Nov. 19, 1929. C. HILL 1,736,442

ADJUSTABLE REVOLVING MOLDBOARD

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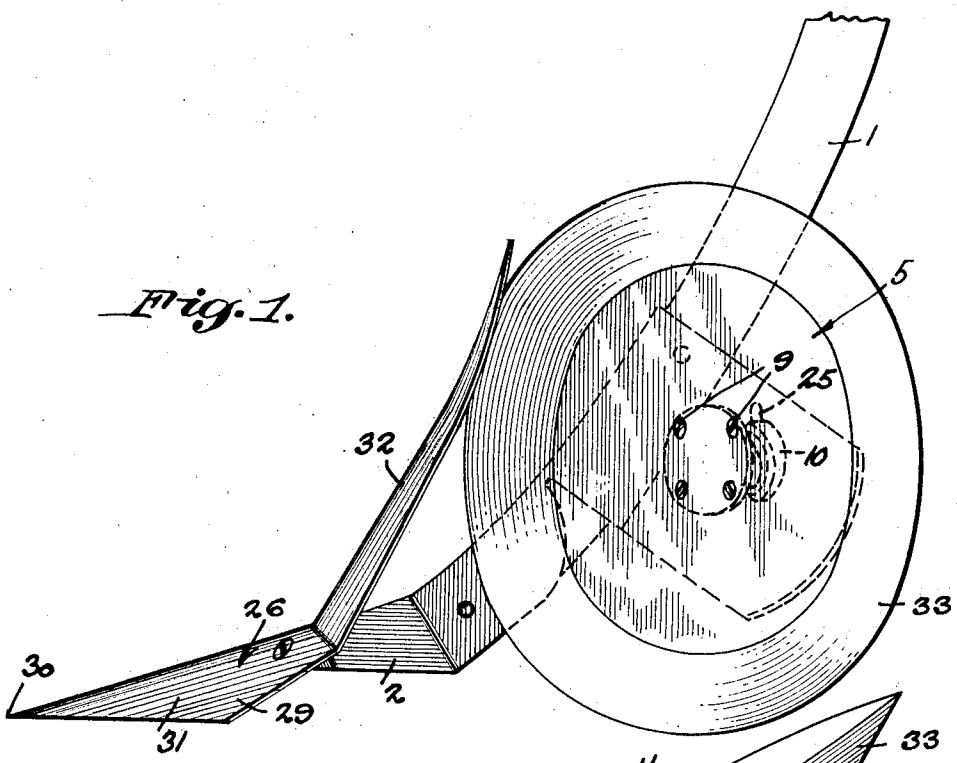
Fig. 1.



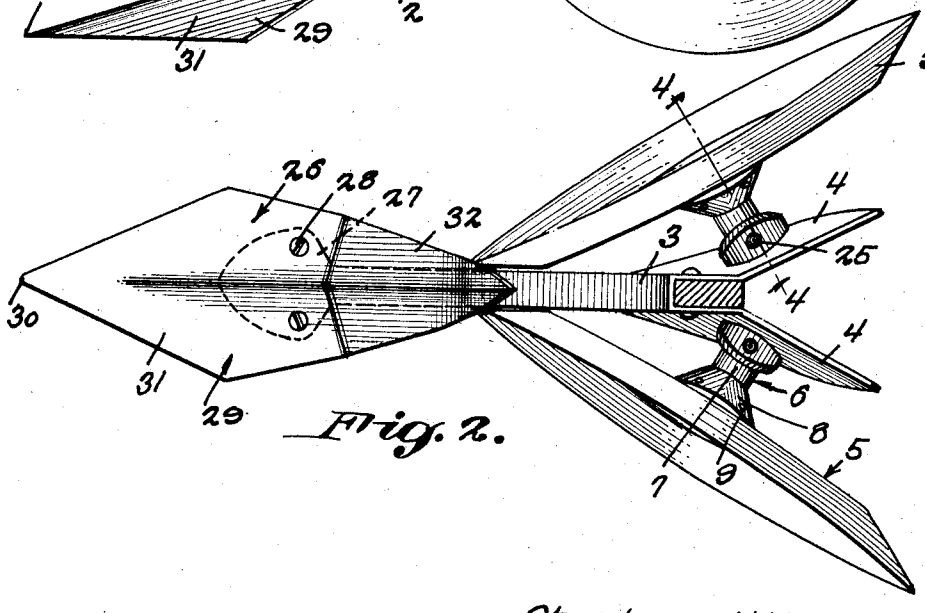


Fig. 2.

Witnesses
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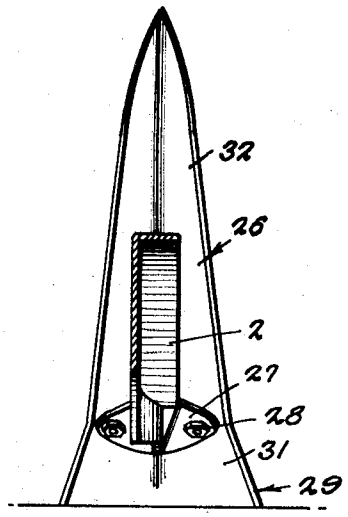
Fig. 3.



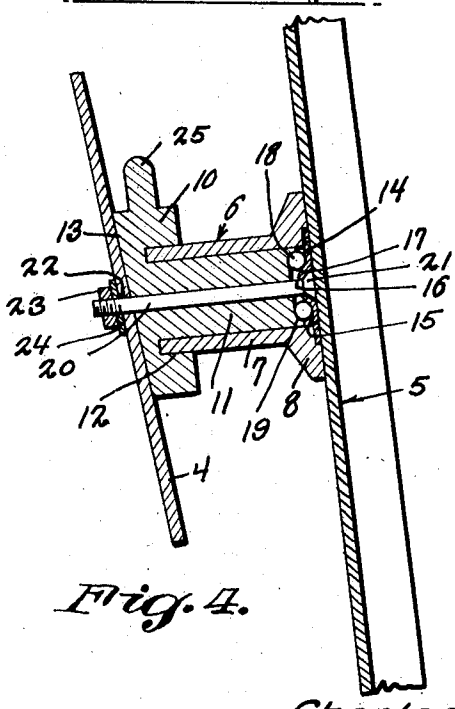


Fig. 4.

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Patented Nov. 19, 1929 1,736,442

UNITED STATES PATENT OFFICE

CHARLES HILL, OF SPRINGFIELD, COLORADO REISSUED

ADJUSTABLE REVOLVING MOLDBOARD

Application filed October 3, 1927. Serial No. 223,820.

This invention relates to improvements in plows and more particularly to an improved construction and arrangement of the mold-boards of a lister plow, although the principles of the invention may find embodiment in subsoilers, drills, and other similar farm machinery.

One of the objects of the invention is to provide an improved rotary mold-board construction for installation upon lister plows, the invention contemplating the provision of novel means whereby mold-boards, which are of the disk type, may be readily angularly adjusted, so as to rotate in different planes at different angles with respect to the share of the lister, such adjustment providing for operation of the lister with maximum efficiency, inasmuch as the angular disposition of the revolving mold-boards may be varied in accordance with the conditions of the soil.

Another object of the invention is to provide a revolving mold-board attachment for listers and the like, embodying means for adjusting the angular disposition of the mold-board, and which adjusting means will be capable of convenient and accurate adjustment without the necessity of dismounting the mold-boards, in order to effect such adjustment.

Another object of the invention is to provide, in combination with the revolving mold-boards, a novel share for attachment to the beam of the lister and so formed as to lift the soil and present the same to the revolving mold-boards in a manner to insure of functioning of the mold-boards with a maximum degree of efficiency.

While the accompanying drawings and the description which is to follow, constitute a disclosure of the preferred embodiment of the invention, it will be understood that various changes may be made within the scope of what is claimed.

In the accompanying drawings:

Figure 1 is a side elevation of the structure embodying the invention;

Figure 2 is a top plan view thereof;

Figure 3 is a vertical section view through the structure shown in Figure 1 taken at a plane in advance of the revolving mold-boards;

Figure 4 is a vertical sectional view taken substantially on the line 4—4 of Figure 2 looking in the direction indicated by the arrows.

In the drawings, the beam of the lister upon which the mold-boards and the share, embodying the invention, are mounted, is indicated by the numeral 1, and is of the usual construction, the same being provided with the usual forwardly directed and widened end 2 for attachment of the share which will presently be described.

The mold-board structure includes a supporting beam consisting of a channelled body 3 which is disposed to straddle the beam 1 and which is provided, at its opposite sides, with supporting wings 4 which extend downwardly and rearwardly at an angle from the portion 3 and which support the revolving mold-boards, in a manner which will now be explained.

The mold-boards are indicated by the numeral 5 and are of the disk type, and each of the mold-boards is supported upon a respective one of the wings 4 of the supporting member. The supporting means for each mold-board comprises a hub 6 which includes a hollow cylindrical body portion 7 which is formed at one end with a head 8 of circular form and disposed against the inner side of the respective mold board 5 at the center thereof, the head being secured to the mold-board by means of screws or bolts 9. A bearing head 10 is assembled with the hub 6, being provided, centrally, with a hollow cylindrical neck 11 which is rotatably adjustably fitted in the bore of the cylindrical body 7 of the hub 6, that face of the body 10 which is presented towards the head 8 of the hub 6, being formed with an annular seat 12, surrounding the inner end of the neck 11, and rotatably accommodating the adjacent end of the body 7 of the hub 6. The other face of the head 10, indicated by the numeral 13, is disposed at an angle to the axis of the head and consequently at an angle to the face of the head in which the seat 12 is formed, and this angularly dis-

posed face of the head 10 is arranged in contact with the outer face of the respective supporting wing 4, as clearly shown in Figures 2 and 4 of the drawings. The purpose of the head 10 will presently be described.

In order to provide for free rotation of the hub 6 about the neck 11 of the head 10 and therefore provide for free rotary movement of the disks 5, a bearing disk 14 is disposed against the outer face of the head 8 of the hub 6 and is received flush within a circular recess 15 formed in said face of the head, the disk 14 being clamped against the side of the disk 5 at the time the bolts 9 are tightened. The disk 14 is formed centrally with an opening 16, and the portion of the disk which surrounds this opening is struck out to substantially conical form to provide a ball race indicated by the numeral 17, bearing balls 18 being arranged about this portion of the said disk 14 and within an annular race 19 formed in the end of the neck 11. A bolt 20 is fitted through the bore of the neck 11 and has a beveled head 21 which is received flush within the concave side of the struck-out central portion 17 of the head 14, the head of the bolt being confined between this portion of the disk 14 and that face of the mold-board disk 5 to which the hub 6 is secured. An opening 22 is provided in the supporting wing 4, and the threaded end of the bolt 20 is fitted through the said opening, and a nut 23 is fitted onto the end of the bolt and is adjusted to bear against a washer 24 likewise fitted on the bolt and held against the inner side of the wing 4. In order that the member 10 may be rotatably adjusted, for a purpose which will now be explained, it is provided at a point in its periphery, with an outwardly projecting lug or finger-piece 25 which may be grasped, for rotatably adjusting the head 10, when the nut 23 is slightly loosened.

From the foregoing description of this portion of the structure embodying the invention, it will be evident that the hub 6 of the disk 5, comprising the revolving mold-board, is free to rotate upon the neck 11 of the member 10, so that this neck constitutes, in effect, a spindle for the said hub. It will also be evident by reference to Figure 2 of the drawings that, due to the angularly diverging disposition of the wings 4 of the attaching and supporting member 3, the bolts 20, the neck 11 of the head 10, and the cylindrical body 7 of the hub 6 of the mold-board disk 5, are concentrically arranged and extend forwardly and laterally at an angle to the line of draft of the lister, the hubs for the two mold-board disks being oppositely angularly disposed, so that they are relatively arranged on forwardly diverging lines. As it will be desirable to vary the angular disposition of the mold-board disks 5, in accordance with different soil conditions, and in order to render the disks most efficient in view of the conditions encountered, the angular disposition of each disk may be readily varied by slightly loosening the respective nuts 23 and rotatably adjusting the respective head 10 which adjustment, due to the angular disposition of the outer face 13 of the head with respect to the axis of the head, will result in angular adjustment of the axis of the member 10 with respect to the plane of the supporting wing 4. It will be evident that this rotative adjustment of the members 10 may be readily effected, and that a wide range of adjustment of the mold-board disks is obtained.

In order that the furrows may be opened and the soil directed and elevated in a manner to substantially present it to the mold-board disks and thus provide for most effective action of the disks, a share, of the construction illustrated in Figs. 1, 2 and 3 of the drawings, is preferably employed, in combination with the disks, this share being indicated in general by the numeral 26. The channelled body 3 of the attaching and supporting member of the structure is, of course, to be bolted or otherwise secured to the lister beam 1, and, in order that the share 26 may be supported in proper position in advance of the mold-board disks 5, the forward portion of the said member is flattened to provide an attaching and supporting head 27 to which the shaft 26 is bolted as indicated by the numeral 28. By reference to Figures 1, 2 and 3 of the drawings it will be observed that the share 26 comprises a blade 29 having a pointed forward end 30 and oppositely downwardly and laterally inclined side portions 31, the blade being secured to the head 27 of the supporting member with its longitudinal center line extending midway between the mold-board disks 5, and consequently in the line of draft of the lister. The rear portion of the blade 29 is extended upwardly, as indicated by the numeral 32, from the point of attachment of the said blade 29 to the head 27 of the supporting member, and this upwardly extended portion 32 of the blade comprising the share, is arranged at a rearward angle of inclination and is tapered in the direction of its upper end, its upper end portion being located immediately in advance of the forward upper sides of the mold-board disks and relatively close thereto.

It will be evident from the foregoing description of the share, that as the same passes through a furrow, the soil at the opposite sides of the furrow will be directed upwardly and rearwardly and therefore, as previously stated, substantially presented to the mold-board disks 5, thus insuring of most effective turning aside of the soil by the disks.

In order that the disks may be substantially self-sharpening and likewise in order to obtain a more thoroughly side-wise deliv-

ery of the soil acted upon by the disks, the peripheral portion of each disk is outwardly flared or deflected, continuously throughout its circumference, as indicated by the numeral 33.

Having thus described my invention what I claim as new is:—

An adjustable revolving mold-board comprising a supporting member, a mold-board disk, a hub having a cylindrical body portion and a head, means securing the head to the disk, a bearing disk disposed against the face of the first mentioned disk, the head of the hub having a seat in its face which contacts the mold-board disk, the periphery of the bearing disk seating in said seat and the bearing disk having a central opening and a seat in its side which contacts the mold-board disk, a cylindrical member upon which the cylindrical body of the hub is rotatably mounted, the member having a head provided with a face at an angle to the axis of the member and disposed against the support, a bolt having its head seating in the seat in the bearing disk, the last mentioned member having an axial opening therein, the said bolt extending through said opening and through the supporting member, a nut threaded upon the bolt and bearing against the supporting member and maintaining the last mentioned member in positions of rotative adjustment upon the bolt, and anti-friction bearing elements arranged between the bearing disk and the inner end of the tubular body of said member.

In testimony whereof I affix my signature.

CHARLES HILL.