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DIAGNOSTIC INSTRUMENT

Filed Jan. 16, 1962

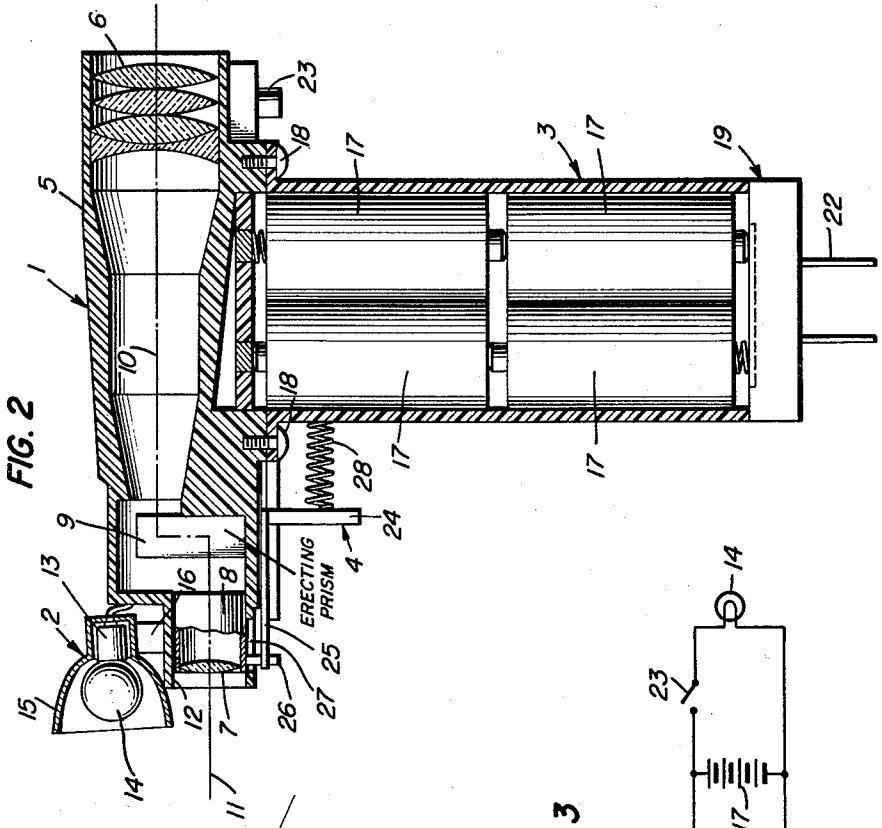


FIG. 2

FIG. 3

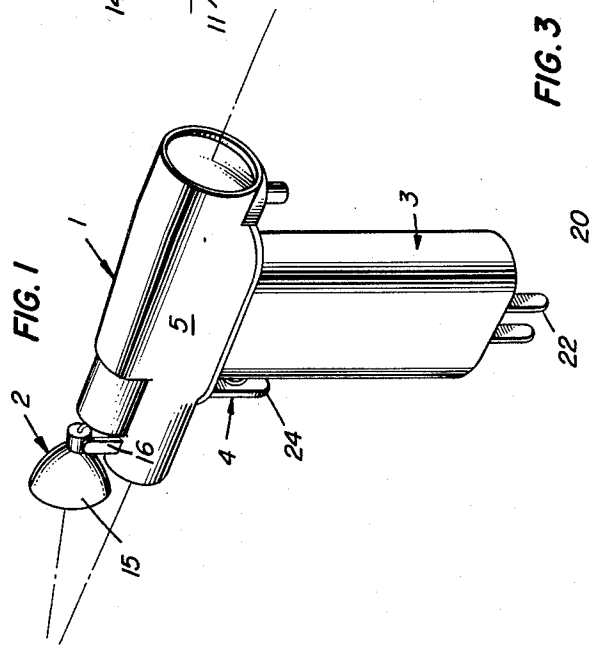


FIG. 1

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DIAGNOSTIC INSTRUMENT

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4 Claims. (Cl. 240—6.4)

This invention relates to diagnostic instruments, and more particularly to an instrument for examining the cervix.

The instrument of the present invention comprises, essentially, a focusing, erecting telescope having a trigger-type focusing arrangement, and a miniature spotlight powered by rechargeable dry cells, the charger for the cells being contained in the handle of the instrument. While rechargeable dry cells have been used in the past for flashlights, solar radios, electric shavers, and the like, as far as applicants are aware, they have not been incorporated in medical examining devices of the character of the present application. Previous medical examining instruments have employed a plurality of small 110-volt lights connected to a suitable 110-volt source by means of a cable or electric cord, which arrangement results in considerable inconvenience to the examining physician. While some prior instruments of the above noted type employ erecting telescopes, they are too large to be supported by and manipulated with one hand. Furthermore, such instruments are cumbersome and relatively expensive.

An object of the invention is to provide an improved, comparatively small, diagnostic instrument, adapted to be supported by and manipulated with one hand, said instrument having a focusing, erecting telescope and a miniature spotlight.

Another object of our invention is to provide an improved, compact, and relatively inexpensive diagnostic instrument having a focusing, erecting telescope and a miniature spotlight, wherein the spotlight is powered by rechargeable dry cells.

A further object of our invention is to provide an improved medical examining instrument having a focusing, erecting telescope and a miniature spotlight powered by rechargeable dry cells, wherein the charger for the cells is contained in the handle of the instrument.

A still further object of our invention is to provide an improved medical examining instrument having a focusing, erecting telescope, a miniature spotlight, and a pistol grip, trigger-type focusing device constructed and arranged, whereby the examining physician can manipulate the instrument with one hand to selectively actuate the spotlight and to control the exact focal length of the telescope.

With these and other objects in view, which may be incident to our improvements, the invention consists in the parts and combinations to be hereinafter set forth and claimed, with the understanding that the several necessary elements comprising our invention, may be varied in construction, proportions and arrangements, without departing from the spirit and scope of the appended claims.

In order to make our invention more clearly understood, we have shown in the accompanying drawings means for carrying the same into practical effect, without limiting the improvements in their useful application to the particular constructions which, for the purpose of explanation, have been made the subject of illustration.

In the drawings:

FIGURE 1 is a perspective view of our improved medical examining instrument;

FIG. 2 is a vertical sectional view, of the instrument shown in FIG. 1; and

FIG. 3 is a schematic diagram of the electrical circuit employed in the instrument shown in FIGS. 1 and 2.

Referring to the drawings, and more particularly to FIG. 1, the improved diagnostic instrument comprises a focusing, erecting telescope 1, having a miniature spotlight 2 mounted on one end thereof, said instrument being provided with a handle 3 and a trigger device 4 for focusing the telescope, as will be described more fully hereinafter.

The focusing, erecting telescope 1 comprises a substantially cylindrical-shaped housing 5 (FIG. 2), having a conventional magnifying eye-piece 6 mounted therein, and an objective lens 7 carried by a tubular member 8 slidably mounted in the forward end portion of the housing. An erecting prism 9 is mounted within the housing intermediate the eye-piece 6 and the objective lens 7 for displacing an image upwardly so that it is concentric with the longitudinal axis 10 of the eye-piece 6, and parallel to the axis 11 of the objective lens 7, which arrangement is conventional in binoculars, and facilitates mounting of the spotlight 2 on an offset portion 12 of the housing.

The spotlight comprises a socket 13 having an incandescent bulb 14 therein, and a suitable reflector or shade 15 pivotally mounted on a bracket 16 secured to the offset portion 13 of the housing. The spotlight is powered by means of a plurality of rechargeable dry cells 17 carried in the handle 3, the handle being secured to the telescope 1 by means of machine screws 18 or other suitable fastening means. The lower end of the handle carries a battery charging device 19, comprising a resistance 20, and a full-wave rectifier 21 (FIG. 3) for recharging the cells 17, said charging device being provided with a pair of terminals 22 adapted for insertion into a suitable outlet connected to a 110-volt A.C. source.

Among the important features of the present invention is the novel arrangement by which the examining physician or surgeon can manipulate the instrument with one hand, and simultaneously focus the telescope and energize the spotlight, as desired. Illumination of the spotlight is controlled by a switch 23 carried by the housing 5 in the vicinity of the eye-piece 6, said switch being adapted to be thumb-actuated. In order to focus the telescope 1, the objective lens 7, carried in the tubular member 8, is movable with respect to the erecting prism 9 and eye-piece 6 by means of the trigger device 4, having a finger engaging member 24 secured to one end of an arm 25 slidably mounted in the telescope housing 5, the opposite end of said arm being attached to a pin 26 carried by the tubular member 8, and extending through a slot 27 formed in the housing. A spring 28 is mounted between the finger-engaging member 24 and handle 3 for biasing the trigger and the associated objective lens 7 to their normal outward positions, as shown in FIG. 2.

In use, the examining physician or surgeon grasps the handle 3 of the instrument with one hand in such a manner that his thumb is in a position to actuate the switch 23, and the forefinger rests, with slight pressure, on the fingerpiece 24 of the trigger device. While held in this manner, the instrument may be manipulated to bring it to examining position, and thereafterwards the switch 23 and fingerpiece 24 may be selectively or simultaneously actuated to energize the spotlight and focus the telescope, respectively, as desired. In order to recharge the dry cells 17 it is only necessary to insert the plug 22 into a socket or other outlet of a 110-volt, A.C. source.

Although a monocular telescope has been described, it will be appreciated that a binocular telescope can be employed. Additionally, the invention also contemplates the use of rechargeable high capacity dry cells so that an ultra-violet light source can be used instead of the incandescent bulb.

While we have shown and described the preferred

embodiment of our invention, we wish it to be understood that we do not confine ourselves to the precise details of construction herein set forth by way of illustration, as it is apparent that many changes and variations may be made therein, by those skilled in the art, without departing from the spirit of the invention or exceeding the scope of the appended claims.

We claim:

1. A medical examining instrument of the character described comprising, a telescope, said telescope including a housing having an offset portion at one end thereof, a magnifying eye-piece mounted in the opposite end of the housing, a tubular member slidably mounted within the housing in the vicinity of the offset portion, an objective lens mounted within the tubular member, an erecting prism mounted within the housing between the objective lens and the eye-piece, a handle member secured to the telescope housing in proximity to the magnifying eye-piece for hand-holding the instrument, means operatively connected between the handle and the tubular member for moving the objective lens relative to the magnifying eye-piece to thereby focus the telescope, a spotlight pivotally mounted on the offset portion of the housing in proximity to the objective lens whereby the beam of light from the spotlight passes directly to the area being examined without diminishing the illumination intensity, the source of power for illuminating the spotlight comprising a rechargeable dry cell mounted within the handle, means carried by the handle for recharging the dry cell and switch means connected between the spotlight and the dry cell for controlling illumination of the spotlight.

2. A medical examining instrument in accordance with claim 1, wherein the means for focusing the telescope comprises a pistol grip, trigger-type device, and the switch means for controlling illumination of the spotlight is positioned on the telescope in proximity to the handle member, whereby the examining physician can hold the instrument and manipulate the same, energize the spotlight, and control the focal length of the telescope with one hand, as desired.

3. A medical examining instrument in accordance with claim 1, wherein the means for recharging the dry cell comprises a full-wave rectifier, including input and output terminals, a resistance electrically connected to one of the input terminals of the rectifier, the output terminals thereof being electrically connected to the cell, and means for connecting the resistance and the remaining input terminal of the rectifier to a 110-volt A.C. source.

4. A medical examining instrument of the character described, comprising a telescope, having a magnifying eyepiece, a movable objective lens and an erecting prism positioned between the objective lens and the eye-piece, a handle secured to the telescope for hand-holding the instrument, spring-biased trigger means operatively connected between the handle and the objective lens for focusing the telescope, a spotlight mounted on the telescope in proximity to the objective lens, whereby the beam of light from the spotlight passes directly to the area being examined without diminishing the illumination intensity, a plurality of rechargeable dry cells mounted within the handle for illuminating the spotlight, and switch means on the telescope in proximity to the telescope handle for controlling illumination of the spotlight, whereby the examining physician can hold the instrument and manipulate the same with one hand, and simultaneously actuate the switch means and the trigger means to illuminate the spotlight and focus the telescope, as desired.

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