July 21, 1931. R. C. ZUCKERMAN 1,815,087

BLADE MOUNTING FOR UNDERGROUND CROP DIGGERS

Filed Oct. 4, 1929

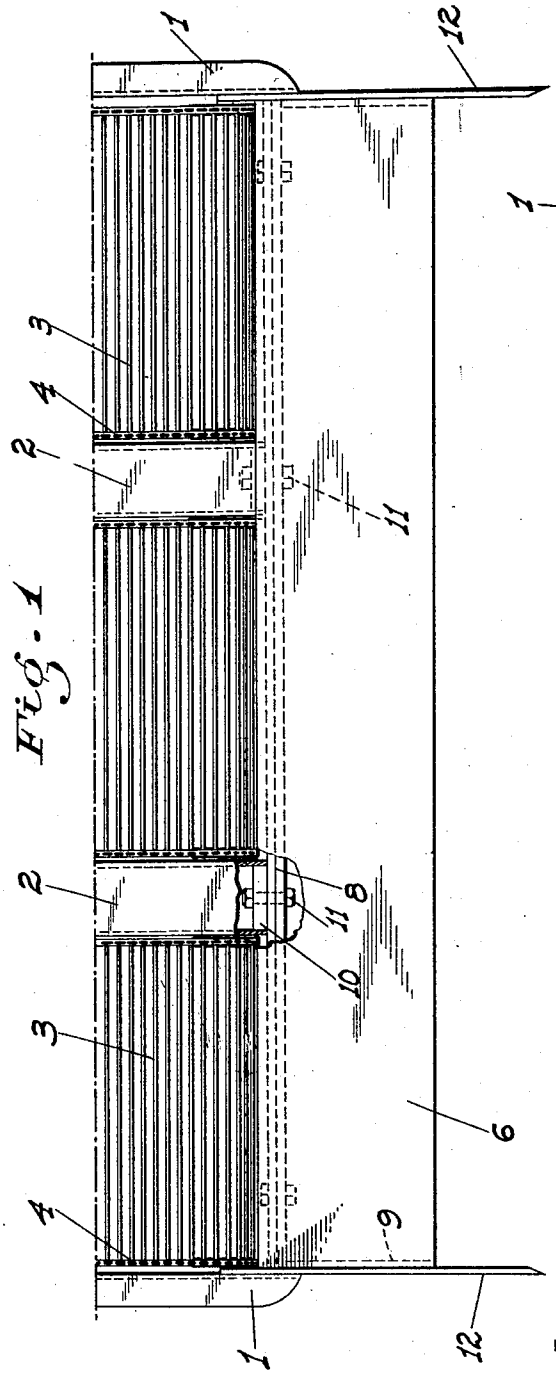


Fig. 1

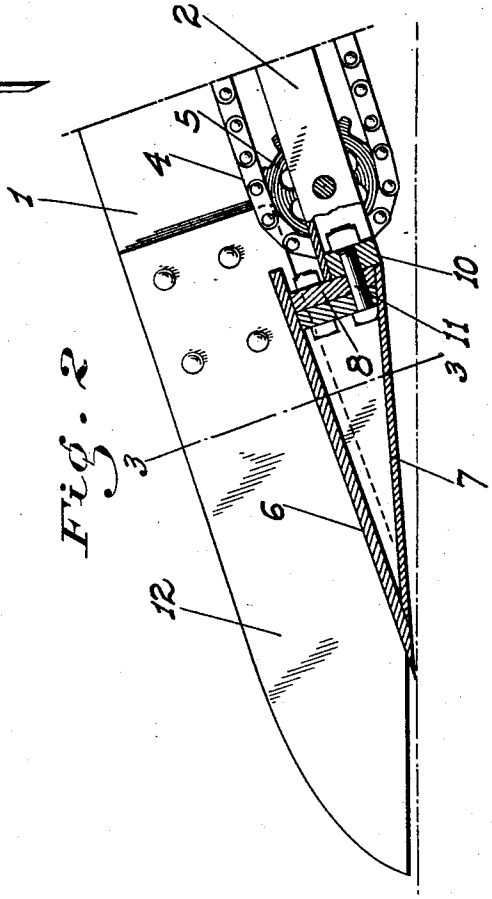


Fig. 2

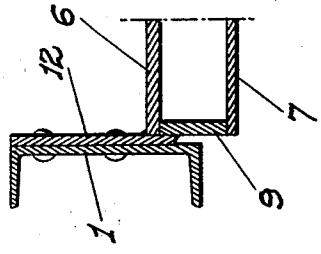


Fig. 3

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UNITED STATES PATENT OFFICE

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BLADE MOUNTING FOR UNDERGROUND CROP DIGGERS

Application filed October 4, 1929. Serial No. 397,236.

This invention relates to potato digging machines arranged to dig a number of rows of potatoes simultaneously and in which the potatoes as dug are immediately delivered to conveyor means which convey the potatoes upwardly and deposit them in wagons or elsewhere, as may be desired.

The present invention deals particularly with the mounting of a digger blade on such a machine, which blade extends unbroken across all the rows being dug, and represents improvements over the corresponding structure shown in my Patent No. 1,761,286 dated June 3, 1930.

In this machine, which is arranged to dig three rows, the width of the blade and the cooperating conveyors or drapers is considerable, and I therefore employ one draper for each row of potatoes, separated by longitudinal supporting beams. I thereby avoid the very heavy and rigid draper construction which would otherwise be necessary if a single draper of the relatively great width required were used. A single blade however is a necessary desideratum, since it provides an unbroken digging surface from side to side of the machine which aids in efficient digging operations. It is therefore necessary to make the blade strong and rigid to avoid buckling. At the same time it is desirable to keep the weight of the structure as low as possible without sacrifice of strength.

A further object of the present invention is to so construct the blade that a relatively light yet extremely stiff blade is had, and so connected to the draper supporting frames as to reinforce the latter and avoid the need of additional bracing for the same. The blade also is so arranged as to act as a tie for the front end of these beams and the machine at the critical point, or where the greatest operating strains and pressures are taken.

A further object of the invention is to provide a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Fig. 1 is a top plan view of my improved blade and mounting arrangement.

Fig. 2 is an enlarged longitudinal section of the same.

Fig. 3 is a fragmentary transverse section taken on the line 3—3 of Fig. 2.

Referring now more particularly to the characters of reference on the drawings, the numeral 1 denotes the main side frame beams of the draper and blade supporting structure—preferably deep channels set vertically or with their flanges horizontally. Between the side frames are other longitudinal draper supporting beams 2 arranged in equally spaced relation to each other and to the side frames. These beams 2 are also of channel form set horizontally or with their flanges in vertical planes. The drapers used are of common form comprising spaced bars 3 mounted on chains 4 which pass about sprockets 5 suitably journaled in connection with the various frame beams adjacent the lower ends of the latter.

The digger blade is of special construction and extends the full width between the side beams just beyond the adjacent ends of the drapers. The blade comprises a continuous main upper plate 6, a lower plate 7 diverging relative thereto from its forward end, heavy bars or plates 8 between the upper and lower plates adjacent their rear ends, and fillers 9 at the sides. These parts are all welded together, and it will be seen that the blade is of hollow triangular box form, which is very rigid, yet relatively light.

The top plate forms the blade proper and the supporting surface for the potatoes as dug. The bars at the rear end of the blade prevent deflection of the top plate and serve as a means for connecting the blade to the intermediate frames, while the bottom plate provides a tie between the free bottom ends of the top plate and bars, preventing any possible relative movement therebetween.

The bars 8 abut against the forward ends of the beams 2 which have filler blocks 10 secured in said ends. Bolts 11 project through

the bars and blocks and tie these parts firmly together. The blade is positioned relative to the said beams so that the top plate is substantially parallel to and alined with the upper surface of the drapers, but the bottom plate is at such an angle relative to said top plate and to the ground as to leave a considerable clearance therebetween at its rear end as shown in Fig. 2. The blade is therefore disposed both in a proper position relative to the ground for efficient digging action, and to the drapers so as to deliver the potatoes thereto in a smooth and unrestricted manner.

The side frames 1 have forwardly projecting extensions in the form of vertically disposed plates 12 which overhang and are welded to the sides of the blade as shown in Fig. 3, and also preferably extend some distance ahead of the same. The blade thus forms a positive tie and brace between the side and intermediate frame beams, avoiding the need of any additional bracing or reinforcements to prevent lateral displacement of the same, the peculiar shape of the blade as previously described forming an efficient brace of itself. The hollow form of the blade also insures the latter against buckling at any point so that it is capable of withstanding any pressures or strains to which it may be subjected.

My improved blade construction is also adaptable to other digging machines such as for instance the type of beet harvester shown in my Patent No. 1,748,746 dated February 25, 1930.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

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

1. In a multiple-row digging machine for underground crops, side frames, intermediate frames parallel thereto, drapers disposed between adjacent frames, and a blade extending unbroken between the side frames ahead of the drapers and rigidly secured to the side and intermediate frames to both support the blade and brace the frames against lateral deflection.

2. A structure as in claim 1, in which the blade is hollow and of triangular form in section.

3. In a multiple-row digging machine for underground crops, side frames, intermediate frames parallel thereto, drapers disposed between adjacent frames, a blade extending unbroken between the side frames ahead of the drapers, said blade including a top plate substantially alined with the top of the drapers, a bottom plate diverging rearwardly from the top plate, and a relatively heavy bar extending between said plates at their rear ends, said bar abutting against the forward ends of the intermediate frames, and means connecting said bar to said frames.

4. A structure as in claim 3, with plate extensions secured to and extending forwardly from the side frames to a point beyond the blade; said extensions overlapping the side edges of the blade and being secured thereto.

5. In a multiple-row digging machine for underground crops, side frames, intermediate frames parallel thereto, drapers disposed between adjacent frames, a blade extending unbroken between the side frames ahead of the drapers, said blade including a top plate substantially alined with the top of the drapers, and a relatively heavy bar secured to and depending from said plate adjacent its rear end, said bar abutting against the forward ends of the intermediate frames, blocks secured to said frames at said ends, and bolts through the bar and blocks.

In testimony whereof I affix my signature.

ROSCOE C. ZUCKERMAN.