No. 671,539. Patented Apr. 9, 1901.

C. B. DEMPSTER.

AXIAL BEARING FOR GRAIN DRILL DISKS.

(Application filed Dec. 22, 1900.)

(No Model.)

Fig. 1.

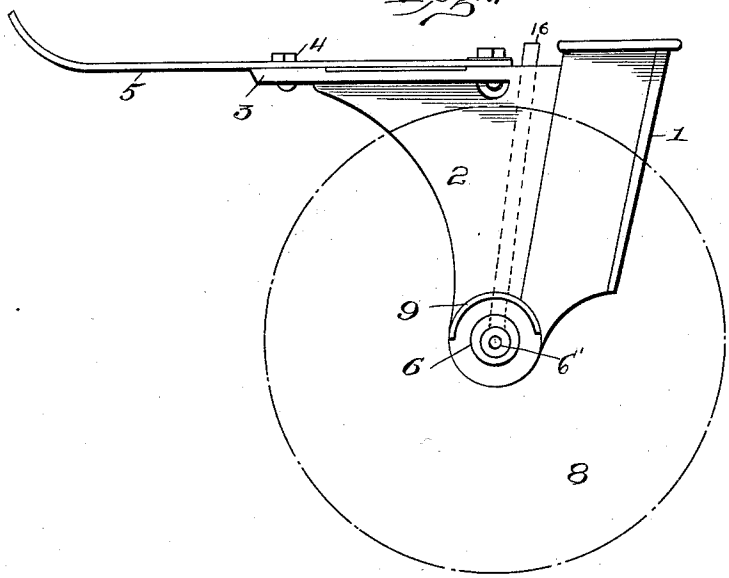


Fig. 2.

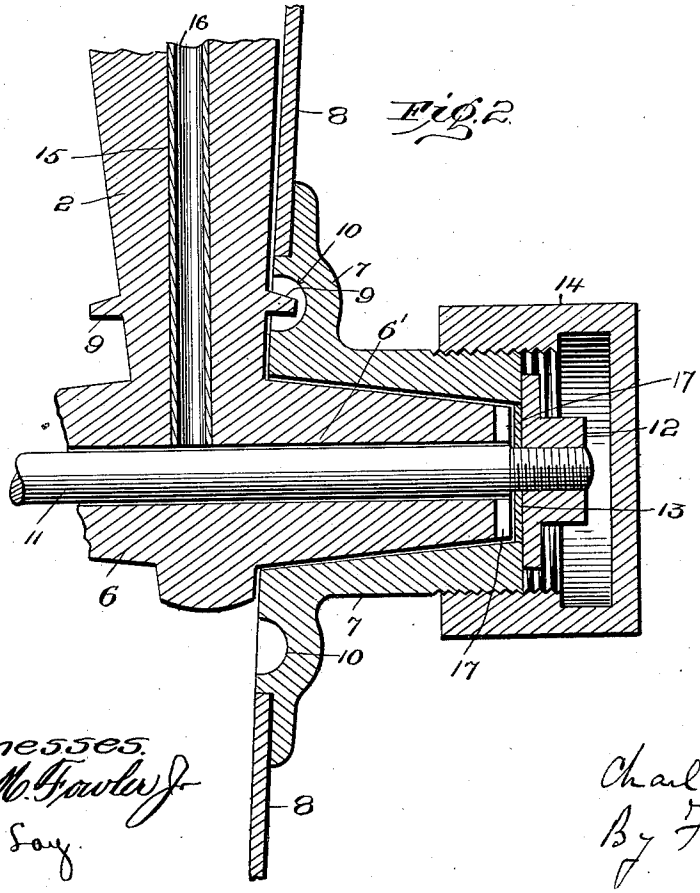
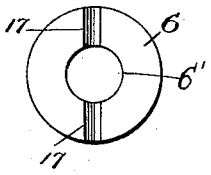


Fig. 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

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AXIAL BEARING FOR GRAIN-DRILL DISKS.

SPECIFICATION forming part of Letters Patent No. 671,539, dated April 9, 1901.

Application filed December 22, 1900. Serial No. 40,795. (No model.)

To all whom it may concern:

Be it known that I, CHARLES B. DEMPSTER, a citizen of the United States, residing at Beatrice, in the county of Gage and State of Nebraska, have invented certain new and useful Improvements in Axial Bearings for Grain-Drill Disks; and I hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in axial bearings or hubs for grain-drill disks, and especially to an improved construction whereby dust and dirt may be entirely excluded from such bearings and the same kept constantly supplied with oil.

In the accompanying drawings, Figure 1 is a side elevation of one of the series of boots in a grain-drill, showing the web projecting forwardly therefrom and the disk axle or spindle carried by said web. Fig. 2 is a vertical transverse section through one side of the bearing, showing portions of the web, disk-spindle, hub, disk, and oil-pipe, it being understood that the parts shown are duplicated on the opposite side of the depending shank or web. Fig. 3 is an elevation of one end of one of the axle-spindles, upon each of which a disk is mounted, showing the transverse or radial groove in the end of said spindle.

1 indicates the tubular boot in common use in grain-drills, usually of cast metal, through which the seed-grain passes in its descent from the hopper to the drills formed by the disks. The boot has a forwardly-projecting web 2, provided on its upper edge with a transverse flange 3, through which pass bolts 4, securing the web and its appendages to the spring draw-bar 5. The lower edge of said web carries upon each side the preferably integral conical extensions 6, which form the spindles or axles upon which rotate the hubs 7, carrying the disks 8. Semicircular sand-bands 9 project from the sides of the web and enter circular grooves 10 in the inner surfaces of the hubs.

The hubs 7 are secured on the spindles 6 by means of the bolts 11, which pass through a longitudinal bore 6′ in the axles and are preferably threaded at each end to receive the flanged nuts 12. Inside said nuts in circular recesses in the ends of the spindles are located washers 13. The outer ends of the hubs are externally threaded to engage circular caps 14, which entirely inclose the ends of the hubs, bolts, &c.

The special means devised by me for keeping the bearings constantly supplied with oil consist, first, of a substantially vertical bore or tube 15, preferably formed in the body of the web 2, extending downward from the upper edge of said web and communicating with the horizontal bore 6′ in the axle 6, through which the bolt 11 passes. A pipe 16 is preferably inserted within said tube and may be closed at the top by a suitable cap or plug; but, if preferred, said pipe may be dispensed with and the plug applied to the tubular passage in the web.

In each end of the axle 6 is formed centrally a preferably vertical transverse groove 17 of suitable size to form a passage-way for oil, the washer 13 when the parts are in working position forming an outer wall for said oil-passage. Said groove 17 may be considered as composed of two radial grooves extending in opposite directions from the central bore through the axle, and such radial grooves need not necessarily be in the same vertical line, but may extend in any preferred direction and may be of any preferred number.

The pipe 16 is of sufficient capacity to hold a considerable quantity of oil, and in operation the oil flows out of said pipe or tube into the bore 6′ in the axle, through which the bolt 11 extends, and works along the narrow space between the bolt and axle until it reaches the transverse groove 17, through which it passes to the bearing-surfaces of the spindles and hubs. Any possible leakage of oil through or around the nut 12 and washer 13 will be retained within the cap or plug 14, thus preventing any waste of the lubricant. It will be observed that the pipe 16 forms a reservoir for the oil, so that a constant supply to the bearing is maintained for a considerable period dependent on the capacity of the pipe, or a suitable oil-cup may be attached to the upper end of the pipe.

An important result accomplished by the construction described and which distinguishes it from other devices for the same pur-

pose which have been patented or used is that the lubricant first reaches the bearing at the small end of the conical spindle and in accordance with a well-known law readily works toward the larger end or greater diameter, so that the whole bearing-surface of the spindle is kept constantly lubricated, which is not the case when the lubricant is first applied in the usual manner to the large end of the spindle. On the contrary, in the latter case the oil instead of spreading freely to the outer end of the spindle will escape and waste at the shoulder or inner end.

I have shown the device as applied to a machine having the disks or cutters arranged in pairs; but it is obvious that the same principle may be applied to the bearings in single-disk machines, in which case the construction would be substantially that shown in Fig. 2, with the spindle, hub, and disk upon one side only of the web. The oil-tube 15 need not necessarily be formed in the web, but may pass through any preferred part of the stationary casting 6, through which the bolt passes.

I claim as my invention and desire to secure by Letters Patent—

1. A bearing for rotating disks, wheels or the like, comprising a depending web or shank having a lateral projection forming a spindle for the hub of the disk, with a longitudinal bore in said spindle and an oil-tube therein passing downward and communicating with said bore, a hub rotatably mounted on said spindle and carrying the disk, a bolt passing through said bore and securing the hub on the spindle, and with oil-grooves formed in the end of said spindle intersecting its periphery and said bore, substantially as set forth.

2. In a bearing for grain-drill disks or the like, the combination of a depending web or shank with a downwardly-extending oil-tube therein, an axle-spindle extending laterally from said web and having a horizontal longitudinal bore with which said oil-tube communicates, with oil-grooves in the end of the axle-spindle, leading from said bore to the conical surface of the spindle, the hub rotatably mounted on said spindle and carrying the disk, and a bolt passing through said bore to secure the hub on said spindle, substantially as set forth.

3. In a bearing for grain-drill disks or the like, the combination of the boot, the web extending therefrom and provided with a downwardly-extending oil-tube, the laterally-projecting axle-spindle having a longitudinal bore with which said oil-tube communicates, with oil-grooves in the end of the spindle connecting said bore and the periphery of the spindle, the bolt passing through said bore, and a cap or plug closing the outer end of said hub, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES B. DEMPSTER.

Witnesses:
H. W. SCHAFER,
D. W. CARRE.