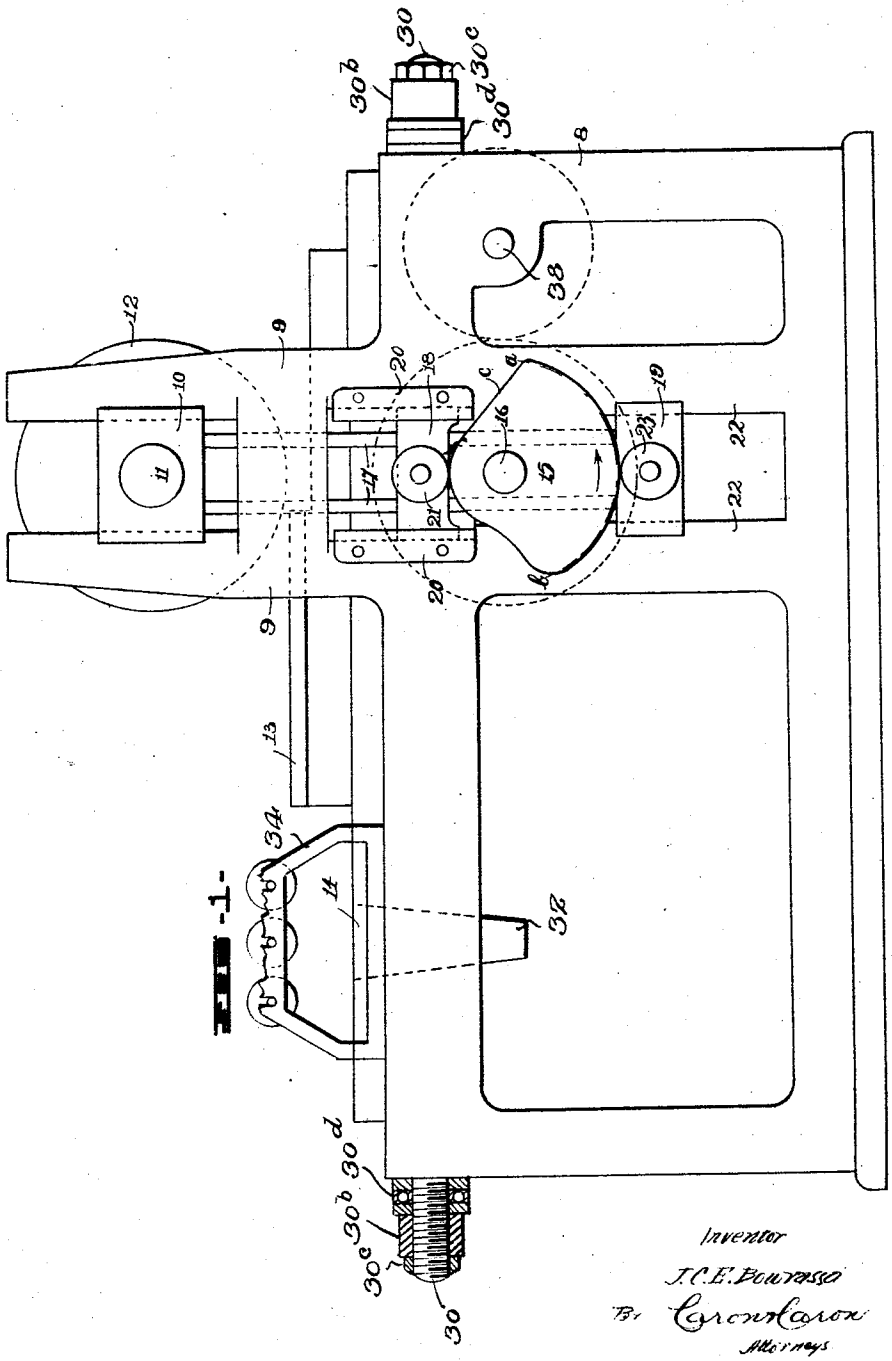
June 23, 1925. 1,543,493

J. C. E. BOURASSA

CYLINDER PRESS

Filed June 4, 1923 4 Sheets-Sheet 1



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CYLINDER PRESS

Filed June 4, 1923 4 Sheets-Sheet 2

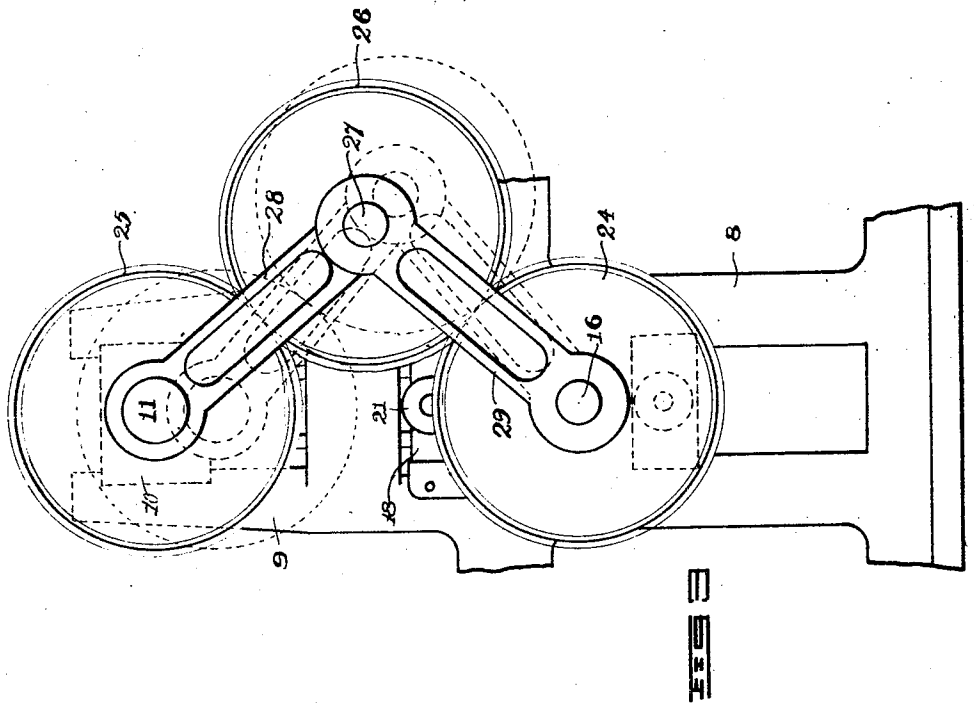


FIG 1

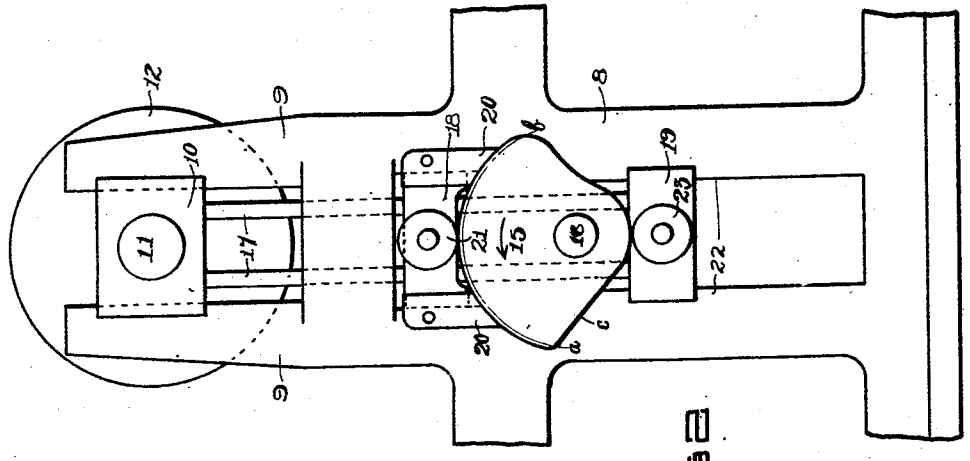


FIG 2

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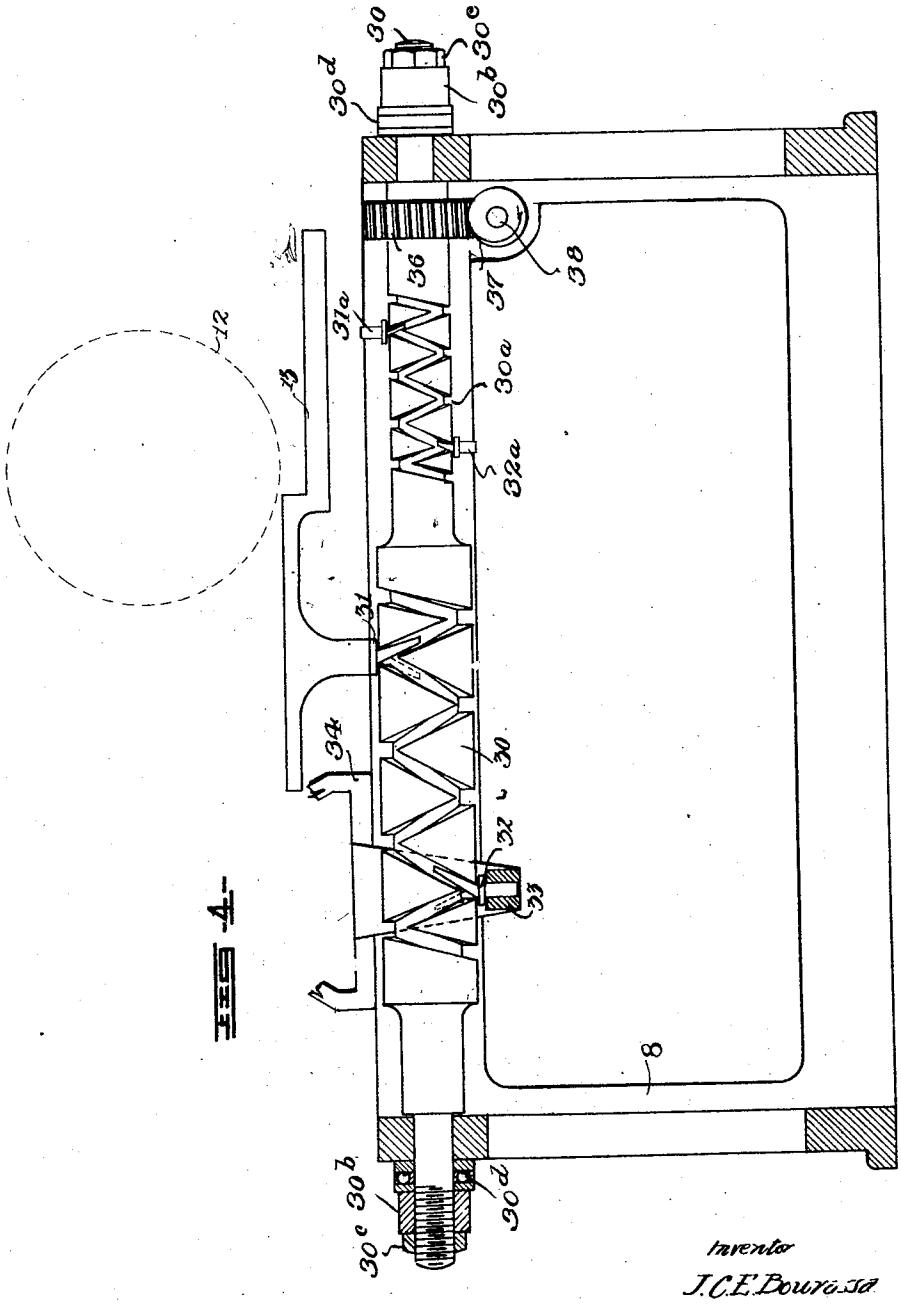


FIG 4.

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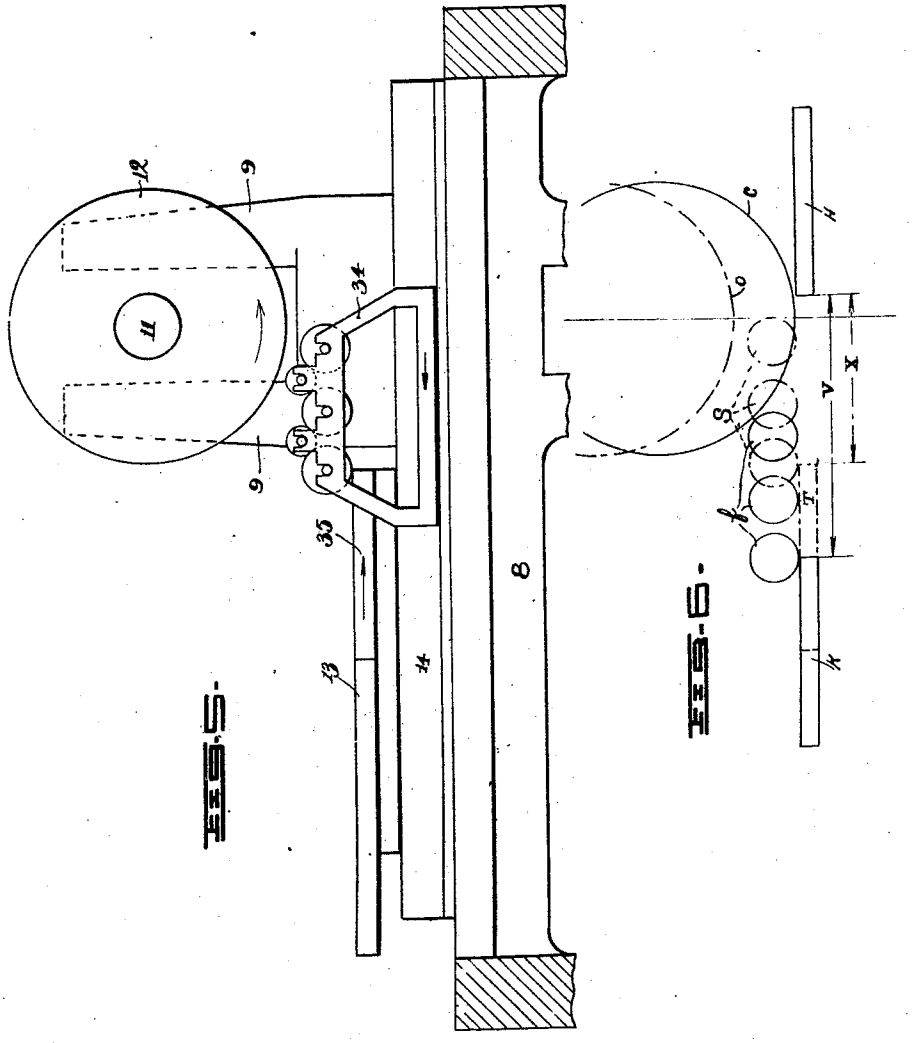


FIG. 5.

FIG. 6.

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UNITED STATES PATENT OFFICE.

JOSEPH CYRILLE EMILE BOURASSA, OF MONTREAL, QUEBEC, CANADA.

CYLINDER PRESS.

Application filed June 4, 1923. Serial No. 643,285.

To all whom it may concern:

Be it known that I, JOSEPH CYRILLE EMILE BOURASSA, a subject of the King of Great Britain, residing at Montreal, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Cylinder Presses, of which the following is a specification.

My invention relates to printing presses and more particularly to that type having a reciprocating bed, a rotating cylinder and movable ink distributing rollers, the main object being to provide a press capable of relatively high speed by reducing the kinetic energy of the bed, another object being to provide means whereby the cylinder is practically at rest when being fed.

A further object is to provide a press relatively lighter, smaller and more rigid for a given capacity.

I obtain these objects by reducing the travel of the bed on the reverse stroke in meeting the form by the advancement of the ink distributing rollers,—that is, reducing this part of the stroke which is used for inking purposes by advancing the rollers instead. This is most successfully performed by the use of my means for converting rotary motion into reciprocal motion as described in my application filed in the United States Patent Office on the 21st day of March, 1923, bearing Serial Number 626,621, which means are also employed in my copending application for patent for printing presses, Serial Number 643,286, filed June 4th, 1923.

To reduce the stroke of the bed, the ink distributing rollers must be advanced so as to practically cover the whole form immediately after the cylinder has covered it. This has heretofore been thought impossible as the cylinder was found to be in the way of the rollers. To obviate this drawback, I have provided means whereby the rollers are advanced to the desired point underneath the cylinder by lifting the latter out of the way.

In order to be more explicit, I hereafter describe one embodiment, as shown in the accompanying drawings, which represent as much of a reciprocating bed printing press as is necessary to illustrate my invention, and in which similar symbols of reference refer to corresponding parts throughout the different views:

Figure 1 is a conventional side elevation of a printing press, showing the cylinder lifting means.

Figure 2 is a side view of a portion of the printing press shown in Figure 1 with the cylinder in raised position.

Figure 3 is a corresponding view as shown in Figure 2 showing in addition the cylinder driving means.

Figure 4 is a longitudinal section of the press illustrating the bed and rollers actuating means.

Figure 5 is a view showing the position of the cylinder and the rollers during the inking operation, and

Figure 6 is a graphic representation of the relative strokes of the beds of two presses, one of which being constructed as per my invention.

Referring to the drawings, 8 is the frame having an upper structure formed of two vertical guides 9 intended to receive the bearing 10 for the shaft 11, supporting and actuating cylinder 12. This arrangement permits vertical movement of the cylinder 12. Numeral 13 indicates the bed, resting on rails, one of which is indicated by 14.

The cylinder lifting means comprise a cam 15 mounted on a shaft 16 which actuates the same and is substantially geared to the bed driving means described later on. Connected to the bearing 10 by two rods 17 are two blocks 18 and 19. Block 18, which is guided in vertical guides 20, is provided with a roller 21 which rests over the cam 15. The block 19 held between vertical members 22 of the frame 6 is provided with a roller 23 resting on the underside of the cam 15. It is easily seen that when the cam 15 is set in motion the cylinder will remain in lowered position while the portion *a—b* of the cam passes over roller 23 as in Figure 1 and remains in raised position while the portion *a—b* of the cam will pass under the roller 21, as shown in Figure 2. This whole arrangement is duplicated on the other side of the press.

The cylinder is driven from the cam shaft by means of three gear wheels, gear 24 being rigidly mounted on shaft 16 and gear 25 rigidly mounted on shaft 11. The third gear

26 is held in engagement with gears 24 and 25 on a stub shaft 27 held by radial arms 28 and 29 bearing at one end on shafts 11 and 16, respectively. This arrangement permits positive engagement of the cylinder with the cam shaft throughout its lifting and lowering movements.

The angle of lifting portion *c* of cam 15 is such that the cylinder will rise at the same velocity as that of the circumference of gear 24. This will cause the cylinder to cease rotating on its up motions. The sheet to be printed may be fed to the cylinder just as it reaches its upper position as it is then starting to rotate slowly.

Referring to Figure 4, the reciprocating means for the bed and the rollers comprise a threaded shaft 30. This shaft is supported in the ends of the frame and held therein by means of nuts 30^b and locknuts 30^c, the thrust being taken by antifriction bearings 30^d. The thread is continuous so that the rotation of the shaft will impart a reciprocating motion to the bed through shoe 31 mounted therein and to the ink distributing rollers through shoe 32, mounted in cross bar 33 integral with frames 34, as shown in Fig. 4. It will be seen that the shoes are placed in the thread at different angles so that the bed and the rollers will reciprocate in opposite directions as shown in Fig. 4. The means for rotating shaft 30 comprise a worm gear 36 thereon driven by a worm 37 mounted on a shaft 38 supported in the main frame as shown. The cylinder and its lifting means are driven by a gear on the cam shaft 16 and a gear on shaft 38 to which power is applied.

As shown in Fig. 4, the smaller end of shaft 30 has a thread 30^a. This thread is intended to actuate and keep in proper place, antifriction rollers, not shown, between the frame and the bed, and also between the frame and the inking rollers' carriage. The shoe 31^a drives the bed rollers and the shoe 32^a drives the carriage rollers.

In operation, referring to Figure 5, the bed is starting towards the cylinder and consequently the rollers are just starting in the opposite direction, making room for the cylinder which is starting in a downward direction. When the cylinder is in its lowered position, the form indicated by 35 will just come in contact with the cylinder while the rollers will travel over the distributing table and the printing will follow until the three named elements reach the positions shown in Figure 1, when the cylinder will start on its upward motion to free the form on the reverse motion of the bed while the rollers will pass over the distributing table, over the form, the three elements assuming their former position as in Figure 5.

An approximate figure of the bed travel saved with my invention may readily be seen by referring to Figure 6, which shows in comparison the travel of two beds, as follows: C represents the cylinder of an ordinary press, *f* its stationary rollers, H the bed before printing, and K the position after printing and inking. In a press as per my invention, the bed will be in the same position as H before printing; after printing the cylinder will rise to *o* but as the rollers will move forward to S, the bed will have to reach but to T in order to be properly inked. It is therefore evident that the distance between V and X is a saving in travel which when converted into speed will increase the output of the press by a large percentage. Should not speed be the requirement, this gain in space may be used for more elaborate ink distribution and therefore give superior print results.

I claim:—

1. In a press the combination of a reciprocating bed, reciprocating ink distributing rollers, and a cylinder, the said cylinder retracting from said bed to permit the said distributing rollers to pass thereunder while reciprocating over said bed.

2. In a press the combination of a reciprocating bed, a cylinder, and ink distributing rollers, means whereby the cylinder may be raised from said bed and means to reciprocate said distributing rollers over the said bed under the said cylinder.

3. In a press the combination of a reciprocating bed, a cylinder adapted to be lifted perpendicularly of said bed, and distributing rollers reciprocating over said bed underneath said cylinder when the said cylinder is in lifted position.

4. In a press the combination of a reciprocating bed, a cylinder and ink distributing rollers, means to lift said cylinder, means to rotate said cylinder and means to reciprocate said distributing rollers over said bed, the said rollers travelling under said cylinder when said cylinder is in lifted position.

5. In a press the combination of a reciprocating bed, a cylinder and distributing rollers, cam lifting means for said cylinder, reciprocating means for said rollers, said rollers travelling over said bed between said cylinder and said bed when the said cylinder is lifted.

6. In a press the combination of a reciprocating bed, a cylinder and ink distributing rollers, cam lifting means for said cylinder to permit said distributing rollers to reciprocate thereunder, and driving means dependent on said cam lifting means for controlling the rotation of said cylinder.

7. In a press the combination of a reciprocating bed, a cylinder and ink distributing rollers, the said cylinder adapted to be lifted from said bed to allow the said distributing rollers to travel thereunder, driving

means for said cylinder, said driving means arresting the rotation of said cylinder on its lifting motion.

8. In a press the combination of a reciprocating bed, a cylinder and ink distributing rollers, the said cylinder adapted to be lifted to allow the said distributing rollers to reciprocate thereunder, driving means comprising a gear mounted on the said cylinder, a driving gear and an intermediate gear and radial means to retain said intermediate gear in engagement with the said driving gear and the said gear on the cylinder.

9. In a press the combination of a reciprocating bed, a cylinder and ink distributing rollers, the said cylinder adapted to reciprocate perpendicularly of said bed, reciprocating means for said distributing rollers, said distributing rollers reciprocating under said cylinder when same is in a remote position from said bed, and driving means for said cylinder.

10. In a press the combination of a reciprocating bed, a cylinder and ink distributing rollers, means to reciprocate said rollers in opposite direction to said bed, cam means to hold the said cylinder in lowered position on the printing stroke of the bed and in a lifted position on the retracting stroke of the bed, allowing the said rollers to pass under said cylinder, means to rotate said cylinder, the said roller reciprocating means, cam means, and cylinder rotating means being dependent on the motion of the said bed.

11. In a printing press, the combination of a reciprocating bed, reciprocating ink distributing rollers, and a cylinder, said cylinder and bed being relatively movable to permit said distributing rollers to pass under said cylinder while traveling over said bed.

12. In a printing press, the combination of a movably mounted bed, movably mounted inking means, and a cylinder, said bed, said means, and said cylinder having relative movements with respect to each other whereby the extent of travel of the bed is reduced.

13. In a printing press, the combination of a movably mounted bed, movably mounted inking means, and a cylinder, said bed, said means, and said cylinder having relative movements with respect to each other whereby the extent of travel of the bed is reduced commensurate to the travel of said inking means.

In testimony whereof, I have affixed my signature hereto, in the presence of the two subscribing witnesses.

JOSEPH CYRILLE EMILE BOURASSA.

Witnesses:
GEO. E. GRAVEL,
RAOUL LACOMBE.