

June 9, 1964

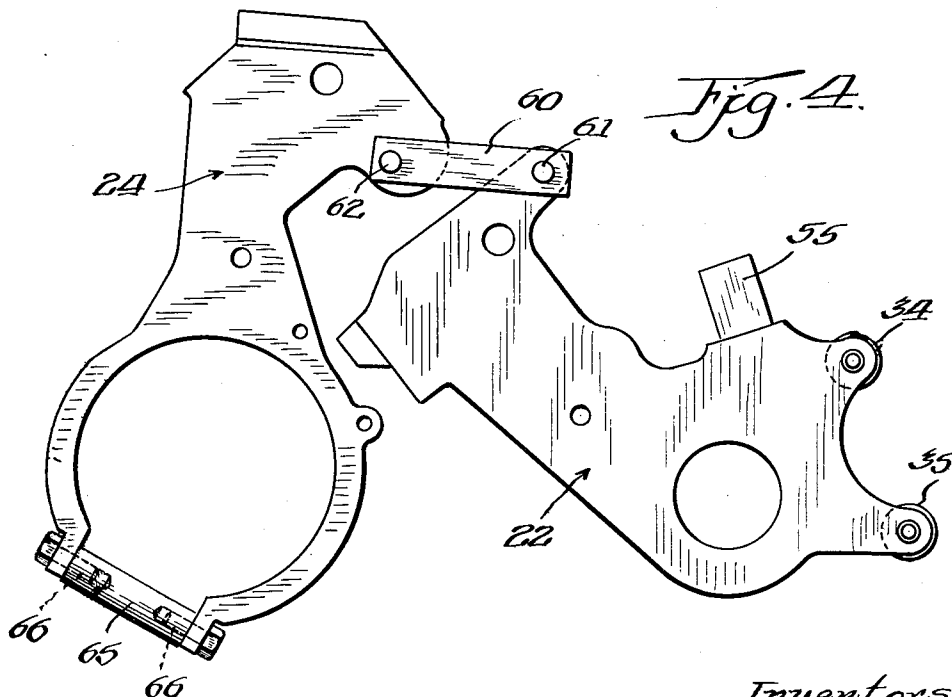
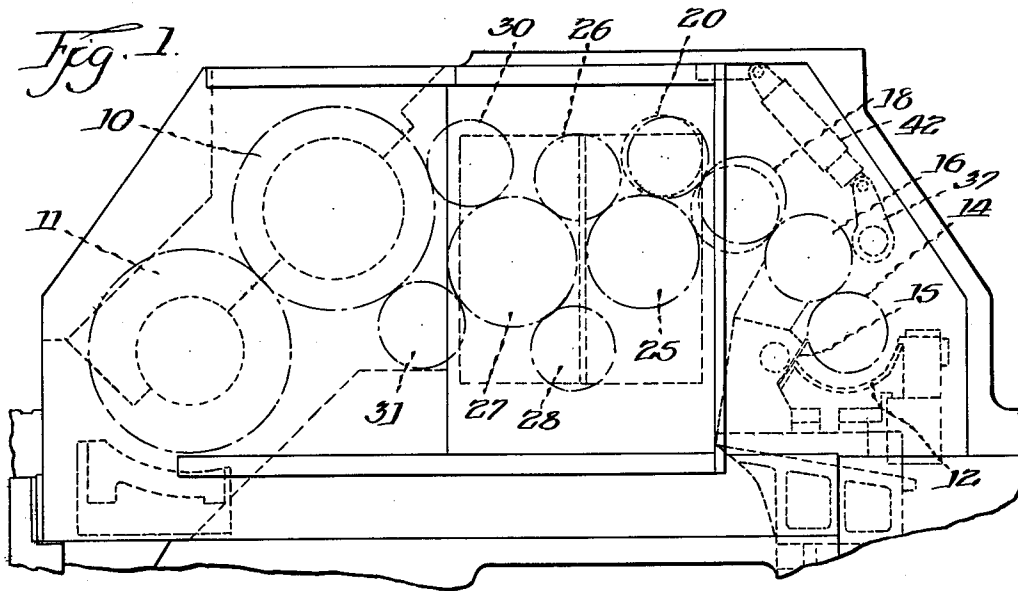
W. G. ZIMMER ETAL

3,136,246

MOUNTING FOR INK ROLLERS OF REVERSIBLE PRINTING COUPLES

Filed March 6, 1962

3 Sheets-Sheet 1



*Inventors.*  
*William G. Zimmer, &*  
*Vernon J. Hilgoe.*

*By Byron Hume Groen & Clement*  
*Hilgoe*

June 9, 1964

W. G. ZIMMER ETAL

3,136,246

MOUNTING FOR INK ROLLERS OF REVERSIBLE PRINTING COUPLES

Filed March 6, 1962

3 Sheets-Sheet 2

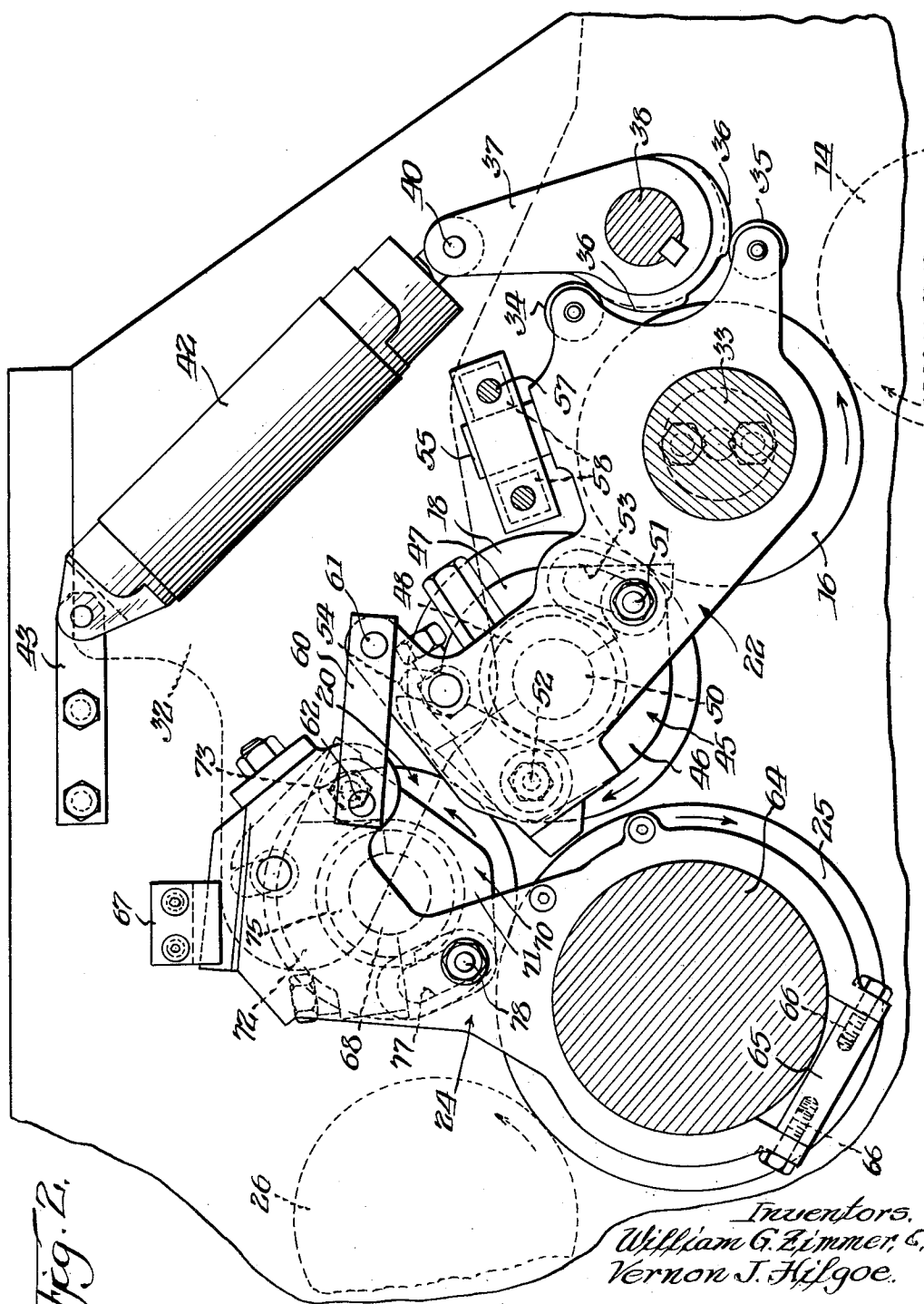


Fig. 2.

Inventors.  
William G. Zimmer, C.  
Vernon J. Hilgoe.

By Byron Hume Groen & Clement  
Attys.

June 9, 1964

W. G. ZIMMER ETAL

3,136,246

MOUNTING FOR INK ROLLERS OF REVERSIBLE PRINTING COUPLES

Filed March 6, 1962

3 Sheets-Sheet 3

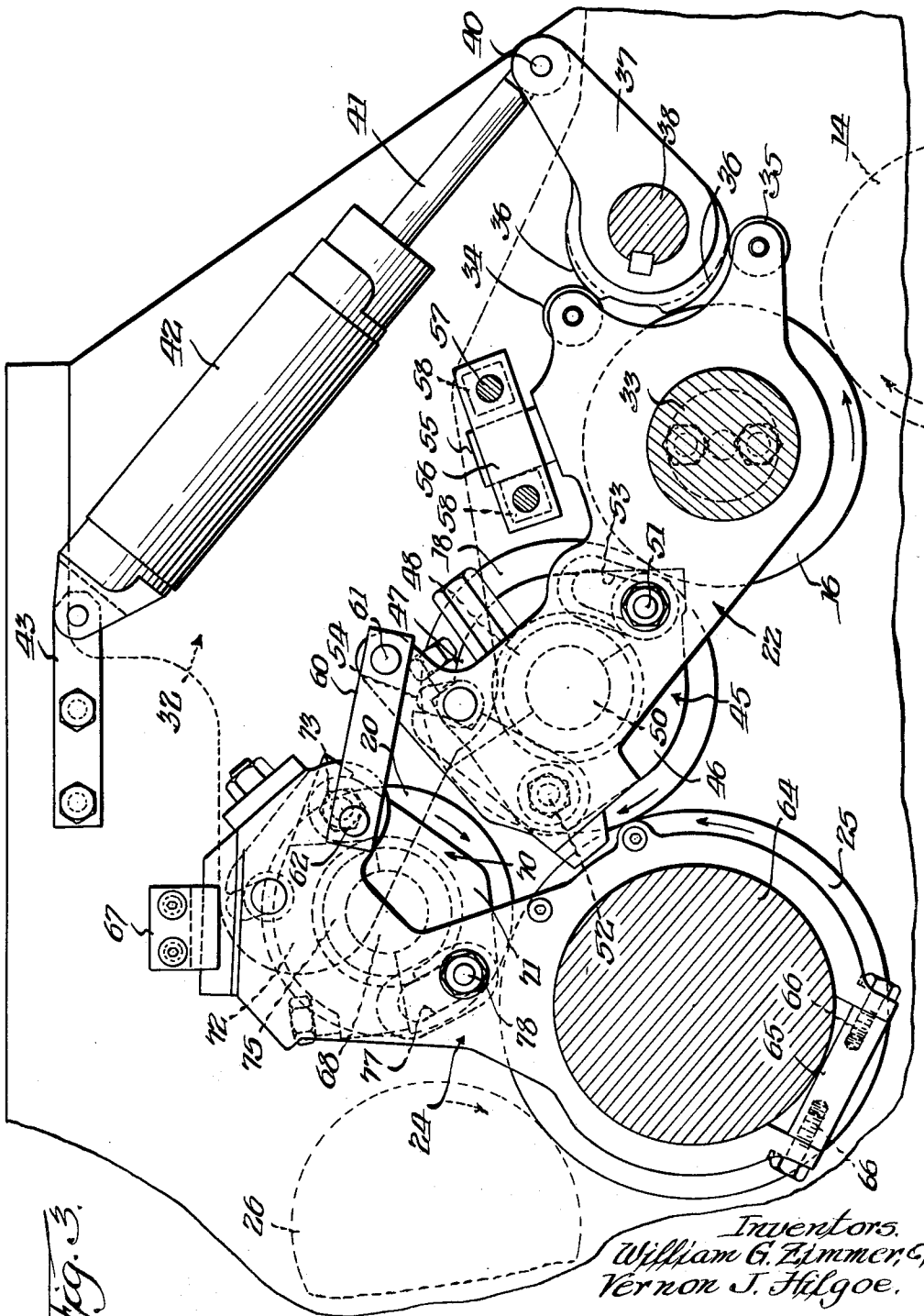


Fig. 3.

Inventors,  
William G. Zimmer, Jr.,  
Vernon J. Hilgoe.

By Byron Hume Kroen & Clement  
Atty.

1

2

## 3,136,246 MOUNTING FOR INK ROLLERS OF REVERSIBLE PRINTING COUPLES

William G. Zimmer, Villa Park, and Vernon J. Hilgoe, Lombard, Ill., assignors to Miehle-Goss-Dexter, Incorporated, Chicago, Ill., a corporation of Delaware  
Filed Mar. 6, 1962, Ser. No. 177,876  
10 Claims. (Cl. 101—350)

The invention relates to web printing presses and has reference more particularly to a new and improved mechanical arrangement of transfer rollers and journalling plates which will make it possible to supply ink to a printing plate cylinder rotating in either direction from a fountain roller which rotates in only one direction.

In certain types of web printing presses the ink is supplied continuously from the ink fountain to the printing plate cylinder, and accordingly the rollers, drums and other parts are designed for continuous feed. The ink feed on other types of presses is intermittent in operation resulting from the use of ink pumps or ductor rollers oscillating between two adjacent members to transfer ink intermittently. Successful use of the continuous feed system requires that the ink supply or fountain roller, which supplies a film of ink of controlled thickness to the system, must always rotate in a given direction. It is also important for the ink pick-up roller which is in co-operative relationship with the fountain roller to always rotate in the same given direction. However, when a unit is to be used for printing color, it is necessary that the plate cylinder be able to rotate in either direction. This is required in order to accommodate the necessary run of the web through the press. In units so designed it is necessary to modify the ink supply system or the arrangement of transfer rollers and drums if ink is supplied by the continuous feed method.

Since reversibility is a requirement in present day presses of the web printing continuous ink feeding type the invention has for its object to provide such presses with an improved mechanical arrangement of transfer rollers and pivoted journalling plates therefor which can be conveniently rocked by the operator thereby making it possible to supply ink to a printing plate rotating in either direction from a fountain roller which rotates in only one direction.

Another and more specific object of the invention resides in a new and improved combination which will provide mechanical means for establishing the ink supply for either normal or reverse operations by causing two ink transfer rollers to change their position relative to an ink drum automatically and quickly, requiring nothing more on the part of the operator than the pressing of a button or the actuation of a switch.

Another object in connection with web printing presses of the continuous feed type resides in a mechanical arrangement including side plates having a special mounting for limited rocking movement and which journal a pair of ink transfer rollers, whereby one of said rollers is moved into and out of the operative chain of rollers for transferring the ink by a rocking of the side plates.

Another feature of the invention in connection with the side plates and roller journalled thereby resides in the fact that the said one roller, when not operative for actually transferring ink, will function as a distributing roller with respect to the drum.

Another object of the invention resides in the provision of ink transfer rollers and pivoted journalling plates therefor wherein the rollers are journalled by adjustable sockets so that the pressure contact of the rollers with each other can be adjusted and which when once set will remain so during the rocking operations of the plates.

With these and various other objects in view, the in-

vention may consist of certain novel features of construction and operation, as will be more fully described and particularly pointed out in the specification, drawings and claims appended thereto.

In the drawings which illustrate an embodiment of the device and wherein like reference characters are used to designate like parts:

FIGURE 1 is a side elevational view of a half deck including a printing couple designed for web printing and wherein the inking mechanism incorporates the improvement of the invention;

FIGURE 2 is a sectional view showing in elevation one position of the side plates and the ink transfer rollers journalled thereby;

FIGURE 3 is a sectional view similar to FIGURE 2 but showing the second operative position of the side plates and rollers; and

FIGURE 4 is a side elevational view of the side plates only in the position they assume in FIGURE 2.

It should be understood that the drawings show parts on one side only of the half deck and that similar parts will be used on the other side. Therefore, the description which follows pertains to the structure on one side of the press only in order to simplify the specification.

Referring to FIGURE 1 the half deck shown in this figure is merely one printing couple of a unit turned on its side and supported above two conventional web printing units. The units may also incorporate the improvements of the invention which will be described and explained with respect to the half deck wherein the numerals 10 and 11 indicate the plate and impression cylinder respectively of the printing couple. Ink is supplied to the plate cylinder 10 by a system of rollers and drums which essentially include an ink fountain 12 located to the right of the printing couple at the terminal end of the frame members for the half deck and which frame members support the fountain 12 and the ink fountain roller 14 in the customary manner. The roller 14 has associated therewith the doctor or knife blade 15 which removes surplus ink, leaving however, a film of ink of controlled thickness on the fountain roller. It is accordingly necessary that the fountain roller rotate in one direction only and the same is true of the ink pick-up roller 16 in contact therewith. One end of the first transfer roller 18 and also the second transfer roller 20 are journalled by the side plates 22 and 24 shown in detail in FIGURES 2, 3 and 4 and which will be more particularly described. In accordance with the invention the ink transfer roller 18 is always in contact with pick-up roller 16 and may have contact with either the auxiliary drum 25 or with the second transfer roller 20. The said roller 20, however, is always in contact with the auxiliary drum 25 and may be moved into or out of contact with the transfer roller 18. When not included in the chain of rollers actually transferring ink the roller 20 will function as a distributing roller for the auxiliary drum 25. From said drum the ink is transferred to the roller 26 and then to the main drum 27, which has the usual distributing roller 28 in contact therewith. The two transfer rollers 30 and 31 contact the main drum 27 and also the plate cylinder 10 to complete the ink transfer system of the unit.

In order to provide for reversibility of the printing couple it will be appreciated that one of the transfer rollers must have the ability to move into and out of the system and this is the mode of operation as regards the roller 20. The change in position of the roller 20 and also roller 18 is effected by side plates which journal the two rollers and which have rocking movement for the purpose all as shown in FIGURES 2 and 3 which structure will now be described.

The fountain roller 14 and the pick-up roller 16 are journalled by structure supported by the fountain 12.

However, the side frames of the press, FIGURES 2 and 3, as indicated by numeral 32 have the stud shafts 33 projecting inwardly from the same and which are disposed with their centers on the axis of rotation for the ink pick-up roller 16. A stud shaft 33 extends inwardly from each frame just far enough to provide a journal for one of the side plates such as 22. On one side of its journal each plate carries a pair of small wheels 34 and 35 in spaced relation and which have contact with the cam surfaces 36 of the cam lever 37 fixed to the actuating shaft 38. Said shaft extends across the press and a cam similar to 36 mounted thereon near the frame in which it is journaled, is actuated simultaneously with cam 36 to produce rocking movement of the side plates which journal the opposite ends of the rollers 18 and 20. The lever end of 37 is pivotally secured at 40 to the piston rod 41 of a power cylinder 42. The other end of the cylinder is pivotally secured to frame of the press by a pin in the bar 43. Upon actuation of the power cylinder 42 as seen in FIGURE 2, the lever 37 is rotated clockwise to reverse the high and low points of the cam surfaces 36 which are in contact with the wheels 34 and 35, and thus effect a rocking of the side plates 22 on their journalling stud shafts 33. This rocking of the side plates 22 in a counter-clockwise direction will change the position of the first transfer roller 18 with respect to both the second transfer roller 20 and the auxiliary drum 25. In particular it will be observed that the roller 18 is moved from contact with the second transfer roller 20, FIGURE 2, to a position as shown in FIGURE 3, wherein the roller 18 now contacts the drum 25.

The roller 18 is journaled at its respective ends by means of socket structures 45 shown generally in dotted lines in FIGURES 2 and 3. The function of the sockets is to adjustably support the roller 18 so that it bears with the desired pressure when in contact with the adjacent roller 20 and drum 25, respectively. The rollers are rubber covered for the proper distribution and transfer of the ink and a socket supports each end of roller 18, the sockets being adjustable so as to slightly shift the axis of the roller for proper pressure relation. The socket structure includes a fixed section 46 and a pivoted section 47 which when in closed relation provide the journal part 48 for receiving the shaft 50 of the roller 18. The section 47 is pivoted at 51 to the section 46 and the two sections as a unit are pivotally mounted on an eccentric stud rotatably mounted in a base or the like at 52. The combined sections have adjustment with respect to axis 52 as permitted by the elongated opening 53, and by rotation of the eccentric stud the operator is able to shift the axis of the roller 50 toward or away from opening 53. By actuation of the member 54, the entire socket may be rotated about stud 52 to move roller 18 out of contact with adjacent rollers or drums. This may be done to facilitate testing contact pressures and it is necessary to loosen the studs at both 51 and 52 in order to rotate the socket.

Referring again to the plate 22 it will be seen that the same is provided with the projection 55 and that the projection is associated with the member 56. The studs 57 secure the member 56 and a pair of spaced stops 58 to the press side frame 32 and since the projection is located between the stops they accordingly limit rocking movement of the side plates 22. Each plate 22 is pivotally connected to a plate 24 by the link 60, the link having connection at its respective ends as at 61 and 62 to the plates 22 and 24. Thus any rocking movement of the plates 22 is transmitted to plates 24.

The side plates 24 are mounted for rotation on the axis of the auxiliary drum 25 by being mounted on a ring member 64 fixed to the inside of frame 32. Each member 64 is in the form of a ring to provide an opening for the shaft of drum 25 which extends through the openings for journalling by the side frames. A spacing bar 65, fixed to each plate 24 by the screws 66, provides an open-

ing in the plate for mounting or removing each respective plate without removing the drum, and the rocking movement of the same is guided to an extent by the member 67. The rubber covered roller 20 having the shaft 68, is journaled by the spaced side plates 24 by socket structures 70 similar in most respects to that described. Each socket structure includes the fixed section 71 and a movable section 72 pivoted to the former at 73. The two sections as a unit provide the journal part 75 for receiving the shaft 68 and the combined sections are pivotally adjustable with respect to axis 73 as permitted by the elongated opening 77 which receives the securing means 78 for securing the socket structure to the plate 24.

With the side plates 22 and 24, and the ink transfer rollers 18 and 20 positioned as shown in FIGURE 2, it will be seen that the ink from pick-up roller 16 will be transferred to roller 18, then to roller 20 and from said roller to the auxiliary drum 25, and then to transfer roller 26. For so positioning the parts the power cylinder 42 has been actuated to locate the cam lever 37 in a substantially vertical position. This has effected a rocking of plates 22 about the axis of rotation of roller 16 in a clockwise direction, this moved transfer roller 18 causing the same to move toward and contact transfer roller 20. Said roller 20 was simultaneously moved towards roller 18 by means of the links 60 coupling the plates. The plates 24 have thus been rocked in a clockwise direction on the axis of rotation of the auxiliary drum 25. Accordingly, as shown in FIGURE 2, the transfer roller 20 is included in the inking mechanism as an active element performing its necessary function of transferring ink from roller 18 to drum 25.

To accommodate a reversal in the direction of rotation of the printing couple, the power cylinder 42 is actuated to oscillate cam lever 37 causing cam 36 to rock side plates 22 in a counter-clockwise direction, whereupon the parts assume the position as shown in FIGURE 3. Roller 18 still maintains contact with the ink pick-up roller 16, and likewise roller 20 still maintains contact with the drum 25. However, the counter-clockwise rocking of plates 22 and the counterclockwise rocking of plates 24 due to the connecting links 60, has moved the ink transfer roller 18 into contact with the drum 25, thus breaking the contact which roller 18 had with roller 20. From roller 16 the ink is now transferred to roller 18 and hence directly to drum 25 which transfers the ink to roller 26. Accordingly, when the parts are positioned as shown in FIGURE 3, roller 20 does not actively function to transfer ink. In other words, roller 20 is out of the chain of elements comprising the ink transferring mechanism. However, under these conditions roller 20, since it maintains contact with the auxiliary drum 25, conveniently functions as an ink distributing roller for the drum.

The same principle and general arrangement of the parts may be used in the inking mechanism for the units themselves or for the inking mechanism as used in a center color installation. The shape of the side plates may be varied to suit requirements, and the socket structures may also be modified to suit conditions. It will be appreciated that to adapt the inking mechanism for continuous feeding from one direction of rotation to a reverse direction of rotation as regards the printing couple can be accomplished easily and quickly merely by pushing a button at some convenient location on the press, and it will be further recognized that the operation will require a minimum of time on the part of the attendant.

The invention is not to be limited to or by details of construction of the particular embodiment thereof illustrated by the drawings, as various other forms of the device will, of course, be apparent to those skilled in the art without departing from the spirit of the invention or the scope of the claims.

What is claimed is:

1. In a printing press, the combination with a printing couple including a plate cylinder and an impression cylin-

der adapted to rotate in either direction, of inking mechanism for the same including an ink pick-up roller and a drum, said ink pick-up roller having rotation in one direction only whereas the drum rotates in either direction as determined by the printing couple, a pair of ink transfer rollers for transferring ink from the pick-up roller to the drum, a pair of spaced plates for journalling each ink transfer roller, and means mounting the plates for limited rocking movement simultaneously whereby to effect bodily movement of the ink transfer rollers to cause one roller to contact either said other roller or to contact the drum.

2. In a printing press, the combination with a printing couple including a plate cylinder and an impression cylinder adapted to rotate in either direction, of inking mechanism for the same including an ink pick-up roller and a drum, said ink pick-up roller having rotation in one direction only whereas the drum rotates in either direction as determined by the printing couple, a first and a second ink transfer roller for transferring ink from the pick-up roller to the drum, a pair of spaced side plates journalling the first transfer roller in a manner to maintain contact with the ink pick-up roller, another pair of spaced side plates journalling the second transfer roller in a manner to maintain contact with the drum, and means mounting the respective pair of side plates for limited rocking movement simultaneously whereby to effect bodily movement of the ink transfer rollers to cause the first roller to contact either the second roller or the drum.

3. In a printing press, the combination with a pair of side frames for the press, of inking mechanism including an ink pick-up roller and a drum, a pair of side plates located adjacent the inside surface of each side frame, one side plate of each pair being mounted for limited oscillating movement on an axis in alignment with the axis of the pick-up roller, a first transfer roller journalled by the said one side plates in a manner which maintains the first transfer roller in contact with the ink pick-up roller, the other side plate of each pair being mounted for limited oscillating movement on an axis in alignment with the axis of the drum, a second transfer roller journalled by the said other side plates in a manner which maintains the second transfer roller in contact with the drum, means for effecting oscillating movement of the said one side plates in either a clockwise or a counterclockwise direction and to said limited extent, and means pivotally linking the side plates of each pair whereby the other plate of each pair is oscillated by movement of the one side plate of each pair, and said transfer rollers being so positioned that said oscillating movements will cause contact of the first transfer roller with either the second transfer roller or with the drum.

4. In a printing press, the combination with a pair of side frames for the press as defined by claim 3, wherein the means for effecting oscillating movement of said one side plates includes a power cylinder fixed to the press frame and an oscillatable cam lever having a pivotal connection with the piston rod of the power cylinder.

5. In a printing press, the combination with a printing couple, an ink pick-up roller and a drum, a pair of side frames provided by the press, said pick-up roller and drum being journalled for rotation within the side frames, a pair of side plates located within and adjacent each of the side frames respectively, one plate of each pair being mounted for limited rocking movement on the same axis as the pick-up roller, the other plate of each pair being mounted for limited rocking movement on the same axis as the drum, means carried by the said one side plates for journalling a first ink transfer roller in a manner maintaining the same in contact with the ink pick-up roller, other means carried by the said other side plates for journalling a second ink transfer roller in a manner maintaining the same in contact with the drum, means pivotally connecting each pair of side plates, and means for rocking the side plates of each pair simultaneously to effect

contact of the first transfer roller with either the second transfer roller or with the drum.

6. In a printing press, the combination with a printing couple adapted to have rotation in either direction, an ink pick-up roller having rotation in one direction only and a drum having rotation in either direction as determined by the printing couple, a pair of side frames provided by the press, said pick-up roller and drum being journalled for rotation within the side frames, a pair of side plates located within and adjacent each side frame respectively, one plate of each pair being mounted by its adjacent side frame for limited rocking movement on the same journalling axis as the pick-up roller, the other plate of each pair being mounted for limited rocking movement on the same journalling axis as the drum, means carried by the said one side plates for journalling a first ink transfer roller in a manner maintaining the same in contact with the ink pick-up roller, other means carried by the said other side plates for journalling a second ink transfer roller in a manner maintaining the same in contact with the drum, means pivotally connecting each pair of side plates, and power means for rocking the side plates of each pair simultaneously to effect contact of the first transfer roller with either the second transfer roller or with the drum.

7. In a printing press, the combination with a printing couple, an ink pick-up roller and a drum as defined by claim 6, additionally including stop elements in associated relation with the one side plate of each pair for limiting the said rocking movement of the plates, and wherein the second ink transfer roller functions as a distributing roller when the first ink transfer roller is in contact with the drum.

8. In a printing press, the combination with a printing couple adapted to have rotation in either direction, an ink pick-up roller adapted to rotate in one direction only and a drum adapted to rotate in either direction as determined by the printing couple, a pair of side frames comprising a part of the press, said pick-up roller and drum being journalled for rotation within the side frames, a pair of side plates located within and adjacent each of the side frames respectively, one plate of each pair being mounted by its adjacent side frame for limited rocking movement on the same journalling axis as the pick-up roller, the other plate of each pair being mounted by its adjacent side frame for limited rocking movement on the same journalling axis as the drum, adjustable socket means carried by the said one side plates for journalling a first ink transfer roller in a manner maintaining the same in contact with the ink pick-up roller, other adjustable socket means carried by the said other side plates for journalling a second ink transfer roller in a manner maintaining the same in contact with the drum, means pivotally connecting each pair of side plates, and power means for rocking certain of the side plates and which effects simultaneous rocking of the remaining side plates through the connecting means, whereby contact of the first transfer roller is effected with either the second transfer roller or with the drum.

9. In a printing press, the combination with a printing couple including a plate cylinder and an impression cylinder adapted to rotate in either direction, of inking mechanism for the same including an ink pick-up roller and a drum, said ink pick-up roller having rotation in one direction only whereas the drum rotates in either direction as determined by the printing couple, means for transferring ink from said pick-up roller to said drum comprising a first roller in rolling contact with said pick-up roller, a second roller in rolling contact with said drum, pairs of rockable side plates for respectively mounting said first and second rollers, and a link connecting the plates on each side for coincident movement between one position in which the first roller contacts the pick-up roller and the drum, and another position in which the first roller

7

contacts the pick-up roller and the second roller, and means for rocking the plates from said one position to the other position.

10. In a printing press, the combination with a printing couple including a plate cylinder and an impression cylinder adapted to rotate in either direction, of inking mechanism for the same including an ink pick-up roller and a drum, said ink pick-up roller having rotation in one direction only whereas the drum is adapted to rotate in either direction as determined by the printing couple, a pair of ink transfer rollers for transferring ink from the pick-up roller to the drum, a pair of spaced side plates having journalling means thereon for respectively journalling the transfer rollers, means mounting the plates for limited but simultaneous rocking movement, whereby to effect bodily movement of the ink transfer rollers to cause one roller to contact either the other roller or to contact

8

the drum, and other means adjustably securing each journalling means to its respective plate, whereby to permit adjustment of the transfer position of each transfer roller with respect to its journalling side plates so that the contact pressure of said rollers with other rollers and with each other can be adjusted.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

1,971,081	Newton et al. -----	Aug. 21, 1934
2,158,474	Misuraca -----	May 16, 1939
2,664,045	Pullo -----	Dec. 29, 1953
2,682,218	Baumgartner -----	June 29, 1954
2,754,753	Chase -----	July 17, 1956

##### FOREIGN PATENTS

449,265	Italy -----	June 8, 1949
---------	-------------	--------------