April 27, 1965 E. H. PUSEY ETAL 3,180,585

EXTENDIBLE AND RETRACTABLE UTILITY LINE APPARATUS

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FIG. 1.

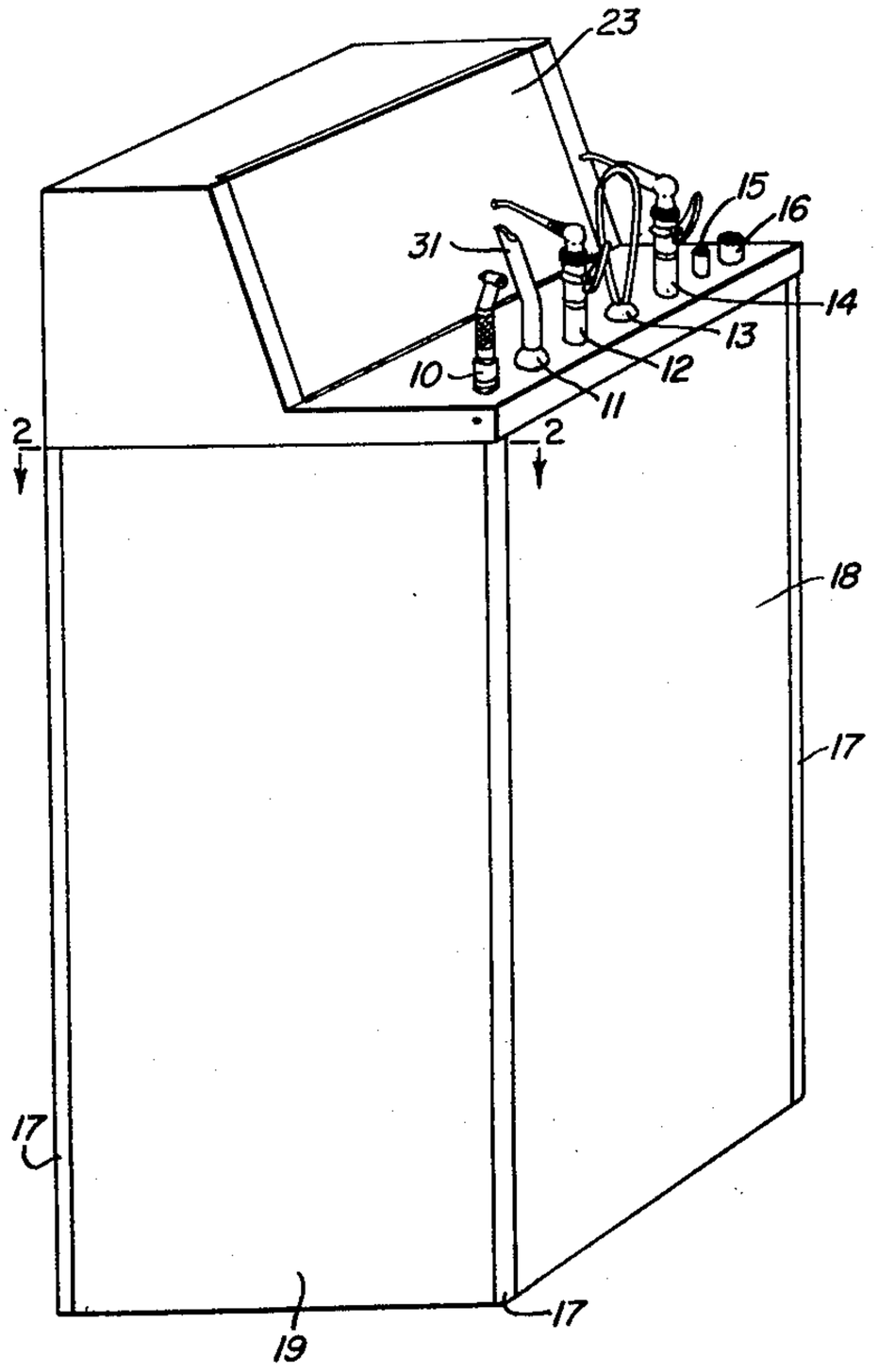
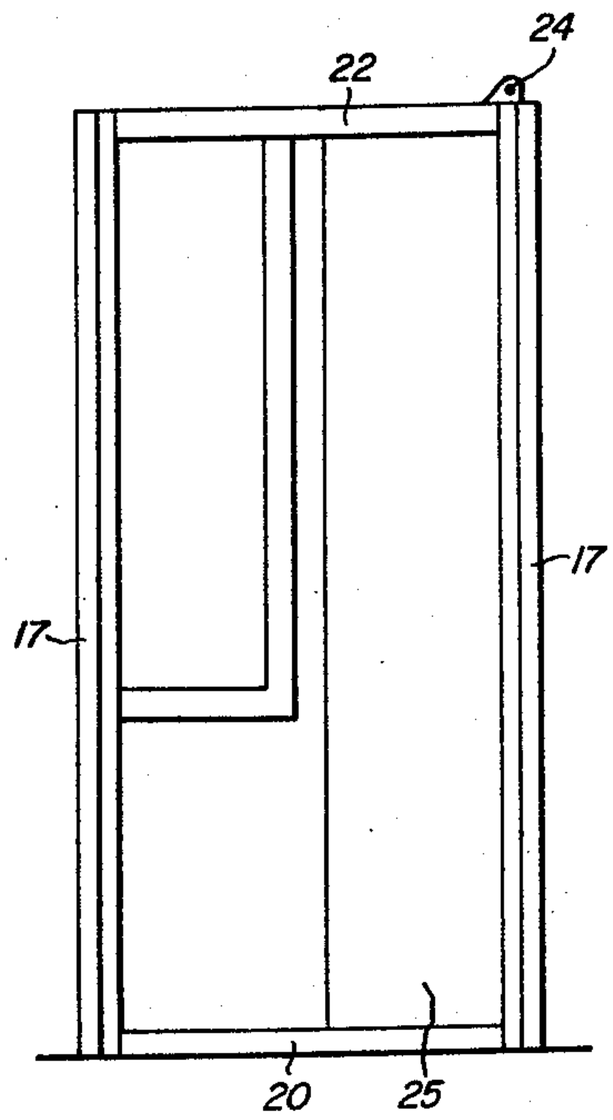


FIG. 3.



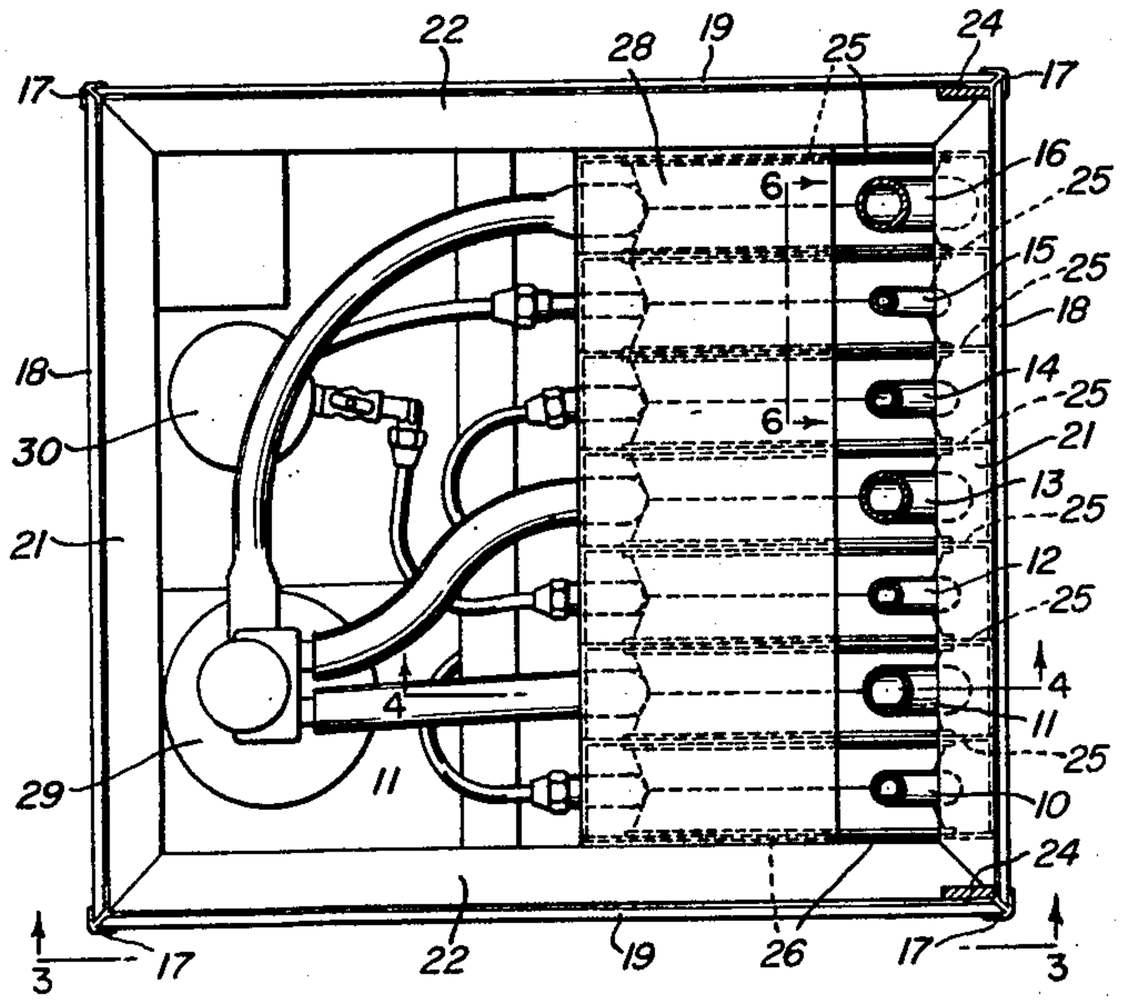


FIG. 2.

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FIG. 4.

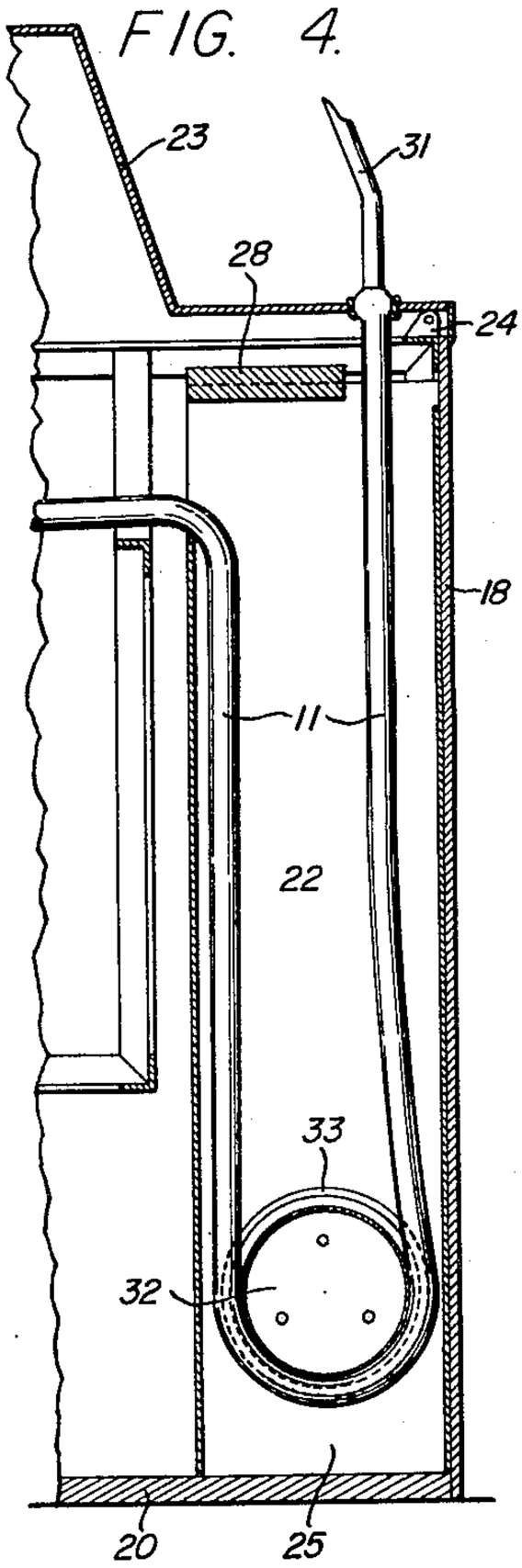


FIG. 5.

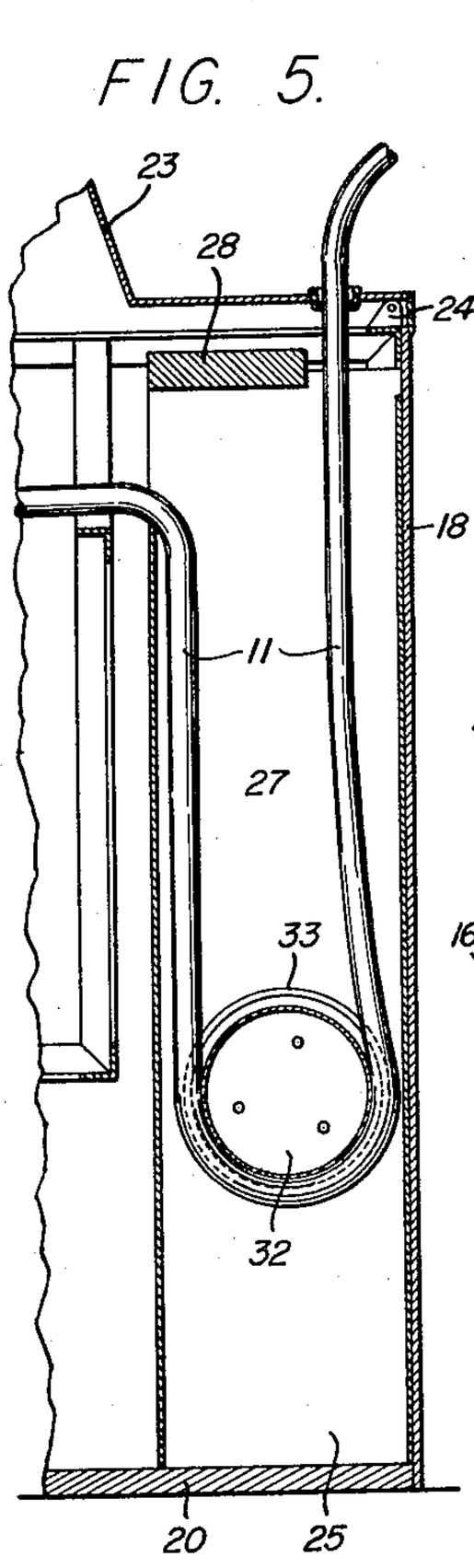
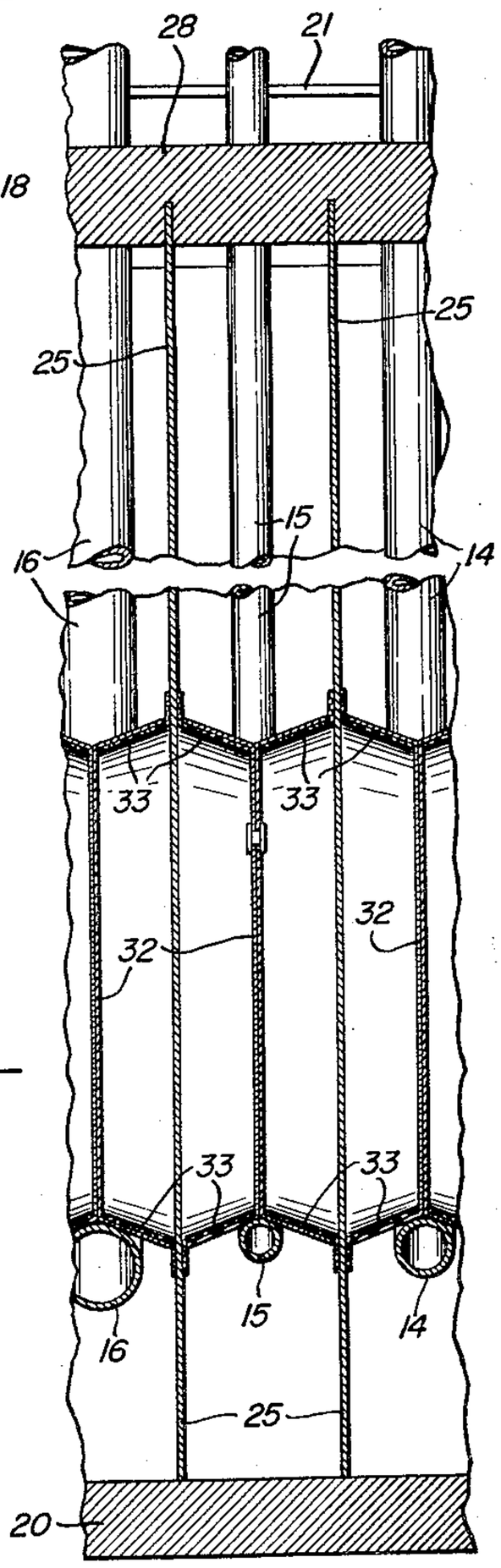


FIG. 6.



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EXTENDIBLE AND RETRACTABLE UTILITY LINE APPARATUS

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This invention relates to apparatus providing utility lines on an exendible and retractable basis. It is particularly concerned with providing dental utilities, such as air turbine drill, oral evacuator, and dental syringe—which are attached to and are powered through flexible hoses—in extendible and automatically retractable, convenient, console arrangement.

A principal object of the invention is to provide for free and easy and silient extension and retraction of each utility line without the use of springs or other mechanism for insuring proper retraction.

As a feature of the invention, this is accomplished by utilizing for each utility line a laterally padded sheave entirely free within a vertically elongate, smooth-walled, guide pocket, the flexible hose or the like constituting the utility line entering the pocket at the upper end thereof and being looped under the sheave to emerge at such upper end of the pocket for manipulation by the person using the utility attached to the working end of the line. The utility line is ordinarily heavy enough to properly retract under the influence of gravity working on it alone, although, where found desirable, the sheave may be appropriately weighted.

While an extendible and retractable utility line unit constructed as above may be provided in any suitable manner, for example built into a recess in a wall adjacent a dental chair or even into the dental chair itself, it is presently preferred to incorporate in a single cabinet the several different utility lines normally used by a dentist, as well as much of the incidental power equipment, thereby providing a portable console for convenient placement adjacent the dental chair.

A feature of such a console is the provision of slide-out panel side walls, so that interior mechanism can be quickly exposed for inspection and repair if necessary.

A specific embodiment of apparatus representing what is presently regarded as the best mode of carrying out the invention is illustrated in the accompanying drawings. From the detailed description of such embodiment, other more specific objects and features of the invention will become apparent.

In the drawings:

FIG. 1 is a view in perspective, looking from one side and the front, of a dental console conforming to the invention;

FIG. 2, a horizontal section taken on the line 2—2 of FIG. 1, showing the upper end of the console cabinet in elevation as it appears with the hinged top raised, certain hidden portions of the utility line apparatus being shown by dotted lines, the view being drawn to a larger scale;

FIG. 3, a side elevation taken from the standpoint of line 3—3, FIG. 2, and showing the framework of the cabinet as it appears with the side panel slid out, the view being drawn to a reduced scale and the cabinet top and interior mechanism removed;

FIG. 4, a fragmentary vertical section taken on the line 4—4 of FIG. 2;

FIG. 5, a similar view showing the utility hose in an extended position, the outer reach thereof being broken away for convenience of illustration; and

FIG. 6, a fragmentary vertical section taken on the

line 6—6 of FIG. 2 an intermediate portion of the height being broken out for convenience of illustration.

Referring to the drawings:

The illustrated installation of the utility line apparatus of the invention is in the form of a dental console, FIG. 1, wherein several dental utilities 10 to 16 are conveniently grouped for easy accessibility and use.

The console cabinet includes a box-like framework having four corner posts 17 of extruded aluminium or the like providing vertical trackways for slidably receiving front and rear wall panels 18, respectively, and mutually opposite side wall panels 19, respectively, the posts being joined together at their lower ends by a bottom wall 20 and at their upper ends by pairs of framing members 21 and 22 in the form of structural angles. A cover 23 is hinged to upstanding lugs 24, FIG. 3, at the front of the framework.

The several utility line units are formed side-by-side within the forward portion of the console cabinet. This is advantageously accomplished by standing broad channels 25, FIG. 2, of aluminum or other smooth-faced material vertically, with the broad back of one closing the board channel opening of the next and with a panel 26 closing the opening of the last to provide a series of smooth-walled, vertical pockets 27, FIGS. 4 and 5, extending across the front of the console cabinet.

A spanning board 28, slotted to receive the upper ends of the channels 25, serves to hold such channels in position, it being noted, see FIGS. 4 and 5, that the sides of the channels are cut down for this purpose and also to permit rearward extension of the several utility hoses, hose 11 being shown in these views. Board 28 preferably slides rearwardly to provide access to the interior of the pockets 27 if and when desired.

The utility lines 10–16 extend forwardly from connection, FIG. 2, with their respective service devices or lines, e.g. suction evacuative unit 29 and compressed air tank 30, rearwardly in the cabinet, dip low in the respective pockets 27, see hose 11, FIGS. 4 and 5, and finally emerge through a corresponding opening in the cover 23. Each has its utility-provided, working end, see oral evacuator mouthpiece 31, FIG. 4, enlarged or otherwise provided with stop means against dropping back into the interior of the cabinet.

The intermediate portion of each utility line is looped about a sheave 32 freely disposed in its pocket 27 for rotation as it will and for movement upwardly and downwardly as the line is extended and retracted, compare FIGS. 4 and 5. The sheave 32 is advantageously of aluminum or some other lightweight material, for the lines are usually sufficiently heavy in themselves to insure gravity retraction. They serve to guide the lines during movement and to prevent twisting and binding within the pockets. They are provided with buffer strips or padding 33, FIG. 6, of felt or some other sound absorbent material laterally thereof to insure silent operation.

Whereas there is here illustrated and described a certain preferred construction which we presently regard as the best mode of carrying out our invention, it should be understood that various changes may be made without departing from the inventive concepts particularly pointed out and distinctly claimed herebelow.

We claim:

1. Extendible utility line apparatus providing automatic retraction for an extended line, comprising a console cabinet having a hinged cover; a series of broad and relatively shallow structural channels of smooth-faced material removably mounted in the cabinet and disposed back to open mouth so as to define a corresponding series of vertically disposed and elongate smooth-wall pockets, the upper end of the back of each channel projecting upwardly beyond its sides; a bottom-grooved spanning board

slidably mounted within said cabinet and normally extending across said upper ends and slidably receiving said ends within its grooves for firmly positioning said channels within said cabinet; a utility line for each pocket extending into the upper end of said pocket, dipping low into the pocket in retracted positon, and looping back to return to the upper end of the pocket, emerge therefrom and extend through the hinged cover; means for supporting the emergent upper end of the retracted utility line against being withdrawn through the cover and into the pocket; and a freely floating sheave having no connection with the pocket-defining structure and being disposed within the loop of said utility line for riding upwardly in said pocket within said loop as a guide and retainer when the utility line is extended, and for dropping down with said loop when said line is released and retracts automatically under the influence of gravity, said sheave having sound absorbent material laterally thereof as a silencer.

2. The apparatus of claim 1, wherein the console cabinet comprises a structural framework including corner posts of extruded metal and having slideway channels extending along their lengths, and wall panels slidably mounted within respective pairs of opposing slideway channels for removal by vertical sliding movement to expose the interior of said cabinet.

3. The apparatus of claim 1, wherein the sheave is of aluminum and the sound absorbent material is felt secured to the aluminum.

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