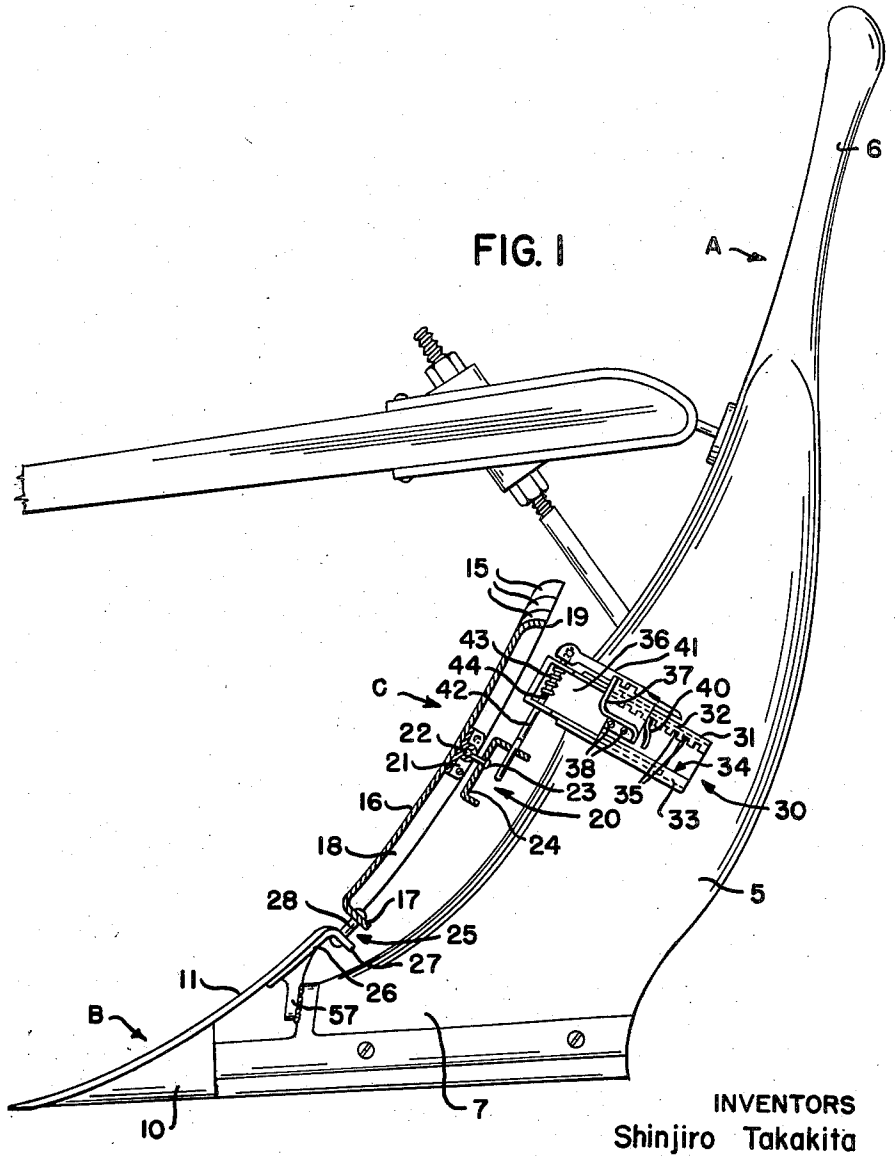
July 1, 1958 SHINJIRO TAKAKITA ET AL 2,841,068

MOULDBOARD OR BREAST OF PLOW

Original Filed Aug. 15, 1952 2 Sheets-Sheet 1

FIG. 1



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FIG. 2

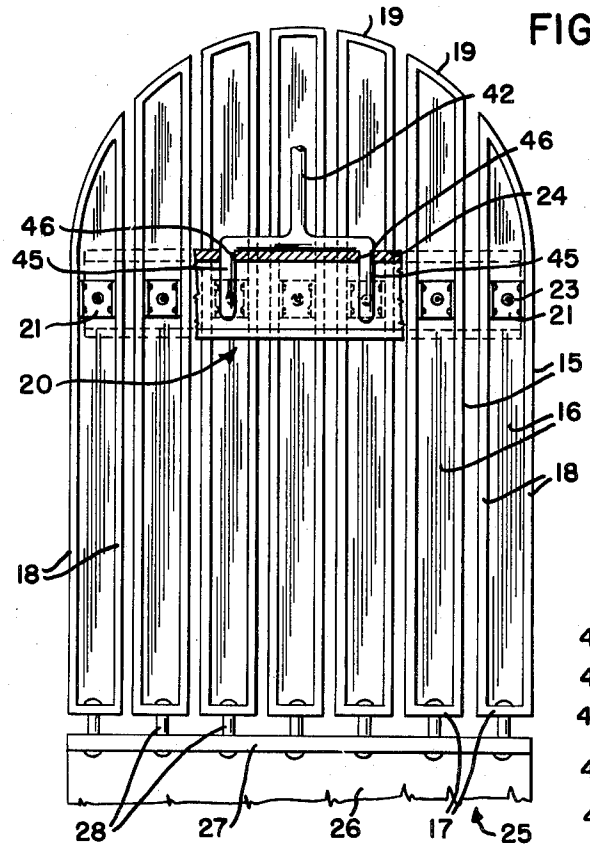


FIG. 3

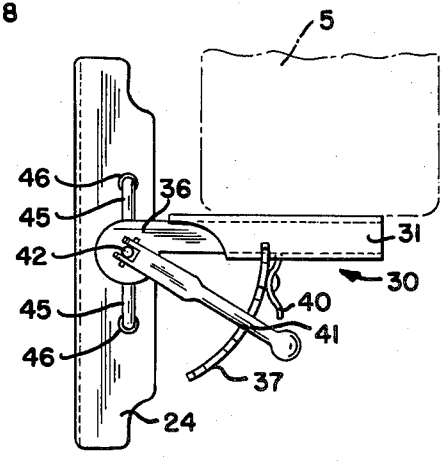
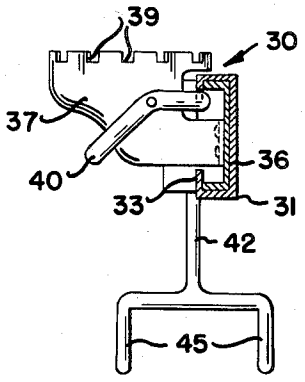


FIG. 4



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MOULDBOARD OR BREAST OF PLOW

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Original application August 15, 1952, Serial No. 304,662, now Patent No. 2,785,617, dated March 19, 1957. Divided and this application January 11, 1957, Serial No. 633,717

3 Claims. (Cl. 97—123)

This invention relates to plows and more particularly to the mouldboards or, as they are sometimes designated, the breasts of the same, and this application is a division of our application for United States Letters Patent Serial No. 304,662, filed August 15, 1952, and now Patent No. 2,785,617.

An important object of the invention is to provide a skeleton mouldboard which may be adjusted as a unit with respect to a fixed plowshare and plow frame, and also the individual ribs of the mouldboard adjusted with respect to the plowshare and frame, so as to expedite and improve plowing operations.

Another important object of the invention is to provide a mouldboard including a plurality of spaced-apart ribs which ribs may be warped or twisted to assume selected positions with respect to the plow frame and fixed share so that the soil will be more readily lifted, turned, sheared and pulverized than in the case of rigid skeleton ribs of skeleton mouldboards and, consequently, the amount of labor reduced in plowing.

Yet another important object of the invention is to provide special ball-and-socket connection means for the ribs of the mouldboard, and angularity adjusting means for the mouldboard, which means differ from that disclosed in the above-identified application, and is disposed mostly at the center of the back of the mouldboard, yet is readily accessible for manipulation, and the ribs of the mouldboard may be warped or twisted, as well as selectively bowed beyond their normal bowed shape.

Still another object is to provide a skeleton mouldboard for association with a fixed plowshare in contradistinction to the movable plowshare of the application referred to above.

Other objects and advantages of the invention will be apparent during the course of the following detailed description of the invention, taken in connection with the accompanying drawings, forming a part of this disclosure, and in which drawings:

Fig. 1 is an elevation of a plow, with the mouldboard in vertical section.

Fig. 2 is a rear elevation of the mouldboard of Fig. 1 removed from the plow frame, with parts broken away to better illustrate portions of the structure.

Fig. 3 is a top plan view of angularity adjusting means and bowing means of the mouldboard.

Fig. 4 is a view, partly in side elevation and partly in vertical section of the means of Fig. 3.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of the invention and wherein similar reference characters designate corresponding parts throughout the several views, the letter A designates a frame of a one-way plow; B, a plowshare; C, the mouldboard of this application; and D, a support means for the mouldboard.

The frame A may be of conventional construction, including a body portion 5, handle portion 6 at the upper

end of the body portion, and landside 7 at the lower end of this body portion and projecting forwardly thereof.

A conventional fixed plowshare B or, as it is also called, a share, may be employed and provided with a point body portion 10 and an upwardly and rearwardly inclined shinpiece 11, providing a first support means for the mouldboard C, as will be subsequently described.

The adjustable mouldboard C, is of skeleton form and includes a plurality of spaced-apart, elongated, upwardly and rearwardly inclined, bowed ribs 15, which are longitudinally twistable. Each rib is provided with an elongated, narrow body portion 16, with upper and lower faces, a lowermost down-turned flange 17, substantially parallel downwardly-projecting side flanges 18, and an uppermost rearwardly-extending flange 19, which is preferably narrower than the associated flange 17. The ribs 15 are of material which permits them to be twisted or partly warped or canted. Spring steel is a well-known material, having the necessary characteristics. Preferably, as shown in Fig. 2, the ribs vary in length to provide an upwardly curved upper edge profile for the mouldboard as a whole, and are normally in the same inclined plane.

Preferably nearest their upper ends, the ribs 15 are joined together by connection means 20, which comprises a plurality of ball-and-socket assemblies, one for each rib, and each may be formed of a channel-shaped base 21, supporting a conventional ball socket structure containing a ball 22, and having an elongated projection 23, extending rigidly from the ball. A base 21 is secured to each rib 15 in contact with the lower face thereof at the upper portion of the rib, and secured to the side flanges 18 as by rivets, for example. The spaced-apart projections 23 are rigidly secured, at their outer ends to an elongated channel-shaped member 24, extending across the ribs and substantially normal to their longitudinal axes.

Support means 25 for and constituting a part of the mouldboard C includes an elongated bracket body 26, secured to the upper end portion of the shinpiece 11 in any approved way, such as by conventional welding, and having a downwardly-inclined elongated flange 27 at its upper end. Projecting upwardly in substantial parallelism from the flange 27 are a plurality of spaced-apart pivot pins 28, one for each rib 15, since their upper end portions extend through suitable pivot openings in the central portions of the flanges 17.

The angularity adjusting means 30 for the ribs 15 of the mouldboard C, includes a channel-shaped rigid preferably inclined frame 31 rigidly mounted upon the body portion 5 of the frame A preferably close to the upper extremities of the ribs 15. The frame 31 has, at its upper and lower flange portions, longitudinally-extending flanges 32 and 33 projecting toward each other at what may be termed the mouth 34 of the frame 31, and the uppermost flange 32 is provided with a plurality of spaced apart recesses 35 extending from the mouth 46, upwardly to provide keepers for a latch arm 40 to be subsequently described. Slidable within the frame 31, and adapted to slidably extend outwardly from the ends thereof, is a channel-shaped rigid support or slide 36 which rigidly supports an inclined keeper or rack 37. The frame 31 and support or slide 36 constitute a support structure. The keeper or rack is arcuate and projects outwardly from the mouth 34, being mounted upon the support or slide 36 by any suitable means, as screws 38, and is provided with a plurality of spaced-apart recesses 39 opening upwardly above the horizontal plane of the frame 31. The support of slide 36 mounts a pivoted dog or latch arm 40, adapted to be manually manipulated to enter any selected recess 35. For the

recess 39, there is provided a lever arm 41, with an intermediate portion thereof adapted to enter any one of these recesses upon manual manipulation of the arm. The inner bifurcated end of the arm is pivotally connected with the upper end of an up-and-down reciprocable rod 42 by a horizontal pivot pin. The rod slidably extends through an opening in one end portion of each of the flanges 32 and 33 so that, as the arm 41 is pivoted upwardly, the bifurcated end will engage the upper face of the flange 32 and raise the rod slightly. However, about an upper portion of the rod is an expansion coil spring 43 bearing, at one end, upon the lower face of the flange 32 and bearing, at its other end, upon a pin 44 extending radially from the rod above the flange 33, to urge the rod downwardly and, of course, the lever arm 41 downwardly. The lower end portion of the rod 42 is bifurcated and each portion 45 thereof is adapted to snugly but slidably extend into a pair of spaced-apart openings 46 in the upper flange of the elongated channel-shaped member 24, each opening being spaced a substantially equal distance from the adjacent end of this upper flange.

The bracket body 26 may be secured to the landside 7 as by a bracket arm 57 which may be welded to the landside, but this is optional. The bracket arm projects downwardly from the bracket body 26.

It is believed now apparent that, when the lever arm is in a neutral position, i. e. in the central recess 39, the ribs 15 will have their upper faces in the same plane but, when the lever arm occupies others of the recesses 39, the arms will be warped or twisted. The bowing of the ribs will be governed by the position of the latch arm 40 in any one of the recesses 35.

Various changes may be made to the form of the invention herein shown and described without departing from the spirit of the invention or scope of the claims.

What is claimed is:

1. An adjustable mouldboard for a plough, comprising a plurality of spaced-apart inclined longitudinally twistable and flexible ribs, each having an outer face and upper and lower end portions with each face normally in substantially the same inclined plane; a support; means loosely connecting said lower end portions to said support; ball-and-socket connection means connecting each rib to a next adjacent rib, including an elongated channel-shaped member extending beneath the upper end portions of said ribs and provided with a pair of openings spaced a substantially equal distance from the longitudinal center thereof, and ball-and-socket assemblies operatively connected between one portion of said channel-shaped member and said ribs; and angularity adjusting means for connection between said channel-shaped member and said plough, to warp said ribs longitudinally so that portions of like faces thereof move out of said plane, including a support structure, means rigidly mounting said support structure upon a plow above the horizontal plane of said elongated channel-shaped member, an arcuate rack carried by said support structure, a lever having an outermost arm portion constructed and arranged to be manually disposed between selected teeth of said rack, and an upwardly-extending rotatable and reciprocating rod pivoted at its upper end to said arm and slidably extending through said support structure, with said support structure forming a fulcrum for said lever, said rod being bifurcated at its lower end and said bifurcated lower end slidably extending downwardly into said openings in said elongated channel-shaped member.

2. An adjustable mouldboard according to claim 1 characterized in that said support structure comprises a frame carried by said means for rigidly mounting said support structure upon a plow, and a slide, slidably carried by said frame with its longitudinal axis normal to said ribs, and said slide and frame are provided with means to adjustably position said slide in selected positions longitudinally of said frame toward and away from said ribs, said rod being carried by said slide at the portion of said slide nearest said ribs, whereby movements of said slide in one direction will tend to bow said ribs.

3. An adjustable mouldboard according to claim 1 characterized in that said support structure comprises a frame carried by said means for rigidly mounting said support structure upon a plow, and a slide, slidably carried by said frame with its longitudinal axis normal to said ribs, said rack is carried by said slide, and said slide and frame are provided with means to adjustably position said slide in selected positions longitudinally of said frame, toward and away from said ribs, said rod being carried by said slide at the portion of said slide nearest said ribs, whereby movements of said slide in one direction will tend to bow said ribs.

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