

April 5, 1949.

H. J. LUEHRS

2,466,603

INK DISTRIBUTION FOR ROTARY PRINTING PRESSES

Filed Dec. 11, 1945

5 Sheets-Sheet 1

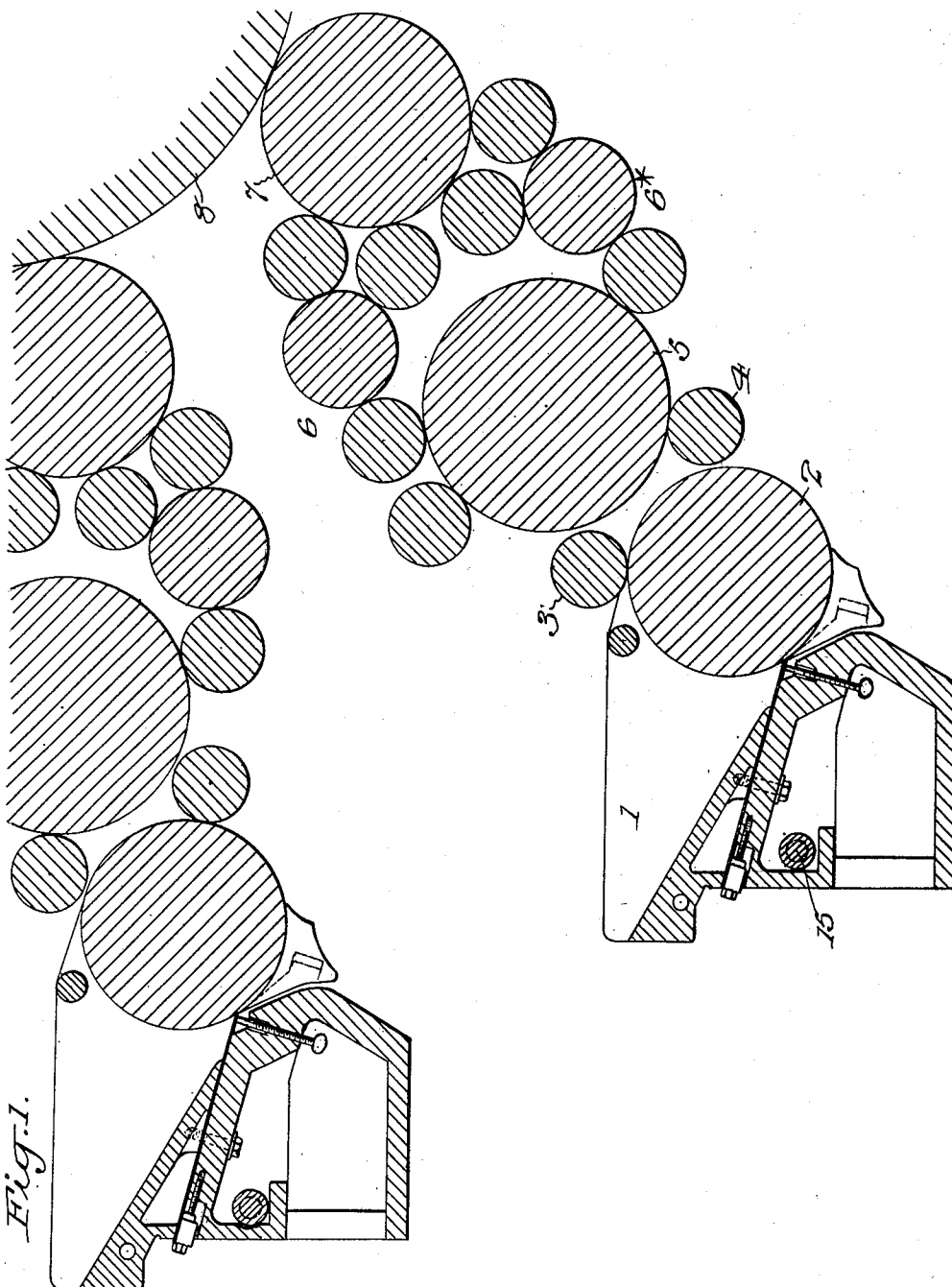


Fig. 1.

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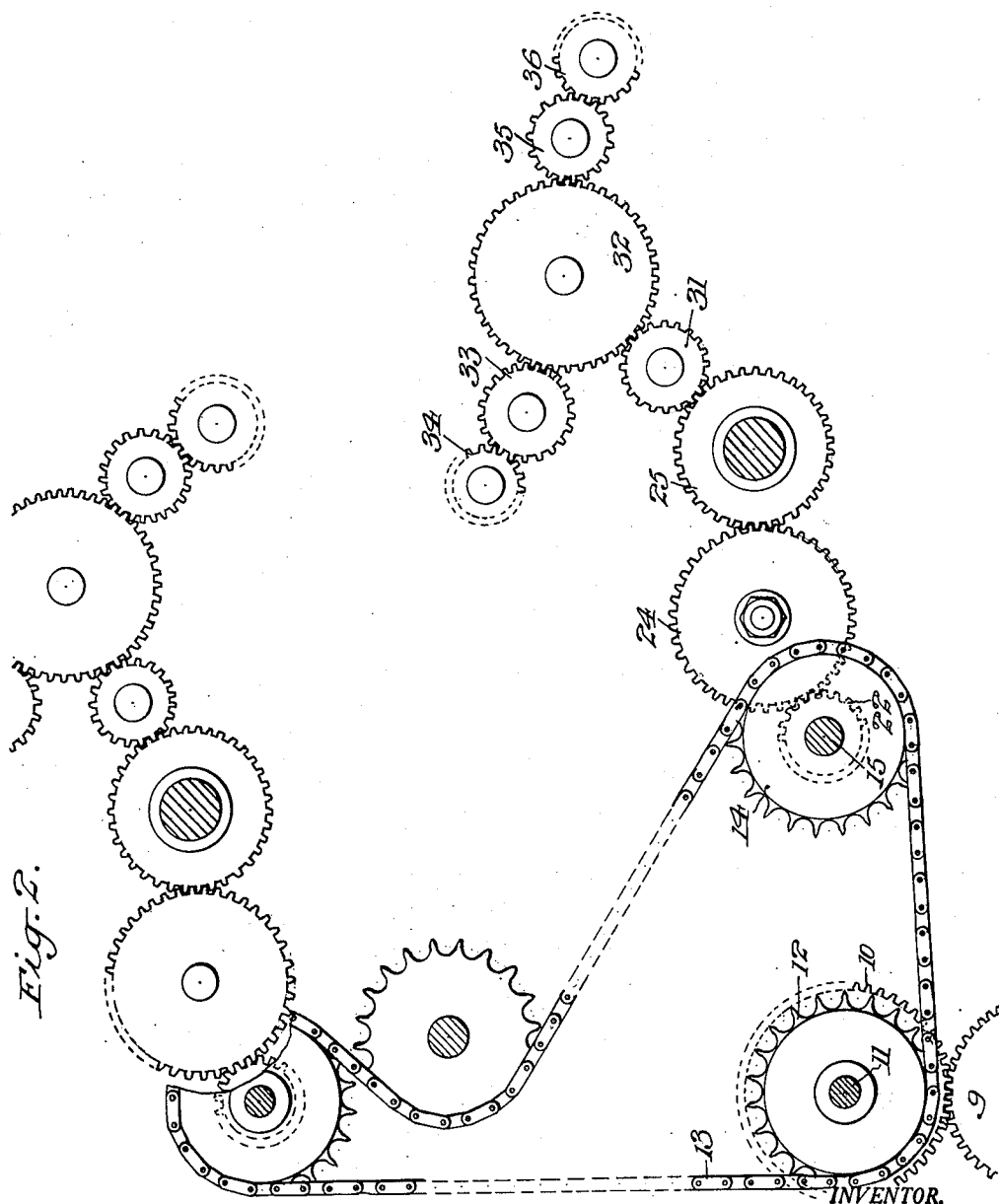
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INK DISTRIBUTION FOR ROTARY PRINTING PRESSES

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5 Sheets-Sheet 2



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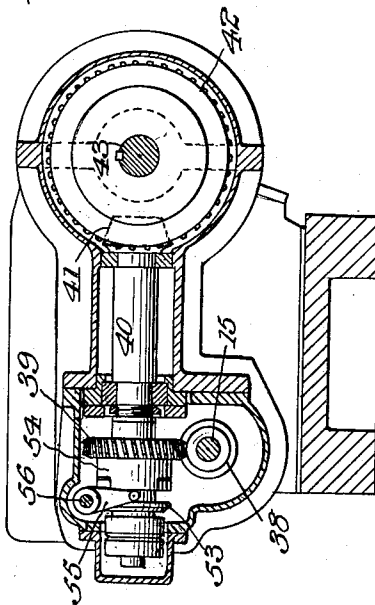
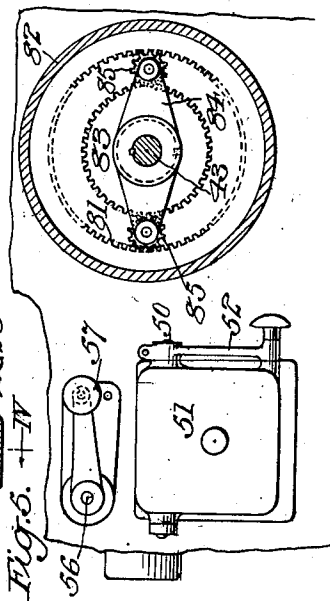
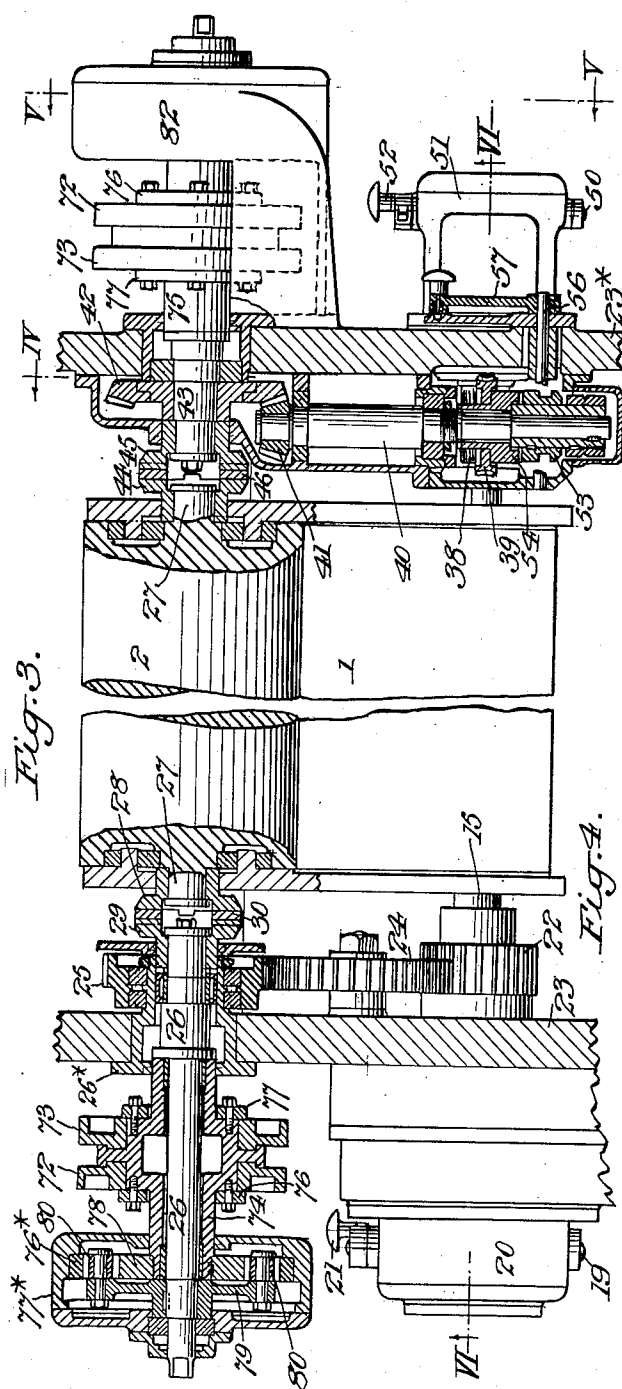
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INK DISTRIBUTION FOR ROTARY PRINTING PRESSES

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5 Sheets-Sheet 3



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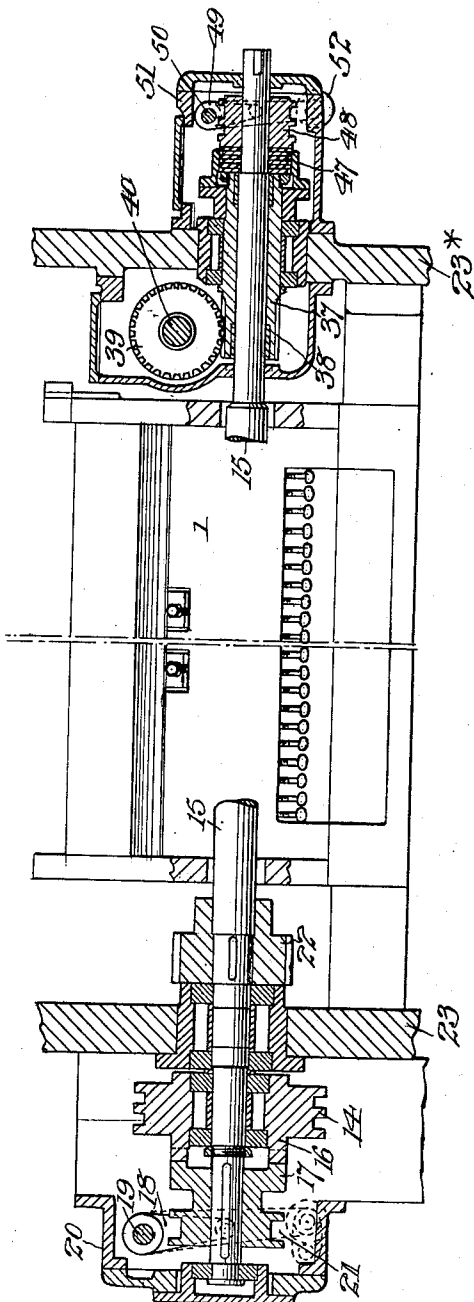
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INK DISTRIBUTION FOR ROTARY PRINTING PRESSES

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Fig. 6.



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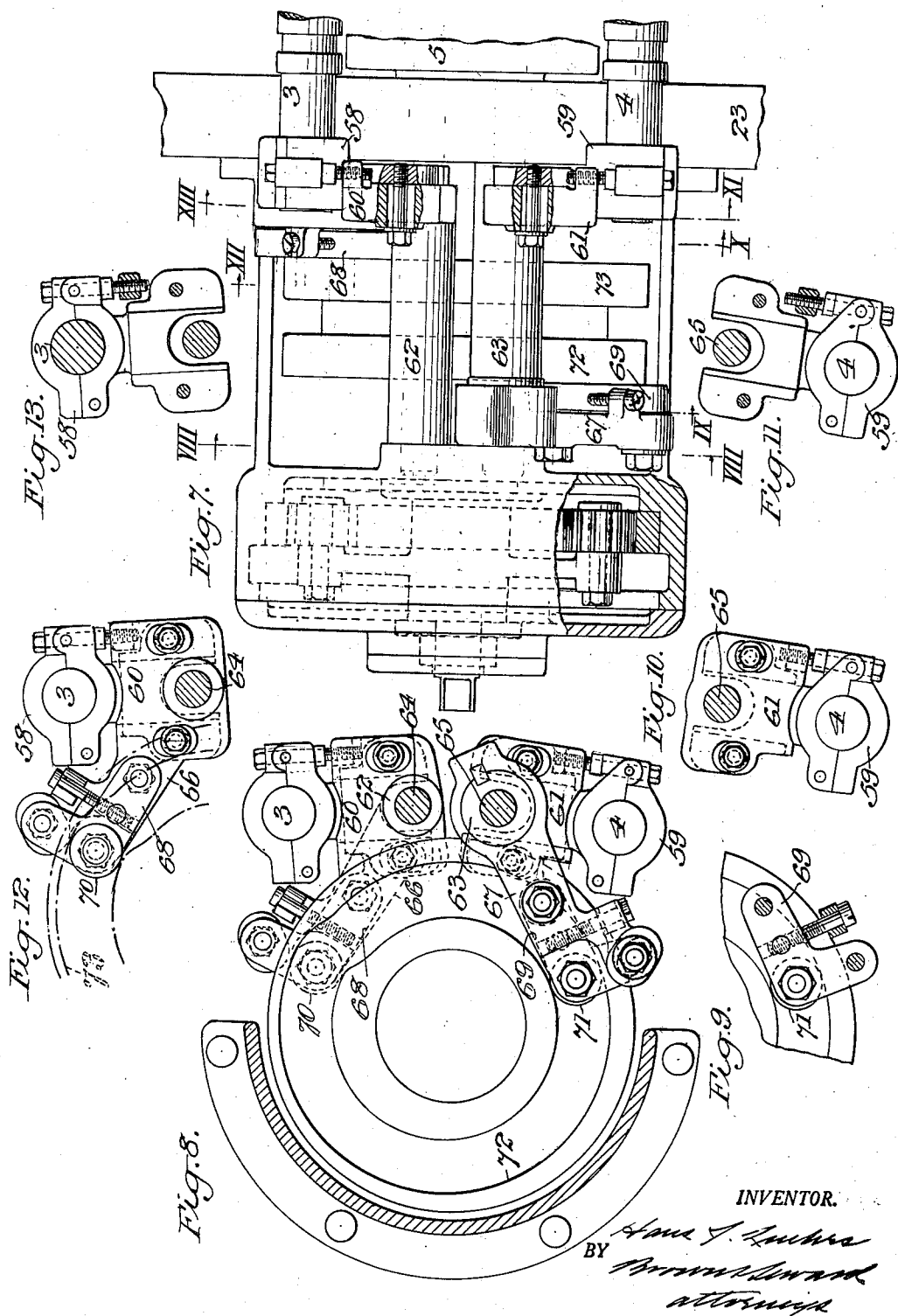
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INK DISTRIBUTION FOR ROTARY PRINTING PRESSES

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## UNITED STATES PATENT OFFICE

2,466,603

## INK DISTRIBUTION FOR ROTARY PRINTING PRESSES

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21 Claims. (Cl. 101—350)

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The object of my invention is to provide certain improvements in ink distributions for high speed rotary printing presses whereby the even distribution of the ink to its plate cylinders is ensured.

A further object is to provide manually operated means for operatively connecting and disconnecting the driving elements at various points.

A further object is to provide means for automatically aligning the fountain roll and also permitting its ready removal and replacement without disturbing the other elements of the distribution.

A further object is to provide certain improvements in the drive for the ductor rollers whereby their oscillations may be timed to cause the ductor rollers to continuously contact different circumferential surfaces of the fountain roll during the rotation thereof.

A practical embodiment of my invention is represented in connection with a multicolor rotary printing press, two ink distributions and their respective plate cylinders being shown.

Fig. 1 represents a detail vertical section taken through the ink distribution for two adjacent color plate cylinders which coat with a common impression cylinder.

Fig. 2 represents a detail vertical section showing the drive for the various elements of the two ink distributions.

Fig. 3 represents a detail horizontal plane, partly in section, showing a portion of the drive for one of the fountain rolls and its ductors.

Fig. 4 represents a detail section, taken in the plane of the line IV—IV of Fig. 3, looking in the direction of the arrows.

Fig. 5 represents a detail section, taken in the plane of the line V—V of Fig. 3, looking in the direction of the arrows.

Fig. 6 represents a vertical section, taken in the plane of the line VI—VI of Fig. 3, looking in the direction of the arrows.

Fig. 7 represents a detail front view, partly in section, at one end of the distribution and showing the mounting and operating means for the oscillating ductor rollers.

Fig. 8 represents a cross section, taken in the plane of the line VIII—VIII of Fig. 7, looking in the direction of the arrows.

Fig. 9 represents a detail section, taken in the plane of the line IX of Fig. 7, looking in the direction of the arrow.

Fig. 10 represents a detail section, taken in the plane of the line X of Fig. 7, looking in the direction of the arrow.

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Fig. 11 represents a detail section, taken in the plane of the line XI of Fig. 7, looking in the direction of the arrow.

Fig. 12 represents a detail section, taken in the plane of the line XII of Fig. 7, looking in the direction of the arrow.

Fig. 13 represents a detail section, taken in the plane of the line XIII of Fig. 7, looking in the direction of the arrow.

As the two ink distributions are substantially the same in construction, form and arrangement I will describe specifically one only of these distributions.

Each of these ink distributions includes the following elements.

An ink fountain 1 of well known or approved form and its continuously driven fountain roll 2. Upper and lower ductor rollers 3 and 4 are mounted to transfer the ink from the fountain roll 2 to the ink drum 5. A plurality of groups of upper and lower distribution rollers 6 and 6\* serve to transfer the ink from the ink drum 5 to the plate cylinder 7, as usual. This plate cylinder coats with the impression cylinder 8 to print the traveling web (not shown herein).

The gear 9 of the main press drive is shown as meshing with a gear 10 on the shaft 11. A sprocket wheel 12 is fixed to the shaft 11 and a sprocket chain 13 passes around the sprocket wheel 12 on the shaft 11 and also the sprocket wheel 14 rotatable on the shaft 15, which shaft 15 extends across the ink distribution.

Manually operated means are provided for operatively connecting the main press drive to and disconnecting it from the distribution at pleasure. The means I have shown herein is a manually operated clutch of well known or approved construction which serves to operatively connect the sprocket wheel 14 to and release it from the distribution drive shaft 15. This clutch is shown as a jaw clutch, the sprocket wheel member being denoted by 16 and the drive shaft member by 17, which shaft member is slidably locked to rotate with the shaft. This shaft member 17 is engaged by the inner arm 18 of a hand lever pivoted at 19 in the casing 20, the outer arm 21 of which lever is releasably locked in its "on" and "off" positions to the casing 20. The distribution, except the fountain roll 2 and ductor rollers 3, 4, is driven as follows. A pinion 22 fixed to the drive shaft 15 within the side frame 23 meshes with an intermediate gear 24 which in turn meshes with a gear 25 loosely mounted on the sleeve 26\* surrounding the fountain roll shaft extension 26. This shaft extension

26 is removably locked to the adjacent end of the fountain roll shaft 27 by a suitable coupling. This coupling is shown as of the Oldham type which comprises a member 28 fast on the fountain roll shaft 27, a member 29 fast on the shaft extension 26 and an intermediate member 30 having a laterally slidable toothed engagement with the other two members.

This gear 25 also meshes with the idler gear 31 which in turn meshes with the ink drum gear 32. This ink drum gear 32 drives the distribution rollers 6 & 11.

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having their sleeves 82 and 83 pivotally mounted  
on the axles 84 and 85.  
The upper and lower pairs of cam levers 86  
and 87 are fixed to their respective sleeves 82 and  
83, which pairs of cam levers 86 and 87 are pro-  
vided with laterally adjustable pairs of cam  
roller arms 88 and 89 which carry the pairs of  
cam rollers 70 and 71 respectively.  
Pairs of box cams 72

Pairs of box 70 and 71 respectively

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roll to be rotated by hand to rotatively adjust the ductor roller cam sleeves 74, 75 and their cams 72, 73 without affecting the drive for the remaining elements of the distribution, the clutch lever 55, 56, 57 is operated to cause the jaw clutch members 53, 54 to be separated, thus disconnecting the worm gear 39 from the worm 38 and thereby the intermediate drive shaft 40 from the distribution drive shaft 15.

It will also be seen that the speed changing means between the shaft extensions 26, 43 and the ductor roller cam sleeves 74, 75 causes the ductor rollers 3, 4 to continuously contact different circumferential surfaces of the fountain roll 2, thus preventing the ductor rollers from repeatedly contacting the same surfaces on the said fountain roll.

It will furthermore be seen that the driving mechanism is materially simplified by providing the sprocket and chain connection between the main press drive and both the upper and lower ink distributions.

While I have shown two ductor rollers in each ink distribution it is obvious that I may employ only one ductor roller in each distribution if so desired. It is also evident that various changes may be resorted to in the construction, form and arrangement of the several parts without departing from the spirit and scope of my invention, and hence I do not intend to be limited to the particular embodiment herein shown and described, but

What I claim is:

1. In an ink distribution, a fountain roll, its shaft, shaft extensions, means removably connecting the fountain roll shaft to its shaft extensions, and means for driving the fountain roll, its shaft and one of the shaft extensions through the other shaft extension.

2. In an ink distribution, a fountain roll, its shaft, shaft extensions, means removably connecting the fountain roll shaft to its shaft extensions, means for driving the fountain roll, its shaft and one of the shaft extensions through the other shaft extension, said means comprising a distribution drive shaft, an intermediate drive shaft operatively connected to said other shaft extension, and manually operated means for operatively connecting the intermediate drive shaft to and disconnecting it from the distribution drive shaft.

3. In an ink distribution, a fountain roll, its shaft, shaft extensions operatively connected thereto, means for driving the fountain roll through one of the shaft extensions, said means comprising a distribution drive shaft, an intermediate drive shaft operatively connected to said shaft extension, a hollow shaft mounted on the distribution drive shaft, and a manually operated means for operatively connecting the hollow shaft to and disconnecting it from the distribution drive shaft.

4. In an ink distribution, a fountain roll, its shaft, shaft extensions operatively connected thereto, means for driving the fountain roll through one of the shaft extensions, said means comprising a distribution drive shaft, an intermediate drive shaft operatively connected to said shaft extension, a hollow shaft mounted on the distribution drive shaft, and manually operated means for operatively connecting the hollow shaft to and disconnecting it from the intermediate shaft.

5. In an ink distribution, a fountain roll, its shaft, shaft extensions operatively connected

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thereto, means for driving the fountain roll through one of the shaft extensions, said means comprising a distribution drive shaft, an intermediate drive shaft operatively connected to said shaft extension, a hollow drive shaft mounted on the distribution drive shaft, a manually operated means for operatively connecting the hollow shaft to and disconnecting it from the distribution drive shaft, and a manually operated means for operatively connecting the hollow shaft to and disconnecting it from the intermediate shaft.

6. In an ink distribution, a fountain roll, its shaft, shaft extensions operatively connected thereto, means for driving the fountain roll through one of the shaft extensions comprising a distribution drive shaft, an intermediate drive shaft operatively connected to said shaft extension, a worm gear rotatively mounted on the intermediate drive shaft, a hollow shaft mounted on the distribution drive shaft, and a worm on the hollow shaft meshing with said worm gear.

7. In an ink distribution, a fountain roll, its shaft, shaft extensions operatively connected thereto, means for driving the fountain roll through one of the shaft extensions comprising a distribution drive shaft, an intermediate drive shaft operatively connected to said shaft extension, a worm gear rotatively mounted on the intermediate drive shaft, a hollow shaft mounted on the distribution drive shaft, a worm on the hollow shaft meshing with said worm gear, and a manually operated means for operatively connecting the hollow shaft to and disconnecting it from the distribution drive shaft.

8. In an ink distribution, a fountain roll, its shaft, shaft extensions operatively connected thereto, means for driving the fountain roll through one of the shaft extensions comprising a distribution drive shaft, an intermediate drive shaft operatively connected to said shaft extension, a worm gear rotatively mounted on the intermediate drive shaft, a hollow shaft mounted on the distribution drive shaft, a worm on the hollow shaft meshing with said worm gear, and a manually operated means for operatively connecting the worm gear to and disconnecting it from the intermediate drive shaft.

9. In an ink distribution, a fountain roll, its shaft, shaft extensions operatively connected thereto, means for driving the fountain roll through one of the shaft extensions comprising a distribution drive shaft, an intermediate drive shaft operatively connected to said shaft extension, a worm gear rotatively mounted on the intermediate drive shaft, a hollow shaft mounted on the distribution drive shaft, a worm on the hollow shaft meshing with said worm gear, a manually operated means for operatively connecting the worm gear to and disconnecting it from the intermediate drive shaft, and a manually operated means for operatively connecting the hollow shaft to and disconnecting it from the distribution drive shaft.

10. In an ink distribution, a fountain roll, its shaft, shaft extensions operatively connected thereto, means for driving the fountain roll through one of the shaft extensions comprising a main drive, a distribution drive shaft, an intermediate drive shaft operatively connected to one of the fountain roll shaft extensions, a manually operated means for operatively connecting the distribution drive shaft to and disconnecting it from the main drive, and manually operated means for operatively connecting the intermediate drive shaft to the distribution drive shaft.



11. In an ink distribution, a fountain roll, its shaft, shaft extensions operatively connected thereto, means for driving the fountain roll shaft and one of the shaft extensions through the other shaft extension, a ductor roller, ductor roller oscillating cams rotatively mounted on said shaft extensions, and speed changing means operatively connecting the shaft extensions to their respective cams.

12. In an ink distribution, a fountain roll, its shaft, shaft extensions operatively connected thereto, means for driving the fountain roll shaft and one of the shaft extensions through the other shaft extension, a ductor roller, ductor roller cam sleeves rotatively mounted on said shaft extensions, ductor roller oscillating cams on said sleeves, and means operatively connecting the shaft extensions to their respective cam sleeves.

13. In an ink distribution, a fountain roll, its shaft, shaft extensions operatively connected thereto, means for driving the fountain roll shaft and one of the shaft extensions through the other shaft extension, a ductor roller, ductor roller cam sleeves rotatively mounted on said shaft extensions, ductor roller oscillating cams independently rotatively adjustable on said sleeves, and means operatively connecting the shaft extensions to their respective cam sleeves.

14. In an ink distribution, a fountain roll, its shaft, shaft extensions operatively connected thereto, means for driving the fountain roll shaft and one of the shaft extensions through the other shaft extension, a ductor roller, ductor roller cam sleeves rotatively mounted on said shaft extensions, ductor roller oscillating cams on said sleeves, and speed changing means operatively connecting the shaft extensions to their respective cam sleeves.

15. In an ink distribution, a fountain roll, its shaft, shaft extensions operatively connected thereto, means for driving the fountain roll shaft and one of the shaft extensions through the other shaft extension, a ductor roller, ductor roller cam sleeves rotatively mounted on said shaft extensions, ductor roller oscillating cams independently rotatively adjustable on said sleeves, and speed changing means operatively connecting the shaft extensions to their respective cam sleeves.

16. In an ink distribution, an ink drum, distributing rollers, a fountain roll, its shaft, shaft extensions, means removably connecting the fountain roll shaft to its shaft extensions, a ductor roller, its operating cam rotatively mounted on one of the shaft extensions, a distribution drive shaft, means operatively connecting it to the ink drum and distributing rollers, and separate means operatively connecting the distribution drive shaft to the fountain roll shaft, its shaft extensions and ductor roller operating cam.

17. In an ink distribution, an ink drum, distributing rollers, a fountain roll, its shaft, shaft

extensions, means removably connecting the fountain roll shaft to its shaft extensions, a ductor roller, its operating cam rotatively mounted on one of the shaft extensions, a distribution drive shaft, a train of gears operatively connecting it to the ink drum and distributing rollers, said train of gears including a gear rotatively mounted on one of said shaft extensions, and separate means operatively connecting the distribution drive shaft to the fountain roll shaft, its shaft extensions and ductor roller operating cam.

18. In an ink distribution, a continuously driven fountain roll, its shaft, shaft extensions, couplings of the laterally movable and detachable type connecting the ends of the fountain roll shaft to its shaft extensions for automatically positioning the fountain roll and permitting the bodily lateral removal of the fountain roll and its shaft, and means for driving the fountain roll, its shaft and one of the shaft extensions through the other shaft extension.

19. In an ink distribution, a fountain roll, its shaft, shaft extensions operatively connected thereto, means for driving the fountain roll shaft and shaft extensions, a pair of ductor rollers, pairs of ductor roller oscillating cams rotatively mounted on said shaft extensions, and speed changing means operatively connecting the shaft extensions to their respective cams.

20. In an ink distribution, a fountain roll, its shaft, shaft extensions operatively connected thereto, means for driving the fountain roll shaft and shaft extensions, a pair of ductor rollers, a pair of ductor roller cam sleeves rotatively mounted on said shaft extensions, pairs of ductor roller oscillating cams on said sleeves, and means operatively connecting the shaft extensions to their respective cam sleeves.

21. In an ink distribution, a fountain roll, its shaft, shaft extensions operatively connected thereto, means for driving the fountain roll shaft and shaft extensions, a pair of ductor rollers, a pair of ductor roller cam sleeves rotatively mounted on said shaft extensions, pairs of ductor roller oscillating cams on said sleeves, and speed changing means operatively connecting the shaft extensions to their respective cam sleeves.

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