April 21, 1942. R. J. ALTGELT 2,280,681

PLOW

Filed Aug. 5, 1937

Fig. 1.

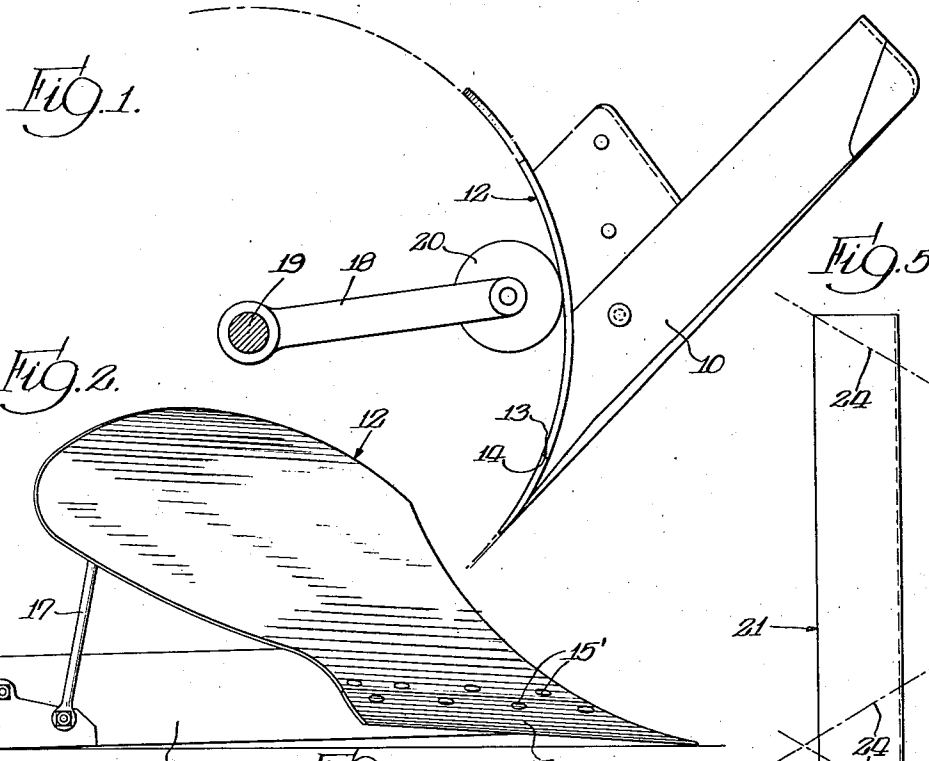


Fig. 2.

Fig. 3.

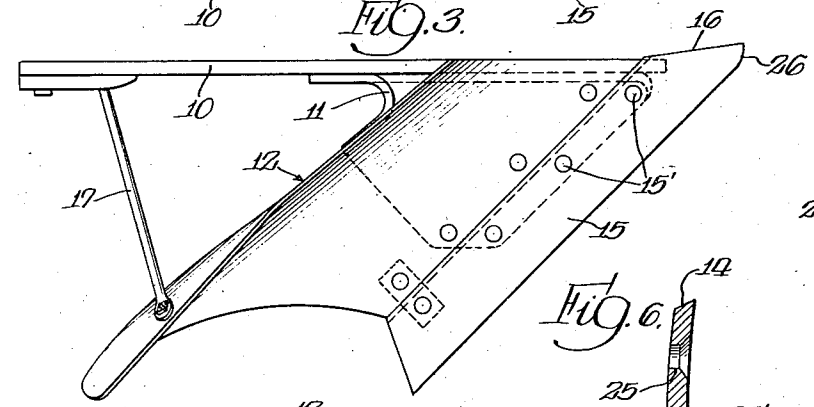


Fig. 4.

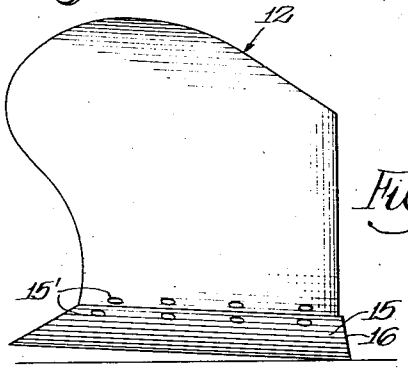


Fig. 5.

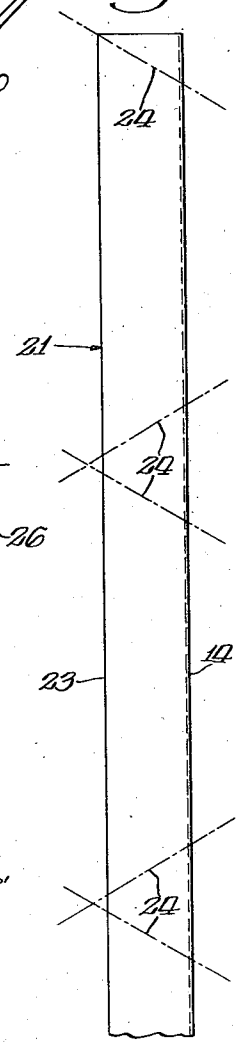
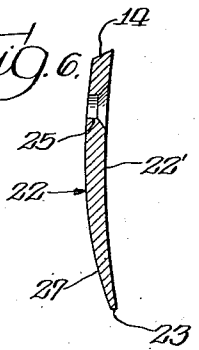


Fig. 6.



Inventor:—
Rudolph J. Altgelt,
By John P. Smith Atty.

Patented Apr. 21, 1942

2,280,681

UNITED STATES PATENT OFFICE

2,280,681

PLOW

Rudolph J. Altgelt, South Bend, Ind., assignor to Oliver Farm Equipment Company, a corporation of Delaware

Application August 5, 1937, Serial No. 157,514

9 Claims. (Cl. 97—113)

The present invention relates to plows generally, but more particularly to the construction and method of making plow mouldboards and shares.

It has become the well established practice heretofore in the manufacture of plows of the mouldboard and share type to process these particular parts through an expensive factory labor procedure. The shares, for example, in the process heretofore used are individually forged into shape, then trimmed, ground and polished because the forging operation produces a product too rough for use. Because of this expensive process the cost of a share to a user is at a relatively high premium. After the share has become dulled from use, it is necessary to sharpen the same at an additional cost to the user. Experience has shown that the average share may be sharpened about four times before it is discarded, making four charges in addition to the original cost of the share. The total cost of these resharpenings amounts to approximately the cost of the original share.

It is therefore, one of the primary objects of the present invention not only to overcome the disadvantages hereinabove pointed out, but to also provide a novel share and method of making the same by means of which the cost of production is so reduced that the cost of replacement will be less than the cost of the resharpening of the old share, thereby saving the original cost of the old share and the loss of time required for resharpening, making a total saving of about fifty (50%) percent over the method heretofore used.

Under my new method of manufacturing plow shares, I procure finished bars or strips of steel from the mill of a cross section identical with the shape of the share it is to assume in finished form and merely cut the shares the proper length from these bars and subsequently punch or drill the holes for securing them by bolts to the plow bases.

A further very important object of the present invention is to provide a novel and improved construction of plow base or mouldboard in which the scouring surface of the mouldboard is in the form of a symmetrically curved cylindrically shaped surface. The mouldboard in this form not only provides an efficient plow, but also reduces the amount of labor heretofore required in that it expedites the grinding and polishing operations and generally increases the production with the resultant reduction in cost therefor.

Another object of the invention is to provide a plow structure in which the mouldboard and share surface is in a single regularly curved or cylindrical form so that the assembled plows may be continuously conveyed by an endless chain into contact with grinding and polishing wheels which are adapted to describe or be actuated through the same curvature as the curved surface of the plow, thereby increasing production and reducing the cost to manufacture.

Another object of the invention is to provide a novel and improved plow construction in which the share is adapted to project beyond the landside of the mouldboard in order to protect the lower forward portion of the mouldboard which is subjected to the greatest wear.

A still further object of the invention is to provide a novel and improved plow construction in which the share is provided with a beveled edge which is adapted to overlap a complementary beveled edge of the mouldboard thereby presenting a continuous smooth surface on the scouring face of the plow.

These and other objects are accomplished by providing a novel construction and arrangement of the various parts in the manner hereinafter pointed out and defined by the appended claims.

Referring to the drawing:

Fig. 1 is a front view of my improved plow construction showing the mouldboard and share in the form of a cylindrical surface; also showing diagrammatically a grinding or polishing mechanism adapted to be actuated about a center;

Fig. 2 is a side elevational view of the plow structure shown in Fig. 1;

Fig. 3 is a top plan view of the same;

Fig. 4 is a front elevational view of the same;

Fig. 5 is a plan view of a bar or strip of steel of a definite cross section showing the manner in which the plow share may be cut therefrom; and

Fig. 6 is a cross sectional view of the share bar in Fig. 5.

For the purpose of illustration I have shown a complete plow structure comprising a main frame or land side member 10 to which is secured a base member 11. Secured to the base member is my improved symmetrically curved mouldboard 12. The mouldboard is in the shape of a cylindrical surface and its lower straight edge is beveled downwardly as shown at 13. Secured by means of countersunk bolts 15' to the lower portion of the base member 11 and overlapping the beveled edge 13 of the mouldboard 12 is a share 15. The plow share in this construction is also a continuation of the cylindrical surface of the

mouldboard. The landside edge of the share as indicated at 16 projects a slight distance beyond the landside member 10 and lower forward portion of the mouldboard in order to protect the mouldboard at this point, which is subjected to the greatest wear. The overlapping of the bevelled edge 14 of the share with that of the mouldboard not only protects the mouldboard at this juncture, but also insures a smoother scouring surface, especially when a dull share is replaced by a new one. Connected at one end to the upper rear portion of the mouldboard is the regular brace rod 17 which has its lower end connected to the landside member 10.

It will be obvious with my improved symmetrically curved or cylindrically formed mouldboard and share that a grinding or polishing mechanism such as is diagrammatically illustrated in Fig. 1 of the drawing may be employed. For example, a mechanically oscillated arm 18 may be journaled on a shaft 19. A revolving grinding stone or a polishing wheel 20 journaled on the free end of the arm. The wheel 20 may extend the full length of the mouldboard so that the complete scouring surface of the same may be traversed on each oscillation thereof. A series of these grinding or polishing wheels may be arranged in alignment and a plurality of plows conveyed on a track mechanism so that a large number of plows may be continuously and simultaneously finished and thereby expedite the manufacture and reduce the cost of production.

When the mouldboard 12 and the share 15 are mounted on and secured to the landside or frame 10, they occupy a single cylindrical surface whose axis is at a slight angle to the horizontal or ground surface. In so arranging or positioning the plow in this manner, the point or toe 26 of the share is directed or pointed into the ground while the rear end or heel of the share is raised with respect to the ground. This arrangement gives the plow the proper suction for maintaining the same at its proper depth penetration of the ground during its operation.

Another very important feature of the present invention includes a novel method of manufacturing the plow shares so as to eliminate the costly factory labor heretofore required of, first, forging the share one at a time, then trimming, next grinding and finally polishing. With my improved method I secure bars or strips of steel from the mill in the form generally indicated by the reference character 21 in Fig. 5 in the drawing. This bar is produced at the mill in relatively long lengths having a cross section of the finished plow share as generally indicated by the reference character 22 in Fig. 6 of the drawing. The front or scouring surface of the bar and share is in the form of a symmetrically curved or cylindrical surface as shown at 22' and is of the same radius as the mouldboard. In other words, the bar as produced has its front face in the form of a portion of a perfect cylinder and uniform thickness in cross section substantially throughout two thirds of its width and the remaining portion is gradually reduced by a curved rear surface as shown at 27 toward the edge 23. The forward edge of the bar is pointed as shown at 23 and beveled as shown at 14 and requires no sharpening. The bar 21 is then cut on the broken lines 24 and holes 25 are then punched or drilled. The share is then completed by merely grinding or rounding of the forward corner as shown at 26 in Fig. 3 of the drawing. The share as thus produced by my new method will not be required to be ground or polished for most soil conditions. However, where sticky soil conditions require a better finish, the same may be accomplished as part of the operation of grinding and polishing the mouldboard of the complete plow in the manner above described.

Summarizing the advantages and savings in labor cost in the manufacturing of plows of my improved process, it will readily be observed that by eliminating the irregular curved surfaces from the mouldboard and share as heretofore employed and forming these parts on a radius, the factory labor costs can be reduced to a minimum by reason of the fact that these operations can be mechanically performed on a production line. It will also be noted that by forming bars or strips of steel of the correct share cross section and cutting these strips in proper share lengths numerous costly labor operations are eliminated to such an extent that a user of the plow will find it cheaper to replace a dull share by a new one rather than sharpen the old one and still make a saving of greater than fifty percent (50%) over the share heretofore used.

My improved construction in which the upper bevelled edge of the share overlaps the complementary lower beveled edge of the mouldboard not only maintains a proper relative position of these parts on the seam, but also prevents undue wear on the mouldboard often occasioned by the share being positioned on a surface level below that of the mouldboard. It will be noted that by positioning or having the forward portion of the share project beyond the landside of the plow, the lower forward portion of the mouldboard subjected to the greatest wear is protected thereby enhancing the life of the complete plow structure.

While in the above specification I have described a plow structure in which the mouldboard and share have their surfaces defined by a single radius or cylindrical surface, it will be obvious that any symmetrical surface such as that of a gradually tapered cone may be used with all the advantages gained by that of the form of the cylindrical surface.

In the above specification I have described one embodiment which my invention may assume in practice, it will of course be understood that the same is capable of modification and that modification may be made without departing from the spirit and scope of the invention as expressed in the following claims:

What I claim as my invention and desire to secure by Letters Patent is:

1. A plow structure having a scouring surface in the form of a symmetrically curved surface, the axis of which is at an angle with respect to the horizontal.

2. A plow structure having a scouring surface in the form of a regular curved surface having a single axis, said axis being located at an angle with respect to the ground.

3. A plow structure having a scouring surface in the form of a regular curved surface having a single radius, the axis of said radius being located at an angle to the horizontal.

4. A plow structure comprising a base, a mouldboard and share secured thereto, the surface of said mouldboard and share in the form of a symmetrically curved surface whose axis is at an angle to the line of travel of said plow and intersects a horizontal plane.

5. A plow structure having a scouring surface in the form of a cylindrical surface whose axis traverses the line of travel of said plow, and is

located at an angle with respect to the horizontal.

6. A plow structure comprising a base, and a mouldboard and share secured thereto, the scouring surface of said mouldboard and share in the form of a cylindrical surface whose axis traverses the line of travel of said plow and is located at an angle with respect to the horizontal.

7. A plow structure comprising a base, a mouldboard secured to said base, and a share secured to said base below said mouldboard and projecting beyond the landward side thereof for protecting the lower forward end of said mouldboard.

8. A plow structure comprising a base, a mouldboard secured to said base having a lower straight edge, and a share secured to said base contiguous to the lower edge of said mouldboard, the landward edge of said share projecting laterally beyond the landward edge of said mouldboard.

9. A plow structure comprising a base, a mouldboard secured to said base, and a share secured to said base below said mouldboard and projecting beyond the landward side at a point contiguous with said mouldboard for protecting the forward end of said mouldboard.

RUDOLPH J. ALTGELT.