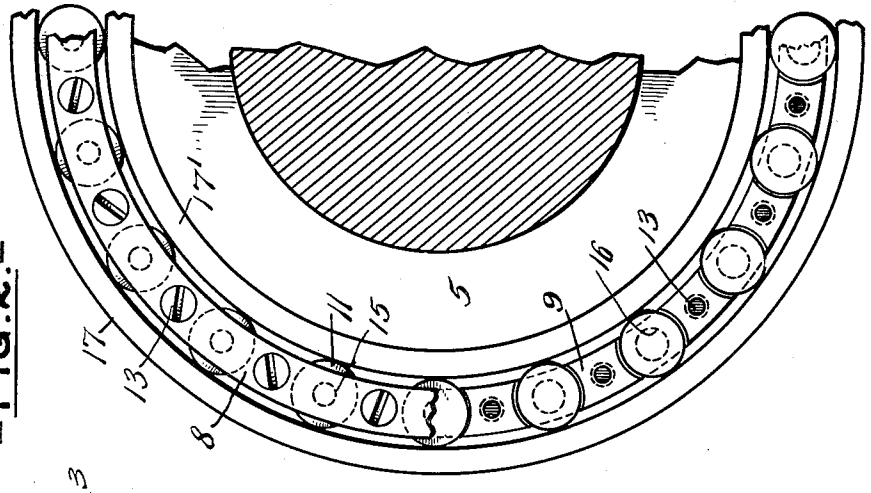
Dec. 1, 1925. 1,563,487

F. HERB

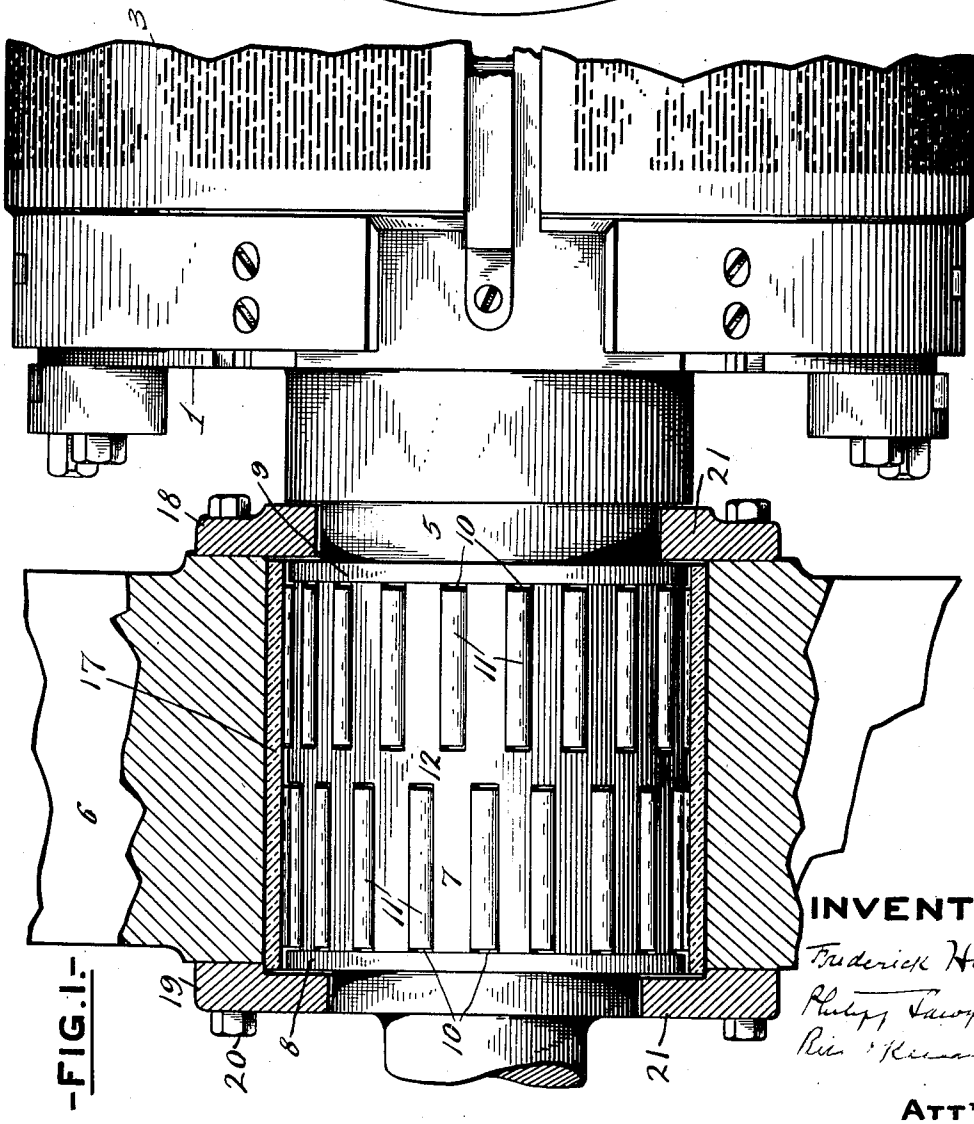
BEARING FOR ROTARY PRINTING COUPLES

Filed Sept. 19, 1923 3 Sheets-Sheet 1

-FIG.2.-



-FIG.1.-



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BEARING FOR ROTARY PRINTING COUPLES

Filed Sept. 19, 1923 3 Sheets-Sheet 2

FIG. 4.

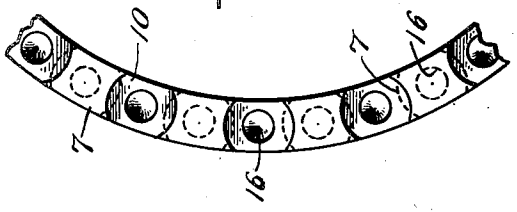


FIG. 3.

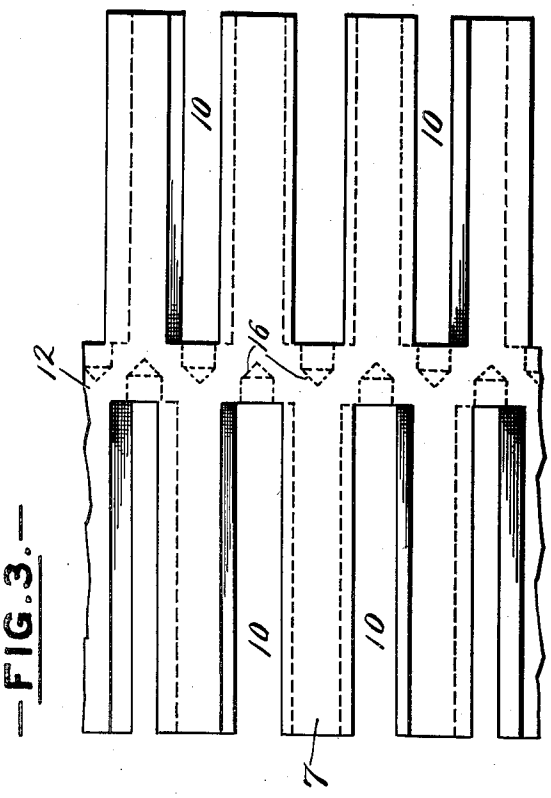
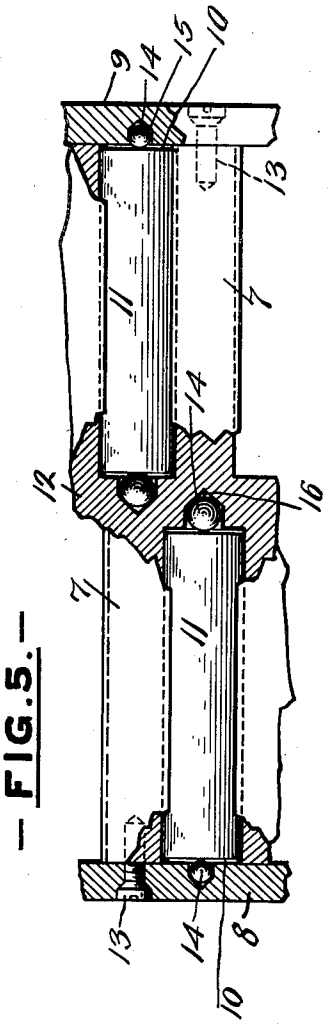


FIG. 5.



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BEARING FOR ROTARY PRINTING COUPLES

Filed Sept. 19, 1923 3 Sheets-Sheet 3

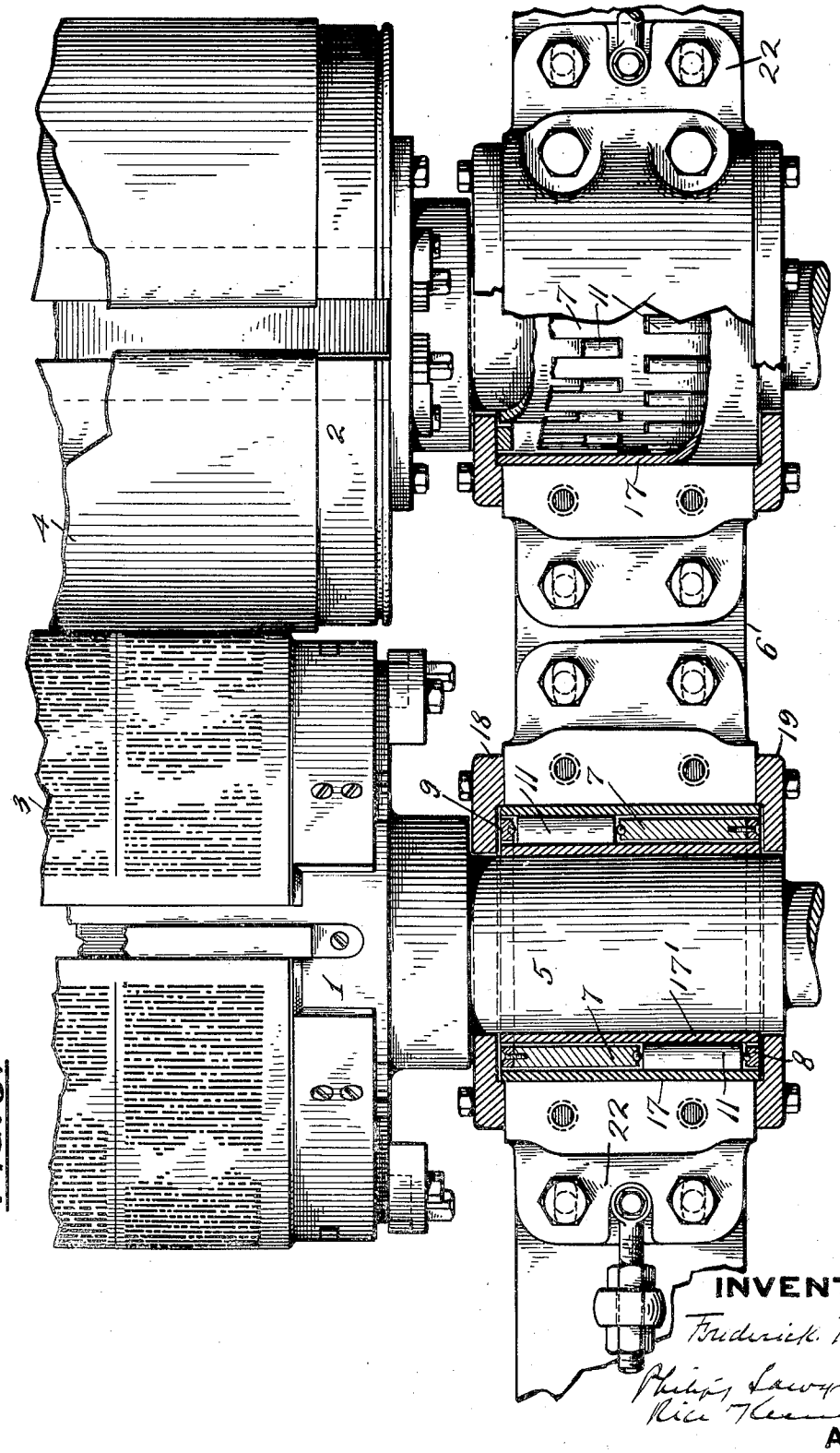


FIG. 6.

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UNITED STATES PATENT OFFICE.

FREDERICK HERB, OF BROOKLYN, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO R. HOE AND CO., INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

BEARING FOR ROTARY PRINTING COUPLES.

Application filed September 19, 1923. Serial No. 663,685.

To all whom it may concern:

Be it known that I, FREDERICK HERB, a citizen of the United States, residing at Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Bearings for Rotary Printing Couples, fully described and represented in the following specification, and the accompanying drawings, forming a part of the same.

This invention relates to certain improvements in bearings for the printing and impression cylinders of rotary printing machines.

In these machines the impression cylinder is usually a blanketed cylinder, that is, a cylinder around the surface of which is arranged a blanket of more or less yielding material, and the printing cylinder is provided with printing forms, usually plates. These cylinders are, during the printing operation, held in close contact with each other to effect the impression on the web or sheet that is to be printed. These blankets are apt to vary somewhat in thickness widthwise of the impression cylinder and the printing plate or plates may also vary in thickness at different points, so that when the cylinders are on impression or in printing relation there occurs an unequal pressure at different points. Furthermore, it is frequently desirable to adjust one end of either of the printing or impression cylinders relatively to the other without adjusting the other end of the cylinder so that the impression contact may be increased or diminished at the adjusted end to produce more or less impression on the web or sheet. These variations in the thickness of the plates or blankets and the difference in pressure contact between the cylinders, due to adjusting at one end, results in that there is an unequal thrust on the cylinder bearings, and frequently unequal wear. It has been proposed to alleviate this condition by the use of roller bearings. Where, however, these roller bearings have been used the construction has been such that this unequal pressure has caused one or more of the rolls to wear or flatten so that the shaft journals do not run true and more or less imperfect impression results and the rollers have to be frequently renewed causing inconvenience and expense.

It is the especial object of the present invention to provide an improved roller bearing for one or both of the cylinders of a rotary printing couple, in which the rolls are so proportioned and arranged that on a given center line no roll is positioned at each side of the bearing, so that one end of the cylinder shaft may be given a slight adjustment to compensate for variations in plate or blanket thickness without binding in the bearing, this construction permitting a slight sidewise or yielding movement of the rolls.

It is a further object of the invention to produce a roller bearing for this purpose which shall be efficient and durable in use and in which the rollers are readily accessible for repair or replacement.

With these and other objects not specifically referred to the invention consists in certain novel parts, combinations and arrangements which will be described in connection with the accompanying drawings and the novel features thereafter pointed out in the claims hereunto annexed.

In the drawings—

Figure 1 is a side view, partly in section and partly broken away, of one end of a plate or form cylinder showing the improved bearing construction;

Figure 2 is a partly broken away and partly sectional view of certain features of the construction shown in Fig. 1;

Figure 3 is a detail view showing the arrangement of the roll sockets of the roll cage;

Figure 4 is a detail end view of the construction shown in Fig. 3;

Figure 5 is a detail sectional view showing the rolls assembled in the cage; and,

Figure 6 is a partly broken away and partly sectional side elevation of a plate and impression cylinder, the journals of which are equipped with the improved bearings.

Referring now to the drawings for a de-

tailed description—the invention has been illustrated as employed with both the form and impression cylinders of the printing couple, but it will be understood that only one of these members, if desired, may be equipped with the improved bearing, this being sufficient under certain circumstances.

In the drawings there is shown a form or plate cylinder 1 and an impression cylinder 2. The plate cylinder 1 is shown as dressed with plates 3 and impression cylinder is provided with a blanket 4. These cylinders are provided with shafts which terminate in journals 5 which extend through side frames 6 of any usual or desired construction.

The shaft journals run in roller bearings in which the rolls are so proportioned and arranged that no roll extends the full width of the bearing so that when the shaft is adjusted it does not bind in the bearing the full width thereof, which permits the adjustment of the shaft without causing it to bind. These roller bearings are identical and a description for one will suffice for all, and these bearings are provided at each end of either or both the form and impression cylinders as may be required or desired. While the particular construction of these bearings may be varied, the form shown has proved very efficient in actual practice and will be described as a preferred embodiment of the invention. The bearing includes a cage including a roll holding portion 7 and end rings or plates 8 and 9. Roll supporting portion 7 of the cage is formed with sockets 10 for the reception of the rolls indicated by the numeral 11. In the best constructions, in order to provide for the minimum amount of wear on any one roll and to prevent binding, the roll surface is divided, two sets of rolls being provided instead of a long roller extending the width of the cage, and these rolls are arranged in staggered relation with each other. The slots 10 in the cage, therefore, are arranged, as shown in Fig. 3, in staggered or offset relation to each other, these slots entering, as shown, from opposite sides of the cage and terminating in a central rib 12. The rolls are held in their slots by the end plates or rings 8, 9, these rings being removably held in position in any suitable manner as by screws 13. With this construction it follows that on a given center line no roll extends across the bearing, half the bearing, in the particular construction shown, on any given line being free of the roll surface. This construction permits an out of line adjustment of the shaft without causing the shaft to bind. In the best constructions the rolls will be mounted so as to reduce, as far as possible, friction due to end thrust, and the rolls are so mounted in the cage as to have a slight tipping movement in their sockets, the sockets being, as shown in Fig. 5, slightly larger in diameter than the diameter of the roll. To reduce the end thrust friction there, anti-friction devices are provided against which the rolls bear at their ends, these anti-friction devices being, as shown, formed of balls 14, these balls seating in recesses 15 formed in the end rings or plates, and in recesses 16 formed in the central rib 12, before referred to. If desired, the center balls may be of somewhat larger diameter than the outside balls, the rib 12 being made of sufficient thickness to provide for this. The rolls, as shown, (see Fig. 2) project on each side of the cage and contact on their outer side with a bushing 17 set in the frame 6, before referred to, and on their inner sides with a sleeve 17′ rotating with the journals. The cage may be held in the frame in any suitable manner. In the particular construction shown it is held by inner and outer plates or rings 18, 19 suitably secured to the frame as by screws 20, these plates or rings having flanges 21 extending inwardly toward the axis of the journal and forming stops by which the cage is held in position.

As is usual in rotary printing couples, one of the cylinders is adjustable toward and away from the other. In the particular construction illustrated the form cylinder is adjustable toward and away from the impression cylinder, this adjustment being effected in any usual manner as by adjusting the pillow block 22.

With this construction the varying pressures due to difference in plate or blanket thickness, or due to adjusting one end of the cylinder relatively to its other end, are entirely compensated for and the journals run true in their bearings so that a good impression is always obtained and the wear on the rolls is reduced to a minimum.

While the invention has been shown and described in its preferred form it is to be understood that certain variations may be made from the specific construction shown and described without departing from the invention as defined in the appended claims.

What I claim is:

1. In a printing machine, the combination of a form cylinder and a blanketed impression cylinder running in impression contact, journals therefor, and bearings for the journals, the bearings for one of the cylinders including a plurality of rollers shorter than the bearing and proportioned and arranged so that on a given center line no roll is positioned at each side of the bearing so that a cylinder shaft may be adjusted out of axial alignment without binding in the bearing to compensate for varying pressures between the form and impression cylinders.

2. In a printing machine, the combination of a form cylinder and a blanketed impression cylinder running in impression contact journals therefor, and bearings for the cylinder journals, the bearings for one of the cylinders including a plurality of rollers shorter than the bearing and so arranged in offset relation to each other that no roller is positioned at each side of the bearing on a given center line.

In testimony whereof, I have hereunto set my hand.

FREDERICK HERB.