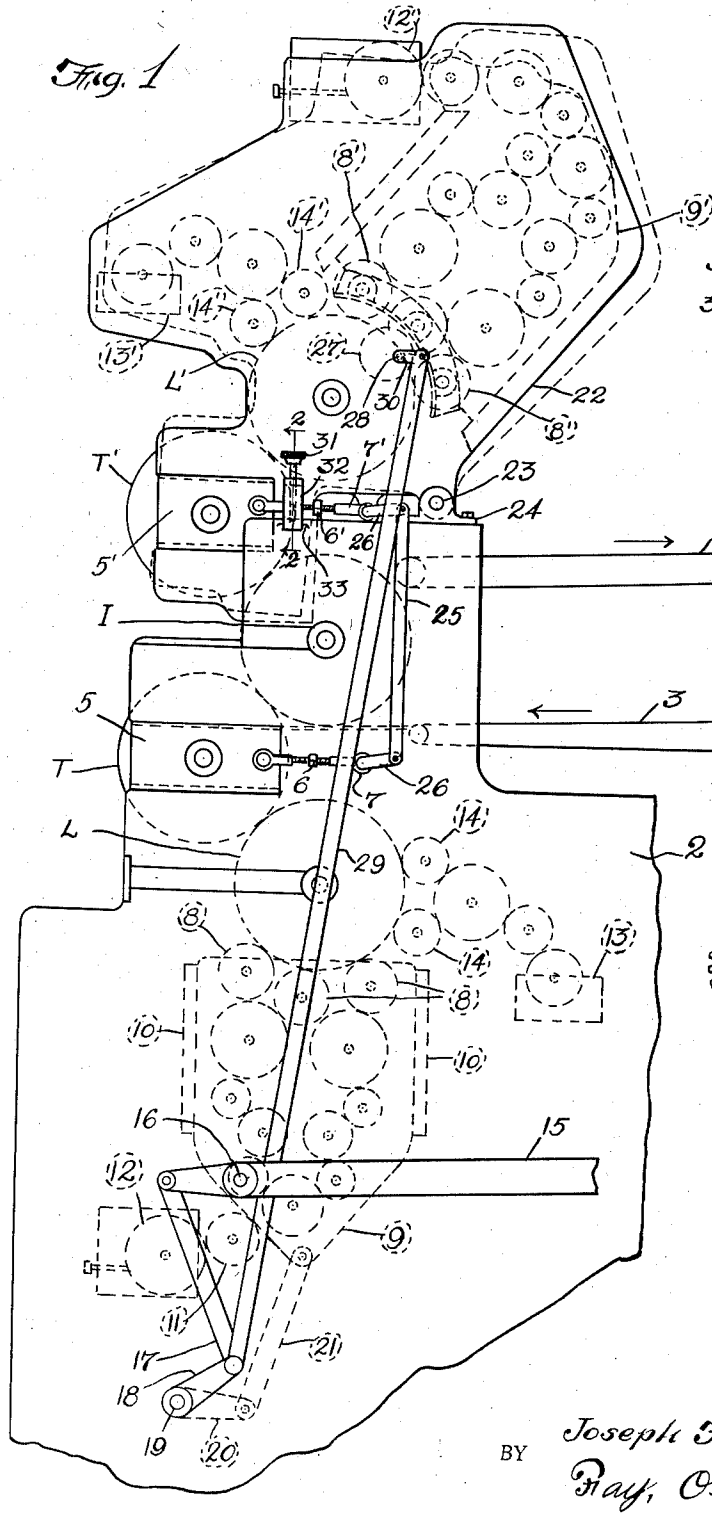
May 16, 1939. J. F. JIROUSEK 2,158,701

PRINTING PRESS

Filed March 15, 1937

Fig. 1



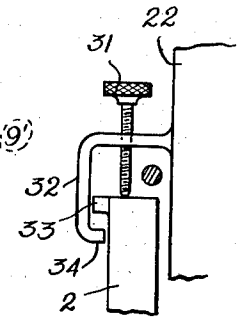


Fig. 2

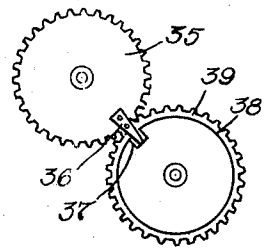


Fig. 3

INVENTOR.
Joseph F. Jirousek

BY Ralf, Oberlin & Ralf
ATTORNEYS

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PRINTING PRESS

Joseph F. Jirousek, Cleveland, Ohio, assignor to The Chandler and Price Company, Cleveland, Ohio, a corporation of Ohio

Application March 15, 1937, Serial No. 130,937

6 Claims. (Cl. 101—142)

This invention relates, as indicated, to printing presses, but has reference more particularly to improvements in and auxiliary devices for use in connection with the lithograph press disclosed in my copending application, Serial No. 717,028, filed March 23, 1934 now Patent No. 2,109,486, dated March 1, 1938.

There is disclosed in the aforesaid application a press comprising lithograph plate transfer and impression cylinders in generally vertical stack arrangement, with the impression cylinder at the top and the lithograph plate cylinder at the bottom. The press, as thus constructed, is necessarily limited to single-color lithography.

I have discovered that as a result of this arrangement of the cylinders, I may, with the use of a minimum number of additional cylinders and with a minimum amount of alteration of the single-color press render the press adaptable for two-color lithography.

A primary object of the invention, accordingly, is to provide a lithographic press adapted to be selectively used for single or two-color lithography.

A further object of the invention is to provide a press of the character described with which two-color lithography may be accomplished by the use of a number of cylinders less than that required for two three-cylinder units, and in which various controls are employed to actuate corresponding cylinders and other devices associated with each color unit.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims; the annexed drawing and the following description setting forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:

Fig. 1 is a side elevational view of a portion of a press embodying the novel features of the invention;

Fig. 2 is a cross-sectional detail, taken on the line 2—2 of Fig. 1; and

Fig. 3 is an end elevation, showing means employed for insuring proper registration of certain of the cylinders.

Referring more particularly to the drawing, there is shown a framework 2 of suitable construction, in which is mounted an impression cylinder I for carrying paper to be lithographed, and cooperating therewith is a transfer cylinder T, preferably in generally vertical stack, and illustrated as in placement below and to the left of the impression cylinder. In addition, a lithograph plate cylinder L is conveniently arranged below the impression cylinder and is adapted to be driven in step with the cylinders I and T. The impression cylinder is supplied with paper by means of suitable feed tapes 3, which feed the sheets to a point adjacent the bottom of the impression cylinder. From the impression cylinder, the lithographed sheet is taken by off-bearing means in the form of carrier-chains 4.

The cylinder T may comprise a body with shaft ends or trunnions mounted in bearing-blocks 5 carried in the frame, preferably with undercut or tongue and groove inter-engagement. Adjustment of the blocks and corresponding adjustment of cylinder T is provided by a turnbuckle and locknut regulator 6 between each block 5 and the frame. A throw-out mechanism is incorporated, in the form of a shaft, mounted in the frame and having eccentric ends to engage the link ends 7 of the turnbuckle regulators 6. The shaft may be turned in its mountings by suitable throw-out actuating mechanism (not shown) operative upon failure of proper feed of sheets, such mechanism being described in detail in the aforesaid copending application. Upon actuation of such throw-out mechanism, the bearing blocks 5 are moved to the left and the cylinder T is pushed outwardly and out of impression contact.

The cylinder T is provided with means for clamping thereon a transfer surface, such as a rubber blanket, and the cylinder L, which is mounted in suitable bearings in the frame, is preferably provided with suitable clamping means for holding lithograph plates upon its periphery.

Inking rollers 8 are arranged adjacent the cylinder L, and are mounted in a carriage 9 which is movable vertically within gibs 10 mounted in the frame. The inking rollers 8 are supplied through a plurality of adjacent feed rollers by a carrier-roller 11 which swings alternately to pick up a charge from the ink-fount roller 12, mechanism for swinging this carrier-roller being disclosed in the earlier application.

A water-supply or fount 13 and rollers 14 are arranged near cylinder L for dampening the lithograph plates during operation of the press.

For the purpose of dropping the carriage 9 and the inking rollers carried thereby out of working position, a hand lever 15 is provided, which is fulcrumed at 16 on the frame. This lever is

connected through a link 17 to swing a lever-arm 18 and its attached shaft 19, and operate the levers 20 and 21, into extended (up) or collapsed (down) position. The lever 15 may be operated to lower the carriage in response to failure of a sheet to be properly fed to the impression cylinder, and mechanism for thus actuating the hand lever is fully disclosed in the prior application and need not be further described.

The press, as thus far described, is adapted for single color lithography only.

In order to utilize the press for two-color lithography, I provide an auxiliary frame 22, which is pivoted, as at 23 to bearings 24 mounted on the main frame 2. Mounted in the frame 22 is a transfer cylinder T', which is disposed directly above the transfer cylinder T, and a lithograph plate cylinder L' disposed above the impression cylinder I.

The cylinder T' is similar in all respects to the cylinder T and therefore comprises a body with shaft ends or trunnions mounted in bearing blocks 5' carried in the frame 22. Adjustment of these blocks and corresponding adjustment of the cylinder T' is provided by a turnbuckle and locknut regulator 6' between each block 5' and the frame 22, and throw-out mechanism is also provided in the form of a shaft mounted in the frame 22 and having eccentric ends to engage the link ends 7' of the turnbuckle regulators 6'. The shaft may be turned in its mountings, concurrently with the shaft which actuates the links 7, by means of levers 25 and links 26 which interconnect the shafts, that is to say, upon turning of the shaft engaging the links 7' will be turned in the same direction and to the same extent through the intermediary of the lever 25 and links 26.

The frame 22 has mounted therein for sliding movement relatively to the cylinder L' a carriage 9', which carries inking rollers 8', which are supplied with ink through the intermediary of other rollers carried by the carriage. These latter rollers receive ink from an ink fountain roller 12'. The carriage 9' may be moved away from the cylinder L' simultaneously with the lowering of the carriage 9, and for this purpose a disk or roller 27 is mounted on the frame and is rotatable about a point 28 eccentric to the roller. This roller engages the carriage 9', so that when the hand lever 15 is actuated the roller 27 is rotated about the point 28 through the intermediary of connecting bar 29 and link 30, thereby moving the carriage 9' with respect to the cylinder L'.

The frame 22 has also mounted therein a water fountain 13', which supplies water to the plates on cylinder L' through the intermediary of water fountain rollers 14'.

When the press is used for two-color lithography, the frame 22 occupies the position shown in solid lines, being maintained in this position by means of adjusting screws 31 threadedly secured in lateral extensions 32 of the frame 22, and engaging the upper edges of the frame 2.

When it is desired to use the press for single color lithography only, the frame 22 is tilted rearwardly until it occupies the position shown in dotted lines, in which position the cylinder T' will be out of driven engagement with the impression cylinder and will be spaced sufficiently from the impression cylinder to insure against lithographing a sheet on the latter cylinder. For this purpose, the screws 31 are adjusted until the stops 33 on the frame 2 are engaged by the lower unturned ends 34 of the extensions 32.

The cylinders I, T' and L' are suitably intergeared, and in order to secure proper registration of the cylinders I and T', the end gear 35 of the cylinder T' (Fig. 3) is provided with a finger 36 which is adapted to enter a notch 37 in a plate 38 disposed adjacent the end gear 39 of the cylinder I.

The press is adapted to be operated in substantially the manner disclosed in my aforesaid copending application. The sheet to be lithographed is fed to the impression cylinder I by the feed tapes 3 and is seized by this cylinder and carried in succession against the cylinders T and T', these cylinders applying different colors to the sheet as is well understood in two-color lithography. The lithographed sheet is then released and deposited on the chains 4, whereby it is carried to a delivery table (not shown).

When it is desired to use the press for single, color lithography, it is only necessary to tilt the frame 22 in the manner which has already been described, so that the sheet will receive an impression from the cylinder T only.

It is thus seen that I have provided a lithographic press of extremely compact, simple and rugged construction, and in which a single impression cylinder is used for either single or two color lithography.

Other forms may be employed embodying the features of my invention instead of the one explained, change being made in the form or construction, provided the elements stated by any of the following claims or the equivalent of such stated elements be employed, whether produced by my preferred method or by others embodying steps equivalent to those stated in the following claims.

I therefore particularly point out and distinctly claim as my invention:

1. A printing press comprising a main frame, an impression cylinder mounted therein, a lithographic printing unit mounted in said frame and adapted for cooperation with said impression cylinder, an auxiliary frame mounted on said main frame and movable towards and away from the latter, and a second lithographic printing unit mounted in said auxiliary frame and adapted for cooperation with said impression cylinder.

2. A printing press comprising a main frame, an impression cylinder mounted therein, a lithographic printing unit mounted in said frame and adapted for cooperation with said impression cylinder, an auxiliary frame mounted on said main frame and pivotally movable towards and away from the latter, and a second lithographic printing unit mounted in said auxiliary frame and adapted for cooperation with said impression cylinder.

3. A printing press comprising a main frame, an impression cylinder mounted therein, a lithographic printing unit mounted in said frame and adapted for cooperation with said impression cylinder, an auxiliary frame mounted for pivotal movement towards and away from the latter, and a second lithographic printing unit mounted in said auxiliary frame and adapted for cooperation with said impression cylinder.

4. A printing press comprising a main frame, an impression cylinder mounted therein, a lithographic printing unit mounted in said frame and adapted for cooperation with said impression cylinder, an auxiliary frame mounted for pivotal

movement towards and away from the latter, a second lithographic printing unit mounted in said auxiliary frame and adapted for cooperation with said impression cylinder, and screw means for moving said auxiliary frame about its pivotal mounting relatively to said main frame.

5. A printing press comprising a main frame, an impression cylinder mounted therein, a lithograph plate cylinder mounted in said frame and disposed below said impression cylinder, an inking mechanism for said plate cylinder, an auxiliary frame mounted for pivotal movement towards and away from said main frame, a second lithograph plate cylinder mounted in said auxiliary frame and disposed above said impression cylinder, an inking mechanism for said second plate cylinder, and means for simultaneously moving said inking mechanisms towards or away from their respective plate cylinders.

6. A printing press comprising a main frame, an impression cylinder, bearings mounted in said frame and slidable therein, a lithograph transfer cylinder mounted in said bearings, an auxiliary frame, bearings mounted in said auxiliary frame and slidable therein, a second transfer cylinder mounted in said last-named bearings, the bearings in said auxiliary frame being parallel with and slidable in a direction parallel with the direction of movement of those in the main frame and means for simultaneously sliding the bearings in both of said frames.

JOSEPH F. JIROUSEK.