

Nov. 21, 1939.

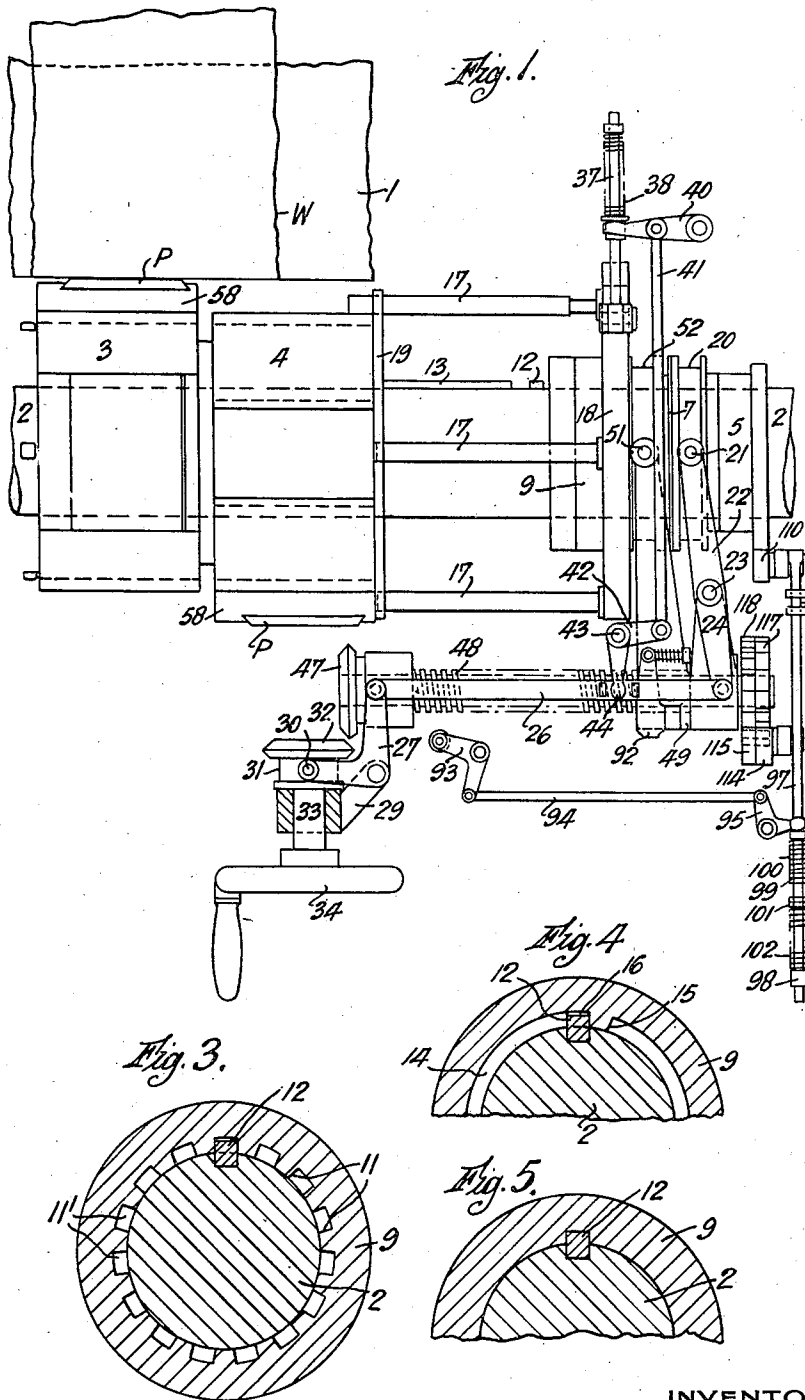
L. N. STONE

2,180,440

PRINTING MACHINE

Filed May 11, 1938

4 Sheets-Sheet 1



INVENTOR
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by *Albert J. Norton*
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Nov. 21, 1939.

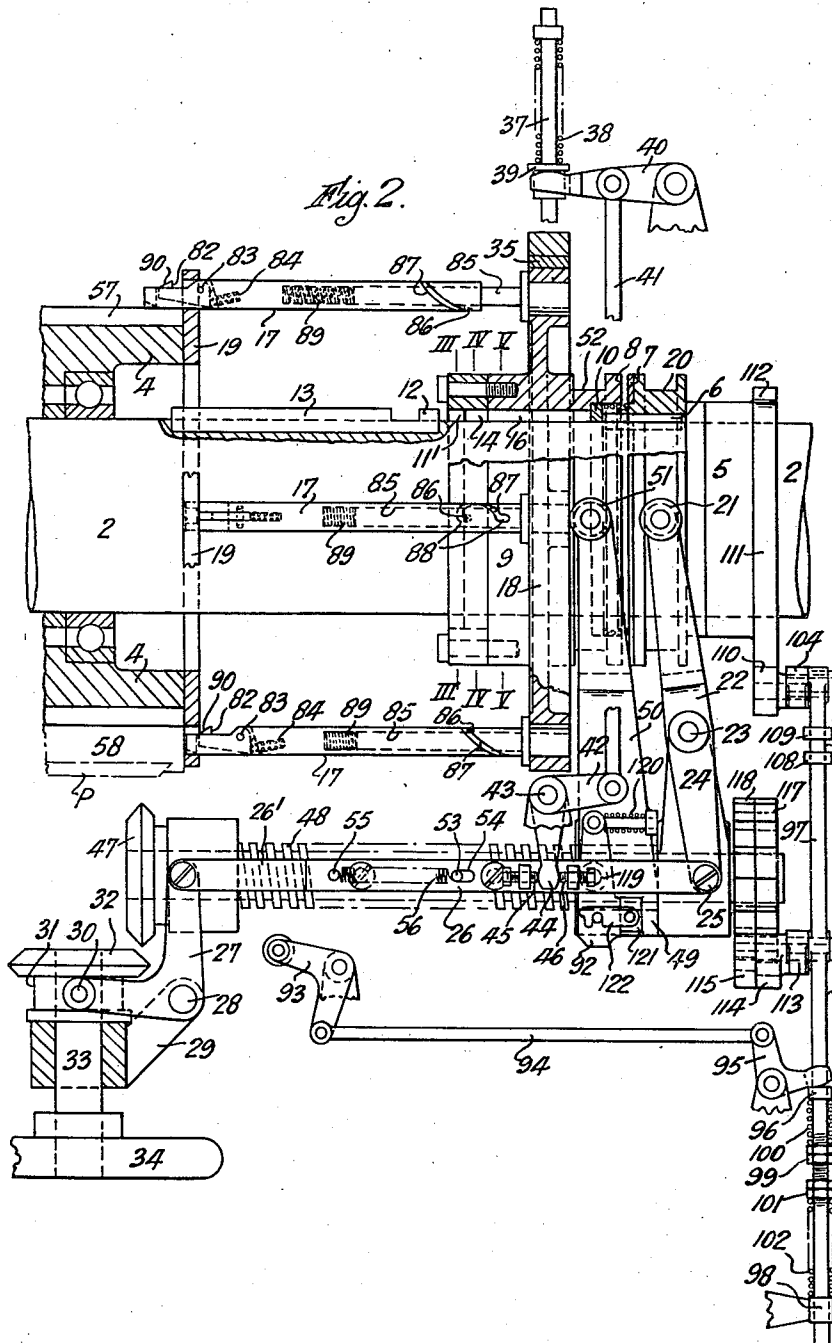
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PRINTING MACHINE

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4 Sheets-Sheet 2



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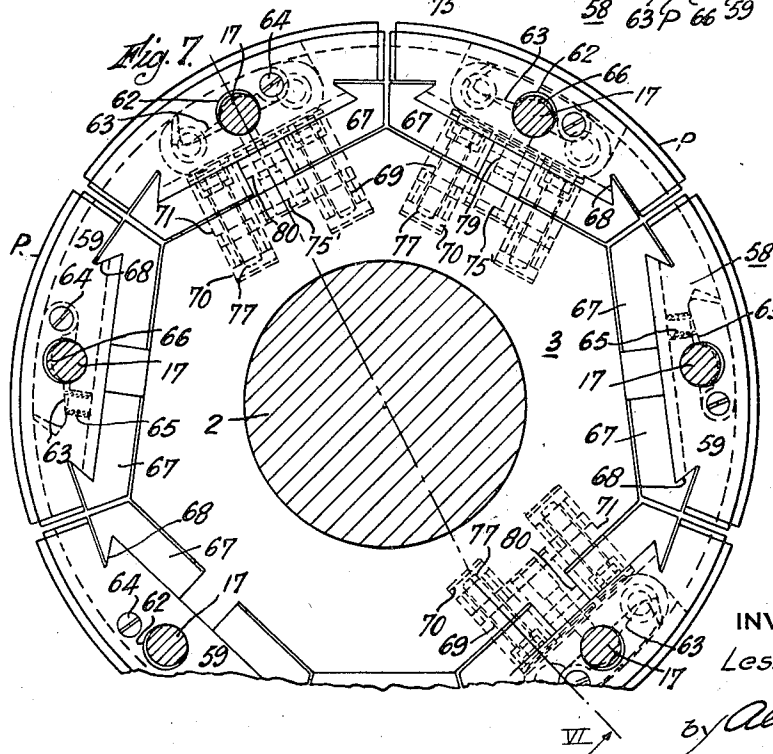
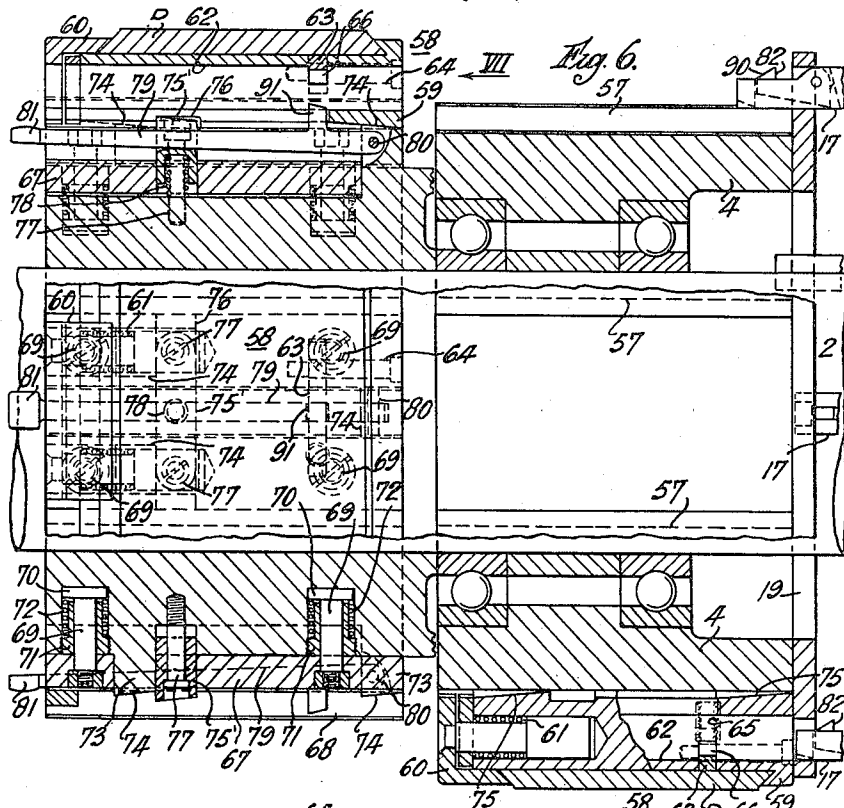
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PRINTING MACHINE

Filed May 11, 1938

4 Sheets-Sheet 3



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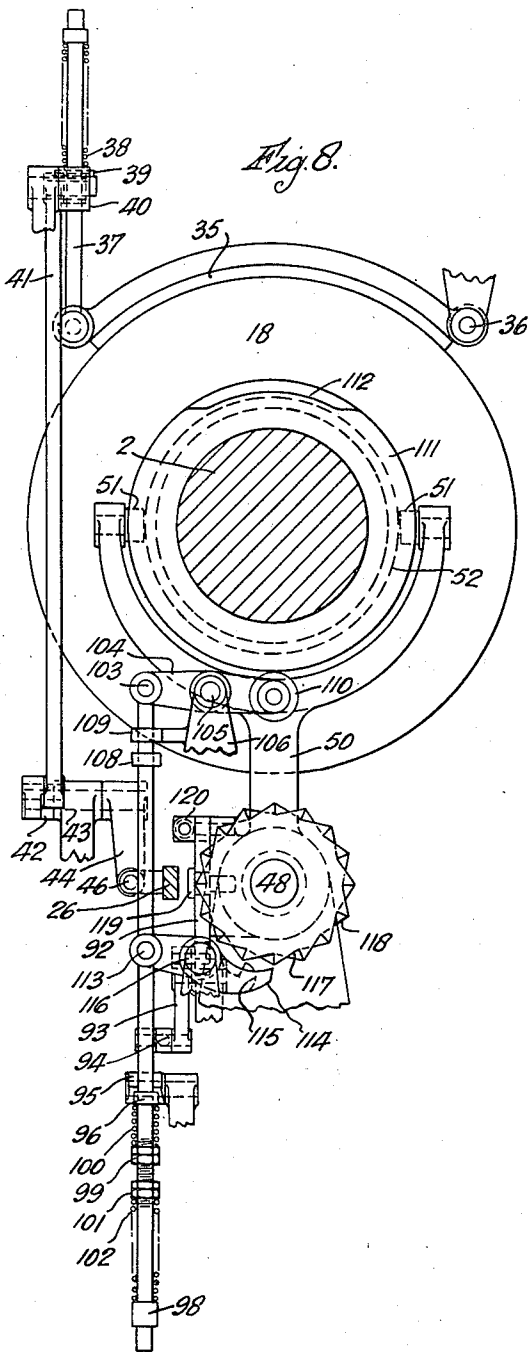
L. N. STONE

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PRINTING MACHINE

Filed May 11, 1938

4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

2,180,440

PRINTING MACHINE

Leslie Norman Stone, Greenford, England, assignor to R. Hoe & Co. Inc., New York, N. Y., a corporation of New York

Application May 11, 1938, Serial No. 207,183
In Great Britain May 22, 1937

15 Claims. (Cl. 101—221)

This invention relates to improvements in printing machines and is more especially concerned with what is commonly referred to as rotary "non-stop" printing mechanism by means of which a printing plate or type (hereinafter referred to as a "plate") usually for late news can be added without the necessity for stopping the printing machine.

According to the present invention there are provided a printing head and, co-axial with it, a normally stationary loading head which is arranged to receive a plate (or plates) below "type-height", i. e. the printing surface of the plate is within the diameter on which the plate is required to print on a web passing between the printing head and an impression cylinder: means are also provided for speeding up the loading head to the speed of the printing head and also for bringing the loading head into peripheral register with the printing head and in addition means are provided for transferring the plate from the now rotating and registered head to the printing head with a movement the final part of which is at an angle to the axis of rotation of the two heads; the longitudinal component of this angular movement brings the plate into final longitudinal register with the printing head and the radial component, i. e. the component in a plane transverse to the axis of the printing head brings the plate to type height so that its printing surface will co-operate with the impression cylinder to print on the web.

As the angular movement which brings the plate from below type height to type height (and consequently bringing the plate from a position clear of the web to a position where in the rotation of the printing head it contacts with the web) is delayed to occur only in the final part of the total movement of the plate from the loading head to the printing head, the risk of tearing the web due to the longitudinal movement necessary to transfer a plate from the loading head to the printing head (i. e. transverse to the web) is reduced.

The invention is illustrated in the accompanying drawings in which Figure 1 is a sectional elevation showing a general assembly of the parts; Figure 2 a detail elevation of the mechanism for speeding up and registering the loading head with the printing head; Figures 3, 4 and 5 sections on the lines III—III, IV—IV and V—V Figure 2; Figure 6 a longitudinal section of the loading head and the printing head looking in the direction of the arrow VI Figure 1; Figure 7 an end elevation looking in the direction

of the arrow VII Figure 6, and Figure 8 a detail end elevation of the mechanism for preventing transverse movement of a plate while it is in contact with the face of the web.

Referring firstly to Figure 1, 1 indicates an impression cylinder geared to a shaft 2 which so long as the impression cylinder 1 is rotating is itself rotating. Secured to the shaft 2 is a printing head 3 adapted to receive printing plates P for printing on a web W passing between itself and the impression cylinder 1. Loosely mounted on the shaft is a loading head 4 which is normally stationary but which can be speeded up and registered with the printing head 3, this loading head 4 being adapted to receive a printing plate P below type height, i. e. when a plate P is on the loading head 4, the printing surface of the plate is within the circle on which the surface of the plate has to lie to effect printing. The plate P can be transferred from the loading head 4 to the printing head 3 by a movement which is firstly longitudinal and then at an angle so that the plate P is brought from below type height on the loading head 4 out to type height on the printing head 3.

Mechanism will first be described for enabling the loading head 4 to be speeded up and registered with the rotating printing head 3. This mechanism, which is best shown in Figure 2, comprises a sleeve member 5 which is slidable on a key 6 on the shaft 2 and has a clutch face 7 adapted to engage when it is moved to the left as seen in Figure 2, a clutch face 8 formed on a second sleeve 9 slidable and rotatable on the shaft 2, the clutch faces being normally held out of contact by a stop 10 on the shaft 2. When the sleeve 5 is moved to the left as seen in Figure 2, the two clutch faces 7, 8 engage and the sleeve 9 is speeded up from rest to the speed at which the shaft 2 is rotating. The sleeve 9 has formed in it at its left hand end a plurality of teeth 11 (see Figure 3) leaving between them apertures 11' any one of which is arranged to receive a portion 12 of a keyway 13 secured to the shaft 2. These apertures 11' open into a circumferential recess 14 in the sleeve 9 and in this recess is a single lug 15 and from this recess opens a single keyway 16.

When now the sleeve 9 (which has by the sleeve 5 been speeded up) continues its movement to the left, one or other aperture 11 in the end of the speeded up sleeve 9 will receive the portion 12 of the key 13. The entry of the portion 12 between any two adjacent teeth causes the sleeve 9 to be momentarily positively driven

by the shaft 2. Continued movement to the left will cause this portion 12 of the key 13 to move into the circumferential recess 14 whereupon the positive drive which was attained ceases and relative rotational motion occurs between the sleeve 9 and the shaft 2 until the part 12 of the key 13 is engaged by the lug 15. The sleeve 9 is now in angular register with the shaft 2 and hence with the printing head 3 thereon. The sleeve 9 is now advanced still further to the left and this movement causes the part 12 of the key 13 to enter the keyway 16 in the sleeve 9 so that the sleeve 9 is positively connected to the shaft 2. The loading head 4 which is, as stated, loosely mounted on the shaft 2 is connected to the sleeve 9 by pushers 17 carried on a flange 18 secured to the sleeve 9 and their forward ends engage the walls of apertures in a plate 19 secured to the loading head 4; hence when the sleeve 9 is speeded up and registered in the manner referred to, the loading head 4 is also speeded up and registered by reason of the interconnection of the head 4 to the sleeve 9 through the pushers 17.

In order to effect this operation of speeding up and registering the loading head with respect to the shaft 2, the following mechanism, best shown in Figure 2 is employed.

The sleeve 5 is provided with an annular recess 20 into which enters pegs 21 on a stirrup member 22 pivoted at 23 and extended at 24 and pivotally connected at 25 to one end of an operating link 26 the other end of which is connected to one arm of a bell crank lever 27 mounted at 28 on a fixed bracket 29: the other arm of this bell crank lever 27 has a peg 30 entering a circumferential groove 31 formed in a gear 32 secured to an operating shaft 33 which can be moved by a hand-wheel 34 both axially and rotatably, the latter motion being for a purpose hereinafter to be described.

It will be seen that when the shaft 33 is moved axially the bell crank lever 27 is rocked in a clockwise direction as seen in Figure 2 and this reacting, through the link 26, rocks the lever 22, 24 in an anti-clockwise direction and in so doing advances the sleeve 5 to effect engagement between the clutch faces 7, 8 so as to speed up the sleeve 9 and hence the loading head 4.

A brake block 35 pivoted at one end at 36 (see Figure 8) is arranged to bear against the periphery of the flange 18 the block being connected at its other end to an operating rod 37 loaded by a spring 38 to bias the block against the flange 18. A collar 39 on the rod 37 is engaged by a lever 40 connected by a link 41 to an arm 42 fast on a shaft 43 having a further arm 44 operating between adjustable abutments 45, 46 on the link 26. The arrangement is such that when, in the manner already described, the link 26 is caused to move to effect speeding up of the loading head 4 the brake block 35 is released from the flange 18.

The axial movement of the shaft 33 which is necessary to effect speeding up in the manner described, results in bringing the bevel wheel 32 on the shaft 33 into mesh with bevel wheel 47 on a shaft 48 which is screw threaded and engaged by a screw threaded carriage 49 carrying a stirrup member 50 provided with pins 51 engaging an annular recess 52 in the sleeve 9. When now the shaft 33 is rotated by the handwheel 34 the screwed shaft 48 is also rotated and the first movement of this shaft causes the carriage 49 to move to the left as seen in Figure 2 and to move the sleeve 9 causing the sleeve 9 to be positively

registered by the key 13 in the manner already described.

It may here be noted that the link 26 which connects the bell crank lever 27 to the operating stirrup 24 is formed in two parts indicated at 26, 26' of which the part 26' connected to the bell crank lever 27 has a pin 53 passing through a slot 54 in the other part 26 which itself is provided with a pin 55. Between these pins is a spring 56 which operates to move the two parts 26, 26' apart or in other words to lengthen the link. This results in applying to the lever 22, 24 and hence to the sleeve 5 a spring bias which tends to cause the clutch face 7 to follow up the clutch face 8 as the sleeve member 9 is moved by rotation of the screwed rod 48 and in this way to cause drive through the clutch to be gradually diminished as the sleeve picks up the key 13.

Reference will now be made to the loading head 4 which is best shown in Figures 6 and 7. The periphery of the loading head 4 is formed with dovetailed grooves 57 constituting guides to receive, with freedom to slide, boxes 58 for the reception of the printing plates P, the boxes each comprising a fixed end abutment 59 and a movable abutment 60, these two abutments being drawn together by springs 61 which draw the abutments 59, 60 into engagement with a plate P.

In the arrangement shown the loading head 4 is capacitated to receive six boxes all of the form described and as all the boxes are similar a description of one will be sufficient, each box is formed with a longitudinal aperture 62 and has on it a plate 63 pivoted at 64 and biased by a spring 65 to move in a clockwise direction as seen in Figure 7. The plate 63 is provided with a cut away portion 66 which when a plate P is not loaded into the box 58 is in line with the aperture 62. When, however, a plate P is loaded into the box the undersurface of the plate P engages the plate 63 and causes the edge of the plate 63 to extend slightly into the aperture 62. The apertures 62 in the boxes are disposed respectively to receive the pushers 17, there being one pusher for each box position on the loading head 4.

When now by continued rotation of the hand-wheel 34 the carriage 49 is caused to move still further to the left as seen in Figure 2 the pushers 17 will pass into the apertures 62 in the loading head: in the case where a box 58 has been loaded with a plate P the end of the appropriate pusher 17 will engage the corresponding plate 63 so that further movement of the carriage 49 and hence of the pusher 17 will cause the loaded box 58 to slide to the left as seen in Figure 6 from the loading head. In the case where a box 58 has not been loaded with a plate P the spring 65 will cause the corresponding plate 63 to be clear of the end of the pusher 17 so that the pusher will pass idly into the aperture 62 without moving the box 58.

This continued movement of the carriage operates to transfer a loaded box 58 from the loading head 4 to the printing head 3 the construction of which will first be described, the head being best shown in Figures 6 and 7. The head 3 is provided with blocks 67 having formed in them dovetailed recesses 68 to receive the boxes 58 in the same manner as the boxes are received on the loading head, and there being as many blocks 67 as there are box positions. These blocks are mounted to move transversely to the axis of the printing head 3, each block 67 being provided with guide pins 69 which extend into apertures in the printing head and are provided with heads 70 75

which between themselves and bushes 71 screwed into the apertures are interposed springs 72 operating to bias the blocks to move to their inward position as seen in Figure 6. In this inward position the dovetailed recesses 68 formed in the blocks 67 are in line with the dovetailed recesses in the loading head 4 when it is speeded up and registered. These blocks are cut away to permit lugs 73 standing up from the printing head 3 to pass to the outer surface of the blocks 67 and the outer ends of these lugs are formed with wedge surfaces 74. The boxes 58 are also provided on their inner surface with wedge surfaces 75 arranged to mate with the surfaces 72 on the lugs 73.

Locking members 75' are also provided to enter recesses 76 formed in the undersides of the boxes 58. These members 75' are mounted to slide radially on pins 77 secured to the printing head 3, the blocks 67 being cut away to receive these members 75' and also to receive springs 78 reacting between the locking members 75' and the printing head, these springs biasing the members 75' to move outwardly into the path of the boxes 58 as they are slid from the loading head to the printing head. These locking members are arranged to be moved from their locking position by levers 79 pivoted at 80 and having a finger piece 81 by which the lever can be rocked in an anti-clockwise direction to compel the locking members 75' to move from locking position.

It will now be seen that when the motion to the left of the pushers 17 is caused by continued rotation of the handwheel 34 those boxes 58 on the loading head 4 which have been loaded with a plate P have their plates 63 engaged by the leading end of the corresponding pusher 17 and this motion slides a box 58 from grooves 57 in the loading head 4 to the grooves 68 in the blocks 67 on the printing head, it being understood that the loading head and the printing head are relatively at rest due to the loading head having been speeded up. Near the end of the motion of the boxes 58 to the left the wedge surfaces 75 on the boxes engage the wedge surfaces 74 on the lugs 73 and as a result the final longitudinal motion of the boxes and with them the corresponding blocks 67 are caused to move outwardly, the total resulting movement of the boxes being at an angle to the axis of the printing head 3. This movement at an angle brings a box from below type height out to type height so that the plate P can commence printing on the web W.

It will be seen that the total longitudinal movement of a plate P from the loading head to longitudinal printing position on the printing head, includes for its major part a longitudinal movement below type height and only a final part represented by the longitudinal component of the movement at an angle. Since the major part of this longitudinal travel is effected below type height (i. e. while the surface of a plate P is clear of the face of the web) the danger that the web may be torn in the necessary total movement to bring a plate P from the loading head to the printing head is minimised.

When the box 58 has reached its final position on the printing head 3 the locking members 75' are caused by their springs 78 to move into the recesses 76 formed in the base of the boxes. When now the hand wheel 34 is rotated in the reverse direction to withdraw the pushers 17 the boxes 58 which have been transferred remain held by these members 75'. Continued rotation

of the handwheel 34 moves the pushers 17 and the parts associated therewith to their original position and disconnects the drive to the loading head 4 which is brought to rest, the brake block 35 being re-applied to the flange 18.

Mechanism will now be described for enabling a box 58 already on the printing head 3 to be withdrawn therefrom and to effect this the pushers 17 are provided with hook members 82 pivoted at 83 and biased by springs 84. The pushers are so mounted that they can be rotated about their axis to bring the hook members 82 from the inoperative position shown on the lower half of Figure 2 to the operative position shown on the upper half of Figure 2. At the same time the pushers are moved axially so as to bring the hook members 82 forwardly to a position where (when the pushers have been fully advanced by the flange 18 itself) they can engage behind the plates 63 on the boxes already on the printing head 3.

This setting of the pushers 17 to effect unloading is caused by mounting the right hand ends of the pushers on rods 85 secured to the flange 18. These rods are provided with projections 86 entering inclined slots 87 formed in the pushers 17 and having two end re-entrant parts 88: the pushers are also loaded by springs 89 to move to the left as seen in Figure 2: when now a pusher is to be set for unloading the pusher is rotated firstly to bring the hook member 82 into operative position, the pusher is also caused to move axially by the co-operation between the inclined slot 87 and the pin 86, the spring operating to lock the pusher 17 in its new position by urging the pin 86 into the re-entrant part 88.

When now the flange (speeded up and registered) is advanced, that pusher (or those pushers) 17 which have been set for unloading a box 58 from the printing head 3 to the unloading head, will on the forward movement (i. e. movement to the left) move idly until its hook member 82 is depressed by the plate 63 and then is caused by its spring 84 to spring up at the back of the plate 63, this action being facilitated by bevelling the nose of the hook member at 90.

At the same time the forward end of the pusher has engaged a projection 91 on the lever 79 so that this lever is rocked to withdraw the locking member 75' from engagement with the recesses 76 in the box 58 to be unloaded. Reverse rotation of the handwheel 34 to retract the pushers 17 will now cause the box 58 to be moved from the printing head 3 to the loading head 4, the first movement of the box being at an angle as the wedges 75 run down the wedges 74 on the lugs 73: this action causes the blocks 67 to move inwardly until the grooves 68 are in line with the grooves 57 in the loading head at which time the surface of the plate P in the box 58 is clear of the face of the web W (i. e. is below type height). Continued movement merely slides the box with a longitudinal movement below type height from the printing head on to the loading head. Here again, as the major part of the longitudinal movement of the plate P is effected while the plate is below type height, the risk of tearing the web is small.

With the mechanism so far described the operation of moving a box 58 up or down the wedge surfaces 74 has been arranged to be continuous but in order to prevent this movement of box 58 while its plate P is in contact with the web W, the means for operating the mechanism can be modified as will now be described so that all

movement of the box from the loading head 4 to the printing head 3 or from the printing head 3 to the loading head 4 along the inclined path is prevented so long as the printing surface of the plate P is adjacent the surface of the web W.

This is achieved by providing the carriage 49 with a striker 92 arranged to operate a bell crank lever 93 connected by a link 94 to one arm of a second bell crank lever 95 which abuts a collar 96 loose on a rod 97 guided in a bracket 98. Between the collar 96 and adjustable stops 99 on the rod 97 is a spring 100 and between the bracket 98 and adjustable stops 101 also on the rod 97 is a second and longer spring 102. The upper end of the rod 97 is pivotally connected at 103 to a lever 104 pivoted at 105 in a bracket 106, the rod 97 carrying a collar 108 which abuts a stop 109 on the bracket 106. The lever 104 carries a cam bowl 110 arranged to engage a cam disc 111 which can be secured in different angular positions on the shaft 2. This disc has a recess 112 and this disc is adjusted on the shaft so that the recess 112 registers with the bowl 110 when a box 58 carrying a plate P to be loaded or unloaded rotates to a position with its face opposite (or in contact with) the web W.

The rod 97 is also pivotally connected at 113 to a double pawl 114, 115 pivoted at 116, the two pawls being movable into and out of engagement with the teeth of opposite hand ratchet wheels 117, 118 secured to the screwed rod 48.

When, in the operation of loading a box 58 on to the printing head (as has already been described) while the carriage 49 is moving to advance a box 58 up to the wedges 74, the follower 119 is held clear of the cam disc 111 and the pawls 114, 115 are both clear of the ratchet wheels 117, 118 so that the screwed rod 48 can be continuously rotated. At the time or just before the box commences to move up the wedge and surfaces 74 the striker 92 engages and rocks the lever 93 and rocks it in an anticlockwise direction. This lever 93 causes, through the rod 94, the bell crank lever 95 to compress the spring 100 which reacts against the stop 99 to move the rod 97 downwardly. This causes the lever 104 to carry the cam bowl 110 against the cam disc 111 and also causes the pawls 114, 115 to move nearly into engagement with the ratchet wheel 117, 118 (see Figure 8) when now in the rotation of the shaft 2 the recess 112 registers with the bowl 110 the lever 104 is caused to rock further and to allow the pawls 114, 115 to move into engagement with the teeth on the wheels 117, 118. Hence, one or other pawls will, once per revolution of the shaft 2 co-operate with the one or other wheel 117, 118 to lock the screwed rod 48 against rotation this occurring for so long as the recess 112 registers with the bowl 110 and ceasing when the recess moves out of register. Thus, since the recess registers with the bowl 110 for the time that the plate P on the corresponding box is opposite the web W, the screwed rod 48 can be rotated only while the plate P is not opposite (or in contact with) the web W.

Similarly when unloading a box 58 from the printing head 3 to the loading head 4, the pawl mechanism will operate to prevent the rod 48 from being rotated so long as a box 58 is moving down the wedges 74, this action ceasing when the box 58 has completed its movement down the wedge at which time the striker 92 on the carriage 49 will have moved clear of the bell crank lever 93 permitting the spring 100 to return the parts to their original position with

the pawls 114 and 115 continuously clear of the ratchet wheels 117, 118 whereafter the screwed rod 48 can be continuously rotated to complete the unloading operation which is effected with the plate P below type height.

In order to enable the pushers 17 to be retracted after they have effected a loading operation, the striker 92 is pivotally mounted at 119 and is urged by a spring 120 to move in an anti-clockwise direction into a limiting position determined by a stop 121 on the carriage 49, this limiting position being that shown in Figure 2. In this position, the striker 92 will operate the lever 93 in the manner described to permit the screwed rod 48 to rotate intermittently only while a loading operation is proceeding: on reverse rotation of the rod 48 to retract the pushers 17 the lever 93 trips the striker 92 against the action of its spring 120 so that the striker passes idly past the lever 93 without rocking this lever. Thus the pawl mechanism is prevented from operating and the screwed rod can be continuously rotated.

As, however, it is required that the pawl mechanism shall operate when a box is being unloaded, the striker 92 is arranged to be held by a catch 122 which can be set to hold the striker 92 against movement.

While the invention has been described as applied to a printing surface formed by a printing plate P the invention can obviously be applied to a printing surface formed by slugs.

What I claim is:

1. Late news printing mechanism comprising an impression cylinder, a printing head, means rotating the head and cylinder to print on a web passing between them, a loading head, means supporting the loading head for rotation co-axial with the printing head, means on the loading head to receive printing plates below type height means operable to speed up the loading head and bring it into registration with the printing head, means for moving a plate longitudinally to bring it from the loading head to the printing head, and means operating in the final part of the longitudinal movement to move the plate obliquely to the axis of the printing head to bring it to type height.

2. Late news printing mechanism comprising an impression cylinder, a printing head, means rotating the head and cylinder to print on a web passing between them, a plurality of boxes adapted to receive printing plates, means on the printing head to receive the boxes, a loading head, means supporting the loading head for rotation co-axially with the printing head, means on the loading head to receive the boxes and support them with printing plates below type height, means operable to speed up the loading head and to bring the box zones therein into registration with the box zones in the printing head, means to slide a box longitudinally from the loading head to the printing head and means operating in the final part of the said movement to move the box obliquely away from the axis of the heads to bring the plate in the box to type height.

3. Late news printing mechanism comprising an impression cylinder, a printing head, means rotating the head and cylinder to print on a web passing between them, a plurality of boxes adapted to receive printing plates, means on the printing head to receive the boxes, a loading head, means supporting the loading head for rotation co-axially with the printing head, means

on the loading head to receive the boxes and support them with printing plates below type height, means operable to speed up the loading head and to bring the box zones therein into registration with the box zones in the printing head, a plurality of advancing members to move boxes from the guides in the loading head to the guides in the printing head, means operating to advance the advancing members simultaneously, means responsive to the loading of a plate in a box to place that box in operative relationship with an advancing member and means operating only in the final part of said advancing movement to move the boxes obliquely away from the axis of the printing head to bring plates in the boxes to type height.

4. Late news printing mechanism comprising an impression cylinder, a printing head, means rotating the head and cylinder to print on a web passing between them, a loading head, means supporting the loading head for rotation co-axial with the printing head, a plurality of boxes arranged to hold printing plates, means on the loading head forming guides for the boxes to hold the plates below type height, a plurality of box receiving members on the printing head, the said receiving members providing guides for the boxes, means for speeding up the loading head and bringing the box guides therein into registration with the guides in the said receiving members, means for longitudinally sliding boxes from the guides in the loading head to the guides in the receiving members and vice versa, and means for moving the said receiving members away from the axis in the final part of the longitudinal movement of the boxes from the loading head to the printing head and towards the axis in the initial part of the movement of the boxes from the printing head to the loading head.

5. Late news printing mechanism comprising an impression cylinder, a printing head, means rotating the head and cylinder to print on a web passing between them, a plurality of boxes adapted to receive printing plates, means on the printing head to receive the boxes, a loading head, means supporting the loading head for rotation co-axially with the printing head, means on the loading head to receive the boxes and support them with printing plates below type height, means operable to speed up the loading head and to bring the box zones therein into registration with the box zones in the printing head, a plurality of transfer members one for each box, means for moving the transfer members to and fro longitudinally, means for setting the transfer members to operate in one direction to move a box from the loading head to the printing head or to operate in the other direction to move a box from the printing head to the loading head, and means operating to move a box away from the axis of the printing head in the final part of its movement from the loading head to the printing head and to move the box towards the axis in the initial part of its movement from the printing head to the loading head.

6. Late news printing mechanism comprising an impression cylinder, a printing head, means rotating the head and cylinder to print on a web passing between them, a plurality of boxes adapted to receive printing plates, means on the printing head to receive the boxes, a loading head, means supporting the loading head for rotation co-axially with the printing head, means on the loading head to receive the boxes and

support them with printing plates below type height, means operable to speed up the loading head and to bring the box zones therein into registration with the box zones in the printing head, a plurality of pusher members one for each box, means for reciprocating the pusher members, a hook member on each pusher member, means for setting the pusher members to enable it to push a box from the loading head to the printing head or to draw a box from the printing head to the loading head, and means operating to move a box away from the axis of the printing head in the final part of its movement from the loading head to the printing head and to move the box towards the axis in the initial part of its movement from the printing head to the loading head.

7. Late news printing mechanism comprising an impression cylinder, a printing head, means rotating the head and cylinder to print on a web passing between them, a loading head, means supporting the loading head for rotation co-axial with the printing head, a plurality of boxes arranged to receive printing plates, means on the loading head to receive the boxes and hold plates therein below type height, a corresponding plurality of box receiving members on the printing head, the said members providing box zones to receive the boxes, means mounting the receiving members for movement towards and away from the axis of the printing head, means for speeding up the loading head and registering the box zones thereon with the box zones in the receiving members, a plurality of transfer members, one for each box, means for moving the transfer members longitudinally to and fro, means selectively setting the transfer members to move a box from the loading head to the printing head or from the printing head to the loading head and wedge surfaces on the printing head operating to cause the receiving members to move away from the axis in the final part of the movement of a box from the loading head to the printing head, and to cause the receiving members to move towards the axis in the initial part of the movement of a box from the printing head to the loading head.

8. Late news printing mechanism comprising an impression cylinder, a printing head, means rotating the head and cylinder to print on a web passing between them, a loading head, means supporting the loading head for rotation co-axial with the printing head, means on the loading head to receive printing plates below type height, means operable to speed up the loading head and bring it into registration with the printing head, means operable to transfer a plate from the loading head to the printing head with a movement in the major part of which the plate is below type height and in the final part of which the plate is moved obliquely to the axis of the printing head to bring the plate to longitudinal printing position at type height on the printing head and means preventing movement of the plate along the inclined path while the surface of the plate is opposed to the face of the web.

9. Late news printing mechanism comprising an impression cylinder, a printing head, means rotating the head and cylinder to print on a web passing between them, a loading head, means supporting the loading head for rotation co-axial with the printing head, a plurality of boxes arranged to hold printing plates, means on the

loading head forming guides for the boxes to hold the plates below type height, a plurality of box receiving members on the printing head, the said receiving members providing guides for the boxes, means for speeding up the loading head and bringing the box guides therein into registration with the guides in the said receiving members, means for longitudinally sliding boxes from the guides in the loading head to the guides in the receiving members and vice versa, means for moving the said receiving members away from the axis in the final part of the longitudinal movement of the boxes from the loading head to the printing head and towards the axis in the initial part of the movement of the boxes from the printing head to the loading head and means synchronised with the rotation of the printing head to hold the boxes against longitudinal movement and the receiving members against movement towards and away from the axis while the plates in the boxes are opposed to the face of the web.

10. Late news printing mechanism comprising an impression cylinder, a printing head, a loading head, means supporting the printing head and the loading head for rotation about a common axis, means gearing the printing head to the impression cylinder to print on a web passing between them, means on the loading head to receive printing plates with their printing surfaces within printing diameter, means to speed up the loading head and to register it with the printing head, means to advance plates from the loading head to the printing head with a longitudinal movement terminating in a final movement having a longitudinal component bringing the plate into longitudinal printing position on the printing head and a transverse component bringing the surface of the plate out to the printing diameter, and having means for transferring a plate from printing position at the printing diameter on the printing head to unloading position within the printing diameter on the loading head, the said means operating in its initial movement to move the plate transversely to bring it to within the printing diameter.

11. In a late news device for a web printing machine, a rotary printing head adapted to receive a printing plate with its printing surface below type height and having ways arranged to guide movement of the plate while below type height to a position adjacent printing position and then elevate it into printing position by an oblique motion with respect to the axis of the printing head, a loading head adapted to receive a printing plate while in a stationary non-printing position, clutch means to rotate the loading head and accelerate it to the speed of the printing head, and a transfer member associated with the loading head and adapted to transfer the plate from the loading head to the printing head and to effect its elevation to printing position.

12. In a late news device for a web printing machine, a rotary printing head having a plurality of plate receiving positions, each of which is adapted to receive a printing plate with its

printing surface below type height and having an elevating member operable to move said plate into printing position by a motion oblique to the axis of the printing head, a loading head having a plurality of plate receiving positions adapted to receive a plate in a selected position while stationary and support the plate with its surface below type height; said loading head having a transfer member associated with each position and selectively operable for transferring a plate from the loading head to the printing head and effecting its elevation into printing position.

13. In a late news device for a web printing machine, a rotary printing head adapted to receive a printing plate with its printing surface below type height, a loading head adapted to receive a printing plate while in a stationary non-printing position and support the plate with its surface below type height, clutch means to rotate the loading head and accelerate it to the speed of the printing head, a transfer member associated with the loading head and adapted to transfer the plate from the loading head to the printing head and to effect its elevation to printing position; said transfer member being alternatively adapted to effect lowering of a printing plate on the printing head to below type height and to withdraw the plate from the printing head onto the loading head.

14. In a late news device for a web printing machine, a rotary printing head having a plurality of plate receiving positions, each of which is adapted to receive a printing plate with its surface below type height, a loading head adapted to receive a printing plate while in stationary non-printing position and support the plate with its surface below type height, clutch means to rotate the loading head and accelerate it to the speed of the printing head, and a transfer member associated with the loading head and adapted to transfer a plate from the loading head to a selected position on the printing head and effect its movement into printing position, and a second transfer member operable to effect lowering of a second printing plate on the printing head to below type height and withdraw said second plate from the printing head onto the loading head.

15. In a late news device for a web printing machine, a rotary printing head having a plurality of plate receiving positions, each of which is adapted to receive a printing plate with its printing surface below type height and having an elevating member arranged to raise said plate into printing position, a loading head having a plurality of plate receiving positions and adapted to receive a plate in a selected position while stationary and support the plate with its surface below type height; said loading head having a transfer member associated with each position and selectively operable for transferring a plate from the loading head to the printing head, and for removing a plate from the printing head to the loading head, and means to rotate the loading head and accelerate it to the speed of the printing head.

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