Feb. 23, 1932. F. H. OWENS 1,846,569

APPARATUS FOR REPRODUCING PHOTOGRAPHIC SOUND RECORDS

Filed June 18, 1929 2 Sheets-Sheet 1

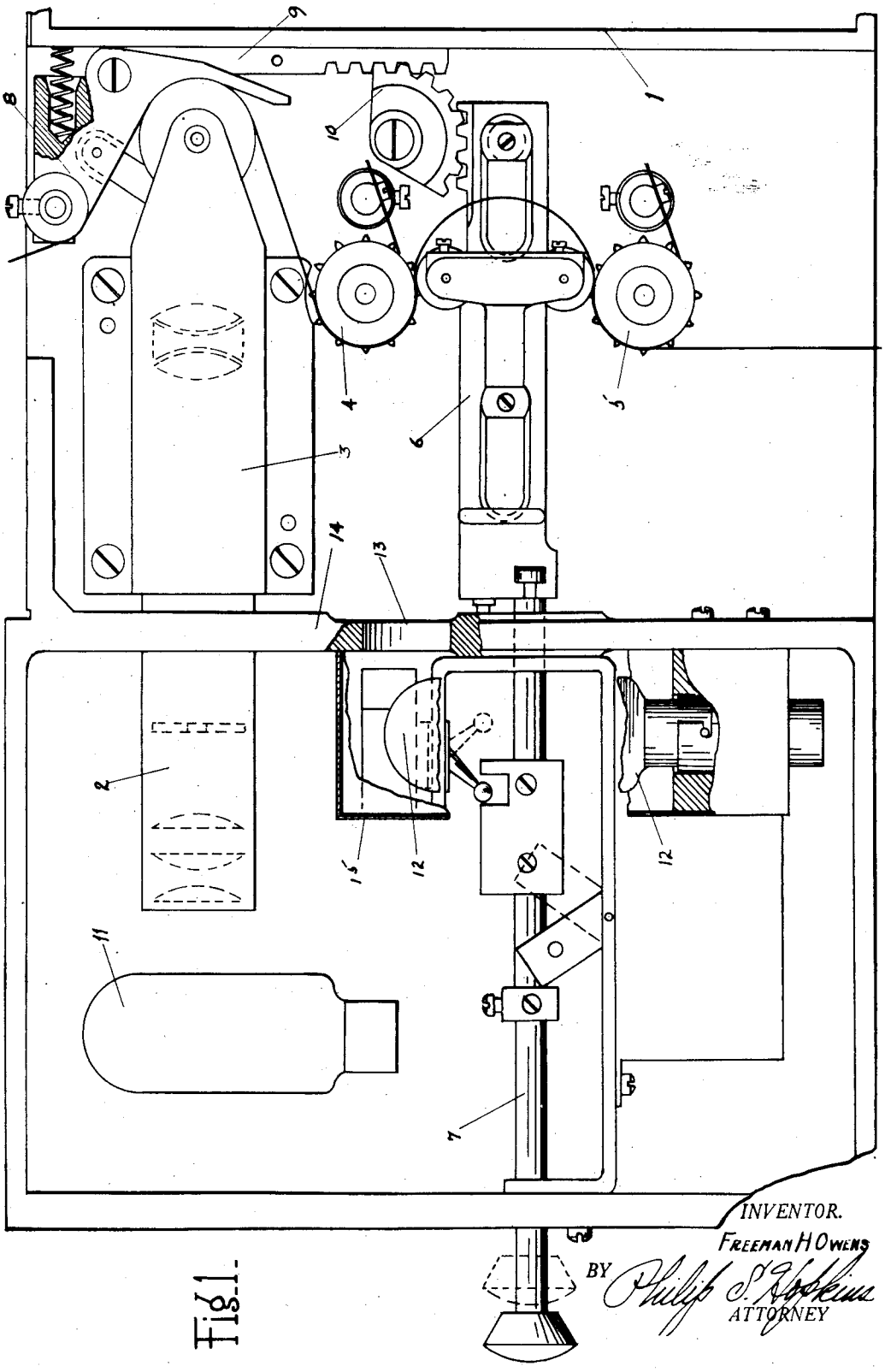


Fig. 1.

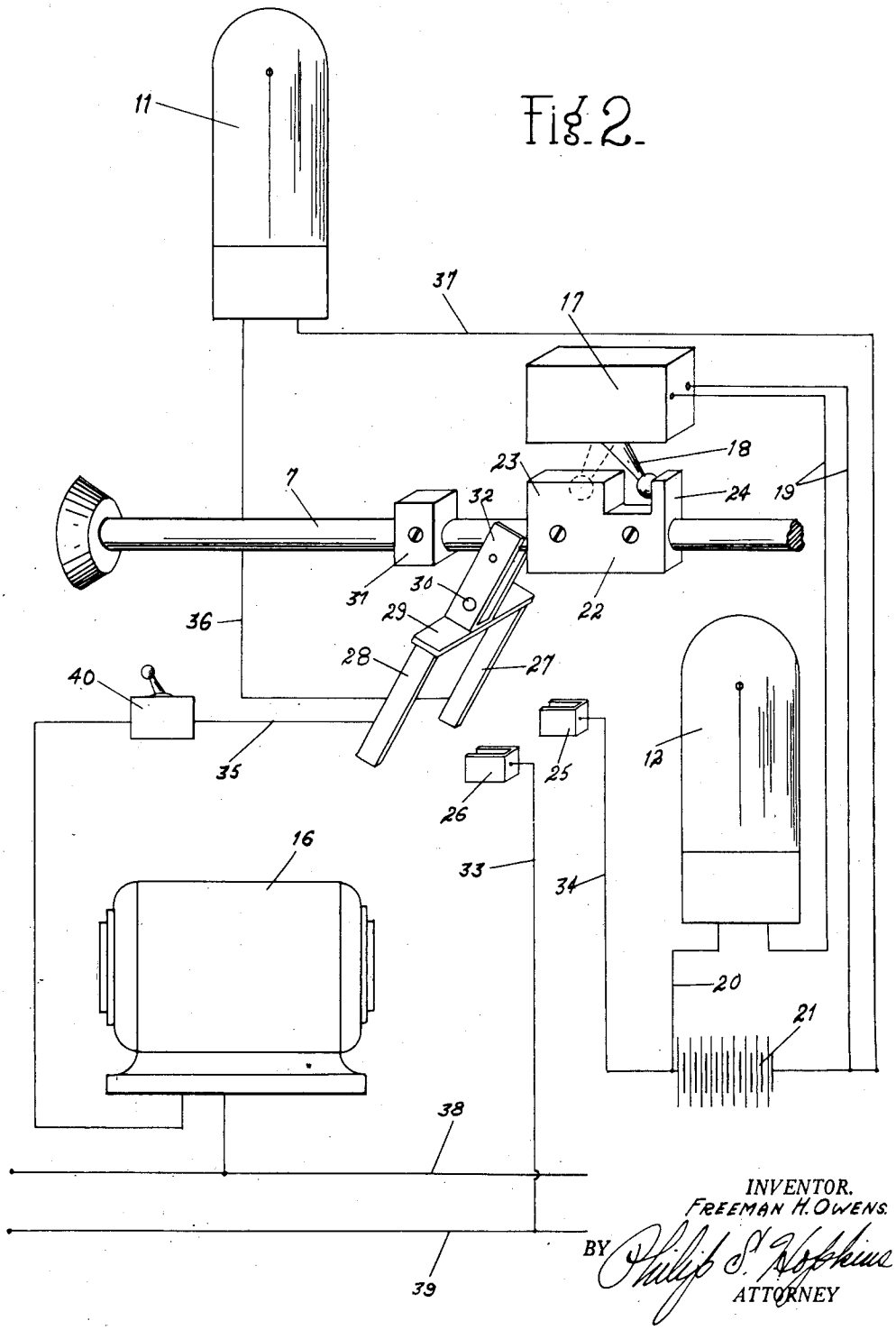
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Fig. 2.



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UNITED STATES PATENT OFFICE

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APPARATUS FOR REPRODUCING PHOTOGRAPHIC SOUND RECORDS

Application filed June 18, 1929. Serial No. 371,810.

This invention relates to an apparatus for recording and reproducing photographic sound records, the principal object of the invention being to provide, in combination with a film-threading and path-defining device, means automatically operated during the actuation of the path-defining device for opening and closing the light and motor circuits at the desired times.

Another and important object lies in the provision of means operable in connection with the film threading means to prevent the operation of the apparatus until and unless the film is properly threaded and the apparatus ready for operation. More specifically, my invention relates to an automatic switch control for a sound reproducing apparatus whereby when such apparatus is set in the threading position, the motor and reproducing light will be automatically turned off, thus preventing accidental or inadvertent starting thereof. Likewise, there is provided means for automatically closing the circuit to the reproducing lamp and partially closing the circuit to the motor when the threading has been completed and the parts returned to operating position.

A further object of the invention is to provide an automatic switch control for the circuit of a service lamp which operates to light said lamp when the parts are moved to operating position.

Other objects and advantages of the invention will appear as the description proceeds.

In the drawings accompanying this specification,

Figure 1 is a partly sectional side elevation of an apparatus embodying the features of the present invention; and

Figure 2 is a diagrammatic view illustrating the light and motor circuits and the means for opening and closing said circuits.

The same characters of reference designate the same parts in both figures of the drawings.

Although I have shown and will describe herein the application of my invention to a sound reproducing apparatus, it will be understood that the same is equally applicable to a photographic sound recording device.

The apparatus illustrated herein embodies a housing 1, in which housing are disposed a lens assembly 2 and a roller film support housing 3 similar to those described in detail in my co-pending application Serial No. 360,875, filed May 6, 1929. Within the housing 1 is also disposed the path-defining and threading mechanism described in detail in my co-pending application Serial No. 371,808, filed June 18, 1929, and comprising the sprockets 4 and 5, slide 6, operating rod 7, tensioning lever 8, lever-operating slide 9 and segmental gear 10 for transmitting motion to said latter slide, all operating in the manner described in said application.

The present invention has to do particularly with the provision of means whereby, when the loop defining mechanism is actuated the circuits through the motor and the reproducing and service or threading lamps are automatically controlled. The reproducing lamp 11 is disposed so that its rays will pass through the lens assembly in the usual manner, while the service or threading lamp 12 is placed so that its rays will pass through an opening 13 in a partition 14 in the housing and thus serve to illuminate the path-defining devices, a shield 15 being provided to protect the eyes of the operator from the direct rays from said lamp. The circuits to the lamps and to the motor 16 are illustrated diagrammatically in Figure 2, wherein the operating rod 7 is shown in its innermost or path-defining position, in which position the circuit to the threading lamp 12 must be closed while the circuits through the motor and reproducing lamp must be open. The circuit through the threading or service lamp 12 includes a pair of terminals disposed within a box 17 mounted in the housing 1 in proximity to the operating rod 7, from which box projects a pivot switch lever 18 adapted when moved toward the right in Figure 2 to bridge said terminals and close the circuit to the lamp 12 through conductors 19 and 20 and battery or other source of current 21. For operating the switch lever 18, a trip block 22 is secured to the rod 7, said block

being cut out at one of its side edges to form a pair of lugs 23 and 24, between which the free end of the switch lever 18 projects. It will be obvious that when the rod 7 is pulled out or toward the left in Figure 2 the lug 24 will rock the switch lever toward the left and thus open the circuit through lamp 12.

The motor and reproducing lamp circuits include a pair of terminals 25 and 26, which are adapted to be closed by blades 27 and 28 carried by a switch lever 29, which lever may be pivoted through an opening 30. Secured on the operating rod 7 in spaced relation to the block 22 is a second trip block 31, and the switch lever 29 is provided with a bifurcated operating handle 32 which straddles the rod 7 between the blocks 22 and 31, whereby on movement of the operating rod 7 toward the left in Figure 2, the block 22 will swing the handle 32 over toward the left, thus carrying the switch blades 27 and 28 into circuit closing contact with the terminals 25 and 26, thereby closing the motor and reproducing circuits through lead wires 33, 34, 35, 36 and 37, and main conductors 38 and 39 to the source of energy. Inasmuch, however, as it is not desirable that the motor shall start to operate at the very instant the lamp 11 is lighted, a manually operable switch 40 is included in the motor circuit, whereby the said circuit may be maintained open during the operation of rod 7 to close the reproducing lamp circuit.

It is believed that the operation of the device will be clear from the foregoing. When the film is to be threaded, the operating rod 7 is pushed inward, thereby actuating the path-defining slide 6 and associated parts as described in my co-pending application Serial No. 371,808, filed June 18, 1929, hereinbefore referred to. The same inward movement of rod 7 causes the lug 23 to engage switch lever 18 and move it toward the right in Figure 2, thus closing the circuit through threading lamp 12.

At the same time the block 31 engages the handle 32 of switch lever 29 and throws it over toward the right, thus withdrawing switch blades 27 and 28 from terminals 25 and 26 and thereby opening the motor and reproducing lamp circuits. The manually operated switch 40 is then thrown so as to maintain the motor circuit open when switch lever 29 is operated into circuit-closing position by the return or "pull" action of the rod 7. Of course, it will be obvious that if desired a spring may be provided in connection with both of the switch levers 18 and 32 for snapping them over into circuit-closing and opening positions.

I claim:

1. In a photographic sound reproducing apparatus, the combination of means for supporting a traveling sound record, movable means for defining the path of said record through the apparatus, a reproducing lamp, a threading lamp for illuminating the defined path, means for operating said path-defining means, and means actuated by said operating means to open the circuit to the reproducing lamp and close the circuit to the threading lamp during movement of said path defining means to operative position and to close the reproducing lamp circuit and open the threading lamp circuit during the return movement of the path-defining means to inoperative position.

2. In a photographic sound reproducing apparatus, the combination of means for supporting a traveling sound record, movable means for defining the path of said record through the apparatus, a reproducing lamp, a threading lamp for illuminating the defined path, a driving motor, a reciprocable rod for operating said path-defining means, switches disposed in the circuits of the threading and reproducing lamps and the motor, and trip members carried by said reciprocable rod and adapted to actuate the threading lamp switch into circuit-closing position and the reproducing lamp and motor switch into open position during movement of the path-defining means to operative position and to operate the reproducing lamp and motor switch into closed position and the threading lamp switch into open position during movement of the path-defining means to inoperative position.

In testimony whereof, I affix my signature.

FREEMAN H. OWENS.