April 12, 1949. E. L. MONNOT 2,466,996

FLEXIBLE MEMBER RETRIEVER APPARATUS

Filed Jan. 4, 1947 2 Sheets-Sheet 1

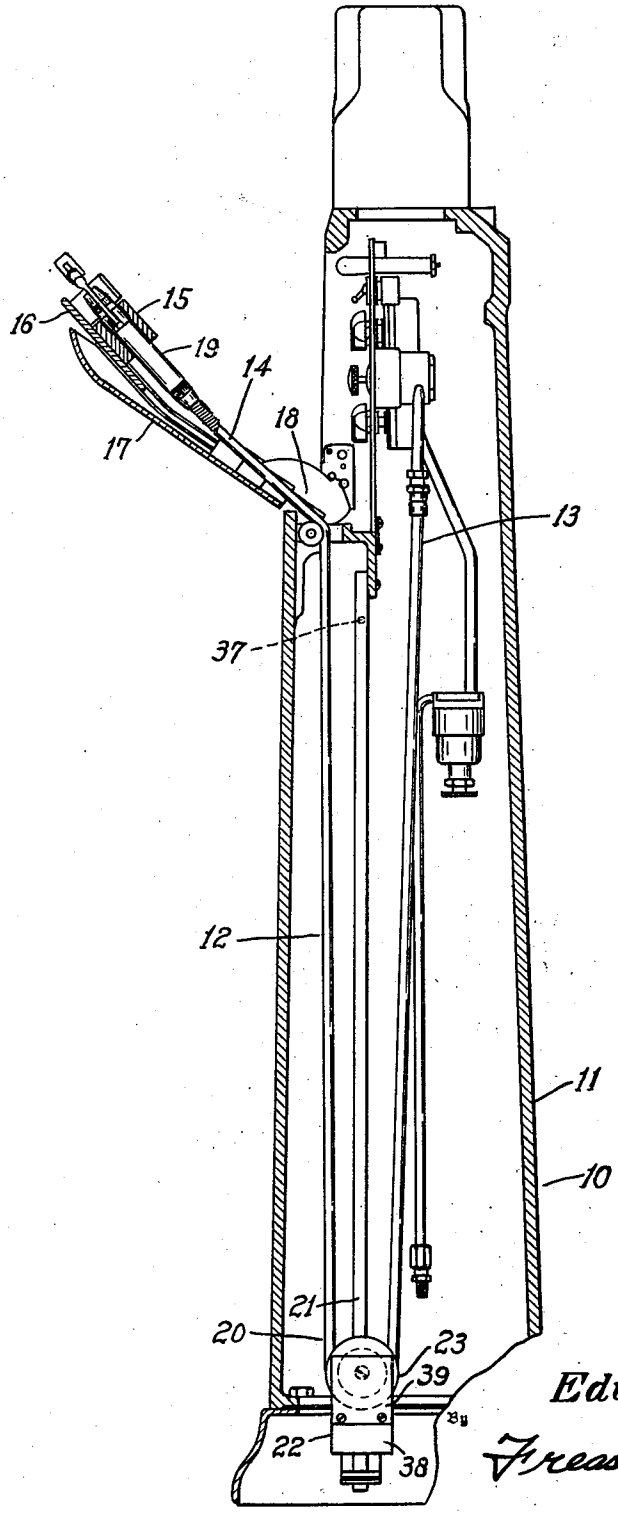



Fig. 1

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FLEXIBLE MEMBER RETRIEVER APPARATUS

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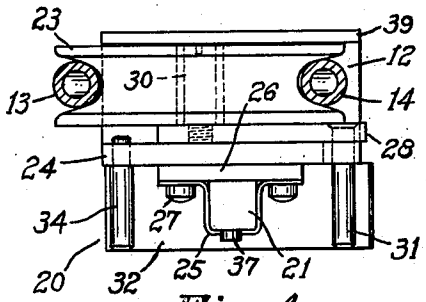



Fig. 4

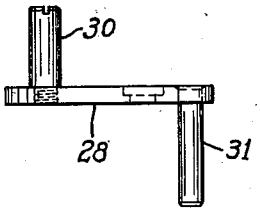



Fig. 6

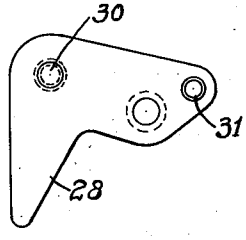



Fig. 5

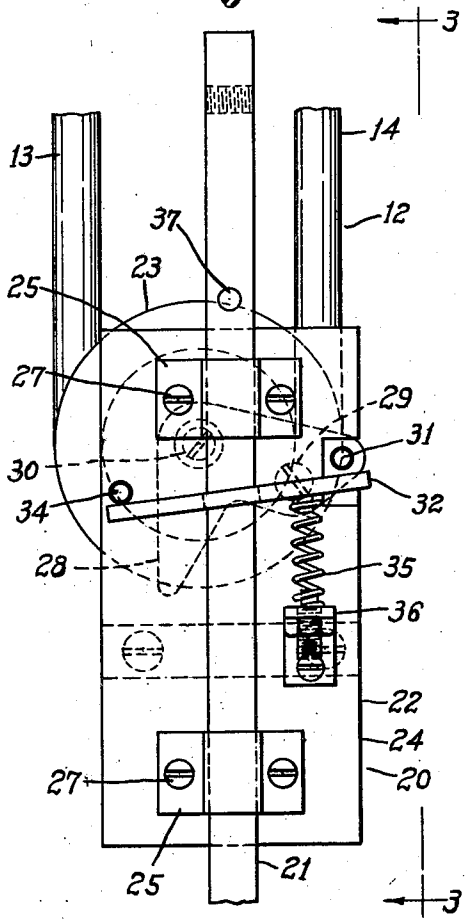



Fig. 2

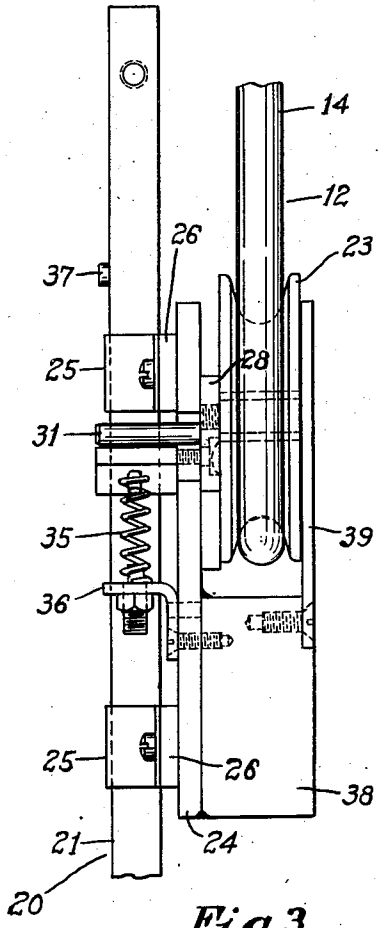



Fig. 3

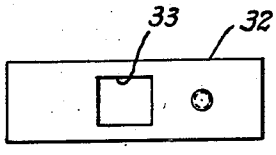



Fig. 7

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# UNITED STATES PATENT OFFICE

2,466,996

## FLEXIBLE MEMBER RETRIEVER APPARATUS

Edward L. Monnot, Canton, Ohio, assignor to The Weber Dental Manufacturing Company, Canton, Ohio, a corporation of Ohio

Application January 4, 1947, Serial No. 720,289

5 Claims. (Cl. 242—47.5)

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The invention relates to flexible member retriever apparatus for dental units and the like, in which the flexible member may be either an electric conductor cord or a rubber tube, a plurality of the flexible members being located in an upright hollow standard, one end of each flexible member within the standard being connected with an electric power line in the case of the electric cord and in the case of the rubber tube usually with a source of compressed air.

The other end of each flexible member is connected with a dental instrument, which when not in use by the dentist is located at an accessible position at the upper end of the standard, as on an instrument slide panel operatively mounted on a door having a lower horizontal hinge mounting on the lower side of the opening in the standard for the door.

A retriever mechanism within the hollow upright standard is provided for each flexible member to automatically withdraw the flexible member so that the instrument on its outer end returns to its position on the instrument slide panel after each use of the instrument by the dentist, during which use the instrument and its flexible member is pulled by the dentist from the unit to the patient's mouth.

The end of the flexible member within the hollow standard is made fast to the standard at its upper end, and the flexible member extends downwardly from the fastening point. A usual retriever mechanism includes an upright slide rod on which is slidably mounted a retriever assembly which preferably includes a pulley about which the downwardly extending flexible member is turned and extends upwardly within the hollow standard to the instrument, which when not in use is located and restrained against retraction in a guide holder on the instrument panel, a guide roller being preferably provided for the flexible member adjacent the lower side of the door opening on the front wall of the hollow standard.

Prior to the present improvements in a usual dental unit it has been necessary for the dentist to pull the flexible member out of the unit to the maximum extent when in use and to hook or latch the retriever pulley assembly in its uppermost position. After using the instrument attached to the flexible member, to permit return of the instrument to its position on the instrument panel, the dentist must effect release of the retriever pulley assembly from its upper latched position by jerking the flexible member.

Moreover, in a usual dental unit there is no

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possibility of locking the retriever pulley assembly at any position on its slide rod excepting at the uppermost position, which results frequently in the necessity of draping the flexible member over the patient's lap. It is desirable to lock the retriever pulley assembly at intermediate positions to limit the length of the exposed portion of the flexible member or cord.

Further, in the usual arrangement of the retriever pulley assembly in a dental unit as above described, the weight of the retriever pulley assembly is always on the flexible member causing wear and decreasing the life of the flexible member as compared to its possible life when not subject to such wear.

The objects of the present invention include the provision of flexible member retriever apparatus for dental units and the like in which a retriever pulley assembly is slidably mounted on a slide rod and associated with a flexible member as above described, and in which the retriever pulley assembly may be locked at any desired position on the slide rod.

Further objects of the present invention include the provision of such a flexible member retriever apparatus in which release of the pulley assembly from a locked position on the slide rod is effected by a gentle pull on the associated flexible member rather than a jerk.

Further objects of the present invention include the provision of such a flexible member retriever apparatus in which in any locked position of the retriever pulley assembly on the slide rod the load on the associated flexible member is relieved.

The foregoing and other objects attained by the flexible member retriever apparatus, parts, combinations, and sub-combinations which comprise the present invention, and the nature of which is set forth in the following general statement, and preferred embodiments of which are set forth in the following description, and which are particularly and distinctly pointed out and set forth in the appended claims forming part hereof.

The nature of the improved flexible member retriever apparatus of the present invention may be stated in general terms as including an upright standard, a flexible member having one end attached to the upper end of the upright standard, the flexible member extending downwardly from the point of attachment and turning upwardly and having its other movable end extending through an upper guide holder, the extremity of the movable end of the flexible member being attached to an enlarged instrument member

which is stopped against a further movement towards the standard by abutment against the holder.

Improved retriever means are operatively interposed on the standard between the ends of the flexible member, and the improved retriever means include an upright slide rod and a retriever pulley assembly slidable on the slide rod, the retriever pulley assembly including a pulley about which the extensible member extends in rolling engagement. The pulley is pivotally mounted on a lever at one side of a pivot mounting the lever on a slide and mounting member which is slidable on the slide rod. Releasable brake means are operatively associated with the slide rod and the slide and mounting member so as to normally maintain the slide and mounting member and thus the entire retriever pulley assembly at a locked position on the slide rod. The brake means are further operatively associated with the pulley supporting lever so that pivoting of the lever by an upward pull on the pulley effected through the flexible member serves to release the brake means and enable raising or lowering of the retriever pulley assembly.

By way of example, preferred embodiments of the flexible member retriever apparatus of the present invention and of improved parts thereof, are illustrated in the accompanying drawings forming part hereof, in which

Figure 1 is a vertical sectional view of a dental unit in which the improved flexible member retriever apparatus is incorporated, the parts being shown when the retriever pulley assembly is at its lowermost position, one of the improved flexible member retriever means being shown in side elevation;

Fig. 2 is an enlarged view of the improved retriever means as shown in Fig. 1, the retriever pulley assembly being shown in an upper position adjacent the upper bumper limiting its upper movement; the retriever means being detached from the dental unit and the retriever pulley assembly being shown in side elevation opposite to that of Fig. 1;

Fig. 3 is an elevation view thereof looking in the direction of the arrows 3—3, Fig. 2;

Fig. 4 is a top plan view thereof;

Fig. 5 is a detached elevation view of the pulley mounting lever;

Fig. 6 is a top plan view thereof; and

Fig. 7 is a detached top plan view of the apertured brake plate of the improved apparatus.

Similar numerals refer to similar parts throughout the several views of the drawing.

A dental unit including the improved flexible member retriever apparatus of the present invention is indicated generally by 10 and includes an hollow upright standard 11 in which are operatively mounted a plurality of flexible members each indicated generally by 12.

In the dental unit 10 each flexible member 12 may be either an electric conductor cord for serving a cautery or a mouth lamp or a rubber tube for serving a warm air syringe, and the like.

Within the hollow upright standard 11 each flexible member 12 has one end 13 attached to the upper end of the hollow upright standard. From the point of attachment to the standard of the upper end 13 of each flexible member, the flexible member extends downwardly and then turns upwardly and its other end 14 is movable and extends through an upper guide holder 15 as shown on an instrument slide panel 16 operatively mounted on a door 17 having a lower horizontal hinge mounting 18 on the lower side of an opening provided in the standard at its upper end for the door 17.

The construction and arrangement of the instrument slide panel 16 and the door and their operative association with the standard 11 may be as set forth in U. S. Letters Patent No. 2,396,311 issued to David J. Binus, for Door apparatus for dental units and the like, March 12, 1946. The movable end 14 of each flexible member extending through its guide holder 15 is attached to an enlarged instrument member 19 which is stopped against further movement towards the standard 11 by abutment against the holder 15.

Improved retriever means indicated generally by 20 are operatively interposed on the standard between the ends 13 and 14 of each flexible member 12. Each improved retriever means includes an upright slide rod 21 and a retriever pulley assembly indicated generally by 22 slidable on the slide rod 21.

The retriever pulley assembly includes a pulley 23 which may otherwise be termed a reversing guide means for the flexible member.

The retriever pulley assembly furthermore includes a slide and mounting member 24 which as shown is in the form of a rectangular plate located at one side of the associated slide rod 21, and slidably mounted thereon by means of a pair of yoke straps each indicated by 25, and each of which extends around the slide rod 21. There is preferably interposed between each yoke strap 25 and the slide and mounting member bar 24, a spacer bar 26, and each yoke strap 25 is secured to the slide and mounting member plate 24 by means of a pair of headed screws each indicated by 27 each having a threaded shank extending through registering apertures in one end of the yoke strap 25 and its spacer bar 26, and being screwed into a threaded aperture in the slide and mounting member plate 24.

A lever 28 is pivotally mounted on the plate 24 by a screw 29. At one side of the pivot screw 29 the pulley 23 is pivotally mounted on the lever 28 by a pin 30. On the opposite side of the lever mounting pivot screw 29 a brake release pin 31 extends from the lever 28.

The releasable brake means for the retriever pulley assembly 22 includes an apertured brake plate 32 having a central aperture 33 formed therein, which as shown is rectangular and the slide rod 21 has a rectangular cross section and extends through the aperture 33 in the brake plate 32 with clearance. At one side of the slide rod 21 the end of the brake plate 32 is located under and in abutment against a fulcrum pin 34 extending from the plate 24. At one side of the slide rod 21 there is interposed between the lower side of the brake plate 32 at its other end a compression spring 35, the lower end of the compression spring 35 reacting against one leg of an angle bracket 36, the other leg of which is secured to the plate 24.

The pin 31 extends across the upper side of the brake plate 32 offset from the spring 35, which applies an upward force against the brake plate 32 tending to turn the brake plate 32 about the fulcrum pin 34 and effect locking engagement of opposite sides of the aperture 33 on the slide rod 21, normally locking the retriever pulley assembly 22 at any selected position on the slide rod 21. When the free end 14 of the flexible member 12 is gently pulled upwardly, the lever 28 on which the pulley 23 is pivotally mounted is swung so that the release pin 31 strikes the brake plate 32

and presses it downwardly about the fulcrum pin 34 and against the spring 35 to a position in which the locking sides of the aperture 33 are disengaged from the slide rod 21. Simultaneously, the retriever pulley assembly 22 may be either raised or lowered on the slide rod 21. Upon a quick release of the pull on the flexible member 12, the spring 53 instantaneously operates to lock the brake plate 32 on the slide rod 21 before any appreciable downward movement due to gravity takes effect in the embodiment shown.

For limiting the upward movement of the retriever pulley assembly 22 on the slide rod 21, a stop pin 37 is secured on one side of the slide rod 21 and is located to be struck by the upper yoke strap 25, and prevents further upward movement of the retriever pulley assembly 22, permitting, however, release of the pulley assembly 22, by a gentle pull on the flexible member 12.

For providing sufficient weight on the retriever pulley assembly 22 to cause it to descend whenever the brake means are released, a mass 38 is secured on the slide and mounting member plate 24 below the pulley 23. The mass 38 is sufficiently wide to permit mounting on its outside face a retainer plate 39 which extends upwardly across the pulley.

The embodiments of the present improvements illustrated and described herein are by way of example, and the scope of the present invention is not limited to the same or to the particular details thereof, but is commensurate with any and all novel subject matter contained herein which may at any time properly under the patent laws be set forth in the claims hereof or originating herein, and the elements of any such claims are intended to include their reasonable mechanical and functional equivalents.

I claim:

1. In retriever apparatus for a flexible member and the like, a slide rod and a retriever assembly, the retriever assembly including a slide and mounting member slidable on the slide rod, a lever, pivot means pivotally mounting the lever on the slide and mounting member, a reversing guide means on the lever at one side of its pivot mounting means, the reversing guide means being adapted to have a flexible member extend about it, releasable brake means operatively mounted on the slide and mounting member and associated with the slide rod, the releasable brake means normally locking the retriever assembly on the slide rod, and a brake release member extending from the lever and being operative to release the brake means by motion imparted through the reversing guide means to the lever, thus permitting movement of the retriever assembly on the slide rod.

2. In retriever apparatus for a flexible member and the like, a slide rod and a retriever assembly, the retriever assembly including a slide and mounting member slidable on the slide rod, a lever, pivot means pivotally mounting the lever on the slide and mounting member, a pulley, means journaling the pulley on the lever at one side of the pivot mounting means for the lever, the pulley being adapted to have a flexible member extend about it, releasable brake means operatively mounted on the side and mounting member and associated with the slide rod, the releasable brake means normally locking the retriever assembly on the slide rod, and a brake release member extending from the lever and being operative to release the brake means by motion imparted through the pulley to the lever, thus permitting movement of the retriever assembly on the slide rod.



3. In retriever apparatus for a flexible member and the like, a slide rod and a retriever assembly, the retriever assembly including a slide and mounting member slidable on the slide rod, a lever, pivot means pivotally mounting the lever on the slide and mounting member, a reversing guide means on the lever at one side of its pivot mounting means, the reversing guide means being adapted to have a flexible member extend about it, releasable brake means operatively mounted on the slide and mounting member and associated with the slide rod, the releasable brake means normally locking the retriever assembly on the slide rod, and brake release means operative between the lever and the brake means to release the brake means by motion imparted through the reversing guide means to the lever, thus permitting movement of the retriever assembly on the slide rod.

4. In retriever apparatus for a flexible member and the like, a slide rod and a retriever assembly, the retriever assembly including a slide and mounting member slidable on the slide rod, a lever, pivot means pivotally mounting the lever on the slide and mounting member, a pulley, means journaling the pulley on the lever at one side of the pivot mounting means for the lever, the pulley being adapted to have a flexible member extend about it, releasable brake means operatively mounted on the slide and mounting member and associated with the slide rod, the releasable brake means normally locking the retriever assembly on the slide rod, and brake release means operative between the lever and the brake means to release the brake means by motion imparted through the pulley to the lever, thus permitting movement of the retriever assembly on the slide rod.

5. In brake apparatus for a retriever and the like, a rod, a mounting member arranged for movement lengthwise of the rod, a lever, pivot means pivotally mounting the lever on the mounting member, releasable brake means operatively mounted on the mounting member and associated with the rod, the releasable brake means normally being in locked engagement with the rod, and brake release means operative between the lever and the brake means to release the brake means by motion imparted to the lever thus permitting movement lengthwise of the rod of the brake means and mounting member and other parts carried by the mounting member.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

| Number | Name | Date |
|---|---|---|
| 2,010,006 | Bosch | Aug. 6, 1935 |