G. A. FRIESS.

CYLINDER ADJUSTING MECHANISM FOR PRINTING PRESSES.

APPLICATION FILED APR. 4, 1916.

1,330,793. Patented Feb. 17, 1920.

2 SHEETS—SHEET 1.

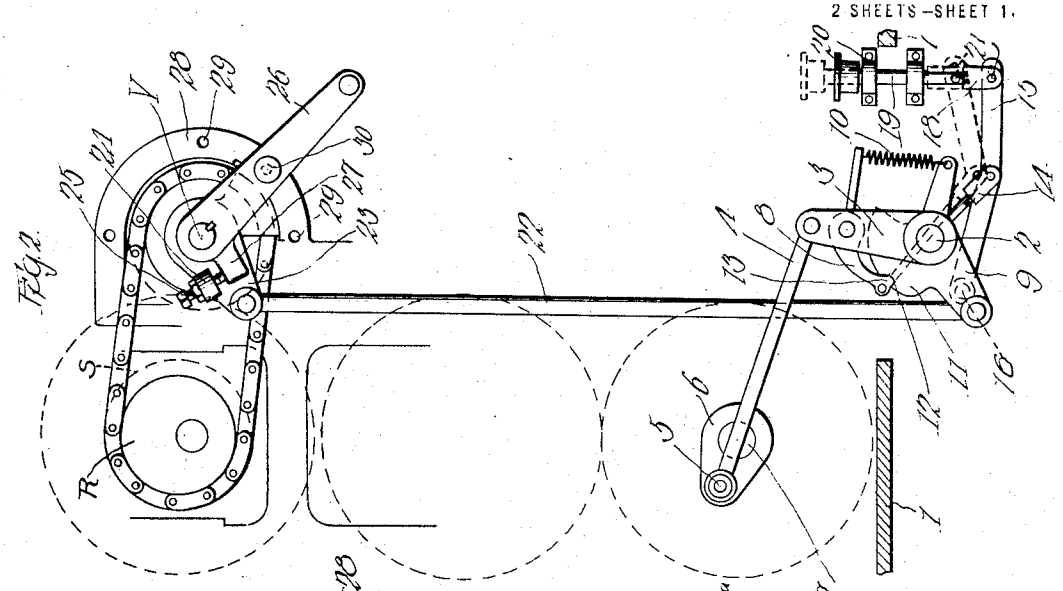

Fig. 2.

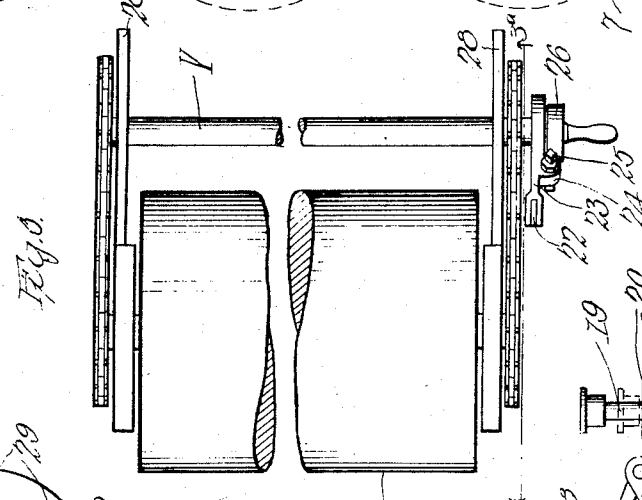

Fig. 3.

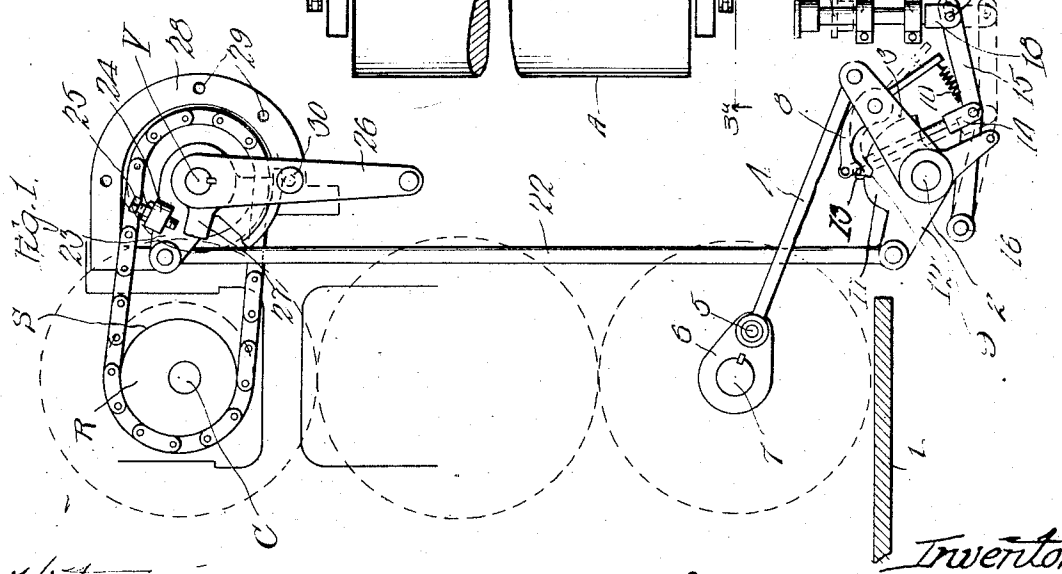

Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 3a.

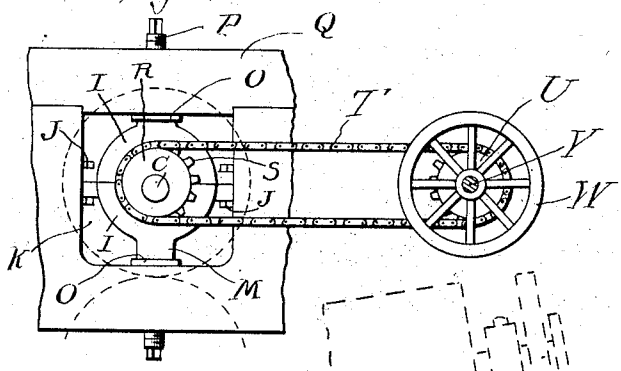


Fig. 3b.

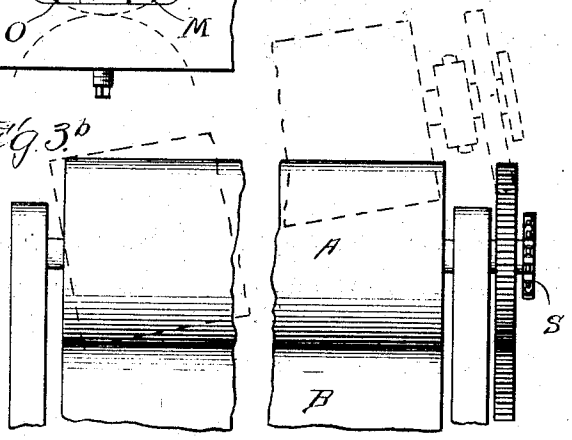


Fig. 4.

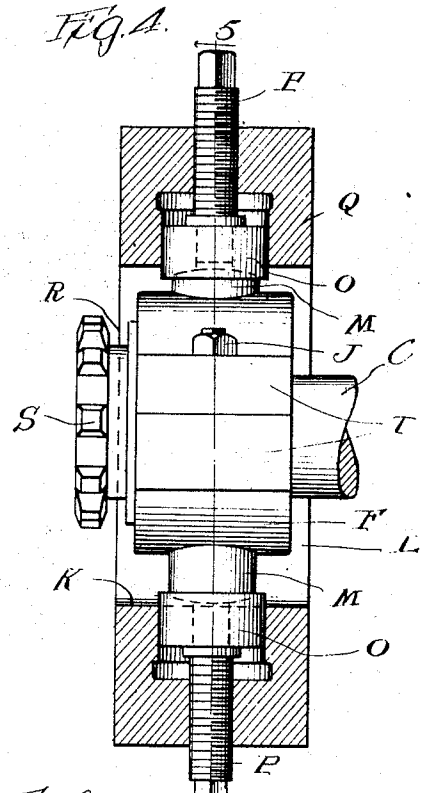


Fig. 5.

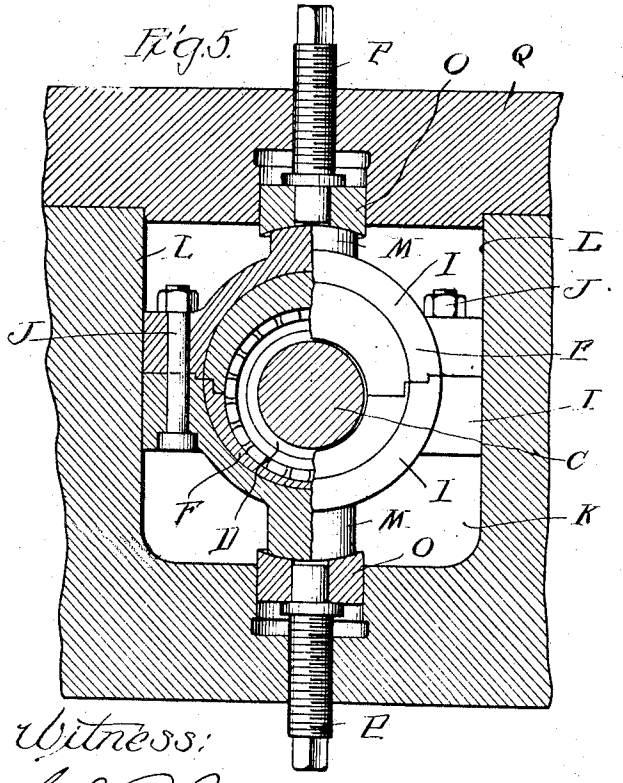
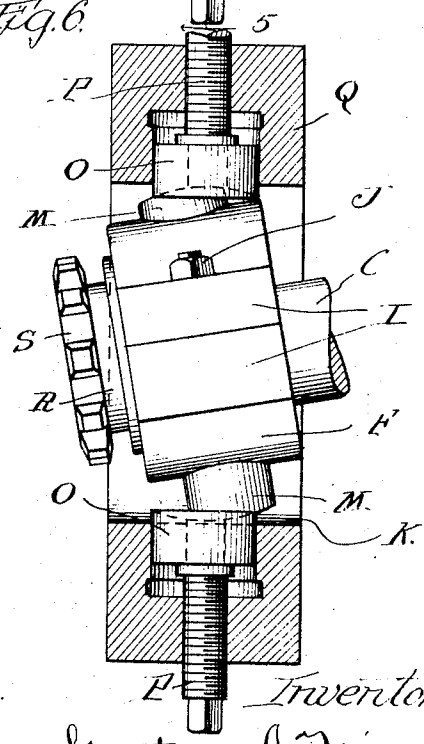


Fig. 6.



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UNITED STATES PATENT OFFICE.

GUSTAV A. FRIESS, OF CHICAGO, ILLINOIS.

CYLINDER-ADJUSTING MECHANISM FOR PRINTING-PRESSES.

1,330,793. Specification of Letters Patent. Patented Feb. 17, 1920.

Application filed April 4, 1916. Serial No. 88, 833.

To all whom it may concern:

Be it known that I, GUSTAV A. FRIESS, subject of the Emperor of Germany, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Cylinder-Adjusting Mechanism for Printing-Presses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has for its object to provide certain new and useful improvements in cylinder printing presses, and has for its more particular objects to provide means whereby the press-feeder may have full control of the printing elements of the press for throwing the same out of relative operative positions to print sheets in the event that said sheet-feeder shall fail to feed a sheet to be printed at the proper interval or intervals.

Second, to provide in a printing press power-actuated mechanism for effecting separation of the printing elements to maintain the opposed faces thereof out of contact with each other in the absence of a sheet to be printed being interposed therebetween, but which said mechanism is manually controlled.

Third, to provide manual control mechanism for the mechanism for separating the printing elements of the press which is very simple and efficient.

Fourth, to provide mechanism of the character defined including means for readily effecting adjustment for the normal relative positions of the printing elements which will not be affected by the separation of said elements for the purposes aforesaid.

The invention consists in the features of construction and combinations of parts hereinafter fully described and particularly claimed.

In the accompanying drawings illustrating a suitable embodiment of the invention:

Figure —1— is a fragmentary detail view in side elevation partly in section of mechanism for effecting separation of the printing elements of a printing press, the latter being indicated in dotted lines.

Fig. —2— is a view similar to Fig. —1— showing the mechanism in another position and the printing elements of the press separated.

Fig. —3— is a fragmentary detail plan view in side elevation showing one of the printing elements and part of the mechanism for effecting separation thereof from its companion element.

Fig. 3^a is a fragmentary view showing a modification of the means of adjusting the relative positions of the cylinders.

Fig. 3^b is a side elevation of the printing cylinder showing it in a tilted position is dotted lines.

Fig. —4— is a detail central vertical section through a portion of the printing press frame showing the mounting for the bearing of the trunnion of the printing cylinder of the press.

Fig. —5— is a detail vertical transverse section on the line —5— of Fig. —4— partly in elevation.

Fig. —6— is a view similar to Fig. 4, showing the bearing for one end of the cylinder in the position which it occupies when the cylinder is tilted as shown in dotted lines in Fig. 3^b.

In the drawings I have illustrated a printing press in which a printing cylinder A and tympan cylinder B are employed, it being understood, of course, that the invention is also applicable to printing presses in which a reciprocating type or plate-carrying element is employed in conjunction with a tympan cylinder, the object of the mechanism being, as aforesaid, to effect separation of the type or plate-carrying element and the tympan element of the press to prevent contact of the opposed surfaces thereof in the absence of an interposed sheet to be printed.

By reference to Figs. —4— and —5— it will be noted that the trunnion C of the cylinder A is journaled in a bearing consisting of the concentric sleeve D equipped with run-ways for balls and the split sleeve F composed of two separable parts. The sleeve D is mounted on the trunnion C and is held against longitudinal movement thereon by any suitable means. The opening in the split sleeve F is annularly grooved to receive the sleeve D, and is eccentric on its outer circumferential face. The split sleeve is housed in a bearing comprising the separable members I secured together by means

of the bolts J. Said bearing I is provided with edge-flanges for preventing longitudinal movement of the sleeve E therein. The said bearing I is housed in a recess K in a portion of the press frame which is provided with parallel side walls L, by which the ends of the flanges of the separable members I, through which the bolts J pass, are confined. The bearing I is provided at diametrically opposite points with projections M which engage blocks O disposed in recesses N in the bottom wall and cover member Q respectively, of the recess K, which are adjustable to raise and lower the bearing I by means of the set-screws P mounted in the cover member Q and bottom wall of the recess K respectively.

The split-sleeve F is rotatable in the bearing I for the purpose of raising and lowering the cylinder A while the latter is being rotated during continued operation of the press, and to this end said split sleeve F of the bearing shown and the companion bearing for the other end or trunnion of said cylinder A are equipped with annular flanges R to which sprocket wheels S are rigidly secured in any suitable manner. It will be obvious that by rotating said sprockets S through an arc of one hundred eighty degrees, or less, the trunnions of the cylinder will be raised relatively to the axis of the bearing I and thus separation of the cylinders A and B will be effected. The said sprocket wheels S are geared by means of the sprocket chains T with the sprockets U on a shaft V extending parallel with the axis of rotation of the cylinder A at a distance from the latter. This shaft V is equipped with a manually operable member for rocking the same to effect raising and lowering of the cylinder A, but as I will now specifically describe, the press is provided with mechanism for effecting operation of the shaft V by the power actuating the press, said mechanism being shown in Figs. —1—, —2— and —3—, in which, 1 indicates the floor upon which the press is mounted. The press frame is equipped with a stud 2 on which an arm 3 is rotatably mounted. The latter is connected at its free end by means of the connecting rod 4 with the crank pin 5 of a crank 6 on the drive-shaft 7 of the press. Pivotally mounted between its ends on said arm 3 between the ends of the latter is a dog 8. Pivotally mounted on the stud 2 is a bell-crank lever 9, one arm of which is connected by means of a helical tension spring 10 with one end of the dog 8. Said bell-crank lever carries a segmental projection 11 which is provided with a recess 12 in the edge thereof which edge is concentric with the axis of the stud 2, and the other end of the dog 8 is provided with a projection 13 adapted to engage in said recess 12. The said last-named end of the dog 8 is connected by means of a connecting rod 14 with a lever 15 between the ends of the latter. The said lever 15 is pivotally engaged at one end with the frame of the press, or other support rigid with said frame, as indicated at 16. The other end of said lever 15 is provided with a longitudinal slot 17 and is received in the forked end 18 of a vertically reciprocable plunger 19 vertically movable in suitable bearings 20 mounted to be rigid with respect to the frame of the press. The floor 1 is provided with an opening through which the mechanism aforesaid projects, though said mechanism may, if required, be disposed above the floor 1, as will be obvious. A pin 21 passes through the said forked end 18 of said plunger and through said slot 17 in said lever 15.

The other arm of the bell-crank lever 9 is pivotally connected with the lower end of a connecting rod 22, which at its other end is pivotally connected with the crank pin of a crank arm 23, on the shaft V, said crank arm being free to rock relatively to said shaft, and being equipped with a lateral projection 24 in which a set-screw 25 is mounted. On said shaft V is a crank arm 26, rigid therewith, by means of which the shaft V may be rocked to rock the split sleeve F. Said crank arm 26 is provided with a projection 27 disposed in the path of the set-screw 25, so that as said crank 23 is rocked, said crank 26 will be engaged and rocked in an obvious manner. Mounted on the press-frame concentric with the shaft V is a member 28 provided with a series of perforations 29 in which a reciprocable latch member 30 on the crank arm 26 is adapted to engage for holding said crank arm 26 against rotation, said latch member being constructed to permit the same to be held out of engaging relation to the perforations 29 in the member 28 during the normal operation of the press, and being adapted to be manually thrown into engagement with the same when it is desired to maintain the cylinder A separated from the cylinder B continuously for a given period. The arm 26 remains normally positioned as shown in Fig. —1— by gravity and will automatically return to that position when the arm 23 returns to its normal position.

The spring 10 normally holds the dog 8 so that the projection 13 thereof is disposed out of engaging relation to the recess 12 and also serves to normally support the lever 15 and plunger 19 in the position indicated in full lines in Fig. —1—, and in dotted lines in Fig. —2— by the tension exerted on the connecting rod 14. By depressing the plunger 19, which is done by the foot of the press feeder, the dog will be turned on its pivot against the action of said spring 10 and will be thrown into position to engage in the recess 12 of the segmental projection 11 of the lever 9. As the arm 3 carrying

said dog 8 is being continuously rocked by its connection with the crank 6 of the drive shaft 7 the dog will, during the forward movement of the arm 3, engage in said recess 12, and thus cause the arm 9 to be rocked, thereby causing the crank-arm 23 to be rocked. During this rocking movement of the latter the set-screw 25 of the crank-arm 23 will engage the projection 27 of the arm 26 and thus rock the shaft V, and by means of the sprocket chain connection between the latter and the split ring F of the bearings for the trunnions of the cylinder A, the said split sleeves will be turned through an arc sufficient to effect a separation of the cylinders A and B to throw their opposed surfaces out of contacting relation with each other. Thus in the event that the press feeder shall miss feeding a sheet at the proper interval, a pressure of his foot on the head of the plunger 19 will automatically effect the separation of the cylinders A and B without, however, stopping the press. As the crank 6 makes its return stroke, however, the movements of the parts of the mechanism just described will be reversed and the cylinder A returned to its normal position to receive the next sheet to be printed, but will not print thereon until the pressure on the plunger 19 is released and the latter is returned to its normal position.

The plunger 19 is normally supported in the position shown in Fig. —1— by the spring 10 acting on the dog 8 and upon the link connecting the other end of the dog with the lever 15. The spring 10 acts to support the latter and thereby also supports the said plunger 19.

By means of the set-screws P the bearings for the trunnions of the cylinder A are properly positioned to relatively position the cylinder A with respect to the cylinder B, or any equivalent companion printing element, and such positioning or adjustment of said cylinder by means of said set-screws will not, as will be obvious, be in any manner affected by the separation of the cylinder A from the cylinder B, or other companion printing element, or by the removal and replacement of said cylinder in the press.

It will be understood, of course, that the axes of the split rings F must normally lie in the plane of the axes of the cylinders A and B in order that the pressure exerted in printing may not effect separation of said cylinders.

It will be obvious, also, that the main advantage derived from the eccentric mounting for the bearings of the cylinder trunnions is that the strain of the pressure on said cylinder during printing is transmitted directly to the press-frame, and that there is no interference with or change in adjustment due to the swinging of the cylinder on the axis of rotation of the sleeve F.

The invention is very simple and efficient, and while I have illustrated its preferred embodiment in the accompanying drawings, it will be understood, of course, that such construction is capable of modification and variation by persons skilled in the art without departing from the invention as defined in the appended claim.

I claim as my invention:—

In a power actuated printing press having coacting printing elements one of which is rotatable, bearings for the latter rotatable on an axis eccentric to the axis of rotation of said element, a rock-shaft geared to said bearings for rotating the same to effect separation of the printing elements, a pair of pivoted members, one thereof operatively connected with said rock-shaft for actuating the same, a connection between the other of said members and a rotatable element of the press for constantly rocking said member, a spring-held dog pivotally mounted on one of said pivoted members and adapted to engage the other thereof to actuate the same, and a manually operable lever connected with said dog for throwing the latter into engaging relation to the last-named pivoted member against the action of said spring.

In testimony whereof I have signed my name in presence of two subscribing witnesses.

GUSTAV A. FRIESS.

Witnesses:
M. M. Boyle,
G. M. Neville.