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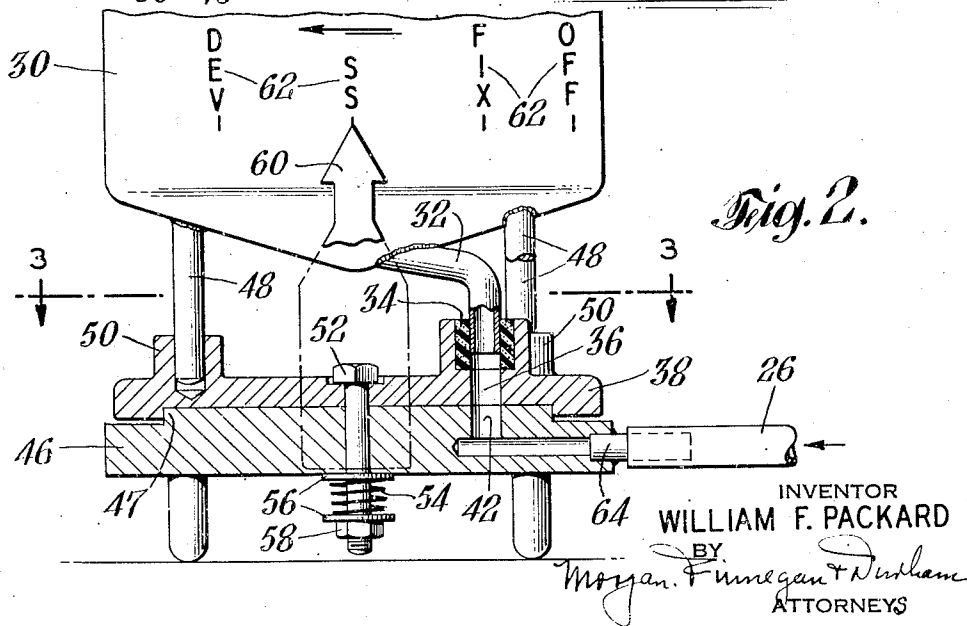
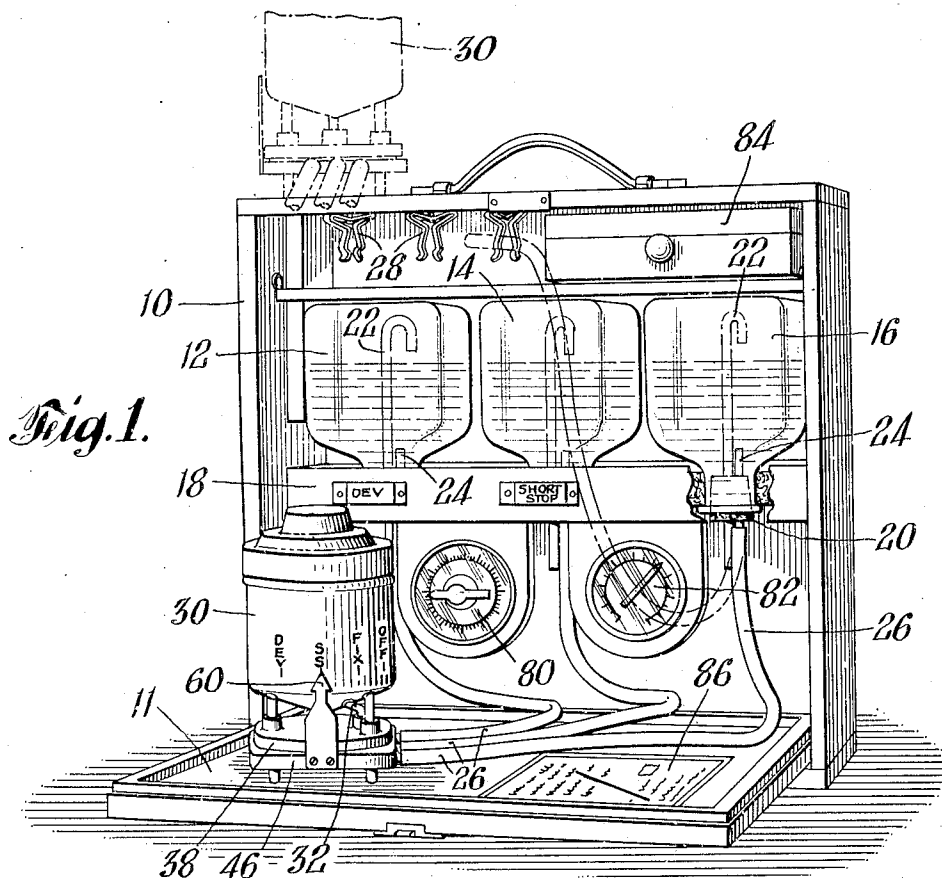
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2,491,620

PORTABLE FILM DEVELOPING APPARATUS

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2 Sheets-Sheet 1



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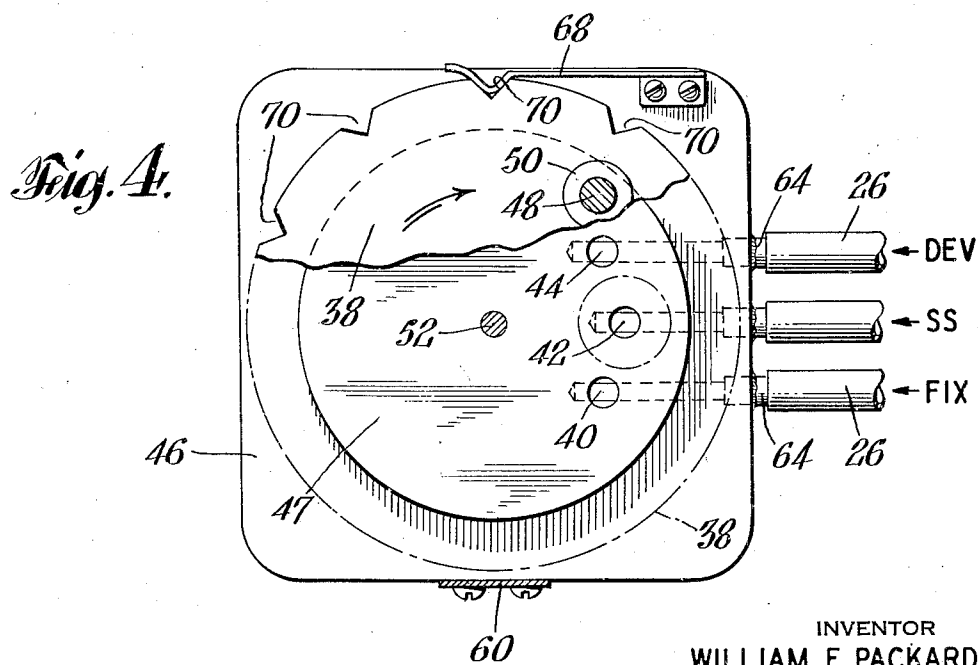
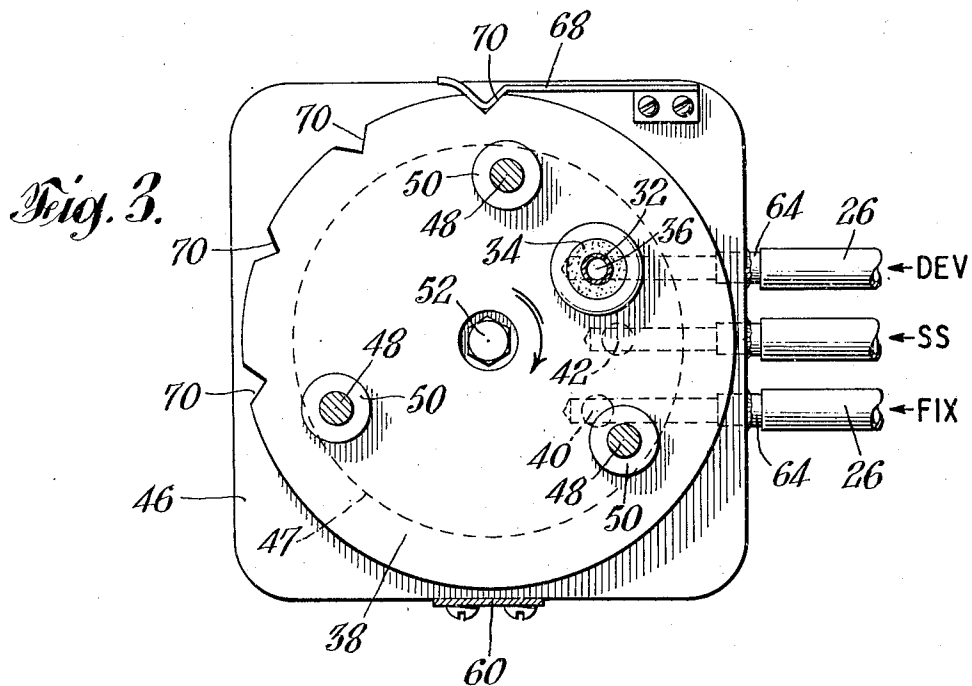
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PORTABLE FILM DEVELOPING APPARATUS

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2 Sheets-Sheet 2



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PORTABLE FILM DEVELOPING APPARATUS

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3 Claims. (Cl. 95—90)

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The present invention relates to a novel and improved portable photographic processing apparatus.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawings, referred to herein and constituting a part hereof, illustrate one embodiment of the invention, and together with the description, serve to explain the principles of the invention.

Of the drawings:

Figure 1 is a perspective view of a preferred and illustrative form of the present invention;

Figure 2 is a fragmentary detailed view, with certain parts in section, of the developing tank shown in Figure 1;

Figure 3 is a sectional view taken on the line 3—3 of Figure 2; and

Figure 4 is a similar sectional view, with certain parts broken away and showing other parts in a different position.

The present invention has for its object the provision of a novel and improved portable developing kit for processing photographic film. A further object of the invention is the provision of a self-contained photographic developing apparatus which can be conveniently stored and easily rendered ready for use, and which is particularly adapted for occasional use in the home.

In general the apparatus comprises a developing tank and a plurality of containers for the several processing solutions, such as developer, short-stop and a fixing bath, the containers being selectively connected to the tank through a valve and being adapted to deliver the solution from a selected one of the containers to the developing tank when the tank is in one position and adapted to return the solution to the container when the tank is in another position, the operation being repeated for the several solutions, after which the tank may be removed for washing or further processing of the film.

It will be understood that the foregoing general description and the following detailed description as well are exemplary and explanatory of the invention but are not restrictive thereof.

Referring now in detail to the present pre-

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ferred and illustrative embodiment of the invention as shown in the accompanying drawings, the embodiment is particularly adapted for the processing of conventional photographic roll film.

As embodied, there is provided a case 10 having a lid 11 which can be dropped to a horizontal position but normally forms one of the large vertical sides of the casing. In the upper portion of the casing are three containers, which may be glass bottles, adapted to contain the required amount of solution. Bottle 12 is filled with developer, bottle 14 with the short-stop, bottle 16 with fixing solution.

The several bottles are supported in inverted position with their necks downwardly by means of an apertured rack 18 which extends horizontally within the casing and in which the bottles rest. Each bottle is provided with a two-hole stopper 20 through which passes a vent tube 22 and an outlet tube 24, the vent extending upwardly above the maximum level of liquid within the bottle and preferably being bent over to prevent dripping of the solution from the tube as the solution is agitated. The tube 24 extends slightly above the stopper 20 so that any sludge in the solution remains at the bottom of the inverted bottle and does not flow from the bottle with the solution. From each of the outlet tubes 24 extends a length of flexible rubber tubing 26, and spring clips 28 are mounted on the upper portion of the interior of the casing 10 so that the tubes 26 are normally and removably secured with their ends above the bottles 12, 14 and 16 and thereby prevent the solutions from flowing out of the bottles.

The developing tank 30 may be of any desired form provided with a rigid outlet tube 32 communicating with the interior at the bottom of the tank, and means are provided for selectively connecting the tank 30 with the several bottles so that the tank may be alternatively filled with any one of the solutions after which the solution may be returned from the tank to the container.

As shown in Figures 2, 3 and 4, the tube 32 fits in a rubber gasket 34 so as to form tight connection with duct 36 in the rotatable valve plate 38, duct 36 being adapted to register with one or the other of the ducts 40, 42 or 44 formed in the base plate 46. The valve plate 38 is recessed, with a circular recess to fit tightly over a circular boss 47 on the base plate 46. Tank 30 is also provided with legs 48 which fit into recessed bosses 50 formed in the plate 38 so that the tank is firmly supported on its base. Plate 38 is held

concentric and in sealing engagement with the base plate 46 by means of the pivot bolt 52 and the adjustable spring 54 which is compressed between washers 56 by nut 58. Plate 38 may be rotated on the base plate 46 and its position is indicated by the pointer 60 secured to the base 46 and extending upwardly adjacent the indices 62. The ducts 40, 42 and 44 communicate with the nipples 64 to which the flexible rubber tubes 26 are connected, one for each container 12, 14 and 16.

A detent spring 68 is mounted on the base plate 46 and engages in one of the notches 70 formed in the rotatable plate 38, the notches corresponding to the several registering positions of the duct 36.

In use the several flexible tubes 26 are connected to the several tubes 64 while the tank 30 is above the level of the solutions in the containers 12, 14 and 16, and conveniently located on the top of the casing 10. The tank 30 and the circular plate 38 are then rotated until the index 60 is against the index 62 for developer showing that the duct 36 is connected to port 44 and the film loaded into the tank 30. The tank is then lowered onto the cover 11, below the mouth of the container 12 and the developer flows from the bottle 12 into the tank 30, the quantity of developer in the bottle 12 being just sufficient to fill the tank to the desired level.

When the proper developing time has elapsed, the tank 30 is raised and the developer flows back into the container 12. The tank 30 and valve plate 38 are then rotated to the position where the pointer 60 is opposite the index for the short-stop and the tank is again lowered to fill the tank with short-stop from the bottle 14. The tank is again raised and rotated to the fixed position and lowered to fill the tank with fixer from the bottle 16.

After fixing is completed the tank is raised to return the fixing solution to the bottle 16 and the tank may be rotated to the "off" position of the valve in which case the duct 36 registers with none of the ports 40, 42 and 44. The tubes 26 may then be disconnected and clipped in their spring clips 28 and the tank transferred for the washing operation of the film. Alternately the tank may be lifted from the valve plate 38 in which case the tube 32 is withdrawn from the rubber gasket 34.

Within the casing 10 there may also be conveniently provided a timer 80, a thermometer 82, an accessory box 84 and a developing chart 86, while the space below the horizontal support 18 is preferably dimensioned so that the tank 30 may fit in the lower part of the casing.

When the apparatus is not in use, the solutions are well preserved as air can be admitted only through the tubes 26, and if desired the ends of the developer and other tubes may be closed with plugs.

The invention in its broader aspects is not

limited to the specific mechanism shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim is:

1. A portable developing kit including a casing, a plurality of inverted bottles supported in an upper portion thereof to contain different processing solutions, a processing tank having a lower outlet, flexible tubing connected to each bottle to allow solution to flow into or out of each bottle, an air inlet for each bottle above the normal liquid level in the bottle, a selector valve between the tank outlet and the several tubes whereby solution may be selectively delivered from or to a selected bottle as the tank is positioned below or above the inverted bottles said tank being detachably mounted on the selector valve and the selector valve being rotatable with the tank to allow one or another solution to flow to or from the tank.

2. A portable developing kit as claimed in claim 1 in which means are provided for removably securing the flexible tubes within the casing above the level of the solutions.

3. A portable developing kit including a casing, a plurality of inverted bottles supported in an upper portion thereof to contain different processing solutions, a processing tank having a lower outlet, flexible tubing connected to each bottle to allow solution to flow into or out of each bottle, an air inlet for each bottle above the normal liquid level in the bottle, a selector valve between the tank outlet and the several tubes whereby solution may be selectively delivered from or to a selected bottle as the tank is positioned below or above the inverted bottles, said casing being provided with means for removably securing the flexible tubes within the casing above the level of the solutions in the bottles.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,022,196	Keifer	Apr. 2, 1912
1,037,664	Rockwell	Sept. 3, 1912
1,079,288	Caballero	Nov. 13, 1913
1,546,552	Pfouts	July 21, 1925
1,705,940	Moisant	Mar. 19, 1929
2,391,196	Sanderson	Dec. 13, 1945

FOREIGN PATENTS

Number	Country	Date
352,243	France	May 26, 1905
20,396	Great Britain	1908
407,243	Germany	Dec. 19, 1924