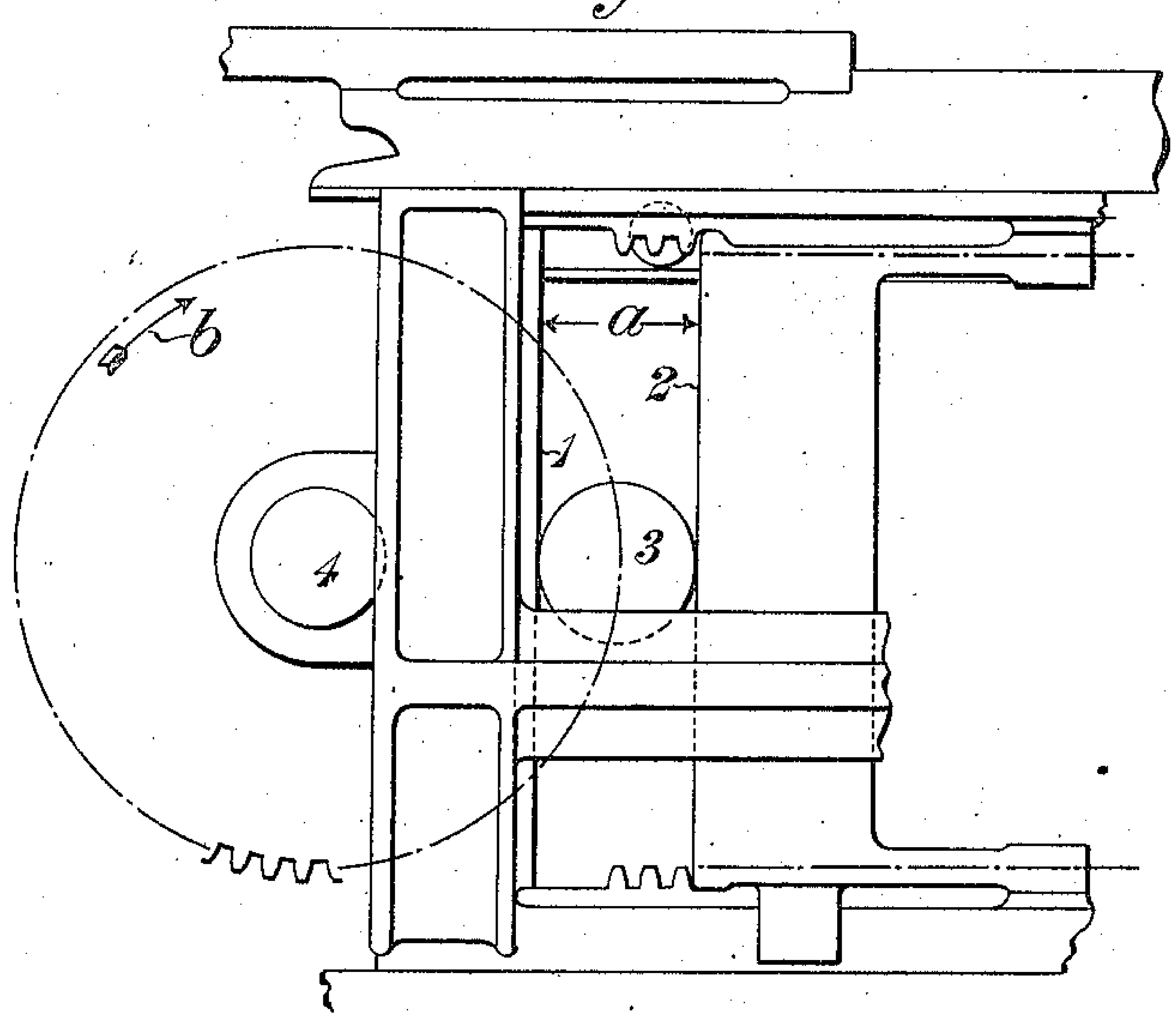
H. PEARCE.

BED MOTION OF PRINTING MACHINES.

APPLICATION FILED DEC. 7, 1909.

952,628. Patented Mar. 22, 1910.

Fig.1.



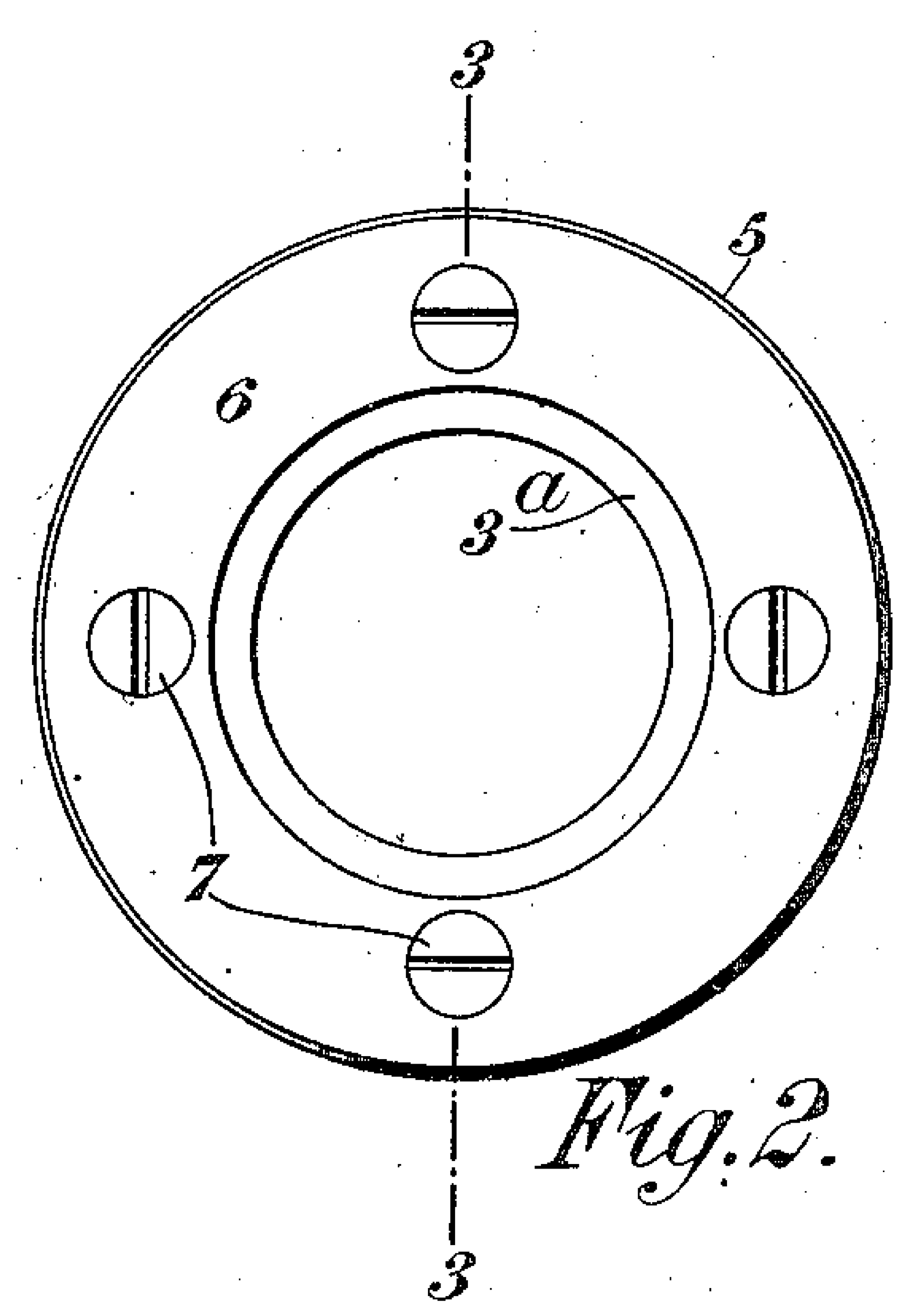


Fig.2.

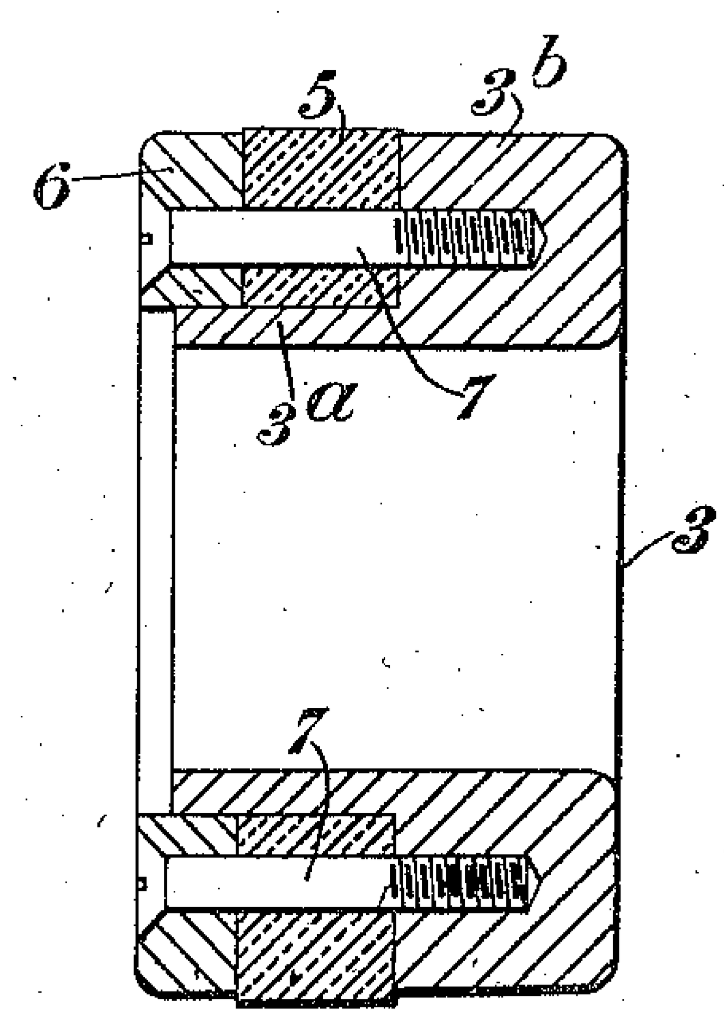


Fig.3.

Witnesses

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BED-MOTION OF PRINTING-MACHINES.

952,628. Specification of Letters Patent. **Patented Mar. 22, 1910.**

Application filed December 7, 1909. Serial No. 531,877.

To all whom it may concern:

Be it known that I, HERBERT PEARCE, a subject of the King of the United Kingdom of Great Britain and Ireland, and residing at Linotype and Machinery Works, Broadheath, in the county of Chester, England, have invented new and useful Improvements in or Relating to the Bed-Motions of Printing-Machines, of which the following is a specification.

This invention relates to printing machine bed motions, of the class in which a crankwise operated roller is caused to coöperate with pairs of abutment guides or so-called "steels" fast to the bed, for the purpose of traversing the latter in respectively opposite directions. In this class of bed motion, as heretofore constructed, much difficulty has been experienced owing to the rapidity with which the aforesaid roller and steels have become worn, and it is the particular object of the present invention to provide means for minimizing this defect.

In the accompanying drawings which are to be taken as part of this specification and read therewith:—Figure 1 is a side elevation represented partly diagrammatically, of portion of a bed motion of the class to which the present invention applies, and Fig. 2 is a side elevation and Fig. 3, a vertical section on the line 3—3 of Fig. 2, of one construction of the improved roller according to this invention.

In a bed motion of the above-named class, as shown in Fig. 1, the distance *a* between the opposed faces of a pair of the steels 1, 2, is slightly greater than the diameter of the roller 3, so that when the latter is, at one end of one of its diameters, in driving contact with say, the steel 1, at the other end of the said diameter, it shall be clear of the steel 2 and vice versa.

From investigations which I have made into the question of the aforesaid rapidity of wear I have been led to attribute the same almost entirely to the following cause. It is observed that when the roller 3—whose planetary motion about the axis of the crank shaft 4, is in the direction indicated by the arrow *b* in Fig. 1—is in driving contact with the steel 1, it is, by frictional contact with that steel, rotated about its axis in the direction of the hands of a clock, and that when the said roller is in driving contact with the steel 2, it will be rotated about its axis in a direction the reverse of that of the hands of a clock. Now, as the roller 3, by traveling over the respective steels 1, 2, acquires considerable momentum (this momentum increasing with the speed of the press) it follows that when the roller comes into contact with the said steels, the contacting surfaces of the roller 3 and respective steel 1 or 2 are subjected to a very severe strain inasmuch as, at the instant of impact, there is a violent confliction of forces due to the rotation of the roller having to be instantly arrested and reversed. When the roller and steels are very hard and kept well lubricated, as they should be, and usually are, the coefficient of friction is small, and consequently it is not until some appreciable time after the aforesaid contact of roller and steel, that the rotation of the roller is arrested and reversed, the two contacting surfaces during this period slipping past each other in opposite directions. Examination of the surfaces of the roller and steels after such slipping as just mentioned, shows that that defect is productive of a plucking out of particles from the said surfaces, however hard the latter may have previously been made, and consequently, when once so defaced, the subsequent deterioration is comparatively rapid, the detached hardened particles themselves expediting this deterioration by becoming introduced between the contacting surfaces of the roller and steels.

According to the present invention the roller is constructed so that the hardened metal surface thereof shall not come into contact with the steels until after the rotation of the said roller has been arrested and reversed. To this end, as shown in Figs. 2 and 3, the roller is formed partly of a resilient material 5 which is adapted to make contact with the steels 1, 2 before the hardened metallic surface thereof does so, the resilient material yielding and allowing the said metallic surface to become practically effective after the said material has served for effecting the reversal of the roller's rotation.

The roller, which may be regarded as a composite roller, may be constructed in different ways, and one way which I have found to give satisfactory results is that illustrated in Figs. 2 and 3. In this arrangement the metallic part of the roller is formed in two parts 3, 6, the part 3 comprising a cylindrical boss 3^a having as it were a flange 3^b at one end, and the other part 6 consisting of a ring adapted to fit nicely on the boss 3^a and to be secured to the flange by a plurality of screws 7 extending parallel with the axis of the boss. The length of the boss 3^a is greater than the thickness of the ring 6, and the intervening annular space between the flange 3^b and ring 6 is occupied by an annulus of compressed fiber or packing 5 held in position by the just mentioned screws 7 which penetrate it, and are threaded into the flange 3^b. The flange 3^b and metal ring 6 are of equal external diameter, which latter is that of an ordinary roller, and the external diameter of the annulus of compressed fiber 5 is slightly, say one-hundredth of an inch, larger than the flange 3^b but still less than the before mentioned distance *a*.

When a roller, such as that just described, is in use, the compressed fiber 5, by reason of its greater diameter, comes into contact with the steels 1, 2, before the peripheries of the parts 3^b, 6 of the roller do so, and this initial contact serves for arresting and reversing the rotation of the roller, the metallic surface of the latter becoming operatively effective when the resistance to the bed's travel is greater than can be overcome by the protruding portion of the annulus of compressed fiber 5. The resilience of the material 5 of which the before described annulus is composed, is such as to restore the said annulus to its normal or approximately its normal condition after leaving the respective steels 1, 2, and the said annulus may be formed either in one piece or two or more juxtaposed rings.

I claim—

1. In a roller for the bed motion of a printing machine, in which motion the said roller is adapted to bear against steels on the bed for moving the latter in relatively opposite directions, the combination with a metallic part adapted to bear on the steels, of a part formed of resilient material, concentric with, but of larger diameter than, the metallic part, and adapted to bear on the steels.

2. In a roller for the bed motion of a printing machine, in which motion the said roller is adapted to bear against steels on the bed for moving the latter in relatively opposite directions, the combination with a metallic part comprising a cylindrical boss and a flange integral with the boss, the said flange being adapted to bear on the steels, of an annulus of resilient material on the cylindrical boss, also adapted to bear on the steels, the external diameter of the annulus being greater than that of the flange.

3. In a roller for the bed motion of a printing machine, in which motion the said roller is adapted to bear against steels on the bed for moving the latter in relatively opposite directions, the combination with a metallic part comprising a cylindrieal boss and a flange integral with the boss, the said flange being adapted to bear on the steels, of an annulus of resilient material and a metallic ring both fitted on the cylindrical boss and adapted to bear on the steels, the external diameter of the flange and of the ring being the same, and less than that of the annulus.

4. In a roller for the bed motion of a printing machine, in which motion the said roller is adapted to bear against steels on the bed for moving the latter in relatively opposite directions, the combination with a metallic part comprising a cylindrical boss and a flange integral with the boss, the said flange being adapted to bear on the steels, of an annulus of resilient material and a metallic ring both fitted on the cylindrical boss, and means adapted to fix the said annulus and ring rigidly upon the boss, the annulus and ring being adapted to bear on the steels, and the external diameter of the flange and of the ring being the same, and less than that of the annulus.

5. In a roller for the bed motion of a printing machine, in which motion the said roller is adapted to bear against steels on the bed for moving the latter in relatively opposite directions, the combination with a metallic part comprising a cylindrical boss and a flange integral with the boss, the said flange being adapted to bear on the steels, of an annulus of resilient material and a metallic ring both fitted on the cylindrical boss, and a plurality of screws penetrating the ring and annulus and threaded into the flange, the ring and annulus being adapted to bear on the steels, and the external diameter of the flange and of the ring being the same, and less than that of the annulus.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

HERBERT PEARCE.

Witnesses:
C. H. PRICHARD,
ROBERT BRIGGS.