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COULTER ASSEMBLY

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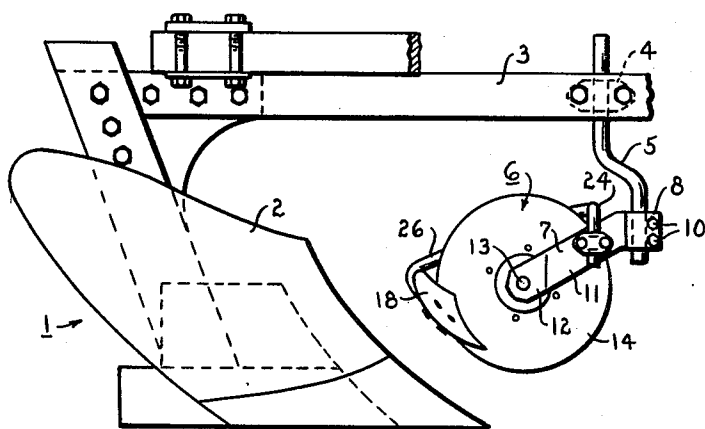


Fig.-1

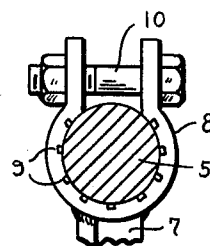


Fig.-6

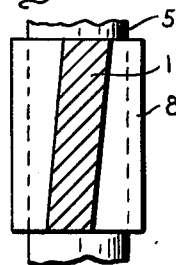


Fig.-5

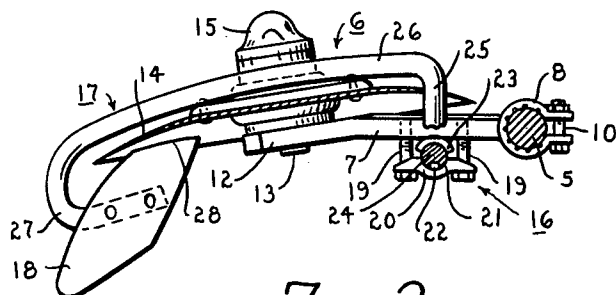


Fig.-2

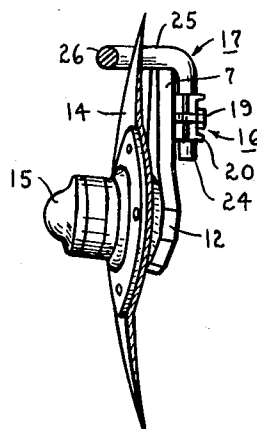


Fig.-4

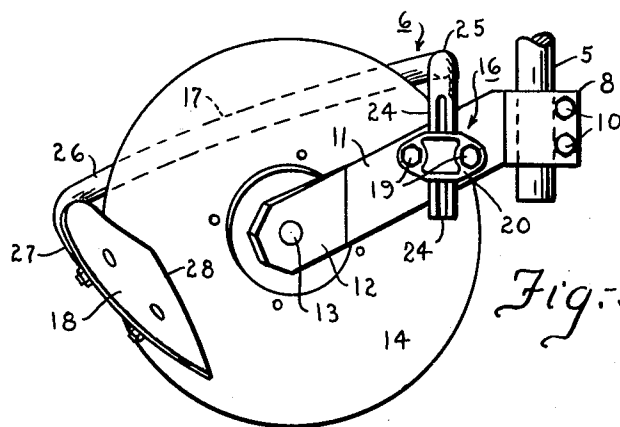


Fig.-3

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COULTER ASSEMBLY

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The invention relates generally to farm equipment and more particularly is directed to coulters adapted for association with a plow for parting or dividing the soil in advance of the plow.

It is recognized that there are a multitude of various forms or types of coulters in use and that they are mounted or supported in different ways. It is also known that some of the coulters are relatively heavy and cumbersome while others are of flimsy construction and do not stand up when subjected to hard usage.

Moreover, the means employed for attaching or mounting coulters vary considerably. The means supporting some coulters are not readily adjustable; some are intricate and difficult to adjust; and others are unstable and fail to maintain the coulters at a proper angle or operating position after adjustment.

One of the major disadvantages or handicaps of the concavo-convex type of disc coulters is the absence of efficient means for accurately setting the angle of the blade. In many instances, an operator, particularly an inexperienced one, will adjust and set the blade at an improper angle so that the blade serves more as a disc plow, in which event, the blade will cause a side thrust or drag sufficient to defeat the real purpose of the coulters.

With the foregoing in mind, the primary object of the invention is to provide a mounting or supporting assembly for a coulters which embodies improved principles of design and construction.

More particularly, an important object of the invention is to provide structure having an elongated support for a blade whereby the blade is always maintained or held at the appropriate angle so that the blade will perform efficiently at all times. This positioning of the blade is of great importance and in part is preferably accomplished by angling the lower extremity of the support. In other words, the lower extremity of the support which carries the blade is permanently offset and disposed to place the plane formed by the blade at an acute angle with respect to the longitudinal axis of the support. The offset serves the dual purpose of assisting to maintain the blade at the proper angle and in providing clearance to permit rotation of the blade.

Another significant object of the invention is to provide a supporting structure which includes a clevis or generally tubular fitting for adjustably connecting the support to a post or hanger, which in turn, is adjustably connected to an overhead beam of a plow. More specifically in this respect, the support is welded or otherwise permanently joined to the fitting in a manner to locate the longitudinal axis of and the plane formed by the support in an inclined or angular position with respect to the longitudinal axis of the fitting. Otherwise expressed, the support extends angularly downwardly from the fitting with the plane of the support disposed at an angle with respect to a vertical plane.

The angularity between the support and fitting and the offset on the support, as described above, is compounded to permanently and accurately maintain the blade in a

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position which, after exhaustive field tests, has proven most beneficial and efficient in operation in practically all known conditions of use.

This compounding of the angularity between the components of the assembly is considered to constitute a profound advance over conventional or known setups of the character above referred to.

An additional object of the invention is to provide a support of the kind described which is provided with adjustable fastening means intermediate its extremities for connection with a curved arm having an inner offset depending end portion detachably connected to the fastening means and an outer offset portion carrying a blade or scraper which assists in turning the soil and in keeping the blade clean. The fastening means affords an adjustment for locating and locking the scraper in a desired position with respect to the support.

Attention is directed to the important fact that the fastening means is disposed on the one side of the support; that the arm includes a generally horizontal portion overlying the support and the blade; a portion which is curved and angled with respect to the depending portion; and that the outer offset portion, above referred to, is disposed on the opposite side of the blade and forms with the curved portion a generally U-shaped formation for straddling or receiving the disc blade.

Other objects of the invention reside in providing an assembly comprising components which can be economically manufactured and assembled on a production basis and which offers advantages with respect to stability, durability, balance and efficient operation not present in conventional assemblies.

A specific object of the invention is to provide a unique fastening means on the support whereby the arm can be readily adjusted thereon to locate the blade or scraper on the arm relative to the disc blade.

Additional objects and advantages of the invention will become apparent after the description hereinafter set forth is considered in conjunction with the annexed drawings and in which one embodiment of the invention is exemplified.

In the drawings:

Figure 1 is an elevational side view of a plow showing the coulters assembly embodying the invention applied thereto;

Figure 2 is a top view of a part of the structure in Figure 1, with portions in section to illustrate details of design and construction;

Figure 3 is an enlarged elevational side view of the coulters assembly;

Figure 4 is an elevational end view of the structure shown in Figure 3 with portions broken away to depict details of the construction;

Figure 5 is an enlarged transverse sectional view taken through the support; and

Figure 6 is a transverse section taken through the post showing the fitting connected thereto.

Referring more particularly to the drawings, numeral 1 generally designates a conventional plow provided with a share 2 and an overhanging forwardly extending horizontal beam 3 having connection means 4 thereon for detachably connecting and adjustably supporting a post or hanger 5 which carries the coulters assembly generally designated 6. The post includes an upper extremity connected to the connection means and an offset lower extremity to which the coulters assembly is attached as clearly shown in Figure 1. The post or hanger affords means whereby the coulters assembly may be adjusted with respect to the forward curved cutting edge of the plow share.

The coulters assembly may be designed and constructed in various ways but as illustrated includes an elongated support 7, preferably rectangular in cross-section, with a

clevice or generally tubular fitting 8 welded or otherwise permanently joined to the upper end of the support. The fitting is preferably provided with longitudinally extending inner grooves 9 so as to facilitate relative rotational adjustment between the support and post and obtain positive lock therebetween through the agency of bolts 10 carried by flanges on the fitting.

The support includes an intermediate portion 11 which extends angularly downwardly and generally in a direction toward the plow share as depicted in Figure 1. The support also includes a lower offset end 12 which carries a shaft or axle 13 extending from one side of the support for rotatably supporting a blade 14, preferably of the concavo-convex disc type, in a conventional manner.

As alluded to above, the longitudinal axis of the support and its plane are disposed at compound angles with respect to the longitudinal axis of the fitting, or to express the arrangement in another way, the support is inclined so that its longitudinal axis is disposed at an acute angle with reference to the horizontal, as best shown in Figures 1 and 3, and its plane is inclined or angled with respect to the vertical as depicted in Figures 2, 4 and 5.

The lower offset end 12 of the support is disposed so that its longitudinal axis and plane are respectively arranged at angles with respect to the longitudinal axis and plane of the intermediate portion 11. With this unique setup a compound angular relationship is permanently maintained between the intermediate portion of the arm and fitting and a permanent compound angular relationship between the intermediate portion and the lower offset of the support in order to provide a firm and well-balanced support for the blade or disc. It will be noted that the shaft or axle 13 is disposed at right angles or perpendicular to the plane of the offset end 12 so it might be further stated that the axis of the shaft is disposed at an angle with respect to the longitudinal axis of the intermediate portion 11 of the support and at an angle to the horizontal as shown in Figures 2 and 4. As mentioned above, the offset end of the support also serves to provide clearance for rotation of the blade. The blade is preferably mounted on a hub 15 which is suitably journaled on the shaft.

A fastening means generally designated 16 is provided on the intermediate portion 11 and opposite side of the support. The fastening means adjustably supports an arm generally designated 17 and a scraper or blade 18 detachably carried thereby. This fastening means may be designed and constructed in various ways but as shown includes a pair of studs 19 threadedly connected to the support and extending laterally thereof, a bar or bridge 20 slidably mounted on the studs and provided with a concave seat 21 having a projecting lug or key 22 therein. The support is also provided with an elongated concave member 23, constituting a seat, preferably welded thereto between the studs in complementary relation to the concave seat on the bridge 20, the seats cooperating to adjustably secure the arm to the support when the studs are tightened.

The arm 17, among other things, includes a depending or vertical end portion 24 disposed in parallel relation to the post and is provided with a longitudinal slot which receives the key 22 to positively lock the arm against movement with respect to the support. The arm 17 also includes a horizontal portion 25 overlying the support and blade; a curved and angled portion 26 substantially conforming to the curvature of the convex side of the blade; and an inturned angled end portion 27 which carries the scraper or blade 18. The end portion 27 in combination with the curved portion 26 forms a generally U-shaped formation which straddles or receives the blade and so that a curved edge 28 on the scraper or blade 18 is disposed generally in conforming relationship with the concave side of the blade as shown in Figures 2 and 3.

Attention is directed to the fact that the fastening means connecting the arm to the support affords a unique setup

whereby the arm can be readily adjusted by merely manipulating the studs so that the blade 18 can be located in a desired operative position with respect to the disc blade.

In view of the foregoing, it will be manifest that the disc blade is accurately and permanently fixed at a predetermined angle for efficiently performing its intended purpose and that the scraper or blade 18 is also secured or locked at an appropriate angle with respect to the disc blade to serve its purpose.

Having thus described my invention, it is obvious that various modifications may be made in the same without departing from the spirit of the invention; and, therefore, I do not wish to be understood as limiting myself to the exact form, construction, arrangement and combination of parts herein shown and described.

I claim:

1. An assembly of the kind described comprising an elongated support, means at one end of the support for attaching the support to a mounting, a disc rotatably mounted on the other end of the support at one side thereof, fastening means carried by the opposite side of the support, an arm having one end secured to the fastening means and a portion extending chordally of the disc, the other end of the arm being formed to straddle a peripheral portion of the disc, and a blade secured to said other end of the arm and located on that side of the disc facing away from the chordally extending portion of said arm.

2. An assembly of the kind described comprising an elongated support provided with a fitting for attaching the assembly to a mounting, said support including an angularly disposed depending portion and an offset lower end portion, an axle secured to the offset portion in a position inclined to the horizontal, a concavo-convex disc rotatably mounted on the axle and located at one side of the support, fastening means carried by the other side of the support, an arm having a vertical portion secured to the fastening means, said arm also having a portion extending transversely of the support and disc and overlying the same, said arm further having a curved portion extending chordally across the disc and substantially conforming to its convex side and having an offset forming in combination with the curved portion a generally U-shaped formation straddling the disc, and a blade carried by the offset, said blade being provided with a work edge substantially conforming to the concave side of the disc for the purpose described.

3. An assembly of the kind described comprising a plow having a share and an overhead beam, a coulter assembly, means suspending and connecting the coulter assembly to the beam for adjustment with respect to the share, said coulter assembly including a one-piece support having a depending inclined elongated portion and a lower portion, an axle carried by the lower portion and rotatably supporting a disc in advance of the share, said lower portion being offset and inclined to a greater degree than the incline of the elongated portion so that the plane of the disc will be tilted with respect to the vertical and form an acute angle with the elongated portion of the support, and a curved arm extending chordally across the disc and having an upper end secured to the elongated portion of the support between the axle and connecting means and also having a lower generally U-shaped portion straddling a peripheral edge portion of the disc, and a blade carried by the U-shaped portion having a work edge operatively associated with the disc.

4. A coulter assembly comprising a vertical resiliently flexible tubular fitting and an inclined support, substantially rectangular in cross-section, secured to the fitting, said support comprising an elongated portion disposed in an inclined plane with respect to the longitudinal axis of the fitting and a lower portion offset with respect to the elongated portion and disposed in a plane of greater inclination than the plane of the elongated portion, a shaft carried by the lower portion, a disc rotatable on the shaft

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and disposed in a plane which intersects the longitudinal axis of the elongated portion at a location rearwardly of said elongated portion, fastening means carried by the support, an arm having an intermediate portion extending chordally across one side of the disc and a pair of offset ends disposed on the other side of the disc with one of the ends adjustably connected to the fastening means, and a blade carried by the other end of the arm for operative association with the disc.

5. An assembly of the kind described comprising a plow having a share and an overhead beam, a coulter assembly, means suspending and connecting the coulter assembly to the beam for adjustment with respect to the share, said coulter assembly including a one-piece support having a depending inclined elongated portion and a lower portion, an axle carried by the lower portion and rotatably supporting a disc in advance of the share, said lower portion being offset and inclined to a greater degree than the incline of the elongated portion so that the plane of the disc will be tilted with respect to the vertical and form an acute angle with the elongated portion of the support, an arm extending chordally of the disc and having an

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upper end secured to the elongated portion of the support between the axle and connecting means and also having a lower bent portion straddling a peripheral portion of the disc, and a blade carried by the bent portion having a work edge operatively associated with the disc.

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