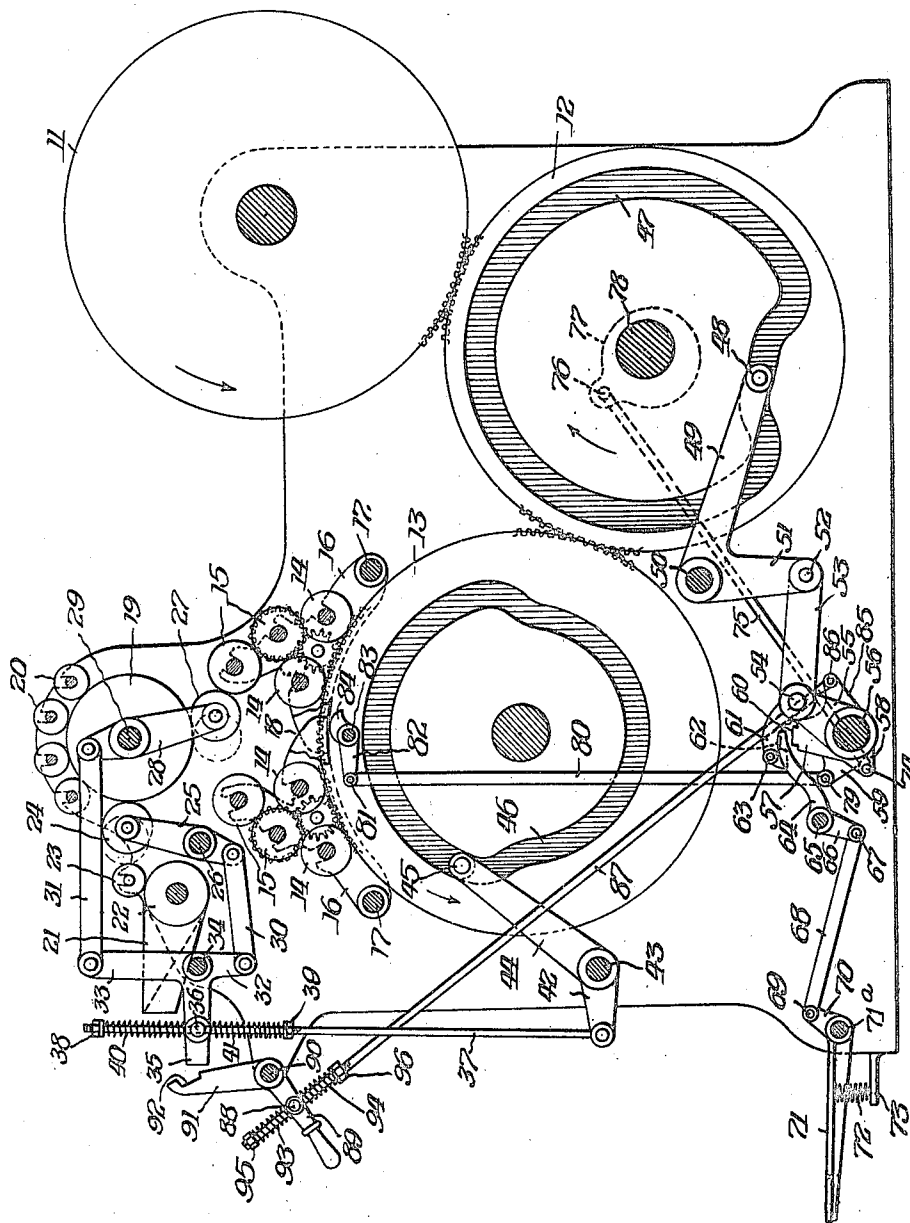


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 INKING MECHANISM FOR PRINTING PRESSES.
 APPLICATION FILED MAY 9, 1918.

1,383,945.

Patented July 5, 1921.



Witness:

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UNITED STATES PATENT OFFICE.

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INKING MECHANISM FOR PRINTING-PRESSES.

1,383,945.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CARL HENDERSON, a citizen of the United States, residing at Oak Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Inking Mechanism for Printing-Presses, of which the following is a specification.

In the operation of printing presses and particularly offset presses, it has been found to be exceedingly difficult to control the application of the ink to the form cylinder in such manner as to compensate for the varying requirements due to manner of operation, as for instance periodic tripping of the blanket cylinder, preliminary inking up, etc.

Provision has heretofore been made for tripping the form inking rolls simultaneously with a tripping of the blanket cylinder, but in such case the unused ink accumulates on the said rolls; and if the ductors between the ink fountain rolls and the form rolls be not suspended as to operation, the accumulation of ink on the distributing rolls or drum will result in an over supply to the form rolls as soon as normal operation is resumed.

My invention has for its object the control of the ink supply at its source, whereby to avoid any accumulation of ink on the intermediate rolls which will result in an excess subsequent supply of ink to the form.

I accomplish this object by not only providing for an automatic tripping of the form rolls concurrently with the tripping of the blanket cylinder, but also for a suspension of the operation of the ductor transferring ink from the distributing rolls to the form rolls and further for a suspension of the operation of the ductor transferring ink from the fountain to the distributing rolls.

A further object of the invention is to permit of an uninterrupted flow of ink to the form rolls during inking up with the blanket cylinder out of operation relative to the other cylinders, and to this end I arrange to render the automatic tripping mechanism of the ink rolls temporarily inoperative at the will of the operator.

In order that the invention may be readily understood in its practical application to a printing press, I have in the accompanying drawing and in the following detailed description illustrated a preferred

embodiment of the invention. Obviously, however, the invention is susceptible of embodiment in other and varied constructional forms to suit the conditions of use, wherefore the drawing and description are to be taken in an illustrative and not in an unnecessarily limiting sense.

Having reference to the drawing, showing in diagrammatic form an embodiment of the invention as applied to an offset press, the impression cylinder is indicated at 11, the blanket cylinder at 12 and the form cylinder at 13. In the example chosen, the form rollers comprise two independent trains of form rolls 14 and their rider rolls 15, carried by frames 16, of arcuate form and hinged at 17, the adjacent ends of the frames 16 overlapping as indicated at 18. An ink drum 19 surmounted by rider rolls 20 constitute the ink distributing system of rolls. The ink fountain is represented at 21 provided with a fountain roller 22 and its rider roll 23. A ductor 24 carried by the two-armed lever 25 pivoted at 26 for oscillation so as to contact in turn with the rider roll 23 and the drum 19, serves to transfer the ink from the fountain to the distributing roll. A second ductor 27 carried by the two-armed lever 28 pivoted at 29, concentric with the axis of the drum 19, to oscillate upon the drum axis in continual peripheral contact with the drum and in intermittent alternate contact with the rider roll 15 of each train of form rolls, serves to distribute the ink from the drum proportionately to the two trains of form rolls.

Oscillatory movement is imparted to the ductors 24 and 27 by the links 30 and 31 respectively, these links connecting the free ends of the levers 25 and 28 with the two arms 32 and 33 of a T-lever pivoted at 34 in the machine frame. The stem 35 of a T-lever is provided with a swivel block 36 through which extends a rod 37 provided with abutment nuts 38 and 39, one on each side of the swivel block. Compression springs 40 and 41 disposed about the rod 37 between the swivel block 36 and each of the two nuts constitute a yieldable connection between the rod 37 and its mounting in the swivel block. The lower end of the rod 37 is pivoted to the arm 42 of an angle lever pivoted at 43, the other arm 44 of said angle lever carrying a roll 45 which travels

within a cam groove 46 on the face of the form cylinder 13. Wherefore it will be seen that upon every revolution of the form cylinder, each of the ductors will swing into
 5 contacting relation with the cooperating rolls; the ductor 24 between the roll 23 and the drum 19, and the ductor 27 between the rider rolls 15 of the respective trains of form rolls while maintaining its contact with
 10 the drum 19. Thereby, during the normal operation of the press, the flow of ink is constant and uniform from the ink mountain to the form.

It occasionally becomes necessary in the
 15 operation of a press to trip the blanket cylinder and thus suspend the printing operation momentarily. If during such interval the supply of ink to the form were continuous the result would be an overinking of
 20 the form followed by an imperfectly printed sheet. To avoid this difficulty, provision has heretofore been made and is also included in the present press, for tripping the form rolls concurrently with the tripping of
 25 the blanket cylinder. In the present instance this is done in the manner following:

The blanket cylinder 12 has upon its end face a cam groove 47 traversed by a cam roller 48 carried by the arm 49 of an angle
 30 lever pivoted at 50. The other arm 51 of the angle lever is pivoted at 52 to a link 53 which is connected at its opposite end at the point 54 with an arm 55 loosely mounted upon the rock shaft 56. Upon the rock
 35 shaft 56 is fixed a member having three arms 57, 58 and 59. The arm 57 has a tooth 60. A pawl 61 pivoted at 54 to the arm 55 has in its under side a notch 62 adapted to engage the tooth 60, but is held out of engagement therewith by means of a roller 63 riding
 40 upon an arm 64 of an angle lever pivoted at 65, the other arm 66 of which is pivoted at 67 to a link 68 which, in turn, is pivoted at 69 to the arm 70 of a pedal 71 pivoted at 71^a, the pedal 71 being normally held
 45 in an elevated position with the pawl 61 out of engagement with the tooth 60 by means of a compression spring 72 bearing below upon a bracket 73. The arm 58 having a
 50 fixed relation with the arm 57 and the shaft 56, has pivoted thereto at 74 a rod 75 connected at 76 to the eccentric shaft 77 forming an eccentric bearing for the shaft 78 of the blanket cylinder 12. The arm 59 having
 55 fixed relation to the arms 57 and 58 and the shaft 56 is connected at 79 to a rod 80, the opposite end of which is pivoted at 81 to an arm 82 of an angle lever pivoted at 83, the other arm 84 of which angle lever has a cam
 60 face underlying the overlapping ends 18 of the form roll frames 16.

It will be obvious that during the normal operation of the press, the roll 48 traveling in the cam groove 47 will cause an oscillation of the arm 55 on the shaft 56, accom-

panied by an oscillatory movement of the pawl 61 above the tongue 60, all without effect upon the press, the pawl 61 being held out of engagement with the tongue 60 on the arm 57. However, in case of a misfed sheet
 70 or for other cause if the operator desires to trip the press, he steps upon the pedal 71, permitting the pawl 61 to drop into engagement with the tooth 60 thus locking the arm 55 to the shaft 56 and causing the latter to
 75 partake of a rocking movement due to the travel of the cam 48. This movement of the shaft 56, transmitted by the rod 75, trips the blanket cylinder 12 out of engagement with the impression cylinder 11 and the form cylinder 13. Concurrently, acting through the
 80 arm 59 and the rod 80 the trains of form rolls are tripped out of inking relation to the form cylinder 13. The normal relation of the parts is resumed upon the operator re-
 85 moving his foot from the pedal 71.

So far as above described, the form cylinder would receive no ink from the form rolls during the time that the blanket cylinder was tripped, but there would be an interrupted supply of ink by the ductors 24 and
 90 27 resulting in a piling up of the ink upon the form rolls, the excess being transmitted to the form upon the resumption of normal operation, with disadvantageous result. To
 95 avoid this difficulty, I have arranged to suspend the supply of ink to the form rolls by bringing the ductor 27 to a position at rest between and out of contact with the two
 100 trains of rider and form rolls; also to suspend the supply of ink to the distributing drum by bringing the ductor 24 to a position of rest intermediate and out of contact with the fountain rider roll and the drum. This is accomplished in the manner following:

Upon the shaft 56 is fixed an additional
 105 arm 85 to which is pivoted at 86 a rod 87 slidably disposed within a swivel block 88 carried upon the handle 89 of an angle lever
 110 pivoted at 90, the other arm 91 of which angle lever is provided with a notch 92 arranged to take over the end 35 of the T-lever for oscillating the ductors. Compression
 115 springs 93, 94 disposed between the swivel block 88 and the abutment nuts 95, 96, and encircling the rod 87, provide flexibility in the connection between the rod 87 and the handle 89. When the shaft 56 is rocked by the tripping of the blanket cylinder and of
 120 the rider rolls, the rod 87 causes the turning of the angle lever 89, 91, upon its pivot and the engagement of the lever arm 35 by the notch 92. This locks the T-lever 32, 33, 35 in position and brings the ductors to rest in
 125 an intermediate position between their cooperating rolls. The springs 40, 41 on the rod 37 give and take to permit idle reciprocation of the rod 37 by the cam groove 46 while the ductors are at rest. Thus it will
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be seen that immediately upon the tripping of the blanket cylinder and the tripping of the form ink rolls, the ductors will both of them be likewise tripped and maintained in-
 5 operative until, as the blanket cylinder is returned to its operative position, the shaft 56 rocks in the opposite direction and restores the form rolls to operative position, whereupon the latch lever arm 91 will re-
 10 lease the T-lever and permit the ductors to resume their oscillatory movement under the influence of the actuating rod 37.

In getting ready for a new job, it is necessary to run the press for a certain length
 15 of time, dependent upon circumstances, with the blanket cylinder 12 tripped and with the various parts of the inking mechanism functioning in the usual manner in order to preliminarily ink the form. To provide for
 20 this, the yielding connection between the rod 87 and the handle 89 permits the operator to grasp the said handle and to release the latch lever 91 from the lever 35, thus permitting the inking mechanism to operate while the
 25 blanket cylinder is tripped.

I claim:

1. In a printing press, the combination with the form cylinder of a printing couple, and inking mechanism therefor comprising
 30 an ink fountain, ink distributing rolls, and form rolls, of a ductor for transferring the ink from the fountain to the distributing rolls, a second ductor for transferring the ink from the distributing rolls to the form
 35 rolls, and means for concurrently suspending the functioning of both ductors and of the form rolls whereby to intermit the flow of the ink from the fountain.
2. In an offset printing press, the combination with the form cylinder, the impres-
 40 sion cylinder, the blanket cylinder, means for tripping the blanket cylinder, and inking mechanism comprising an ink fountain, a distributing roll, and form rolls, of a
 45 ductor for transferring the ink from the fountain to the distributing rolls, a second ductor for transferring the ink from the distributing rolls to the form rolls, and means to automatically render the two duc-
 50 tors inoperative concurrently with the tripping of the blanket cylinder whereby to intermit the supply of ink from the fountain and prevent the accumulation thereof on the distributing and form rolls.
3. In a printing press, the combination with the form cylinder of a printing couple,
 55 of a plurality of trains of rolls each including form rolls and rider rolls, an ink distributing drum, a fountain, a ductor mounted to oscillate upon the drum axis in con-
 60 tinual peripheral contact with the drum and in intermittent alternate contact with the rider rolls of each train of form rolls, means temporarily to move the form rolls out of contact with the form, and means
 operating automatically to suspend the oscillation of the ductor in a neutral position concurrently with the rendering of the form rolls inoperative whereby to prevent an accumulation of ink on the form and rider
 70 roll trains while idle.
4. In a printing press, the combination with the form cylinder of the printing couple, of a plurality of trains of form and rider rolls, an ink distributing drum, a duc-
 75 tor mounted to oscillate upon the drum axis in continual peripheral contact with the drum and in intermittent alternate contact with the rider roll of each form train, an ink fountain, a second ductor mounted to
 80 oscillate into alternate peripheral contact with a fountain roll and with the drum, means temporarily to move the form roll train out of contact with the form, and means operative automatically with the ren-
 85 dering of the form rolls inoperative to suspend the oscillation of the two ductors in neutral position whereby to intermit the flow of ink from the fountain and to prevent the accumulation of ink on the distributing
 90 drum and the form rolls.
5. In an offset printing press, the combination with the form cylinder, the blanket cylinder, the impression cylinder, and means for tripping the blanket cylinder, of a plu-
 95 rality of trains of form rolls, an ink drum, an ink fountain, a ductor mounted to oscillate upon the drum axis in continual peripheral contact with the drum and in intermittent alternate contact with a roll of each
 100 of the form roll trains, means operating automatically upon the tripping of the blanket cylinder to move the form roll trains temporarily out of contact with the form, and means also operating automatically con-
 105 currently with the tripping of the blanket cylinder to suspend the oscillation of the ductor in neutral position whereby to prevent an accumulation of ink upon the form rolls during the tripped relation of the
 110 blanket cylinder and the form rolls.
6. In an offset printing press, the combination with the form cylinder, the blanket cylinder, the impression cylinder, and means for tripping the blanket cylinder, of a plu-
 115 rality of trains of form rolls, an ink drum, an ink fountain, a ductor mounted to oscillate upon the drum axis in continual peripheral contact with the drum and in intermittent alternate contact with a roll of each of
 120 the form roll trains, means operating automatically upon the tripping of the blanket cylinder to move the form roll trains temporarily out of contact with the form, and means also operating automatically con-
 125 currently with the tripping of the blanket cylinder to suspend the oscillation of the ductor in neutral position, an ink fountain roll train, a second ductor mounted to oscillate into and out of peripheral contact alter-
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nately with the ink fountain roll train and with the ink distributing drum, and means operating automatically upon the tripping of the blanket cylinder and with the rendering inoperative of the form rolls and the first mentioned ductor to suspend the oscillation of the last mentioned ductor in a neutral position, whereby to intermit the flow of ink from the fountain and to prevent an accumulation thereof upon the distributing rolls and the form rolls.

7. In a printing press, the combination with the form cylinder of a printing couple, inking mechanism therefor comprising form rolls, ink distributing rolls, an ink fountain, oscillatory ductors interposed one between the ink fountain and the distributing rolls and the other between the distributing rolls and the form rolls, and means for actuating and controlling the oscillation of the ductors in unison comprising a T-lever, a link connecting one arm of the T-lever with one of the ductors, a second link connecting the other arm of the T-lever to the other of the ductors, a cam actuated lever under the control of the form cylinder, and a connection between the cam actuated lever and the stem of the T-lever.

8. In a printing press, the combination with the form cylinder of a printing couple, inking mechanism therefor comprising form rolls, ink distributing rolls, an ink fountain, oscillatory ductors interposed one between the ink fountain and the distributing rolls and the other between the distributing rolls and the form rolls, and means for actuating and controlling the oscillation of the ductors in unison comprising a T-lever, a link connecting one arm of the T-lever with one of the ductors, a second link connecting the other arm of the T-lever to the other of the ductors, a cam actuated lever under the control of the form cylinder, and a releasable connection between the cam lever and the stem of the T-lever whereby to actuate the ductors in synchronism with the rotation of the form cylinder and at will to suspend the operation of the ductors independently of the rotation of the form cylinder.

9. In an offset printing press, the combination with the form cylinder, the blanket cylinder, a normally stationary rock shaft for tripping the blanket cylinder, and means

under the control of the operator for actuating the rock shaft to trip the blanket cylinder, of inking mechanism for the form cylinder comprising an ink fountain, ink distributing rolls, form cylinder rolls, and a ductor mounted to oscillate between certain elements comprised in the ink distributing trains, a connection between the rock shaft and the form rolls whereby to move the latter out of operative contact with the form cylinder concurrently with the tripping of the blanket cylinder, and a releasable connection between the rock shaft and the actuating mechanism of the ductor under the control of the operator while the press is in motion whereby to suspend the oscillation of the ductor concurrently with the tripping of the blanket cylinder and alternatively upon the release of said connection to permit the oscillation of the ductor independently of the tripping of the blanket cylinder.

10. In a printing press, the combination with the form cylinder of a printing couple, of a plurality of trains of rolls each including form rolls and rider rolls, an ink distributing drum, a fountain, a ductor mounted to oscillate upon the drum axis in continual peripheral contact with the drum and in intermittent alternate contact with the rider rolls of each train of form rolls, means temporarily to move the form rolls out of contact with the form, means operating automatically to suspend the oscillation of the ductor in a neutral position concurrently with the rendering of the form rolls inoperative whereby to prevent an accumulation of ink on the form and rider roll trains while idle, and means under the control of the operator while the press is in motion to throw out of operation the last mentioned automatically operating means whereby to continue the functioning of the ductor at will independently of the relation of the form rolls to the form.

In testimony whereof I have hereunto signed my name in presence of two subscribing witnesses.

CARL HENDERSON.

Witnesses:

WM. HOBBS,
J. R. BLAINE.