H. M. STAINFIELD & E. R. BEEMAN.

DISK MOUNTING.

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1,046,231. Patented Dec. 3, 1912.

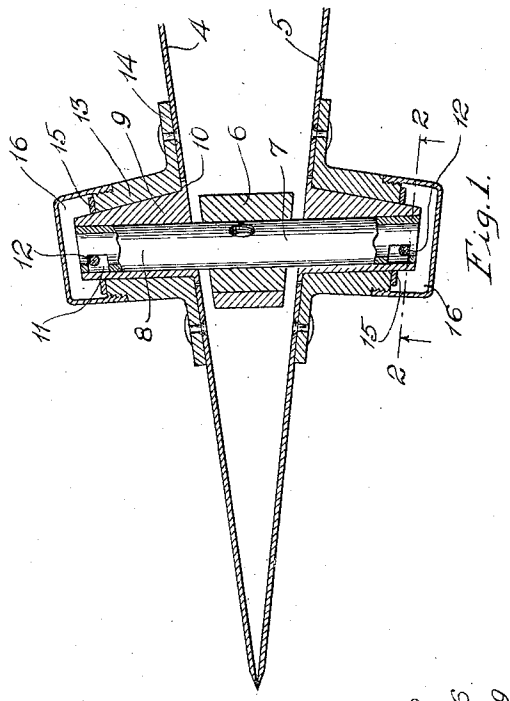

Fig. 1.

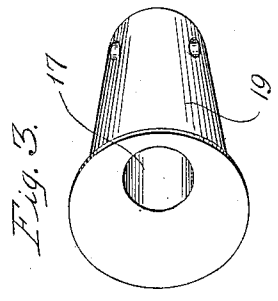

Fig. 3.

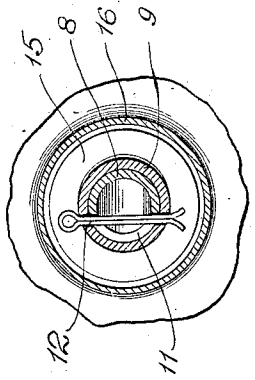

Fig. 2.

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UNITED STATES PATENT OFFICE.

HARRY M. STAINFIELD, OF ST. LOUIS PARK, AND EDWIN R. BEEMAN, OF MINNEAPOLIS, MINNESOTA, ASSIGNORS TO THE MONITOR DRILL COMPANY, OF MINNEAPOLIS, MINNESOTA, A CORPORATION OF MINNESOTA.

DISK-MOUNTING.

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To all whom it may concern:

Be it known that we, HARRY M. STAINFIELD and EDWIN R. BEEMAN, both citizens of the United States, residing at St. Louis Park, in the county of Hennepin and State of Minnesota, and at Minneapolis, in the county of Hennepin and State of Minnesota, respectively, have invented certain new and useful Improvements in Disk-Mountings, of which the following is a specification.

This invention relates to a mounting or bearing whereby the disk of a disk attachment is supported on the boot of the attachment.

The invention relates particularly to a mounting whereby the disk is permitted to have a bodily in and out movement toward and from the boot, as well as being permitted to rotate.

This invention has particular reference to such a mounting as used in double disk attachments, but is not restricted to such use.

The invention relates more especially to the mounting of the disks for double disk attachments, in which the adjustment between the disks, as they wear in diameter, is secured by a bodily movement of the disks toward each other. Such a form of disk attachment is to be distinguished from those in which the aforementioned adjustment is obtained by varying the angle between the disks.

The main objects of the invention are: to provide a mounting of such a nature that a straight axle member may be used, notwithstanding the fact that the disks themselves are supported at an angle; to provide a hub construction of such a nature that it can be secured to the axle member only in the proper manner, so as to bring the disks together at the proper angle; to provide means for so holding the hubs as to bring the disks together at the proper angle, and for limiting the in and out movement of the disks at the same time; to provide means for simultaneously lubricating the disks, both for rotation and for in and out adjustment; and in other ways and manners to generally improve the construction of this class of attachment.

Other objects and uses will appear from a detailed description of the invention, which consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 shows a horizontal section, taken through the disks, of a double disk attachment embodying the features of our invention, the section being taken through the point where the disks come together; Fig. 2 shows a section, taken on the line 2—2 of Fig. 1, looking in the direction of the arrows; and Fig. 3 shows an enlarged perspective view of the hub member.

In the drawing, our invention is shown as applied to a double disk attachment. In this case, the disks are designated by the numerals 4 and 5, and the standard or other carrying member of the boot is designated by the numeral 6. An axle member 7, which, by reason of the nature of the disk mounting we employ, may be straight, is carried by the standard and cannot rotate with respect to the same. Each end portion 8 of the axle member carries a hardened bearing, or sleeve, 9, the body portion of which preferably tapers in diameter toward its outer end, and the inner end of which is provided with a flange 10. A transverse elongated slot 11 is eccentrically formed in the axle member, a pin being passed through the sides of the sleeve and through this slot. Reference particularly to Fig. 2 shows that, by reason of the eccentric nature of the slot, it is impossible to insert the pin through the slot and through the holes of the sleeve unless the latter occupies the proper position on the axle. Nevertheless, by reason of the elongation of the slot, the sleeve and pin are permitted a certain amount of direct in and out movement on the axle.

A hub 13 is rotatably mounted on each sleeve, the flange 14 of such hub being attached to the corresponding disk. The parts may be relatively so proportioned that the hub will come into contact with the flange 10, as illustrated, before it jams on the sleeve. In this manner, the parts can never become jammed so as to prevent rotation of the disks. Now the pin 12 overlies the end of the corresponding hub, so that the latter cannot pull away from the sleeve. Thus the disk is maintained in proper position. A wearing washer 15, however, is preferably interposed between the end of the hub and the pin.

A cap 16 is secured to the end of the hub and incloses the several members at this point. This prevents the access of dust and other matter to the wearing surfaces.

From a study of the above construction,

it is apparent that the hub member and disk are permitted a certain amount of direct or bodily in and out movement on the axle member. It is also apparent that the disk can rotate with respect to the sleeve but that the latter cannot rotate with respect to the axle.

We will now describe the construction which we have adopted for bringing the disks together at the proper angle and at the proper point. To this end, the hole 17 in each sleeve member, which holes receive the corresponding ends of the axle, are eccentrically formed, the amount of such eccentricity being proper to bring the disks together at the desired angle, and the eccentricity of the holes being so related to the eccentricity of the slots as to bring the disks together at the proper point. The sleeve members can be formed from hardened steel or other suitable material, and the holes can be formed directly in them at the proper angle.

It will be seen that if no means were provided for insuring that the sleeves should be placed on the axle at the proper degree of rotation, they might be so placed as not to occupy the desired angle with respect to each other and not to bring the disks together at the desired point. However, by providing means for insuring that the sleeves shall always be placed on the axle at the proper degree of rotation, this difficulty has been overcome, so that the farmer or other user of the attachment will have assurance that when the sleeves have been locked in position on the axle they will occupy the proper position with respect to each other.

We claim:

1. In a disk mounting, the combination of an axle member, a sleeve slidably and eccentrically mounted on each end of the same, and a bearing member rotatably mounted on each sleeve, substantially as described.

2. In a disk mounting, the combination of an axle member, a sleeve eccentrically and slidably mounted on each end of the same, a bearing member rotatably mounted on each sleeve, and a disk secured to each bearing member, substantially as described.

3. In a disk mounting, the combination of an axle member, provided adjacent each end with an eccentrically extending slot, a sleeve eccentrically mounted on each end of the axle member, a pin extended through each sleeve and engaging the corresponding slot of the axle member, and a disk rotatably mounted on each sleeve, substantially as described.

4. In a disk mounting, the combination of an axle member, provided adjacent each end with an eccentrically extending opening, a sleeve eccentrically and slidably mounted on each end of the axle member, a pin extended through each sleeve and engaging the corresponding eccentric opening of the axle member, to retain the sleeve against rotation with respect to the axle member and to retain the sleeve in position on the same, and a disk rotatably mounted on each sleeve, substantially as described.

5. In a disk mounting, the combination of an axle member, provided with an eccentrically extending opening adjacent each end of the same, a sleeve slidably and eccentrically mounted on each end of the axle member, a pin extending through each sleeve and through the corresponding opening of the axle member, to retain the sleeves against rotation on the axle member, and a disk rotatably mounted on each sleeve, whereby the edges of the disks are brought together at the proper point, substantially as described.

6. In a disk attachment, the combination of a supporting member, an axial member carried thereby, a hub member eccentrically and slidably mounted on each end of the axial member, a bearing member rotatably mounted on each hub, and means for retaining each hub against rotation on the axial member and for retaining each bearing member on its hub, substantially as described.

7. In a disk attachment, the combination of a supporting member, a straight axle carried thereby, a hub slidably mounted on each end of the axle with its center line extending at an angle to the center line of the axle, means for retaining each hub member against rotation on the axle and for limiting its sliding movement thereon, and a bearing member rotatably mounted on each hub, substantially as described.

8. In a disk attachment, the combination of a supporting member, an axle carried thereby, there being an elongated perforation eccentrically formed in each end of the axle, a hub slidably mounted on each end of the axle, a bearing member rotatably mounted on each hub, and a retaining device extended through each hub and through the corresponding perforation of the axle whereby the hub is retained against rotation on the axle, substantially as described.

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