Feb. 23, 1960 P. E. HIXON ET AL 2,925,767

PHOTOGRAPHIC PRINT PROCESSING EQUIPMENT

Filed May 29, 1958 2 Sheets-Sheet 1

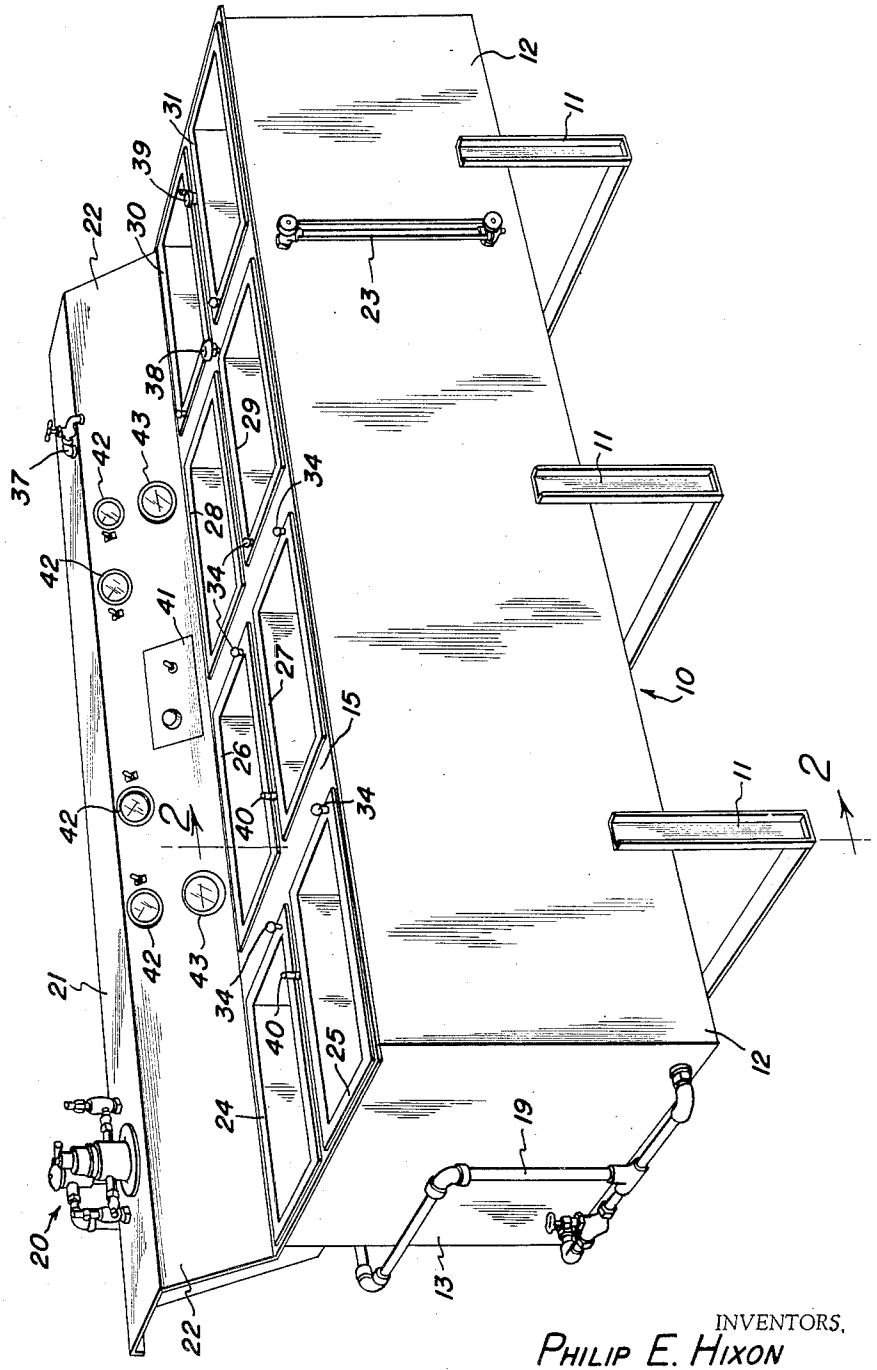



FIG. 1

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2 Sheets-Sheet 2

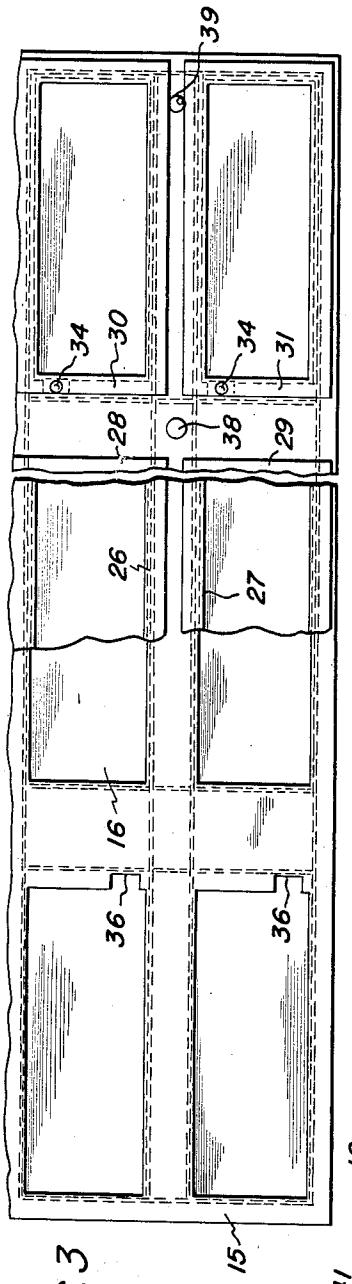



FIG. 3

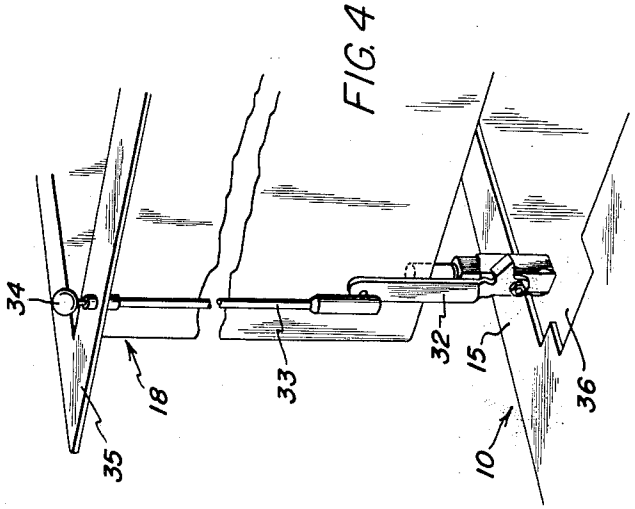



FIG. 4

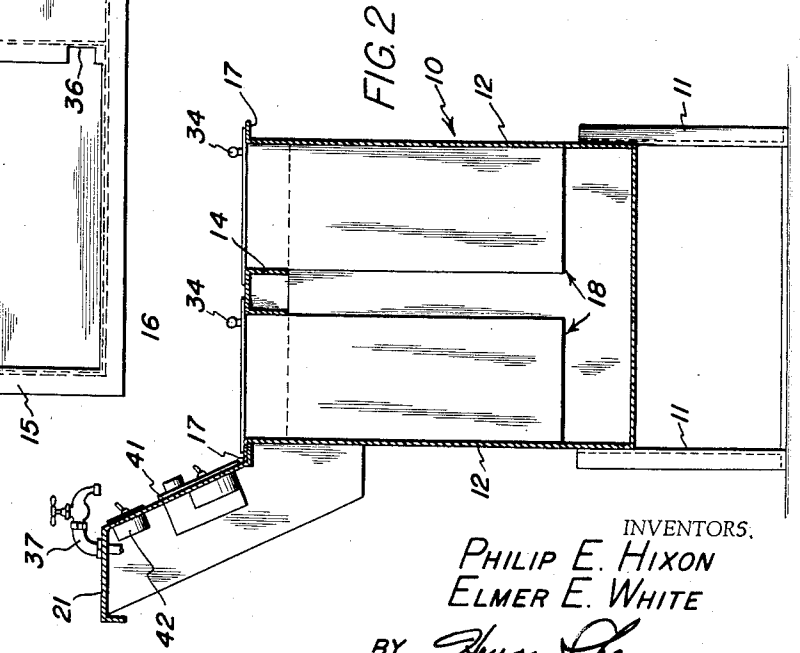



FIG. 2

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Patented Feb. 23, 1960



2,925,767

# PHOTOGRAPHIC PRINT PROCESSING EQUIPMENT

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Application May 29, 1958, Serial No. 738,868

5 Claims. (Cl. 95—89)

This invention relates to equipment for processing photographic prints, and relates more particularly to a novel tank structure for processing color prints on a commercial scale.

In the processing of color prints on a commercial basis, tanks are employed rather than trays since a great many more color prints may be processed at one time. In fact, from 20 to 80 color prints may be processed satisfactorily in tank equipment as against three color prints when trays are employed. Heretofore, no satisfactory processing tank particularly designed for the expeditious and economic processing of large color prints has been developed. It is, accordingly, an important object of this invention to provide an improved tank structure which is so constructed and arranged to permit the processing of color prints rapidly and at relatively low cost per print.

Another object of this invention is the provision of a color print processing tank wherein the vessels holding the processing liquids are provided with means permitting quick dumping of the contents thereof, whereby said vessels may be easily handled, particularly when removed from the tank.

A further object of this invention is to provide in the tank means for supplying gas and air for agitating the processing liquids during the color print processing operations.

Still another object of this invention is the provision in a color print processing tank means for regulating the temperature of the water circulating about the vessels holding the processing liquids, as well as of the water supplied to the wash vessel.

Other objects of this invention, together with certain details of construction and combinations of parts, will appear from the following detailed description and claims.

In the drawings wherein a preferred embodiment of this invention is shown,

Fig. 1 is a perspective view of the improved color print processing tank of this invention,

Fig. 2 is a cross-sectional view taken on line 2—2 of Fig. 1 in the direction of the arrows,

Fig. 3 is a top plan view with certain of the vessels, adapted to hold processing liquids, removed, and

Fig. 4 is a detail view on an enlarged scale, showing the valve means provided on most of the vessels of the tank for permitting quick dumping of the liquid contained in said vessels.

Like reference numerals indicate like parts throughout the several views of the drawings.

Referring now to the drawings for a detailed description of this invention, the reference numeral **10** indicates generally an elongated tank of any suitable material such as stainless steel or baked epoxy resin coated steel, for example. The tank is supported on a series of legs **11**. Extending the length of the tank, midway between the side walls **12** thereof and attached to end walls **13**, as by welding, is a beam **14** of substantially square U-shape. Supported on said beam **14** and on the upper edges of the tank walls is a cover **15** provided with a plurality of openings **16**, the cover being preferably welded in position. The cover is wider than the tank and the overhanging edges of the cover form flanges **17**. The openings **16** in the cover are of suitable size and shape to receive vessels, generally indicated by reference numeral **18**, which are adapted to contain the several treating liquids employed in the processing of the color prints.



The tank structure of the instant invention is eminently suitable for utilizing the highly efficient print carrying basket such as is described and claimed in our copending application, Serial No. 673,274, filed July 22, 1957, now Patent No. 2,892,393. This print carrying basket is designed to hold a relatively large number of color prints of various sizes for simultaneous processing through the several vessels **18**.

To adjust the temperature of the processing liquids contained in the vessels **18** inserted in the openings **16** in the tank cover, the tank is provided with piping **19** connected to a suitable water supply through a thermostatic water-mixing valve **20** which is carried by a shelf **21** of a panel **22** fixed to the tank along the length of one side wall. Water circulating through said valve so quickly adjusts the same to the proper temperature. The structure outlined above makes the tank a highly efficient water jacket surrounding the vessels in the tank. The tank is also provided with a water-level gauge **23**.

Referring now more specifically to the vessels insertable in the tank, vessel **24** is adapted to contain the developer, vessel **25** the stop bath, vessel **26** the fixing bath, vessel **27** the bleach, vessel **28** water, vessel **29** the hardening fixing bath, vessel **30** the hardener and vessel **31** the buffer. The vessels, with the exception of vessel **27** which is adapted to hold the bleach, are preferably made from stainless steel; vessel **27** being preferably made from red brass which resists the corrosive action of the bleach. Each of the vessels other than the water vessel **28**, which is permanently fixed, is provided with a quick-draining valve **32** shown in Fig. 4 of the drawings, which is fixed to the bottom of the vessel and is operated by a lever system **33** mounted on the outside of the vessel and operated by a knob or handle **34** attached to a portion of the lever system **33** which extends through a flange **35** with which the perimeter of each of the vessels is provided. To accommodate the valve-operating lever system, the openings **16** in the tank cover are cut away at **36**, as is shown in Fig. 3. The provision of the quick-draining valve in certain of the vessels permits the emptying of the processing liquid contained therein into the tank prior to lifting the vessel from said tank. Since the lifting of a vessel containing ten gallons of liquid requires much physical effort on the part of the operative, this draining feature is quite advantageous.

Because the water in vessel **28** must be changed quite frequently, it is provided with a convenient supply of water from faucet **37** which is mounted on shelf **21** of panel **22**. This vessel is, moreover, also provided with a fast dumping valve, not shown, which empties the water into an outside drain in a matter of about ten seconds. A knob or handle **38** operates the fast dumping valve of the water vessel, while a knob or handle **39** operates the tank draining valve.

For agitating the processing liquids, there is provided a series of valves **40** connected to a source of gas supply and to a gas burst timer **41** mounted on the panel **22**. The print carrying baskets may be provided with a suitable jack which may be connected to a valve **40** to obtain a flow of gas into the liquid to agitate the same. Operation of the gas burst timer causes a metered burst of gas, i.e. nitrogen, into the processing liquid. Air may

also be employed as the liquid agitating gas. To this end, the valves 40 may also be used.

The panel 22 may also have mounted thereon a series of timers 42 which may have audible or visible alarms and thermometers 43 for indicating the temperatures of the water in the tank and the temperature of the water being fed into the tank.

In operation, the print carrying basket is inserted in sequence, after predetermined intervals of time, into the vessels in the following order: (1) developer vessel 24, (2) short stop bath vessel 25, (3) fixing bath vessel 26, (4) water vessel 28, (5) bleaching vessel 27, (6) water vessel 28, (7) hardening fixing bath vessel 29, (8) water vessel 28, and (9) buffer vessel 31. As the color prints in the print carrying basket are treated progressively in the several vessels, the processing liquids are agitated wherever required, by connecting the valves 40 to the jack in the basket. At the end of the processing, or whenever desired, the operative merely by operating the knobs on the vessels or on the tank cover, can empty the vessels as well as the tank to quickly make the structure ready for subsequent operation.

The structure described above makes for an efficient apparatus permitting of the processing of color prints quickly with excellent results from the standpoints of production and ease of handling.

What we claim as new and desire to secure by Letters Patent is:

1. A color print processing apparatus comprising a tank, a cover for said tank having openings therein, a vessel adapted to receive processing liquids mounted in each of said openings, one of said vessels being permanently fixed in one of said openings and other vessels being removably mounted in said openings, means connected to said apparatus for supplying liquid to said fixed vessel, quick draining valves carried by said removable vessels and having means for operating said valves extending from the top of said vessels, means for circulating fluid of predetermined temperature through said tank and around said vessels.

2. A color print processing apparatus comprising a tank, a cover for said tank having openings therein, a vessel adapted to receive processing liquids mounted in each of said openings, one of said vessels being permanently fixed in one of said openings and other vessels being removably mounted in said openings, means connected to said apparatus for supplying liquid to said fixed vessel, quick draining valves carried by said removable vessels and dischargeable in said tank, said valves having means for operating the same extending from the top of said vessels, means for circulating fluid of predetermined temperature through said tank and around said vessels.

3. A color print processing apparatus comprising a tank, a cover for said tank having openings therein, a vessel adapted to receive processing liquids mounted in each of said openings, one of said vessels being permanently fixed in one of said openings and the remaining vessels being removably mounted in said openings, means connected to said apparatus for supplying liquid to said fixed vessel, quick draining valves carried by said removable vessels and wholly movable therewith, said valves having means for operating the same extending from the top of said vessels, means for circulating fluid of predetermined temperature through said tank and around said vessels.

4. A color print processing apparatus comprising a tank, a cover for said tank having openings therein, a vessel adapted to receive processing liquids mounted in each of said openings, one of said vessels being permanently fixed in one of said openings and other vessels being removably mounted in said openings, means connected to said apparatus for supplying liquid to said fixed vessel, quick draining valves carried by said removable vessels and wholly movable with said vessel and dischargeable in said tank, said valves having means for operating the same extending from the top of said vessels, means for circulating fluid of predetermined temperature through said tank and around said vessels.

5. A color print processing apparatus comprising a tank, a cover for said tank having openings therein, a vessel adapted to receive processing liquids mounted in each of said openings, one of said vessels being permanently fixed in one of said openings and the remaining vessels being removably mounted in said openings, means connected to said apparatus in proximity to said fixed vessel for supplying liquid thereto, quick draining valves carried by said removable vessels and wholly movable with said vessel and dischargeable in said tank, said valves having means for operating the same extending from the top of said vessels, means including a thermostatic mixing valve carried by the apparatus for circulating fluid of predetermined temperature through said tank and around said vessels.

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