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Patented Sept. 28, 1909.
2 SHEETS—SHEET 1.



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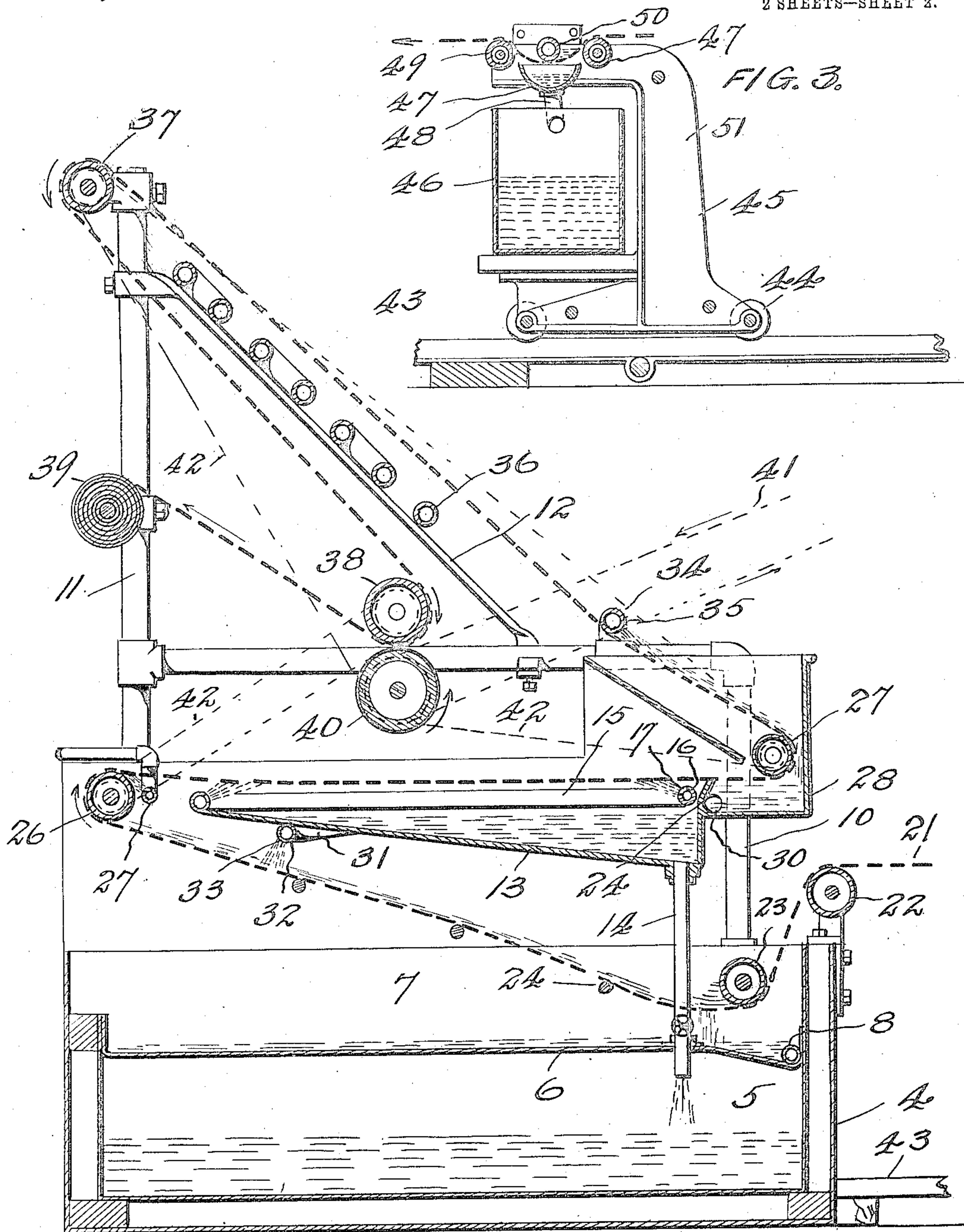
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APPARATUS FOR DEVELOPING AND WASHING PRINTS.

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2 SHEETS--SHEET 2.

935,148.



F/G. 2.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR DEVELOPING AND WASHING PRINTS.

935,148.

Specification of Letters Patent. Patented Sept. 28, 1909.

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To all whom it may concern:

Be it known that I, HENRY C. GAWLER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Developing and Washing Prints, of which the following is a specification.

The present invention relates more particularly to means for developing and washing prints, and while more particularly intended for blue prints made upon a continuous sheet, is not necessarily limited thereto.

The object of this invention is to provide simple, novel, and effective means for washing, fixing and drying prints, said means being so arranged that it is very economical, both in the use of chemicals and wash water.

A further object is to provide, in combination with a print washer and drier, a developing machine having novel relation thereto.

The preferred embodiment of the invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a side elevation of the apparatus. Fig. 2 is a vertical longitudinal sectional view therethrough. Fig. 3 is a detail sectional view of the developing machine preferably employed in connection therewith.

Similar reference numerals designate corresponding parts in all the figures of the drawings.

In the embodiment disclosed, a base is employed, in the form of a box 4 that contains a reservoir 5 for the fixing chemical. Over this reservoir is located a bottom 6, forming a catch pan 7 for waste water, the same being discharged from said catch pan through a suitable pipe 8. Mounted upon this base or reservoir, is a frame 10, including rear standards 11 carrying inclined braces 12 for the purpose hereinafter explained.

Located in the lower portion of the frame, is a catch pan 13, having a downwardly inclined bottom, to the lower portion of which is connected a discharge pipe 14 that delivers into the reservoir 5. Arranged within the upper portion of this catch pan, is a spray pipe 15 having transverse portions 16 provided with spray orifices 17. A pump 18

of any suitable character forms a part of the apparatus, and has an intake 19 communicating with the reservoir 5, its discharge being suitably coupled to a delivery pipe 20 that is connected to the spray pipe 15, all of which is illustrated in Fig. 1. It will thus be evident that if a fixing chemical in liquid form is placed in the reservoir 5 and the pump is operated by suitable means, this chemical will be discharged through the orifices 17, and dropping into the catch pan 13, will be delivered through the pipe 14 back into the reservoir. A complete circulatory system is thus produced.

The printed and developed sheet is indicated by a heavy dash line 21, and comes from the developing machine, hereinafter described, over a roller. It then dips downwardly under a roller 23, constituting a stop for the preliminary wash water, as hereinafter explained. This sheet thence passes upwardly at an inclination over suitable supporting rods 24, which may, if desired, be stationary, and around a roller 26. It is the upper face of the sheet that is printed, and in order to prevent injury to said face by contact with the roller 26, a spray of water is directed against the same by means of a suitable pipe 27, producing a film upon the surface of the roller. The said sheet then passes in a substantially horizontal direction, with its printed face underneath and exposed to the spray, from the pipe 16, as will be evident by reference to Fig. 2. After leaving the catch pan 13, its direction of movement is changed by still another roller 27^a, and it then passes upwardly at an inclination over the drying means, to be described. Arranged directly below the roller 27^a, is another catch pan 28 separated from the catch pan 13 by a partition wall 29. The discharge from said catch pan 28 is through an opening 30 delivering to a pipe 31 that extends beneath the catch pan 13, and has a transverse portion 32 provided with spray orifices 33. Located over the upper stretch of the sheet and above the roller 27 is a water supply pipe 34, which has orifices 35 delivering jets downwardly upon the upper face of the sheet.

With the arrangement above described, it will be noted that the water delivered from the orifices 35, flows down the sheet, thoroughly cleansing the same, and is collected

in the catch pan 28, and passing from thence, through the pipe 31, it is again delivered to the sheet prior to the passage of said sheet over the jets of chemical. The water flows
 5 down the sheet beneath the catch pan 13, and is stopped by the roller 23, collecting in the catch pan 7 and discharging through the outlet 8.

Supported on the inclined braces 12 is
 10 suitable drying means, which may be of any desired character, but in the present instance, is shown in the form of steam pipes 36, over which the upwardly ascending stretch of the sheet passes. Said sheet
 15 doubles around an upper roller 37, and passes downwardly beneath the pipes 36, thence around a roller 38 to a winding drum 39. An operating friction roller 40 preferably coöperates with the roller 38. The
 20 sheet passing between the same and the said roller may be positively driven, as shown at 41 from any suitable source of power. The said rollers 38 and 40 are preferably belted, as illustrated in dotted lines at 42, to certain
 25 of the other rollers so as to insure their proper simultaneous movements.

Extending from the front portion of the base or reservoir 4 are spaced tracks 43, and operating in said tracks are wheels 44
 30 journaled in a frame 45. This frame carries the developing mechanism, which consists of a reservoir 46 and an upper tank 47 having a discharge communicating with said reservoir, as illustrated at 48. Rollers 49, carried
 35 by a bracket 51, of the frame 45, are arranged on opposite sides of the tank 47, and between the rollers 49, is a developer delivering pipe 50, which receives its supply from the reservoir 46, the same being pumped
 40 thereto in the same manner as the fixing chemical is delivered.

Briefly described, the operation of the machine is as follows. The paper comes from the printing machines, passes over the
 45 rollers 49 and beneath the pipe 50, where the developer is applied. Thence it is received on the roller 22, and passes through the washing, fixing and drying apparatus. In its passage, it is first washed of the developer, the fixing bath is applied, and it is
 50 then rewashed, it being coated with the water used in the final wash, which is also used in the preliminary cleansing operation. Passing over the heater, the sheet is
 55 thoroughly dried, and is finally rolled.

The relative adjustment between the developing and washing machine is of very

considerable importance, inasmuch as by moving the former toward or from the latter, the period of development can be altered, as
 60 desired in order to secure the best results.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.
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Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is:—

1. In apparatus of the character set forth, the combination with a print washing machine, of a developing machine delivering the prints thereto and adjustable toward and from the same.
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2. In apparatus of the character set forth, the combination with a print washing machine, of tracks extending from said machine, and a developing machine delivering prints to the washing machine and having wheels that run upon the tracks.
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3. In apparatus of the character set forth, the combination with washing and drying means, of a roller for directing a sheet thereto, and means for applying a film of water to the roller.
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4. In an apparatus of the character set forth, the combination with a base forming a reservoir, a frame mounted thereon, and means for drying a printed sheet carried by said frame, of means for delivering water upon the upper face of said sheet at one point, a catch pan for collecting the water so delivered, means communicating with the catch pan for delivering water to the sheet at another point, a second catch pan having a discharge communicating with the reservoir, chemical spraying means located over the latter catch pan and delivering a chemical against the sheet between the said water delivery means, and a pump having its inlet communicating with the reservoir and its outlet delivering to the spraying means.
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In testimony whereof I affix my signature in presence of two witnesses.

HENRY C. GAWLER.

Witnesses:

C. F. PEASE,

W. D. WILCOX.