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CABLE RETRACTOR

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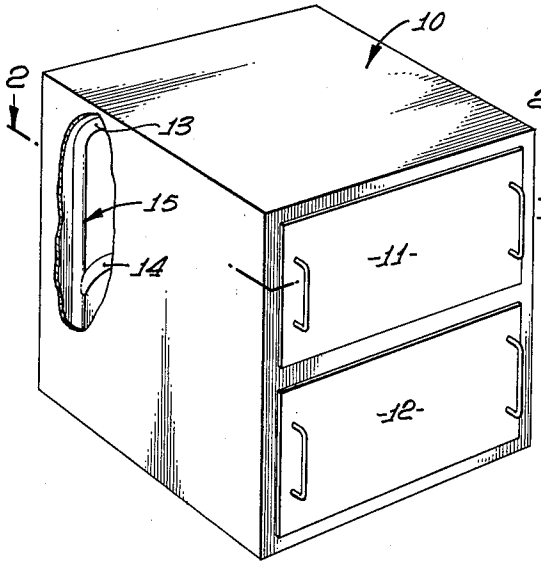



FIG. 1.

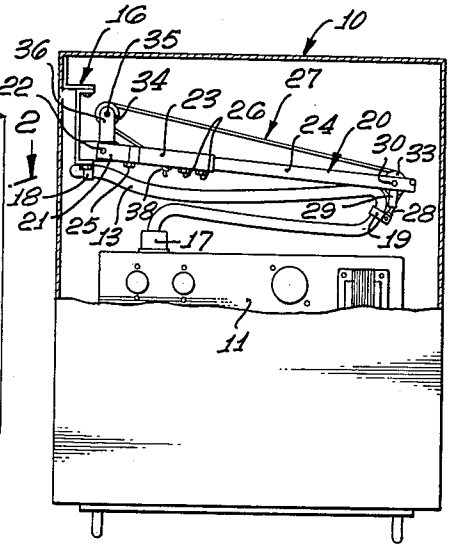



FIG. 2.

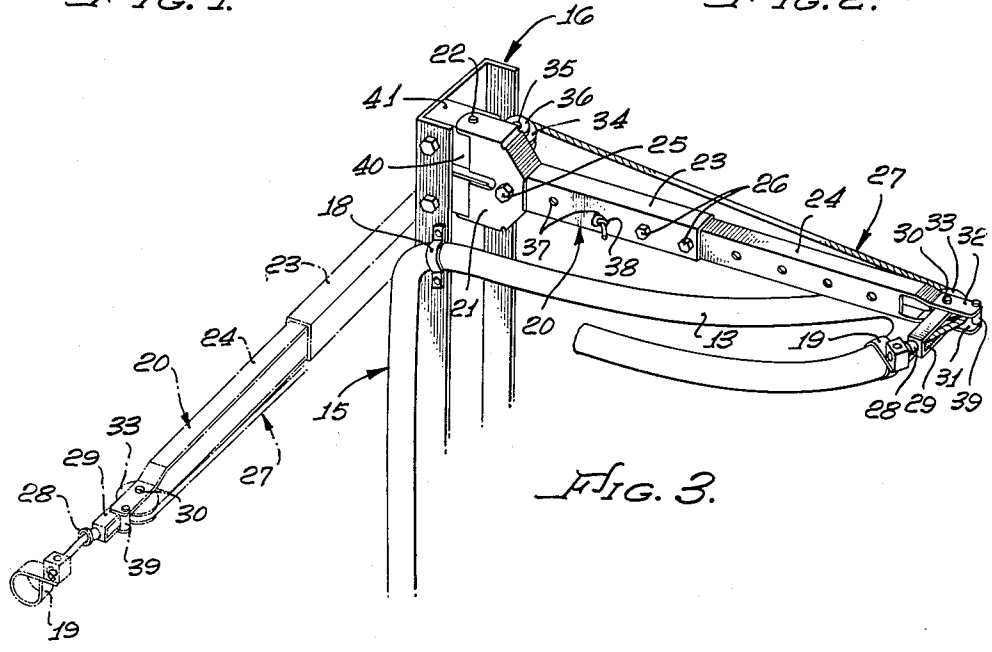



FIG. 3.

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# CABLE RETRACTOR

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This invention relates to devices for use in supporting electrical leads, and more particularly to movable means for supporting electrical cables at the rear of drawers of electronic equipment cabinets in a manner to permit the drawers to be pulled out easily without disconnecting cables attached thereto and without damaging the cables or subjecting them to fatigue or wear stresses.

Cable supporting devices, called cable retractors, are designed for use in a cabinet having a drawer therein and a cable supported both on the drawer and on the cabinet frame. In this case the cable normally is of a length substantially greater than the distance between the support points.

The device of the invention is employed to support the cable at a point intermediate its ends in a folded position across the back of the drawer. In this case the invention preferably includes an arm pivotally suspended from the framework to rotate from a position adjacent the back of the drawer to a position forwardly thereof, and means extending from the arm at a point spaced from its pivot axis to urge the cable rearwardly toward the arm when the drawer is pulled outwardly of the cabinet.

In one preferred embodiment of the invention, a pulley is rotatably mounted on the arm about an axis parallel to he pivot axis of the arm. Still further, another pulley is rotatably mounted on the cabinet framework about an axis parallel to the pivot axis. In this case an elastic cord is employed which is fixed to the cable at the intermediate point and which extends up through guide means adjacent the pulley on the arm, around the pulley on the arm, around the pulley on the cabinet framework, and back to the arm and is fixed thereto. Thus, the elastic cord is "folded on itself" in that it is wrapped around the pulley on the cabinet framework. This means that additional cord elongation is obtained, but with little more required in the way of cabinet housing space.

An outstanding advantage of the invention resides in the fact that the elastic cord performs two functions simultaneously. In the first place, it urges the cable rearwardly toward the arm due to its elasticity when the drawer is pulled outwardly of the cabinet. Secondly, due to the fact that its one end is fixed to the arm itself, it urges the arm rearwardly in the cabinet. This means that both of these functions performed by the cord make it possible to push the drawer into the cabinet while preventing the cable from dropping into and becoming entangled with the equipment below and in so doing "jam" the drawer. Thus, these functions facilitate folding and supporting the cable in its desired position when the drawer is pushed in.

The invention will be better understood when considered in connection with the following description:

In the accompanying drawings, which are to be regarded as merely illustrative:

FIG. 1 is a perspective view of a cabinet with which the cable retractor of the invention may be used;

FIG. 2 is a sectional view of the cabinet taken on the line 2—2 shown in FIG. 1; and

FIG. 3 is a perspective view of the cable retractor of the invention.

In the drawings in FIG. 1, a cabinet is indicated at **10**, having drawers **11** and **12**, to which horizontal extensions **13** and **14**, respectively, of the vertical cable **15** are fixed.

Only the extension **13** of cable **15** is shown in FIG. 2 fixed to a portion of the cabinet framework indicated at **16** and to the rear end of drawer **11** by means of a plug



**17**. Extension **13** is fixed to framework **16** by means of a cable clamp **18**, best shown in FIG. 3.

The cable retractor of the invention is adapted to support extension **30** at an intermediate point where a clamp **19** is fixed to it. The cable retractor of the invention includes an arm **20** which is made up of three parts, a first part **21** that is rotatably mounted about a pin **22** on framework **16**, a U-shaped sectional part **23** telescoped into the part **21**, and a somewhat smaller U-shaped sectional part **24** telescoped into the part **23**. A bolt **25** holds parts **21** and **23** together, and two bolts **26** hold parts **23** and **24** together.

Portion **13** of cable **15** is supported at clamp **19** by means of an elastic cord **27** which is fixed to clamp **19** and extends through a ferrule **28** made of an outwardly flared piece of tubing. Ferrule **28** is fixed to a bracket **29** which is rotatable about a pin **30**. Pin **30** extends through a pair of supporting plates **31** and **32** at the end of arm **20**.

A pulley **33** is mounted rotatably about pin **30** inside of bracket **29**. Thus, cord **27** extends not only through ferrule **29** but around pulley **33** to a pulley **34** rotatably mounted about a pin **35** which extends through a bracket **36** fixed to framework **16**.

Cord **27** extends to the right again, as viewed in FIG. 2, through one of several holes **37** in part **23** of arm **20**. A knot **38** is tied in cord **27** at the end thereof extending through a hole **37** to secure it in position relative to the arm **20**.

From the foregoing, it will be appreciated that bracket **29** will rotate to the position shown in dotted lines in FIG. 3 when drawer **11** is pulled outward of the cabinet **10**. Thus, it would otherwise be possible for cord **27** to come out of the groove in pulley **33**, but for a pin **39** which extends through and is fixed to supporting plates **31** and **32** to prevent this from occurring.

It is to be noted that should pulley **33** not be employed, pins **30** and **39** would serve as guide means for the cord **27** which extends between them. Still further, ferrule **28** additionally serves as guide means for the cord **27**. Because the cord **27** is elastic, clamp **19** fixed to extension **13** of cable **15** may be stretched outwardly of ferrule **28**, as shown in FIG. 3.

From the foregoing, it can be seen that the cable retractor of the invention is unusually simple and operates efficiently to retract the cable which is employed at the rear of drawers in electronic equipment cabinets. In addition, the particular arrangement of the elastic cord **27** provides two unusually useful functions. In the first place, the cord is folded on itself. That is, it extends not only from pulley **33** on arm **20** to pulley **34** on framework **16**, but also back again to arm **20** where it is tied at **38** to one of the holes **37** in part **23**. This means that both of these functions performed by the elastic cord **27** make it easier to push the drawer **11** into the cabinet. Moreover, these functions also facilitate folding and supporting the extension **13** of cable **15** in its desired position, as shown in FIG. 2, when the drawer **11** is pushed in.

Although only one specific embodiment of the invention has been shown and described, it is to be understood that many changes and modifications will, of course, suggest themselves to those skilled in the art. For example, a spring-biased telescoping arm may be substituted for the arm **20**. In addition, pulley **34** need not be provided for cord **27**. For example, cord **27** need not be elastic if it is attached to a drum at the position of pulley **34** and the drum is spring-biased. In this case, of course, it is unnecessary for the cord to be attached to the arm at all, except as extending over pulley **33**. Still further, other anti-friction means or equivalent devices may be employed as substitutes for pulleys **33** and **34**. In addition, the arm **20** may be located either horizontally or

vertically. However, as indicated in FIG. 3, an edge 40 abuts a projecting portion 41 of framework 16 when arm 20 is rotated approximately 90 degrees. If this arrangement is employed, the arm 20, if mounted to rotate about a horizontal axis, would normally be mounted to rotate down when drawer 11 is opened, and rotate up when it is closed in order to prevent arm 20 from rotating beyond a desired limiting position determined by the position of edge 40 of part 21 as it bears against projection 41 of cabinet framework 16.

Since, according to the foregoing, many of the above or other changes and modifications of the invention will, of course, suggest themselves to those skilled in the art, the single embodiment described and illustrated is not to be interpreted as a definition of the limits of the invention, the true scope thereof being defined only in the appended claims.

What is claimed is:

1. In a cabinet including a framework having a drawer therein, and a cable supported at one point at the rear of said drawer and at another point adjacent thereto on said framework, said cable being of a length substantially greater than the distance between said support points, a device for supporting said cable at a point intermediate to its ends in a folded position at the back of said drawer, said device comprising: an arm pivotally suspended from said framework to rotate from a position adjacent the back of said drawer to a position forwardly thereof; an elastic cord; means on said framework adjacent the pivot axis of said arm to support said cord, said cord extending from said support means in a position spaced from said pivot axis to be supported on said arm adjacent said intermediate point, said cord extending from said arm and being fixed to said cable at said intermediete point.

2. In a cabinet including a framework having a drawer therein, and a cable supported at one point at the rear of said drawer and at another point adjacent thereto on said framework, said cable being of a length substantially greater than the distance between said support points, a device for supporting said cable at a point intermediate to its ends in a folded position at the back of said drawer, said device comprising: an arm pivotally suspended from said framework to rotate from a position adjacent the back of said drawer to a position forwardly thereof, said arm including a pair of spaced supporting plates; an elastic cord; means on said framework adjacent the pivot axis of said arm to support said cord; and guide means extending through said spaced plates at spaced points, said cord extending from said support means both between said space plates and between said guide means, said cord extending from said guide means and being fixed to said cable at said intermediate point.

3. In a cabinet including a framework having a drawer therein, and a cable supported at one point at the rear of said drawer and at another point adjacent thereto on said framework, said cable being of a length substantially greater than the distance between said support points, a device for supporting said cable at a point intermediate to its ends in a folded position across the back of said drawer, said device comprising: an arm pivotally suspended from said framework to rotate from a position adjacent the back of said drawer to a position forwardly thereof, said arm including a pair of spaced supporting plates; an elastic cord; means on said framework adjacent the pivot axis of said arm to support said cord; a pulley rotatably mounted on said arm about an axis parallel to said pivot axis; and guide means supported from said arm adjacent said pulley, said cord being fixed to said cable at said intermediate point and extending through said guide means around said pulley and to said support means.

4. In a cabinet including a framework having a drawer therein, and a cable supported at one point at the rear of said drawer and at another point adjacent thereto on said framework, said cable being of a length substantially greater than the distance between said support points, a device for supporting said cable at a point intermediate to its ends in a folded position at the back of said drawer, said device comprising: an arm pivotally suspended from said framework to rotate from a position adjacent the back of said drawer to a position forwardly thereof; a bracket fixed to said framework having a pin extending therethrough in a direction parallel to the pivot axis of said arm; an elastic cord having one end fixed to said arm at a first point spaced from the pivot axis thereof and extending around said pin and back through said arm at a second point spaced from said first point on the side thereof opposite the side on which said pin is positioned, the other end of said cord being fixed to said cable at said intermediate point.

5. In a cabinet including a framework having a drawer therein, and a cable supported at one point at the rear of said drawer and at another point adjacent thereto on said framework, said cable being of a length substantially greater than the distance between said support points, a device for supporting said cable at a point intermediate to its ends in a folded position at the back of said drawer, said device comprising: an arm pivotally suspended from said framework to rotate from a position adjacent the back of said drawer to a position forwardly thereof; a pulley rotatably mounted on said framework about an axis parallel to the pivot axis of said arm; an elastic cord having one end fixed to said arm at a first point spaced from the pivot axis thereof and extending around said pin and back through said arm at a second point spaced from said first point on the side thereof opposite the side on which said pin is positioned, the other end of said cord being fixed to said cable at said intermediate point.

6. In a cabinet including a framework having a drawer therein, and a cable supported at one point at the rear of said drawer and at another point adjacent thereto on said framework, said cable being of a length substantially greater than the distance between said support points, a device for supporting said cable at a point intermediate to its ends in a folded position across the back of said drawer, said device comprising: an arm pivotally suspended from said framework to rotate from a position adjacent the back of said drawer to a position forwardly thereof, said arm including a pair of spaced supporting plates; an elastic cord; means on said framework adjacent the pivot axis of said arm to support said cord; a pulley rotatably mounted on said arm about an axis parallel to said pivot axis; guide means supported from said arm adjacent the pulley thereon, said guide means including a bracket rotatably mounted about the pulley on said arm, a pin extending through said arm beyond the pulley thereon, and a ferrule including a section of outwardly flared tubing fixed to said bracket; a pulley rotatably mounted on said framework about an axis parallel to the pivot axis of said arm, said cord being fixed to said cable at said intermediate point and extending through said guide means around the pulley on said arm, around the pulley on said framework, and back to said arm, the end of said cord opposite the end to which said cable is connected being fixed to said arm at a point intermediate the pivot axis thereof and the pivot axis of the pulley mounted thereon.


**References Cited** in the file of this patent

UNITED STATES PATENTS

| | | |
|---|---|---|
| 1,942,453 | Ruemelin | Jan. 9, 1934 |
| 2,023,541 | Paull | Dec. 10, 1935 |
| 2,173,101 | Fiedler | Sept. 19, 1939 |
| 2,492,049 | Krone | Dec. 20, 1949 |
| 2,748,236 | Landis | May 29, 1956 |
| 2,865,979 | Klassen | Dec. 23, 1958 |
| 2,948,450 | Dobrikin | Aug. 9, 1960 |