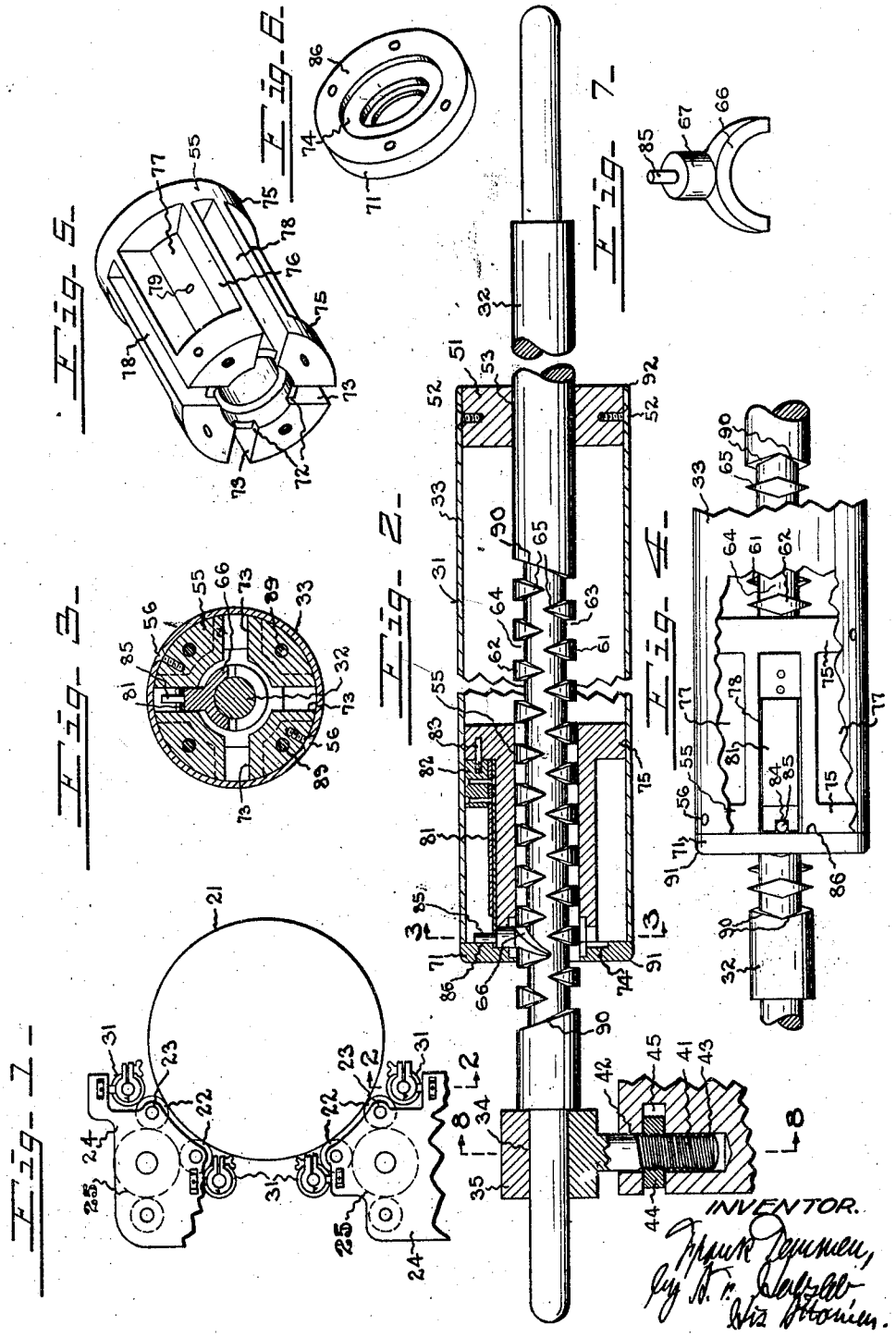
May 11, 1926. 1,584,256

F. TEMMEN

INK DISTRIBUTING ROLLER

Filed March 4, 1926 2 Sheets-Sheet 1



INVENTOR.
Frank Temmen,
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INK DISTRIBUTING ROLLER

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Fig. 8.

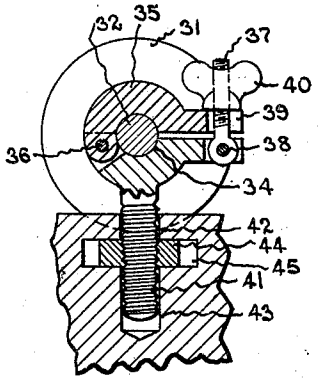


Fig. 10.

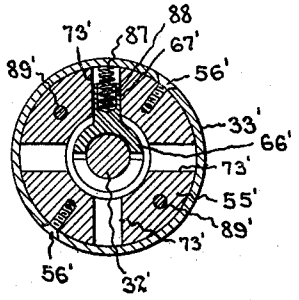


Fig. 11.

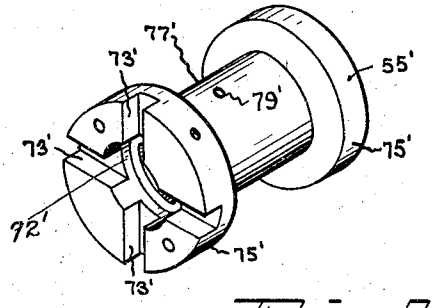
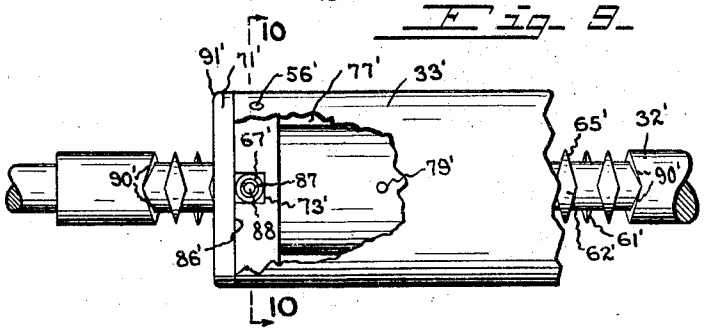


Fig. 9.



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Patented May 11, 1926. 1,584,256

UNITED STATES PATENT OFFICE.

FRANK TEMMEN, OF COVINGTON, KENTUCKY.

INK-DISTRIBUTING ROLLER.

Application filed March 4, 1926. Serial No. 92,277.

My invention relates to ink distributing rollers for use in printing presses, including lithographing presses and the like, and has for its object the provision of an ink distributing roller by means of which accurate, even and minute distribution of the ink is obtained.

My invention is intended for use principally in connection with the form rollers which ink the form or stone prior to the printing operation.

It is the object of my invention to provide a new and improved ink distributing roller by means of which the ink is very evenly distributed on the form for obtaining evenly inked impressions; and, further, to provide novel means for increasing the covering capacity of the ink.

The present exemplification of my invention is intended primarily for use in connection with rotary presses in which the inking rollers are continuously rotated in the same direction, the ink distributing periphery of my improved device being exemplified as rotated by frictional contact with the inking roller or rollers with which it directly cooperates, although supplementary rotating means for said ink distributing periphery may be provided, for instance, as shown, described and claimed in my copending application Serial No. 92,276, filed March 4, 1926.

It is the object of my invention further to provide an ink distributing roller with means whereby long reciprocating axial movements are imparted to an ink distributing shell with a minimum of endwise space in the mechanism for its endwise actuation and whilst the shell is rotating continuously in the same direction; and, further, to provide novel parts and arrangements of parts whereby the operating devices are readily accessible for inspection, and whereby the parts may be readily removed and replaced in case of wear or accident, and whereby, further, ease and accuracy of operation are assured.

In the drawings:

Fig. 1 represents a side elevation of so much of an elementary rotary printing press, partly broken away, as is necessary to show the application of my invention thereto.

Fig. 2 is an axial section of my improved ink distributing roller, taken on the line 2—2 of Fig. 1.

Fig. 3 is a cross-section of the same taken in the plane of the line 3—3 of Fig. 2.

Fig. 4 is a plan view of the same, partly broken away.

Fig. 5 is a perspective view of the bearing in which the directing shoe is mounted.

Fig. 6 is a perspective view of the closing plate for the bearing.

Fig. 7 is a perspective view of the directing shoe.

Fig. 8 is a cross-section of the clamping means for the rod of my improved device, taken in the plane of the line 8—8 of Fig. 2.

Fig. 9 is a plan view, partly broken away, showing a modification of my improved device.

Fig. 10 is a cross-section of the same, taken in the plane of the line 10—10 of Fig. 9; and,

Fig. 11 is a perspective view of the bearing for the directing shoe in this modification.

Referring to Fig. 1, 21 represents the form cylinder of a rotary printing press, which is arranged to have the form from which the printing is done suitably secured thereto in the usual manner. Suitable means are provided for rotating the form cylinder in proper relation with other parts of the printing press.

Form rollers 22 are journaled at their respective ends in bearings 23 supported by the side frames 24 of the printing press, suitable adjusting means being provided for these bearings, not shown because well known. Said bearings are arranged so that the form rollers maintain proper contact relation with the printing surfaces on the form cylinder. The form rollers may be rotated by frictional contact with the printing surfaces on the form cylinder or in other usual manner. Suitable inking rollers, one of which is shown at 25, supply the ink to the form rollers in usual manner, which rollers may include a suitable fountain roller, not shown because well known.

My improved ink distributing roller is exemplified at 31. It comprises a rod 32, and an ink distributing shell 33, the outer periphery of which is cylindrical in form and serves as an ink distributer. Long endwise reciprocations are imparted to the shell

whilst in contact with the inking roller with which it coacts, exemplified as the composition form rollers 22.

Means are provided for restraining rotation of the rod. The rod in the present exemplification is mounted at each of its ends in a bearing 34. This bearing is shown as a clamp bearing, comprising a releasable cap 35 hinged to the body of the bearing by a hinge 36, and clamped upon the rod by a clamp, which comprises a bolt 37 pivoted to the body of the bearing by a hinge 38, and received through a slot 39 in the cap, and provided with a nut 40 for clamping the cap upon the rod located between the cap and the body of the bearing.

The means for locating my improved ink distributing roller in coactive relation with its coacting composition roller are exemplified as comprising a threaded shank 41 with which the bearing 34 is provided. The shank is movable freely endwise in bearings 42, 43, in the side frame of the machine. A nut 44 is axially held in a recess 45 between said bearings, and has threaded connection with the threaded shank for moving the bearing in which the rod is located toward and from the coacting inking roller. One of these structures is located at each end of my improved distributing roller, although it is obvious that other devices for the same purpose may be substituted without departing from my invention.

The ink disributing shell 33 is preferably a steel or other metal tube. A bearing 51 is fixed in one end thereof, as by means of countersunk screws 52 received through said shell and threaded into said bearing, the outer ends of the screws being finished to form part of the ink distributing periphery of said shell. The said bearing has rotative and axial movement on a journal section 53 of said rod.

The shell at its other end comprises a bearing 55, which is fixed to the shell by means of countersunk screws 56, received through said shell and threaded into said bearing, the outer ends of the screws being finished to form part of the ink distributing periphery of the shell.

The rod is provided with crossing threads 61, 62, which are respectively right hand and left hand, which have thread-spaces 63, 64, therebetween. These crossing threads are interrupted, whilst the thread-spaces are continuous. The threads are at their crossing points provided with tapering ends 65. The threaded portion may be of desirable length, depending on the length of end reciprocation which it is desired to impart to the ink distributing shell.

A directing shoe cooperates with the crossing threads for causing the endwise reciprocations of the shell. This directing shoe comprises a thread-segment 66, which is received in the thread-spaces of the crossing threads, and is arranged to follow the thread-spaces. It is shown provided with a stem 67 which forms a pivot for the shoe.

A plate 71 is arranged to close the end of the shell. The shoe is located between the bearing 55 and the plate 71. The bearing 55 and the plate 71 are shown as bearings for the threaded end of the rod.

The bearing is shown provided with a plurality of end recesses 72, which connect with each other, from which journal recesses 73 project. The plate is provided with a recess 74 which is complemental to the recesses 72. The body of the shoe is arranged to be received in any one of the recesses 72 and the corresponding part of the complemental recess 74.

The bearing 55 is provided with end flanges 75, and at one or more sides thereof, is provided with longitudinal flanges 76 between which pockets 77 are located, forming lubricant pockets, and longitudinal recesses 78, forming slots. The lubricant pockets communicate by means of holes 79 with the inner periphery of the bearing and the screw therein.

A spring 81 is received in the slot. This spring is shown comprising a plurality of leaves secured to a block 82 from which a pin 83 extends. A spring assembly consisting of the spring leaves, the block and the pin, is arranged to be placed endwise in the slot 78 between the bottom of the slot and the shell, the pin 83 being received in the end wall of the slot and aiding in locating the spring assembly and preventing tipping of the block. The outer end of the spring is provided with a slot 84, which is preferably pluri-walled, in which a shank 85 extending from the block is received. The shank is held between the walls of said slot and the inner end-face 86 of the end plate. The outer end of the spring is arranged to press the shoe toward the rod.

This arrangement of spring enables a long spring with great resilient yielding powers to be employed, thus avoiding crystallization, and insuring long life to the spring. The shoe is loosely received in the recess so as to move freely in radial direction and to accommodate itself to the thread.

In the modification shown in Figs. 9, 10 and 11, similar parts are designated by similar but primed reference numerals. In this modification the spring is shown as a helical spring 87 and the longitudinal flanges of the bearing 55 are omitted, forming the pocket 77 as a continuous annular lubricant pocket. The stem 67 of the shoe is received in a recess 73′ which is an extension of the recess 72′. This recess is pluri-walled in cross-section.

The stem is releasably held in the recess 73′ by the inner end-face 86′ of the end-plate

71'. The helical spring is located in a bore 88 in said shank, between the bottom of said bore and the shell 33. The shoe and the spring are readily removed by removal of the end-plate 71.

The recesses 73' and the slot 84 in the leaf-spring are shown as pluri-walled and the stem as cylindrical, so that the pivotal mounting of the shoe is accomplished by line contacts between its stem and said walls. The position of the shoe may be changed so as to be respectively received in any of the recesses 72, and the spring assembly may be received in any of the slots 78 for co-operation with the shoe in any of the recesses. The spring assemblies are readily removable by pulling the same endwise out of the slots.

The plate 71 is releasably secured to the bearing 55 by means of screws 89 which pass through the plate and are threaded into the bearing, the heads of said screws being countersunk in the disk.

The threaded holes in the bearing 55 may connect with the lubricant pockets for passing lubricant therethrough into said pockets.

The respective ends of the threaded portion of the rod are provided with oppositely disposed slanting faces 90, for reversing the directing shoe, for changing its angular position from that which it has assumed during coaction with one of the threads, to an angular position for coaction with the other of the threads, whereby the endwise travel of the ink distributing shell is reversed. This reversal of endwise movement is effected with an easy motion and without jar, so that even ink distribution on the coacting inking roller may not be disturbed.

The respective ends of the outer periphery of the shell and end-plate are relieved, as shown at 91, 92, for relieving end contact between said outer periphery and the coacting inking roller.

During rotation of the ink distributing shell, the directing shoe rotates with the shell and moves in the threaded space on the rod in the inside of the shell, whereby a rotative movement and also an endwise movement are imparted to the ink distributing shell. The rotative movement is in the present instance exemplified as continuous in one direction. When the directing shoe has reached the end of the threaded space in which it is located, its forwardly directed end engages one of the slanting faces 90 at the ends of said threads, which has the effect of reversing the direction of presentation of said shoe, for causing said shoe to enter the oppositely presented thread-space, while the rotative movement of the shell continues.

This endwise movement in the opposite direction continues until the slanting face 90 at the opposite end of the threaded portion of the rod is engaged by the advancing end of the shoe, whereupon the direction of presentation of the shoe is again reversed for again changing the direction of endwise movement of the ink distributing roller.

In the present exemplification the parts for causing the endwise reciprocation of the ink distributing roller are located inside the roller at one end thereof, and are held in place by releasable means, for ready access to the operating parts, in order that the same may be inspected and removed for repair and replaced or new parts substituted in convenient and ready manner.

My improved device further is simple, inexpensive and readily assembled, and by means of it extreme lengthwise movements of the ink distributing shell, upon which maximum ink distribution is dependent, is obtained within a minimum amount of endwise space occupied by the device. The shoe is further readily replaceable in new relations between the ink distributing shell and the threads, whereby the life of the device is increased. The pivotal movements of the directing shoe are controlled by line contacts with spaces therebetween, so that the movements of the shoe are always free, and danger of having the shoe bind is avoided, as said spaces between said line contacts provide clearance passages for the gummy substances arising from the frequent cleanings of the ink distributing roller in practice, preventing such gummy substances from causing the directing shoe to stick in its operation.

My improved device provides for exceedingly fine and even distribution of the ink, permits long lengthwise reciprocations of the distributing roller to be had within minimum endwise space, and provides novel means whereby dense covering of the printing surfaces may be obtained with a minimum amount of ink.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is:

1. In an ink distributing roller, the combination of an ink distributing rotatable shell, a bearing therein, a rod whose longitudinal axis is coincident with the axis of rotation of said shell, said rod having a threaded portion in said bearing, means restraining rotation of said rod, said threaded portion comprising crossing interrupted threads and continuous crossing thread-spaces therebetween, a shoe pivoted in said bearing on a pivot whose pivotal axis is substantially radial with relation to said shell, said pivoted shoe having a threaded portion received in said thread-spaces, means at the respective ends of said crossing threads for turning said shoe on its pivot for reversing the direction of its thread portion with relation to said crossing threads, and arranged

whereby, upon rotation of said shell, said shell is also moved in opposite axial directions, and a releasable end-plate for releasably holding said shoe to said bearing.

2. In an ink distributing roller, the combination of an ink distributing rotatable shell, a bearing therein comprising an inner end portion fixed to said shell and an outer end portion releasable from said inner portion, means releasably attaching said outer portion to said inner portion, a rod whose longitudinal axis is coincident with the axis of rotation of said shell, said shell and said bearing rotatable about said rod, said rod having a threaded portion in said bearing, means restraining rotation of said rod, said threaded portion comprising crossing interrupted threads and continuous crossing thread-spaces therebetween, a pivoted shoe having a threaded portion received in said thread-spaces and provided with a pivot portion, the proximate ends of said bearing-portions respectively provided with recesses in which said shoe is received, and means at the respective ends of said crossing threads for turning said shoe on its pivot for reversing the direction of its threaded portion with relation to said crossing threads, and arranged whereby, upon rotation of said shell, said shell is also moved in opposite axial directions.

3. In an ink distributing roller, the combination of an ink distributing rotatable shell, a bearing therein comprising an inner end section fixed to said shell and a releasable outer end section, means releasably securing said outer end section in said shell to said inner end portion, a rod whose longitudinal axis is coincident with the axis of rotation of said shell, means restraining rotation of said rod, said shell and said bearing rotatable about said rod, said rod having a threaded portion in said bearing, said threaded portion comprsing crossing interrupted threads and continuous crossing thread-spaces therebetween, a pivoted shoe having a thread portion received in said thread-spaces and provided with a pivot-stem, the proximate ends of said bearing sections provided with a plurality of mating end recesses for said shoe and with an extension of said recesses for said pivot-stem, said extension being pluri-walled in cross-section for line contacts between said walls and said pivot-stem, and means at the respective ends of said crossing threads for turning said shoe on its pivot for reversing the direction of its thread portion with relation to said crossing threads, and arranged whereby, upon rotation of said shell, said shell is also moved in opposite axial directions.

4. In an ink distributing roller, the combination of an ink distributing shell comprising a bearing, a rod having a threaded portion whose longitudinal axis is coincident with the axis of rotation of said shell, a pivoted directing shoe received in said threaded portion, said shoe provided with a pivot-stem, said bearing provided with a longitudinal recess, and a leaf-spring extending lengthwise of the axis of said bearing and removably received in said recess and provided with a slot in which said pivot-stem is located, said pivoted shoe provided with a shoulder for said leaf-spring, and said leaf-spring acting to press said shoe toward said threaded portion.

5. In an ink distributing roller, the combination of an ink distributing shell comprising a bearing, a rod provided with a threaded portion whose longitudinal axis is coincident with the axis of rotation of said shell, a pivoted directing shoe received in said threaded portion, said shoe provided with a pivot-stem and a shoulder at the base of said pivot-stem, a releasable end-plate, said bearing provided with a longitudinal recess, and a leaf-spring extending lengthwise of the axis of said bearing and received in said recess and provided with a slot through which said pivot-stem projects, said bearing and said end-plate provided with complemental end recesses in which said shoe is received, and the inner end face of said end plate and the walls of said slot received about said stem for locating said stem, and said spring acting on said shoulder for pressing said shoe toward said threaded portion.

In testimony whereof, I have hereunto signed my name.

FRANK TEMMEN.