May 25, 1926. 1,586,150

R. HEIN

ROLLING MACHINE

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Fig. 1

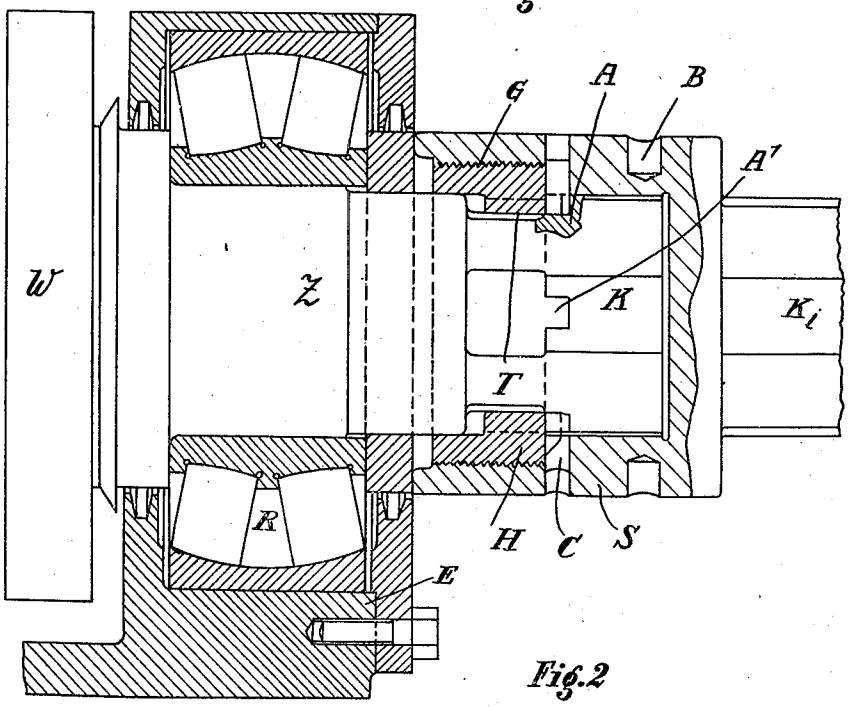
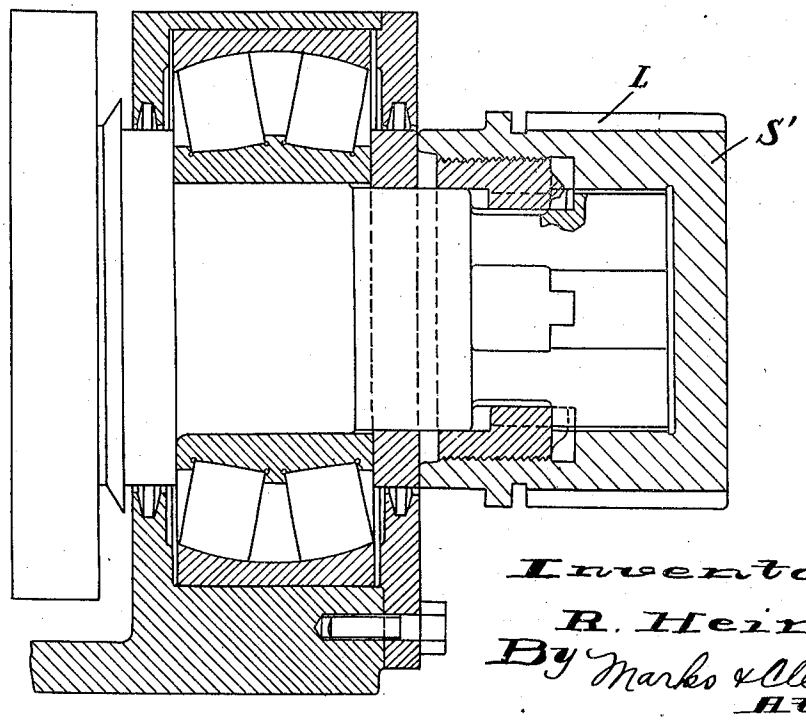


Fig. 2



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Fig. 3

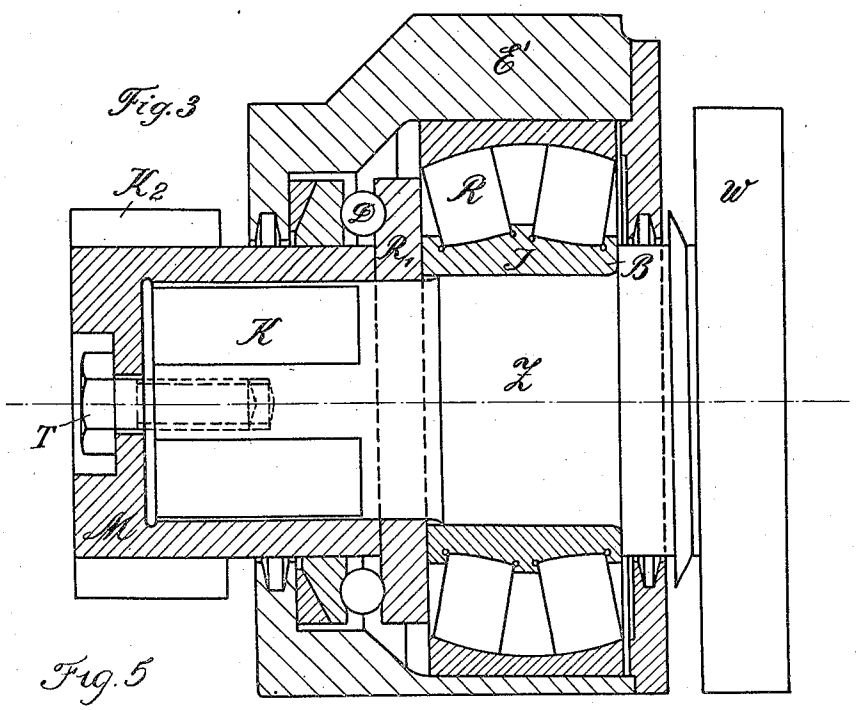


Fig. 5

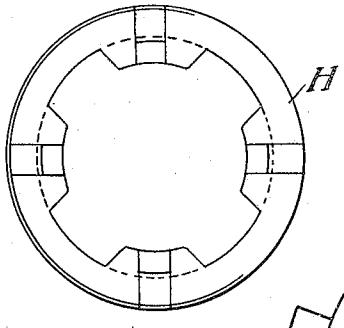
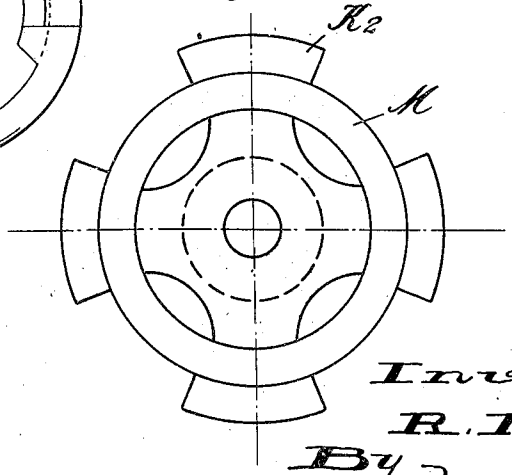


Fig. 4



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UNITED STATES PATENT OFFICE.

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ROLLING MACHINE.

Application filed August 6, 1923. Serial No. 656,037.

The present invention relates to rolling machines and in particular to the employment of antifriction-bearings, such as roller-bearings or ball-bearings in connection with the rolls or the trunnions thereof. Hitherto bearings of the kind have not been used in connection with normal rolls on account of their trunnions being too short for this purpose.

The object of the invention is to provide a device or means for mounting bearings of the stated kind on the trunnions of normal rolls especially also those, which already have been in use.

With this object in view I provide a cap-nut having a cross-shaped extension projecting therefrom axially, for securing the antifriction-bearing in position on the trunnion of the roll and I further provide a circumferentially threaded sleeve adapted to be firmly attached to the cross-shaped outer end of the trunnion and to receive the aforesaid cap-nut in order to ensure a rigid connection of the parts. To this end I provide a peripheral annular groove or recess on the cross-shaped end of the trunnion and a number of inwardly projecting radial lugs or noses in the said sleeve preferably corresponding to the number of arms present to constitute the cross-shape of the outer end of the trunnion, so that, if the parts are properly assembled, the said lugs or noses will register and coincide with the spaces between the arms of the trunnion-end to allow the sleeve to be shifted over the trunnion-end in order to bring the lugs or noses in the hereinbefore mentioned annular groove or recess on the cross-shaped end of the trunnion. By giving the sleeve thus accommodated in the groove or recess a turn of about 45° the lugs or noses thereof will thereby be brought in alinement with the arms of the cross-shaped end of the trunnion, so as to be adapted to engage in recesses provided in the arms, if the sleeve is drawn back towards the outer end of the trunnion. Suitable means may be employed for securing the sleeve in the position with its lugs or noses properly seated in the recesses of the arms of the cross-shaped end of the trunnion.

The sleeve thus being rigidly mounted on the trunnion the aforesaid cap-nut is screwed on to the sleeve.

Having thus set forth in general the principles upon which my invention depends, I shall now particularly describe three simple embodiments thereof which I have shown in the accompanying drawing for the purpose of more fully disclosing my invention.

In the drawings—

Figure 1 is a vertical section showing the trunnion of the roll in its bearing and with the new mounting means attached thereto,

Figure 2 is a similar section illustrating a modification or second embodiment thereof,

Figure 3 is a similar section showing the third embodiment and

Figure 4 is an end view of Figure 3,

Figure 5 is an end view of the sleeve.

Referring to Figure 1 the trunnion Z of the roll W provided with a normal end portion K of cross-shaped sectional area, is properly prepared for the reception of the bearing and the bearing R is properly mounted thereon. In the embodiment shown the bearing is a roller-bearing of usual construction, so that a description thereof will not be necessary. The part of the cross-shaped end contiguous to the main body of the trunnion is circumferentially cut or recessed and the annular recess or groove thus formed is shown at T. The sleeve H is shifted over the cross-shaped end of the trunnion onto the cylindrical main body thereof with their lugs or noses A sliding in the spaces between the arms of the end portion K of the trunnion, and as soon as the said lugs or noses reach the groove T the sleeve H is turned for about 45° whereby the lugs or noses will be brought in front of or in alinement with the arms of the end portion K of the trunnion. In the latter recesses A^1 are provided and the sleeve H is thereupon shifted back to cause its lugs or noses to engage in the said recesses A^1, where they may be fixed in any suitable manner.

The sleeve H is screw-threaded on its outside as shown at G. The cap-nut S provided with an axial projection K_1 of cross-shape like K, is screwed onto the sleeve H in order to maintain and secure the roller-bearing R in its place on the trunnion.

Holes B are provided in the circumference of the cap-nut S for a wrench or any other tool adapted for screwing and unscrewing the nut, and openings C are provided in the cap-nut for inspecting and ascertaining whether or not the lugs A are properly em-

bedded in the recesses A^1 of the trunnion end K.

In the embodiment illustrated in Figure 2 the cap-nut S^1 is provided with the wings or arms L directly on its circumference. This modification is particularly adapted for use in cases where elongated trunnions are not required.

In the embodiment shown in Figures 3 and 4 the trunnion Z of the roll W is normally provided with an extension K of cross-shaped sectional area and duly prepared for the reception of the roller-bearing R. Both the ball-bearing R and the thrust-bearing D are housed in a common casing E^1, the former being shifted onto the trunnion and maintained in position by means of the ring R^1 of the thrust-bearing. To firmly hold the parts in place with the inner ring J of the roller-bearing in contact with the rim or edge B of the roll and with the ring R^1 of the trust-bearing in intimate contact with the ring J, a cap M is provided to enclose the extension K of the trunnion and to engage the ring R^1, so that when the screwbolt T is tightened to rigidly connect the cap M with the extension K the parts will be firmly assembled and united.

The wings K_2 of the cap M are intended for coupling purposes, that is to say, for positively connecting the roll with an adjacent roll by means of a coupling sleeve and shaft.

From the foregoing it is believed, that the advantages and novel features of my invention will be readily understood and, therefore, further detailed description is deemed unnecessary. I wish it, however, to be understood that I do not limit myself to the three embodiments of my invention which I have shown and described, inasmuch as many modifications may be devised by those skilled in the art without departing from the spirit of my invention, and that various changes in the details of construction and in the proportion of parts may be resorted to when required without sacrificing any of the advantages of my invention as defined in the appended claims.

What I claim is:

1. In a rolling machine of the character described, the combination with a roll trunnion, of an antifriction-bearing, a cross-shaped extension axially projecting from said trunnion, a sleeve having outside thread and adapted to fit on said extension, and a cap-nut adapted to engage with the thread of said sleeve, essentially as and for the purpose set forth.

2. In a roll of the character described the combination with a roll trunnion, of an anti-friction-bearing, a cross-shaped extension axially projecting from said bearing and having an annular groove and recesses communicating therewith, a sleeve having outside thread and inside lugs adapted to engage in said groove and to fit in said recesses and a cap-nut adapted to engage with the thread of said sleeve, substantially as and for the purpose set forth.

3. In a roll of the character described, the combination with a roll trunnion, of an anti-friction-bearing mounted on the trunnion, a cap rigidly connected with the trunnion to hold the bearing firmly in place, and coupling wings on the said cap, substantially as and for the purpose set forth.

4. In a means of the character described, the combination with a roll-trunnion, of an antifriction-bearing mounted on the trunnion, a thrust-bearing likewise mounted on the trunnion, a cap rigidly connected with the trunnion to hold both the first stated bearing and the thrust-bearing firmly in place, and coupling wings on the said cap, substantially as and for the purpose set forth.

In witness whereof I affix my signature.

RICHARD HEIN.