A. J. SMITH.

HARROW.

APPLICATION FILED DEC. 31, 1920.

1,411,196. Patented Mar. 28, 1922.

2 SHEETS—SHEET 1.

Fig. 1.

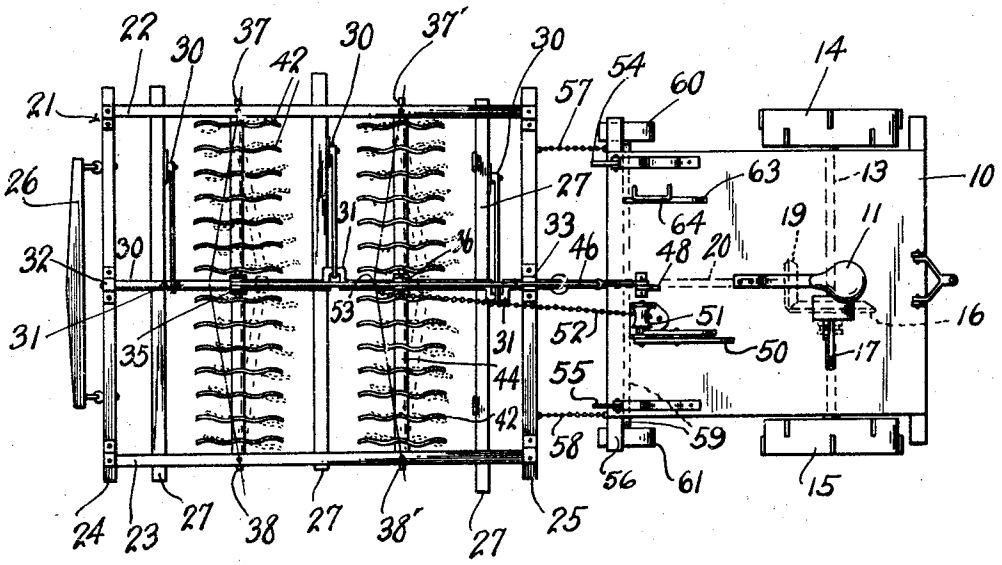
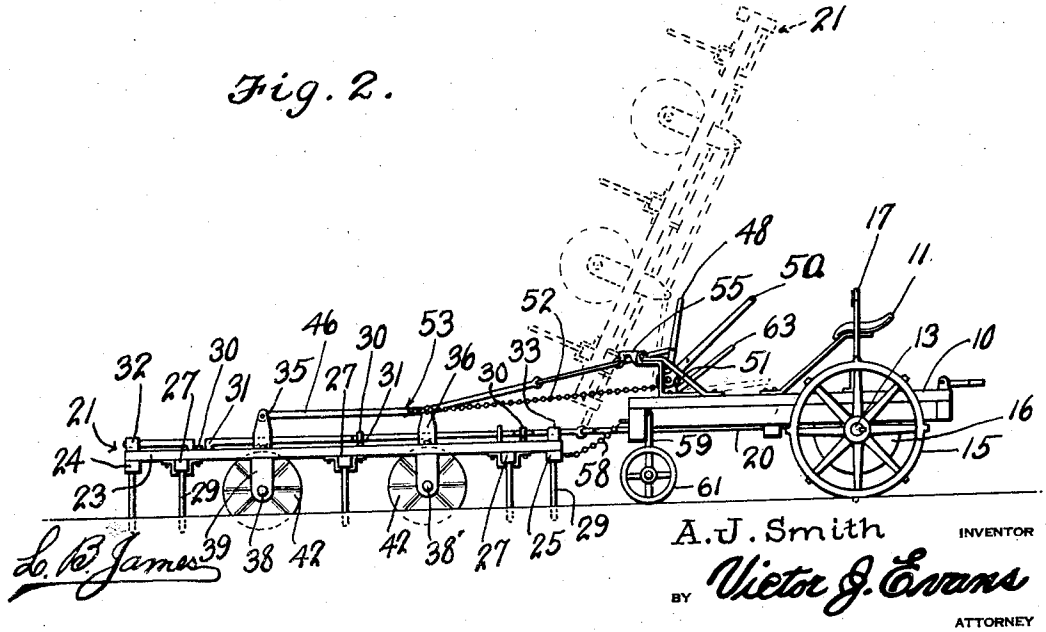


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

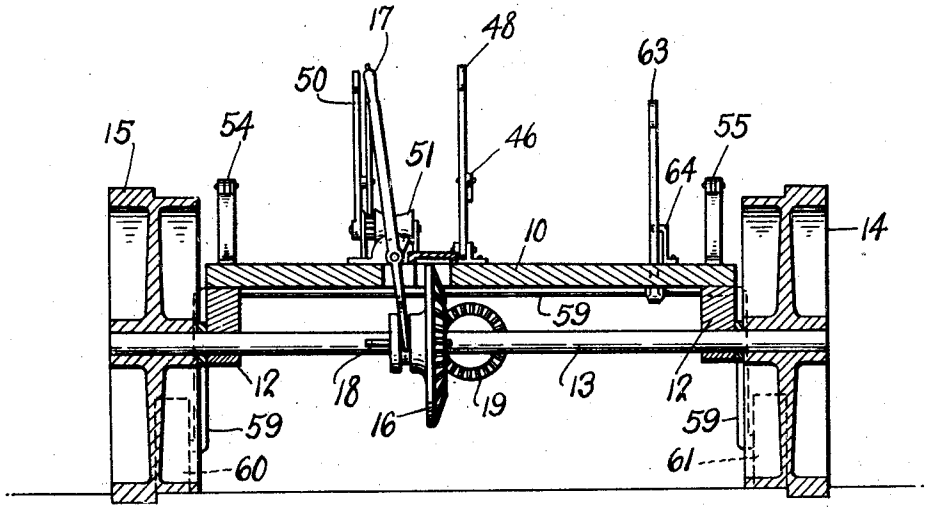


Fig. 4.

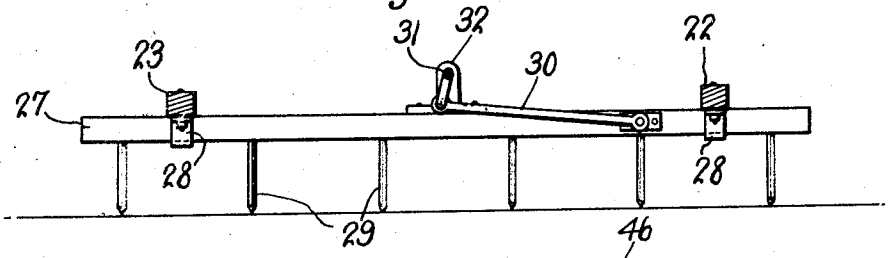
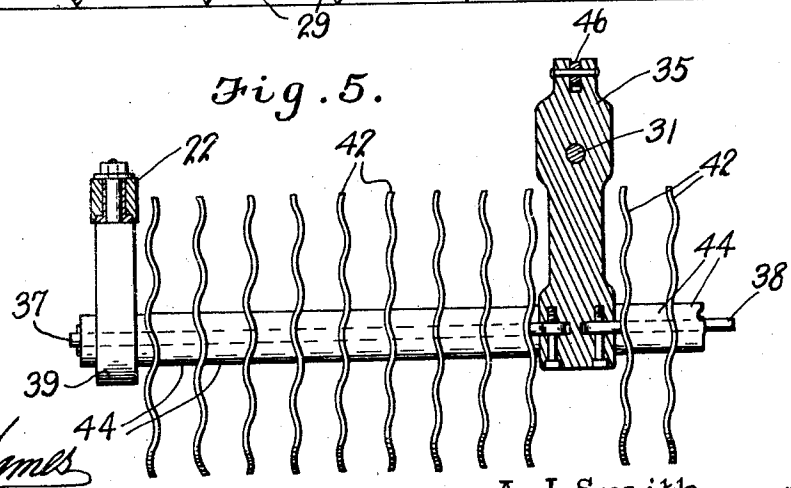


Fig. 5.



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ADONIRAM JUDSON SMITH, OF SEATTLE, WASHINGTON.

HARROW.

1,411,196. Specification of Letters Patent. Patented Mar. 28, 1922.

Application filed December 31, 1920. Serial No. 434,285.

To all whom it may concern:

Be it known that I, ADONIRAM J. SMITH, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented new and useful Improvements in Harrows, of which the following is a specification.

This invention relates to a harrow, and one object is to provide means whereby certain of the elements carrying the teeth of the harrow are caused to reciprocate laterally, the reciprocating movement being effected directly from the main shaft upon which the ground wheels are mounted.

A further object is to provide in connection with a frame and a plurality of elements carrying teeth and mounted to reciprocate laterally, a crank shaft extending longitudinally of the frame and driven from the main axle, and means connecting the crank shaft with the reciprocable elements, whereby movement is imparted thereto.

A still further object is to provide, in connection with the construction above outlined, a plurality of shafts extending transversely of the frame and serving to mount a series or plurality of series, of disks, with means for changing the angular position of the shafts with reference to the longitudinal axis of the frame.

A still further object is to provide, in connection with a crank shaft, driven as indicated, and serving the purpose stated, a plurality of elements slidable longitudinally of the shaft and serving to mount a plurality of transverse shafts carrying disks, with means for effecting the movement of the elements slidable on the crank shaft for changing the angular position of the transverse shafts.

With the foregoing and other objects in view, the invention consists in the novel construction, combination and arrangement of elements hereinafter described and claimed.

In the drawings, Figure 1 is a top plan view of the machine, Figure 2 is a view in side elevation, the frame mounting the cultivating elements being shown in dotted lines in raised position, Figure 3 is a vertical transverse section through the platform, showing the drive from the main axle carrying the ground wheels, Figure 4 is a transverse section through the forward frame, showing the means for mounting and reciprocating one of the bars carrying cultivator teeth, Figure 5 shows the manner of mounting the shafts carrying the disks referred to below.

In carrying out my invention, I provide a platform 10, on which the seat 11 of the driver is mounted, the lower side of this platform mounting bearings 12 in which a main shaft 13 is journaled. This shaft carries ground wheels 14 and 15 and also carries a gear wheel 16 slidable longitudinal of the shaft by the operation of lever 17; the shaft carrying a feather 18, preventing the rotation of the gear wheel with reference to the shaft.

Meshing with the gear wheel just mentioned is a beveled pinion 19 on a short shaft 20, the latter serving to drive the crank shaft referred to below.

The frame 21 of the harrow per se includes the side bars 22 and 23 and the forward and rear transverse bars 24 and 25. A draft element 26 serves the usual purpose.

The transversely movable or slidable bars 27 are mounted in U-shaped elements 28 and pass loosely therethrough. These bars carry teeth 29, the bars being connected by pitmen 30 with crank shaft 31, driven from shaft 20 before mentioned. The crank shaft is mounted in bearings 32 and 33 on the forward and rear elements of the frame and passes through bearing blocks 35 and 36. The block 35 receives the adjacent ends of two shaft sections 37 and 38, which may normally be in alinement. The outer ends of these shafts are mounted in bearings 39 on the side bars of the frame, and the two shaft sections 37′ and 38′ are similarly mounted in the rear portion of the frame, bearing block 36 receiving the adjacent ends of the shaft sections last named.

Disks 42 are mounted in spaced relation on the several shaft sections, the sleeves or collars 44 effecting the aforesaid spacing. The disks are of the form shown in Figure 5, being especially effective in connection with the shaft arrangement described.

The bearing blocks 35 and 36 are slidable longitudinally of the crank shaft by the operation of the rod 46 connected with said bearing blocks at the points shown. This rod is controlled by a lever 48 and the connecting link or links illustrated. It is obvious that the shifting of the blocks 35 and 36, as described, will move the shaft sections in approximate alinement, out of alinement, in order to produce the angular relation shown in Figure 1 (in dotted lines) whereby

the disks assume any desired position, within the limits of the construction.

The frame of the harrow may be elevated by the operation of the lever 50, drum 51 being rotatable by the pawl and ratchet mechanism shown, and said drum serving to wind a chain 52 having its outer end secured at 53. The frame may further be retained in an elevated position by means of the cooperating engaging devices 54 and 55 on each side of the frame and platform 10. The frame is connected with the forward bar 56 of the platform by means of chains 57 and 58; and a crank shaft 59 mounts wheels 60 and 61 by means of which construction the elevation of the forward portion of the platform is varied through the operation of lever 63 cooperating with the rod 64.

What is claimed is:

1. In a device of the class described, a frame, bars mounted for movement transversely of the frame, a crank shaft mounted longitudinally of the frame, means connecting the crank shaft with the respective bars, for effecting the movement thereof, teeth carried by the bars, means for driving the crank shaft, devices slidable on the crank shaft, soil pulverizing devices and mounting means therefor controlled by the slidable devices, and means for shifting said slidable devices.

2. In a device of the class described, a frame, bars mounted for movement transversely of the frame, teeth carried by the bars, a crank shaft and devices connected therewith and with the bars for effecting the movement of the latter, a main shaft, ground wheels mounted thereon, means for driving the crank shaft from the main shaft, devices slidable on the crank shaft, soil pulverizing devices and mounting means therefor controlled by the slidable devices, and means for shifting said slidable devices.

3. In a device of the class described, a frame, a plurality of shafts mounted therein and each including a plurality of sections in approximate alinement, means for mounting the approaching ends of the shaft sections, said means being slidable longitudinally of the frame, soil pulverizing devices carried by the shaft sections, a bar connected with the slidable mounting means, and means for imparting movement to the bar for changing the relative position of those shaft sections in approximate alinement, a shaft on which the slidable means are movable, and soil pulverizing devices reciprocated in a transverse direction upon the rotation of the shaft.

In testimony whereof I affix my signature.

ADONIRAM JUDSON SMITH.