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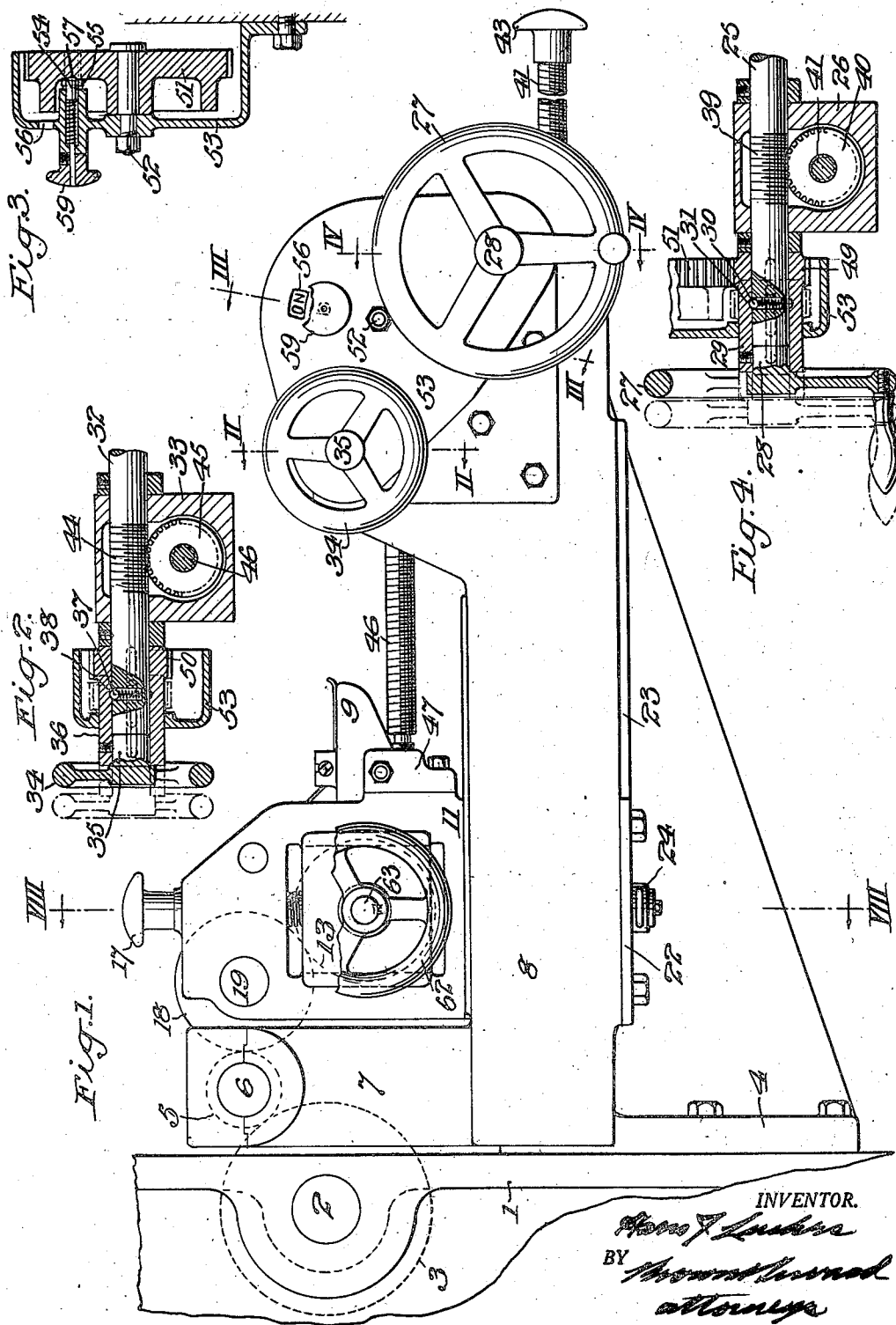
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Fig. 5.

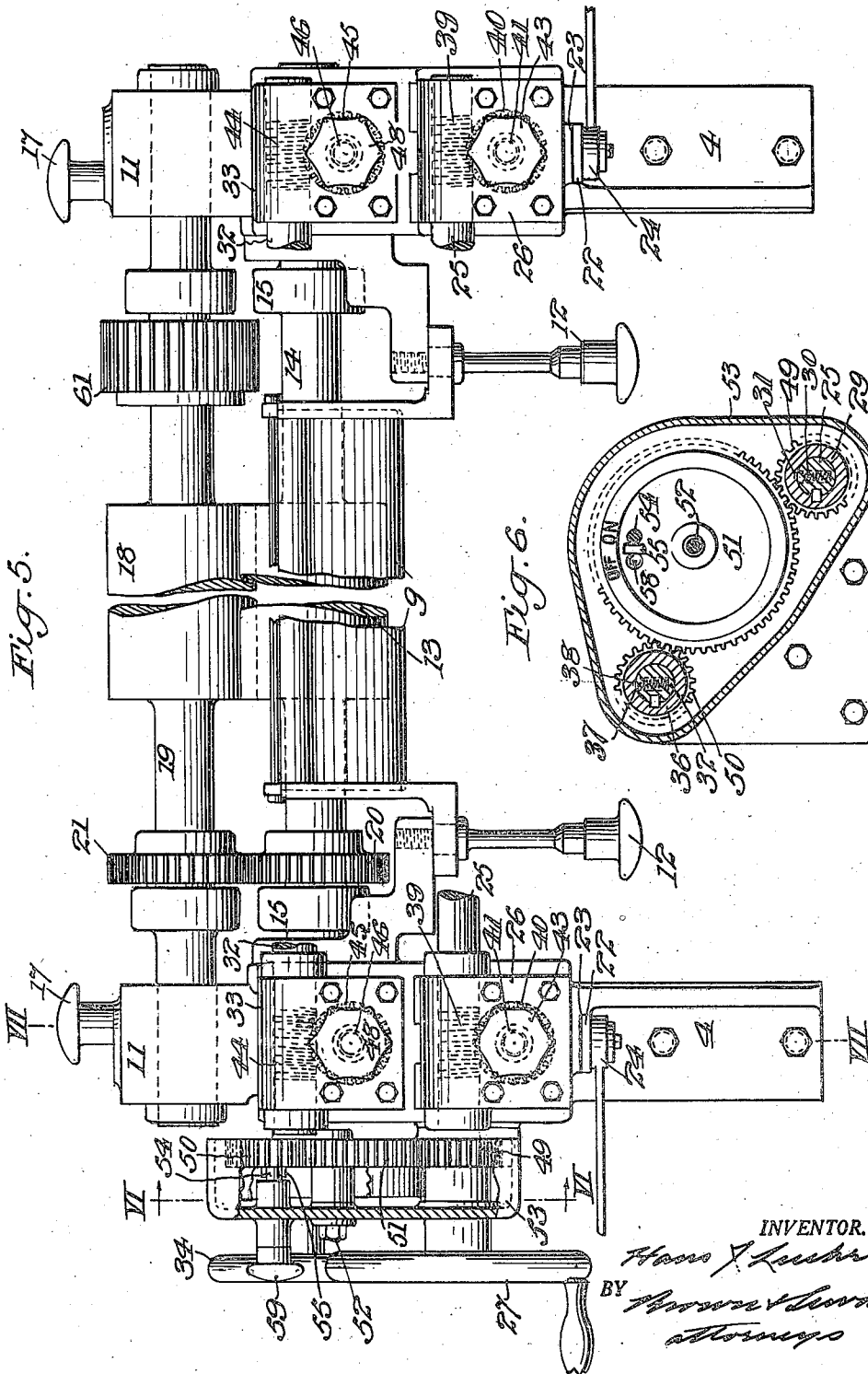
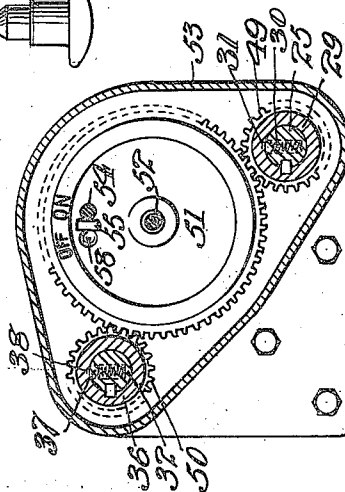


Fig. 6.



INVENTOR.

H. J. Luehrs

BY *Harmon & Howard*
attorneys

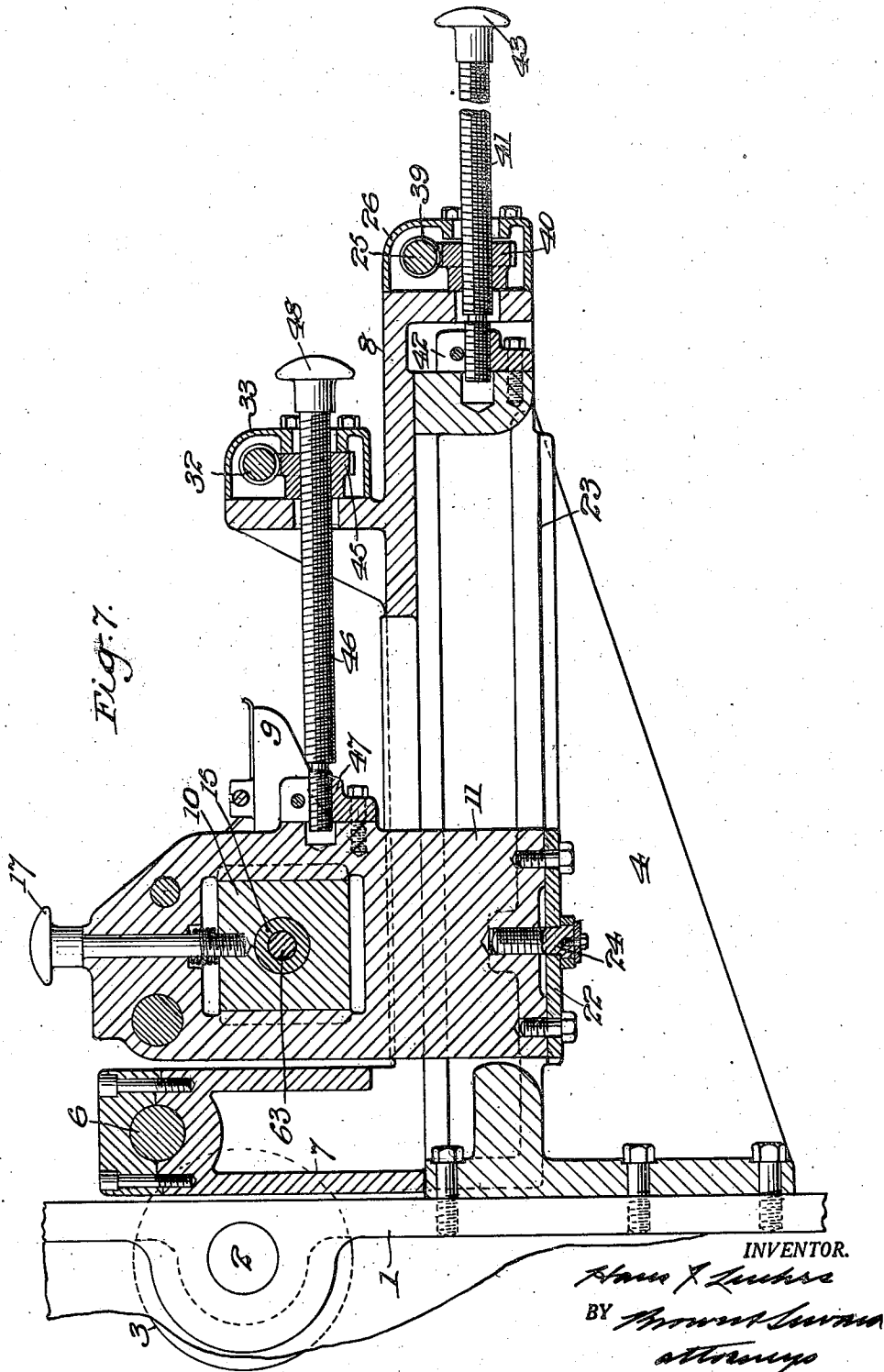
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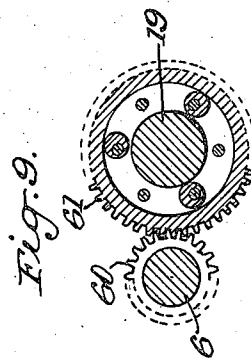
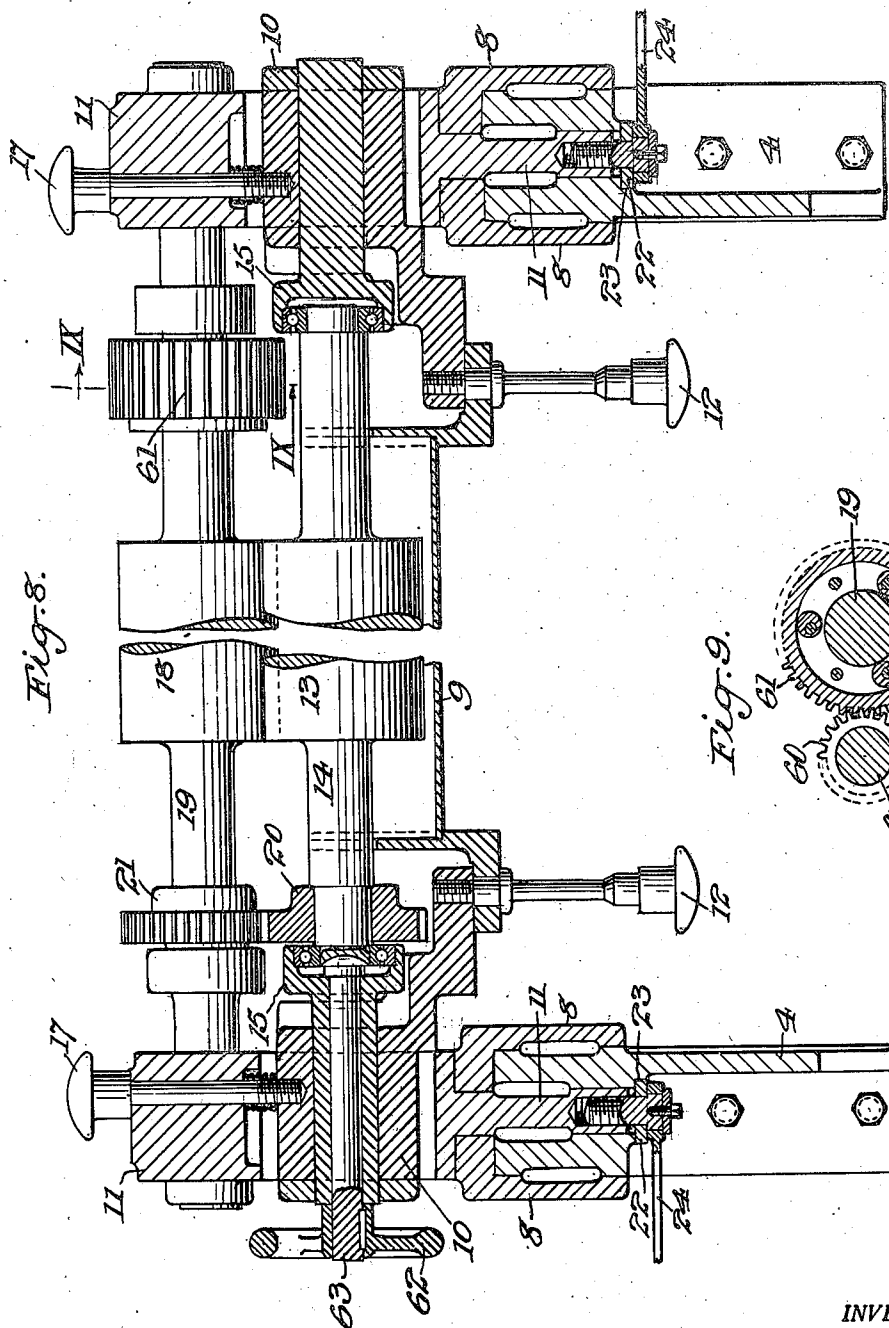
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Filed Feb. 5, 1943

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INVENTOR.

Hans J. Luehrs
BY *Arnold Howard*
attorney

UNITED STATES PATENT OFFICE

2,405,795

ROTARY PRINTING PRESS

Hans J. Luehrs, Westerly, R. I., assignor to C. B. Cottrell & Sons Company, Westerly, R. I., a corporation of Delaware

Application February 5, 1943, Serial No. 474,785

29 Claims. (Cl. 101—247)

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One object of my invention is to provide a very simple and effective cylinder "throw-off" and adjusting mechanism for rotary printing presses in which novel means are employed for simultaneously moving the form and ink supply cylinders relatively to the impression cylinder and relatively to each other.

A further object is to provide novel means which may be independently manipulated when desired to move the form and ink supply cylinders together toward and away from the impression cylinder and the ink supply cylinder toward and away from the form cylinder.

My invention comprises, generally, an impression cylinder and its support, a form cylinder having its carriage movable along said support and an ink supply cylinder having its carriage movable with or along the form cylinder carriage.

My invention also comprises two operatively connected hand shafts for simultaneously moving the form and ink supply cylinder carriages toward and away from the impression cylinder support and the ink supply cylinder carriage toward and away from the form cylinder carriage.

My invention also comprises novel means for operatively disconnecting the hand shafts from each other to permit their independent manipulation.

My invention also comprises means for limiting the "contact" and "throw-off" movements of the form and ink supply cylinders, said limiting means being manually releasable to permit the required spacing for form cylinders of different sizes.

My invention also comprises means for automatically locking the form and ink supply cylinders in their "contact" and "throw-off" positions.

My invention also particularly includes an operative connection between the two hand shafts comprising two hand shaft gears and their intermediate gear, manually operated devices being provided for operatively disconnecting either of said hand shaft gears from the intermediate gear to permit the individual manipulation of the hand shafts.

My invention also more particularly includes a manually releasable spring actuated pin which normally projects into the path of a stop on the intermediate gear for limiting its rotative movement in either direction and thereby the relative movements of the form and ink supply cylinders when their hand shafts are operatively connected; the said intermediate gear also having shallow recesses on opposite sides of the stop which are located in position to engage the inner

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end of the manually releasable pin, for automatically locking the intermediate gear at the limits of its rotative movements.

My invention also more particularly includes a cylinder "throw-off" mechanism in which the two hand shafts and their geared connection are all mounted on the form cylinder carriage.

A practical embodiment of my invention is represented in the accompanying drawings in which Fig. 1 represents a detail side elevation of a printing press embodying my invention;

Fig. 2 represents a detail section taken in the plane of the line II—II of Fig. 1;

Fig. 3 represents a detail section taken in the plane of the line III—III of Fig. 1;

Fig. 4 represents a detail section taken in the plane of the line IV—IV of Fig. 1;

Fig. 5 represents an end elevation, partly broken away;

Fig. 6 represents a detail section taken in the plane of the line VI—VI of Fig. 5;

Fig. 7 represents a detail section taken in the plane of the line VII—VII of Fig. 5;

Fig. 8 represents a detail section taken in the plane of the line VIII—VIII of Fig. 1; and

Fig. 9 represents a detail section taken in the plane of the line IX—IX of Fig. 8.

The side frames of the printing press are denoted by 1, 1. The shaft 2 of the impression cylinder 3 may be suitably journaled in the said side frames which form a fixed support for the impression cylinder. Brackets 4, 4 project from the side frames 1, 1.

The form cylinder 5 has its shaft 6 journaled in upward extensions 7, 7 of a carriage 8, which carriage when released is slidable along the side frame brackets 4, 4 to move the form cylinder 5 toward and away from the impression cylinder 3.

The ink fountain 9 may be removably secured to the boxes 10, 10, vertically adjustable in the carriage 11, 11, as by suitable hand screws 12, 12. The ink fountain roll 13 has its shaft 14 journaled in axial supports 15, 15 carried by the boxes 10, 10. Hand screws 17, 17 serve to adjust these boxes 10, 10 in the carriage 11, 11.

The ink supply cylinder 18 has its shaft 19 journaled in the carriage 11. The ink supply cylinder carriage 11, when released, is slidable along the form cylinder carriage 8 to move the ink supply roll 18 toward and away from the form cylinder 5. Gears 20, 21 operatively connect the fountain roll shaft 14 to the ink supply cylinder shaft 19.

The means shown for removably securing the form and ink supply cylinder carriages 8 and

11 to the side frame brackets 4, 4 is shown as comprising spring plates 22, 22 slidable along grooves 23, 23 in the brackets 4, 4 and hand screws 24, 24 acting on said spring plates to lock and release said carriages.

A lower hand shaft 25 is journaled in housings 26, 26 on the form cylinder carriage 8 to move bodily with said carriage toward and away from the impression cylinder. A hand wheel 27 is slidably interlocked to one end of the hand shaft 25 by securing to the central stud 28 a sleeve 29 splined to the said hand shaft 25. A spring pressed device 30 is housed in the hand shaft 25 in position to engage a recess 31 in the sleeve 29 for yieldingly holding the hand wheel 27 at the limit of its inward movement along the hand shaft.

An upper hand shaft 32 is journaled in a pair of housings 33, 33 on the form cylinder carriage 8 to move bodily with said carriage toward and away from the impression cylinder 3. A hand wheel 34 is slidably interlocked to one end of the hand shaft 32 by securing to its central stud 35 a sleeve 36 splined to the said hand shaft 32. A spring pressed device 37 is housed in the hand shaft 32 in position to engage a recess 38 in the sleeve 36 for yieldingly holding the hand wheel 34 at the limit of its inward movement along the hand shaft.

The lower hand shaft 25 is operably connected to move the form cylinder carriage 8 by providing the hand shaft with two worms 39, 39 which mesh with the external teeth of two worm gears 40, 40, internally threaded on spindles 41, 41 which pass through the housings 26, 26. These spindles 41, 41 are releasably locked against rotative movement to the brackets 4, 4 of the side frames 1, 1 by providing the said brackets with clamps 42, 42 which engage the inner threaded ends of said spindles. These inner threaded ends have a lesser pitch than the outer threaded portions of the spindles. These spindles 41, 41 are provided with suitable handles 43, 43 to permit the individual and fine adjustment of the spindles when unclamped, to bring the form cylinder 5 into parallelism with the impression cylinder 3. This adjustment is obtained by the action of the different pitches of the inner and outer threaded portions of the spindles.

The upper hand shaft 32 is operably connected to move the ink supply cylinder carriage 11 by providing the hand shaft with two worms 44, 44 which mesh with external teeth of two worm gears 45, 45 internally threaded on spindles 46, 46 which pass through the housings 33, 33. These spindles 46, 46 are releasably locked against rotative movement to the ink supply cylinder carriage 11 by providing the said carriage with clamps 47, 47 which engage the inner threaded ends of said spindles. These inner threaded ends have a lesser pitch than the outer threaded portions of the spindles.

These spindles 46, 46 are provided with suitable handles 48, 48 to permit the individual adjustment of the spindles when unclamped to bring the ink supply cylinder 18 into parallelism with the form cylinder 5. The adjustment is obtained by the action of the different pitches of the inner and outer threaded portions of the spindles.

The lower and upper hand shafts 25 and 32 are operably connected for causing the form and ink supply cylinders 5 and 18 and their respective carriages to be moved relatively to the impression cylinder 3 and relatively to each other

between their "contact" and "throw-off" positions, as follows: the sleeves 29 and 36 are provided with spur gears 49 and 50 which normally mesh with an intermediate gear 51 rotatably mounted on a stud 52 in a housing 53 carried by the form cylinder carriage 8.

A manually operated retractable spring pressed pin 54 projects into the path of a lug 55 on the intermediate gear 51, which lug serves as a stop for releasably limiting the rotative movement in either direction of the intermediate gear 51 between its "contact" and "throw-off" positions. To permit these positions to be observed by the operator the intermediate gear may be provided with designations "On" and "Off" which will be exposed through a window 56 in the housing 53 as the form and ink supply cylinders reach their "contact" and "throw-off" positions.

Shallow recesses 57, 58 are provided in the intermediate gear on opposite sides of the stop lug 55 in position to receive the rounded inner end of the manually releasable pin 54 for automatically locking the intermediate gear 51 and thereby the form and ink supply cylinders 5 and 18 in their "contact" and "throw-off" positions. A suitable handle 59 may be provided for manipulating the pin 54.

The form cylinder gear 60 meshes with a free wheeling gear 61 of any well known or approved construction, mounted on the shaft 19 of the ink supply cylinder 18. A hand wheel 62 has its shaft 63 passing axially through one of the supports 15 into interlocking engagement with the adjacent end of the fountain roll shaft 14. It will be seen that when the press is at rest the hand wheel 62, because of a free wheeling connection between the gears 60 and 61, may be manipulated to rotate the fountain roll 13 and the ink supply cylinder 18 in their direction of travel, for softening up any ink which may have been dried while the press was at rest. When the press is started, the gear 61 will be automatically clutched to the supply cylinder shaft 19 and the inking mechanism will then be again driven by the press through the form cylinder gear 60.

In operation: If it be desired to simultaneously "throw-off" the form and ink supply cylinders the hand screws 24, 24 are first manipulated to release the form and ink supply cylinder carriages 8 and 11 from their locked engagement with the brackets 4, 4. The operatively connected hand shafts 25 and 32 may then be turned by the hand wheel 27 in the proper direction to cause, through the threaded spindles 41, 41 and 46, 46, the form cylinder carriage 8 to move along the brackets 4, 4 and the ink supply carriage 11 to move along the form cylinder carriage 8 to separate the form cylinder 5 from the impression cylinder 3 and the ink supply cylinder 18 from the form cylinder 5.

It will be understood that the engagement of the longitudinally yielding pin 54 with the stop 55 on the intermediate gear 51 as the gear almost completes a revolution, serves to limit the "throw-off" movements of the form and ink supply cylinders. It will also be seen that the engagement of the inner end of the pin 54 with the shallow recess 58 on the intermediate gear 51 will serve to automatically lock the form and impression cylinders in their "throw-off" positions.

Should it be desired to replace the form cylinder 5 with a larger form cylinder, the pin 54 may be manually withdrawn from the path of the stop 55 on the intermediate gear 51 thus permitting the further rotary movement of the intermediate

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gear and a sufficient separation of the impression, form and ink supply cylinders to accommodate the said larger form cylinder.

If it be desired to independently adjust the form and ink supply cylinder carriages either the hand wheel 27 may be moved axially to bring its gear 49 out of mesh with the intermediate gear 51 or the hand wheel 34 may be moved axially to bring its gear 50 out of mesh with the intermediate gear 51.

When the gear 49 is moved out of mesh with the intermediate gear 51 it will be seen that the turning of the hand shaft 25 by the hand wheel 27 will move the form cylinder 5 and ink supply cylinder 18 together, away from the impression cylinder 3.

When the gear 50 is moved out of mesh with the intermediate gear 51 it will be seen that the hand shaft 32 may be manipulated by the hand wheel 34 to move the ink supply cylinder 18 independently of the form cylinder 5.

It will also be understood that by the releasing of the clamps 42, 42 and the clamps 47, 47 the spindles 41, 41 and 46, 46 may be manipulated, to bring the form cylinder 5 into parallelism with the impression cylinder 3 and the ink supply cylinder 18 into parallelism with the form cylinder 5.

It will also be understood that when the form and ink supply cylinders are brought into their proper "contact" positions the hand screws 24, 24 may be manipulated to clamp the form and ink supply cylinder carriages 8 and 11 firmly to the side frame brackets 4, 4.

It will therefore be seen that by mounting both of the operatively connected hand shafts on the form cylinder carriage and by operatively connecting one hand shaft to the pair of threaded spindles attached to the side frame brackets, and the other hand shaft to the pair of spindles attached to the ink supply cylinder carriage, I am enabled to simultaneously move the form and ink supply cylinders relatively to the impression cylinder and to each other. By operatively disconnecting the two hand shafts I am enabled to independently move the form and ink supply cylinders together relatively to the impression cylinder, and the ink supply cylinder relatively to the form cylinder.

It is 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. Impression, form and ink supply cylinders, and means for simultaneously moving the form and ink supply cylinders relatively to the impression cylinder and to each other, comprising two hand shafts operatively connected to their respective form and ink supply cylinders and means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft.

2. Impression, form and ink supply cylinders, means for simultaneously moving the form and ink supply cylinders relatively to the impression cylinder and to each other, comprising two hand shafts operatively connected to their respective form and ink supply cylinders, means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft and means for operatively disconnecting the hand shafts from each

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other for permitting them to individually move the said form and ink supply cylinders.

3. Impression, form and ink supply cylinders, and means for simultaneously moving the form and ink supply cylinders relatively to the impression cylinder and to each other, comprising two hand shafts operatively connected to their respective form and ink supply cylinders, means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft and means for releasably limiting the simultaneous relative movements of the form and ink supply cylinders.

4. Impression, form and ink supply cylinders, and means for simultaneously moving the form and ink supply cylinders relatively to the impression cylinder and to each other, comprising two hand shafts operatively connected to their respective form and ink supply cylinders, means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft means for releasably limiting the simultaneous relative movements of the form and ink supply cylinders, and means for operatively disconnecting the hand shafts from each other for permitting them to individually move the said form and ink supply cylinders.

5. Impression, form and ink supply cylinders, and means for simultaneously moving the form and ink supply cylinders relatively to the impression cylinder and to each other, comprising two hand shafts operatively connected to their respective form and ink supply cylinders, means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft and means for releasably limiting the simultaneous relative movements of the form and ink supply cylinders, and for automatically locking them at said limits of movement.

6. Impression, form and ink supply cylinders, and means for simultaneously moving the form and ink supply cylinders relatively to the impression cylinder and to each other, comprising two hand shafts operatively connected to their respective form and ink supply cylinders, means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft, means for releasably limiting the simultaneous relative movements of the form and ink supply cylinders and for releasably holding them at said limits of movement, and means for operatively disconnecting the hand shafts from each other for permitting them to individually move the said form and ink supply cylinders.

7. Impression, form and ink supply cylinders, and means for simultaneously moving the form and ink supply cylinders relatively to the impression cylinder, to each other, comprising two pairs of threaded spindles and two hand shafts operatively connected to their respective pairs of spindles and means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft.

8. Impression, form and ink supply cylinders, means for simultaneously moving the form and ink supply cylinders relatively to the impression cylinder and to each other, comprising two pairs of threaded spindles, two hand shafts operatively connected to their respective pairs of spindles, means operably connecting the two hand shafts whereby the turning of one hand shaft will cause

the turning of the other hand shaft and means for operatively disconnecting the two hand shafts from each other for permitting them to individually move the form and ink supply cylinders.

9. An impression cylinder, its support, form and ink supply cylinders, their carriages, and means for simultaneously moving said carriages relatively to said support and to each other, comprising two pairs of threaded spindles, two hand shafts operatively connected to their respective pairs of spindles and means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft.

10. An impression cylinder, its support, form and ink supply cylinders, their carriages, means for simultaneously moving said carriages relatively to said support and to each other, comprising two pairs of threaded spindles, two hand shafts operatively connected to their respective pairs of spindles, means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft and means for releasably limiting the simultaneous relative movements of the said carriages.

11. An impression cylinder, its support, form and ink supply cylinders, their carriages, means for simultaneously moving said carriages relatively to said support and to each other, comprising two pairs of threaded spindles, two hand shafts operatively connected to their respective pairs of spindles, means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft and means for operatively disconnecting the two hand shafts from each other for permitting them to individually move their respective carriages.

12. An impression cylinder, its support, form and ink supply cylinders, their carriages, means for simultaneously moving said carriages relatively to said support and to each other, comprising two pairs of threaded spindles, two hand shafts operatively connected to their respective pairs of spindles, means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft means for releasably limiting the simultaneous relative movements of said carriages, and means for operatively disconnecting the two hand shafts from each other for permitting them to individually move their respective carriages.

13. Impression, form and ink supply cylinders, and means for simultaneously moving the form and ink supply cylinders relatively to the impression cylinder and to each other, comprising two hand shafts operatively connected to their respective form and ink supply cylinders, and means for operatively connecting the hand shafts including two hand shaft gears and their intermediate gear.

14. Impression, form and ink supply cylinders, and means for simultaneously moving the form and ink supply cylinders relatively to the impression cylinder and to each other, comprising two hand shafts operatively connected to their respective form and ink supply cylinders, means for operatively connecting the hand shafts including two hand shaft gears and their intermediate gear, and means for moving one of said gears out of mesh with the intermediate gear to permit a hand shaft to move the form and ink supply cylinders relatively to the impression cylinder.

15. Impression, form and ink supply cylinders,

and means for simultaneously moving the form and ink supply cylinders relatively to the impression cylinder and to each other, comprising two hand shafts operatively connected to their respective form and ink supply cylinders, means for operatively connecting the hand shafts including two hand shaft gears and their intermediate gear, and means for moving one of said gears out of mesh with the intermediate gear to permit a hand shaft to move the ink supply cylinder relatively to the form and impression cylinders, without disturbing the position of the intermediate gear.

16. Impression, form and ink supply cylinders, means for simultaneously moving the form and ink supply cylinders relatively to the impression cylinder and to each other, comprising two hand shafts operatively connected to their respective form and ink supply cylinders, means for operatively connecting the hand shafts including two hand shaft gears and an intermediate gear meshing therewith, and means for releasably limiting the simultaneous relative movements of the form and ink supply cylinders.

17. Impression, form and ink supply cylinders, means for simultaneously moving the form and ink supply cylinders relatively to the impression cylinder and to each other, comprising two hand shafts operatively connected to their respective form and ink supply cylinders, means for operatively connecting the hand shafts including two hand shaft gears and an intermediate gear meshing therewith, and means for releasably limiting the simultaneous relative movements of the form and ink supply cylinders, including a stop on the intermediate gear and a yielding pin located in the path of the stop.

18. Impression, form and ink supply cylinders, means for simultaneously moving the form and ink supply cylinders relatively to the impression cylinder and to each other, comprising two hand shafts operatively connected to their respective form and ink supply cylinders, means for operatively connecting the hand shafts including two hand shaft gears and an intermediate gear meshing therewith, and means for releasably limiting the simultaneous relative movements of the form and ink supply cylinders, including a stop on the intermediate gear and a yielding pin located in the path of the stop, said intermediate gear having recesses at both sides of the stop for receiving the pin to automatically lock the form and ink supply cylinders at the limits of their movements.

19. An impression cylinder, its support, a form cylinder, its carriage, an ink supply cylinder, its carriage, and means for simultaneously moving the form and ink supply cylinders relatively to the impression cylinder and to each other, comprising two pairs of threaded spindles carried by said form cylinder carriage and secured respectively to the said impression cylinder support and ink supply cylinder carriage, two hand shafts rotatably mounted on the form cylinder carriage and operatively connected to their respective pairs of spindles and means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft.

20. An impression cylinder, its support, a form cylinder, its carriage, an ink supply cylinder, its carriage, and means for simultaneously moving the form and ink supply cylinders relatively to the impression cylinder and to each other, comprising two pairs of threaded spindles carried by said form cylinder carriage and secured respectively to the said impression cylinder support and

ink supply cylinder carriage, two hand shafts rotatably mounted on the form cylinder carriage and operatively connected to their respective pairs of spindles, means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft and means for operatively disconnecting said hand shafts from each other to permit them to be manipulated to individually move the form and ink supply cylinders.

21. An impression cylinder, its support, a form cylinder, its carriage, an ink supply cylinder, its carriage, and means for simultaneously moving the form and ink supply cylinders relatively to the impression cylinder and to each other, comprising two pairs of threaded spindles carried by said form cylinder carriage and releasably clamped respectively to the said impression cylinder support and ink supply cylinder carriage, two hand shafts rotatably mounted on the form cylinder carriage and operatively connected to their respective pairs of spindles and means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft.

22. An impression cylinder, its support, a form cylinder, its carriage, an ink supply cylinder, its carriage, means for simultaneously moving the form and ink supply cylinders relatively to the impression cylinder and to each other, comprising two pairs of threaded spindles carried by said form cylinder carriage and releasably clamped respectively to the said impression cylinder support and ink supply cylinder carriage, two hand shafts rotatably mounted on the form cylinder carriage and operatively connected to their respective pairs of spindles, means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft and means for operatively disconnecting said hand shafts from each other to permit them to be manipulated to individually move the form and ink supply cylinders.

23. Impression, form and ink supply cylinders, means for simultaneously moving the form and ink supply cylinders relatively to the impression cylinder and to each other, comprising two hand shafts operatively connected to their respective form and ink supply cylinders, means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft and means for operatively disconnecting the hand shafts from each other to permit them to be individually manipulated to move the form and ink supply cylinders together with respect to the impression cylinder and the ink supply cylinder with respect to the form cylinder.

24. Impression, form and ink supply cylinders, means for simultaneously moving the form and ink supply cylinders relatively to the impression cylinder and to each other, comprising two hand shafts operatively connected to their respective form and ink supply cylinders, means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft and means for operatively disconnecting the hand shafts from each other to permit them to be individually manipulated to move the form and ink supply cylinders together toward and away from the impression cylinder and the ink supply cylinder toward and away from the form cylinder.

25. An impression cylinder, its support, form and ink supply cylinders, their carriages, means for simultaneously moving said carriages relatively to said support and to each other, comprising two hand shafts operatively connected to their respective carriages, means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft and means for operatively disconnecting the two hand shafts from each other to permit them to be individually manipulated to move the form and ink supply cylinder carriages together along the said support and the ink supply cylinder carriage along the form cylinder carriage.

26. An impression cylinder, its support, a form cylinder, its carriage slidable on the support, an ink supply cylinder, its carriage slidable on the form cylinder carriage, and means for simultaneously moving said carriages relatively to said support and to each other, comprising two hand shafts carried by the form cylinder carriage, operatively connected to their respective carriages and means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft.

27. An impression cylinder, its support, a form cylinder, its carriage slidable on the support, an ink supply cylinder, its carriage slidable on the form cylinder carriage, and means for simultaneously moving said carriages relatively to the said support and to each other, comprising two pairs of threaded spindles, two hand shafts carried by the form cylinder carriage, operatively connected to their respective pairs of spindles and means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft.

28. An impression cylinder, its support, a form cylinder, its carriage slidable on the support, an ink supply cylinder, its carriage slidable on the form cylinder carriage, and means for simultaneously moving said carriages relatively to the said support and to each other, comprising a lower pair of threaded spindles connected to the impression cylinder support, a lower hand shaft, operatively connected to the said spindles, an upper pair of threaded spindles connected to the ink supply cylinder carriage, an upper hand shaft, operatively connected to said spindles, and means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft.

29. An impression cylinder, its support, a form cylinder, its carriage slidable on the support, an ink supply cylinder, its carriage slidable on the form cylinder carriage, and means for simultaneously moving said carriages relatively to the said support and to each other, comprising a lower pair of threaded spindles connected to the impression cylinder support, a lower hand shaft carried by the form cylinder carriage, operatively connected to the said spindles, an upper pair of threaded spindles connected to the ink supply cylinder carriage, an upper hand shaft carried by the form cylinder carriage, operatively connected to said spindles, and means operably connecting the two hand shafts whereby the turning of one hand shaft will cause the turning of the other hand shaft.