

June 8, 1937.

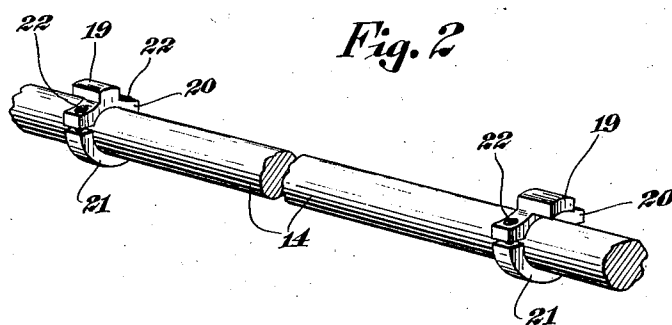
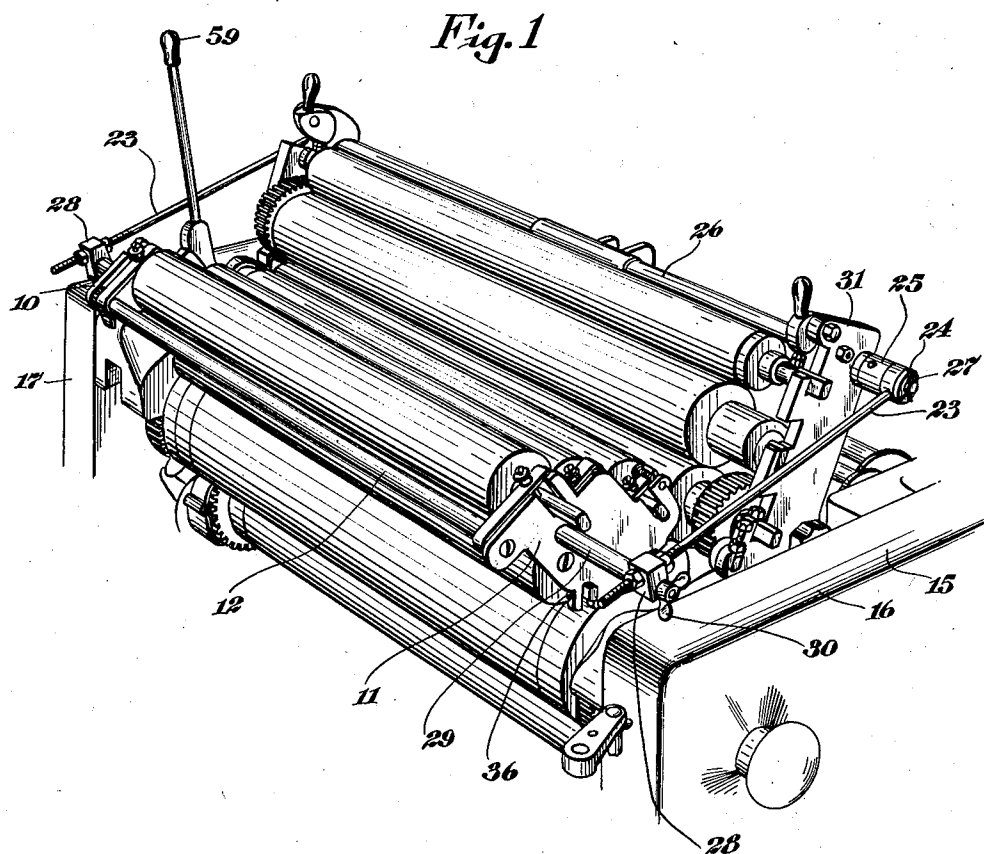
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2,083,497

ROLLER ATTACHMENT FOR LITHOGRAPHIC MACHINES

Filed Oct. 18, 1935

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 3

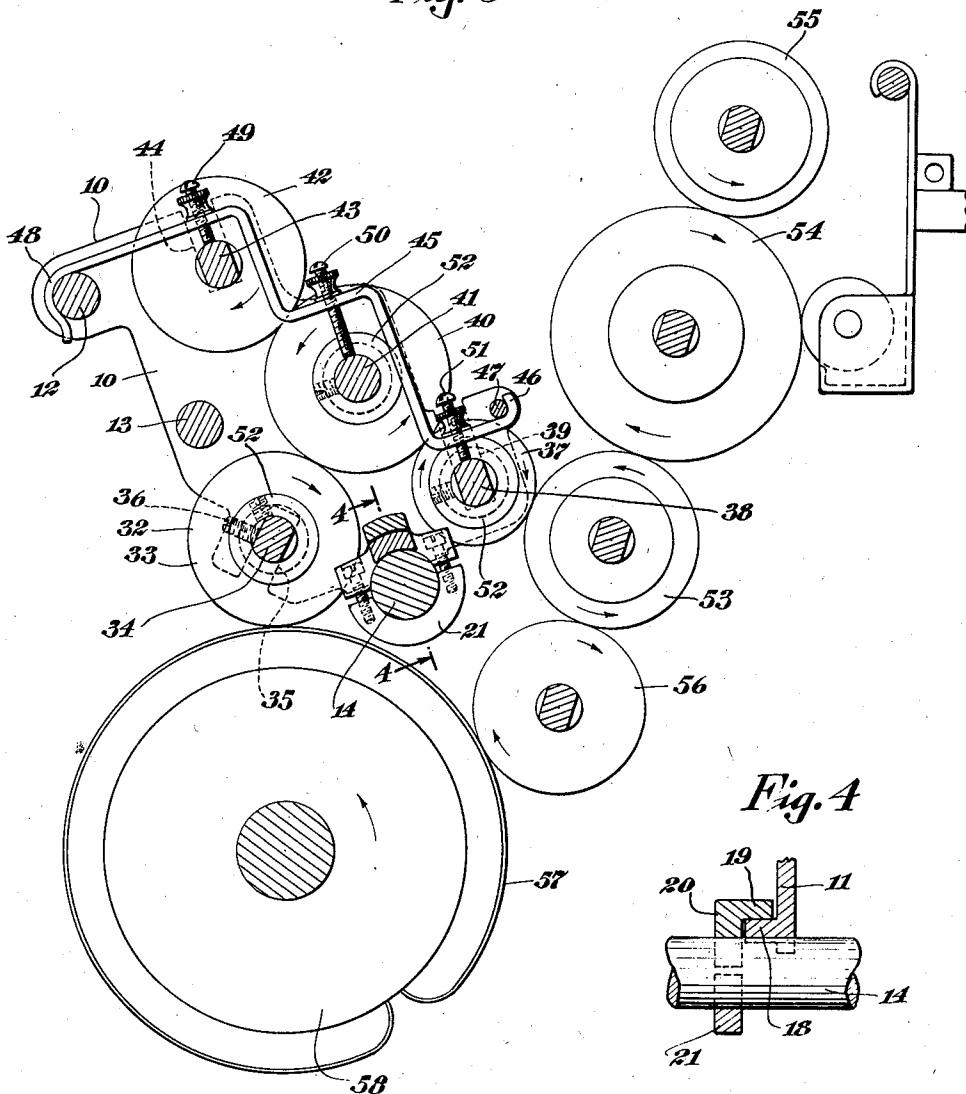
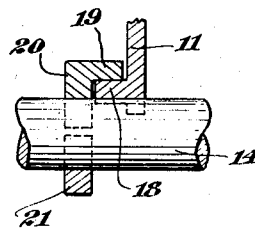


Fig. 4



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ROLLER ATTACHMENT FOR LITHOGRAPHIC MACHINES

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3 Claims. (Cl. 101—351)

This invention relates generally to machines for printing, and more particularly to an ink distributing roller attachment for lithographic machines.

5 The main object of this invention is the provision of an auxiliary ink distributing mechanism which may be appended to previously existing lithographic machines or incorporated during the construction of new lithographic machines.

10 Heretofore difficulty has been experienced with lithographic machines in properly applying a coating of ink to the lithographic plate therein. This has been encountered especially where the lay-out of the printed page contained great variation in distribution, as for example where half-tones or line drawings are interspersed with light face type. Under such conditions if too much ink is used the half-tones are too dense and lack contrast while ink is carried into the white space about the type, and on the other hand, insufficient inking results in grayish blacks and flat half-tones with occasional water streaks and ghosts.

20 Through the utilization of the present invention, the above mentioned difficulties are remedied and a lithographically printed sheet of paper is produced in which are found brilliant half-tone pictures, and dense, even-laying blacks of type matter and solids.

30 Another object of this invention is the provision of structure of the class described which is simply attached to the lithographic press, and expeditiously detached for cleaning or adjustment.

35 A further object of the invention is the provision of structure whereby the same may be dismantled for cleaning and then quickly and easily reassembled without disturbing the previously adjusted inter-roller pressures thereof.

40 A still further object is the provision of structure whereby greater ink distribution is secured at all speeds and adequate ink distribution is obtained at considerably higher press speeds, so that the ink lies flatter; more densely and uniformly. The efficiency of a hand ink fountain is also increased, while the operation of an automatic ink fountain is not interfered with.

50 Because of the reduced pressure of the "form" (lithographic plate contacting) rollers against the lithographic plate, the latter gives longer runs, and the life of the rollers is increased with a concurrent reduction in stress on the related machine parts and bearings. The additional

rollers also reduce the occurrence of water streaks and ghosts.

These objects and further ends and advantages will more fully appear in the progress of this disclosure and as pointed out in the appended claims.

In the accompanying drawings:

Figure 1 is a fragmentary view in perspective showing the invention as applied to a rotary lithographic printing press.

Figure 2 is a fragmentary view in perspective of the attaching brackets comprising split collars fastened to a tie bar of the lithographic machine.

Figure 3 is a vertical sectional view taken transversely of the attachment, looking inwardly thereof and viewed from a plane immediately inwardly of the right hand frame plate, as viewed in Figure 1.

Figure 4 is a fragmentary sectional view of Figure 3 taken along the plane 4—4 thereon.

The chassis of this roller attachment is comprised of a pair of vertical and parallel opposed plates 10 and 11 which are maintained in spaced inter-relation by a pair of transverse tie-rods 12 and 13. The plates 10 and 11 are of irregular shape and the configuration thereof will be more particularly set out below. Tie-rods 12 and 13 are suitably affixed therebetween as for example by the flat headed machine screws penetrating countersunk orifices in said plates and engaging the internally threaded ends of the said rods.

Numeral 14 designates a heavy transverse tie rod which is part of the structure of the main rotary lithographic press generally indicated by numeral 15. Tie rod 14 supports and spaces the two vertical side walls 16 and 17 of press 15, and said rod also carries the chassis of the roller attachment by means of two inwardly offset lugs 18 resting thereon. Lugs 18 are integral lateral projections from the plates 10 and 11 at the lower edges thereof and are of a suitable shape preferably curved so that the under surfaces thereof saddle upon the upper surface of the tie bar 14 while the upper surfaces of said lugs are adapted to fit beneath a pair of lugs 19, which are integral with and outwardly offset from the upper halves 20 of a pair of split collars 21. Collars 21 are affixed to the tie rod 14 by means of the clamping action obtained when the screws 22 are tightened. Screws 22 freely penetrate the upper halves 20 and threadedly engage the lower halves of the split collars 21 as best seen in Figure 2 of the accompanying drawings. The collars 21 are so spaced along the rod 14 that the

vertical surfaces of the inner ends of lugs 18 abut the outer vertical surfaces of the upper halves 20 as seen in Figure 4.

It may now be seen that the chassis of the roller attachment is mounted upon rod 14 by placing lugs 18 thereon forward of lugs 19 or to the right thereof as viewed in Figure 3 and then circumferentially shifting the said chassis until the lugs 18 are under lugs 19 as shown in Figure 4. In the procedure just outlined the inking head 31 is tilted to allow sufficient clearance. The roller attachment chassis is secured in position with the lugs 18 and 19 interlocked by means of a pair of braces 23 which limit the rotational displacement thereof about rod 14.

The pivotal ends of braces 23 are integrally and radially mounted in collars 24 in turn pivotally mounted on extensions 25 which are affixed to the outer ends of a tie bar 26. The bar 26 is one of the transverse members of the inking head 31 on the press 15. Extensions 25 are comprised of a collar portion having a set screw which engages the end of the tie rod inserted therein and a reduced position which penetrates collars 24, the latter being retained thereon by a washer and cotter pin 27. Each of the other ends of braces 23 are threaded for a substantial portion thereof and said ends freely penetrate blocks 28 which are fixed therealong by means of nuts on said braces which are drawn up against both sides of said blocks. Blocks 28 are mounted upon posts 29 which extend outwardly and perpendicularly from plates 10 and 11. The outer terminals of posts 29 are internally threaded to receive wing bolts 30, said bolts penetrating transverse orifices in blocks 28.

The form roller 32 is comprised of an outer cylinder 33 of a resilient material, preferably rubber, which is mounted in turn upon a rigid cylinder rotatably carried by means of bushings upon a shaft 34. Shaft 34 has the terminals thereof flattened so that it is capable of displacement along the slots 35 which are formed in the lower edge of plates 10 and 11, the configuration of said plates being best seen in Figure 3. Shaft 34 may be fixed in its displacement along slots 35 by means of set screws 36 mounted in plates 10 and 11 which meet said shaft at right angles to the length thereof. Shaft 34 moves with plates 10 and 11.

An ink pickup roller 37 is constructed similarly to roller 32, being carried by a shaft 38. Shaft 38 has the ends thereof flattened and is adapted for vertical displacement in the slots 39.

An intermediate roller 40 is constructed similarly to roller 32, and is mounted rotatably on a transverse shaft 41. The terminals of shaft 41 abut the inner faces of plates 10 and 11 and are not journaled therein. Roller 40 is thus maintained in operative position by riding upon the rollers 32 and 37.

An ink distributing roller 42 has a rigid outer cylinder preferably brass, and is rotatably mounted on a transverse shaft 43. Shaft 43 has the ends thereof flattened and is adapted for vertical displacement within the slots 44 in the plates 10 and 11. Roller 42 is of the transverse oscillating type well known in the printing art having internal cam ways which cooperate with studs projecting proportionately from shaft 43 within said roller. In normal operation the roller 42 rests upon the roller 40.

The relative inter-roller pressures are regulated by means of structure now to be described.

A pair of irregularly bent clips 45 are adapted

by means of the upturned lower ends 46 thereof to hook under a pair of inwardly projecting studs 47 extending off the inner faces of plates 10 and 11. The upper ends of clips 45 are curved as indicated by numeral 48 and are adapted to frictionally and resiliently engage the tie rod 12. The general configuration of the clips 45 is best seen in Figure 3. Each of the clips 45 is provided with three screws 49, 50 and 51, which are adapted to bear against the upper surfaces of the extremities of shafts 43, 41 and 38 respectively. Each of the last mentioned screws is provided with suitable locking means as, for example, with knurled nuts as shown. Each of the shafts 34, 41 and 38 is provided with a pair of collars 52 which are fixed thereon at either side of the corresponding rollers and which serve to properly center the same. Shaft 43 is not provided with collars corresponding to the collars 52 just mentioned because the lateral displacement of the oscillating roller 42 is controlled internally as previously set forth. It may now be seen that by unsnapping the curved portions 48 of the clips 45 from the tie rod 12 the entire clips may be unhooked from the studs 47, and the rollers 42, 40 and 37 may be conveniently removed for cleaning since it is unnecessary to disturb the adjustment of the screws 49, 50 and 51 in this process. When these rollers are replaced the clips are merely hooked under the studs 47 and resnapped by the rod 12. The pressures existing between the various rollers will now be the same as before the cleaning operation was undertaken.

The roller 37 contacts the roller 53 which is preferably a rubber roller and is one of a series of rollers in the inking bead 31. As indicated on Figure 3, ink is deposited upon a roller 54, which is preferably a rubber roller of the oscillating type. Roller 55 is preferably steel and serves to evenly distribute the ink on roller 54. Ink travels from roller 54 to roller 53 and thence in two directions. One route by way of a roller 56, preferably rubber, to the lithographic plate 57 mounted upon the main cylinder 58 of the press 15. The other route of ink travelling from roller 53 is by way of rollers 37, 40 and 32. The last mentioned roller delivers ink to the lithographic plate 57. The roller 42 being of the oscillating type serves to uniformly spread the ink on roller 40.

It may now be seen that ink is deposited upon the lithographic plate at two separate points, and since the ink delivered on said plate is thus divided, not only is the distribution thereon more uniform, but the pressure of rollers 56 and 32 thereagainst can be considerably reduced. By manipulation of the settings of the various shafts 34, 38, 41 and 43, which is easily accomplished by means of set screws 36 and screws 49, 50 and 51, the inter roller pressures may be so arranged that the ink is transferred in a highly efficient manner from the pick up roller 37 to the form roller 32.

Numeral 59 in Fig. 1 designates an extension handle used in preference to the short standard handle, such as may be seen in the same figure, adapted to elevate the inking head 31 on the press 15. Such long handle is required to enable the operator to conveniently raise the auxiliary inking device into proper position, as before explained, because the roller attachment brace 23 would interfere with a standard short handle.

I wish it distinctly understood that minor va-

riations in the materials, construction and disposition of the various parts of this invention may be introduced without departing from the spirit of the invention and the scope of the following claims.

I claim:

1. The combination with a rotary lithographic printing press, comprising an inking head, a cylindrical lithographic plate and a frame tie bar; of a detachable auxiliary inking device for diverting a part of the ink from the inking head, serving the lithographic plate, to a separate circumferential portion of said plate, said device comprising a pair of split collars, provided with offset lugs and spacedly clamped around said tie bars, two chassis plates with lugs interlockingly engaging the aforesaid lugs, a set of ink-transferring rollers journaled between the chassis plates and a pair of adjustable braces, adapted to tie the free-swinging ends of the chassis plates to the frame structure of the inking head at a proper angle for operative contact of the auxiliary inking device with the inking head and the lithographic plate.

2. In a rotary lithographic printing press, comprising an inking head and a cylindrical lithographic plate, a detachable auxiliary inking device for diverting a part of the ink from the inking head, serving the lithographic plate, to a separate circumferential portion of said plate, said device comprising a pair of chassis plates, a set of ink-transferring rollers loosely journaled between these chassis plates, detachable means to pivotally fasten and hold said chassis plates on

the frame of the press in proper contacting position of the set of rollers relative to the inking head and the lithographic plate, and a pair of resilient detachable clips, provided with stepped offsets and adjustable set screws, mounted in said offsets, said clips pivotally fastened at their ends alongside of the chassis plates in such a way that the set screws form limit stops for the movement of the loosely journaled ends of the roller shafts, so that the inter-roller pressure may be regulated thereby.

3. The combination with a rotary lithographic printing press, comprising an inking head and a cylindrical lithographic plate, inked by said head; of a detachable auxiliary inking device for diverting a part of the ink from said inking head to a separate circumferential portion of said plate, said auxiliary device comprising a pair of chassis plates, pivotally and adjustably held on the frame structure of the press, an ink pickup roller, adjustably journaled in the chassis plates so as to contact one of the inking head rollers, a form roller, adjustably journaled in the chassis plates, apart from the pickup roller and so as to contact the cylindrical lithographic plate, and an intermediate transfer roller, floatingly supported by the pickup and the form roller, with unjournaled offset free ends and means to limit the upward free motion of said intermediate roller, said means comprising adjustable stops, adapted to contact the unjournaled offset ends of the roller, said stops mounted on the chassis plates.

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