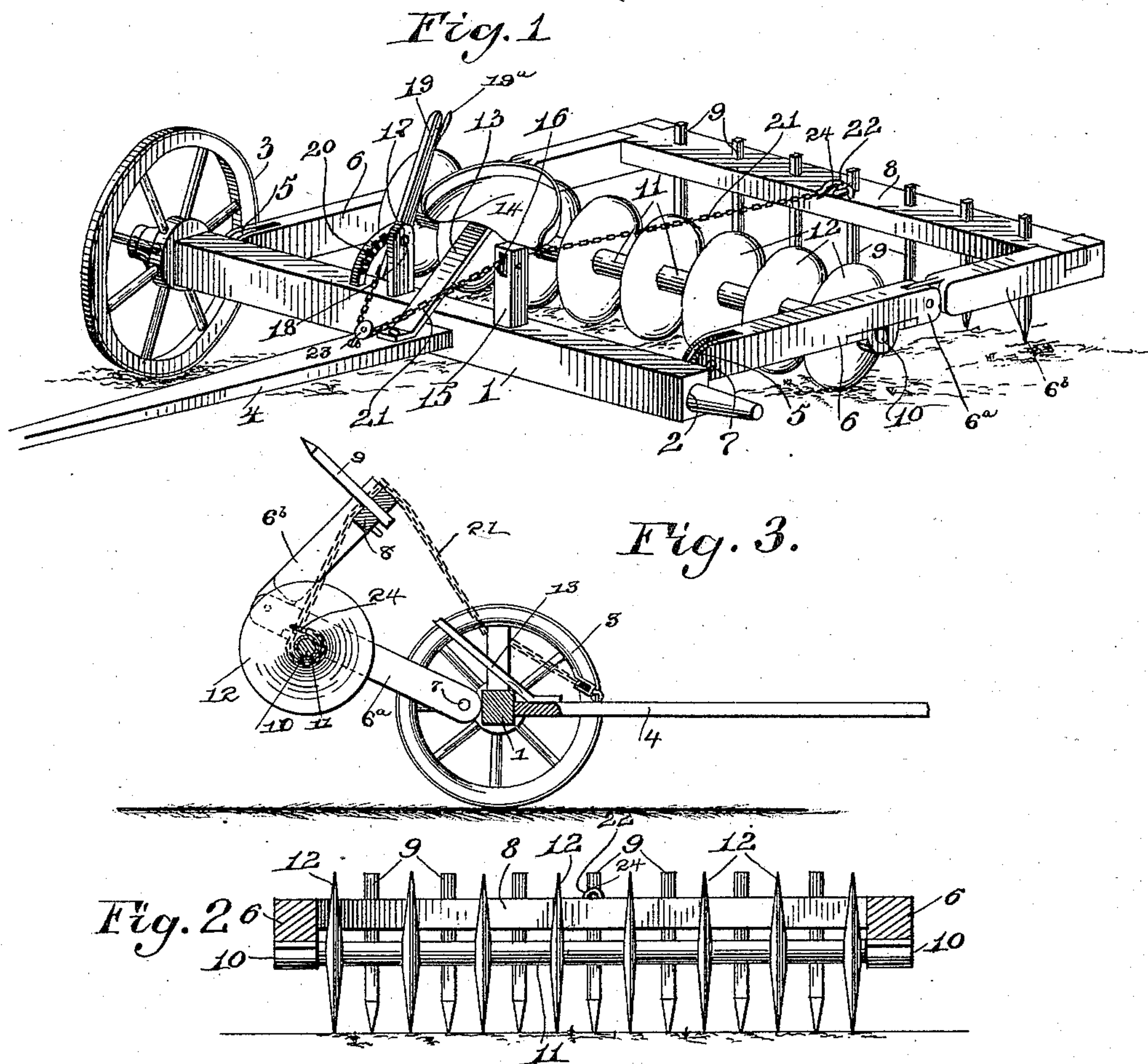


(No Model.)

J. H. RICHMOND.
HARROW.

No. 470,401.

Patented Mar. 8, 1892.



Witnesses:

C. M. Gallaher

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UNITED STATES PATENT OFFICE.

JAMES H. RICHMOND, OF ARDEOLA, MISSOURI.

HARROW.

SPECIFICATION forming part of Letters Patent No. 470,401, dated March 8, 1892.

Application filed April 11, 1891. Serial No. 388,531. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. RICHMOND, a citizen of the United States, residing at Ardeola, in the county of Stoddard and State of Missouri, have invented a new and useful Harrow, of which the following is a specification.

This invention relates to improvements in harrows, and has for its object the construction of a cheap and simple harrow adapted to thoroughly pulverize and harrow the soil and to be thrown into and out of operative position for the purpose of transporting the machine to and from the scene of operation.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be particularly pointed out in the claim.

Referring to the drawings, Figure 1 is a perspective of a harrow constructed in accordance with my invention. Fig. 2 is a vertical longitudinal section, the harrow being folded as for transportation. Fig. 3 is a transverse section of Fig. 1.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 designates an axle, preferably rectangular in cross-section and reduced at its extremities to form bearings 2 for the reception of a pair of ground-wheels 3. From the front of the axle extends a draft-tongue 4. Perforated ears 5 extend rearwardly from the axle near the bearing ends of the same, which ears are pivoted, as at 7, to the forward bifurcated ends of front sectional side bars 6, the rear ends of which are loosely hinged, as at 6^a, to the forward ends of rear sectional side bars 6^b, the rear ends of which are connected by the harrow or drag-bar 8, transversely disposed. The drag-bar is provided with a series of perforations, through which pass rigid harrow-teeth 9. The under sides of the sections 6 are provided with bearings 10, and in the bearings is mounted for rotation a transverse shaft 11, provided at intervals with harrow-disks 12, so located upon the shaft as to alternate with the teeth 9 of the drag-bar. A seat-standard 13 extends rearwardly from the draft-tongue 4 and supports a driver's seat 14. At one side of the seat-standard there is

mounted upon the axle a short vertical post or standard 15, in which is loosely mounted a pulley 16, while at the opposite side of the standard there rises from the axle a standard 17, to which, as at 18, is pivoted a hand-lever 19. This lever is provided with a locking bolt or ratchet 19^a, designed to engage with a toothed locking-sector 20, located upon the axle. To the lower end of the lever 19 there is secured a chain 21, which chain is passed forward through a pulley-block 23, located upon the tongue 4, and rearwardly over the pulley 16 to the rear end of the frame, where it terminates in a hook 24 for removably engaging a staple 22 upon the drag-bar.

In operation the disks cut the soil, while the teeth following thereafter pulverize the same, as will readily be understood. All trash collected by the harrow-teeth may be readily dropped at convenient spots by simply raising the drag-bar through the medium of the lever and chain. When it is desired to travel from one field to another or to and from the point of use, the drag-bar is thrown over upon the sectional side bars 6, which may be accomplished by reason of said sectional side bars being hinged to the rear sectional side bars 6^b, and the hook 24 having been disengaged from the staple 22 of the drag-bar the chain is passed around the drag-bar under the same and connected to the shaft 10. Now by operating the lever 19 the rear frame-work is raised upon the pivots 7 until the disks are above the ground, and the apparatus may be transported upon the wheels 3. Having described my invention, what I claim is—

The combination, with the axle having ground-wheels, rearwardly-disposed perforated lugs, and a forwardly-disposed tongue, of front sectional side bars pivoted to the lugs and having bearings, a shaft mounted in the bearings, harrow-disks mounted on the shaft, rear sectional side bars hinged to the rear ends of the front sectional bar, a transverse drag-bar connecting the rear ends of the rear sectional bars, harrow-teeth mounted in the drag-bar, a staple mounted upon the drag-bar, a lever fulcrumed upon the axle and having a locking-bolt, a sector for engaging the

bolt, a pulley-block located upon the draft-
bar, a standard and its pulley located upon
the axle in rear of the pulley-block, and a
chain connected to the lever, passed through
5 the pulley-block and over the pulley, and ter-
minating at its rear end in a hook for remov-
ably engaging the staple of the drag-bar,
whereby said chain may be passed over the
drag-bar and engage the disk-supporting shaft

when the rear section is folded forward upon to
the front section, substantially as specified.

In testimony that I claim the foregoing as
my own I have hereto affixed my signature in
presence of two witnesses.

JAMES H. RICHMOND.

Witnesses:

C. A. MOSELEY,
ASA NORMAN.