This invention relates to improvements in plow and scraper blade mountings. It is the principal object of the invention to provide improved plow and scraper blade mountings wherein the blade or moldboard is adjustably supported above ground level on convexly bottomed shoes. The provision of convexly bottomed shoes permits the blade to assume a variety of angular positions respecting the direction of vehicle travel without interfering with the skirt or support function of the shoe.

Another object of the invention is to provide a pivot mounting for the blade upon which the blade may be rotated to selected angular positions respecting the direction of vehicle travel. In this connection it is an object of the invention to provide a pivot mounting particularly adapted for interconnection with the articulating tractor dipper stick frames of the type disclosed in our co-pending application filed March 10, 1950, Serial No. 148,961 and now Patent No. 2,672,994.

A further object of the invention is to provide the blade with a yieldable mounting upon which the blade is permitted to pivot in a plane normal to the ground to allow the blade to ride over solid obstructions and otherwise protect the blade from injury.

A still further object of the invention is to provide a V-shaped snow plow having convexly bottomed shoes disposed in a triangular pattern corresponding to the outlines of the V-shaped blade.

Other objects will be more apparent to one skilled in the art upon an examination of the following disclosures.

In the drawings:

Fig. 1 is a plan view of the front portion of a vehicle dipper stick and a scraper blade pivotally attached thereto.

Fig. 2 is a cross sectional view taken along the line 2—2 of Fig. 1.

Fig. 3 is a plan view of a scraper blade showing a novel mounting therefor including a pivotal connection between the blade and the vehicle dipper stick.

Fig. 4 is a cross sectional view taken along the lines 4—4 of Fig. 3.

Fig. 5 is a rear perspective view of a modified form of the blade shown in Figs. 3 and 4, the modification comprising a pivot upon which the blade is pivoted in a plane normal to the ground and a yieldable connection between the dipper stick and blade offset from said pivot.

Fig. 6 is a detail view of the yieldable blade connection.

Fig. 7 is a rear perspective view of a V-shaped snow plow provided with convexly bottomed ski shoes disposed in a triangular pattern corresponding to the blade outline.

Fig. 8 is a vertical cross sectional view taken through the plow as shown.

Although the plows and blades to be described herein have application to any type of power driven vehicle, they have particular utility when used as front end attachments to the tractor dipper sticks described in our co-pending application aforesaid. These dipper sticks are illustrated only fragmentarily herein, and comprise laterally spaced longitudinally extending lever arms (see Figs. 1 and 2).

The dipper stick further comprises a cross member 11 between the arms 10. In one embodiment of the invention, and as best shown in Figs. 1 and 2, the cross member 11 supports a tubular sleeve 12 in which a retractible catch or lock rod 13 is reciprocably mounted. A scraper blade 14 may be mounted on the lever arm ends between the brackets 16 and transverse pivot pins 15 and is further provided with a centrally disposed rearwardly extending strap 19 which is apertured at 20 at several points along the strap 19 to selectively receive the lock rod 13. By changing the rod from one aperture 20 to another the inclination of the blade 14 respecting the ground may be varied.

Lock rod 13 may be withdrawn from a strap aperture 20 by means of a linkage system operatively controlled from the driver's seat of the tractor. A control rod 21 extends from the driver's seat to a pivotal connection to a lever 22 which is fulcrummed upon a bracket 23 fixed to the cross member 11. Intermediate its ends the lever 22 is pivotally connected at 24 to the lock rod 13. Withdrawal of the lock rod from the blade strap aperture will dump the contents of the blade when the dipper stick arms 10 are raised.

An important feature of the invention is the provision for the adjustable support of the blade 14 at desired levels above the ground. For this purpose convexly bottomed ski shoes 25 are disposed at each side of the blade upon the brackets 26. The blades shown in Figs. 3, 4, and 5 are similarly provided with convexly bottomed ski shoes 25. As best shown in Fig. 5 the mounting bracket 26 comprises a sleeve portion 27 having vertically spaced apertures 29. The shoe 25 is provided with a mounting stem 30 which is slidable in the bracket sleeve 27 and is also provided with spaced apertures 31 which align with the sleeve aperture 29 to selectively receive a removable pin 32 or the like by which the height of the blade 14 respecting the ground may be adjusted.

The blade 14, in the embodiments of the invention shown in Figs. 3 to 5, is mounted upon the dipper stick lever arms 10 of the tractor in a somewhat different manner than that of the embodiment of Fig. 1. As best shown in Fig. 3 the blade 14 may be pivoted about a pin 36 to a variety of angular positions respecting the path of vehicle travel. The pivotal mounting comprises a plate 33 fixed to the dipper stick and in face contact with a plate 34 connected to the blade. Plate 34 is accurately apertured at 35, and is provided with the offset pivot 36 about which the blade may be rotated. The plate 33 is provided with an arm 37 overlying the plate 33 to receive therebetween the blade plate 34. Arm 37 is provided with an aperture 38 disposed in the same arc as the plate apertures 35. When one of the apertures 35 and the arm aperture 38 are mutually aligned a pin 41 may be passed through the aligned apertures to fix the blade in selected angular position. In this manner the pivotally related plates 33 and 34 constitute a turntable on which the blade is pivotally mounted.

The convexly bottomed shoes 25 serve effectively as support skids regardless of the angular positioning of the blade upon its pivotal mounting, the convex ski riding over the surface of the ground equally well in all directions and at various angles.

The dipper stick plate 33 is detachably rigidly connected to the lever arms 10 by means of the paired rearwardly extending arms 42 which are apertured at 43 to receive the transverse rod 44 which has bearings in the
respective ends of the arms 10. The rearward portion of the arms 10 are forked, as best shown at 45 in Fig. 4, to embrace the dipper stick cross member 11 between the arms 10 and prevent play over the transverse rod 44. In this manner the plate 53 is made rigid with the dipper stick but may be readily attached and removed therefrom.

As best shown in Figs. 5 and 6 the blade 14 may be further provided with a pivot 48 at right angles to pivot 36. The rearward portion of the arms 42 are forked, as best shown at 45 in Fig. 4, to remain horizontally oriented when lifted from the ground. We claim:

1. The combination with a boom comprising a blade and blade turntable carried by said boom, said turntable comprising a relativity stationary normally horizontal first plate having means for turning the arms of said boom and arms extending rearwardly beyond said means and along said boom arms, said plate arms having rearwardly open forks engaged with the cross bar of the boom whereby to rigidly but detachably brace said first plate with respect to the boom, said turntable further comprising a pivot pin, a second plate having bearing support on the first plate and having a central bearing pivotally engaged with said pin for oscillation of said plate thereabout, an arm connected to said first plate beyond the margin of said second plate and extending over said second plate in spaced relation to said first and second plates, said arm being provided with an aperture over the margin of said second plate, said margin being provided with a series of apertures arcuately arranged about said pivot pin, and a locking pin engageable through the said aperture in said last arm and selectively with the apertures in the margin of the second plate whereby to lock said second plate adjustably with respect to said first plate, said second plate being provided with a second pivot pin at a right angle to said first pivot pin, said blade being provided with a bearing on which said blade is mounted to said second plate by said second pivot pin forming a plane substantially parallel to said table and having a plane of turntable rotation, and spring means connecting said second plate and blade to bias said blade to upright position about said second pivot but yieldable on impact of said blade with any unyielding obstruction to permit the blade to oscillate about said second pivot to pass said obstruction, said second plate being provided with a first bracket extending upwardly therefrom and a second bracket extending downwardly therefrom, said blade being provided with a rearwardly extending third bracket parallel to said second bracket and in face sliding contact therewith, said second and third brackets being provided with aligned holes providing a passage for said second pivot, said spring means comprising an anchor mounted on said third bracket, a rod connected to said anchor and extending along said third bracket in substantially parallel relation thereto, said rod having an end collar, a compression spring coiled about said rod and seated against said collar, an arm connected to said second bracket and extending in spaced parallel relation to said third bracket and rod, said arm having its end turned toward said rod and provided with an aperture through which said rod extends from said anchor, said end provided a seat for the spring opposite the collar whereby to compress said spring between said end and collar when the blade oscillates forwardly about said second pivot in passing an obstruction.

2. In a device of the character described a blade and blade turntable mounting comprising a relatively stationarily normally horizontal first plate, an upright first pivot pin on said plate, a second plate in bearing engagement on the first plate and having a central bearing pivotally engaged with said pin for oscillation of said second plate thereabout, an arm connected to said first plate beyond the margin of said second plate and extending over said second plate in spaced relation to said first and second plates, said arm being provided with a bearing on which said blade is mounted to said second plate by said second pivot pin for oscillation in a plane transverse to the plane of turntable rotation, said second plate being provided with a first bracket extending upwardly therefrom and a second bracket extending down-
wardly therefrom, said blade being provided with a rear-
wardly extending third bracket parallel to said second
bracket and in face sliding contact therewith, said second
and third brackets being provided with aligned holes pro-
viding the bearings for said second pivot, an anchor
mounted on said third bracket, a rod connected to said
anchor and extending along said third bracket in substan-
tially parallel relation thereto, said rod having an end
collar, a compression spring coiled about said rod and
seated against said collar, an arm connected to said
second bracket and extending in spaced parallel relation
to said third bracket and rod, said arm having its end
turned toward said rod and provided with an aperture
through which said rod extends from said anchor, said end
providing a seat for the spring opposite the collar whereby
to compress said spring between said end and collar when
the blade oscillates forwardly about said second pivot,
whereby said blade may pass an unyielding obstruction.

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