Oct. 13, 1931. E. E. ENGLUND 1,827,001

PLOW

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FIG. 7

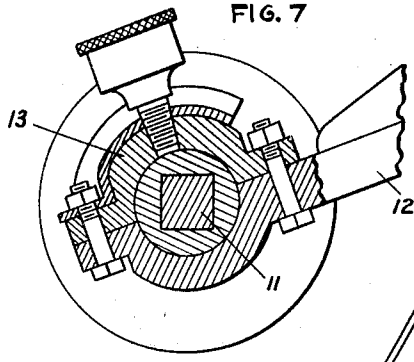


FIG. 1

FIG. 6

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PLOW

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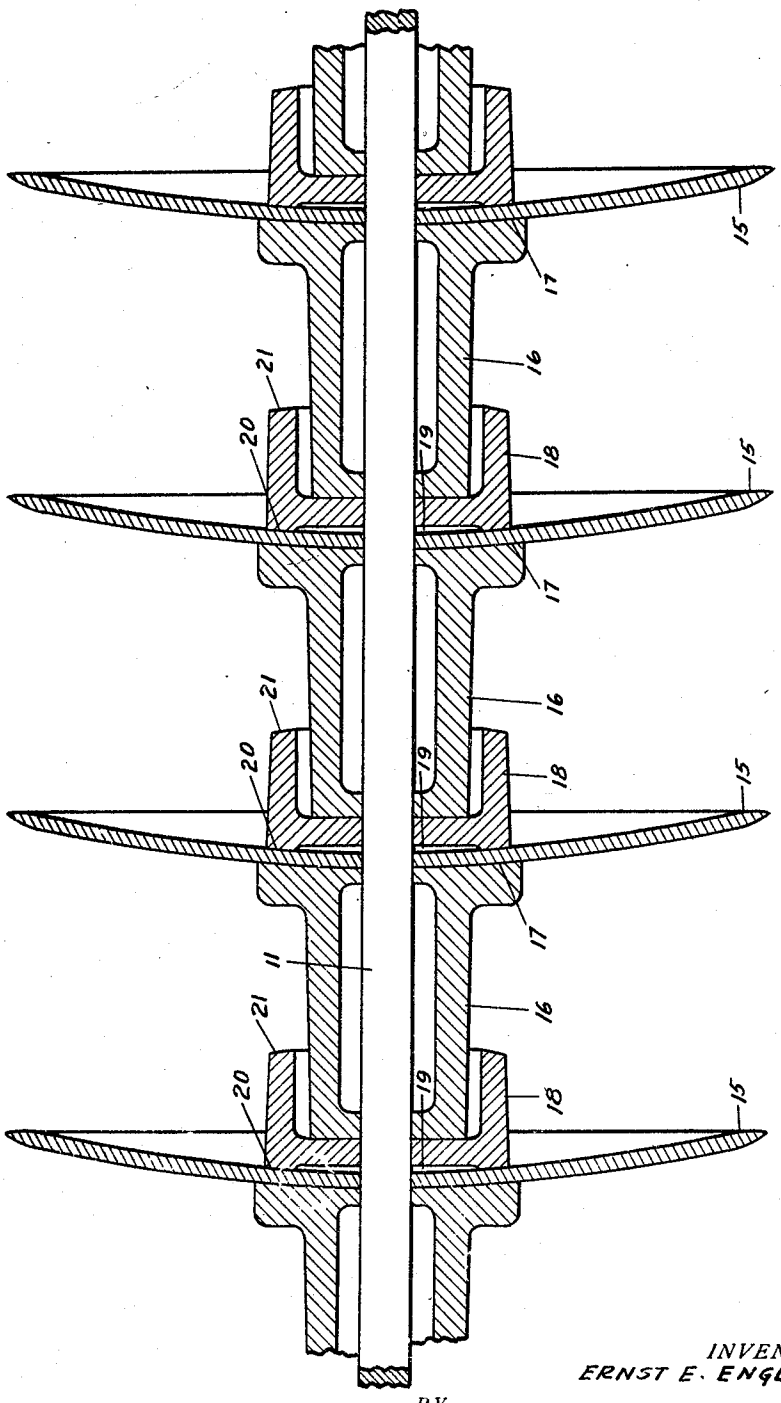


FIG. 2

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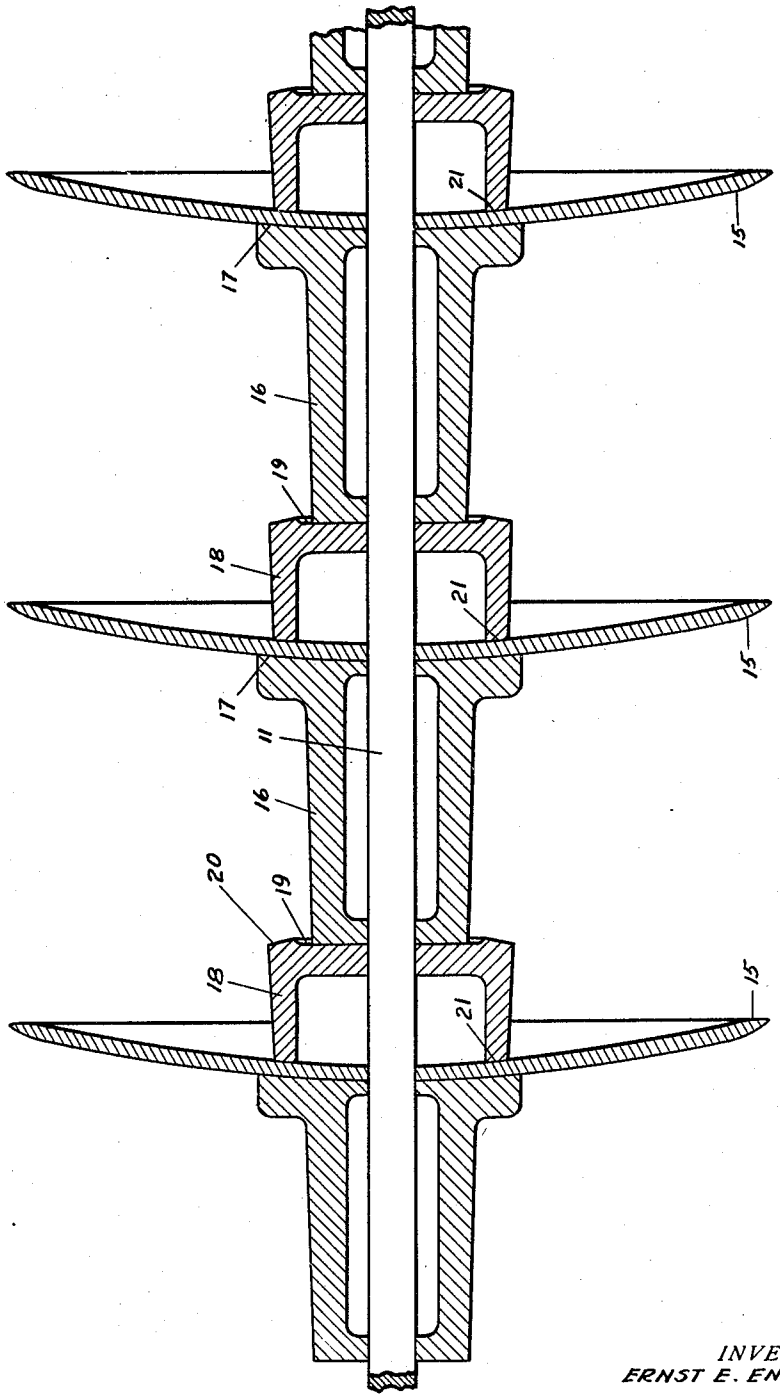


FIG. 3

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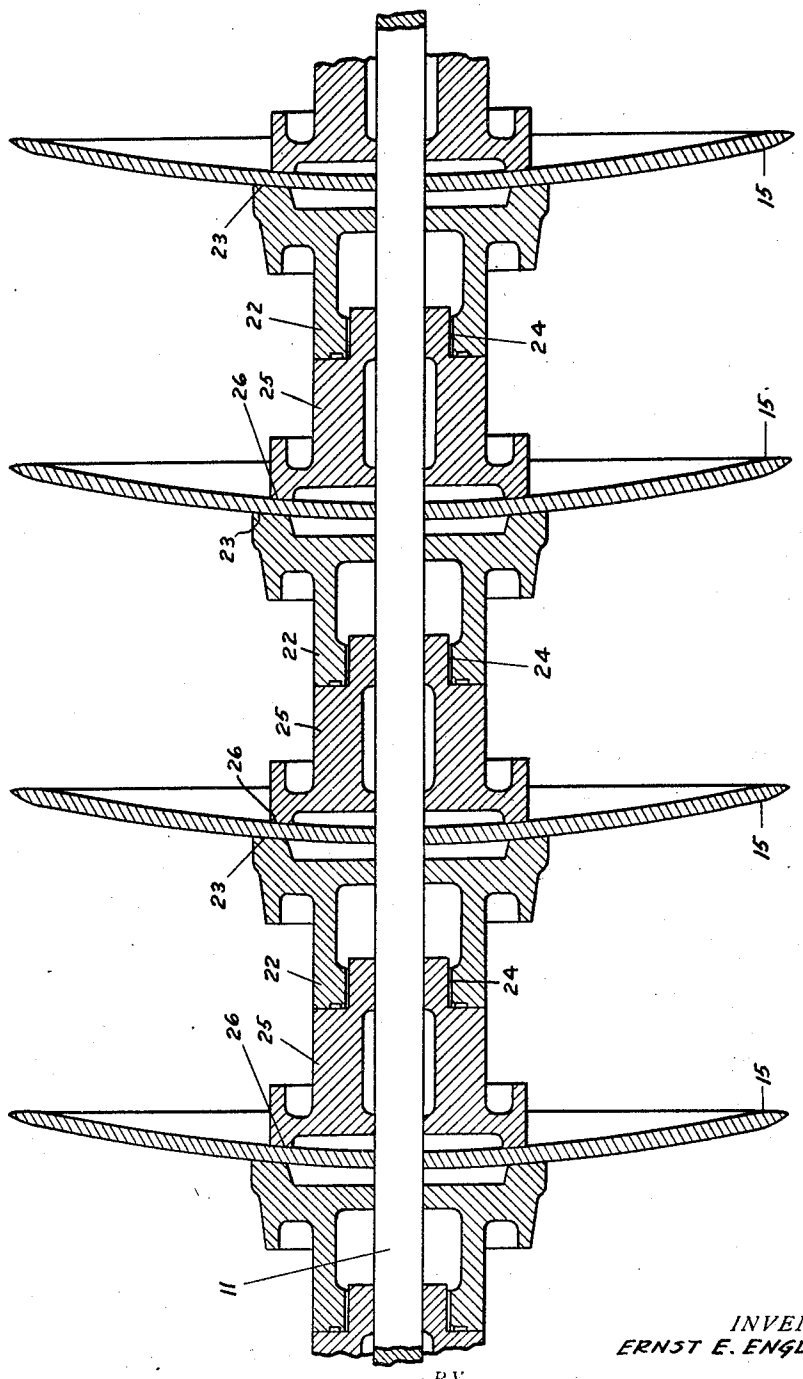
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FIG. 4



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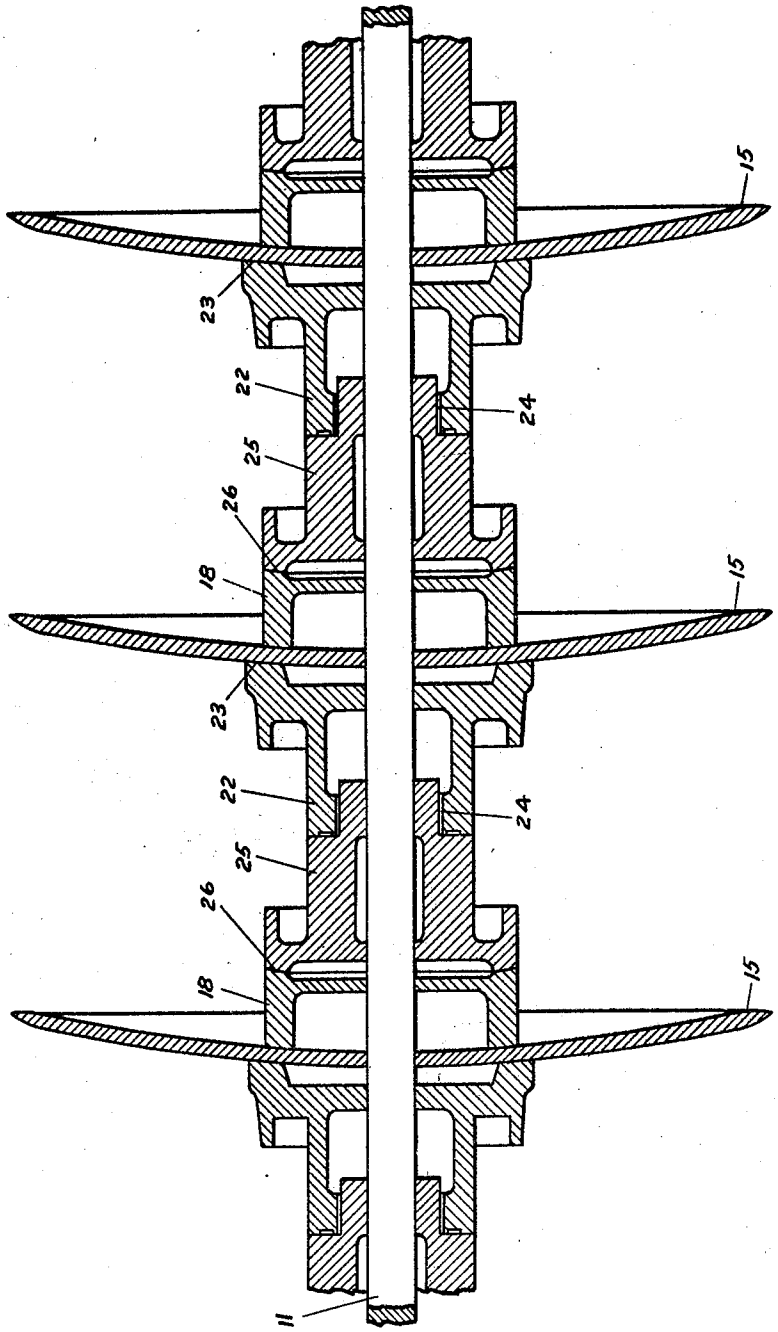


FIG. 5

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Patented Oct. 13, 1931 1,827,001

UNITED STATES PATENT OFFICE

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PLOW

Application filed May 22, 1930. Serial No. 454,564.

This invention relates to improvements in disc plows, and has for its object to provide means for spacing the discs on a supporting shaft in such a way that the spaces between the discs may be varied. For the purpose of effecting this variation and adjustment there is provided between the adjacent discs a plurality of cooperating spacing elements, adapted to be used in connection with each other in such a way that by the adjustment of these elements the spaces between the discs may be varied. In the present instance this is accomplished by means of a barrel or spool member adapted to engage at one end with one of the faces of a disc, while on the other end of the barrel member there is a cup-shaped member adapted to cooperate therewith in such a way as to provide two adjustments between adjacent discs. The cup-shaped member has its ends formed to correspond to one face of a disc.

Instead of the barrel or spool member being formed in one piece with a single enlarged end for engagement with a disc, the barrel member may be composed of two parts, easily detachable one from the other, with a head on each end for engagement with different sides of discs, and cooperating with either of these heads is a cup-shaped member adapted to be used in connection with the double headed barrel or spool member for forming an additional spacing element cooperating with this spool or barrel member. In this form the cup-shaped member may cooperate with only one part of the barrel member so that less space may be provided between two adjacent discs.

The purpose of having and providing this adjustment between discs is that the soil may be either broken in large chunks or may be more finely pulverized, owing to the condition of the soil and the ends desired or required. For early breaking of land it is desirable to have the discs spaced some distance apart, while in later breaking of the soil, where it is desired to more finely divide and pulverize the soil, it is necessary that the discs be closer.

These and other advantages will appear from the following description taken in connection with the drawings.

Referring to the drawings:

Figure 1 is a top plan view of a disc plow or harrow supported by the usual frame and wheels.

Figure 2 is a longitudinal sectional view through a series of discs mounted on the supporting shaft, showing one form of spacing means and one adjustment of this form.

Figure 3 is a sectional view similar to Figure 2 but showing the spacers in a different arrangement from that shown in Figure 2.

Figure 4 is a modified form of spacer.

Figure 5 is a view similar to Figure 4 but showing in conjunction with the spacer shown in Figure 4 a cup-shaped member to increase the spacing effect of the spacer.

Figure 6 is a longitudinal section through the thrust bearing.

Figure 7 is a cross section on the line 7—7 of Figure 1.

In Figure 1 there is shown a form of disc plow or harrow, the details of which it is unnecessary to describe. In this form the usual frame is found for supporting the discs and the disc shaft. This frame is indicated by the numeral 1 and has attached thereto and supported thereby the usual gang of discs 2. Extending rearwardly from one end of the frame is an angular extension 3 which serves as a thrust bearing for one end of the shaft that carries the discs. The frame is supported by the usual rear wheel 4 and front wheels 5 and 6.

Suitably attached to the angular extension is a bearing cup 7, shown in Figure 6. This cup is supported by a bracket 8 forming part of the frame 1. The cup is supported and held to the bracket by means of bolts 9. On one end of a longitudinal shaft is a bearing

head 10 adapted to fit within the cup 7 so as to fully and completely support one end of a shaft 11 which supports the discs, and hold the shaft against end thrust. This shaft is square for supporting the discs. One end of the shaft is threaded to engage a threaded socket in the bearing head 10. While the cup 7 supports one end of the shaft, the other end and the parts of the shaft intermediate the ends are supported by arms 12, each arm being attached at one end to the frame and having in the other end a bearing in which the shaft rotates. These arms extend from a part of the frame between certain of the discs. The bearings on the ends of the arms are indicated by the numeral 13 and are illustrated in Figure 7.

While one end of the shaft and its bearing head are supported by the cup member 7, the other end has a nut 14 thereon for the purpose of holding the parts in relation to each other and for holding the discs and spacers on the shaft. The individual discs are indicated by the numeral 15 and are the usual dish-shaped discs found in farm implements of this kind. While these discs are shown to be of this shape the spacers here provided may be used with any form of disc, the form here being used by way of illustration only.

In order to provide for convenient adjustment between the discs spool or barrel members 16 are provided. These spool or barrel members have on one end a flange which provides a concave seat 17 to receive a convex side of a disc. The other end of the barrel or spool member is not enlarged and is adapted to receive and support thereon a cup-shaped member 18. The bottom of the cup member is hollowed out, as indicated by the numeral 19. The outer edges of the bottom part of the cup member are convex, as indicated by the numeral 20, to engage and fit in a concave side of a disc. The other or top end 21 of the cup member has its walls convex in shape to fit a corresponding face of a disc. By this means the barrel member and the cup-shaped member may be arranged as shown in Figure 2, to provide one adjustment between the discs. By inverting the relative positions of the cup and the barrel member the space between the discs may be increased and made larger, as indicated in Figure 3. In Figure 3 the hollowed-out bottom of the cup rests on the small end of the barrel member.

In the form shown in Figure 4 the spacer member is composed of a barrel or spool member formed in two parts. On each end of this spacer member there is a flange. In one of these disc ends there is formed a concave seat 23 to receive a convex side of a disc. One part of this barrel or spacer member is indicated by the numeral 22 and has in the central end thereof a socket 24 to receive a projection on the other part of the barrel member 25. These two parts constitute the spacer as shown in Figure 4. The end of the spacer remote from the concave part 23 is convex, as indicated by the numeral 26. These two ends are similarly formed and similarly shaped, with the exception that one end has a concave seat therein while the other one has a convex seat to receive and accommodate different faces of the discs.

In Figure 5 a form of spacer similar to that shown in Figure 4 is shown. However, there is associated with the barrel member a cup-shaped member similar to that shown in connection with Figures 2 and 3. The cup member here shown is indicated by the same reference character. In the cup member shown in Figure 5 the bottom part of the cup is provided with a concave seat to engage the convex end of the barrel spaced member. The other or upper end of the cup member is convex to engage the concave face of a disc.

As shown in this figure, the cup member is placed between the convex end of the spacer barrel member and a disc, but this cup member could as readily be placed between the other end of the barrel member and the disc engaged thereby. This would merely involve the shifting of the cup member from one end of the barrel member to the other. The cup member has its ends so shaped that it can be fitted against either side of a disc, and it may engage either end of the barrel member. It is also possible in the form shown in Figure 5 to remove the part 25, in which case the hollowed-out portion in the bottom of the cup member will fit over the small end of the part 22 so that there is provided a still smaller space between the two adjacent discs.

By proper arrangement of the parts shown in Figure 5, three adjustments may be made between two adjacent discs. In one of these adjustments all three of the parts are used, as shown in Figure 5. In another one of these adjustments the parts are such as shown in Figure 4. If the part 25 were omitted and the cup member fitted on the small end of the part 22 still a third adjustment would be effected. It is apparent from an examination of the figures shown here that applicant has provided a means by which the adjacent discs of a disc harrow or plow may be adjusted with relation to each other so that the space between the two adjacent discs may be relatively great or relatively small.

By the use of the spacing means here provided the space between adjacent discs may be varied two or more inches. All that is necessary to properly space and adjust the discs is that the nut 14 on the end of the shaft be removed so that the discs may be slipped off and replaced with the proper spacing between them. The bearings on the ends of the arms 12 are such that the shaft can be readily removed therefrom for disc-adjusting purposes. It it also obvious from an examination

of Figure 6 that the bearing head 10 constitutes a seat for the disc on the end of the shaft adjacent the bearing head. From this head toward the other end of the shaft the discs are spaced by means of the spacers here described. The member used in connection with the nut 14 may be of any suitable shape or size so that it engages and fits within the face of the disc adjacent the nut.

The spacers here described pertain to spacing means adapted to be placed between two adjacent discs for adjusting the relative position of one to the other. While these spacers are intended to be used for the purpose of equally spacing the discs one from the other they may be used, if it should be found necessary, to space the discs one from the other at different spaces so that the spaces between the discs may be varied, if such were desired.

I desire to comprehend within my invention such modifications as may be clearly embraced within my claims and the scope of my invention.

Having thus fully described my invention, what I claim is new and desire to secure by Letters Patent, is:

1. In a disc plow, means for supporting a plurality of discs, and means for maintaining the discs in spaced relation, said last means consisting of a barrel member and a reversible cup member.

2. In a disc plow, means for supporting a plurality of discs, and means for maintaining the discs in spaced relation one to the other, said last means consisting of a barrel member having one end concaved and a cup member having its top and bottom end edges convex and adapted to sit on or be inverted over the end of the barrel member.

3. In a disc plow, means for supporting a plurality of discs, and spacer means for said discs consisting of a barrel member and a coacting cup member cooperating with the barrel member to form a dual adjustment for the discs.

4. In a disc plow, means for supporting a plurality of discs, and spacer means for said discs consisting of a barrel member having a flanged and concaved end and a cup-shaped member having its bottom and its top edges convexed, said cup-shaped member adapted to cooperate with the barrel member to form a dual adjustment for the discs.

5. In a disc plow, a frame member having a thrust bearing at one end and a second bearing at the other end, a shaft supported by said bearings, a plurality of discs on said shaft, and spacer means for said discs consisting of a barrel member and a reversible cup member, having different depths in its receiving portions for accommodating the barrel member.

6. In a disc plow, a frame member having a plurality of bearings, a shaft supported by said bearings, a plurality of discs on said shaft, and spacer means for said discs consisting of a plurality of members adapted to be arranged to form a dual adjustment for the discs.

7. In a disc plow, a frame, a shaft supported by said frame, a plurality of discs on said shaft, and spacer means on said shaft between adjacent discs, said spacer means consisting of a plurality of members adapted to be arranged to give a plurality of adjustments between the adjacent discs.

8. In a disc plow, a frame having a plurality of bearings, a shaft supported by said bearings, a plurality of discs on said shaft, and spacer means on said shaft between adjacent discs, said spacer means consisting of a barrel member having one end flanged and concaved and a cup-shaped member having its ends convexed and adapted to set against or be inverted over the other end of the barrel member to form a dual adjusting means.

9. In a disc plow, a frame having a plurality of bearings, a shaft supported by said frame in said bearings, a plurality of discs on said shaft, and spacer means on said shaft between adjacent discs, said spacer means consisting of a barrel member having one end flanged to engage a disc and a cup member having each end shaped to engage a disc and adapted to set against or be inverted over the other end of the barrel member to form a dual adjusting means.

10. In a disc plow, a wheel supported frame, a shaft rotatably supported by said frame, a plurality of discs on said shaft, and spacer means on said shaft between adjacent discs, said spacer means consisting of a barrel member having one end flanged and concaved to engage one side of a disc, and a cup-shaped member having its end convexed to engage the other side of a disc and adapted to set against or be inverted over the other end of the barrel member to form a dual adjusting means.

11. In a disc plow, a supporting shaft, a plurality of dish-shaped discs on said shaft, and spacer means on said shaft between adjacent discs, said spacer means consisting of a two-part barrel member having its end shaped to engage different faces of a disc to form a spacing unit and a cup-shaped member having each end shaped to engage a different face of a disc and cooperating with the barrel member to form a second spacing unit and cooperating with either of the parts of the barrel member to form other spacing units.

12. In a disc plow, a supporting shaft, a plurality of dish-shaped discs on said shaft, and spacer means on said shaft between adjacent discs, said spacer means consisting of a two-part barrel member having its end shaped to engage different faces of a disc, one part of said barrel having a socket and

the other part a projection fitting within and surrounded by the walls of said socket.

13. In a disc plow, a supporting shaft, a plurality of dish-shaped discs on said shaft, and spacer means on said shaft between adjacent discs, said spacer means consisting of a two-part barrel member having one end flanged and concaved to fit one side of a disc and the other end flanged and convexed to fit the other side of a disc and one part of said barrel member projecting into the other part.

14. In a disc plow, a supporting shaft, a plurality of dish-shaped discs on said shaft, and spacer means between adjacent discs, said spacer means consisting of a two-part barrel member having one end flanged and concaved to fit one side of a disc and the other end flanged and convexed to fit the other side of a disc, one part of said barrel member having a socket and the other part a projection to fit in the socket and a cup shaped spacer member adapted to fit in between the spacer means and either of the adjacent discs.

15. In a disc plow, a supporting shaft, a plurality of dish-shaped discs on said shaft, and spacer means between adjacent discs, said spacer means consisting of a two-part barrel member and a second member, said barrel member having one end flanged and concaved to fit one side of a disc and the other end flanged and convexed to fit the other side of a disc, one part of said barrel member having a socket and the other part a projection to fit in the socket and the second member having its ends shaped so that said second member can fit between either end of the barrel member and the adjacent disc.

16. In a disc plow having dish-shaped discs, a spacer therefor consisting of a two-part barrel member and a second member, said barrel member having one end flanged and concaved to fit one side of a disc and the other end flanged and convexed to fit the other side of a disc, the second member having its end shaped so that it can fit between either end of the barrel member and the adjacent disc.

In testimony whereof, I affix my signature.

ERNST E. ENGLUND.