Dec. 2, 1930. F. T. SHEEDY ET AL 1,783,888

TRANSFER PRESS

Filed March 10, 1930

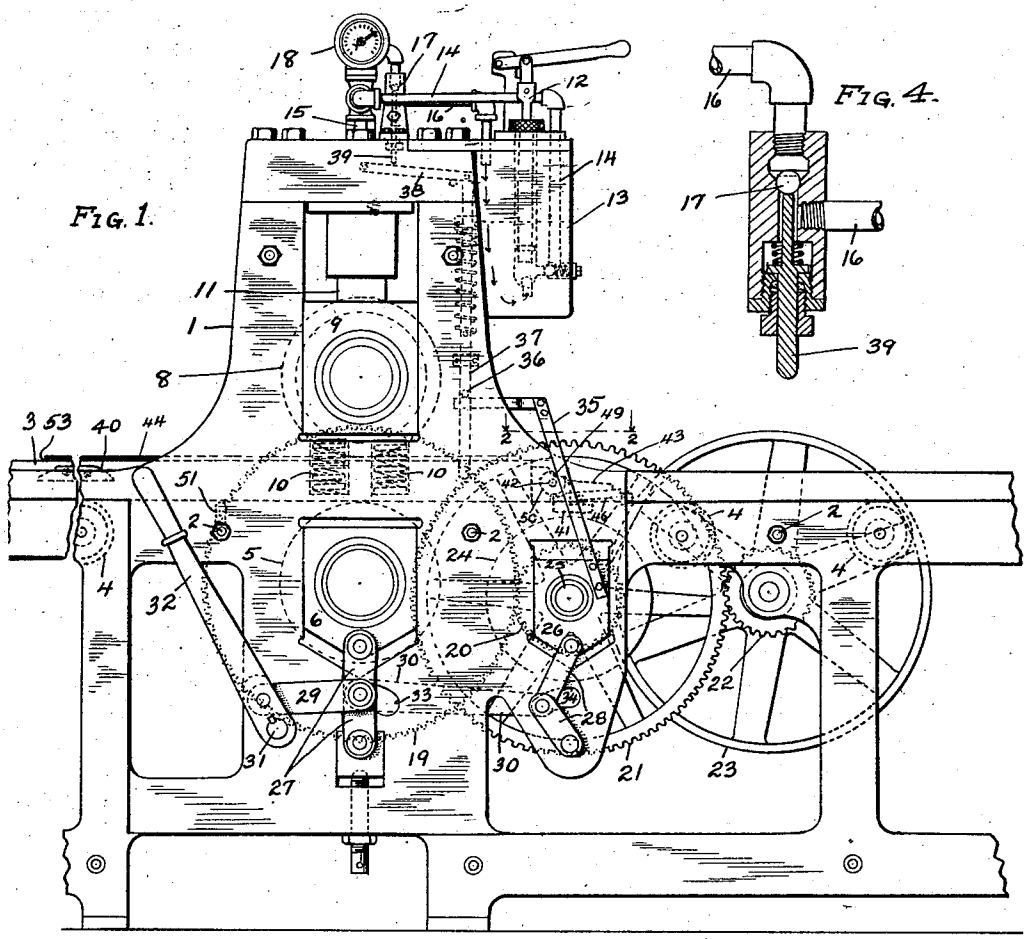


FIG. 1.

FIG. 4.

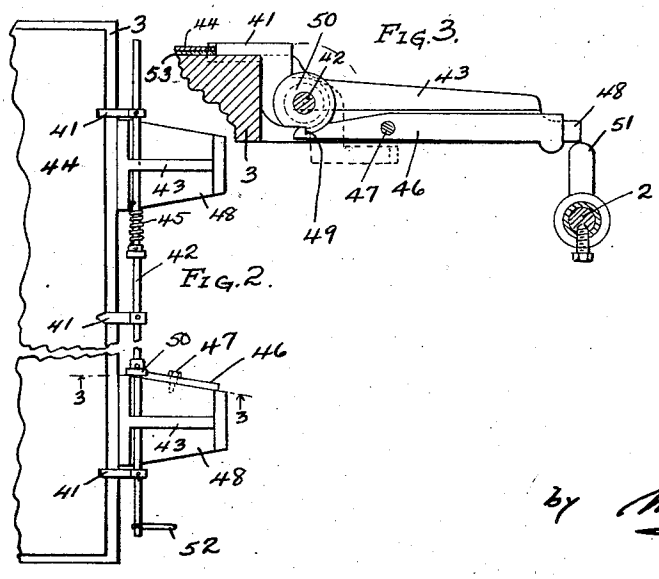


FIG. 3.

FIG. 2.

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UNITED STATES PATENT OFFICE

FRANK T. SHEEDY, HUGH C. WOOD, AND LOUIS TRAUNG, OF SAN FRANCISCO, CALIFORNIA, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO THE TRAUNG COMPANY, OF SAN FRANCISCO, CALIFORNIA, A COPARTNERSHIP CONSISTING OF LOUIS TRAUNG, CHARLES F. TRAUNG, L. H. JACKSON, H. W. JOHNSTON, FRANK T. SHEEDY, AND H. T. GARDNER

TRANSFER PRESS

Application filed March 10, 1930. Serial No. 434,516.

This invention relates to presses used in lithography and has for its objects improvements in a transfer press whereby the use of a scraper and tympan are avoided, the danger of stretching the sheet metal printing plate is avoided, the plate is gaged from the leading edge as it passes through the press instead of from the side, an absolutely equalized pressure across the plate is had, the pressure is automatically kicked off after passing the plate through the press, and the pressure cannot be applied until the bed is in place between a pair of pressure rolls. Another object is the provision of a soft rubber-covered pressure roll in combination with a flat reciprocating metal bed. Other objects will appear in the following description and accompanying drawings.

In the drawings Fig. 1 is a side elevation of our improved transfer press with the ends of the frame broken away and the bed broken so as to shorten the drawing.

Fig. 2 is a plan view of the leading or forward end of the flat bed showing the spring actuated gages.

Fig. 3 is an enlarged side view of the gage tripping mechanism as seen from the line 3—3 of Fig. 2.

Fig. 4 is an enlarged detail of the relief valve for breaking the pressure of the press.

Before describing our improvements, attention is called to the fact that in making lithographic transfers, such as transferring a lot of prints laid out on a keyboard to the prepared surface of a large sheet of zinc or aluminum, that one notched end of the metal sheet is first aligned against stops or gages arranged along one side edge of the flat iron bed of a press, the keyboard similarly notched and bearing the transfers is lowered face down upon the metal, the hinged tympan of the press is lowered, bed advanced under the scraper, the toggle lever of the scraper is pulled down and the bed is passed under the scraper either by hand or power.

The above practice subjects the plate to terrific pressure concentrated across a narrow band and in spite of metal tympans being in common use, the sheet metal tympan as well as the printing plate lying on the flat bed of the press are sometimes stretched to such a degree as to seriously interfere with proper register in color jobs, but nevertheless, the method as described is at the present moment in universal use in the great lithograph houses of the country.

In our press we gage the plate from the leading edge in direction of travel through the transfer press, something never done before, the tympan frame not permitting, and we apply the pressure by means of a rubber-covered roller forced down by means of an hydraulic pump, with a result that a better transfer is secured with less pressure, no tympan is required, stretching of the plate is practically avoided but if it should take place to a slight extent since the gaging is at the leading edge instead of at the side as heretofore and the plate travels through the transfer press in the same direction as through the cylinder presses it follows that any slight error due to stretching is easily compensated for.

In the drawings one side 1 of the frame of the press only is shown as it is understood that both are alike tied by rods 2 and supporting between them the rollers and movable flat bed 3 of the press.

The flat bed is guided against lateral displacement and is supported, when not under pressure, on idlers 4 carried on the frame and when under pressure principally on a large iron or steel roller 5, mounted in vertically slidable bearings 6, and which rises up directly under a similar roller covered with a heavy layer of tough live rubber 8 vulcanized to the iron roller, ground true on its outer diameter and of a grade to withstand very great pressure.

Roller 8 is also carried in vertically slidable bearings 9 resiliently forced upward by heavy compression springs 10 fitted in recesses in the frame or bearing housing so as to normally lift the roller 8 to clear the bed 3, and is forced down by means of hydraulic pistons 11, one over each bearing actuated by means of a small high pressure hand pump 12 mounted above and extending into an oil reservoir 13 carried on one side frame of the press, the pressure pipe 14 from the lower

end of the pump coming up through the oil reservoir and leading across the press to both pressure pistons as by vertical pipes 15, the one shown being for the forward bearing, while a return pipe 16 leads from the pressure pipe system back through a check valve 17 to the oil reservoir, it is of course understood that the pump itself and oil reservoir are suitably check valved at their lower end in the well known way not detailed in the drawing.

A pressure gage 18 is connected to the pressure line, and means is provided for automatically breaking the pressure at the end of the bed travel by opening check valve 17 in the return oil line to the reservoir and also for preventing the application of the hydrostatic pressure unless the lower roll 5 is in raised position under the bed as will be later explained.

Bed 3 is flat and as stated is normally supported on idlers 4, but when pressure is applied by roll 8, the lower roll 5 is elevated under the bed to just take its weight from the idlers and the revolving of the under roll under power applied through the train of gears 19, 20, 21, 22 from belt pulley 23 serves to draw the bed along between the rollers, pulley 23 being any type of clutch pulley construction not detailed in the drawings.

When the traveling bed has carried the plate through the rolls and the hydraulic pressure has been broken, the lower roll is dropped and a short roll or wheel 24 carried on gear shaft 25 in vertically slidable bearings 26 is raised to contact the under side of the bed and reverse its movement so as to return it to starting point. This is accomplished by supporting bearings 6 and 26 on both sides of the press on toggle levers 27, 28 connected by links 29, 30 for simultaneous action by means of a transversely extending shaft 31 provided at one side of the press with a hand lever 32, the arrangement being such that when the lever is pulled in one direction roll 5 will be elevated to contact bottom of bed and wheel 24 will be dropped out of contact (as shown in Fig. 1), and when pushed in the opposite direction the reverse position will obtain so as to reverse the bed.

To hold the toggles just over the center their center pins work in slots 33, 34 in the frame so as to definitely limit their travel, toggles 27 are presumed to be just slightly over center so as to be locked against the hydraulic pressure roll above.

As it is important that the hydraulic pressure should not be capable of being applied unless lower roll 5 is elevated to supporting position we provide a release for relief valve 17 which holds it open when bearing 26 is raised, and consisting of an arm 35 secured at its lower end to the bearing 26 and with its upper end lying under a pin 36 projecting from a vertically movable rod 37 pivoted at its upper end to a lever 38 arranged to raise the valve stem 39 and open the valve when bearing 26 is raised.

Rod 37 also extends downward adjacent the side of the bed 3 and is lifted at the end of the bed travel by a wedge 40 carried by the bed so that the pressure will automatically be broken at end of travel, roll 8 will instantly rise under influence of springs 10 and the bed will be free to return.

The plate gages 41 at the forward edge of the bed are best shown in Figs. 2 and 3, and they comprise several Z-shaped fingers secured to a transversely extending shaft 42 rotatably carried in ribs 43 of a pair of extensions or ears 48 secured to or integrally extending from the forward edge of the bed 3.

Fingers or gages 41 are adapted to swing on shaft 42 from a position lying in shallow recesses on the upper edge of the bed as shown in full lines in Fig. 3 for gaging the plate 53 and key-board 44, to a forward released position below the surface of the bed 3 as shown in dotted lines. Shaft 42 is actuated by spring 45 to automatically release the gage fingers upon advancing the bed so that the upper roller will not be injured, and to this end a latch 46 pivoted at 47 to one of the ears 48 engages a jaw 49 of a collar 50 secured to shaft 42 to hold the gages over the bed, but allows them to fly forward when latch 46 is raised by passing over a cam 51 carried on one of the frame tie rods 2.

In operation of the press the gage fingers are turned back to position by means of a small handle 52 on shaft 42.

Forwardly extending ears 48 are finished on the bottom coincident with the bottom of the bed and are for the purpose of giving the supporting roll 5 an advance frictional grip upon the bed for pulling it in, as well as a final grip for wheel or wheels 24 for pushing the bed back. It is of course evident that suitable bumpers or dash pots may be used at opposite ends of travel of bed as are common on all types of reciprocating flat bed presses.

We claim:

1. A transfer press comprising a frame, a flat bed reciprocable on said frame, a pressure roll extending across the upper face of said bed, a layer of tough resilient rubber on said roll, means for forcing said roll toward said bed, a supporting roll under said bed and under said pressure roll, means for lowering said supporting roll out of contact with said bed, a reversing roller under said bed and means for elevating the reversing roller to contact said bed, the means for lowering the supporting roll and elevating the roller comprising vertically movable bearings for the roll and roller, toggle levers supported from the frame of the press arranged for moving the bearings up and down,

and operating linkage connecting the toggle levers.

2. A transfer press including a pair of side frames with a flat bed reciprocably mounted thereon, a pressure roll extending across the press above the bed, and hydrostatic means for forcing said roll downward toward said bed comprising a pressure cylinder above each end of the roll, a force pump provided with piping leading to both cylinders.

3. A transfer press including a pair of side frames with a flat bed reciprocably mounted thereon, a pressure roll extending across the press above the bed, and hydrostatic means for forcing said roll downward toward said bed comprising a pressure cylinder above each end of the roll, a force pump provided with piping leading to both cylinders, and a pressure relief valve on said piping tripped by the action of the press at a predetermined point of its operation.

4. A transfer press including a pair of side frames with a flat bed reciprocably mounted thereon, a pressure roll extending across the press above the bed, hydrostatic means for forcing said roll downward toward said bed, and means for releasing and rendering said hydrostatic means ineffective upon the return movement of said bed.

5. A transfer press including a pair of side frames with a flat bed reciprocably mounted thereon, a pressure roll extending across the press above the bed, hydrostatic means for forcing said roll downward toward said bed, and means for releasing and rendering said hydrostatic means ineffective upon the return movement of said bed comprising a trip on the rear portion of the bed and mechanism operated by said trip during its advance arranged for opening said valve.

6. A transfer press including a pair of side frames with a flat bed reciprocably mounted thereon, a pressure roll extending across the press above the bed, hydrostatic means for forcing said roll downward toward said bed, and means for releasing and rendering said hydrostatic means ineffective upon the return movement of said bed, and means for automatically lifting said pressure roll to clear the bed upon release of the pressure means.

7. In a transfer press of the character described, a pressure roll, a flat bed reciprocable under said roll, a plurality of gage fingers at the forward edge of said bed, and means for automatically removing said fingers as the bed advances under the roll.

8. In a transfer press of the character described, a pressure roll, a flat bed reciprocable under said roll, a plurality of gage fingers overlying the forward edge of said bed, a shaft upon which said fingers are mounted for swinging out of position below the top of the bed, and means for automatically swinging said fingers out of position below the upper surface of the bed as same advances under said roll.

9. In a transfer press of the character described, a pressure roll, a flat bed reciprocable under said roll, a plurality of gage fingers overlying the forward edge of said bed, a shaft upon which said fingers are mounted for swinging out of position below the top of the bed, and means for automatically swinging said fingers out of position below the upper surface of the bed as same advances under said roll comprising a spring tending to revolve said shaft to release the fingers, a latch holding the shaft against the action of said spring, and a striker on said press releasing said latch at a predetermined position of said bed.

10. A transfer press including a pair of side frames, a pressure roll extending from frame to frame, a flat bed mounted for reciprocation under said pressure roll, a supporting drive roll under said bed adapted to contact said bed for driving the same by friction in one direction, and means for reversing the direction of said bed.

11. A transfer press including a pair of side frames, a pressure roll extending from frame to frame, a flat bed mounted for reciprocation under said pressure roll, a supporting drive roll under said bed adapted to contact said bed for driving the same by friction in one direction, and means for reversing the direction of said bed comprising a reverse drive roll under said bed adapted to contact the same, and means for selectively contacting the supporting drive roll or the reverse drive roll with said bed.

12. In a structure as specified in claim 11, a forwardly extending ear on said bed adapted for frictional contact with the drive rolls.

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