

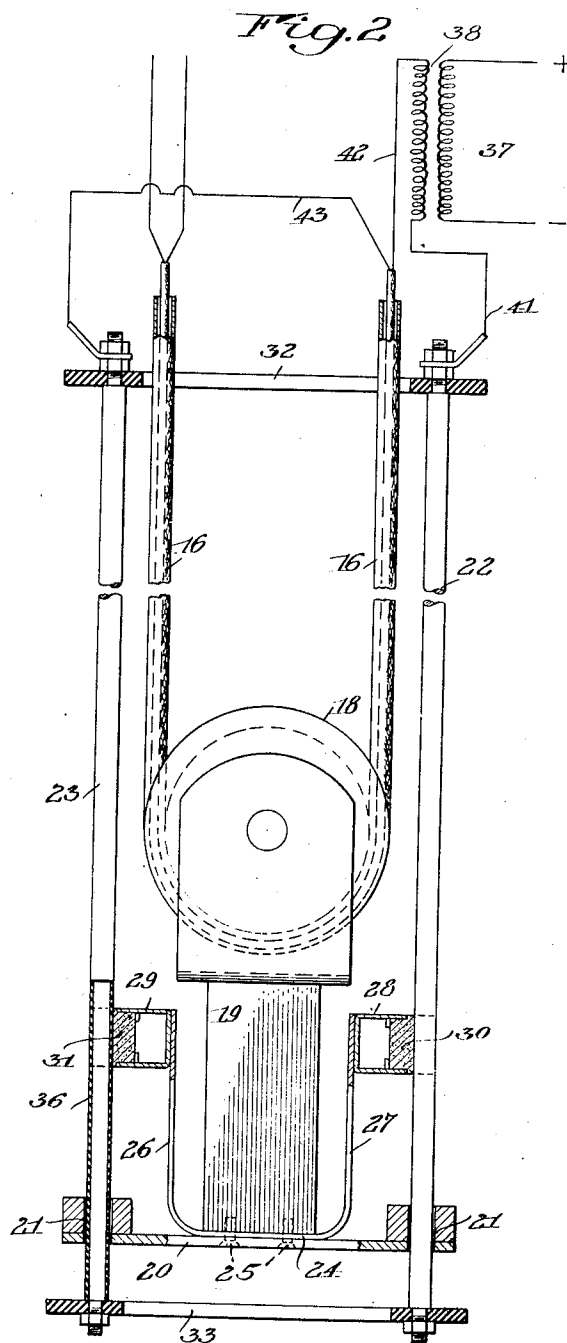
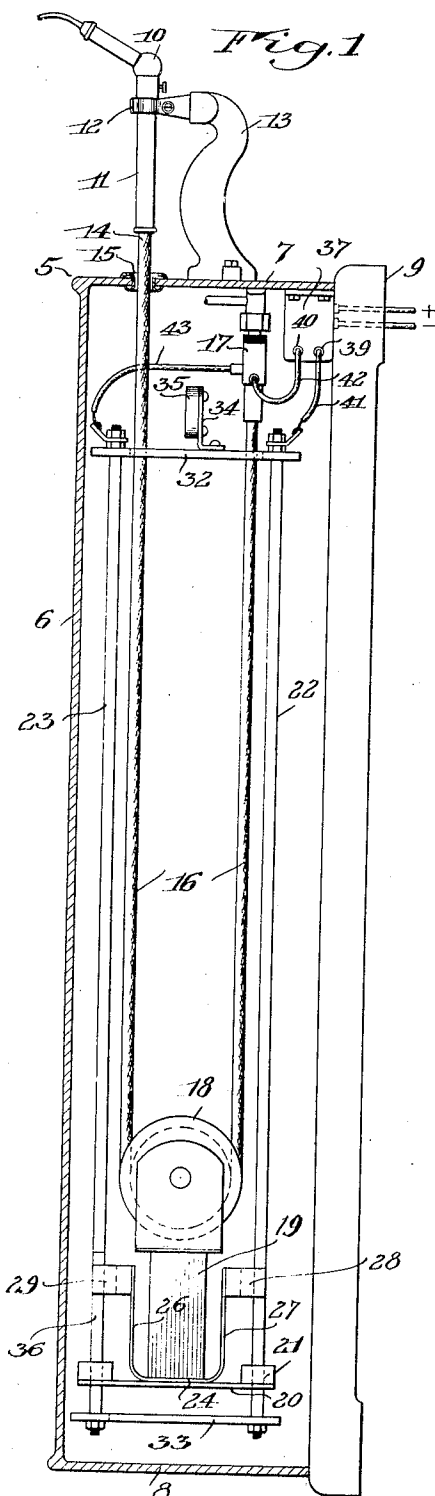
Sept. 7, 1943.

L. J. RUF

2,328,924

EQUIPMENT STAND

Filed Dec. 1, 1942



INVENTOR.

INVENTOR.
Louis John Ruf

BY

Cumpton & Shepard
his Attorneys

UNITED STATES PATENT OFFICE

2,328,924

EQUIPMENT STAND

Louis John Ruf, Rochester, N. Y., assignor to Ritter Company, Inc., Rochester, N. Y., a corporation of Delaware

Application December 1, 1942, Serial No. 467,497

6 Claims. (Cl. 32—22)

This invention relates to equipment stands, such as those commonly employed to support an assembly of dental or surgical instruments adjacent the operating position, and, more particularly, to means for automatically controlling the circuits of extensible instruments carried by such stands. Circuit controlling means of the character referred to are disclosed, for example, in the patent to Pieper and Pieper, No. 1,462,656, dated July 24, 1923, one object of the present invention being to provide a new and improved means for automatically closing the instrument circuit when the instrument is extended from the stand for operating use and for opening the circuit when the instrument is returned to the stand to safeguard the equipment during periods of non-use.

Another object is to provide a device of the above nature in which the controlling switch and other electrical circuit parts are enclosed and protected within the housing of the equipment stand.

Still another object is to provide a more simple and efficient device of the character specified, having comparatively few parts which are simple in construction and reliably automatic in operation.

To these and other ends the invention resides in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawing:

Fig. 1 is a side elevation, partly in section, of an equipment stand embodying the present invention, and

Fig. 2 is a similar view of some of the parts shown in Fig. 1, partly in section, and illustrating the electrical circuit.

The invention is embodied in the present instance, by way of illustration, in a dental equipment unit or stand of the known type adapted to be supported on a side wall of an operating room, such as disclosed in the above patent. Various parts commonly included in such a stand, but forming no part of the present invention, have been omitted to afford a more simple and clear disclosure of the present subject matter and a more complete description of such as stand, if desired, may be found in said patent.

Referring to Fig. 1 of the drawing, the stand is shown as comprising a housing indicated at 5, preferably of substantial height and generally rectangular in horizontal cross section. Such housing comprises, preferably, a front wall 6, top

and bottom walls 7 and 8, respectively, and a back wall 9 adapted for attachment to a side wall of the room. Such a stand is arranged to support the operating instruments within convenient reach of the operator and to enclose and protect within the housing the various supply and control means for the operating instruments, as well understood in the art.

The invention is applied, in the present instance, to the control of a circuit for energizing an electrical instrument 10, such, for example, as the warm air syringe shown in Fig. 1. In the present embodiment, as commonly found in such apparatus, the instrument 10 has a handle portion 11 adapted to be received in and supported by a clip, or pair of spring fingers, 12, projecting forwardly from a bracket 13 on the top wall 7 of the housing. The inner end of the handle 11 has connected therewith a flexible, hollow, air conducting tube or cord 14 passing through an opening 15 in the top wall into the casing and containing the circuit wires connecting the electrical heating means of the instrument with the transformer located in the housing, the arrangement being such, as well understood in the art, that the instrument and its handle 11 may be conveniently detached from the clip 12 and moved to the point of operation, the cord 14 being extensible from the housing through means which will now be described.

The flexible instrument cord is arranged with a loop portion 16 in the housing to provide the surplus length necessary for the extension of the instrument. Such loop extends from the opening 15 in the top wall 7 downwardly toward the bottom of the casing and upwardly again adjacent the top wall where it is secured in any known or suitable way in a bracket 17 fixed on the housing and including terminal connections for the cord circuit wires, as hereafter described.

Means are provided, as usual in such equipment, for engaging the loop of the cord to impart a slight tension for retracting the cord when the instrument is returned to the housing, comprising, in the present instance, a pulley 18 rotatably mounted in suitable bearings at the upper end of a counterweight 19, which furnishes the retracting force. This counterweight device is fixed on a horizontal plate 20 formed with bushed openings 21 slidably engaging a pair of spaced guide rods 22 and 23 fixed in the housing and connected in the instrument circuit, as hereafter more fully described.

The switch means for controlling the instrument circuit comprises a pair of electrically con-

nected contacts arranged on the counterweight for slidably engaging the guide rods 22 and 23. Such contact means comprises, preferably, a strip of resilient conducting metal bent into the form of a U-shaped bail fixed at its central portion 24 between the counterweight and the plate 20, as by means of the screws 25 which hold such parts together. The upturned spring ends 26 and 27 of the bail are provided with receptacles 28 and 29, of conducting metal, each holding a brush element, 30 and 31, respectively, of suitable conducting material such as employed, for example, in the commutator brushes of electrical motors and generators. These brushes 30 and 31 are suitably shaped for sliding contact with the rods 22 and 23, respectively, for the purpose of electrically connecting the rods to complete the instrument circuit, as hereafter described.

Guide rods 22 and 23 are preferably received and secured at their opposite ends in openings in upper and lower plates, 32 and 33, of fiber, rubber, or other suitable insulating material, fixed by any suitable means on the walls of the housing, as by the bracket 34 fixed to plate 32 and to a lug 35 on the housing. Rods 22 and 23 are made of conducting metal, preferably with silvered surfaces, to afford good electrical contact with the brushes 30 and 31. The surface of rod 22 is thus formed throughout the range of contact by brush 30, but the lower end portion of rod 23 is preferably insulated, as by a coating 36, of rubber, plastic, or other known and suitable material, with the result that when the brush 31 is lowered into contact with such insulated lower end of the rod, the circuit is discontinued between the rods 22 and 23.

The electrical circuit comprises the usual transformer 37, for connection with a suitable source of power, the transformer having a low voltage coil 38, the ends of which are connected with terminals 39 and 40. Terminal 39 is connected by a conductor 41 with the upper end of rod 22. Terminal 40 is connected by a conductor 42, through bracket 17, with the stationary end of the flexible instrument cord through which a conductor passes to the instrument 10. The return line from the instrument passes through the cord, bracket 17 and conductor 43, to the conducting upper portion of rod 23.

It will now be seen that when the operating instrument 10 is idly disposed in its holding clip 12, counterweight 19 is at the bottom of its travel and its brush 31 contacts only the insulated portion 36 of rod 23, so that the circuit between the instrument and the transformer is discontinued. When instrument 10 is removed from its clip 12 and extended for use in performing an operation upon a patient, counterweight 19 is raised and its brush is brought into sliding contact with the conducting portion of rod 23, with the result that the circuit is completed between rods 22 and 23, by means of the brushes 30 and 31, thereby completing the circuit through the instrument and electrically energizing it so long as it remains extended for use.

The invention thus provides switch means for automatically closing the circuit when the instrument is removed from the stand for use and for automatically opening the circuit when the instrument is returned to the stand, to safeguard the instrument and circuit during periods of non-use. The switch means includes contacts which are engaged by a sliding or wiping type of contact, which is self-cleaning in action, so as to insure continuation of the good electrical contact

desired for the low voltage current commonly employed in such instruments. These contacts and the whole electrical circuit, except as contained in the instrument and the extended portion of its cord, are enclosed and protected within the housing of the stand. Such control means comprises a comparatively small number of parts having a simple type of construction, which insures trouble-free and efficient operation.

The invention thus accomplishes its objects, and while it has been herein disclosed in a preferred embodiment, it is to be understood that such disclosure is intended to be merely illustrative, and not by way of limitation, as it is contemplated that various changes in the construction and arrangement of the parts will readily occur to those skilled in the art within the scope of the appended claims.

I claim:

1. In an instrument stand, a housing, an instrument carried on said housing for movement toward and from the work, electric circuit conducting means in said housing and connected to said instrument, a flexible cord connecting said instrument and housing and through which said conducting means passes, said cord having a loop in said housing providing for extension of said instrument, a guide in said housing, a device engaging said cord loop and movable on said guide for retracting said cord on return of said instrument, and a switch operated by said device to open said circuit on return of said instrument to said housing.

2. In an instrument stand, a housing, an instrument carried on said housing for movement toward and from the work, a flexible cord connecting said instrument and housing and having a loop in said housing providing for extension of said instrument, a guide in said housing, a device engaging said cord loop and movable on said guide for retracting said cord on return of said instrument, electric circuit conducting means including said guide and passing through said cord to include said instrument, said guide having a non-conducting portion forming a discontinuance of said circuit, and contact means movable with said device and arranged in said circuit to engage said guide and bridge said non-conducting portion thereof to close said circuit when said instrument is extended from said housing.

3. In an instrument stand, a housing, an instrument carried on said housing for movement toward and from the work, a flexible cord connecting said instrument and housing and having a loop in said housing providing for extension of said instrument, a guide in said housing, a counterweight movable on said guide and comprising a pulley engaging said loop for retracting said cord on return of said instrument, electric circuit conducting means including said guide and passing through said cord to include said instrument, said guide having spaced conducting portions forming a gap in said circuit, and contact means on said device arranged in said circuit to engage said guide portions and bridge said gap to close said circuit when said instrument is extended from said housing.

4. In an instrument stand, a housing, an instrument carried on said housing for movement toward and from the work, a flexible cord connecting said instrument and housing and having a loop in said housing provided for extension of said instrument, a pair of spaced guide rods in said housing, a device movable on said guide rods and engaging said cord loop for retracting

said cord on return of said instrument, electric circuit conducting means including said guide rods and passing through said cord to include said instrument, one of said guide rods having a non-conducting portion forming a discontinuance of said circuit, and contact means movable with said device and arranged in said circuit to engage said guide rods and bridge said non-conducting portion thereof to close said circuit when said instrument is extended from said housing.

5. In an instrument stand, a housing, an instrument carried on said housing for movement toward and from the work, a flexible cord connecting said instrument and housing and having a loop in said housing providing for extension of said instrument, a pair of spaced guide rods in said housing, a counterweight movable on said guide rods and having a pulley engaging said cord loop for retracting said cord on return of said instrument, electric circuit conducting means including said guide rods and passing through said cord to include said instrument, one of said guide rods having a non-conducting portion forming a discontinuance of said circuit, and contact means movable with said counterweight

and arranged in said circuit to engage said guide rods and bridge said non-conducting portion thereof to close said circuit when said instrument is extended from said housing.

5 6. In an instrument stand, a housing, an instrument carried on said housing for movement toward and from the work, a flexible cord connecting said instrument and housing and having a loop in said housing providing for extension of said instrument, a pair of spaced contact rods of conducting material mounted in and insulated from said housing, a counterweight movable on said guide rods and having a pulley engaging said cord loop for retracting said cord on return of said instrument, electric circuit conducting means including said contact rods and passing through said cord to include said instrument, one of said guide rods having an insulating portion adjacent the lower end thereof, and a pair of electrically connected, spring actuated brushes on said counterweight engaging said contact rods, respectively, one arranged to engage said insulating portion and open said circuit when said instrument is returned to said housing.

LOUIS JOHN RUF.