Nov. 14, 1944. R. SARDESON ET AL 2,362,587

PRINT DEVELOPING MACHINE

Filed Aug. 29, 1941 5 Sheets-Sheet 1

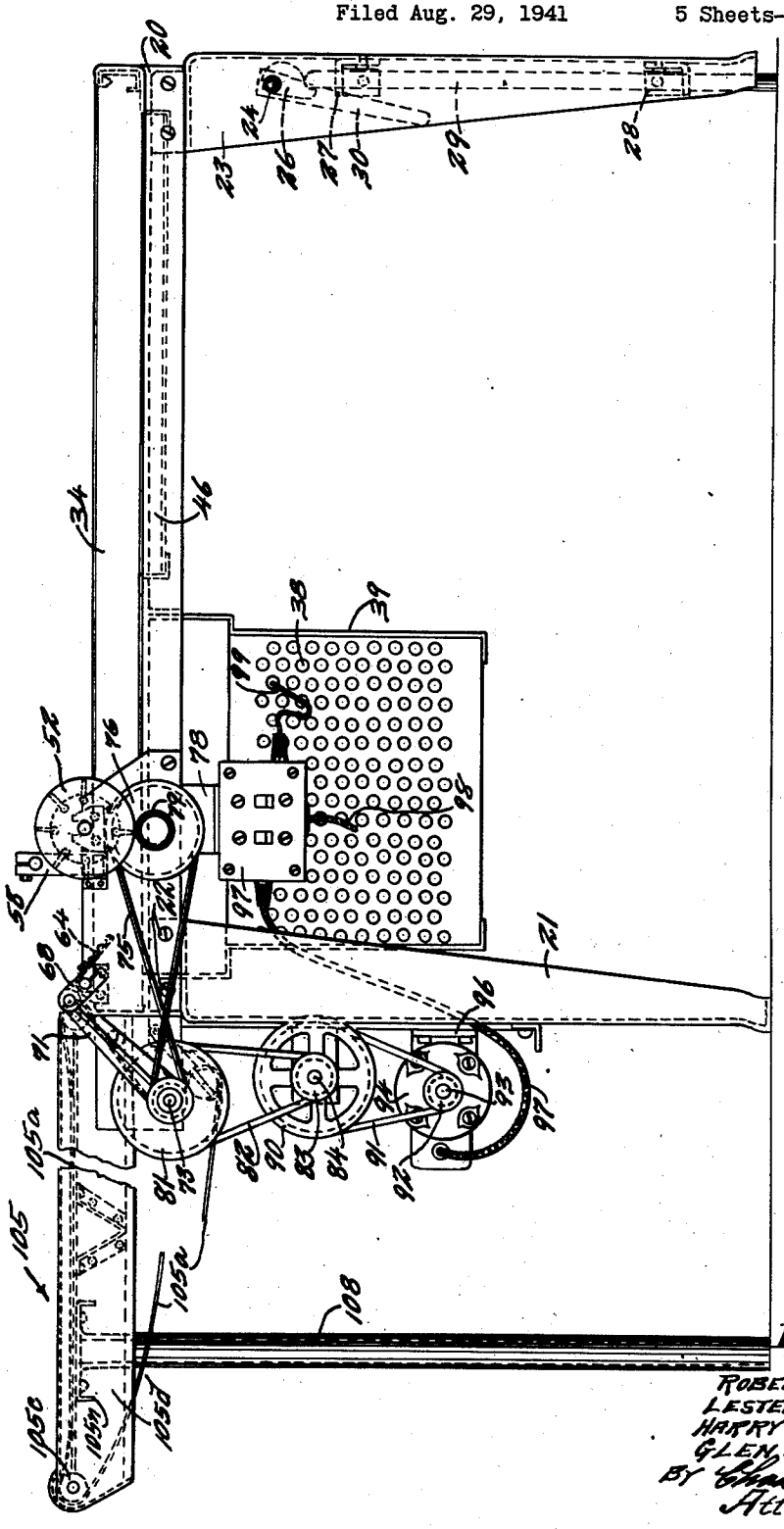


Fig. 1.

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PRINT DEVELOPING MACHINE

Filed Aug. 29, 1941 5 Sheets-Sheet 2

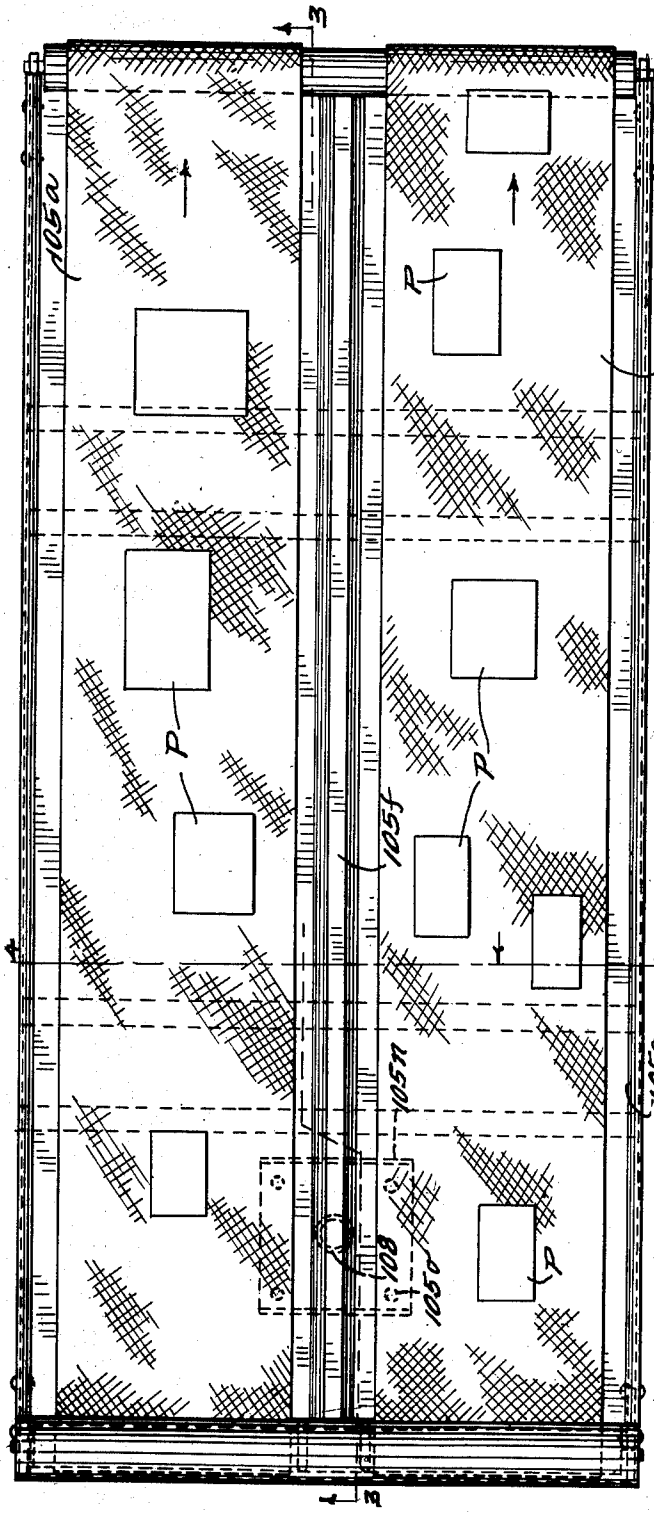


Fig. 2.

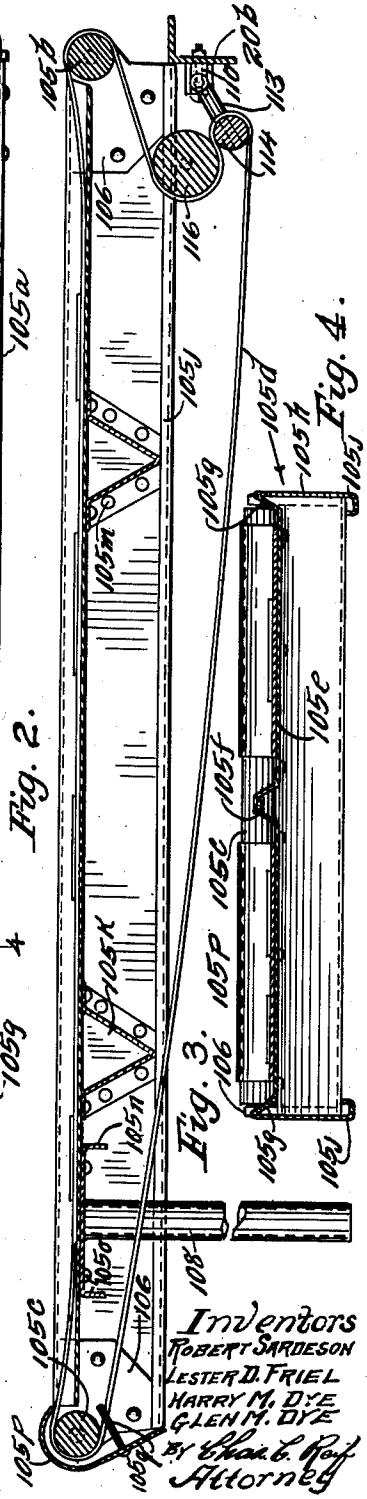


Fig. 3.

Fig. 4.

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PRINT DEVELOPING MACHINE

Filed Aug. 29, 1941 5 Sheets-Sheet 3

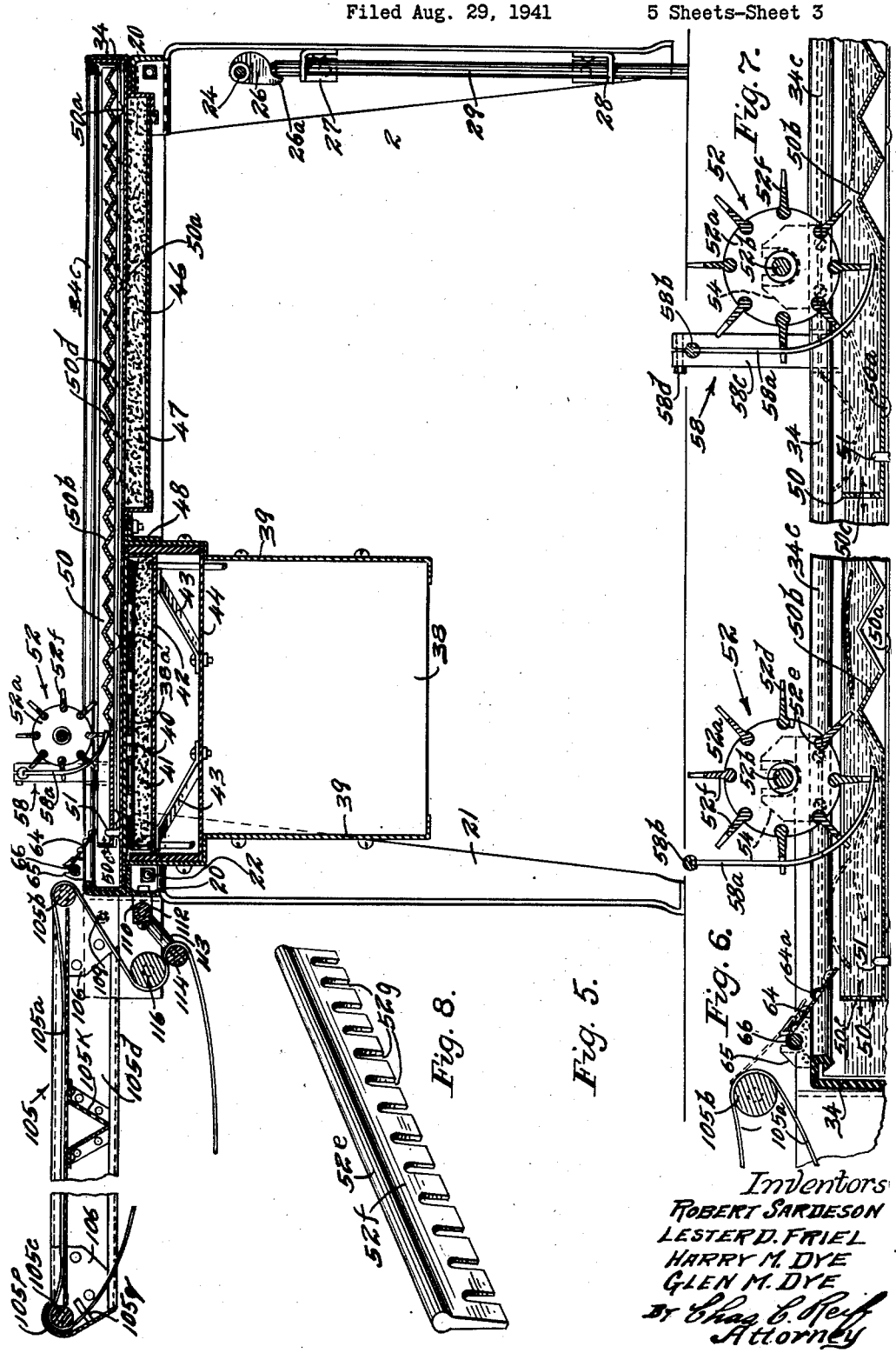


Fig. 5.

Fig. 8.

Fig. 6.

Fig. 7.

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PRINT DEVELOPING MACHINE

Filed Aug. 29, 1941 5 Sheets-Sheet 4

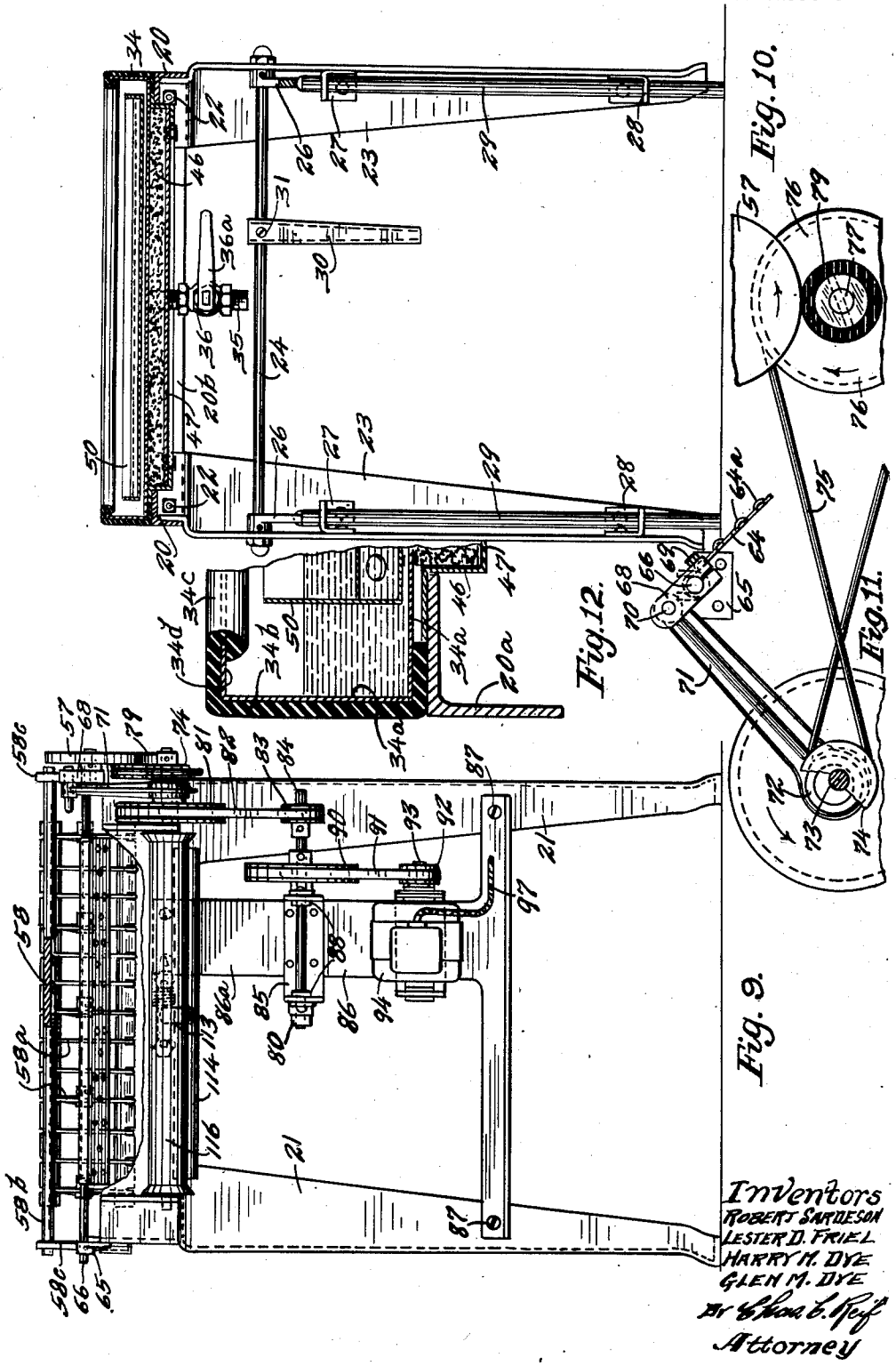


Fig. 9.

Fig. 10.

Fig. 11.

Fig. 12.

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PRINT DEVELOPING MACHINE

Filed Aug. 29, 1941 5 Sheets-Sheet 5

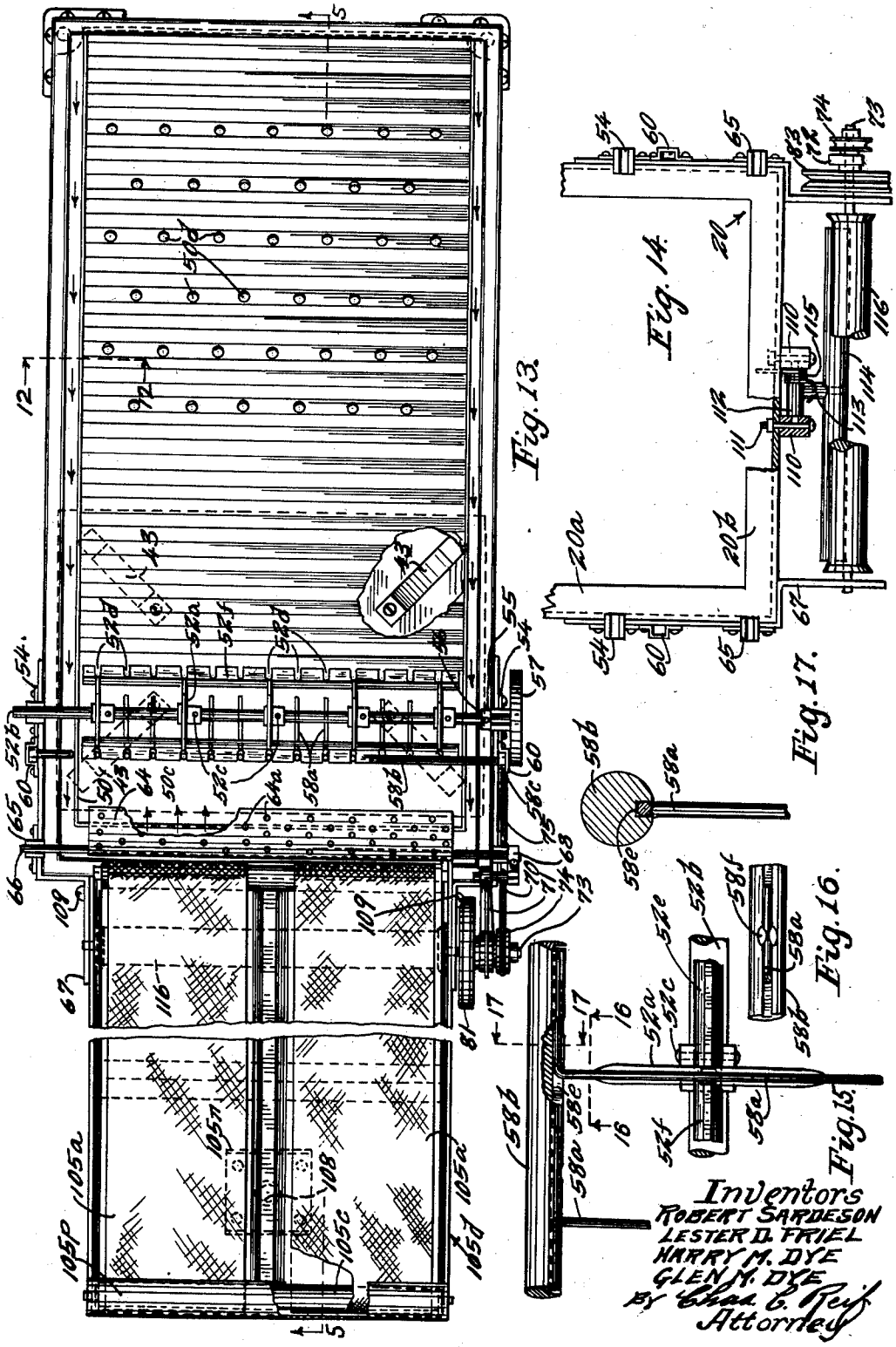


Fig. 13.

Fig. 14.

Fig. 17.

Fig. 16.

Fig. 15.

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UNITED STATES PATENT OFFICE

2,362,587

PRINT DEVELOPING MACHINE

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Application August 29, 1941, Serial No. 408,824

20 Claims. (Cl. 95—89)

This invention relates to a machine for handling photographic prints and such a machine as will handle a great range in size of prints from very small prints to large sizes. While the machine in its preferred embodiment is used for developing prints and using developing liquid, it could also be used for treating prints with other liquids. In commercial establishments where a large number of prints are handled the same are printed by the operators and then placed on the conveyor of the developing machine and subsequently removed from the developing liquid by an operator when the print is properly developed.

It is an object of this invention to provide a simple and efficient machine having a minimum of parts arranged for convenient operation and for very convenient assembly and removal.

It is a further object of the invention to provide a machine for treating photographic prints comprising a tray containing developing liquid and means for feeding the prints to said tray and submerging them in the developing liquid so that all parts of the print are properly contacted by the liquid.

It is also an object of the invention to provide a machine for handling photographic prints comprising a tray containing the treating liquid, a submerging means for the prints comprising a wheel having vanes extending transversely of said tray with novel and efficient means for directing prints to said submerging means.

It is a further object of the invention to provide a machine for handling photographic prints comprising a tray adapted to contain liquid, said tray having ridges extending transversely of its bottom, which ridges are preferably of substantially inverted V-shape together with a submerging wheel at the forward end of said tray having vanes extending transversely of said tray, said vanes at the bottom of said wheel moving close to the surface and top of the adjacent ridge.

It is still another object of the invention to provide a machine for treating photographic prints comprising a tray adapted to contain developing liquid, means for feeding prints to the forward end of said tray and submerging them in the liquid, said liquid being impelled to move toward the rear end of said tray together with means for causing the liquid to have a quiet zone or a zone of small movement at the rear end of said tray.

Another object of the invention is to provide a machine for treating photographic prints comprising a tray adapted to contain liquid, a pan in which said tray is supported, said tray having inlet and outlet openings communicating with said pan, said pan having a drain opening at one end, said pan being normally supported in substantially horizontal position and an auxiliary supporting means for said end of said pan on which it may be supported at a lower level to drain said pan.

It is still another object of the invention to provide a machine for treating photographic prints comprising a tray adapted to contain the treating liquid, a conveyor for feeding prints to said tray with a novel means for driving said conveyor so that it can be quickly and easily removed.

It is a further object of the invention to provide a machine for treating photographic prints comprising a tray adapted to contain developing liquid together with simple and efficient means for maintaining said liquid at the desired temperature.

These and other objects and advantages will more fully appear from the following description made in connection with the accompanying drawings in which like reference characters refer to similar parts throughout the several views and in which:

Fig. 1 is a view in side elevation of said machine;

Fig. 2 is a plan view of the conveyor for feeding the prints;

Fig. 3 is a vertical section taken on line 3—3 of Fig. 2 as indicated by the arrows;

Fig. 4 is a vertical section taken on line 4—4 of Fig. 2 as indicated by the arrow;

Fig. 5 is a longitudinal vertical section taken substantially on line 5—5 of Fig. 13;

Fig. 6 is a partial vertical section similar to Fig. 5 shown on an enlarged scale;

Fig. 7 is a view similar to Fig. 6 showing some additional parts;

Fig. 8 is a perspective view of a vane of the submerging wheel or ducker;

Fig. 9 is a view in front elevation of the machine, some parts being broken away and others shown in vertical section;

Fig. 10 is a view in rear elevation of the machine, some parts being shown in vertical section;

Fig. 11 is a view in side elevation showing the driving mechanism, some parts being broken away and said view being shown on an enlarged scale;

Fig. 12 is a vertical section taken on line 12—12 of Fig. 13 as indicated by the arrows;

Fig. 5 is a top plan view of the machine, some

parts being broken away and others shown in horizontal section;

Fig. 14 is a partial plan view of the frame and other parts, some parts being broken away and others shown in horizontal section;

Fig. 15 is a view in front elevation of the print guide, some parts being broken away and others shown in vertical section;

Fig. 16 is a horizontal section taken on line 16—16 of Fig. 15 as indicated by the arrows; and

Fig. 17 is a vertical section taken on line 17—17 of Fig. 15 as indicated by the arrows.

Referring to the drawings a machine is shown comprising a main frame 20 having longitudinally extending side portions 20*a* and end portions 20*b*. While this frame could be variously made, in the embodiment of the invention illustrated it is shown as formed of angle bars. Said frame is supported at its forward end upon leg members 21 connected thereto in any suitable manner as by screws 22. Legs 21 are shown as having offset vertical flanges disposed at the inner sides of frame member 20 through which screws 22 pass, said frame thus resting on the ledge formed by said offset portions. At its rear end frame 20 has secured thereto leg members 23 similar to leg members 21. While leg members 21 and 23 could be variously made, in the embodiment of the invention illustrated they are shown as of right angular form in horizontal cross section and tapering in width toward their lower ends. Leg members 23 are secured to the frame 20 in a manner similar to leg members 21 by the bolts 22. Leg members 23 have journaled therein and extending therebetween a substantially horizontal headed rod 24. Rod 24 has heads at the outer sides of legs 23 and at the inner sides of said legs the same has secured thereto cam members 26. Each leg member 23 also has secured to its inner side vertically spaced angular guide brackets 27 and 28 having horizontal flanges with vertically aligned apertures therethrough. A rod 29 is movable through said apertures in the brackets on each leg 23, the upper end of which engages cam 26. Cams 26 have eccentric cam surfaces engaging the tops of rods 29 and are provided with lips 26*a* forming stops. A handle 30 is secured to rod 24 in any suitable manner as by the set screw 31. As shown in Figs. 5 and 10 rods 29 normally engage the floor or supporting surface and the bottoms of legs 23 are somewhat above said floor or supporting surface. The cams 26 can be oscillated by turning rod 24 by means of handle 30, thus permitting rods 29 to move upward and permitting legs 23 to engage the floor or supporting surface.

A pan 34 rests upon frame 20, the same being illustrated as having sides and ends flush with the sides and ends of said frame. While pan 34 could be variously made, in the embodiment of the invention illustrated it is shown as having a metal body 34*a* surrounded at its sides by a body of waterproof material 34*b* of some suitable rubber compound. Body 34*b* has a bead 34*c* extending about and enclosing the inner edge of an inwardly extending top flange 34*d* of body 34*a*. Due to body 34*b* the bottom of said pan or its body 34*a* is spaced some distance from the top of frame 20. Pan 34 at its rear end is provided with a drain opening to which is secured a drain pipe 35 having a shut-off valve 36 therein provided with a handle 36*a*. Pan 34 is adapted to contain developing fluid or other treating liquid and the machine is provided with a refrigerating apparatus 38 carried in suitable brackets 39 secured to frame 20 beneath the same. The refrigerating apparatus per se forms no part of the present invention and is not specifically illustrated except insofar as it comprises coils 38*a* containing the refrigerating fluid, which coils engage a plate 40 which is in contact with the bottom of pan 34 or its body portion 34*a*. Insulating material 41 is disposed below coils 38*a* and held by a casing 42 resting on a plurality of plate springs 43 secured to a plate 44 carried in brackets 39. Plate 40 is thus kept quite cold and is resiliently held by springs 43 against the bottom of pan 34. Plate 40 engages the bottom of pan 34 at the forward portion of said pan and the rearward portion of said pan has its bottom engaged by a body of insulating material 46 such as cork, the same being carried in a casing 47 supported on transversely extending angle brackets 48 bolted to frame 20, one of which also supports one of the brackets 39.

Disposed within the pan 34 is a tray 50. While this tray could be variously formed, it is illustrated as rectangular in plan and transverse cross section and is provided with spaced projections 50*a* on its bottom which engage the bottom of pan 34 so that the bottom of said tray is held above the bottom of said pan. A pair of pins 51 project upwardly from the bottom of pan 34 adjacent its front end and pass through aligning apertures in the bottom of tray 50, thus positioning said tray in said pan. Said tray 50 has a corrugated bottom, the same having extending transversely thereof ridges 50*b* being shown as substantially of inverted V-shape in cross section. Tray 50 has a series of holes 50*c* in its front wall and is also provided with a plurality of holes 50*d* adjacent its rear end, which holes are shown as passing through the rear sides of certain of the ridges 50*b*. Adjacent the front end of tray 50 is disposed a submerging means or ducker 52. This comprises a wheel having a plurality of spaced circular disks 52*a* having hubs secured to a central shaft 52*b* in any suitable manner as by pins or screws 52*c*. The disks 52*a* are provided with a plurality of equally and circumferentially spaced slots being shown as substantially of circular form in which fit the thickened edges or beads 52*e* of the vanes 52*f*, which vanes project outwardly radially from the disks 52*a*. The central shaft 52*b* projects beyond tray 50 and pan 34 and rests in open-topped bearings 54 secured to the sides of frame 20. A collar 55 is secured to shaft 52*b* in any suitable manner as by the pin or screw 56, the same engaging the inner side of one of the bearings 54. At the outer side of said bearing shaft 52*b* has secured thereto a friction wheel 57 by which wheel 52 is driven which will be later described. The vanes 52*f* each have a series of open ended slots 52*g* formed in their outer sides and print guiding means 58 is provided, the same comprising a series of spaced small rods or wires 58*a* which extend vertically at the front side of wheel 52 and then curve downwardly beneath said wheel in a substantially circular arc which is approximately concentric with the center of shaft 52*b*. Rods 58*a* are secured in a supporting bar or rod 58*b* which is secured at its ends in a pair of standards 58*c*. As shown in Fig. 7 said standards are slotted at the top and bored to receive rod 58*b* and said rod is clamped therein by the screws 58*d* extending through the slotted portion. As a simple and convenient method of securing the

rods 58a the rod 58b is provided with a longitudinally extending slot 58e. Each rod 58a is bent at a right angle and has its bent portion disposed in the slot 58e, said bar 58b being swaged over said portion as shown at 58f in Fig. 16. Each rod 58a is thus held firmly in position. The standards 58c have their lower ends received in the openings in U-shaped brackets 60 secured at opposite sides of the frame 20. It will be noted that the rods 58a are equal in number and align with the slots 52g in the vanes 52f, said rods being disposed in slots 52g as wheel 52 rotates. It will also be noted that the adjacent ridge 50b of the tray 50 is disposed close to wheel 52 and in such relation that each vane 52f has its outer edge moving close to the top surface of said ridge and close to the top portion thereof as wheel 52 rotates.

A plate 64 is disposed just above the front end portion of tray 50, the same being inclined downwardly and rearwardly toward said tray, said plate being secured to a rod 66 which is oscillatably mounted in open-topped bearings 65 secured to the sides of frame 20. It will be noted that as shown in Figs. 13 and 14, the bearings 54 and 65 as well as brackets 60 are disposed at the outer side of brackets 67 which directly engage the frame 20 and are secured by front screws 22 and additional screws not shown. Plate 64 is provided on its upper surface with a multiplicity of spaced projections or protuberances 64a. Rod 66 projects beyond one of its bearings and has secured thereto a crank arm 68 which is split and bored to receive rod 66 and clamped thereto by the clamping screw 69. Arm 68 has a crank pin 70 therein also extending into the end of a link 71 formed as an eccentric strap at its other end surrounding an eccentric 72 secured to a shaft 73. Shaft 73 is journaled in brackets 67 which project beyond the end of frame 20 as shown in Fig. 14. A pulley 74 is secured to shaft 73 over which runs a belt 75 also running over the pulley 76, said belt being crossed as shown in Fig. 11. Pulley 76 is secured to a stub shaft 77 riveted in one of the brackets 67. Pulley 76 has an outwardly projecting hub surrounded by an annular rim or tire 79 of rubber or similar material. Wheel 57 already described, rests on the top of wheel 79 and is driven from wheel 79. It will be seen that as shaft 73 is rotated the eccentric 72 will reciprocate link 71 and thus oscillate crank arm 68 and the plate 64, the latter being oscillated about the axis of shaft 66. The shaft 73 already described has secured thereto a pulley 81 over which runs a belt 82 also running over a pulley 83 secured to a short countershaft 84 journaled in bearings 88 bolted to and projecting through the arms of a U-shaped bracket 85 in turn secured to a bracket 86 having a vertical plate-like portion 86a secured at its upper end to frame 20. Bracket 86 has a transversely extending angle shaped portion secured at its ends to the front legs 21 by the screws 87. Shaft 84 is held from endwise movement by a collar 89 engaging one end of one bearing 88. A pulley 90 is secured to shaft 84 also holding it from endwise movement and over which runs a belt 91 also running over the pulley 92 secured to the armature shaft 93 of an electric motor 94 carried on a bracket 95 also secured to the portion 86a of bracket 86 by the bolts 96. It will thus be seen that shaft 84 is driven from motor 94 through belt 91 and that shaft 73 is in turn driven from shaft 84 through belt 82. Pulley 76 is driven from shaft 73 by the belt 75. A cable carrying the necessary conductors extends to motor 94 and to a switch box 97 secured to the side of casing 39. A conductor cord or cable 98 extends from switch box 97 and will be provided with a suitable plug for connection to an electrical socket or other suitable source of current. A conductor cord or cable 99 is also shown for refrigerator 38.

The prints to be treated are developed or moved to the tray 50 by a conveyor designated generally as 105. In the embodiment of the invention illustrated this conveyor comprises parallel belts 105a made of suitable canvas or other fabric material. These belts at their ends run over and around guide members 105b and 105c having their ends secured to plate brackets 106 secured to the sides of the conveyor frame 105d. Said conveyor frame is preferably formed of sheet material and has a top portion 105e extending in a horizontal plane pressed upwardly at its center to form a central longitudinal rib 105f shown as of trapezoidal form. The frame has upwardly inclined portions 105g at its sides from the upper ends of which extend downwardly the vertical side portions 105h. These are inturned at the bottom to form channels 105j which extend longitudinally of the frame. The bearing plates 106 have their upper portions disposed in the channels formed by the inclined portions 105g. The frame 105d is in practice made in two parts divided centrally longitudinally, these being bolted or welded together. Frame 105d has extending transversely thereof beneath the top plate 105e the ribs 105k illustrated as of V-shape and having flanges secured to the side portions 105h by the rivets 105m. A rather wide channel 105n extends transversely beneath top plate 105e being secured by the rivets 105o, said channel having its flanges directed downwardly and having secured centrally thereto a vertical leg member 108, the latter being shown in the form of a tube or pipe. Member 108 forms the front support for the conveyor 105. The rear end of the conveyor frame 105d is disposed between the projecting ends of brackets 67, and the conveyor is attached to the main frame 20 by a screw 109 at each side. A pair of spaced blocks 110 illustrated as of hexagonal shape in cross section are secured to the outer side of the front frame member 20b by headed and nutted bolts 111 passing through said blocks. A short shaft 112 extends between blocks 110 having trunnions at its ends journaled in said blocks. A stud 113 is secured to shaft 112, the same projecting forwardly and downwardly therefrom and having a reduced portion on which is centrally swiveled a cylindrical rod 114. A coiled torsion spring 115 extends around shaft 112 having one end bent around stud 113 and its other end engaging frame member 20b. Spring 115 tends to swing stud 113 upwardly and forwardly toward a roller 116. Roller 116 is secured to shaft 73 already described and extends transversely of the conveyor between the side portions 105h of frame 105d. Belts 105a have their top runs disposed above the top plate 105e and then pass around the end guide members 105b and 105c, said belts at their rear ends extending forwardly from member 105b to pass around the forward side of roller 116. The belts then pass around the rear side of rod 114, which acted upon by its spring 115, holds the belts against roller 116. Rod 114 can swivel on stud 113 and its pressure on the belts is thus equalized. A front end housing 105p is secured to frame 105d and extends over the top of guide member 105c downwardly and rearwardly to the bottom of frame 105d. A pair of headed pins 105q are secured in housing member 105p and extend upwardly and rearwardly to form a guide means for

the inner edges of belts 105a. As shown in Fig. 14, the rod 114 has free ends being only supported centrally by the stud 113.

In operation the machine is customarily located in a dark room where the print printing machines are located. Ordinarily there is one machine between two printing machines. The operators at the printing machines remove the prints and deposit the same on the belt 105a nearest them. The motor 94 is operated and as already described drives shafts 84 and 73 so that roller 116 is driven. The belts 105a are driven by roller 116. The prints P pass to the rear ends of belts 105a and are then delivered over the ends of said belt on to the plate 64. The plate 64, owing to projections 64a, engages the prints at spaced points and due to the oscillation of this plate, the prints are discharged into the front end of tray 50. As already described, plate 64 is oscillated quite rapidly by eccentric 72 and the link 71 through arm 68. It has been found desirable to oscillate plate 64 to positively insure that none of the prints stick or stop at this point. A certain distance must be determined between plate 64 and wheel 52. Some prints are about of postage stamp size while others are quite large. It is in order to have all sizes of prints properly delivered into tray 50 that plate 64 is oscillated. As already described, the wheel 79 is rotated from shaft 73 by belt 75 and this rotates wheel 57 secured to the paddle wheel or ducker 52. Wheel 52 is revolved with its forward end moving downwardly along the rods 58a. The wheel 52 with its paddles 52f causes the developing liquid in tray 50 to move rearwardly in said tray. The prints which have been discharged from plate 64 into the developing liquid thus move toward the rods 58a and are guided therebeneath and pass beneath said rods and under the vanes of the wheel 52. With the provision of the rods 58a and the vanes 52f it is insured that all parts of the prints will be submerged and wetted and thus covered by the developing liquid. The prints tend to curl at their edges and thus act to keep these edges from contact with the liquid. Without the rods 58a some prints might get by the wheel 52 with some of their edge portions still dry. The prints pass from the wheel 52 beneath the same over the top of the first ridge 50b. It has been found in practice that it is important to have the proper relation between the vanes 52f and this first ridge. The outer edges of the vanes have been arranged to pass close to the adjacent surface of said ridge and close to the top thereof. If the ridge is positioned somewhat further rearwardly of the wheel a pulsation or eddy of the liquid occurs which tends to suck the prints toward the wheel and prevent their further movement rearwardly. With the present arrangement the prints are completely submerged and wetted and progressed rearwardly as desired. The prints continue to move rearwardly in tray 50 with the current of liquid and in practice the operator watches the prints and when they are sufficiently developed she removes them and they are then transferred for further treatment. Some prints must remain in the developing liquid much longer than others and it is desired to have the prints slow up in their movement or substantially come to rest at the rear portion of the tray. For accomplishing this the holes 50d are provided. The liquid which is moved rearwardly in tray 50 by wheel 52 moves to the rear portion of the tray and then passes downwardly progressively beneath the tray through the spaced holes 50d. Said liquid then passes forwardly at the sides of tray 50 as indicated by the arrows in Fig. 13 and also passes forwardly in the space beneath the bottom of tray 50 and the bottom of pan 34. The liquid then enters the tray to continue its rearward movement through the holes 50c at the front of the tray. The rearward movement of the liquid upon reaching holes 50d is progressively retarded and at the rear portion of the tray 50 the liquid is quiescent. The prints thus slow up progressively toward the rear portion of the tray and beyond the holes 50d have no motion at all and they can thus remain in the developing liquid until they are sufficiently developed and removed by the operator. The large volume of print developing business is in the summer when the temperature is rather high. It is desirable to keep the developing liquid from becoming too heated. For this purpose the refrigerating apparatus 38 in casing 39 is provided and the coils 38a in which refrigerating fluid is contained are soldered to the plate 40 which is held against the bottom of pan 34 by the springs 43, said coils being directly engaged by the insulated material or cork 41 in the casing 42. The insulating material 46 in casing 47 also acts to prevent heating of the developing liquid by the air in the surrounding room.

The tray 50 and pan 34 must be drained at frequent intervals and as described, the drain pipe 35 is provided at the rear end of pan 34. Tray 50 and pan 34 are normally in substantially horizontal position. To speed up the draining operation and save time the members 29 and accompanying mechanism are provided. When the pan is to be drained the operator swings handle 30, thus rotating the cams 26 and permitting rods 29 to rise so that the legs 23 come in contact with the floor. The pan 34 then is inclined toward its rear end and the draining operation is rapidly accomplished. When the pan is to be provided with fresh fluid the handle 30 will again be swung so that cams 26 push down the rods 29 again bringing tray 34 to horizontal position. The cams with stops 26a and rods 29 are so arranged that they are in stable position with rods 29 depressed.

The parts of the machine are arranged so that they can be very easily and quickly removed or disassembled. It is necessary to frequently remove tray 50 and pan 34 for cleaning, and it is very important that this can be done with a minimum of time and labor. The wheel 52 can be lifted from position since its driving wheel 57 is unattached and its central shaft 52b rests in the open-topped bearings 54. The guide means 58 can then be lifted by simply lifting its side portions 58c from their sockets in brackets 60. The plate 64 can be removed by being merely lifted as its rod 66 is supported in open-topped bearings 65. Rod 66 will then be moved endwise to remove pin 70 from link 71. With the wheel 52, the guide means 58 and the plate 64 removed, the tray 50 can be lifted and removed. Tray 50 could be removed without removing plate 64. By removing the two screws 109 the conveyor 105 can be moved away from the frame 20. The belts 105a can be moved over the ends of the tensioning rod or roller 114. This releases the belts from this rod 114 as well as from driving roller 116. It will be noted that the outer side of the belt engages roller 116.

From the above description it will be seen that we have provided an extremely efficient print treating machine with a very novel arrangement and construction of parts. The construction has been arrived at after a study of the actual problems encountered over a long period of time. The

construction has been simplified to a great degree and the parts arranged so that the necessary changing of liquid and cleaning can be quickly and easily performed. The machine has been amply demonstrated in actual practice, found to be very successful and efficient and is being put into production.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without departing from the scope of applicants' invention, which generally stated, consists in a device capable of carrying out the objects above set forth, in the parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:

1. A photo print handling device having in combination, a tray adapted to contain liquid, means for feeding prints to said tray, a ducker adjacent said means comprising a rotating paddle wheel having vanes extending transversely of said tray throughout the width thereof, said vanes moving through the liquid in said tray to engage prints with their edges and flat sides to submerge said prints in said liquid and also acting to induce a current of said liquid rearwardly of said tray and means closely adjacent the front side of said wheel for guiding prints thereunder.

2. The structure set forth in claim 1, said tray having ridges extending transversely thereof of substantially inverted V-shape adjacent said wheel, said wheel being so located that the vanes of said wheel in their upward movement define a path substantially tangent to the top surface of the adjacent ridge.

3. A photo print handling device having in combination, a tray adapted to contain liquid, means for feeding prints to said tray, a ducker comprising a rotating paddle wheel having vanes extending transversely of said tray, said vanes moving through the liquid in said tray to submerge prints in said liquid and to induce a current of said liquid rearwardly of said tray and means comprising members disposed within the periphery of said wheel for guiding prints to and under said wheel.

4. A photo print handling device comprising a tray adapted to contain liquid, means for feeding prints to said tray, a plate extending in downwardly inclined position toward said tray at the front end of said tray to which the prints are delivered and means for oscillatably vibrating said plate to discharge said prints therefrom.

5. A photo print handling device comprising a tray adapted to contain liquid, means for feeding prints to said tray, a plate extending in downwardly inclined position toward said tray at the front end of said tray to which the prints are delivered, means for rapidly oscillating said plate to discharge said prints therefrom, a ducker comprising a rotating paddle wheel having vanes extending transversely of tray disposed adjacent said plate with its lower side moving away from said plate and adjacent the bottom of said tray to submerge prints in said liquid and induce a current of said liquid rearwardly of said tray.

6. A photo print handling device comprising a tray adapted to contain liquid, means for feeding prints to said tray, a plate extending in downwardly inclined position toward said tray at the front end of said tray to which the prints are delivered, means for oscillating said plate to discharge said prints, a ducker comprising a rotating paddle wheel having vanes extending transversely of said tray disposed adjacent said plate with its lower side moving away from said plate and adjacent the bottom of said tray to engage and submerge prints in said liquid and induce a current of said liquid rearwardly of said tray and a plurality of spaced rods extending downwardly and rearwardly under said paddle wheel for guiding prints under said rods and wheel.

7. A photo print handling device comprising a stationary tray containing liquid, means for feeding prints to said tray, a ducker at the forward end of said tray adjacent said means comprising a rotating paddle wheel having vanes extending transversely of said tray and movable rearwardly in said liquid and inducing a current in said liquid rearwardly, said wheel having trunnions at its ends, a pan in which said tray is supported and open-topped bearings at the sides of said pan in which said trunnions are supported so that said wheel may be lifted from said bearings and bodily removed to facilitate removal of said tray.

8. A photo print handling device having a stationary tray containing liquid, means for delivering prints to said tray, a frame having side members, a submerging means comprising a paddle wheel extending transversely of said tray adjacent said means, trunnions extending from the ends of said wheel, a driving wheel carried by one of said trunnions and adapted to rest against a friction driving wheel, open-top bearings supported on said side members of the frame, said trunnions resting in said open-top bearings whereby said paddle wheel and its driving wheel may be removed by being lifted from said bearings.

9. A photo print handling device comprising a tray adapted to contain liquid, a submerging means comprising a paddle wheel adjacent one end of said tray, a guide means comprising a plurality of spaced rods extending along one side of and beneath said wheel, supporting means for said rods to which they are attached and anchoring means for said supporting means, said rods being removable by lifting said supporting means from said anchoring means and attached rods.

10. A photo print handling device having in combination, a tray adapted to contain liquid, means for delivering prints to said tray, a plate adjacent said means extending downwardly in inclined position toward and over said tray, a rod carrying said plate, open-top bearings carried on said side members of said frame in which said rod is journaled, an arm secured to one end of said rod, a pin projecting from said arm and a link adapted to be oscillated having a bore at one end in which said pin extends whereby said plate can be removed by lifting said rod from said bearings and moving the same endwise to remove said pin from said bore.

11. A photo print handling device having a tray and a print guide means comprising a bar having a slot in its lower side, a plurality of small rods having their end portions bent at right angles and disposed in said slot parallel to said bar, said bar being swaged over said portions at the sides of said slot, said rods projecting downwardly into said tray to form a print guiding means.

12. A photo print handling device having in combination, a tray, a pan in which said tray is disposed with the bottom of said tray spaced from the bottom of said pan, means for impelling liquid in said tray toward the rear end of said

tray, said tray having inlet openings at its front end communicating with said pan and means for progressively retarding the rearward movement of said liquid, said last mentioned means comprising a plurality of openings through the bottom of said tray and spaced longitudinally thereof through which the liquid can pass as it reaches the rear portion of said tray to again move forwardly in said pan.

13. A photo print handling device having in combination, a tray adapted to contain liquid, means for delivering prints to the forward end of said tray and guiding means adjacent said means and extending downwardly toward and over said tray, said guiding means being pivoted about a transverse axis adjacent its upper end and means for oscillatably vibrating said guiding means about said axis to cause it to feed and discharge prints delivered thereto.

14. A photo print handling device having in combination, a tray adapted to contain liquid, a frame on which said tray is supported, a conveyor for delivering prints to said tray disposed at one end of said frame and comprising a wide endless belt, guide members at each end of said belt over which it travels, a driven roller disposed between said guide members and a rod over which said belt travels after passing around said driven roller, said rod having a free end whereby said belt can be removed over said free end and then moved away from said driven roller.

15. The structure set forth in claim 14, a conveyor frame carrying said guide members, means securing said conveyor frame to said first mentioned frame, said rod being secured to said first mentioned frame whereby by removing said last mentioned means and removing said belt from said rod said conveyor frame can be moved away from said first mentioned frame.

16. A photo print handling device having in combination, a tray for containing liquid for treating said prints, means for feeding prints to the front end of said tray, means at said end of said tray for submerging said prints and causing liquid to move toward the rear end of said tray, a pan in which said tray is supported, said pan and tray being substantially horizontal, said pan having a drain opening at one end and a supporting means for said end of said pan movable to position for lowering said end thereof for draining said pan.

17. A photo print handling machine having in combination, a tray adapted to contain liquid, a frame on which said tray is supported, a conveyor for delivering prints to said tray disposed at one end of said frame and comprising spaced parallel endless belts, guide members at each end of said conveyor over which said belts travel, a driven roller disposed between said guide members and a rod over which said belts travel after passing around said driven roller for pressing said belts against said driven roller, said rod being carried on said frame and having swiveling movement about an axis disposed centrally thereof and extending at right angles to the axis of said rod.

18. A photo print handling machine having in combination, a tray for containing liquid for treating prints, means for feeding prints to the front end of said tray, means for submerging said prints in said liquid and causing said liquid to move toward the rear end of said tray, a pan in which said tray is supported, said tray and pan being substantially horizontal, said pan having a drain opening at one end and a supporting means for said end of said pan having a movable element movable to position to shorten said supporting means for lowering said end of said pan for draining the same.

19. A photo print handling machine having in combination, a pan containing liquid, a tray disposed in said pan with its bottom disposed above the bottom of said pan, said tray having means at its front end for the entrance of liquid thereto from said pan, means adjacent the front of said tray for inducing the flow of said liquid into said tray and causing said liquid to flow toward the rear of said tray and means for decreasing the velocity of said liquid substantially uniformly across said tray as it approaches the rear of said tray and causing said liquid at the rear end of said tray to become substantially quiescent whereby prints floating in said liquid will move with said liquid and become substantially stationary at the rear end portion of said tray, said last mentioned means comprising a series of holes through the bottom of said tray spaced longitudinally thereof and spaced substantially uniformly across said tray so that said liquid progressively passes through said holes without deflecting said prints and can move forwardly in said pan beneath said tray.

20. A photo print-handling machine having in combination, a pan containing liquid, a tray disposed in said pan with its bottom disposed above the bottom of said pan, said tray having means at its front end for the entrance of liquid thereto from said pan, means adjacent the front of said tray for inducing the flow of said liquid into said tray and causing said liquid to flow toward the rear of said tray and means comprising holes through the bottom of said pan and spaced thereacross for decreasing the velocity of said liquid substantially uniformly across said tray as it approaches the rear of said tray and causing said liquid at the rear of said tray to become substantially quiescent whereby prints floating in said liquid will move with said liquid substantially rectilinearly longitudinally thereof and become substantially stationary at the rear portion of said tray in positions spaced transversely of said tray.

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