

Oct. 31, 1939.

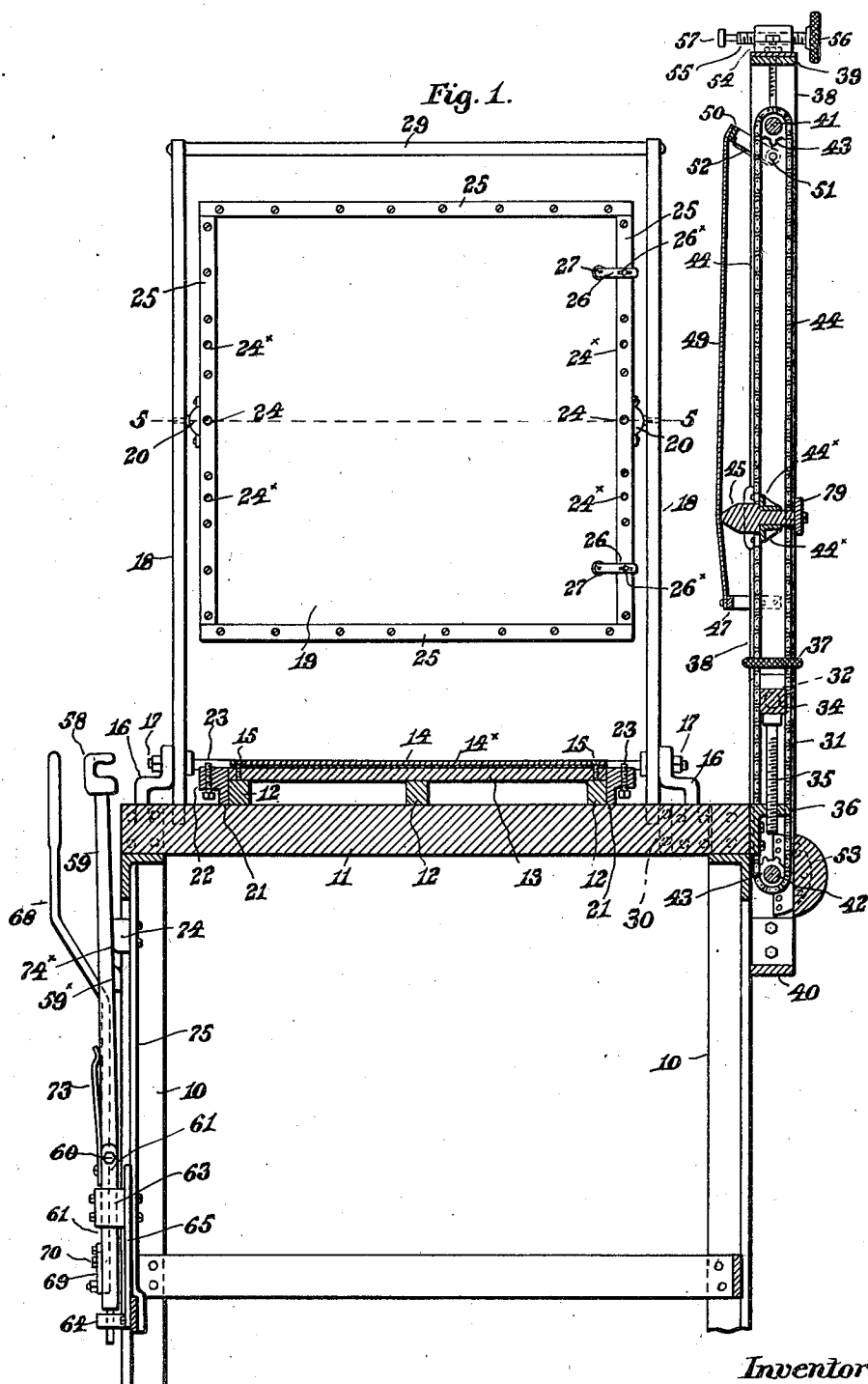
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2,178,259

LITHOGRAPHER'S PRESS

Filed June 22, 1938

3 Sheets-Sheet 1



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LITHOGRAPHER'S PRESS

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3 Sheets-Sheet 2

Fig. 2.

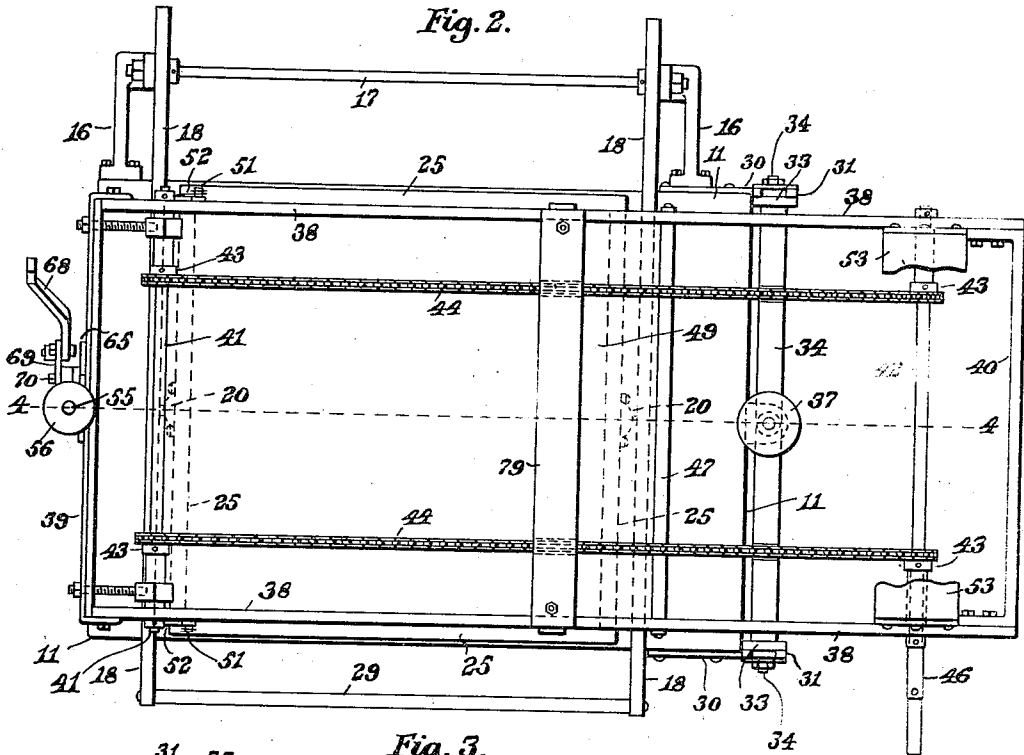
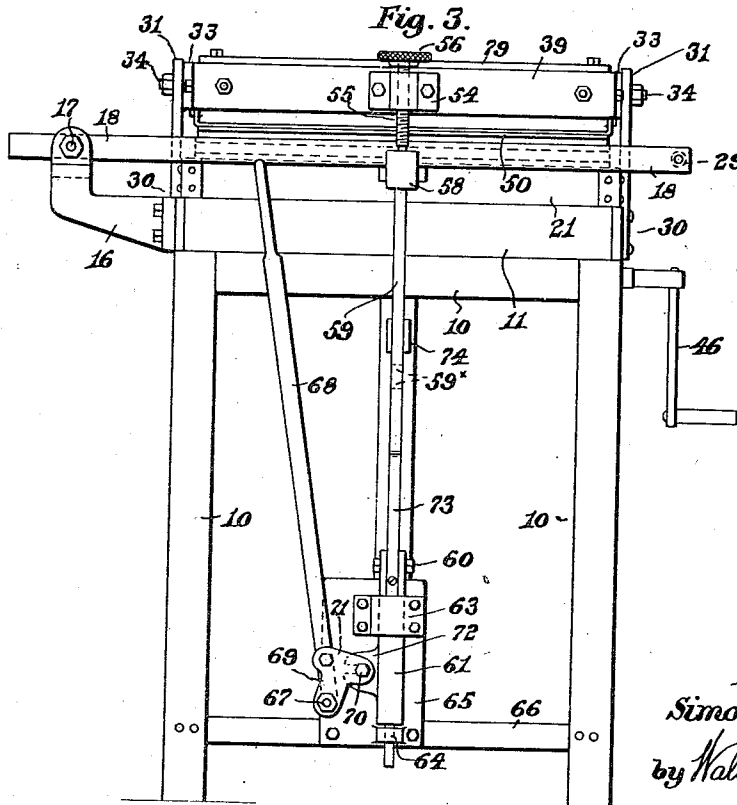


Fig. 3.



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3 Sheets-Sheet 3

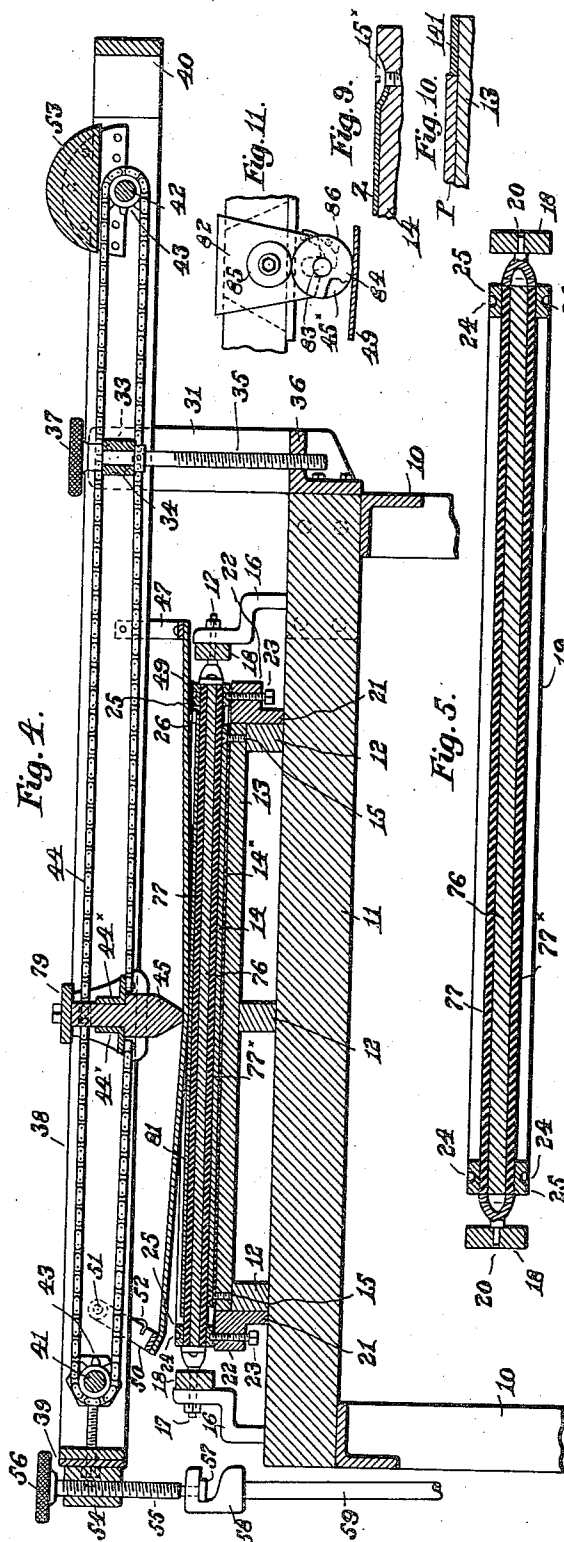


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UNITED STATES PATENT OFFICE

2,178,259

LITHOGRAPHER'S PRESS

Simon F. Kjell, Racine, Wis.

Application June 22, 1938, Serial No. 215,126

16 Claims. (Cl. 101—130)

This invention relates to presses and particularly to presses for use by lithographers and engravers, the object of the invention being the production of a machine of this character which will be inexpensive to construct, and will operate more expeditiously.

This object is attained by the mechanism illustrated in the accompanying drawings.

For the purpose of illustrating the invention, one preferred form thereof is illustrated in the drawings, this form having been found to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which the invention consists can be variously arranged and organized, and the invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described except as required by the scope of the appended claims.

Of the drawings:

Figure 1 represents a vertical section of a machine embodying the principles of the present invention.

Figure 2 represents a plan of the same with the offset device and tympan support in operative position.

Figure 3 represents an end elevation of the same.

Figure 4 represents an enlarged longitudinal section of the same on line 4, 4, on Fig. 2.

Figure 5 represents a transverse section of the offset device.

Figure 6 represents a sectional detail of the scraper coating with tympan.

Figure 7 represents a plan of a portion of the press bed.

Figure 8 represents a sectional detail of one of the slotted supports for the bar carrying the scraper frame.

Figures 9 and 10 represent sectional details to be hereinafter described, and

Figure 11 represents an elevation of a roller mechanism which may be substituted for the scraper ordinarily used.

Similar characters indicate like parts throughout the several figures of the drawings.

In the drawings, 10 is a framework upon which is mounted a thick wooden top 11.

Superimposed upon this top 11 is a press bed consisting of a wooden framework 12 upon which is positioned an iron casting 13, to the upper face of which is secured a steel plate 14 beneath which is a thin sheet of rubber 14x to assure even pressure when a print is being made from a litho-

graphic or engraved steel plate imposed on the top of said steel plate.

The plate 14 is secured to the iron casting 13 by means of countersunk screws 15.

When a zinc plate is used on top of plate 14 it is secured to said plate 14 by countersunk screws 15x at the right hand end of the press bed, as shown in Fig. 9 of the drawings.

To one end of the wooden top 11 are secured two brackets 16 having pivoted thereto, at 17, a framework 18 within which is pivotally mounted an offset device 19.

The pivotal connections 20 between this offset device 19 and the framework 18 are midway between the ends of said offset device 19 to permit the reversal of said device 19 when desired.

The wooden framework 12 and the iron casting 13 superimposed thereon are surrounded by an iron frame 21 having ears 22 extending therefrom in which are mounted a plurality of bolts 23, the upper projecting ends of which are adapted to enter the depressions 24 in the frame 25 of the offset device 19 to register the frame 25 when in its lowered horizontal position.

The opposite sides of the frame 25 has adjustably secured thereto a pair of gripper members 26, each having at one end thereof a resilient disk 27 on the under side thereof which is adapted to grip a sheet of paper placed upon said device 19.

When the offset device 19 is in horizontal position the members 27 on the under side of frame 25 will extend into depressions 28 in the edge of the plate 14.

The members 26 may be adjusted towards and from each other by changing the clamp screws 26x to other threaded holes 24x, thus providing means for clamping various sizes of paper sheets.

The frame 18 includes a rounded rod 29 which may be gripped by the operator to move the frame 18 about its pivot 17 from its raised position as shown in Fig. 1, into the position indicated in Figs. 2, 3 and 4, or vice versa.

The wooden top 11 has secured to the opposite sides thereof, two supports 30 having upward extensions 31 provided with open ended slots 32 in their upper ends.

In these slots 32 are positioned movable bearings 33 in which are mounted the opposite cylindrical ends of a bar 34, through which extends an adjusting screw 35 threaded to a bracket 36 secured to said top 11, as shown in Fig. 1.

This adjusting screw 35 is provided with a milled head 37 by which it may be turned in

order to make the required adjustment of the bar 34 in the slots 32.

To the bar 34 are secured the side rails 38 of a framework connected together at the opposite ends thereof by U-shaped members 39, 40.

These side rails 38 are provided with bearings for the shafts 41 and 42, each of which is provided with a pair of sprocket wheels 43 on which are mounted two parallel sprocket chains 44, the opposite ends of which are connected to angle irons 44x on opposite sides of a movable scraper 45, as shown in Fig. 4 of the drawings.

The shaft 42 has a handle 46 by which it may be rotated manually to move the scraper 45 in either direction.

In larger machines the handle 46 may be dispensed with and power mechanism connected to said shaft.

Depending from the side rails 38 is a U-shaped member 47 having secured to the lower end thereof one end of a metal tympan sheet 49, the opposite end of which is secured to another U-shaped member 50 pivoted to side rails 38 at 51 and pressed outwardly by means of a spring 52 to keep the metal tympan sheet taut at all times.

Secured to one end of the side rails 38 is a counterbalance weight 53 adapted to retain the framework 38, 39, 40, under normal conditions, in the raised position as shown in Fig. 1.

To the U-shaped member 39 is secured a nut 54 in which is mounted the screw 55 having a milled head 56 at the upper end thereof and an annular flange or button 57 at its lower end.

When the framework 38, 39 and 40 is in its horizontal position as indicated in Fig. 4, this annular flange or button 57 is adapted to engage with the slotted hook member 58 on the upper end of a pressure rod 59 which is pivoted at 60 to a member 61 slidable vertically in the bearings 63, 64, mounted upon a plate 65 secured to a girt 66 of the frame 10.

Pivoted to this plate 65 at 67 is a lever 68 having secured thereto a plate 69 having a pin 70 extending into a slot 71 formed in an ear 72 projecting from the slidable member 61.

When the lever 68 is moved about its pivot to the right of the position indicated in Fig. 3, the member 61 will be moved downwardly thereby drawing down the adjustable member 55 at the free end of the framework 38, 39 and 40.

The slidable member 61 has secured thereto an upwardly extending spring 73 bearing against the pressure rod 59 and thereby retaining it in position against the block 74 secured to a vertical plate 75 beneath the wooden top 11 of the framework 10.

The block 74 is provided with an inclined face 74x at its lower end adapted to coact with a block 59x on the rear of the pressure rod 59 when the slidable member 61 is raised in order to move said rod 59 outwardly to release the button 57 from the hook member 58.

The offset device 19 held within the frame 25 consists of an aluminum sheet 76 on the opposite sides of which are rubber blankets 77.

The rubber blankets are made nonstretchable by gluing the back of the rubber blanket to a suitable cardboard, as for instance, Bristol board.

This is done by making a smooth coating of glue on the back of the rubber blanket and then passing a special heavy pressure roller over the cardboard and thereby pressing it gradually to the back of the rubber blanket.

The scraper member 45 has secured to its opposite ends flanged plates 78 bearing against the

side rails 38 and has a cross plate 79 secured to the upper end thereof, the ends of said plate 79 extending over said side rails 38, thus forming with the plates 78 a good guide for the member 45 as it is moved longitudinally of the side rails 38.

The scraper member 45 has openings 80 therein through which the sprocket chains 44 extend.

On the top of the steel plate 14 is placed an original printing plate with printing characters formed on the upper face thereof and when this original plate is inked and the offset member 19 is moved downwardly thereon, one of the rubber blankets 77x will contact therewith, the other rubber blanket 77 being on top.

The original printing plates may be made of steel, aluminum or zinc, as desired, according to the work to be done.

When the framework 38, 39 and 40 is moved down into horizontal position above the offset device 19 and the scraper 45 is moved along the tympan sheet an impression from the steel or zinc plate will be made upon the lower rubber blanket 77x.

If the offset device 19 is then raised into position shown in Fig. 1, turned about its pivots 20 and is again lowered into horizontal position, the rubber blanket 77x which has just taken an impression will be on top and a clean rubber blanket 77 will be in contact with the steel or zinc plate.

A sheet of paper 81 is then secured in position by means of the gripper members 27 and the framework 38, 39 and 40 is then moved into horizontal position, as shown in Fig. 4, and locked in this position by button 57 and hook 58.

The sheet of paper 81 will be held by means of the gripper members 27, so that it cannot be displaced as the scraper 45 passes over the surface of the tympan sheet.

During this movement of the scraper member 45 a new impression will be made on the under rubber blanket 77 and the impression previously made on the upper rubber blanket 77x will be transferred to the under face of the sheet of paper 81.

It is obvious that this operation may be repeated indefinitely and every time the scraper 45 moves along the tympan sheet one impression will be made from the steel or zinc plate on the under rubber blanket while an impression from the upper rubber blanket is simultaneously being transferred to the paper sheet 81 superimposed thereon.

By this means much more work will be accomplished than is ordinarily accomplished on machines of this character.

It is self-evident that the proper pressure may always be obtained by adjusting the screws 35 and 55.

When the head 57 is released from the slotted hook member 58 the counter-balance weight 53 will make it easy for the operator to return the framework 38, 39 and 40 to its vertical position, as shown in Fig. 1, or these weights may be sufficient to return the framework 38, 39 and 40 to its vertical position as soon as the button 57 has been released from the hook 58.

Instead of a scraper 45, a roller 45x may be used, a roller being preferable for certain kinds of work, as for instance, in making line etchings.

One form of roller mechanism is shown in Fig. 11 in which the frame 38 has secured thereto forked brackets 82 straddling the shaft 83 of a roller 45x, the opposite ends of said shaft having secured thereto wheels 84 with the peripheries 75

of which revoluble pressure wheels 85 coact to apply pressure to the roller 45z.

The member 86 is provided to prevent the accidental displacement of the shaft 83 from the forked lower ends of members 82.

The steel plate may be made rectangular as indicated in Fig. 10 at 141 and a printing plate placed directly on the iron casting 13 with the printing plate P abutting an inner wall of the rectangular steel plate 141.

The plates 141 do not require screws to retain them in position as they may be secured in position by having their lower sides inked and then firmly pressed against the upper face of the cast iron plate 13.

It is believed that the operation and many advantages of the invention will be understood without further description.

Having thus described my invention, I claim:

1. The combination of a horizontal table, a bed supported thereon; a printing plate secured to said bed; an offset device hinged to one side of said table and movable into position parallel with said plate, said offset device having resilient blankets on opposite sides thereof; means on said device for clamping a paper sheet thereto; pressure mechanism movable in a direction at right angles to the movement of the hinged offset device into parallelism with said printing plate and into contact with said offset device; and means for regulating the pressure of said mechanism.

2. The combination of a horizontal table, a bed supported thereon; a printing plate secured to said bed; a framework hinged to one side of said table and movable into position parallel with said plate; an offset device pivoted to and reversible in said framework, said offset device having resilient blankets on opposite sides thereof; means on said device for clamping a paper sheet thereto; pressure mechanism movable in a direction at right angles to the movement of the hinged offset device into parallelism with said printing plate and into contact with said offset device; and means for regulating the pressure of said mechanism.

3. The combination of a horizontal table, a removable bed supported thereon; two metal plates secured to said bed with an interposed rubber sheet, the upper plate being a printing plate; a reversible offset device hinged to a side of said table adapted to be moved into contact with the printing plate and consisting of a metal plate having resilient blankets on opposite sides thereof; means for clamping a paper sheet to the upper blanket; and means for applying pressure to said offset device when in horizontal position.

4. The combination of a horizontal table, a removable bed supported thereon; a printing plate secured to said bed; a reversible offset device hinged to a side of said table and adapted to be moved into contact with said printing plate, said device consisting of a metal plate having resilient blankets on opposite sides thereof; means for clamping a paper sheet to the upper blanket; and means for applying pressure to said offset device including a metal tympan and a scraper movable in contact therewith in a path parallel with the face of said printing plate.

5. The combination of a horizontal table, a printing member supported thereon; a reversible offset device hinged to a side of said table and adapted to be superimposed on said printing member; means for clamping a paper sheet to said device; a framework hinged to said table at right angles to said offset device and movable into

parallelism with said printing member; two endless chains supported by said framework; a scraper secured to said chains; a metal tympan carried by said framework and extending beneath and in contact with said scraper; and means for actuating said chains to move said scraper longitudinally of said framework.

6. The combination of a horizontal table, a printing member supported thereon; a reversible offset device hinged to a side of said table and adapted to be superimposed on said printing member; means for clamping a paper sheet to said device; a framework hinged to said table at right angles to said offset device and movable into parallelism with said printing member; two endless chains supported by said framework; a scraper secured to said chains; a metal tympan carried by said framework and extending beneath and in contact with said scraper; means for moving said framework toward and from said printing member; and means for actuating said chains to move said scraper longitudinally of said framework.

7. The combination of a horizontal table, a printing member supported thereon; a reversible offset device hinged to a side of said table and adapted to be superimposed on said printing member; means for clamping a paper sheet to said device; a framework hinged to said table at right angles to said offset device and movable into parallelism with said printing member; two endless chains supported by said framework; a scraper secured to said chains; a metal tympan carried by said framework and extending beneath and in contact with said scraper; means for locking the free end of said framework to said table; and means for actuating said chains to move said scraper longitudinally of said framework.

8. The combination of a horizontal table, a printing member supported thereon; a reversible offset device hinged to a side of said table and adapted to be superimposed on said printing member; means for clamping a paper sheet to said device; a framework hinged to said table at right angles to said offset device and movable into parallelism with said printing member; two endless chains supported by said framework; a scraper secured to said chains; a metal tympan carried by said framework and extending beneath and in contact with said scraper; means for locking the free end of said framework to said table; means for actuating said chains to move said scraper longitudinally of said framework; and a weight for raising said framework to a vertical position when unlocked from said table.

9. The combination of a horizontal table, a bed supported thereon; a printing plate on said bed; a reversible offset device hinged to a side of said table and movable into position parallel with said plate, said offset device consisting of a flat metal plate having resilient blankets clamped to the opposite sides thereof; means on said offset device for clamping a paper sheet thereto; pressure mechanism hinged to said table at right angles to said offset device and movable into parallelism with said printing plate and into contact with said offset device; and means for locking the free end of said pressure mechanism to said table.

10. The combination of a horizontal table, a bed supported thereon; a printing plate on said bed; a framework hinged to a side of said table and movable into position parallel with said plate; an offset device pivoted to and reversible in said framework, said offset device having resilient

blankets on opposite sides thereof; means on said device for clamping a paper sheet thereto; pressure mechanism hinged to said table at right angle to said framework and movable into parallelism with said printing plate and into contact with said offset device; means for locking said pressure mechanism to the table; and means for moving said pressure mechanism upwardly into vertical position when released from said locking means.

11. The combination of a horizontal table, a bed supported thereon; a printing plate on said bed; a reversible offset device normally in vertical position and adapted to be moved into contact with the upper face of said printing plate and consisting of a metal plate having resilient blankets clamped to the opposite sides thereof; means for clamping a paper sheet to the upper blanket; and means movable transversely of and into contact with said offset device for applying downward pressure to said offset device.

12. The combination of a horizontal table, a bed supported thereon; a printing plate secured to said bed; a frame hinged to one side of said table and normally vertical; an offset device reversibly mounted in said frame and adapted to be moved with said frame into contact with said printing plate; means for clamping a paper sheet to one face of said offset device; a framework hinged to said table and movable at right angle to the movement of said frame into horizontal position above said offset device; and means carried by said framework for applying pressure to said offset device, said means including a metal tympan in contact with said paper sheet and a scraper movable in a straight path over the upper face of said tympan.

13. The combination of a horizontal table, a printing member supported thereon; a reversible offset device adapted to be superimposed on said printing member; means for clamping a paper sheet to said device; a framework hinged to a side of said table and movable into parallelism with said printing member; two endless chains supported by said framework; a scraper secured to said chains; a metal tympan carried by said framework and extending beneath and in contact with said scraper; means for actuating said chains to move said scraper longitudinally of said framework; means for locking the free end of said framework to a member slidable vertically on said table; and a lever-actuated

mechanism for releasing said framework from said locking means.

14. The combination of a horizontal table, a printing member supported thereon; a reversible offset device adapted to be superimposed on said printing member; means for clamping a paper sheet to said device; a framework hinged to a side of said table and movable into parallelism with said printing member; two endless chains supported by said framework; a scraper secured to said chains; a metal tympan carried by said framework and extending beneath and in contact with said scraper; means for moving said framework toward and from said printing member; and means for actuating said chains to move said scraper in either direction longitudinally of said framework.

15. The combination of a horizontal table; a printing member supported thereon; a reversible offset device adapted to be superimposed on said printing member; means for clamping a paper sheet to said device; a framework hinged to a side of said table and movable into parallelism with said printing member; two endless chains supported by said framework; a scraper secured to and depending from said chains; a metal tympan carried by said framework and extending beneath and in contact with said scraper; a threaded shouldered member adjustable in the free end of said framework; a member slidable vertically on said table; a spring-pressed hook pivoted to said slidable member and engaging said shouldered member; a lever-actuated mechanism for releasing said hook from said shouldered member; and means for actuating said chains to move said scraper in either direction longitudinally of said framework.

16. The combination of a horizontally disposed printing member, a hinged device adapted to be moved into contact therewith consisting of a flat metal plate having rubber blankets on the opposite sides thereof; means for securing a paper sheet to the upper blanket; and mechanism contacting with the paper sheet for applying downward pressure to said sheet and device when in horizontal position whereby a printing is made from said plate on the face of the lower blanket and a transfer or offset is simultaneously made on the paper sheet from a printing previously made on the upper blanket.

SIMON F. KJELL.