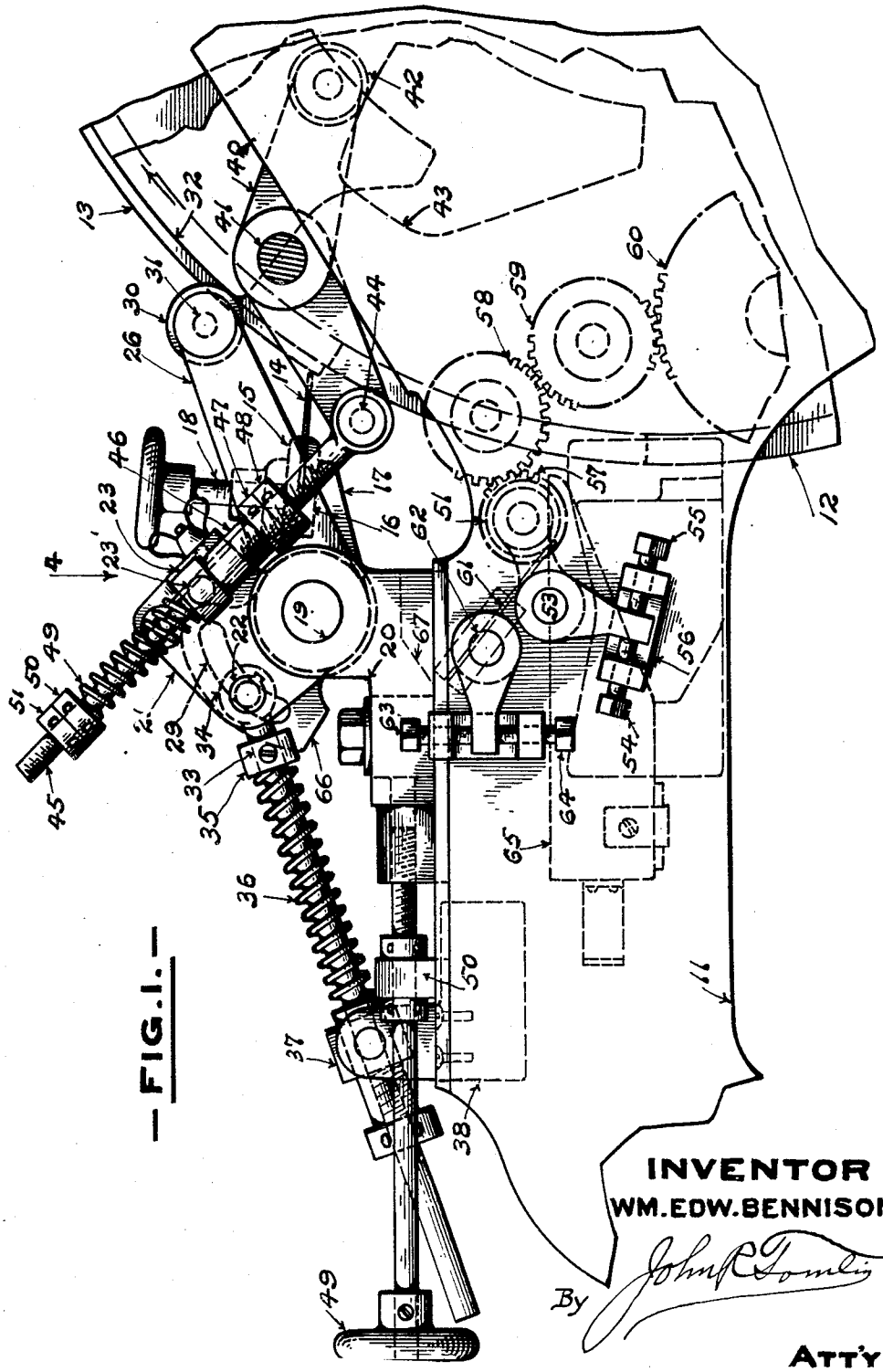
June 23, 1931. W. E. BENNISON 1,811,379

PLATE PRINTING MACHINE

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— FIG. 1. —

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PLATE PRINTING MACHINE

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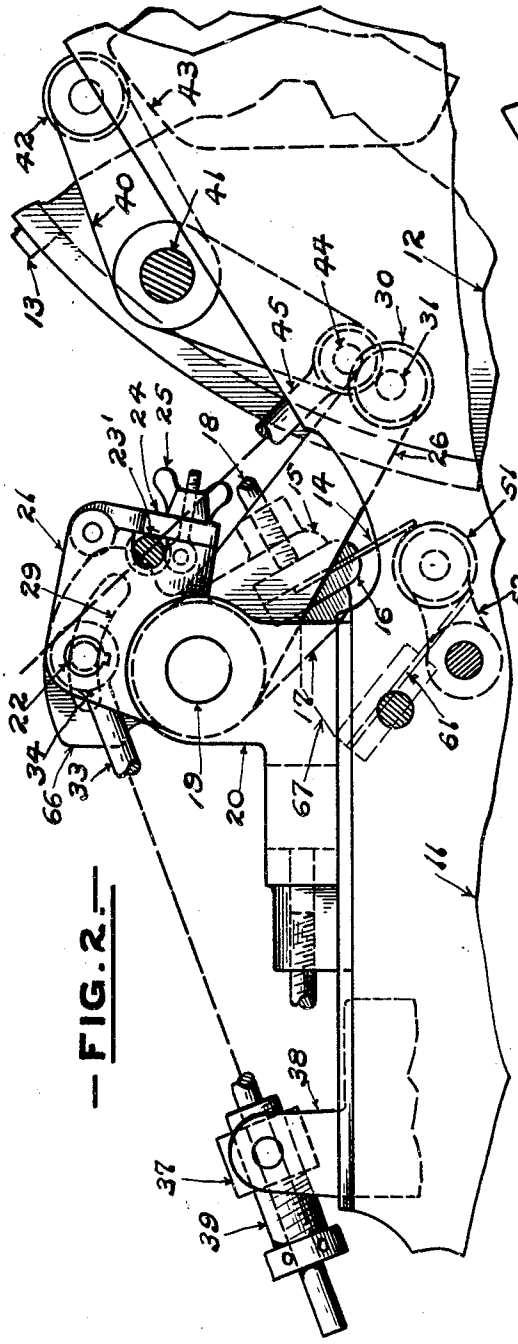


FIG. 2.

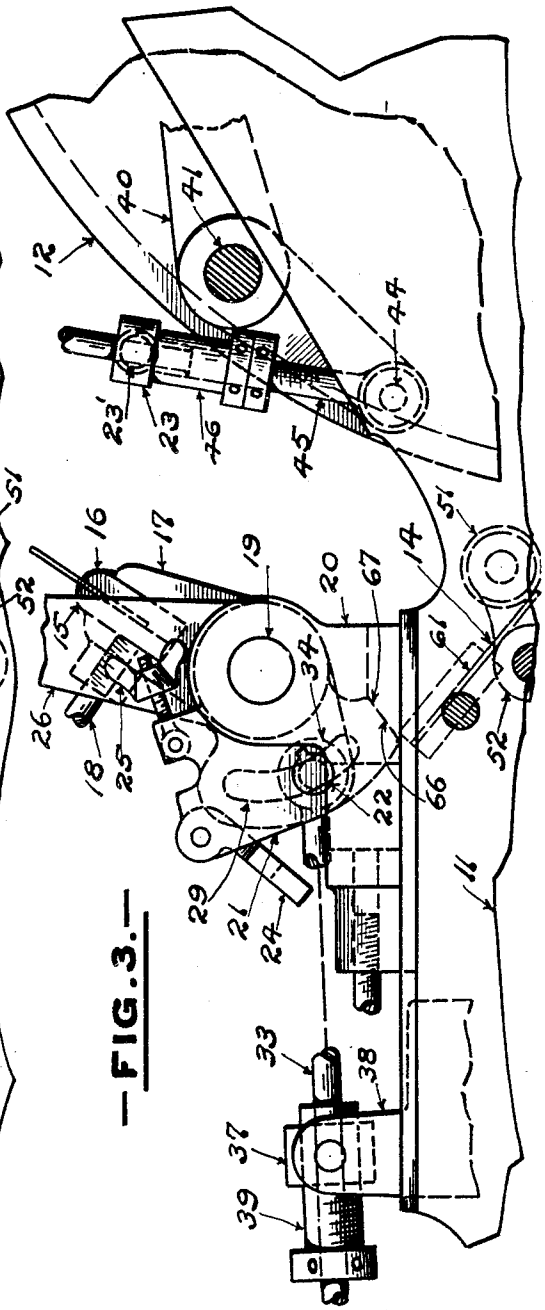


FIG. 3.

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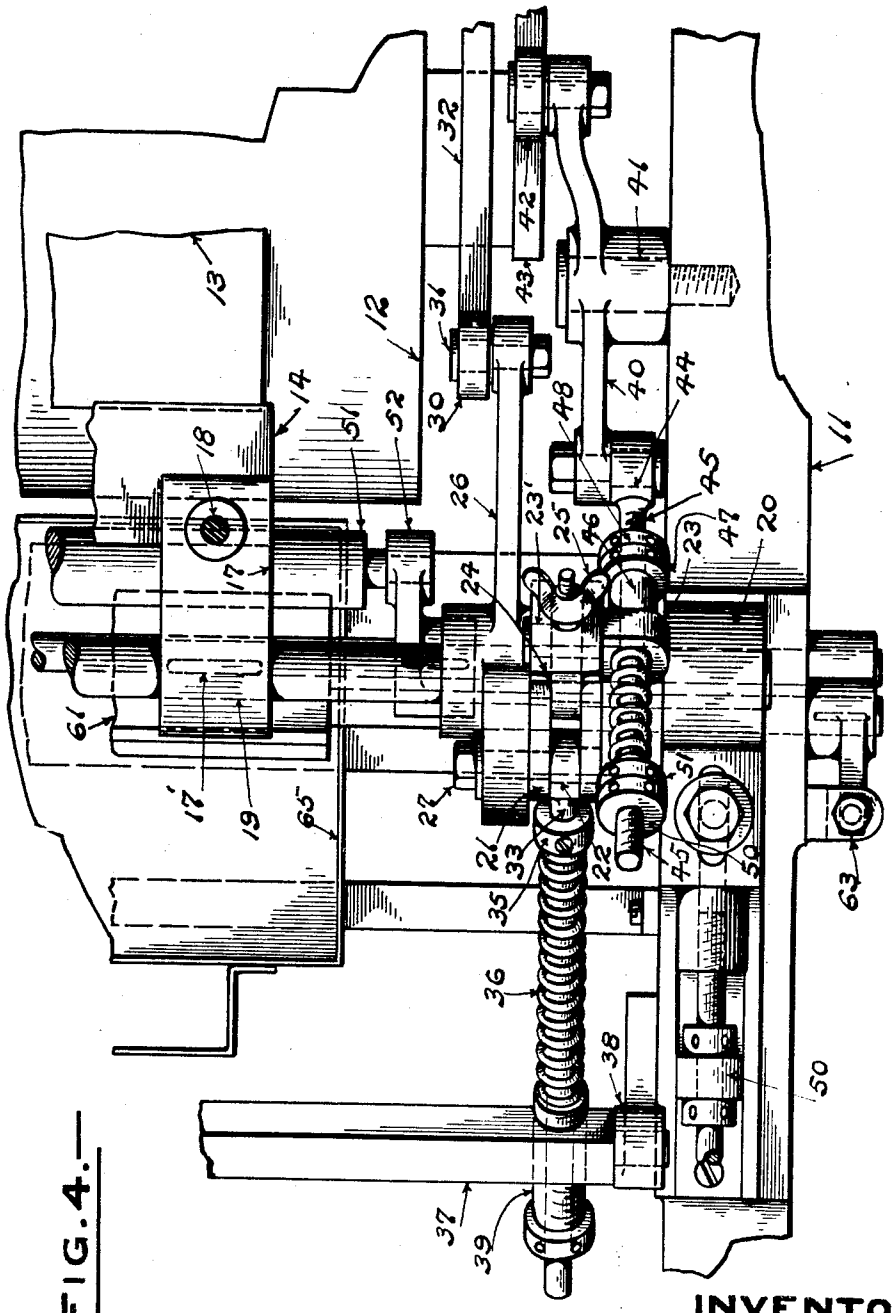


FIG. 4.

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Patented June 23, 1931

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UNITED STATES PATENT OFFICE

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PLATE PRINTING MACHINE

Application filed September 5, 1928, Serial No. 304,124, and in Great Britain September 22, 1927.

The present invention relates to improvements in plate printing machines in which the printing is done from a plate having an intaglio image thereon and in which the excess ink is removed from the surface of the plate or plates by means of a blade commonly known as a doctor blade.

The especial object of the invention is to provide an improved means for removing the accumulation of ink from the doctor blade.

It is also an object of the invention to provide an ink salvaging mechanism of generally improved construction, whereby the device will be simple, durable and inexpensive in construction, as well as convenient, practical, serviceable and efficient in its use.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts, and in the details of construction hereinafter described and claimed, it being understood that various changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed without departing from the spirit of the invention.

Referring to the drawings:

Figure 1 represents a portion of a rotary intaglio plate printing machine and shows a section of the plate cylinder bearing a printing plate from which the ink is being removed by a doctor blade, also the mechanism for removing the ink from the blade, and various associated parts, the functions of which will be hereinafter explained.

Figure 2 shows a portion of the mechanism shown in Figure 1 with the parts in the position they assume when ink is being removed from the doctor blade.

Figure 3 is a view similar to Figures 1 and 2, showing a portion of the mechanism with the parts in the position they occupy when the doctor blade is thrown out of engagement with the printing plate, and

Figure 4 is a plan view of a portion of the mechanism as viewed in the direction of arrow 4 of Figure 1.

Referring to the drawings, 11 indicates a side frame of a printing machine and 12 a portion of the cylinder on which the printing plates are mounted, a portion of one of the plates being shown at 13.

Ink is supplied to the plate by an inking mechanism not shown and the rotation of the cylinder in the direction of the arrow then carries the plate into engagement with the doctor blade 14. The doctor blade is clamped between blocks 15 and 16 carried in a slot in the arm 17, the required clamping pressure being supplied by means of the thumb screw 18 which is threaded into the arm 17. The arm 17 is secured by the key 17′ to the shaft 19 which is journaled in the bracket 20. It will be understood that the frame 11 and various parts such as those numbered 15 to 20 are duplicated on the opposite side of the machine from that shown in the drawings.

A forked arm 21 is also secured to the shaft 19 and the forked members of the arm are fitted with a shouldered stud 22, the purpose of which will be hereinafter explained. The forks of the arm 21 are slotted to receive the stem 23′ of the guide 23 and a pivoted cap 24, locked in position by the thumb nut 25, serves to hold the guide stem 23′ in its seat.

The arm 26 is loose on the shaft 19 but can be secured thereto by means of the shouldered stud 22 and the nut 27, for it will be understood that tightening the nut 27 will clamp the arm 26 to the forked arm 21 which is secured to the shaft 19. The opening 29 in the arm 26, that receives the stud 22 is made in the form of a slot so that a certain range of adjustment in the relation of the arm 26 to the other parts carried by the shaft 19 is provided. A roller 30 is carried on a stud 31 near the end of the arm 26, and engages a cam 32 secured to the cylinder 12. A rod 33 has a head portion 34 that is fitted to turn on the stud 22. A collar 35 is secured to the rod 33 and forms a seat for the spring 36. The square shaft 37 is pivoted in the bracket 38 secured to the frame, and a bushing 39 is threaded into the shaft 37 and has a clearance hole through it for the rod 33. The bushing furnishes an abutment for the spring 36 and also a means for adjusting the spring tension.

A bell crank lever 40 is pivoted on a stud 41 threaded into the frame 11. One end of

the lever 40 carries a roller 42 which engages a cam 43 carried on the cylinder 12 while the other end carries a stud 44 which passes through an eye in the head end of a rod 45. The rod 45 has a large diameter portion that slides in the sleeve 46 which is a part of the guide 23. The small diameter section of the rod 45 passes through the guide 23 and carries the spring 49. Lock nuts 50 and 51 are threaded on to the end of the rod and serve as a means for adjusting and as an abutment for, the spring 49 the other end of which presses against the guide 23. The bell crank lever is thus biased to turn in a clockwise direction but is limited in its travel by the nut 47, which may be turned with relation to the rod 45 to properly adjust the relation of the members and it may be secured by the lock nut 48.

Means for adjustment to compensate for variations in the width of the doctor blade due to wear is provided by the hand-wheel 49, acting through the fixed bracket 50 and the movable bracket 20, in which the shaft 19 is journaled.

An ink salvaging roller 51 is journaled in arms 52 which are pivoted at 53 and provided with a two way adjustment by means of screws 54 and 55, threaded into the bracket 56 secured to the frame 11. It will be understood that this adjustment permits raising or lowering the roller 51, as desired. The roller 51 may be driven by any convenient means such as the gears 57, 58, 59 and 60 which connect it to a running shaft of the machine.

A scraping blade 61 is supported on a shaft pivoted at 62 and provided with a two way adjustment by means of the screws 63 and 64 so the blade may be set to bear against the roller with the desired pressure. An ink reservoir 65 is located under the roller 51 and the scraper 61.

In operation, the cylinder carrying the plate turns clockwise and while the plate is passing under it, the blade 14 accumulates a quantity of ink on its lower side. When the rear edge of the plate 13 reaches the blade 14 the roller 30 will have reached the end of the cam 32. The cam 43 will have acted on the roller 42 and turned the bell crank 40, thereby turning the shaft 19 and bringing the doctor blade 14 into engagement with the roller 51 as shown in Figure 2. As the roller is being turned clockwise, the ink that is on the doctor blade will be wiped off on the roller 51. The roller 42 will then have passed the high portion of the cam 43 and in rolling down to the low portion will permit the spring 49 to return the doctor blade 14 and the roller 30 to the position shown in Figure 1.

It will be understood that cams similar to 32 and 43 are provided for each printing plate carried by the cylinder 12. The length of the cams 32 will vary with the length of the plates and their forward side will act on the roller 30 to accurately position the doctor blade 14 with respect to the plate 13.

From Figure 3 it will be seen that when the thumb nut 25 is released the cap 24 may be turned back and the guide 23 disengaged. The shaft 19 may then be turned back as shown bringing the doctor blade into position for inspection or replacement.

It will be noted that in turning the shaft 19 from the normal position to that shown in Figure 3 the spring 36 is moved past the point of its greatest compression and that it will then act to press the face 66 of the arm 26 against the stop 67, thereby holding the doctor blade in a convenient position for inspection.

As the roller 51 rotates, the ink that is deposited on it is taken off by the blade 61 and falls into the reservoir 65 from which it may be removed at convenient times.

What I claim is:

1. In a printing machine, a cylinder, a printing plate on the cylinder, an ink salvaging roller, a blade secured to a pivoted support, means for pressing the blade against the plate, means for moving the blade into engagement with the salvaging roller, a cam roller on an arm operably connected to the support, and a cam on the cylinder adapted to engage the roller and position the blade with respect to the plate.

2. In a printing machine, a cylinder, a printing plate on the cylinder, a doctor blade secured to a swinging support, an ink salvaging roller, means for pressing the blade against the plate, an arm operably connected to the support, a cam rotating with the cylinder and adapted to engage the roller and position the blade with respect to the plate, a second arm operably connected to the support, a roller on the second arm, and a second cam rotating with the cylinder adapted to engage the roller on the second arm and move the doctor blade into engagement with the ink salvaging roller.

3. In a printing machine, a cylinder, a printing plate on the cylinder, an ink salvaging roller, and a doctor blade secured to a swinging support and movable to one position for engaging the plate, to another position for engaging the salvaging roller and to another position convenient for its inspection, means for pressing the blade against the plate, an arm operably connected to the support, a cam on the cylinder adapted to engage the roller and position the blade with respect to the plate, a second arm operably connected to the support by a hand operated securing means whereby it may be disconnected quickly, a roller on the second arm, and a second cam on the cylinder adapted to engage the roller on the second arm and move the doctor blade into engagement with the salvaging roller.

4. In a printing machine, a cylinder, a

printing plate secured to the cylinder and covering a portion of its periphery, an ink salvaging roller, and a blade secured to a pivoted support and arranged to press against the plate while the cylinder is rotated, and after the plate has passed, to swing toward and past the cylinder and engage with the ink salvaging roller.

5. In a printing machine, a cylinder, a printing plate secured to the cylinder and covering a portion of its periphery, an ink salvaging roller, a doctor blade secured to a pivoted support and arranged to be pressed against the plate while the cylinder is rotated, and after the plate has passed, to be swung past the cylinder and into engagement with the ink salvaging roller, and means associated with the support adapted to engage with operating means rotating with the cylinder for positioning the blade with respect to the plate and for swinging it into engagement with the ink salvaging roller.

6. In a printing machine, a rotatable cylinder, a printing plate secured to the cylinder and covering a portion of its periphery, an ink salvaging roller, a blade secured to a pivoted support and arranged to be held in one position to engage with the plate and in another position to engage with the salvaging roller, actuating means connected to the cylinder adapted to engage with operating means connected to the support for moving the blade from plate engaging position to roller engaging position and then returning it to the plate engaging position.

In testimony whereof, I affix my signature.

WILLIAM EDWARD BENNISON.