March 28, 1933. J. W. FERGUSON 1,903,174

FILM DEVELOPER AND DRIER

Filed July 25, 1931

Fig. 1.

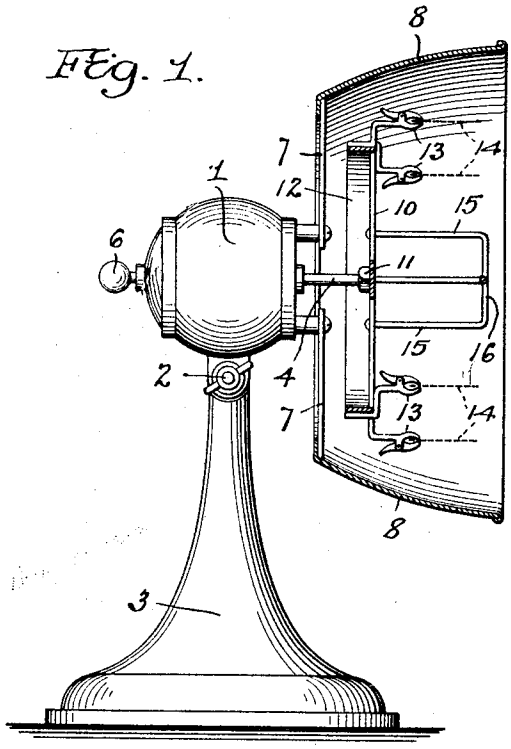


Fig. 2.

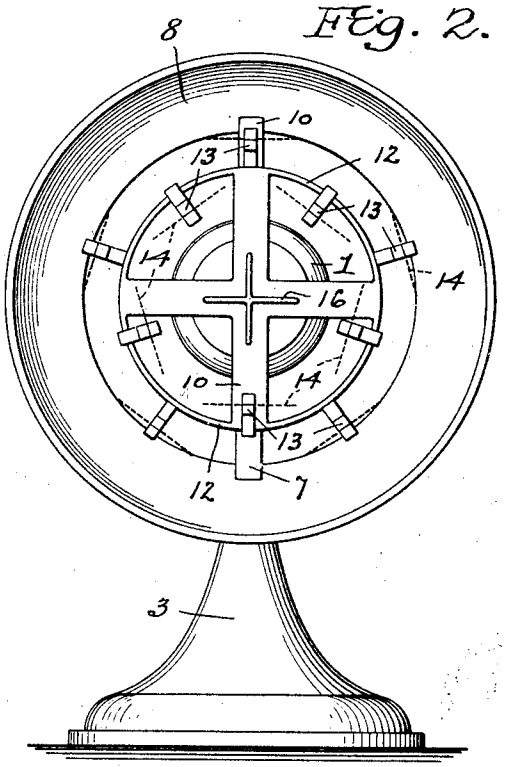


Fig. 3.

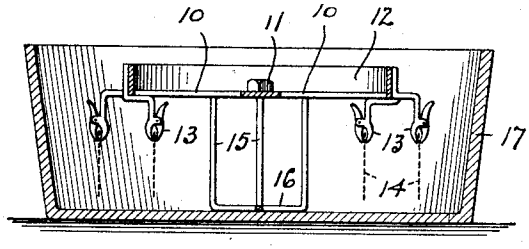
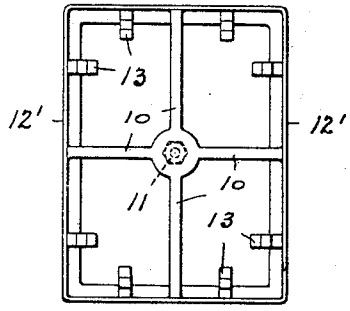


Fig. 4.



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UNITED STATES PATENT OFFICE

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FILM DEVELOPER AND DRIER

Application filed July 25, 1931. Serial No. 553,185.

This invention relates to devices for developing and drying photographic films. More particularly it is directed to providing means for handling simultaneously a plurality of film units, both during the developing and drying operations.

The object of the invention is to provide an improved device of the character indicated, involving improved and simplified structure and certain novel arrangements and combinations of parts by means of which the time required for rinsing and drying is materially reduced and a great degree of efficiency is attained.

The invention consists in the novel construction and arrangement of parts hereinafter more particularly described and claimed.

One sheet of drawings accompanies this specification as part thereof in which like reference characters indicate like parts throughout.

Figure 1 is an elevation showing parts of the device in cross section.

Figure 2 is a front elevation corresponding to Figure 1.

Figure 3 shows the film holding device detached from the motor and in a developing pan shown in cross section.

Figure 4 is a plan view of a modified form of holder.

Referring to the drawing 1 indicates a motor housing pivotally mounted by a clamping device 2 to a base 3. The shaft 4 of the motor is provided on one end with threads (not shown) and on the other end with a hand grasp 6.

Radial arms 7 secured to the motor housing 1 support an annular shield 8.

The film holding device proper comprises cross members 10 to which are secured at their point of intersection a nut 11 having threads adapted to comate with those on shaft 4. The arms 10 support a frame member 12 to which are secured a plurality of film clamping clips 13, which as here illustrated, are of the ordinary hinge jaw spring type, well-known in the art. These spring clips 13 are preferably arranged in spaced and staggered relation.

On the outer face of the cross arms 10 is secured a supporting device 15, here illustrated comprising cross wires bent into substantially U shape and having their legs of a length slightly greater than the combined length of the spring clips 13 and films 4 when held in said clips. The connecting parts 16 of the U members 15 may be crossed and united at their point of intersection and provide a supporting device by means of which the frame is positioned in a developing pan 17 at such a height that the film depending from clips 13 will just clear the bottom of the bath.

In Figure 4 a modified form of the holder is illustrated in which the frame is shown of a rectangular shape and as including a side wall 12′ with the clips positioned within the wall. With this structure it will be apparent that the side wall 12′ of the supporting member will operate as a shield and perform substantially the same function as the shield 8 supported by the motor housing as illustrated in Figure 1.

Various modifications of the precise shape and structure of the holder will readily suggest themselves to those skilled in the art.

The operation of the improved device will be apparent from the structure but it may be pointed out that by reason of the frame with its supporting structure the films are held in a compact manner and can be readily developed in a very much smaller bath than ordinarily required.

It is further pointed out that when the holder is attached to the motor shaft centrifugal force will operate upon the water and dilute chemicals on the face of the films and direct same off very rapidly and efficiently so that in actual practice the rinsing operation can be materially reduced in point of time. Experience indicates that the normal twenty minute rinsing period can be reduced to substantially three minutes when, after rinsing, the films are dried on a motor in the manner indicated.

It is further pointed out that the shield 8 or 8′ operates not only to protect from the spattering of the water and chemicals but also protects the films from particles of dust

and dirt in the air so that films dried with this device are particularly free from dust particles.

Having thus fully described my invention I claim:

1. A developer and drier for photographic films comprising a frame, a clip on the frame adapted to grasp a film, a supporting member associated with the frame of a height slightly greater than the combined length of the film and clip whereby the frame may be supported in a bath with the film depending almost to the bottom of the bath, and means for removably associating the frame with a rotary shaft.

2. The structure of claim 1 with a plurality of clips arranged in spaced relation around the periphery of the frame.

3. The structure of claim 1 in combination with a motor having a shaft adapted to support the frame.

4. The structure of claim 1 in combination with a motor having a shaft with means on one end adapted to engage the frame, means on the other end of the shaft to afford a hand grasp and with the frame support arranged to afford a hand grasp on the frame.

5. The structure of claim 1 in combination with a motor and an annular shield positioned around the frame.

6. The structure of claim 1 in which the supporting member consists of a continuous side wall and the clips are arranged within said wall.

In testimony whereof I affix my signature.

JAMES WALTER FERGUSON.