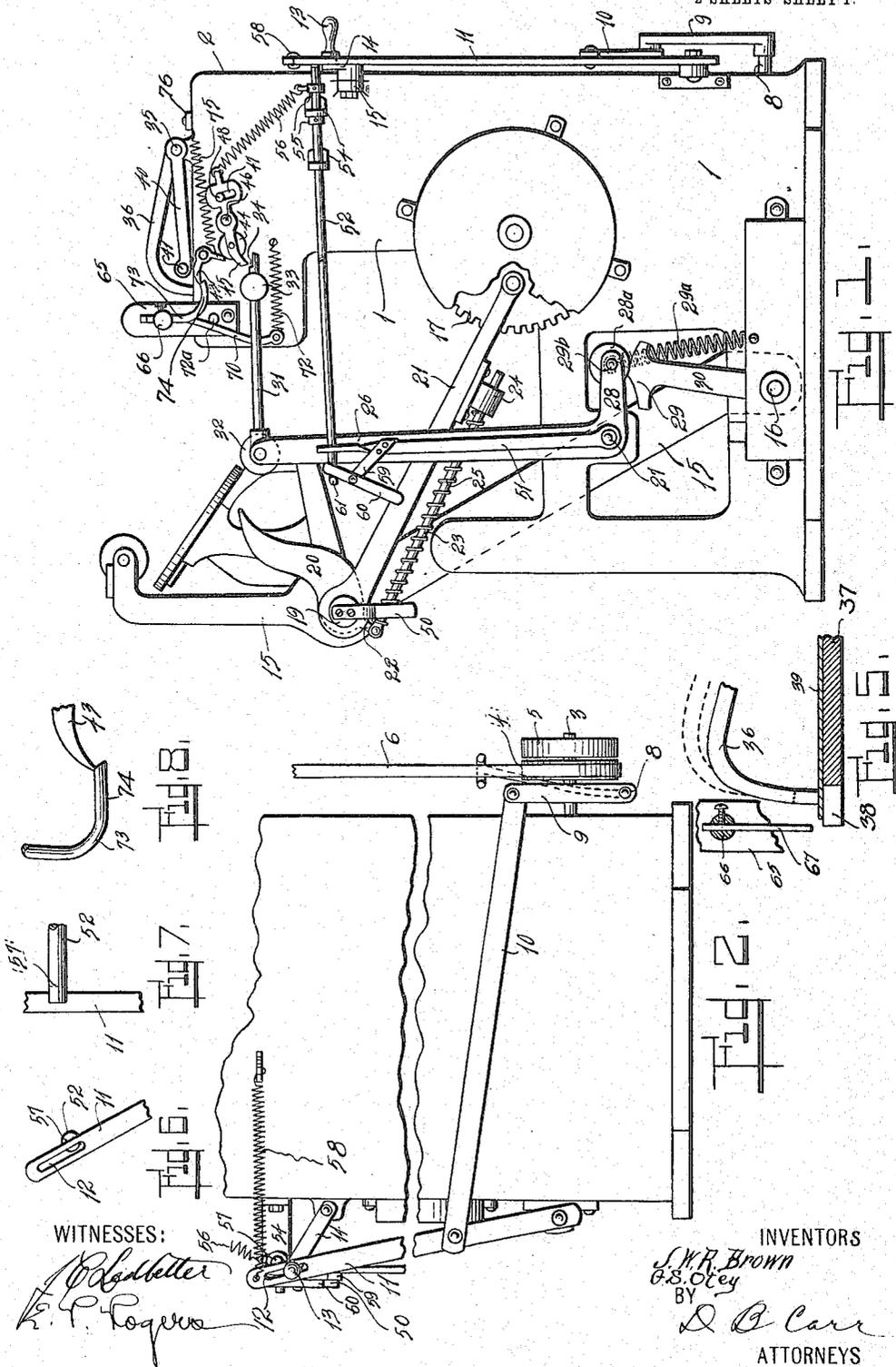


J. W. R. BROWN & G. S. OTEY.
 AUTOMATIC STOP DEVICE FOR PRINTING PRESSES.
 APPLICATION FILED MAY 28, 1914.

1,129,844.

Patented Mar. 2, 1915.

2 SHEETS—SHEET 1.



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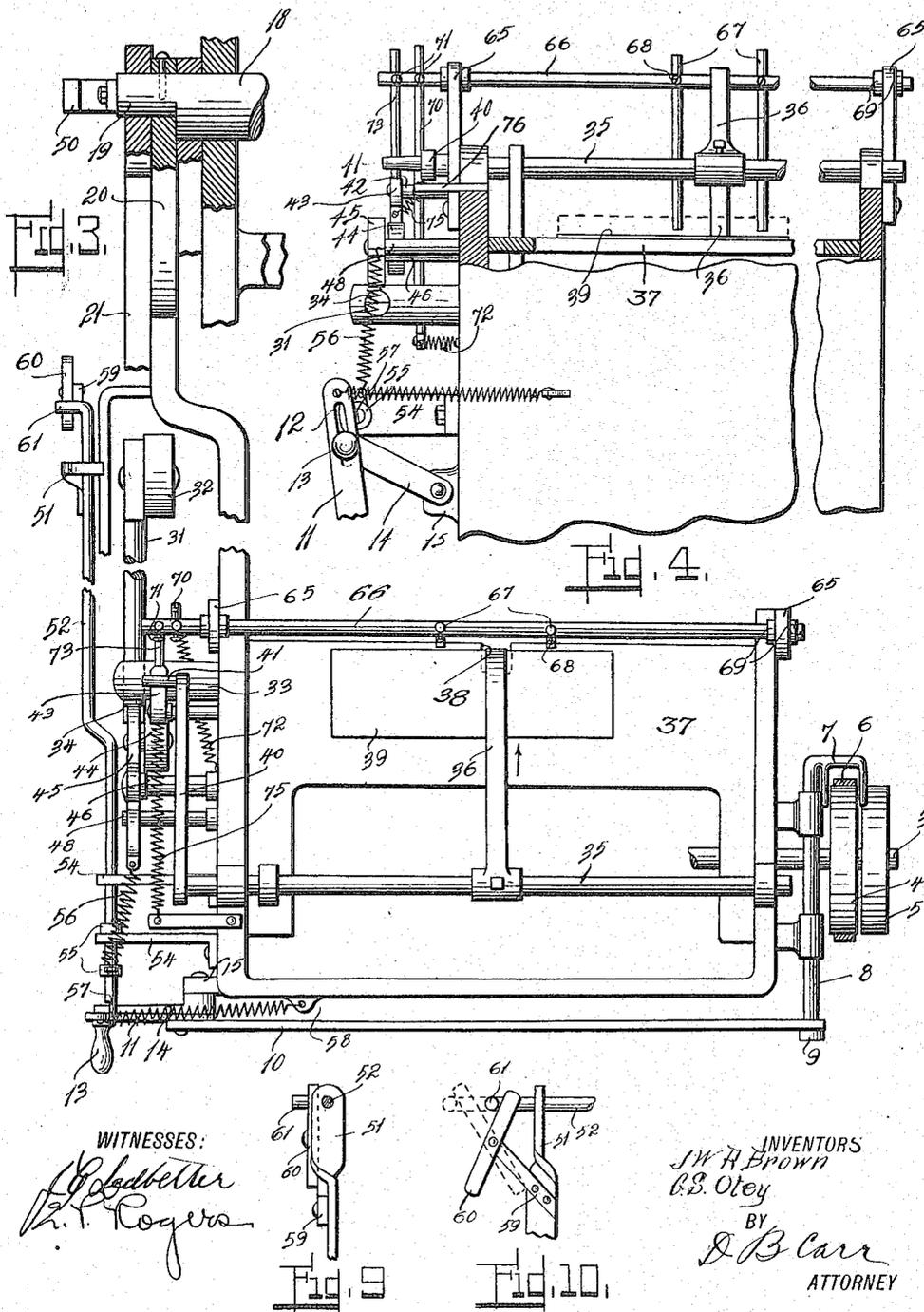
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UNITED STATES PATENT OFFICE.

JOHN WALTER R. BROWN AND GEORGE S. OTEY, OF DALLAS, TEXAS.

AUTOMATIC STOP DEVICE FOR PRINTING-PRESSES.

1,129,844.

Specification of Letters Patent.

Patented Mar. 2, 1915.

Application filed May 28, 1914. Serial No. 841,673.

To all whom it may concern:

Be it known that we, JOHN WALTER R. BROWN and GEORGE S. OTEY, citizens of the United States of America, residing at 4322 McKenney avenue and 3119 Bowser avenue, Dallas, Texas, respectively, have invented certain new and useful improvements in Automatic Stop Devices for Printing-Presses, of which the following is a specification.

This invention relates to new and useful improvements in safety devices for printing machines and has as its purpose that of providing an automatic stopping means for said press when the sheets to be printed cease to be fed to the type plate or when the sheet becomes crumpled, folded or otherwise unfit for printing.

An object of the invention is to provide a simple form of attachment which is adaptable to correlate with the press and perform the functions for which it is designed without becoming an innate operating element necessary for the printing or operating of the machine.

The present invention is adapted to correlate with the well known form of power driven press and in this particular instance one which uses a form of belt drive.

In the printing presses referred to a belt shifting lever which is originally provided on the machine is adapted, by manual power, to shift the belt from a fixed to a loose pulley thereby stopping the machine, this necessitates the close attention of an operator in that the machine referred to has no means of automatically stopping itself should the sheets begin to fold or crumple about the type plates. Such folding and crumpling as referred to does serious damage to some class of plates and type as the increased pressure through the crumpled or folded sheet mashes and distorts the soft metal type rendering it unfit for further use.

The present invention embodies a tension spring to actuate the belt shifting lever, when said lever is released by automatic means tripped through the agency of the crumpled or folded sheet. The machine referred to is also originally provided with an eccentric arm impression throw off device which is designed to throw back the impression and type plate only enough to prevent the type plate from coming in contact with the platen plate. The platen plate here referred to being the table support for the

sheet at the instant said sheet stops, on its way through machine, to receive the impression plate. It will here be understood that the action of the impression plate leaves an air space of approximately one quarter inch between the impression plate and the platen plate. At the same time the action of the eccentric arm impression throw off does not stop the machine.

This invention, besides providing means for stopping the machine when a crumpled sheet threatens the type plate, also provides means for stopping the machine when all the sheets to be printed have been run. With this last action of the press described and made possible by my invention it is seen how it is possible for the attendant to turn his attention to other matters, returning to the machine only when said machine is stopped through the action of either of the elements herein described.

With the foregoing as necessary and explanatory to the proper comprehension of the invention and with these and various other objects in view the invention has relation to a certain construction and combination of parts and correlation with a printing press; an example of which is described in the following specification, illustrated in the accompanying drawings and pointed out in the appended claims.

Figure 1 is a side elevation of a belt driven printing press with which my invention is adapted to correlate. Fig. 2 is a partial front view of the machine showing the manner of adapting the belt shift lever to the spring actuated. Fig. 3 is a partial plan view of the device, some parts of the printing machine shown correlated therewith. Fig. 4 is a view in front elevation of Fig. 3. Fig. 5 is a view in side elevation of a certain weight arm correlated with the invention. Fig. 6 is a partial view of the belt shifting lever showing the release trigger rod in position therewith. Fig. 7 is a front view of Fig. 6. Fig. 8 is a side view of a certain trigger rod release arm. Figs. 9 and 10 are respectively views in front and side elevation of a certain lever and release rod embodied in the invention.

A general description of the press with which the invention is correlated will be given, after which the invention as an attachment, will be thoroughly described and set forth.

Referring now more in particular to the

drawings, Figs. 1 and 2, wherein like reference characters designate the same parts throughout, the numeral 1 designates one of the side frame members of the press, numeral 2 designates the front wall or face of the press frame. This frame contains and houses the minute working mechanism of the printing elements and devices which have no associated connection whatever with the invention, hence they are not illustrated or described.

Referring to Figs. 2 and 3, 3 designates the power shaft of the press, said shaft is journaled in the side wall and has a driving agency over the press. A fixed pulley 4 is carried by the shaft; journaled adjacent to the fixed pulley is a loose pulley 5. A belt 6 is provided and adapted to drive the press through the pulley. A forked belt shift arm 7 is integral with a rock shaft 8. The forward extremity of the rock shaft carries fixed thereto a vertical actuating arm 9, said arm having a pivoted connection with a reach arm 10 which is connected with a substantially vertical hand lever 11 pivoted at its lower extremity to the frame of the machine. The upper extremity of the hand lever is provided with a slot 12 in which is slidably retained a handle 13, said handle being provided with an arm 14 pivoted to an ear 15 integral with the side of the frame. The elements just described are provided for shifting the belt from the fixed to the loose pulley. It is seen how the belt is shifted and the machine stopped by giving the handle 13 a right hand swing about the pivoted point of the arm 14.

The machine, Fig. 1 is provided with the usual oscillating printing carriage 15 which carries the type or impression plate, ink disk, fountain roller and many other of the necessary mechanical elements embodied in the printing press but not here in any manner associated with the invention. The carriage is pivoted to the frame or base as indicated by the numeral 16. A gear 17 is journaled in a housing on the wall 1 and is driven from the internal mechanism driven from the power shaft 3. The printing carriage is provided with the usual eccentric shaft 18, Fig. 3, which is adapted, as mentioned in an introductory paragraph to this specification, to subject the printing carriage or impression plate to a slight rearward thrust when the sheets run out. A description will now be given of the eccentric device and some of its correlated parts. Fig. 3 is a partial sectional view, the printing carriage being shown in section and many of its elements being omitted for clearness. The shaft 18 is carried by the carriage 15 and has formed on its extremity an eccentric 19. An eccentric arm 20 is fixed to the eccentric 17. A connecting crank arm 21 establishes a movable relation between

the gear 17 and eccentric 19. It is now seen how the gear 17 is adapted to oscillate the printing carriage about the pivotal point 16, the action being imparted to the carriage from the crank arm 21 to the shaft 18. Said shaft is journaled in the printing carriage but undergoes only a part of the revolution, and that only when the sheets cease to feed to the platen plate which action brings into play the impression throw off; which impression throw off is here equipped with the invention and adapted to stop the machine. As the eccentric arm 20 is fixed to the shaft, it is seen how a rearward or counter-clockwise thrust on the extremity of the eccentric arm will cause the shaft to undergo a rotary motion in the printing carriage. This rotary motion has the axis of its motion in the center of the shaft 18; while the eccentric 19 has its axis of rotation somewhat off center of the shaft 18, this causes a slight rearward movement of the printing carriage when the eccentric arm travels rearward. The eccentric arm 20 is provided with a depending ear 22 which pivotally connects to a thrust rod 23 which has its free extremity slidably retained in a bracket 24. A compression spring 25 is confined between the bracket 24 and the ear 22. The compression spring adapts the eccentric arm 20 to be kept in a normal forward limited position such as is shown, this also keeps the printing carriage in a normal forward printing position.

A throw off arm 26, adapted to actuate the eccentric arm, is provided; said arm is pivoted at its lower extremity as designated by 27. A lateral arm 28, integral with the arm 26, carries a roller 28^a and is adapted to be actuated about the center 27, by a cam 29. A tension spring 29^a is fixed to the roller pin 29^b and to the base of the machine, the pull of the said spring being sufficient to keep the roller in contact with the cam face. The cam 29 is carried by a rocker arm 30 which is pivoted upon the shaft 16 and undergoes an oscillating motion synchronous with that of the printing carriage. The upper extremity of the arm 26 pivotally carries the extremity of a horizontal throw rod 31 provided with a roller 32. A guide 33 projecting horizontally from the side wall 1 slidably retains the rod 31. The said rod is provided with a shouldered portion 34.

A horizontal rock shaft 35 is journaled in projecting ears between the side walls of the press. A weight arm 36 is fixed to the rock shaft and extends forward and bends downward, positioning its lower extremity adjacent to the sheet table 37, said table being adapted to receive the blank sheets as it takes its course through the machine. An opening 38 is formed in the table and just beneath the end of the arm 36. As seen, Fig. 5, the opening has an area slightly

larger than the exposed area of the end of the arm. Upon every cycle of the operation or upon every forward oscillation of the printing carriage a blank sheet passes in its course of travel over the table 37. This direction of course of progress is indicated by the arrows in Fig. 3. Here its forward progress is momentarily arrested while the sheet just ahead is on the platen plate and receiving the impression. As the blank sheet comes to rest the weight arm 36 is released from its poised position and drops upon the sheet, momentarily resting there. Instantly the arm raises again and the sheet passes on while another enters under the arm receiving and supporting its weight above the opening as it comes down to rest. See Fig. 5 for an illustration of the foregoing. The arm 36 is shown raised in the dotted position while its resting position is supported only by the thin sheet of blank paper 39. The rock shaft 35 is subjected to a slight rotary motion, by elements herein not mentioned as they have no connection with the invention, which subjects the down turned portion of the arm to a slight vertical reciprocating action, as seen in Fig. 5. Upon one extremity of the rock shaft is fixed a horizontal reach arm 40 which has pivoted on its free end a trip pin 41. A pin 42 projecting from the side wall of the press pivotally carries a trip dog 43. One arm of the trip dog lies horizontally beneath the trip pin 41 while the other is disposed substantially vertically downward, the lower extremity of which lies in contact with a roller 44, carried by dog 45 which is pivoted at 46 to the press. The dog is provided with a slot 47, through which a pin 48 is introduced and fixed to the wall 1, said pin being adapted to limit the pivotal action of the dog.

A description of the elements of the press with which the invention is adapted to correlate has now been given. In the operation of the press it will be understood that the arm 26 will oscillate back and forth, with the printing carriage, which causes the rod 31 to reciprocate in the guide way 33. The dog 45 is normally balanced upon its pivot 46. The weight of the horizontal arm of the trip dog keeps the lower extremity contiguous with the roller 44. Should the blank sheets cease to pass through the machine there would be nothing to support the extremity of the weight member 36 above the opening 38. The arm would immediately drop in the opening downwardly displacing the trip pin 41 against the trip dog which would overbalance the dog causing same to be projected in the path of the shoulder 34 of the reciprocating rod 31. This action would immediately bring the arm 26 to a standstill in a vertical position against the tension of the spring 29^a. The printing

carriage however will continue to oscillate. As the printing carriage goes forward on the next impression the roller 32, by virtue of its stationary position, will impinge the face of the eccentric arm 20 throwing it back against the pressure of the spring 25. This causes the shaft 18 and eccentric 19 to undergo a partial rotary motion which throws or thrusts back each time the carriage 20 goes forward, thereby preventing the impression of the type plate upon the platen plate. The machine continues in operation however as there is nothing yet described which will shift the belt and stop the press. To this end the invention, a description of which follows, is designed and correlated with the foregoing press.

Fixed to the exposed end of the eccentric 19 is a depending outturned thrust arm 50. A vertical guide bracket 51 is fixed to the pivoted bolt 27 of the arm 26 but is mounted thereon in a positive immovable relation to all parts. The upper extremity of this guide bracket is provided with an aperture adapted to slidably receive a release rod 52; said rod occupies a substantially horizontal position on the side of the printing press, and is provided with an outturned finger 61. A pair of guide brackets 54, fixed to the press frame and slidably carrying the release rod member, are provided. A pair of collars 55 are fixed to the release rod, one lying contiguous with the rear face of the forward guide bracket while the other is fixed to the rod forward of the front guide. A tension spring 56 is fixed to the forward collar and to the forward end of the dog 45. The forward extremity of the release rod is shouldered in the form of a trigger 57 and adapted to lie in contact with the face of the lever 11. A tension actuating spring 58 has one extremity fixed to the upper end of the lever 11 and the other end fixed to the frame wall. The tension exerted by the spring is sufficient to perform the duty of belt shifting as ordinarily done by hand. A bracket 59 is fixed to the upper extremity of the guide bracket 51 and has pivoted thereon a lever 60. The upper extremity of the lever 60 lies forward of an outturned finger 61 of the release rod and contiguous to said finger. The arrangement of parts just described is such that the thrust arm 50 and lever 60 are in true alinement with respect to the path of travel of the thrust arm.

A description has been given of the impression throw off of the printing carriage. The partial anti-clockwise rotation of the eccentric 19; due to the rearward thrust of the eccentric hook 20 by virtue of its upper extremity being brought in contact with the stationary roller 32, said roller 32 remaining stationary or rigid by virtue of the dog 45 impinging the shoulder 34 of the throw off

rod; is utilized to trip the release rod 52 from the lever 11, thereby subjecting said lever to the direct pull of the actuating spring 58 which instantly shifts the belt to the loose pulley stopping the machine. Fig. 1 illustrates the thrust bracket 50 to be some distance from the lever 60. This is true as long as the printing carriage and arm 26 are oscillating in synchronism. Immediately upon the fall of the weight arm 36 through the opening 38, through the absence of the sheet to be printed, the several elements which control the impression throw off become active and effect, as described, the eccentric shaft. It is seen how the lower extremity of the thrust arm 50 will change position by being moved forward toward the lever 60 when the eccentric shaft is oscillated. This action upon the next forward movement of the printing carriage, immediately throws the upper end of the lever 60 rearward against the finger 61 thereby releasing the belt shift lever stopping the machine when the impression throw off is brought into play. The machine was stopped indirectly by virtue of the dog 45 being down. To reset the machine and start the printing press again to work it is only necessary for the attendant to pull back the lever 11, pull back the release rod and adjust the trigger 57 against the side of the lever 11. When this is done the spring 56 tightens thereby lifting the dog 45 from its restrictive control over the throw off arm.

The foregoing attachment and device constitutes means for stopping the machine when said machine ceases to feed. Additional elements of the invention will be presented for exercising the same control over the stopping device as the combination just shown, when the blank sheets become folded, crumpled or in a condition which would threaten the type plate should the press continue to run.

With particular reference to Figs. 3 and 4, a pair of vertical brackets 65 are fixed to the side walls of the machine. A horizontal rock shaft 66, substantially light in weight, is journaled in the brackets 65. Said rock shaft is located in proximity to the downturn portion of the arm 36. A pair of depending trip fingers 67 are carried by the rock shaft, one being, in this instance arranged on either side of the weight arm 36. Screws 68 are threaded into the rock shaft and adapted to hold the trip rods 68 in proper position. Said trip fingers will have their lower extremities closely adjusted to the table 37. The adjustment will be such that the blank sheet may pass unrestricted between the trip finger extremity and the table. A pair of collars 69, one disposed on either side of the bracket 65, are fixed to the rock shaft and adapted to restrict said shaft from a lateral displacement.

A depending pull arm 70 is carried by the outer extremity of the rock shaft, being adjustably retained therein by a screw 71. The lower end of said pull arm has one extremity of a light tension spring 72 fixed thereto while the other extremity of the spring is fixed to the side wall. A pin 72^a is fixed to the bracket and adapted to limit the pull arm 70 against the tension of the spring 72. A release arm 73 is similarly carried and adjusted in the extremity of the shaft, said release arm has its lower extremity 74 turned forward and beveled in the form of a trigger, Fig. 8, and delicately adjusted beneath and contiguous to the horizontal arm of the trip dog 43. A light tension spring 75 is fixed to a bracket 76 and adapted to keep the trip dog in close contact with the roller 44 and release arm 73.

The device just developed will in no way affect the stopping mechanism, related to the absence of the blank sheet, a description of which has been given, this being evident as the trip pin 41 may drop upon the dog arm 43 displacing same downward with sufficient force to throw the release arm 73 rearward and out of action. The elements just developed however are designed as a supplement to the release rod 52 and adapted to act upon the release rod when a crumpled or folded sheet starts to leave the table 37. The elements just described are preferably light in weight and carefully and delicately adjusted. In Fig. 5 the blank sheet is seen to have an unrestricted passage under the trip arm so long as it remains straight and in condition to pass to the platen plate. The dotted lines contiguous to the trip fingers represent the blank sheet as received upon the table folded, crumpled or in otherwise one of the numerous bad conditions unfit to be passed to the platen plate. As the weight arm 36 rises and the sheet attempts to pass onward its crumpled edges or folded sides will immediately impinge one or both the trip fingers thrusting them rearward. This will cause a clockwise partial rotation of the shaft 66, which action causes the release arm to be jerked from the trip dog. The spring 75 now has an unrestricted pull upon the trip dog. The lower extremity of the trip ratchet now travels over the face of the roller 44 forcing the dog 45 into the path of the shoulder 34. It is seen that the spring 75 in this last action is substituted for the action of the trip pin 41 in the first action.

A description of the movement of the device has been given from the moment the dog went into position till the belt was shifted to the loose pulley, hence the necessity of only tracing the movements of the supplemental device from the crumpled blank sheet to the dog.

The invention is presented as including

all such modifications and changes as may properly come within the scope of the following claims.

Claims—

- 5 1. In an automatic stop for a printing press, a belt shift lever, a tension spring attached to said lever, a release rod correlated with said lever, an eccentric shaft, a thrust arm fixed to the eccentric shaft, a lever
10 alined with the thrust arm and correlated with the release rod, an impression throw off dog, and a spring correlated with the release rod and impression throw off dog.
- 15 2. In an automatic stop for a printing press, a spring actuated belt shift lever, a plurality of guide members fixed to the wall of the press, a release rod confined in the guides, a trigger formed on the release rod,
20 collars fixed to the release rod, a finger formed on the extremity of the release rod, an impression throw off dog, a spring attached to one collar and associated with the impression throw off dog, a bracket fixed to
25 one of the guides, a lever pivoted to the bracket, an eccentric shaft, a thrust arm fixed to the eccentric shaft and correlating with the lever.
- 30 3. In an automatic stop for a printing press, a belt shift lever, a rock shaft, trip fingers carried by the rock shaft, a pull arm correlated with the rock shaft, a release arm correlated with the rock shaft, a dog correlated with the release arm, an impression
35 throw off dog correlated with the first dog mentioned, a spring attached to the pull arm and means for actuating the belt shift lever.
- 40 4. In an automatic stop for a printing press, a rock shaft, trip fingers carried by the rock shaft, a pull arm correlated with the rock shaft, a release arm correlated with the rock shaft, an impression throw off dog, a spring attached to the pull arm,
45 a spring fixed to the belt shift lever, a release rod correlated with the belt shift lever and means, adapted through the impression throw off dog, for actuating the release rod.
- 50 5. In an automatic stop for a printing press, a rock shaft, trip fingers carried by the rock shaft, a pull arm correlated with the rock shaft, a release arm correlated with the rock shaft, an impression throw off dog, a spring attached to the pull arm, a spring
55 fixed to the frame of the press, a release rod confined in the guide members, a finger formed on the one extremity of the release rod and means correlated with the finger of the release rod for actuating said release
60 rod.
6. In an automatic stop for printing presses, a rock shaft, trip fingers carried by the rock shaft, a pull arm correlated with the rock shaft, a release arm correlated with the rock shaft, an impression throw off dog, a spring attached to the pull arm, a spring fixed to the belt shift lever, guide members, a finger formed on the one extremity of the release rod, a lever pivoted to one of the guides, an eccentric shaft, and a thrust arm fixed to the eccentric shaft.
7. In an automatic stop for printing presses, a rock shaft, trip fingers carried by the rock shaft, a pull arm correlated with the rock shaft, a release arm correlated with the rock shaft, an impression throw off dog, a spring attached to the pull arm, a spring fixed to the belt shift lever, guide members, a release rod confined in the guide members, a finger formed on the one extremity of the release rod, a lever pivoted to one of the guides, an eccentric shaft, and a thrust arm fixed to the eccentric shaft.
8. In an automatic stop for printing presses, a rock shaft, trip fingers carried by the rock shaft, a pull arm correlated with the rock shaft, a release arm correlated with the rock shaft, an impression throw off dog, a spring attached to the pull arm, a spring fixed to the belt shift lever, guide members fixed to the frame of the press, a release rod confined in the guide member, a finger formed on the one extremity of the release rod, a lever pivoted to one of the guides, collars fixed to the release rod, an impression throw off dog, a spring connection between one of the collars and the impression throw off dog, and a thrust arm adapted to actuate the release rod.
9. In an automatic stop for a printing press means for actuating the belt shift lever when the sheets are clogged or rendered unfit for printing in combination with means for actuating the belt shift lever when the sheets cease to feed.
10. In an automatic stop for a printing press, a spring actuated belt shift lever, a release rod, one extremity of the release rod shouldered in the form of a trigger and adapted to lie contiguous with the said shift lever, an out-turned finger formed on the other extremity of the release rod, trip fingers and means correlated with the trip fingers to thrust the out-turned finger when a single sheet of paper interferes with or impinges the trip fingers.

In testimony whereof, we affix our signatures in the presence of two witnesses.

JOHN WALTER R. BROWN.
GEORGE S. OTEY.

Witnesses:

J. D. FOURAKER,
J. C. LEDBETTER.