

Aug. 7, 1934.

P. AITCHISON

1,968,980

ROTARY STEEL PLATE PRINTING MACHINE

Filed March 15, 1932

2 Sheets-Sheet 1

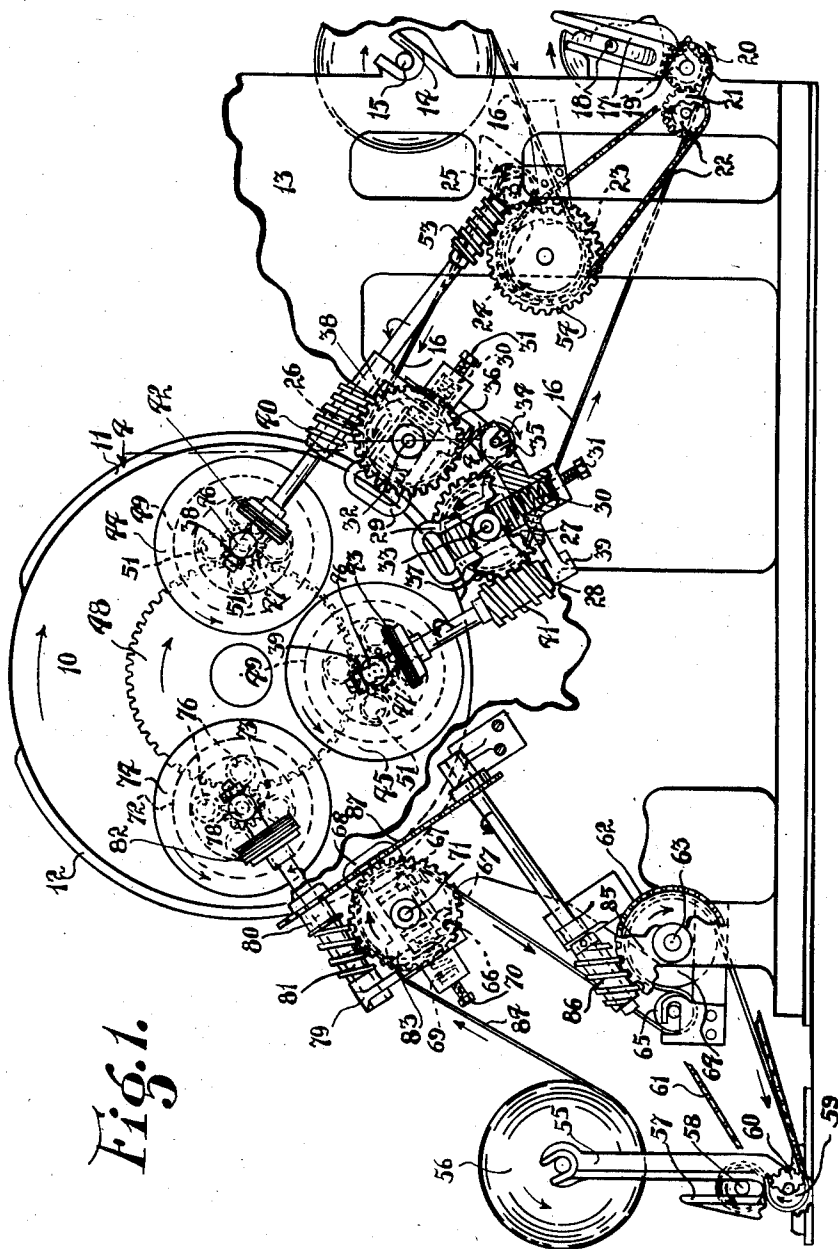


Fig. 1.

Peter Aitchison

INVENTOR
BY *James M. Westmuth*
his ATTORNEY.

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2 Sheets-Sheet 2

Fig. 3.

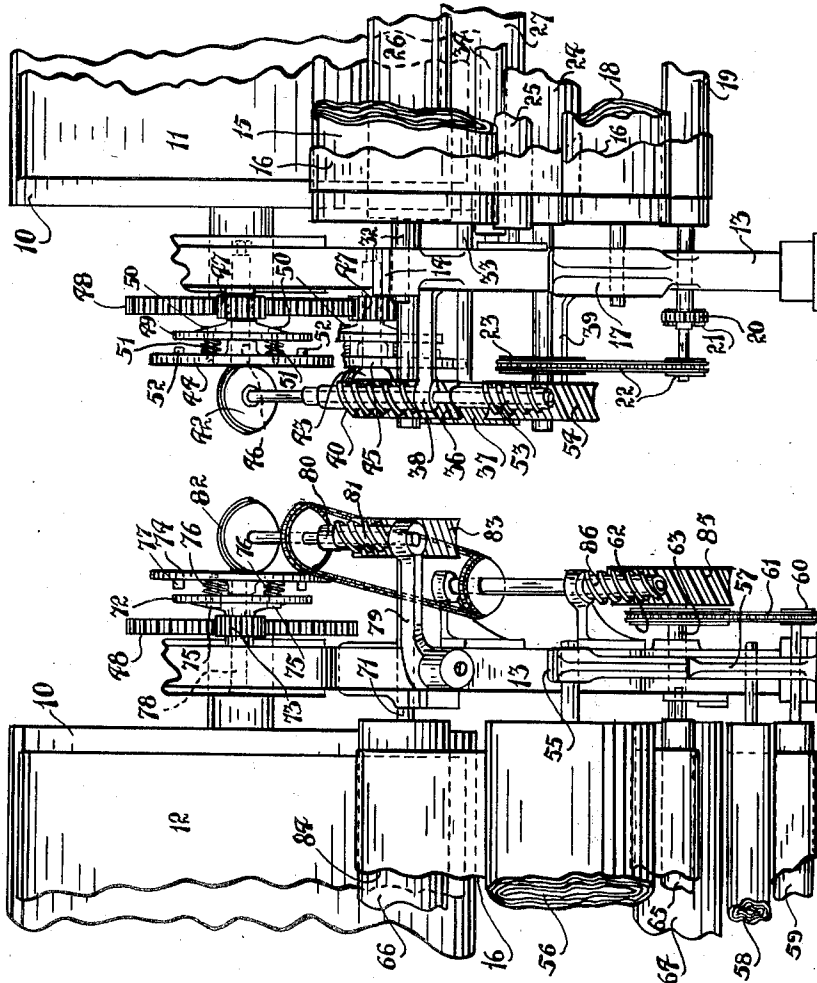


Fig. 2.

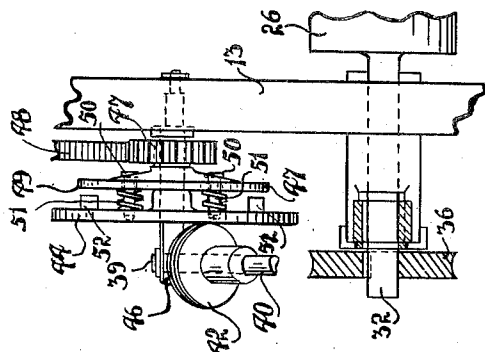


Fig. 4

Peter Aitchison

INVENTOR

BY *Frank J. Whitworth*

his ATTORNEY

UNITED STATES PATENT OFFICE

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ROTARY STEEL PLATE PRINTING MACHINE

Peter Aitchison, New Rochelle, N. Y., assignor to
American Bank Note Company, New York,
N. Y., a corporation of New York

Application March 15, 1932, Serial No. 598,899

18 Claims. (Cl. 101—156)

My invention relates to rotary steel plate printing machines, and more particularly to the wiping and polishing mechanisms of such machines.

5 In machines used in making impressions from engraved, intaglio or undersurface steel plates, ink is applied to the top or non-printing surface of the plate in volume in excess of that required to fill the lines in the plate, the ink being packed in these lines and the surplus ink removed from the plate by what is known as "wiping" and "polishing" cloths or rags, although paper of a special kind is now being extensively used for this purpose.

15 In rotary steel plate machines, the wiping cloths or rags in web form are passed from a supply roll about platens which are spring pressed into engagement with the plates. In such presses, two or more plates are usually employed, the plates being spaced from each other upon the plate cylinder, affording clearance between the plates during which the platens and the wiping polishing webs thereon are relieved from the pressure of the plate to permit the advancement of the webs following each wiping or polishing action, so as to present a short length of fresh clean web to the succeeding plate. Ordinarily the fresh portion of the wiping web is the first to engage a plate, it having been found by experience that when the portion of the web last to act upon the plate is partially saturated with ink there is less tendency toward the withdrawing of inks from the lines of the plate. During the contact of the web with the plate, the platen is receiving either a right-line reciprocatory movement or a four-way movement, the webs remaining stationary in relation to the platen during the entire wiping or polishing operation.

40 With a mechanism of the type above described, the tendency of the formation of lines or streaks of ink upon the non-printing surface of the plate is minimized as a result of the movement of the platen and the web in relation to the plate during the wiping or polishing operation. This results from the movement of the web transversely of the direction of travel of the plate while in engagement therewith.

50 In all such machines, the movement of the webs longitudinally of the cylinder and laterally of the plate, tends to create conditions which at times interfere with the proper cleaning of the plate, and there is also difficulty in the proper feeding of the wiping and polishing web, since this feeding is accomplished by the actuation of the rewind mechanism which drags or

pulls the cloth through the machine and across the various platens, which develops considerable resistance to the movement of the cloth. The lateral reciprocation or four-way movement of the wiping platen also has a tendency to create slack between these platens and the supply roll.

While these difficulties have been largely corrected by the use of additional feed rollers operative upon the wiping web particularly, and the use of what is known as a "rag clamp" to prevent the creation of slack between the wiping pads and the rewind roll, there is always a possibility of an improper wiping action. Furthermore, with a mechanism of the type immediately above referred to, it is essential that the plates upon the plate cylinder be spaced from each other a considerable distance in order to afford a time interval between succeeding wiping operations, sufficient to permit the feeding of the web.

75 In other types of rotary steel plate printing machines wiping webs have been drawn through the machine in contact with a considerable area of the printing plate, either in the same direction as the movement of the plates, or counter thereto, the wiping web being placed under tension by various mechanisms to develop the desired pressure between the web and the plate. This type of machine does not operate satisfactorily.

85 With the above conditions in mind, my invention provides a rotary steel plate printing machine embodying therein mechanisms by which a web of wiping material may be brought into the desired pressure relation to the plates upon a plate cylinder by rotatable power driven platens, the wiping webs being continuously withdrawn from a supply roll and fed while limited areas thereof are in engagement with the steel printing plates in a manner to ensure a continuous rubbing contact of the web with the plate.

95 In the machine of the invention, the space occupied by the wiping mechanism is so limited as to permit the use, in co-operation therewith, of a polishing mechanism by which a polishing web is similarly fed to and engaged with the plate following the movement of these plates from the wiping mechanism.

105 The constantly changing condition of the surface of the web in engagement with the plate, resulting from the varying quantity of ink in different portions thereof, avoids the streaking of the plates, and by reason of the limited contact area of the web between the wiping rollers and the plates, there is an accumulation of the surface ink 110.

of the plates at the point of each initial contact of the wiping material with the plate which tends to effectively remove the surface ink and pack the lines of the plate so as to ensure the making
5 of more perfect imprints. This applies to the wiping webs only since as to the polishing web the amount of surface ink is so small as to limit the action to the removal of such surface ink.

In the machine of the invention, the advance-
10 ment of the web through the machine results from the rotation of the platen rollers, the rewind mechanism being utilized solely to take up the slack created by the platen rollers. I also provide between the platen rollers and the supply roll of web, feeding rollers for withdrawing
15 the web from the supply roll and advancing it toward the platen rollers which latter move it in relation to the plate.

By the mechanism of the invention, it is possible to secure the same degree of effectiveness in the wiping and polishing of plates, if the plates are in close abutting relation to each other, as when they are spaced apart, since the feeding of the web is a continuous operation occurring
20 while in engagement with the plate, as well as while it is not so engaged.

Wiping and polishing mechanisms embodying the invention limit the contact area between the wiping and polishing webs to a narrow strip, thus
30 effecting the progressive removal of the ink from a succession of short lengths of plate, the relative simultaneous movement of the wiping cloths and a plate due to the slow travel of the web, as compared with the angular speed of the plate, limiting the time interval during which ink can be
35 absorbed by the web. That excess ink required to secure an effective packing of the lines in the plate results almost entirely from the piling up or accumulation of the ink, due to the convergence of the curved surfaces of a plate and of the platen roller. Movement of the web at low speed secures the desired wiping action upon the plate, and at the same time serves to constantly convey the accumulated ink, removed from one portion of the
40 plate, to succeeding portions of the plate, where it may be effectively utilized in packing the lines.

In this manner, substantial absorption of the ink by the web is avoided without sacrificing the advantage of the presence of ink in quantities
50 sufficient to fill and pack the lines, and likelihood of the web withdrawing ink from the lines after they have been packed. The absorption of a reduced volume of ink by the web permits the application of less ink to the printing plates.
55 This is highly desirable in the economical operation of the machine.

To compensate for possible variation in the operative speeds of different parts of the machine, I preferably impart movement to the platen rollers by means of a friction drive controlled by the movements of the plate cylinder. By the use of this mechanism, the various mechanisms incidental to the rotation of the platen cylinders may be permitted to have variable speed as a result of slippage in the drive mechanism operative upon each, thus minimizing any tendency to develop excessive irregular stresses which might tend to interfere with the proper conditioning of the wiping and polishing cloths, or cause the breakage thereof in the event that a paper web is used for this purpose.
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By using a friction drive for rotating the platen rollers, movement of these rollers toward and from the plate cylinder against spring tension is
75 permitted.

The steel plates used upon rotary steel plate printing machines, frequently have slightly undulatory portions resulting from the bending of the plate, so that by limiting the contact area between the plates and the webs of wiping and polishing material and flexibly supporting the platen rollers, every portion of the plate is subjected to the wiping action of the webs, thus eliminating one of the common causes of streaking or blurring of the imprints due to an incomplete removal of the ink from the top or non-printing surface of the plate.
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The invention consists primarily in a rotary steel plate printing machine, embodying therein a plate cylinder, and a wiping mechanism embodying a support for a supply roll of a continuous web of wiping material, a support for a rewind reel, a platen rotatable about an axis substantially parallel with the axis of said plate cylinder, whereby a wiping web may be passed from said supply roll about said platen and to said rewind reel, means whereby the web passing said platen is maintained in engaging relation with a plate upon said cylinder, means imparting continuous rotary movement to said platen in the same direction as, but at a relatively lower speed than, the plate, and a rewind mechanism adjacent the support for the rewind reel; and in such other novel features and combination of parts as are hereinafter set forth and described, and more particularly pointed out in the claims hereto appended.
95

Referring to the drawings,

Fig. 1 is a side elevation, partly broken away, showing the plate cylinder and the wiping and polishing mechanisms of a rotary steel plate printing machine embodying the invention;
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Fig. 2 is a view from the left of Fig. 1 showing only one end of the plate cylinder and its associated mechanisms;
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Fig. 3 is a similar view to the right of Fig. 1; and
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Fig. 4 is a section on the line 4—4 of Fig. 1 showing one of the friction drive mechanisms in detail and upon a larger scale.

Like numerals refer to like parts throughout the several views.
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In the accompanying drawings, the plate cylinder is shown at 10. Mounted upon the cylinder are two plates 11 and 12. At one end of the frame 13 of the machine are open bearings 14 affording means whereby a roll 15 of a web of wiping material may be rotatably mounted. The web itself, as it passes through the machine, is shown at 16. Below the bearings 14 are brackets 17 having an elongated slotted bearing for the reception of the arbors of a rewind reel 18. Below said bearings 14, is a friction roller 19, the shaft of which carries a gear 20, enmeshed with a gear 21. The gear 21 is driven by means of a chain and sprocket mechanism 22 receiving its power from a sprocket 23 carried upon the shaft of one of a pair of feed rollers 24. Associated with the feed roller 24 is a co-operating feed roller 25.
120

Mounted closely adjacent the perimeter of the plate cylinder 10 are two platen rollers 26 and 27 extending from side frame to side frame of the machine. The arbors of these rollers are mounted in bearing blocks 28 slidably mounted in bearings 29 so as to permit movement of each roller radially of the plate cylinder 10. Acting upon each block is a spring 30, the tension of which may be controlled by means of an adjusting mechanism 31. The shafts of the platen rollers are shown at 32 and 33. Intermediate the rollers 26 and 27, and positioned below same, is an idle
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guide roller 34 mounted in downwardly presented; open bearings 35 so as to have a tensioning action upon the web 16 between the platen rollers.

Each of the platen rollers 26 and 27 is continuously rotated with a predetermined speed ratio with that of the cylinder 10, by a friction drive mechanism which will now be described.

Carried by each shaft 32 and 33 is a worm wheel, that carried by the shaft 32 being shown at 36 and that carried by the shaft 33 being shown at 37. Mounted in suitable upper and lower bearings 38 and 39 are worm shafts 40 and 41 enmeshed with the worm wheels 36 and 37. Each of these worm shafts carries a friction wheel, that carried by the shaft 40 being shown at 42 and that carried by the shaft 41 at 43. Co-operating with the friction wheels are friction disks 44 and 45 mounted adjacent the end of the cylinder 10. The construction of each of these friction drive mechanisms is substantially identical with the other, and also with the friction drive of the polishing mechanism hereinafter referred to. Hence only one such mechanism need be described in detail.

Each of these friction mechanisms comprises a stud shaft 46 having mounted thereon a gear 47 enmeshed with a gear 48 carried by the shaft of the plate cylinder 10. Secured to this gear 47 is a plate 49, through openings in which a plurality of pins 50 pass, these pins being carried by the disk 44. Between the plate 49 and the disk 44 are springs 51 for developing the desired pressure-engaging relation between the wheel 42 and the friction disk 44 co-operating therewith. Stud 52 carried by the friction disk 44 limit the compressibility of the springs 51, and also preclude any excessive tilting of this disk.

The worm shaft 40 is both slidable and rotatable in its upper and lower bearings 38, longitudinal movement of the shaft compensating for movement of the platen roller radially of the plate cylinder. The worm shaft 41 is also both slidable and rotatable in its upper and lower bearings 39 for the same purpose.

Both friction drive mechanisms, operative upon the web of wiping material, are so constructed as to rotate both platen rollers 26 and 27 at substantially the same speed. Identity of speed, however, is not essential so long as there is no great variation between the speed of the two platens. In fact, there is a constant minor variation in the speed of these two platen rollers, but the quantity of each variation is negligible and may be compensated for in part by slippage between the friction disk and its co-operating friction wheel, and in part by the intermediate guide roller 34.

It will be obvious that the use of a friction drive permits a limitation of the longitudinal pull exerted upon the web 16.

In the machine as shown in the drawings, four springs 51, grouped 90° apart about the axis of the friction disk, are used so as to minimize variation in the pressure relation between the disk and its co-operating wheel.

An extension of the worm shaft 40, beyond the lower bearing 38, carries a worm 53 enmeshed with a worm wheel 54 carried by the shaft of the feed roll 24, thus simultaneously rotating said feed roll 24 and the platen roll 26. These rollers, being of the same diameter and being actuated at the same speed through the same mechanism, result in the withdrawal of the web from the supply roll 15 and its delivery toward the platen roller 26 in a manner to avoid any tendency of

the drag of the supply roll and its varying weight to interfere with substantial uniformity in the travel of the web by the platen rollers 26 and 27. These platen rollers are also of the same diameter, and are preferably provided with a yieldable cover of any desired material with the two-fold object of ensuring the desired feed of the web through the machine and permitting compressibility thereof to an extent to avoid too narrow a line of contact between the web and the plate upon the cylinder 10.

Adjacent the opposite end of the machine to that carrying the bearings 14, are bearings 55 for a supply roll 56 of a polishing web, and below the bearings 55 are elongated bearings 57 for a rewind reel 58. Below the reel 58 is mounted a friction roller 59, the shaft of which is provided with a sprocket wheel 60 driven by means of a sprocket chain 61, enmeshed with a sprocket wheel 62, carried by the shaft 63 of a feed roller 64. Co-operating with the feed roller 64 is a small feed roller 65.

Mounted closely adjacent the perimeter of the plate cylinder 10 is a polishing platen roller 66 extending from side frame to side frame of the machine. The arbors of this roller are mounted in bearing blocks 67 slidably mounted in bearings 68 so as to permit the movement of the roller radially of the plate cylinder. Acting upon the block is a spring 69, the tension of which may be controlled by means of an adjusting mechanism 70. The shaft of the plate roller is shown at 71. This polishing plate roller is continuously rotated by the same type of friction mechanism as the wiping plate rollers 26 and 27, including a plate 72 driven from the gear 48 by means of a gear 73. Supported from the plate 72 by pins 75 and spaced therefrom by springs 76 is a friction disc 74. The disc 74 is provided with studs 77 corresponding in number and arrangement with the studs 52. The plate 72 with its gear 73 is mounted upon a stud shaft 78 carried by the frame of the machine.

Mounted in bearings 79 and 80 is a worm shaft 81 secured to which is a friction wheel 82, co-operating with the friction disc 74. Carried by the shaft 71 is a worm wheel 83 enmeshed with the worm upon the shaft 81.

By the mechanism immediately above described, the polishing platen roller 66 as shown in Fig. 1 receives clockwise movement, at a low speed as compared with the angular speed of the cylinder 10. The run 84 from the roll of web 56 passes about the polishing platen roller 66 in a direction opposite to that of the movement of the plates upon the plate cylinder as they are being subjected to the action of the polishing web. After passing about the said roller 66 the web passes about co-operating feed rollers 64 and 65 about the friction roller 59 and the rewind reel 58.

While, in the wiping mechanism, the web is withdrawn from the supply roll by a pair of feeding rollers and delivered by said rollers toward the wiping platen rollers, the rollers 64 and 65 merely take up the run of the web after it leaves the polishing roller 66 and advances it toward the rewind reel 58. The feed rollers 64 and 65 are driven by means of a worm wheel 85 mounted upon the shaft 63 which is enmeshed with a worm shaft 86 connected by means of a chain and sprocket mechanism 87 with the worm shaft 81. Counter shafts 81 and 86 are used for the actuation of the feed rollers 64 and 65 to permit variation in the actuation of the rewind mecha-

nism in accordance with any variation in the actuation of the polishing roller 66.

Two steel plates 11 and 12 are shown on the cylinder 10 but three or more plates may be used if desired, according to the design of said cylinder.

The operation of the herein described printing machine, as to the wiping and polishing mechanisms therefor, is substantially as follows:—

In rotary steel plate printing machines ink is applied to the lines of the intaglio, engraved or undersurface steel plate, and to the top or non-printing surface of the plate. Preparatory to the making of the impression from the plate, it is necessary not only to completely fill the lines of the design upon the plate, which is known as "packing" such lines, but to remove the ink from the top or non-printing surface of the plate. The ink used for "packing" the lines is drawn from the supply of ink afforded by the ink deposited upon the top or non-printing surface of the plate. Proper packing of the lines is necessary to avoid ragged lines in an imprint, which ragged lines result in wastage since such imprints cannot be used.

In steel plate printing, ink, much in excess of that required to actually form the imprint, must be applied to the plate, and there is great wastage of this ink by methods employed prior to my invention due to the ineffective utilization of the excess supply in packing the lines of the design. By limiting the area of contact of the wiping cloths with the plate by utilizing a roller about which the wiping web passes, and by imparting slow movement to each roller in the same direction as the movement of the plate, ink upon the top surface is accumulated at the point of divergence of the wiping web and the curved plate upon the cylinder. This results in a constant tendency, owing to the high speed of the plate as compared with that of the platen roller, to ensure, at all times, ink throughout the entire width of the plate in sufficient volume to adequately pack the lines upon the plate, particularly in view of the fact that by reason of the rolling contact of the plate and the web upon the platen roller, there is a tendency to force some of this surplus ink within the lines and carry sufficient ink between the web and the plate to ensure complete filling of all lines irrespective of the directions in which they run. By reason of this and the small contact area between the web and the plate there is a little tendency for the wiping web to draw ink from such lines, particularly as the surface of the plate is moving away from the web instantly that it leaves the area of contact thereof with the web. This tendency of the ink to remain in the lines is due in part to the fact that the portion of the web engaged with the plate is at all times coated with ink, if not partially saturated therewith.

The manner of applying the ink to the plates 87 and 88 and the mechanisms for making impressions, and delivering sheets to and collecting them from the machine, may take any desired or well known form, such mechanisms not being shown or described.

Ink is applied to the plate as the cylinder 10 is turning clockwise as shown in Fig. 1, the inked plates thereafter being brought into operative engagement with the wiping web 16. While the cylinder 10 is turning, the gear 48 carried by the arbor of this cylinder imparts rotary movement to the friction discs 44 and 45, the action of which upon the friction wheels 42 and 43 im-

parts a slow turning movement to the platen rollers 26 and 27. These rollers are turned in a direction so that the web 16 has movement in the same direction as the plate, but at a lower speed. Consequently, a plate 11 or 12 has rubbing contact with the portions of the web 16 passing about the platen rollers 26 and 27, and succeeding portions of the plate are progressively subjected to fresh portions of the web.

With the movement of the plate in relation to the web, the ink upon the top or non-printing surface of the plate is rubbed along the plate and accumulated in the angle between the web and the plate, in sufficient volume to ensure at all times an excess of ink along the entire width of the plate. Wherever lines occur upon the plate, these lines, irrespective of the direction in which they may run, are completely filled with ink, any lines which have not been previously completely filled receiving sufficient ink from this accumulation to ensure such a complete filling thereof.

The convergence of the surface of the plate and of the wiping web passing around the roller 26 effectively packs the ink with which the lines are thus filled. This convergence also has a tendency to carry the accumulated ink between all portions of the plate and the web 16, excepting the top or non-printing surface of the plate. This also contributes toward a complete filling and packing of the lines and minimizes likelihood of dragging ink from the lines during the wiping operation.

The contact area between the web passing about the roller 26, and the plate, extends from side to side, but for only a short distance circumferentially of the plate. This also minimizes likelihood of dragging of ink from the lines since immediately after a short contact interval between the web and the plate, these parts diverge so that there is no tendency toward the forcing of the web within the lines due to a continuing pressure relation between the web and the plate after the lines have been completely filled with ink.

By reason of the above conditions, and the undesirability of an excessive accumulation of ink in advance of the initial line of contact between the plate and the wiping web, the quantity of ink applied to the plate by the inking mechanism may be materially reduced.

After the plate has passed the platen roller 26, substantially all of the ink upon its top or non-printing surface will have been removed. There may, however, be portions of the plate which have not been completely cleaned, leaving what is known as ink streaks upon this top or non-printing surface.

The secondary wiping plate roller 27 is employed to complete the wiping action, and the adjustability of the rollers 26 and 27 permits these rollers to be so set that the desired action of each may be controlled. For example, it may be desirable, with some plates, to regulate the action of the portion of the web passing about the platen roller 26 so as to control the quantity of ink which is left upon the plate and thus distribute the wiping action between the two portions of the web passing about the rollers 26 and 27 in a particular manner.

After each portion of the plate leaves the platen roller 26, it is acted upon by the portion of the web passing around the platen roller 27 in the same manner as to contact area, accumulation of ink, etc., as above described, with the difference of course that there is little or no accumulation

of ink at the meeting line of the plate and the web beyond that which may be carried by or expressed from the web itself.

Where the plates are spaced apart upon the cylinder 10, ink accumulated at the line of contact of the plate and the web will adhere to the web and be carried thereby about the intermediate guide roller 34 and distributed upon the web in a manner to make this ink available during the final wiping operation while the web is passing around the platen 27. By using two platens, each having a limited contact area, the final wiping action will always be by a web partially saturated or coated with ink. This is desirable particularly as it minimizes the tendency of the wiping web to drag ink from the lines and ensures the presence of ink in all of the lines, particularly the very fine and shallow lines.

The plate, after leaving the web passing about the platen 27, is brought within the operative range of the run of the web 84 passing around the polishing platen roller 66. It will be noted that the movement of the web passing about this roller 66 is counter to that of the plate. This is for the purpose of ensuring the final polishing action by a clean area of the web. The partial saturation of, or a coating upon, the polishing web is undesirable. In fact, if a muslin polishing web be used, it may be dampened so as to repel the ink and accomplish the polishing action merely by the rubbing contact between the web and the plate.

By using feed rollers 24 and 25, any tendency of the movement of the web in excess of that determined by the speed of rotation of the platen rollers 26 and 27, due to movement of the plates 11-12, is eliminated, these rollers 24-25 acting as a drag to check such a tendency while advancing the web toward said platen rollers as required for a proper operation of the mechanism. The rollers 64 and 65 take up slack in the run 84 of the polishing web and also act as a drag to prevent the drawing back of this web by the plates.

By controlling the run of both webs in the manner herein described, the formation of creases and wrinkles in the web is prevented. Such creases are undesirable as they so increase the thickness of the web locally as to affect the wiping action thereof upon the plates throughout a wide area.

By using a friction drive for the platen rollers 26 and 27, slippage may occur in the event of the development of excess stresses upon the web, thus avoiding possibility of the breaking or tearing of the webs.

The operation of the rewinding mechanisms is obvious, and need not be described.

It is not my intention to limit the invention to the precise details of construction shown in the accompanying drawings, it being apparent that such may be varied without departing from the spirit and scope of the invention.

Having described the invention, what I claim as new and desire to have protected by Letters Patent, is:—

1. A rotary steel plate printing machine, embodying therein a plate cylinder, and a wiping mechanism embodying a support for a supply roll of a continuous web of wiping material, a support for a rewind reel, a platen rotatable about an axis substantially parallel with the axis of said plate cylinder, whereby a wiping web may be passed from said supply roll about said platen and to said rewind reel, bearing blocks for said platen movable radially of said plate cylinder, springs thrusting said blocks towards said cylinder, means operative to vary the tension

passing said platen is maintained in engaging relation with a plate upon said cylinder, means imparting continuous rotary movement to said platen in the same direction as, but at a relatively lower speed than, the plate, and a rewind mechanism adjacent the support for the rewind reel.

2. A rotary steel plate printing machine, embodying therein a plate cylinder, and a wiping mechanism embodying a support for a supply roll of a continuous web of wiping material, a support for a rewind reel, a plurality of platens, each rotatable about an axis substantially parallel with the axis of said plate cylinder, a guide roller intermediate said platen rollers, whereby a wiping web may be passed from said supply roll about said platens successively and to said rewind reel, means whereby the web passing said platens is maintained in engaging relation with a plate upon said cylinder, means imparting continuous rotary movement to said platens in the same direction as, but at a relatively lower speed than, the plate, and a rewind mechanism adjacent the support for the rewind reel.

3. A rotary steel plate printing machine, embodying therein a plate cylinder, and a wiping mechanism embodying a support for a supply roll of a continuous web of wiping material, a support for a rewind reel, a platen rotatable about an axis substantially parallel with the axis of said plate cylinder, whereby a wiping web may be passed from said supply roll about said platen and to said rewind reel, means whereby the web passing said platen is maintained in engaging relation with a plate upon said cylinder, means imparting continuous rotary movement to said platen in the same direction as, but at a relatively lower speed than, the plate, feed rollers intermediate said platen and said support for the web of wiping material, means actuating said feed rollers at substantially the same speed as said platen, and a rewind mechanism adjacent the support for the rewind reel.

4. A rotary steel plate printing machine, embodying therein a plate cylinder, and a wiping mechanism embodying a support for a supply roll of a continuous web of wiping material, a support for a rewind reel, a plurality of platens, each rotatable about an axis substantially parallel with the axis of said plate cylinder, a guide roller intermediate said platen rollers, whereby a wiping web may be passed from said supply roll about said platens successively and to said rewind reel, means whereby the web passing said platens is maintained in engaging relation with a plate upon said cylinder, means imparting continuous rotary movement to said platens in the same direction as, but at a relatively lower speed than, the plate, feed rollers intermediate said platens and said support for the web of wiping material, means actuating said feed rollers at substantially the same speed as said platens, and a rewind mechanism adjacent the support for the rewind reel.

5. A rotary steel plate printing machine, embodying therein a plate cylinder, and a wiping mechanism embodying a support for a supply roll of a continuous web of wiping material, a support for a rewind reel, a platen rotatable about an axis substantially parallel with the axis of said plate cylinder, whereby a wiping web may be passed from said supply roll about said platen and to said rewind reel, bearing blocks for said platen movable radially of said plate cylinder, springs thrusting said blocks towards said cylinder, means operative to vary the tension

of said springs and therethrough adjust said blocks to bring and maintain said platen in the desired engaging relation with a plate upon said cylinder, means imparting continuous rotary movement to said platen, and a rewind mechanism adjacent the support for the rewind reel.

6. A rotary steel plate printing machine, embodying therein a plate cylinder, and a wiping mechanism embodying a support for a supply roll of a continuous web of wiping material, a support for a rewind reel, a plurality of platens, each rotatable about an axis substantially parallel with the axis of said plate cylinder, a guide roller intermediate said platen rollers, whereby a wiping web may be passed from said supply roll about said platens successively and to said rewind reel, bearing blocks for each of said platens movable radially of said plate cylinder, springs thrusting said blocks towards said cylinder, means independently operative upon the springs acting upon the bearing blocks for each platen to vary the tension of said springs and therethrough to bring and maintain each platen in the desired engaging relation with a plate upon said cylinder, means imparting continuous rotary movement to said platens, and a rewind mechanism adjacent the support for the rewind reel.

7. A rotary steel plate printing machine, embodying therein a plate cylinder, and a wiping mechanism embodying a support for a supply roll of a continuous web of wiping material, a support for a rewind reel, a platen rotatable about an axis substantially parallel with the axis of said plate cylinder, whereby a wiping web may be passed from said supply roll about said platen and to said rewind reel, means whereby the web passing said platen is maintained in engaging relation with a plate upon said cylinder, a friction disk, co-operating means carried by said plate cylinder and said disk for continuously rotating said disk, a worm wheel carried by said platen, a worm shaft enmeshed therewith, a friction wheel carried by said worm shaft and engaging said friction disk, and a rewind mechanism adjacent the support for the rewind reel.

8. A rotary steel plate printing machine, embodying therein a plate cylinder, and a wiping mechanism embodying a support for a supply roll of a continuous web of wiping material, a support for a rewind reel, a platen rotatable about an axis substantially parallel with the axis of said plate cylinder, whereby a wiping web may be passed from said supply roll about said platen and to said rewind reel, bearing blocks for said platen movable radially of said plate cylinder, springs thrusting said blocks towards said cylinder, means operative to vary the tension of said springs and therethrough adjust said blocks to bring and maintain said platen in the desired engaging relation with a plate upon said cylinder, a friction disk, co-operating means carried by said plate cylinder and said disk for continuously rotating said disk, a worm wheel carried by said platen, a worm shaft enmeshed therewith, bearings permitting longitudinal movement of said shaft when adjusting said bearing blocks, a friction wheel carried by said worm shaft and engaging said friction disk, and a rewind mechanism adjacent the support for the rewind reel.

9. A rotary steel plate printing machine, embodying therein a plate cylinder, and a wiping mechanism embodying a support for a supply roll of a continuous web of wiping material, a support for a rewind reel, a platen rotatable about an axis substantially parallel with the axis of

said plate cylinder, whereby a wiping web may be passed from said supply roll about said platen and to said rewind reel, means whereby the web passing said platen is maintained in engaging relation with a plate upon said cylinder, feed rollers intermediate said platen and said support for the web of wiping material, a friction disk, co-operating means carried by said plate cylinder and said disk for continuously rotating said disk, a worm wheel carried by said platen, a worm wheel carried by one of said feed rollers, a worm shaft enmeshed with both of said worm wheels, a friction wheel carried by said worm shaft and engaging said friction disk, a rewind mechanism, and gearing connecting said feed rollers and said rewind mechanism.

10. A rotary steel plate printing machine, embodying therein a plate cylinder, and a wiping mechanism embodying a support for a supply roll of a continuous web of wiping material, a support for a rewind reel, a plurality of platens, each rotatable about an axis substantially parallel with the axis of said plate cylinder, a guide roller intermediate said platen rollers, whereby a wiping web may be passed from said supply roll about said platens successively and to said rewind reel, means whereby the web passing said platens is maintained in engaging relation with a plate upon said cylinder, feed rollers intermediate said platens and said support for the web of wiping material, a plurality of friction disks, co-operating means carried by said plate cylinder and said disks respectively for continuously rotating said disks, a worm wheel carried by each of said platens and by one of said feed rollers, a worm shaft enmeshed with the worm wheel carried by one of said platens and by said feed roller, a second worm shaft enmeshed with the worm gear carried by said other platen, a friction wheel carried by each of said worm shafts and engaging a friction disk, a rewind mechanism, and gearing connecting said feed rollers and said rewind mechanism.

11. A rotary steel plate printing machine, embodying therein a plate cylinder, and a wiping mechanism embodying a support for a supply roll of a continuous web of wiping material, a support for a rewind reel, a platen rotatable about an axis substantially parallel with the axis of said plate cylinder, whereby a wiping web may be passed from said supply roll about said platen and to said rewind reel, means whereby the web passing said platen is maintained in engaging relation with a plate upon said cylinder, a speed reducing mechanism between said plate cylinder and said platen imparting continuous rotary movement to said platen in a direction to cause the wiping web to have movement with a plate upon said plate cylinder, and a rewind mechanism adjacent the support for the rewind reel.

12. A rotary steel plate printing machine, embodying therein a plate cylinder, and a polishing mechanism embodying a support for a supply roll of a continuous web of polishing material, a support for a rewind reel, a platen rotatable about an axis substantially parallel with the axis of said plate cylinder, whereby a polishing web may be passed from said supply roll about said platen to said rewind reel, means whereby the web passing said platen is maintained in engaging relation with a plate upon said cylinder, means imparting continuous rotary movement to said platen in the same direction as, but at a relatively lower speed than, the plate, and a

rewind mechanism adjacent the support for the rewind reel.

13. A rotary steel plate printing machine, embodying therein a plate cylinder, and a polishing mechanism embodying a support for a supply roll of a continuous web of polishing material, a support for a rewind reel, a platen rotatable about an axis substantially parallel with the axis of said plate cylinder, whereby a polishing web may be passed from said supply roll about said platen to said rewind reel, means whereby the web passing said platen is maintained in engaging relation with a plate upon said cylinder, a friction disk, co-operating means carried by said plate cylinder and said disk for continuously rotating said disk, a worm wheel carried by said platen, a worm shaft enmeshed therewith, a friction wheel carried by said worm shaft and engaging said friction disk, and a rewind mechanism adjacent the support for the rewind reel.

14. A rotary steel plate printing machine, embodying therein a plate cylinder, and a polishing mechanism embodying a support for a supply roll of a continuous web of polishing material, a support for a rewind reel, a platen rotatable about an axis substantially parallel with the axis of said plate cylinder, whereby a polishing web may be passed from said supply roll about said platen to said rewind reel, means whereby the web passing said platen is maintained in engaging relation with a plate upon said cylinder, a speed reducing mechanism between said plate cylinder and said platen imparting continuous rotary movement to said platen in a direction to cause said polishing web to have movement counter to that of a plate upon said plate cylinder, and a rewind mechanism adjacent the support for the rewind reel.

15. A rotary steel plate printing machine embodying therein a plate cylinder, having associated therewith a wiping platen and a polishing platen, each platen being rotatable about an axis substantially parallel with the axis of said plate cylinder, supports for a supply roll of a continuous web of wiping material and for a supply roll of a continuous web of polishing material, supports for two rewind reels, whereby a wiping web and a polishing web may be passed respectively from its roll about a rotatable platen to a rewind reel, means whereby the web passing about each platen is maintained in engaging relation with a plate upon said cylinder, means imparting continuous rotary movement to said wiping platen in the same direction as, but at a relatively lower speed than, the plate, means imparting continuous rotary movement to said polishing platen in a direction opposite to, but at a relatively lower speed than, the plate, and a rewind mechanism adjacent each support for a rewind reel.

16. A rotary steel plate printing machine embodying therein a plate cylinder, having associated therewith a wiping platen and a polishing platen, each platen being rotatable about an axis substantially parallel with the axis of said plate cylinder, supports for a roll of web of wiping material and for a roll of web of polishing material, supports for two rewind reels, whereby a wiping web and a polishing web may be passed respectively from its roll about a rotatable platen

to a rewind reel, means whereby the web passing about each platen is maintained in engaging relation with a plate upon said cylinder, speed reducing mechanisms between said plate cylinder and said wiping platen imparting continuous rotary movement to the latter in a direction to cause a wiping web to have movement with a plate upon said cylinder, and speed reducing mechanisms between said plate cylinder and said polishing platen imparting continuous rotary movement to the latter in a direction to cause a polishing web to have movement counter to that of a plate upon said plate cylinder, and a rewind mechanism adjacent each support for a rewind reel.

17. A rotary steel plate printing machine, embodying therein a plate cylinder, having associated therewith two wiping platens and a polishing platen, each platen being rotatable about an axis substantially parallel with the axis of said plate cylinder, a guide roller intermediate said wiping platens, supports for a supply roll of a continuous web of wiping material and for a supply roll of a continuous web of polishing material, supports for two rewind reels, a wiping web being passed from its roll, about said wiping platens and said intermediate guide roller to a rewind reel, and a polishing web being passed from its roll, about said polishing platen to a rewind reel, means whereby the web passing about each platen is maintained in engaging relation with a plate upon said cylinder, means imparting continuous rotary movement to said wiping platens in the same direction as, but at a relatively lower speed than, the plate, means imparting continuous rotary movement to said polishing platen in a direction opposite to, but at a relatively lower speed than, the plate, and a rewind mechanism adjacent each support for a rewind reel.

18. A rotary steel plate printing machine, embodying therein a plate cylinder, having associated therewith two wiping platens and a polishing platen, each platen being rotatable about an axis substantially parallel with the axis of said plate cylinder, a guide roller intermediate said wiping platens, supports for a supply roll of a continuous web of wiping material and for a supply roll of a continuous web of polishing material, supports for two rewind reels, a wiping web being passed from its roll, about said wiping platens and said intermediate guide roller to a rewind reel, and a polishing web being passed from its roll, about said polishing platen to a rewind reel, feed rollers between said wiping web support and said wiping platen, means whereby the web passing about each platen is maintained in engaging relation with a plate upon said cylinder, means imparting continuous rotary movement to said wiping platens in the same direction as, but at a relatively lower speed than, the plate, means imparting continuous rotary movement to said polishing platen in a direction opposite to, but at a relatively lower speed than, the plate, a rewind mechanism adjacent each support for a rewind reel, feed rollers between said polishing platen and the rewind reel for the polishing web, and means whereby said feed rollers respectively are actuated at the same speed as said platens.

PETER AITCHISON.