

C. W. OLSON.

HARROW.

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944,690.

Patented Dec. 28, 1909.

2 SHEETS—SHEET 1.

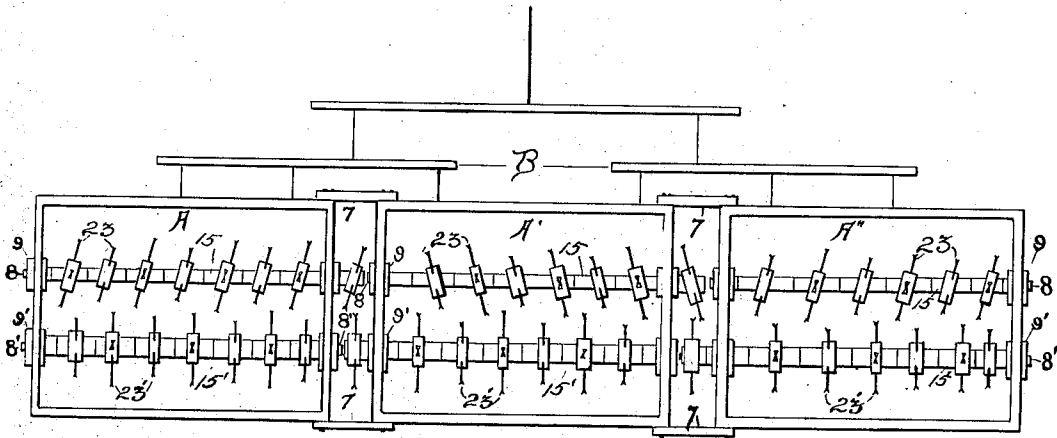


Fig. 1.

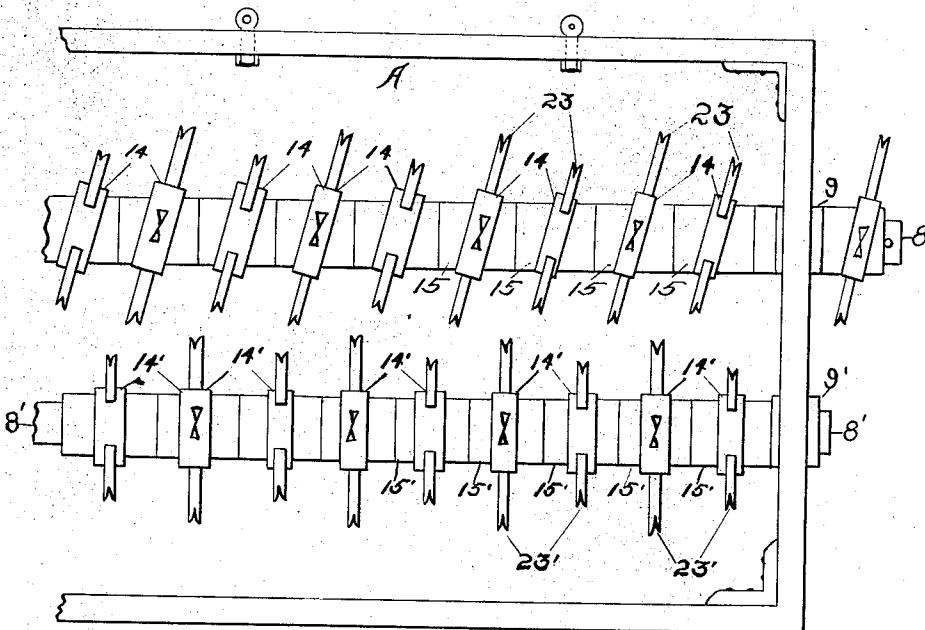


Fig. 2

Witnesses.

J. J. Glorn
C. C. Snoddy.

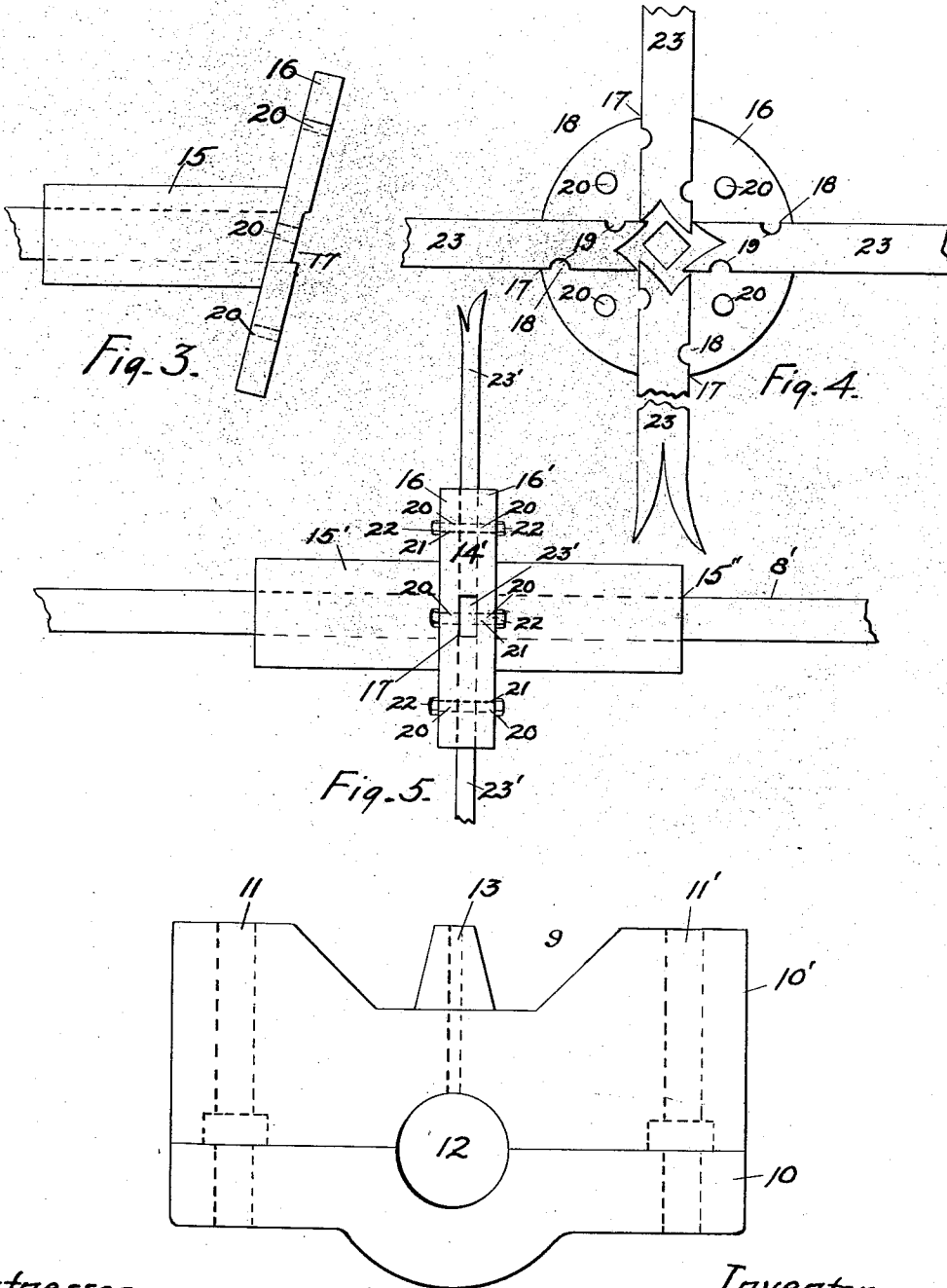
Inventor.

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2 SHEETS—SHEET 2.



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Fig. 6.

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UNITED STATES PATENT OFFICE.

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HARROW.

944,690.

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To all whom it may concern:

Be it known that I, CHARLES W. OLSON, a citizen of the United States, residing at Condon, in the county of Gilliam and State of Oregon, have invented a new and useful Improvement in Harrows, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to harrows having 10 rotatable knives or cutters.

The object of my invention is to provide a harrow in which removable knives are secured in holders which are rigidly mounted on shafts extending laterally of the harrow and which knives may be placed at right angles with the shafts or at an oblique angle thereto. I attain these objects and other advantages by the mechanism, construction, combination, and arrangement of 20 parts illustrated in the accompanying drawings, which form a part hereof.

It is well known that harrows heretofore in use do not satisfactorily agitate the soil, pulverize clods therein and at the same time keep clear of rubbish when operated. It is to overcome these radical difficulties as well as others that I have sought out and provided the harrow herein described which I contend can be operated successfully in 30 these respects and is novel, useful and economical.

Figure 1 is a plan view of my harrow showing the same in three sections. Fig. 2 is a plan view of one section of the harrow on an enlarged scale. Fig. 3 is a detail view on enlarged scale of part of a shaft with knife plate thereon. Fig. 4 is a detail side view of a knife plate showing knives therein partly broken away. Fig. 5 is an end view in detail of a knife holder on the shaft with knives therein either entirely or partly broken away. Fig. 6 is a side of the bearings of the shafts carrying the knife holders.

45 Like numerals and letters refer to like parts throughout the views.

A—A'—A'' are sectional frames of the harrow, the inner ends of A and A' being secured to the respective ends of the frame 50 A' by pivoted link bars 7.

B represents draft bars placed on the front sides of the sectional frames in suitable location. Each sectional frame is provided with two transverse squared shafts 55 8—8' with circular ends. The shafts 8—8'

are mounted in respective bearings 9—9' at their ends, secured to the frame. The bearings 9—9', (illustrated in detail in Fig. 6), are composed of two members 10—10' the lower one 10 having on its upper side a recess formed as a half segment of a circle, and the upper box member 10' having a recess in its lower side formed as a half segment of a circle. The two members are provided with openings 11—11' extending vertically through their ends and through which bolts may be passed to secure the bearing members to the ends of the harrow frames. The box 10 is also formed with a vertical opening 13 for the introduction of lubricant into the bearings. When the members are secured together they form the shaft bearing opening 12. The shafts are alternately made of lengths to extend beyond the frames into the spaces between frame sections and to carry knife holders on the ends in said space as illustrated in Figs. 1 and 2.

Upon the shafts are mounted knife carrying holders 14—14'. The holders are rigidly secured upon the center of sleeves 15—15' having squared longitudinal openings 15'' (Fig. 5), and through which the shafts pass. The sleeves are of suitable length to engage the ends of the frame and also the ends of sleeves next adjacent so that the holders 14—14' are retained in a desired position apart from each other. The holders between frame sections are retained upon the ends of the shafts by any convenient means. The holders may also be secured upon the sleeves at right angles to the same and to the shaft, or at any oblique angle thereto as may be desired and as illustrated by the holders 14'—14' respectively. The holders are composed of two circular members 16—16', see Figs. 3, 4, 5. The member 16 is rigidly secured upon the sleeves 15—15' either at right angles or at any desired oblique angle thereto. This member is formed with recesses 17 on its side at right angles to each other to receive the knives therein. The sides of these recesses also have bosses 18 formed therein and which enter recesses 19 formed in the edges of the upper parts of the knives. The member 16' is a circular plate having a squared opening through its center at the proper angle to receive through it the sleeve upon which it is to be placed. The members 16—16' are provided with 110

openings 20 through which bolts 21 may be passed and fastened by nuts 22 to secure the members of the knife holders together when the knives are in place. The knives 23—23' are formed with flat vertical shanks having the recesses 19 in the edges of the same.

It will now be seen that when the sleeves carrying the knives at different angles thereto are placed upon the respective shafts an arrangement thereof is made as illustrated, whereby bifurcated, beveled knives are provided, and those on the forward shaft will rotate at angles oblique either to the right or left with respect to the shaft and those on the rear shaft will rotate at right angles thereto. It will be further noted that in my harrow the operator may arrange the knives upon the shafts so that they may be distributed throughout the sectional frame to cut in any manner or direction which may be desired, or the nature of the soil to be harrowed may seem to require. The placing of shafts carrying rotating knives of this character in bearings which may be lubricated, is also an advantage as the bearings are protected from the intrusion of rubbish and the machine requires less power to operate it. One or more sections of the harrow may be used as may be desired. The knife plates being easily removable and the knives being easily removable from the holders, it will thus be seen that any number of differently positioned holders and any number of knives may be conveniently and economically kept on hand for use in the machine.

Another advantage in my machine is that the knives may be made of steel and thus more durable and effective knives used therein than where the knife is of cast-iron or integral with the knife holder.

Knives in my machine may be easily removed to sharpen them or to replace broken or injured ones and my harrow thus kept constantly in good working order.

Having thus described my invention, I claim:

1. A harrow having one or more rectangular frames, each having closed circular shaft bearings at each end, squared shafts with circular ends mounted in said bearings, and knife carriers comprising sleeves having squared longitudinal openings formed to receive the shafts therein, said sleeves being of suitable length to engage the ends of the frame and each other and retain the knife holders thereon a suitable distance apart,

knife holders rigidly secured upon the centers of said sleeves, partly at right and partly at oblique angles to the same and to the shafts, said holders being composed of two members, the member 16 having four recesses on its inner face at right angles to each other, each formed with bosses 18 on its sides and to receive knives 23 therein, the member 16' having plane faces and means to rigidly secure said members together with the knives between them in the recesses, substantially as described.

2. In a harrow the combination between squared shafts mounted in closed bearings at each end of a rectangular frame, and knife carriers comprising sleeves having squared longitudinal openings formed to receive the shafts therein, said sleeves being of suitable length to engage the ends of the frame and each other and retain the knife holders thereon a suitable distance apart, knife holders rigidly secured upon the centers of said sleeves, partly at right and partly at oblique angles to the same and to the shafts, said holders being composed of two members, the member 16 having four recesses on its inner face at right angles to each other, each formed with bosses 18 on its sides and to receive knives 23 therein, the member 16' having plane faces and means to rigidly secure said members together with the knives between them in the recesses, substantially as described.

3. In a harrow of the kind described knife carriers comprising sleeves having squared longitudinal openings formed to receive the shafts therein, said sleeves being of suitable length to engage the ends of the frame and each other and retain the knife holders thereon a suitable distance apart, knife holders rigidly secured upon the centers of said sleeves, partly at right and partly at oblique angles to the same and to the shafts, said holders being composed of two members, the member 16 having four recesses on its inner face at right angles to each other, each formed with bosses 18 on its sides and to receive knives 23 therein, the member 16' having plane faces and means to rigidly secure said members together with the knives between them in the recesses, substantially as described.

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Witnesses:

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