June 14, 1932. W. J. WILLIAMS 1,863,132

APPARATUS FOR AND METHOD OF HANDLING PHOTOGRAPHIC PRINTS OR NEGATIVES

Filed Oct. 22, 1928 3 Sheets-Sheet 1

Fig. 1.

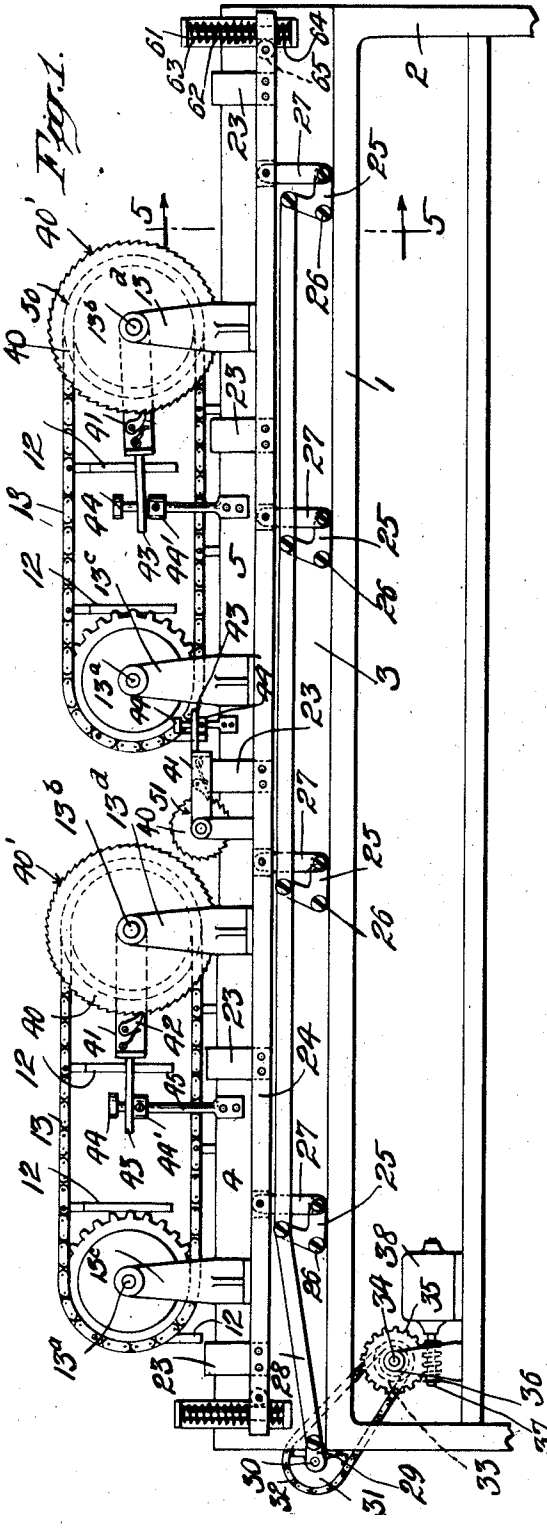


Fig. 9.

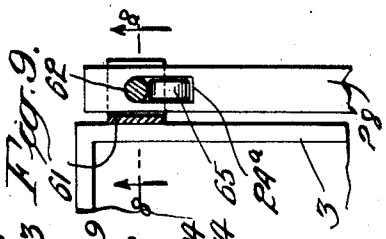


Fig. 8.

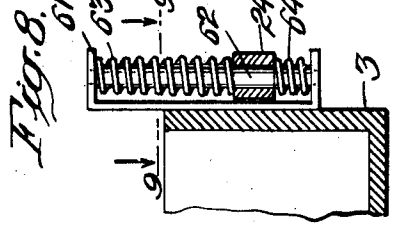
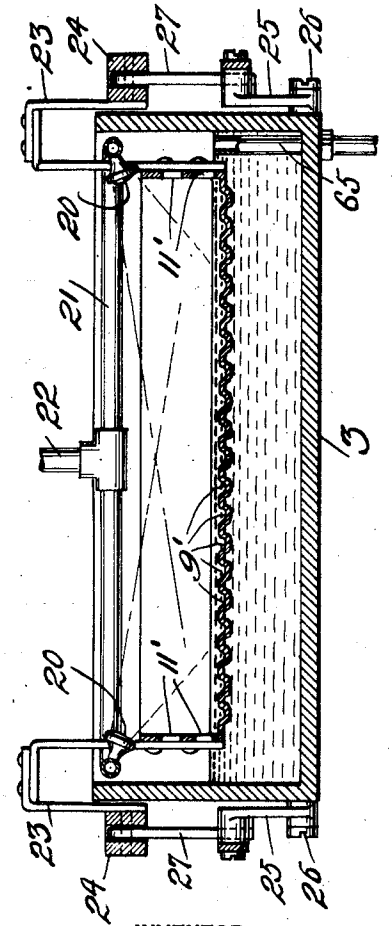


Fig. 5.



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APPARATUS FOR AND METHOD OF HANDLING PHOTOGRAPHIC PRINTS OR NEGATIVES

Filed Oct. 22, 1928 3 Sheets-Sheet 2

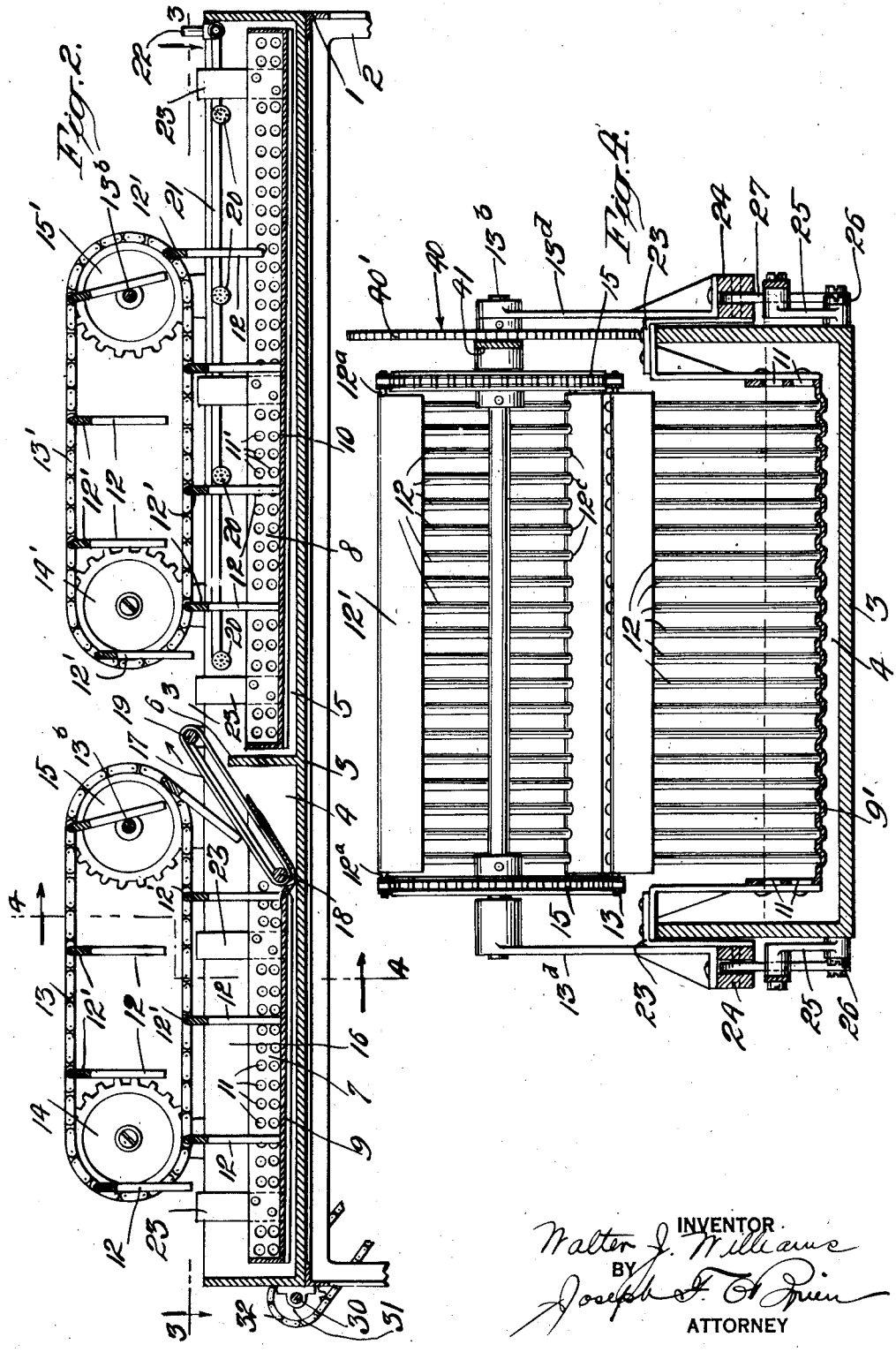


Fig. 2.

Fig. 4.

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APPARATUS FOR AND METHOD OF HANDLING PHOTOGRAPHIC PRINTS OR NEGATIVES

Filed Oct. 22, 1928 3 Sheets-Sheet 3

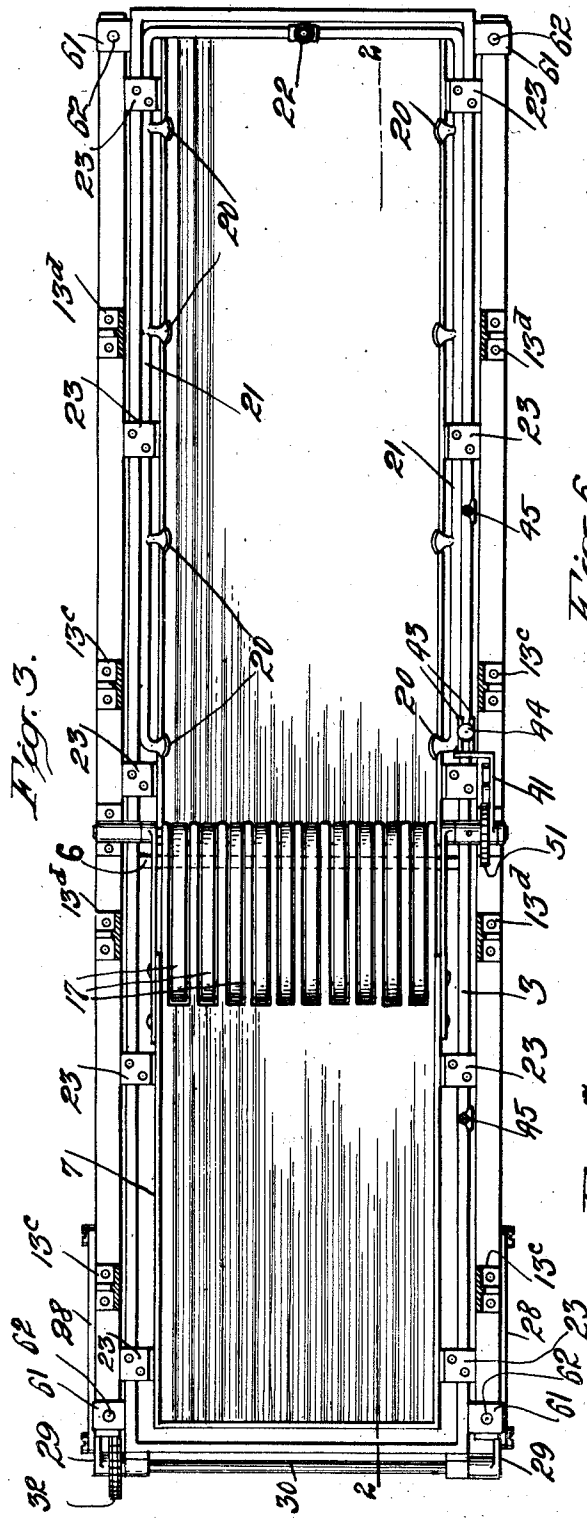


Fig. 3.

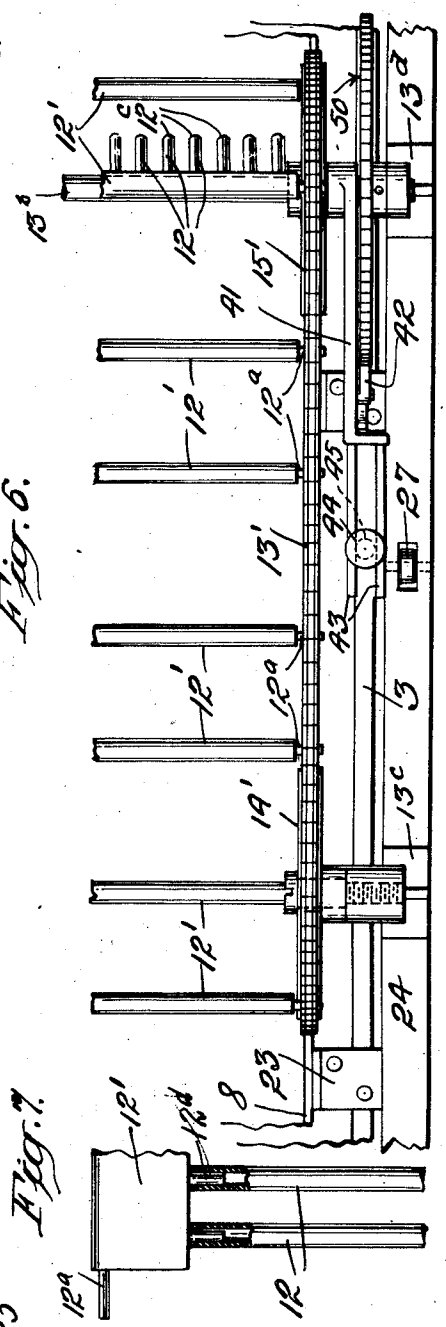


Fig. 6.

Fig. 7.

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UNITED STATES PATENT OFFICE

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APPARATUS FOR AND METHOD OF HANDLING PHOTOGRAPHIC PRINTS OR NEGATIVES

Application filed October 22, 1928. Serial No. 314,148.

This invention relates to apparatus for and method of handling photographic prints or negatives and particularly to an apparatus for and method of washing and fixing such prints.

In handling prints, it is desirable to move the same progressively through the various operations thereon as speedily as possible consistent with proper development and fixing thereof and with as little manual handling and contact with the machine parts as possible.

It is one of the objects of this invention to provide a method and to produce an apparatus for washing and fixing prints in which the prints will be moved by the movement of the submerging liquid until they are properly developed, washed or fixed.

Another object of this invention is to provide an apparatus having means for enclosing a given load or charge of prints and for repeatedly raising and lowering a charge of these prints together with the immersing liquid and means for raising and moving the immersing liquid forward to carry the prints therewith and means for retarding the excessive movement by the liquid of the prints and to cause the movement therethrough by timed elements to insure the proper development thereof.

Another object of this invention is to provide means for directly engaging and conveying prints from immersed position in one tank and depositing the same in an adjacent tank.

Still another object of the invention is to provide a simple mechanism for raising and moving in a given forward direction the submerging liquid and carrying the prints therewith.

Still another object of the invention is, in an apparatus of the type described, to provide means which, during the movement of the prints, will cause a thorough separation and agitation thereof.

Still another object of the invention is, in an apparatus of the type described, to provide means for alternately producing the movement of a current of the immersing liquid in a forward and outward print-conveying direction and in a rearward and inward print-separating movement.

Still another object of the invention is to provide a device in which an auxiliary tank and the contained water is raised to produce a forward print-conveying movement thereof and a discharge of water therefrom and is lowered to cause a reverse inflowing movement of the liquid into said auxiliary tank.

Still another object of the invention is to provide a pan inclined to the horizontal for producing the movement of a current of water in a forward print-conveying direction, and means in the pan for agitating and separating the prints during their forward movement by the liquid therein.

Another object of the invention is to provide a simple mechanism for raising and lowering the water-moving pan to cause a forward conveying movement of the prints by the immersing liquid.

Still another object of the invention is to provide a simple and inexpensive batch-separating element adapted to cooperate with the pan to enclose a batch during treatment and to retard excessive movement thereof upon the up and down movement of the liquid-moving element.

Still another object of the invention is to provide a simple adjustable timing mechanism for the batch-enclosing elements.

Still another object is to provide in combination with a plurality of tanks, batch-enclosing mechanism for each tank and independent timing mechanism for each batch-enclosing mechanism preferably actuated from the raising and lowering mechanism for the pan, or auxiliary receptacle and this independent timing mechanism preferably comprises a ratchet and pawl device arranged for actuation by the raising and lowering mechanism for the said pan or auxiliary receptacle.

Another object of the invention is to provide in a device of the character specified conveying mechanism dipping within the liquid in the receptacle and arranged to convey wet prints contacting therewith into an adjacent tank or receptacle and this conveying mechanism is provided with a driving mech-

anism preferably comprising a ratchet and pawl device adapted to be actuated from the mechanism for raising and lowering the pan and independently of the conveyor mechanism for moving the batch-enclosing devices.

Another object of the invention is to provide in combination with a vertically-moving auxiliary receptacle or pan a wet print conveyor mechanism having one end connected to and movable with said receptacle or pan and arranged to receive prints from said receptacle during the movement thereof and to convey over a dividing partition between said initial receptacle and the adjacent receptacle.

Still another object of my invention is to provide means for separating liquid within the auxiliary tank during the movement of the prints therethrough.

With these and other objects in view, the invention comprises the combination of members and arrangement of parts so combined as to co-act and cooperate with each other in the performance of the functions and the accomplishment of the results herein contemplated, and comprises in one of its adaptations the species or preferred form illustrated in the accompanying drawings, in which:—

Fig. 1 is a side elevation of a machine embodying my invention;

Fig. 2 is a section on the line 2—2 of Fig. 3, looking in the direction of the arrow;

Fig. 3 is a section on the line 3—3 of Fig. 2, looking in the direction of the arrow;

Fig. 4 is a section on the line 4—4 of Fig. 2, looking in the direction of the arrow;

Fig. 5 is a section on the line 5—5 of Fig. 1, looking in the direction of the arrow;

Fig. 6 is a fragmentary view, in plan, of one side edge of the machine showing one of the partition-conveying mechanisms employed by me;

Fig. 7 is a fragmentary view of one end of a dividing partition;

Fig. 8 is a fragmentary view, in section, on the line 8—8 of Fg. 9; and

Fig. 9 is a fragmentary view, in section, on the line 9—9 of Fig. 8.

Referring now to these drawings, which illustrate a preferred embodiment of my invention, 1 indicates a horizontal frame having legs 2 extending to a floor or like supporting structure.

Supported on the frame 1 is a tank 3 composed of hard rubber or other suitable material. As illustrated, the receptacle 3 is divided into a plurality and, as shown, two main liquid receptacles 4 and 5 respectively separated by a transverse dividing partition 6. These receptacles 4 and 5 are each thus independent of each other except that they are formed in the same tank or machine. While these receptacles may be used for containing any suitable treating liquid, I preferably provide a fixing liquid, such as hypo, in the receptacle 4 and a washing liquid, such as water, in the receptacle 5.

Mounted within the receptacles 4 and 5 are auxiliary receptacles 7 and 8 respectively which are preferably of substantially similar area or length and width with that of the main receptacle and these auxiliary receptacles are mounted to have a vertical movement within the respective main receptacles 4 and 5.

One of the objects of this invention is to produce a current or flow of liquid within the auxiliary receptacle and to this end the auxiliary receptacles 7 and 8 are provided with inclined bottoms 9 and 10 and means such as the apertures 11, 11′ are provided at opposite sides of the receptacle for causing an emptying of the liquid during a vertical movement of the receptacles and the liquid contained therein will flow by gravity toward the lower end of the inclined bottom, thus causing a forward current or flow of liquid during each raising movement of the auxiliary receptacles. This flow will be in a direction forwardly and toward the opposite sides of the receptacle in which the holes or emptying apertures 11, 11′ are placed. Obviously, when prints are placed in receptacles of this type the forward movement of the liquid will cause the prints to be similarly moved forwardly. On the lowering movement of the auxiliary receptacles liquid will rush through the side apertures and the prints will be again moved thereby, thus producing a forward and back and side movements of the prints in the liquid.

In order to cause the prints to be moved through the treating liquid uniformly and with a predetermined degree of speed or time to the end that each of the prints will have a given and uniform amount of treatment, I preferably divide the longitudinal area of the auxiliary receptacle by a traveling partition or partitions and, in the preferred form of my invention, a series of these partitions 12 are suspended from conveyor chains 13 mounted on sprockets 14 and 15. These partitions, as illustrated, preferably comprise a series of tubes or pipes 12 mounted at one end on stubs 12^d on a cross bar 12′ as illustrated in Fig. 7 which cross-bar 12 is mounted on a rod 12^a pivoted on one of the conveyor chains 13, 13′, said cross bar 12′ having said series of spaced tubes 12 depending therefrom and free at their lower ends.

In the preferred embodiment of my invention, these bars are spaced to correspond with corrugations 9′ in the bottom of the auxiliary receptacle and the ends 12^e of the bars 12 preferably fit into the corrugations 9′ and travel along the same. The gratings or partitions 12 are spaced from each other a suitable distance to provide a batch-enclosure or compartment 16 and when these gratings are traversed along the auxiliary recep-

tacle or pan, the batch-enclosing section will consequently travel from one end of the receptacle or pan to the other. Obviously, these compartments so enclosed will be caused to travel along and prints contained therein will be guided in the r movement through and by the liquid in the receptacle and thus will be caused to move through the same in a predetermined time depending upon the speed at which the partitions are moved through the liquid by the conveyor chain from one end of the auxiliary receptacle to the other, these partitions not only enclosing a batch of the prints but retarding a too rapid forward movement thereof during a raising of the auxiliary receptacle, and preventing a reverse movement of the prints during a lowering movement of the pan or receptacle.

In the preferred embodiment of my invention, where a plurality of receptacles are employed, I preferably mechanically convey the wet prints from one auxiliary receptacle, as for example, from the hypo-receptacle 4 over the dividing partition 6 between the two receptacles and cause a discharge or depositing of such wet prints in the adjacent receptacle which, as illustrated, constitutes an auxiliary receptacle 8 in a washing receptacle 5. For this purpose, I provide a conveyor belt 17 dipping within the liquid receptacle at one end and extending in an inclined position over the dividing partition 6 and having its opposite end positioned above the said receptacle 5 and over the auxiliary receptacle 8. As shown, the conveyor belt 17 is mounted at opposite ends upon rollers 18 and 19, the roller 18 being mounted on the bottom of the pan 7 and the upper roller 19 for the opposite end of the belt being mounted in suitable brackets movable conjointly with the movement of the pan or auxiliary receptacle 7. The upwardly moving side or leg of the conveyor 17 having its lower end dipping within the liquid and preferably disposed adjacent to the bottom of the pan or auxiliary receptacle, will contact with prints and convey them upwardly over the partition 6 to discharge the same into the adjacent auxiliary receptacle 8 where they will be further treated. As illustrated, these prints are assisted in their inclined upward movement by the partitions 12 which being pivoted on the chain 13 assume an inclined position and prevent the prints from sliding backwardly in relation to the belt 17. These prints are thus discharged or deposited into the auxiliary receptacle 8 within the washing receptacle 5 and the prints are moved along this receptacle in a manner similar to that in which they are moved through the fixing liquid.

Thus the bottom 10 of the auxiliary receptacle or pan 8 is similarly inclined to cause a current of the liquid forwardly during the raising movement thereof and in a substantial transverse direction during the lowering movement thereof, the said auxiliary receptacle being provided with side apertures 11′ at opposite sides of the receptacle and the movement thereof through the receptacle being timed and controlled by means of a series of travelling partitions 12 pivotally mounted on a conveyor belt 13′ mounted on sprockets 14′, 15′ in all respects similar to that hereinabove described.

It is desirable, during the passage of the prints, through the print-washing receptacle to spray the same with water and in the embodiment shown, I provide a series of spray-nozzles 20 arranged at opposite sides of the main receptacle and connected by pipes 21, 22 to a suitable source of water supply, and these spray-nozzles are adapted to substantially spray from opposite sides the entire area of the tank.

Any suitable mechanism may be used for raising and lowering the auxiliary receptacle vertically and for moving the conveyor mechanism hereinabove described. As illustrated, however, these auxiliary receptacles are provided with a series of brackets 23 which extend over the side walls of the main receptacle or tank and are connected to a common longitudinal bar 24 which is raised and lowered by a series of cranks 25 pivoted at 26 and having a connection with the bar 24 by links 27. These cranks are rocked by means of an arm 28 connected to a revolving crank 29 rotatable on a shaft 30 driven by means of a sprocket 31, chain 32 and sprocket 33 from a shaft 34 which is in turn driven by a worm-wheel 35 and a worm 36 on a shaft 37 of a motor 38.

In the preferred embodiment of my invention, the three conveyor mechanisms are each independently operated so as to enable the speed thereof to be adjusted independently of the other and each of these mechanisms are, as illustrated, independently mounted upon the longitudinal operating bar 24. Thus the conveyor mechanism 13 is mounted upon shafts 13^a, 13^b supported in brackets 13^c and 13^d which in turn are fast upon the bar 24.

In the preferred embodiment of my invention, the conveyor chains 13, 13′ and also the conveyor belt are actuated by pawl and ratchet mechanisms. Thus the conveyor chain 13, is operated by providing on the shaft 13^b a ratchet wheel 40 and this ratchet wheel is rotated at a predetermined speed by the movement of the bar 24. This is accomplished by pivoting on the same shaft 13^b an arm 41 carrying a spring-pressed pawl 42 adapted to engage the teeth 40′ of the ratchet during movement in one direction and to slide over the same during movement in the opposite direction. The pivoting movement of the arm 41 is limited by providing the end thereof with a forked portion 43 and limiting the movement thereof be-

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tween stops 44, 44′ upon a post 45 mounted on the main tank or receptacle. Obviously upward movement of the bar 24 will cause the ratchet wheel 40 to be likewise elevated and if the movement of the arm 41 be retained against movement or adjusted to move a lesser distance, the ratchet will be turned or rotated a predetermined degree depending upon the amount of movement permitted to the forked end 43 of the arm 41 and I am, therefore, enabled to adjust the movement of the conveyor chain by a simple adjustment of the stops 44, 44′. The other conveyor chain 13′ is similarly operated by the ratchet and pawl mechanism 50 which is in all respects similar to that hereinabove described and the movement of the wet print conveyor is likewise actuated by the ratchet and pawl mechanism 51 which is also similarly mounted, operated and adjusted.

The longitudinal bar 24 is guided at opposite ends as shown in Figs. 8 and 9. Thus the bar is provided with an apertures 24ª through which is passed a rod 62 supported in a bracket 61 and having opposed springs 63 and 64 mounted thereon and pressing in opposite directions against the bar 24. An anti-friction roller 65 is also preferably mounted in the apertures 24ª and rolls on the rod 62.

The tank 5 when used as a washing receptacle is preferably provided with a conventional overflow pipe 65.

Having described my invention, I claim:—

1. The method of handling photographic prints which consists in immersing prints in a print-treating liquid within a receptacle, moving said prints longitudinally of the receptacle by causing the print-treating liquid to have a longitudinal print-carrying movement in said receptacle, and retarding the movement of said prints within the liquid.

2. The method of handling photographic prints which consists in immersing prints in a print-treating liquid within a receptacle, moving said prints longitudinally of the receptacle by causing the print-treating liquid to have a longitudinal print-carrying movement in said receptacle, retarding the movement of said prints within the liquid, and repeating said longitudinal movement of the liquid and retarding of the prints a plurality of times.

3. The method of handling photographic prints which consists in immersing prints in a print-treating liquid within a receptacle, moving said prints longitudinally of the receptacle by causing the print-treating liquid to have a combined longitudinal and transverse print-carrying movement in said receptacle to treat said prints and to convey the same through said receptacle, and retarding the movement of said prints within the liquid.

4. The method of handling photographic prints which consists in immersing prints in a print-treating liquid within a receptacle, moving said prints longitudinally of the receptacle by causing said print-treating liquid to have a combined longitudinal and transverse print-carrying movement in said receptacle a plurality of times to treat said prints and to convey the same through said receptacle, retarding the movement of said prints within the liquid, and repeating said longitudinal movement of the liquid and retarding of the prints a plurality of times.

5. The method of handling photographic prints which consists in immersing prints in a print-treating liquid within a receptacle, moving said prints longitudinally of the receptacle by causing the print-treating liquid to have a print-carrying longitudinal movement in one direction and print-carrying and separating transverse movements in opposite directions in said receptacle to treat said prints and to convey the same through said receptacle.

6. The method of handling photographic prints which consists in immersing prints in a print-treating liquid within a receptacle, moving said prints longitudinally of the receptacle by causing the print-treating liquid to have a longitudinal print-carrying movement in said receptacle, enclosing within partitions in the liquid a batch of said prints to retard the too rapid forward movement and to prevent reverse movement of the said prints, and moving said enclosing partitions longitudinally.

7. A photographic print-handling apparatus embodying, in combination, a main receptacle adapted to contain a print-treating liquid, an auxiliary receptacle arranged within said main receptacle, means for moving said auxiliary receptacle vertically, and means associated with said auxiliary receptacle and cooperating with said receptacle-moving means for causing a longitudinal print-carrying movement of the treating liquid within said auxiliary receptacle.

8. A photographic print-handling apparatus embodying, in combination, a main receptacle adapted to contain a print-treating liquid, an auxiliary receptacle arranged within said main receptacle and having liquid-channels communicating with the main receptacle and a bottom portion disposed in an inclined plane, and means for moving said auxiliary receptacle vertically to cause a longitudinal print-carrying movement of the treating liquid within said auxiliary receptacle.

9. A photographic print-handling apparatus embodying, in combination, a main receptacle adapted to contain a print-treating liquid, an auxiliary receptacle arranged within said main receptacle and having liquid-channels and a bottom portion disposed in an inclined plane, and means for moving said

auxiliary receptacle vertically to cause a longitudinal print-carrying movement of the treating liquid within said auxiliary receptacle, said auxiliary receptacle being substantially imperforate at its bottom and ends and said liquid channels comprising perforations in its opposite side walls.

10. A photographic print-handling apparatus embodying, in combination, a main receptacle adapted to contain a print-treating liquid, an auxiliary receptacle arranged within said main receptacle and having liquid-channels and a bottom portion disposed in an inclined plane, said auxiliary receptacle being substantially imperforate at its bottom and ends and having perforations in its side walls, means for moving said auxiliary receptacle vertically to cause a forward movement of the treating liquid within said auxiliary receptacle, and means movable within and through said auxiliary receptacle arranged to sub-divide the same into a series of batch-enclosing travelling sections.

11. A photographic print-handling apparatus embodying, in combination, a main receptacle adapted to contain a print-treating liquid, an auxiliary receptacle arranged within said main receptacle and having a bottom portion disposed in an inclined plane, said auxiliary receptacle being substantially imperforate at its bottom and ends and having perforations in its side walls, means for moving said auxiliary receptacle vertically to cause a forward movement of the treating liquid within said auxiliary receptacle, and a series of partitions extending substantially in a vertical direction into the liquid to sub-divide the same into a plurality of batch-enclosing sections.

12. A photographic print-handling apparatus embodying, in combination, a main receptacle adapted to contain a print-treating liquid, an auxiliary receptacle arranged within said main receptacle and having a bottom portion disposed in an inclined plane, said auxiliary receptacle being substantially imperforate at its bottom and ends and having perforations in its side walls, a series of partitions extending substantially in a vertical direction into the liquid to sub-divide the same into a plurality of sections, means for moving said partitions longitudinally through said receptacle, means for moving the auxiliary receptacle vertically to cause a forward and outward movement of the treating liquid within said auxiliary receptacle on its upward movement and a transverse movement of the water on its downward movement within said sections.

13. A photographic print-handling apparatus embodying, in combination, a main receptacle adapted to contain a print-treating liquid, an auxiliary receptacle arranged within said main receptacle and having a bottom portion disposed in an inclined plane, said auxiliary receptacle being substantially imperforate at its bottom and ends and having perforations in its side walls, means for moving said auxiliary receptacle vertically to cause a forward movement of the treating liquid within said auxiliary receptacle, a series of partitions extending substantially in a vertical direction into the liquid to sub-divide the same into a plurality of sections, and a conveyor mechanism mounted above said tank for moving said sectioning partitions.

14. A photographic print-handling apparatus embodying, in combination, a main receptacle adapted to contain a print-treating liquid, an auxiliary receptacle arranged within said main receptacle and having a bottom portion disposed in an inclined plane, said auxiliary receptacle being substantially imperforate at its bottom and ends and having perforations in its side walls, means for moving said auxiliary receptacle vertically to cause a forward movement of the treating liquid within said auxiliary receptacle, a series of partitions extending substantially in a vertical direction into the liquid to sub-divide the same into a plurality of sections, means for moving said partitions longitudinally through said receptacle, means for moving the auxiliary receptacle vertically to cause a forward and outward movement of the treating liquid within said auxiliary receptacle on its upward movement and a transverse movement of the water on its downward movement within said sections, and conveyor means connected with the bottom of said auxiliary receptacle for lifting the prints out of said auxiliary receptacle and depositing the same in an adjacent treating receptacle.

15. A photographic print-handling apparatus embodying, in combination, a main receptacle adapted to contain a print-treating liquid, an auxiliary receptacle arranged within said main receptacle and adapted to contain a part of said print-treating liquid and into the liquid in which auxiliary receptacle prints are deposited, said auxiliary receptacle having liquid-channels communicating with the main receptacle, means for successively raising and lowering said auxiliary receptacle to cause a movement of the liquid therein, partitions for dividing the area of said auxiliary receptacle into a series of movable compartments, means for moving said auxiliary compartment vertically, and means for causing the longitudinal travel of said dividing partitions.

16. A photographic print-handling apparatus embodying, in combination, a main receptacle adapted to contain a print-treating liquid, an auxiliary receptacle arranged within said main receptacle and adapted to contain a part of said print-treating liquid and into the liquid in which auxiliary receptacle prints are deposited, partitions for dividing the area of said auxiliary receptacle into a

series of movable compartments, means for simultaneously lifting and lowering said auxiliary receptacle and partitions vertically, means associated with said auxiliary receptacle and cooperating with said lifting and lowering means for causing the upward movement a combined separating and forward movement within said compartments of the prints and on the lowering movement of said auxiliary receptacle to cause a further movement in said compartments of said prints, and means for traversing said partitions through the liquid in said auxiliary receptacle.

17. A photographic print-handling apparatus embodying, in combination, a main receptacle adapted to contain a print-treating liquid, an auxiliary receptacle arranged within said main receptacle and adapted to contain a part of said print-treating liquid and into the liquid in which auxiliary receptacle prints are deposited, partitions for dividing the area of said auxiliary receptacle into a series of movable compartments, means for simultaneously lifting and lowering said auxiliary receptacle and partitions vertically, means associated with said auxiliary receptacle and cooperating with said lifting and lowering means for causing a combined separating and forward movement of the prints within said compartments and on the lowering movement of said auxiliary receptacle to cause a further movement therein of the prints, and means for traversing said partitions through the liquid in said auxiliary receptacle.

18. A photographic print-handling apparatus embodying, in combination, a main receptacle adapted to contain a print-treating liquid, an auxiliary receptacle of substantially similar proportions arranged to be submerged within the liquid in said receptacle, means for successively raising and lowering said auxiliary receptacle, a conveyor mechanism arranged above said receptacles and having a plurality of section-separating elements depending within said auxiliary receptacle.

19. A photographic print-handling apparatus embodying, in combination, a main receptacle adapted to contain a print-treating liquid, an auxiliary receptacle of substantially similar proportions arranged to be submerged within the liquid in said receptacle, means for successively raising and lowering said auxiliary receptacle, a conveyor mechanism arranged above said receptacles, and having a plurality of section-separating elements depending within said auxiliary receptacle, said elements comprising a series of spaced slats.

20. A photographic print-handling apparatus embodying, in combination, a main receptacle adapted to contain a print-treating liquid, an auxiliary receptacle of substantially similar proportions arranged to be submerged within the liquid in said receptacle, means for successively raising and lowering said auxiliary receptacle, a conveyor mechanism arranged above said receptacles, and having a plurality of section-separating elements depending within said auxiliary receptacle, and means for operating said conveyor mechanism by the raising and lowering mechanism of the auxiliary receptacle.

21. A photographic print-handling apparatus embodying, in combination, a main receptacle adapted to contain a print-treating liquid, an auxiliary receptacle of substantially similar proportions arranged to be submerged within the liquid in said receptacle, means for successively raising and lowering said auxiliary receptacle, a conveyor mechanism arranged above said receptacles, and having a plurality of section-separating elements depending within said auxiliary receptacle, means for operating said conveyor mechanism by the raising and lowering mechanism of the auxiliary receptacle, and means for adjusting the speed of the conveyor mechanism.

22. A photographic print-handling apparatus embodying, in combination, a main receptacle adapted to contain a print-treating liquid, an auxiliary receptacle of substantially similar proportions arranged to be submerged within the liquid in said receptacle, means for successively raising and lowering said auxiliary receptacle, a conveyor mechanism arranged above said receptacles, and having a plurality of section-separating elements depending within said auxiliary receptacle, means for operating said conveyor mechanism by the raising and lowering mechanism of the auxiliary receptacle, and means for adjusting the speed of the conveyor mechanism comprising a ratchet and pawl mechanism operated from the raising and lowering mechanism of the auxiliary receptacle for operating and timing the movement of said conveyor mechanism.

23. A photographic print-handling apparatus embodying, in combination, a plurality of main liquid-containing receptacles separated by a dividing partition, each of said receptacles being adapted to contain a different print-treating liquid, an auxiliary receptacle of substantially similar area submerged in each main receptacle and having liquid-channels communicating with the main receptacle, means for lifting and lowering said auxiliary receptacles vertically, a print-conveyor mechanism connected at one end with the bottom of an auxiliary receptacle and extending over the dividing partition between said main receptacles to convey prints from one liquid-containing receptacle to another.

24. A photographic print-handling apparatus embodying, in combination, a plurality

of main liquid-containing receptacles separated by a dividing partition, each of said receptacles being adapted to contain a different print-treating liquid, an auxiliary receptacle of substantially similar area submerged in each main receptacle and having liquid-channels communicating with the main receptacle, means for lifting and lowering said auxiliary receptacles vertically, a print-conveyor mechanism connected at one end with the bottom of an auxiliary receptacle and extending over the dividing partition between said main receptacles to convey prints from one liquid-containing receptacle to another, a conveyor mechanism arranged over each receptacle and each having a series of separating partitions mounted thereon and movable through the liquid in said auxiliary receptacle, and independent means for moving each of said conveyor mechanisms at different speeds.

25. A photographic print-handling apparatus embodying, in combination, a plurality of main liquid-containing receptacles separated by a dividing partition, each of said receptacles being adapted to contain a different print-treating liquid, an auxiliary receptacle of substantially similar area submerged in each main receptacle and having liquid-channels communicating with the main receptacles, means for lifting and lowering said auxiliary receptacles vertically, a print-conveyor mechanism connected at one end with the bottom of an auxiliary receptacle and extending over the dividing partition between said main receptacles to convey prints from one liquid-containing receptacle to another, a conveyor mechanism arranged over each receptacle and each having a series of separating partitions mounted thereon and movable through the liquid in said auxiliary receptacle, independent means for moving each of said conveyor mechanisms at different speeds, and means independent of the movement of the partition-conveying mechanism for independently moving said print-conveyor mechanism.

26. A photographic print-handling apparatus embodying, in combination, a main receptacle adapted to contain a treating liquid, an auxiliary receptacle of substantially similar area submerged within said main receptacle, an inclined print-conveyor connected at one end to said submerged auxiliary receptacle and extending at the other end above the end of the said main receptacle, a partition-carrying conveyor arranged above said receptacle and above said print-conveyor, said partition-carrying conveyor being provided with a series of partitions comprising a plurality of spaced pivotally-mounted slats movable in contact with the bottom of the auxiliary receptacle and with the inclined print conveyor.

27. A photographic print-handling apparatus embodying, in combination, a main receptacle adapted to contain a treating liquid, an auxiliary receptacle of substantially similar area submerged within said main receptacle, an inclined print-conveyor connected at one end to said submerged auxiliary receptacle and extending at the other end above the end of the said main receptacle, a partition-carrying conveyor arranged above a receptacle and extending over said print-conveyor, a plurality of spaced pivotally-mounted slats having rounded lower ends, mounted on the partition-carrying conveyor and movable over and into contact with the bottom of the auxiliary receptacle and with said print-conveyor, and said auxiliary receptacle being provided with a plurality of depressions or grooves within which the lower ends of said slats move.

In witness whereof, I have signed my name to the foregoing specification.

WALTER J. WILLIAMS.