leg room for the telephone operator as well as to provide a space of greater length than the vertical height of the shelf 8, for storing the retracted telephone cords. It will

be appreciated however, that these partitions may, if desired, extend vertically or at an angle other than that shown in the drawing where the length of the cord permits.

The telephone cord 13 which is anchored in any suitable manner to the cabinet at 14, forms a part of a cord circuit which has not been shown since the details thereof form no part of the present invention. The cord extends into the space between the partitions 11 and 12, its free end being secured in conventional manner to the plug 9 projecting upward from and normally resting in its related plug seat on the shelf 8. The intermediate portion of the telephone cord is looped about the hub or center portion 15 of a grooved disk 16. This disk includes the side plates 17 which may be riveted or otherwise suitably secured to the respective faces of hub 15 to provide a relatively deep groove 18 for receiving the bight of the cord 13. As shown particularly in Fig. 3 the groove 18 also receives the flanges 19 of the guide rails 20. These guide rails are conveniently formed of angle iron, and extend in vertical alignment being secured, as by means of screws 21, to the opposing faces of the partitions 11 and 12.

In order to reduce the noise of operation of the retracting mechanism and to increase the frictional contact between the pulley and the rails, a suitable covering of cloth, leather, rubber or the like may be provided on the rails, this material being in the form of strips 22 which may be riveted, cemented or otherwise suitably secured over the free edges of the flanges 19. These strips have the added function of protecting the cord from injury by the guide rails. Instead of applying the strip of material to the guide rails in the manner shown in Fig. 3 the flanges may have holes 23 therethrough as shown in Fig. 4, to receive a strip 24 of rubber, leather or the like laced thru these holes and over the free edge of the flange in the manner shown in Fig. 4.

In order to prevent kinking of the cord adjacent the fastening means 14, a curved member 25 which may comprise a coil of resilient material, is secured to the cabinet to support the cord at the point where it enters the space between the partitions 11 and 12. The curved member 25 also provides a flexible extension for the lower guide rail 20, and has the added function of guiding the grooved disk to the lower guide rail 20 in assembling the device. When it is desired to repair or replace the cord or the disk, the plug shelf which is preferably hinged, may be raised to permit removal of the cord and the disk, the coiled member 25 being compressed to allow the disk to be disengaged from the upper guide rail 20 and withdrawn from the switchboard cabinet.

It will be clear from the above description that when the operator raises a plug to insert it in any one of the jacks, the cord 13 will be kept taut at all times by the weight of the ascending disk, which is guided in its movement by the rails 20, preventing kinking and twisting of the cord. When the operator removes the plug from a jack, the weighted disk immediately begins to descend on the guide rails to pull the cord for that plug into its storage position shown in Fig. 2. The movement of the disk on the guide rails is slightly resisted by the frictional engagement between the pulley and covering 22, so that the cord will not be jerked when the descent of the pulley is

stopped by the engagement of the plug with its plug seat.

It will be understood that the retractive force on the cord may be varied by changing the pitch of the guides 20 or the weight of the disk 16. It will also be appreciated that various materials other than those mentioned above, may be used on the guides 20 to vary the frictional effect of the strips 22.

While the invention has been described with particular reference to the cords of a telephone switchboard, it will be appreciated that it may also be used for retracting other flexible conductors, such as hoses used for distributing compressed air, gasoline or other gasses and fluids. The present invention may also be used wherever it is desired to store a flexible wire, cable, conduit or the like while not in use, but which is instantly available. Thus, in Figs. 5 and 6 there has been illustrated, in section, a gasoline pump casing with the invention applied thereto for retracting the gasoline delivery hose into the casing. The various operating parts of the gasoline pump and metering devices are well known and have not been illustrated since they form no part of the present invention.

In Fig. 5 reference character 30 generally indicates a gasoline pump casing having an opening 31 thru which the delivery hose 32 extends. The hose is stored within the casing when not in use and is connected to the fixed supply pipe 33. As shown in the drawing the hose is trained over the pulley 34 disposed in the upper part of the casing and mounted for rotation on the axle 35. This pulley is preferably grooved to facilitate guiding of the hose. The hose 32 is also trained over the grooved disk 36 which may be suitably weighted by using a solid or partly solid hub portion 37 to assist in retracting the hose. As shown particularly in Fig. 6 the grooved disk 36 is guided for vertical movement by means of the guide or channel members 38 which may have cushioning or frictional material such as felt, rubber, leather or the like secured over the flanges thereof, as indicated at 39. The channel members are secured within the casing in any suitable manner. The frictional material 39 functions in the same manner as the strips 22 and 24 shown in Figs. 3 and 4 of the drawing, in that it reduces the noise of operation and increases the frictional contact between the disk 36 and the channel members 38. The operation of the retracting mechanism just described is as follows: When it is desired to withdraw the hose from the casing the attendant merely pulls on the hose causing the weighted disk 36 to ascend within the casing, the disk being guided by the channel members 38. The pulley 34 rotates on its axle 35 to guide the hose thru the opening 31. When the attendant releases the hose the weighted disk 36 descends along the channel members drawing the hose into the casing where it is stored. It will be appreciated that if it is desired to use a hose of a length which cannot be conveniently stored in a casing of conventional height, it is only necessary to provide a pit in the base on which the casing is supported and extend the channel members into the pit so that the disk and hose may be guided into the pit.

In Fig. 7 there is shown a further modification of the retracting mechanism in which the grooved disk 40 over which the telephone cord, hose or the like is to be trained, is guided by means of a channel member 41 having its flanges

disposed adjacent the outer faces of the disk and a member 42, parallel to the member 41 and which may comprise an inverted channel, disposed within the groove of the weighted disk. As in the previously described constructions, the guiding members 41 and 42 will be mounted on suitable supports and may be provided with a covering 43 which may be felt, leather, rubber or the like.

What I claim is:

1. In a switchboard or the like, a pair of spaced, elongated guide rails supported in opposed parallel relation, said guide rails being inclined with respect to the horizontal, a grooved disk supported on said rails, with the rails disposed in the groove of said disk, and a cord or the like anchored at one end and looped over said disk, with the bight thereof disposed between said rails and the bottom of said groove.

2. A switchboard comprising a pair of spaced members, a strip of angle iron secured to each of said members, the flange of one strip being in the same plane with and parallel to a flange of the other strip, a grooved disk, said flanges of said strips of angle iron having strips of flexible material secured thereto, said flanges seating in the groove of said disk, and a telephone cord anchored at one end and looped over said disk and disposed between the free edges of said flanges and the bottom of the groove of said disk.

3. A retracting mechanism comprising a flexible member anchored at one end, a grooved disk, said member being trained over and seated in the groove of said disk, means for guiding said disk, said means including a pair of spaced parallel guide rails seated in the groove of said disk at diametrically opposite parts thereof and strips of flexible material secured to said guide rails and engaging said disk.

4. Retracting mechanism for telephone cords or the like comprising a disk including a hub

portion and spaced flange portions providing a relatively deep groove in said disk, a pair of spaced parallel guide members supported in opposed relation, the diameter of said hub portion being less than the distance between said guide members, said guide members being received in the groove of said pulley between said flange portions and a cord anchored at one end, said cord being looped about said disk with the bight thereof disposed between said hub portion and said guide members.

5. A retracting mechanism comprising a flexible member anchored at one end, a grooved disk, said member being trained over and seated in the groove of said disk, means for guiding said disk, said means including a pair of spaced parallel guide rails seated in the groove of said disk at diametrically opposite parts thereof, and a flexible covering secured over the portion of said guide rails which seats in the groove of said disk.

6. A retracting mechanism comprising a flexible member anchored at one end, a grooved disk, said member being trained over and seated in the groove of said disk, means for guiding said disk, said means including a pair of spaced, parallel channel members, said disk being seated in the space between the flanges of said channel member to be guided thereby, and a flexible covering secured to the inner surfaces of said flanges of the channel members in a position to engage said disk.

7. A retracting mechanism comprising a flexible member anchored at one end, a grooved disk, said member being trained over and seated in the groove of said disk, and means for guiding said disk, said means including a pair of spaced parallel guide members seated in the groove of said disk at diametrically opposite parts thereof.

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