April 15, 1930. E. WASYLENKO 1,755,041

FILM DEVELOPING AND PRINTING DEVICE

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Fig. 1.

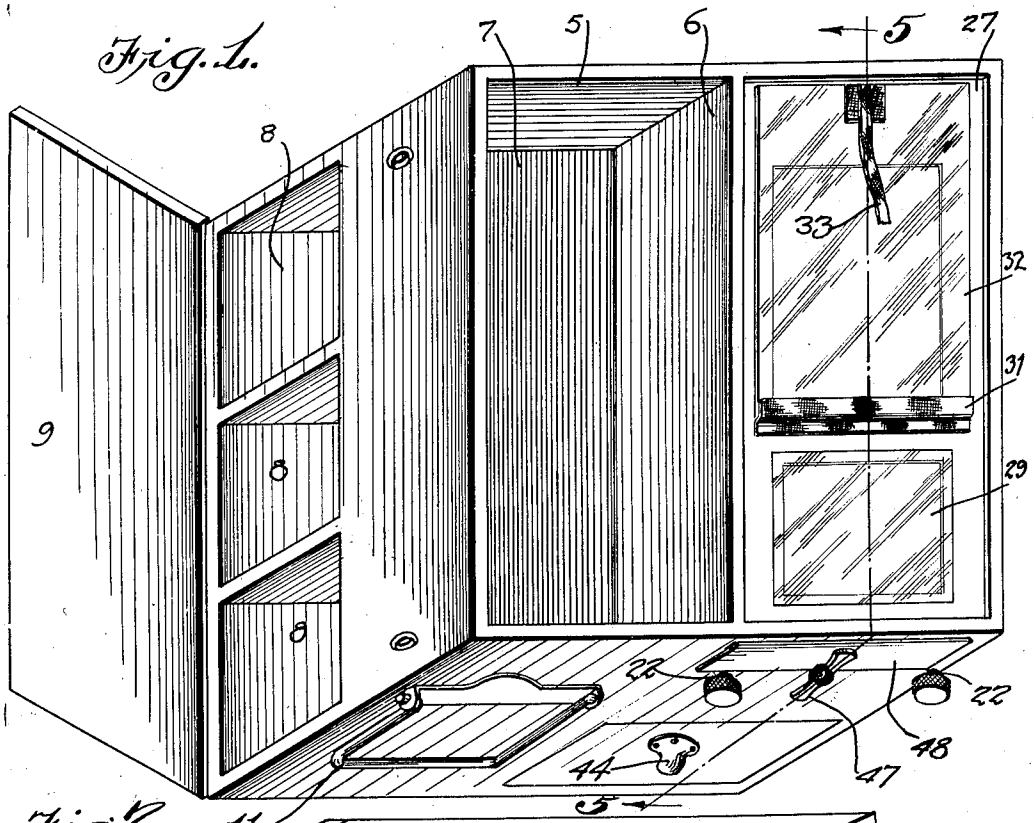

Fig. 2.

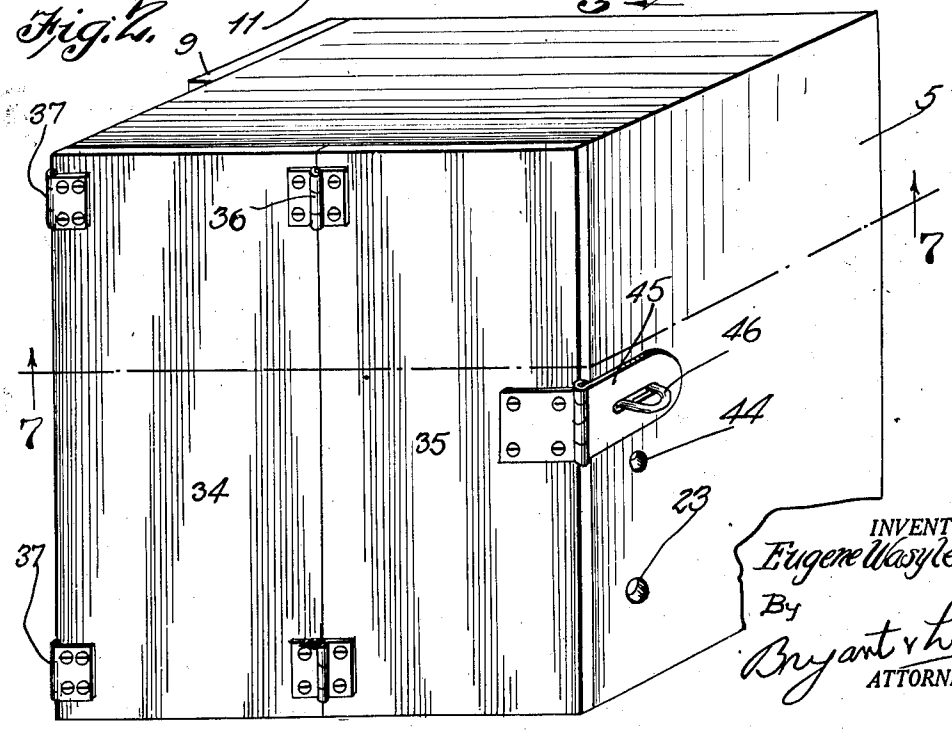

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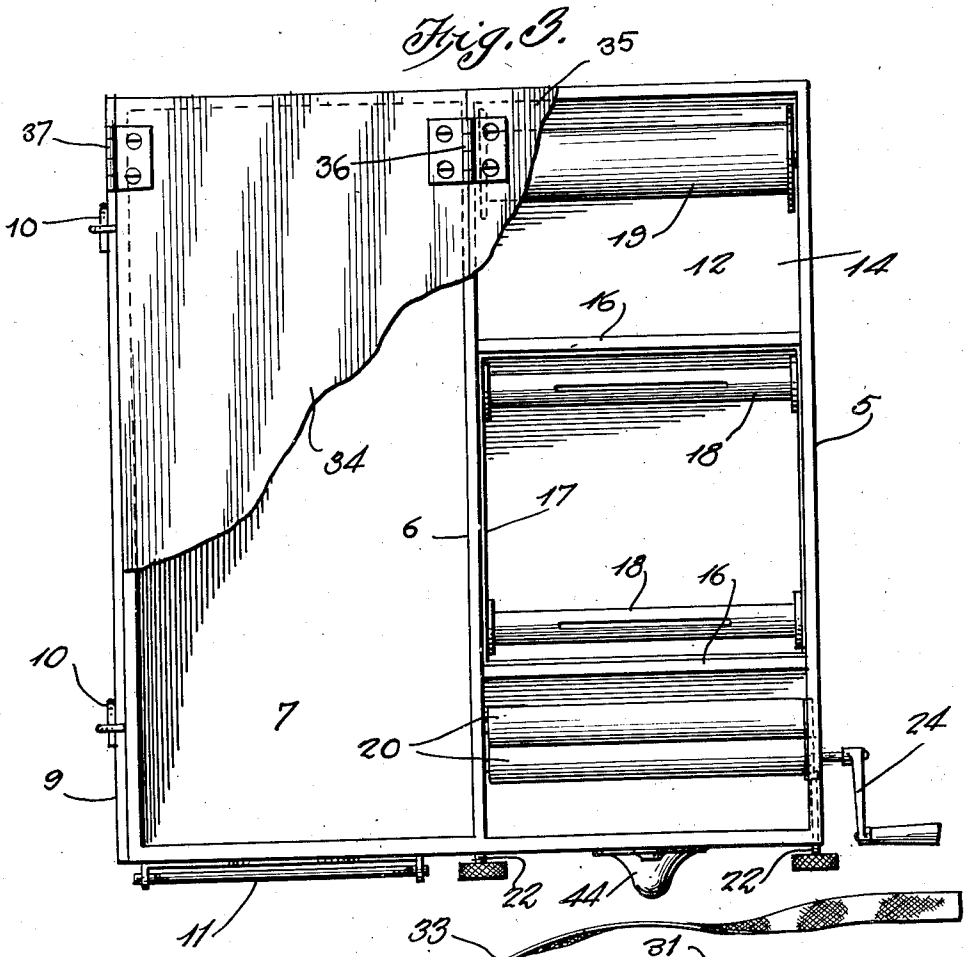
Fig. 3.



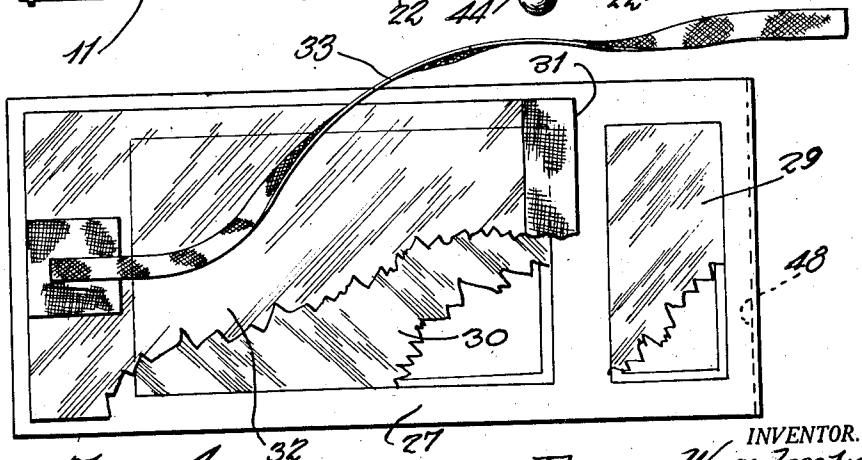


Fig. 4

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FILM DEVELOPING AND PRINTING DEVICE

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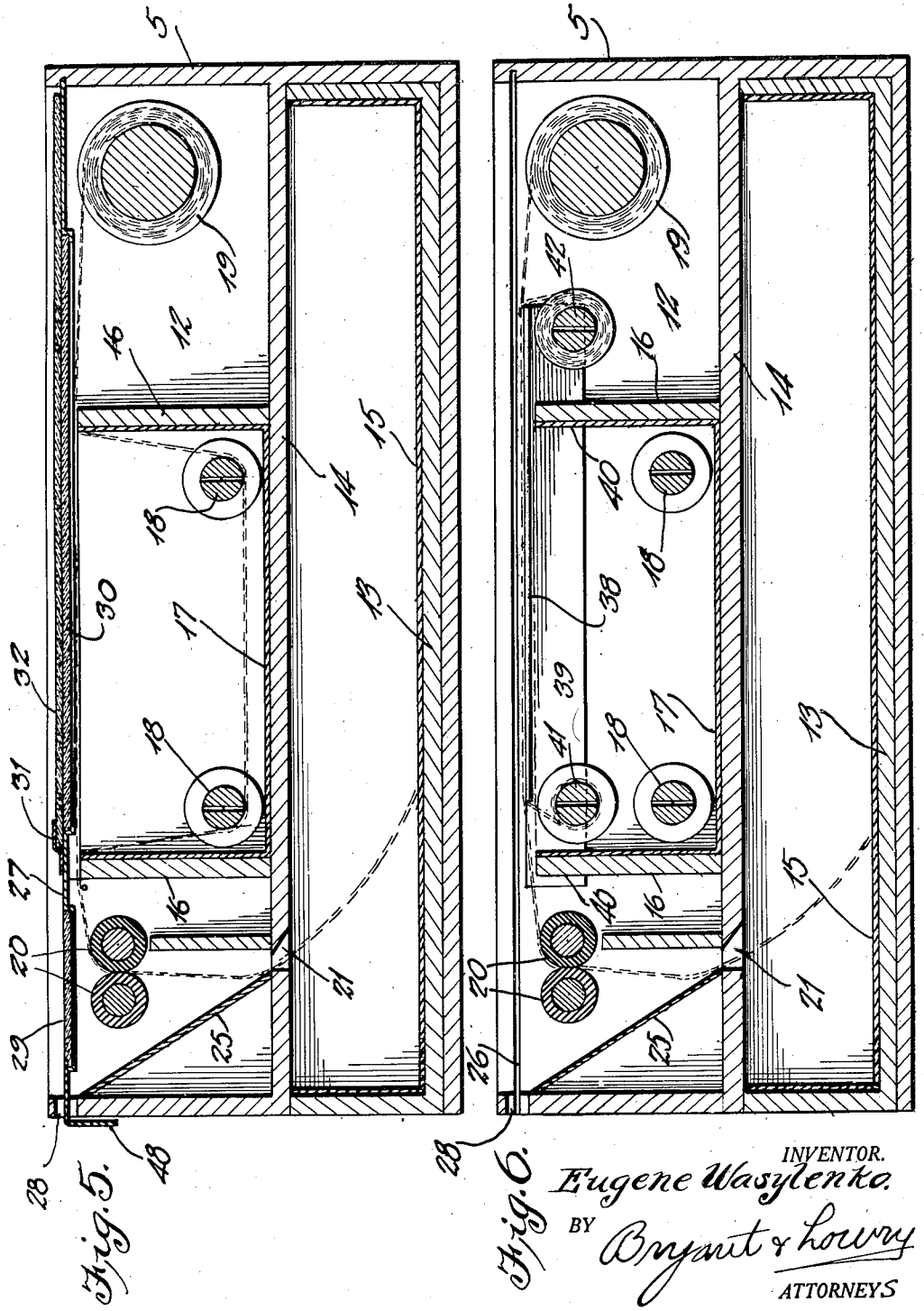

Fig. 5.

Fig. 6.

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FILM DEVELOPING AND PRINTING DEVICE

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Fig. 7.

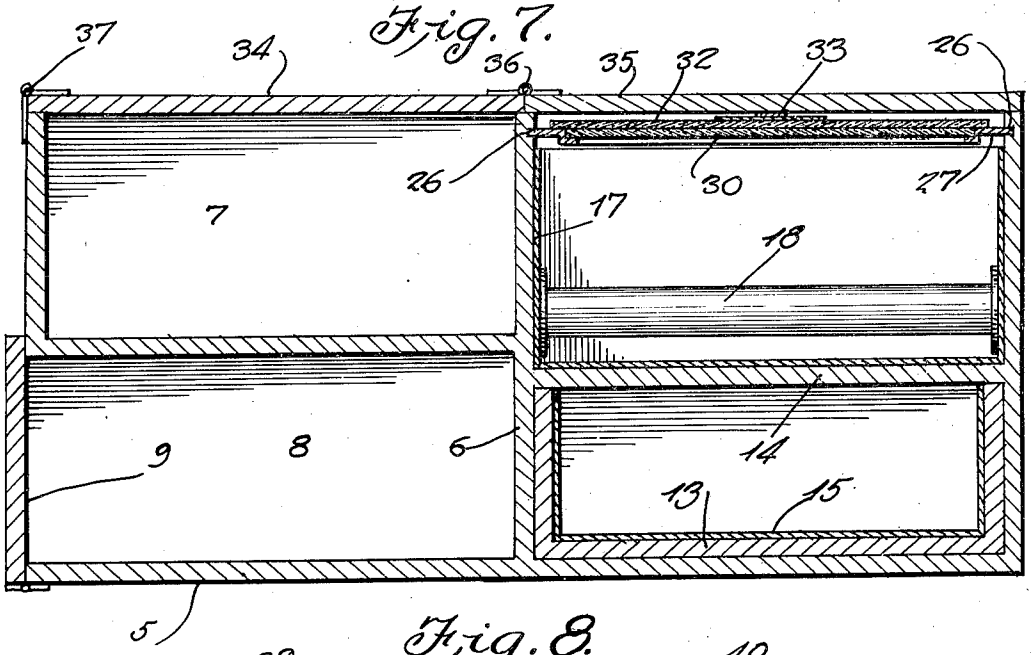


Fig. 8.

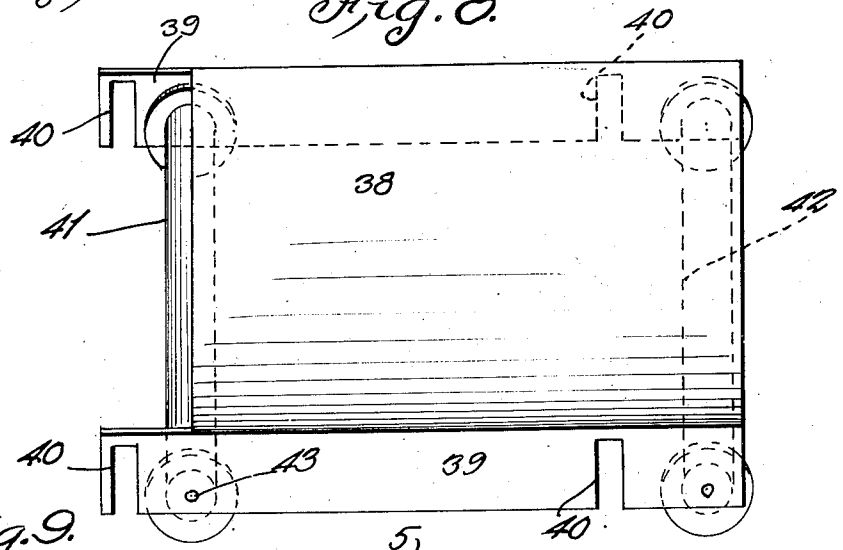
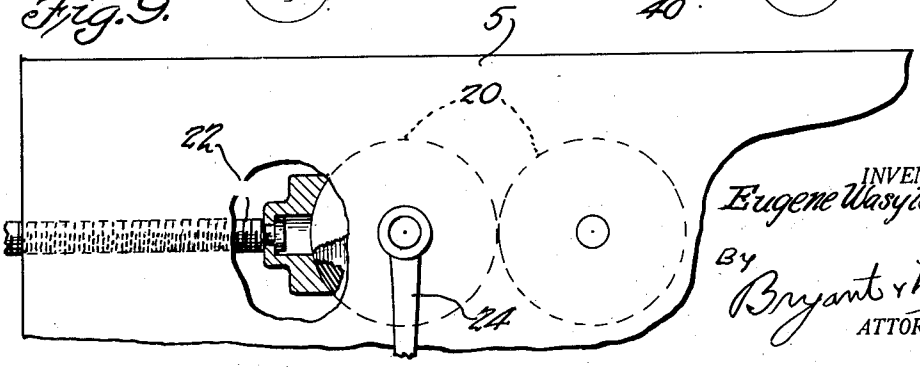


Fig. 9.



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Patented Apr. 15, 1930 1,755,041

UNITED STATES PATENT OFFICE

EUGENE WASYLENKO, OF MOUNT CARMEL, PENNSYLVANIA

FILM DEVELOPING AND PRINTING DEVICE

Application filed November 4, 1927. Serial No. 231,075.

The present invention relates to improvements in photographic film developing and printing devices, and has more particular reference to an improved portable device of this kind by means of which photographic roll films may be readily and conveniently developed and printed without the aid of a dark room.

The primary object of the present invention is to provide a device of the above kind which is extremely simple and durable in construction as well as efficient and reliable in use.

A more particular object is to provide simple and practical devices for interchangeably conditioning the device either for developing or printing operations, at will.

Still another object is to provide a simple and improved relation of parts whereby most convenient feeding of the film through the developing solution and into the fixing solution may be had, and whereby ready removal of the developed film may be had after its introduction into the fixing bath.

Other objects will become apparent as the nature of the invention is better understood, and the same consists in the novel form, combination and arrangement of parts hereinafter more fully described, shown in the accompanying drawings and claimed.

In the drawings, wherein like reference characters indicate corresponding parts throughout the several views,

Figure 1 is a perspective view looking at the top of a film developing and printing device constructed in accordance with the present invention, the cover being removed and the door for the accessories holding compartment being open;

Figure 2 is a perspective view, partly broken away, of the device shown in Figure 1 with the cover and door closed;

Figure 3 is a top plan view of the device with the cover partly broken away and the printing platen and slide removed;

Figure 4 is a plan view, partly broken away, of the removable slide;

Figure 5 is a longitudinal vertical section on line 5—5 of Figure 1;

Figure 6 is a view similar to Figure 5 with the slide removed and the printing platen in place;

Figure 7 is a transverse section on line 7—7 of Figure 2;

Figure 8 is an enlarged perspective view of the printing platen; and

Figure 9 is an enlarged fragmentary detail view, partly in elevation and partly in section, illustrating the means for adjusting the feeding pressure between the film feeding roll.

Referring more in detail to the drawings, the present invention embodies a rectangular box or casing 5 divided substantially centrally by a vertical longitudinal partition 6 into two sections, one having an upper open top compartment 7 for the reception and storage of a camera when not in use, and a plurality of lower compartments 8 adapted for reception of various articles and accessories employed with the device and the camera and adapted to be closed by a hinged or swinging door 9, the other section containing the developing and printing apparatus as will presently become apparent. The door 9 may be releasably held closed by suitable means such as the hand fastener 10, while a suitable handle 11 may be provided upon the front wall of the box or casing for convenience in carrying the device in the hand.

The printing and developing section of the casing is divided into an upper compartment 12 and a lower compartment containing a slidable drawer or tray 12 which is removable through the front of the box, by means of a horizontal partition 14. The drawer or tray 13 is preferably suitably lined with metal or the like as at 15 so as to constitute a water-tight tank for reception of a suitable fixing solution into which the film is adapted to be fed after passing through the developing bath, in a manner which will presently become apparent.

Snugly fitting in the intermediate portion of the upper compartment 12 between a pair of vertical transverse partitions 16 is a metal tray or tank 17 adapted to receive the developing solution and having film guiding rollers 18 journaled therein, the guide rollers 18 are journaled transversely at opposite ends

of the tank 17 adjacent the bottom of the latter so that when a film is passed thereunder from one to the other, such film will be immersed in the developing bath. Suitable means, as is generally well known in the art, is provided for removably journaling a film holding roll 19 transversely of and within one end portion of the compartment 12, while a pair of transverse horizontally aligned film meeting friction rollers 20 are suitably journaled within the other end of the compartment 12 directly above a transverse slot 21 in the partition 14. The forward feed roller 20 is mounted for adjustment toward and from the rear roller 20 and is provided with suitable adjusting means including an adjusting screw 22, at each end, whereby the film feeding pressure or relation between the feed rollers may be properly adjusted. The forward feed roller 20 is further provided at one end with a suitable projecting shaft portion that is aligned with an opening 23 (Fig. 2) in the side of the casing 5 whereby the socket of a suitable key or handle 24 may be engaged with said end of the feed roller shaft for causing rotation of the feed rollers. A suitable inclined deflector plate 25 is mounted in the ends of the compartment 12 forwardly of the feed rollers 20 and extending downwardly and rearwardly to the forward side of the slot 21 so as to properly direct the film into the drawer or tray 13 from said feed rollers.

The side and rear walls of the compartment 12 are formed near their upper edges with horizontal grooves 26 forming a guideway adapted for removable reception of a slide including a suitably apertured frame 27 and adapted for removal forwardly through a slot 28 in the front wall of the casing. This slide has a relatively small opening above the feed rollers 20 which is closed by means of a ruby-colored panel 29 of glass or the like, while a further larger opening is provided in the frame 27 above the tank 17 and the rear portion of the compartment 12 between the tank 17 and the roll 19, which latter opening is closed by means of a transparent or clear-colored glass pane 30. Hinged by means of a flexible strip 31 at one end to the frame 27 at one end of the panel 30 is a ruby-colored glass cover plate 32 adapted to completely cover the panel 30 when resting thereon and provided with a suitably attached tape 33 by means of which said cover plate 30 may be raised, to uncover the transparent panel 30. The tape 33 may be attached to the free end of the cover plate 32 by adhesive or the like, and as it may be flatly laid upon the cover plate 32, the same will not interfere with closing the top of the compartment 12 by means of an opaque cover or lid that is provided including hingedly connected sections 34 and 35 respectively adapted to cover the compartment 7 and the compartment 12. As shown, the sections 34 and 35 are connected along adjacent edges by the hinges 36, while the section 34 is hinged as at 37 to the side wall of the casing 5 remote from the compartment 12 whereby the section 35 may be swung open to uncover the compartment 12 and slide 27 without necessarily opening the compartment 7.

In using the device for developing film, the film roll 19 is placed in the compartment 12 as shown and the usual feed tab or strip attached to the end of the film is passed over the adjacent rear end of tank 17 and downwardly behind and under the rear guide roller 18, then forwardly under the forward guide roller 18, then upwardly over the front wall of tank 17 and downwardly between the feed rollers 20. The handle 24 is then applied and turned so as to cause the film to be fed downwardly through slot 21 into the tray or drawer 13. With the developing solution placed in tank 17 and a suitable fixing solution 15 placed in drawer 13, a continuous developing operation may be readily carried on, the slide 27 being in place at this time so as to prevent the entrance of actinic light to the film. The cover sections 35 will however be open and the developing operation can be readily observed through the panel 30 and cover plate 32, while the feeding can be observed through the panel 29. When the complete film has been passed through the developing solution in tank 17 and delivered into the drawer 13, it may be removed with said drawer for being properly dried preparatory to printing pictures therefrom.

In order to adapt the device for the printing of films, a platen 38 is provided having downturned side flanges 39 which are slotted as at 40 for fitting over the upper ends of the partitions 16 and the front and rear walls of tank 17 as shown in Figure 6 whereby the platen 38 is firmly supported beneath the slide 27. This platen has suitable rollers 41 and 42 beneath the ends thereof and in the side flanges 39 of the same. The roller 42 is adapted to receive a roll of sensitized or print paper, and as the printing progresses the same is rolled upon the roller 41. In order to effect rolling of the paper upon the roll 41, an end of the shaft of the latter is adapted as at 43 for reception of a suitable key or handle for turning the same, the clamped end 43 being registered with an opening 44 in the adjacent side wall of the casing 5 (Fig. 2) when the platen 38 is operatively disposed as shown in Figure 6. The print paper is extended from roll 42 upwardly around the adjacent end of platen 38 and then across the upper surface of the latter and downwardly to roller 41, while the film may be passed from the roll 19 to the feed roller 20 overlying the print paper beneath the slide 27. By turning the feed roller 20 and roll 41, the several picture areas of the film may be suc-

cessively printed, or any number of prints of each picture area of the film may be made. During the printing operation, the cover plate 32 is raised so as to uncover the transparent panel 30 and permit the entrance of proper light for the printing operation. During the printing operation, the solutions are removed from the tank 17 and tray or drawer 13, the film being delivered to the latter in the printing operation the same as in the developing operation. Upon removal of slide 27 the platen 38 may be removed together with the rolls 41 and 42 and the sensitized paper upon which the pictures have been printed.

A suitable handle 44 is provided for facilitating removal of the drawer 13, and it is noted that the compartments are of sufficient size to accommodate the several keys or handles used as well as rolls of film and receptacles containing the developing and fixing solution. When the device is not in use, the cover composed of sections 34 and 35 is closed with the slide 27 in place therebeneath, said cover being adapted to be locked in closed position through the provision of a suitable hasp fastener 45 having a staple member 46 to receive the shackle of a small padlock or the like. With the various accessories and the like in the compartments 8 and the camera in the compartments 7, as well as with the door 7 and cover sections 34 and 35 closed, the device may be readily carried in the hand.

From the foregoing description it is believed that the construction and operation as well as the advantages of the present invention will be readily understood and appreciated by those skilled in the art.

Minor changes may be made without departing from the spirit and scope of the invention as claimed. For instance, any suitable locking means may be provided in lieu of the hasp fastener 45, while a suitable turn button 47 may be provided to hold the slide 27 in place, said button being adapted to be turned into engagement with a depending forward end portion 48 of slide frame 27 and being pivoted upon the front wall of the casing 5.

What I claim as new is:—

1. In a portable film developing and printing device, a casing having superposed compartments communicating at adjacent ends, a developing tank in the upper compartment midway the ends thereof, a frame slidably mounted in the walls of the upper compartment overlying the same, a hinged colored glass in the frame overlying the developing tank and film roll to be developed journalled in one end of the upper compartment, trailed through the developing tank and downwardly into the lower compartment.

2. In a portable film developing and printing device, a casing having superposed compartments communicating at adjacent ends, a developing tank in the upper compartment midway the ends thereof, a frame slidably mounted in the walls of the upper compartment overlying the same, a hinged colored glass in the frame overlying the developing tank and film roll to be developed journalled in one end of the upper compartment, trailed through the developing tank and downwardly into the lower compartment, the sides and one end wall of the casing being grooved to receive the slidably positioned frame and the other end wall of the casing having a slotted opening therein alined with the grooves for insertion of the frame.

3. In a portable film developing and printing device, a casing having superposed compartments communicating at adjacent ends, a developing tank in the upper compartment midway the ends thereof, a frame slidably mounted in the walls of the upper compartment overlying the same, a hinged colored glass in the frame overlying the developing tank and film roll to be developed journalled in one end of the upper compartment, trailed through the developing tank and downwardly into the lower compartment, a pair of feed rollers for directing the film strip downwardly into the lower compartment, and a transparent panel in the frame overlying the feed rollers.

4. In a portable film developing and printing device, a casing having superposed compartments communicating at adjacent ends, a developing tank in the upper compartment midway the ends thereof, a frame slidably mounted in the walls of the upper compartment overlying the same, a hinged colored glass in the frame overlying the developing tank and film roll to be developed journalled in one end of the upper compartment, trailed through the developing tank and downwardly into the lower compartment, and a printing platen carrying printing paper rollers comprising a flat top wall and depending notched side walls removably positioned on the upper edges of the developing tank beneath the frame.

In testimony whereof I affix my signature.

EUGENE WASYLENKO.