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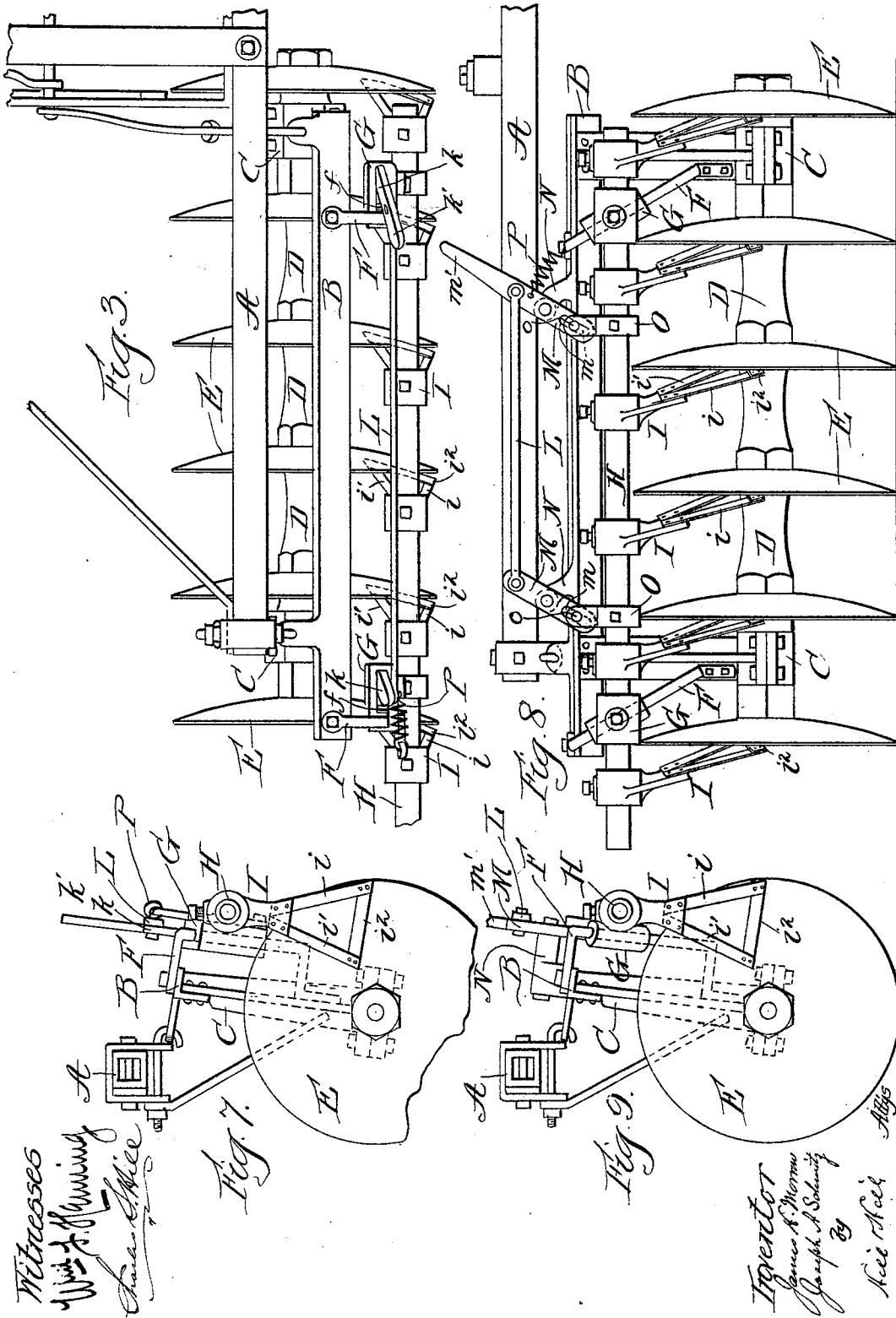
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DISK HARROW.

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(No Model.)

2 Sheets—Sheet 2.



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DISK HARROW.

SPECIFICATION forming part of Letters Patent No. 613,291, dated November 1, 1898.

Application filed November 20, 1897. Serial No. 659,240. (No model.)

To all whom it may concern:

Be it known that we, JAMES H. MORROW and JOSEPH A. SCHMITZ, citizens of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Disk Harrows, of which the following is a description.

Referring to the accompanying drawings, wherein like reference-letters indicate like or corresponding parts, Figure 1 is a rear elevation of one section of a disk harrow, with parts broken away to show the relative position of the parts when the scrapers are removed from the disk. Fig. 2 is a similar elevation showing the position when the scrapers are in contact with the disk. Fig. 3 is a top plan of the harrow. Fig. 4 is a horizontal section in line 4 4 of Fig. 1. Fig. 5 is a similar section in line 5 5 of Fig. 2. Fig. 6 is a partial sectional view showing the detail of the lifting mechanism in the preferred form. Fig. 7 is an end view with parts dotted in to show the construction. Fig. 8 is a rear elevation of a modification, and Fig. 9 is an end elevation of the same with parts dotted in.

In the construction and use of disk harrows it has been found difficult to clear the device of adhesive soil, which, because of the usual dish to the disks, is liable to adhere to them, thus greatly interfering with the effective work of the implement.

The object of our invention is to obviate this difficulty by providing simple and effective means for clearing the disks of any soil adhering to them.

To this end it consists, broadly, in providing the harrow with a series of knives or scrapers, each conforming to the contour of its disk, and combining the scrapers with mechanism adapted to move the scrapers diagonally toward the disks in close imitation of the movement employed by a person operating a hand-scraper to clear the disks of adhering soil.

It also consists in supporting the scraper bar or frame on diagonally-inclined guides and combining the frame with suitable operating mechanism to give the scrapers the desired diagonal movement toward the disks.

It also consists in a new and improved form of scraper for the purpose set forth.

It also consists in such other novel construction and combination of parts as are shown and described, and are particularly pointed out in the claims.

In the drawings, A B are the horizontal bars of a harrow-frame, suitably connected to secure the necessary rigidity for implements of this character.

C C are standards extending downward from the frame, in the lower ends of which is journaled the shaft or axle D.

E E, &c., are the disks, suitably arranged upon the shaft at proper distances from one another.

The description thus far embraces but one-half of the harrow-frame, which consists of duplicate parts suitably connected and usually supporting a driver's seat and provided with a tongue and other necessary equipment for attaching the teams or other motive power.

The description thus far applies to a class of disk harrows well known at this time, and we claim nothing new in it.

F F are guide-bars, which are diagonally inclined downward and at the same time inward in a direction substantially parallel with the axle D of the implement.

G G are blocks movable upon the guide-bars F F, to which is firmly secured the bar H, carrying the scrapers I I. It is obvious that with suitable mechanism for simultaneously raising and lowering the blocks G G the several scrapers may either be lifted upward and away from the disks or moved rectilinearly and diagonally downward and in close proximity to or in contact with them. This operation gives the knives or scrapers a peculiar chiseling action, whereby the comparatively sharp edges of the scrapers easily penetrate any accumulation of soil on the disks and, coming in close proximity to or in contact with the surface of the disks as they rotate, effectively remove the soil. The scrapers may then be withdrawn, as described.

Any suitable means may be employed to simultaneously raise or lower the blocks G G and scraper-supporting bar H, and we have shown two simple means for this purpose. In the preferred form (shown in Figs. 1, 3, and 6) the fixed guide-bars F F are provided with a cog-rack section *ff*, and pinions K K, provided

with extending arms or levers $k k$, are mounted on the blocks G G, in mesh therewith. A rod L, or equivalent means connecting the levers $k k$, causes them to operate in unison and the blocks to be simultaneously raised or lowered on the guide-bars. One or both of the levers or arms k may be extended, as at k' , to form a convenient lever to operate the scraper device. Figs. 8 and 9 show another simple and effective means for simultaneously operating the blocks and scraper-bar. In this form levers M M are pivotally mounted on the frame—as, for example, on the arms N N on the bar B. The lower ends of the levers are provided with slots $m m$. Collars O or equivalent parts on the scraper-bar H are provided with pins o , which project into the slots $m m$. The rod L connects the two levers, as before, for the same purpose. The extension m' serves as a lever to operate the scraper, as before. In either form springs P may be employed, if desired, to normally hold the mechanism in such position that the scrapers are out of contact with the disks, as shown, or the reverse. It is obvious that, if preferred, the pins o may be positioned directly upon the bar H and the collars O be dispensed with; but this arrangement we consider an inferior equivalent to that shown.

In the preferred form the scrapers I are constructed to secure strength without undue weight. In accomplishing this we construct the knives or scrapers in triangular form, with the center cut out and with the cutting edges conforming closely to the contour of the disk. This may be accomplished by stamping them out of an integral piece of metal, or, as shown in the drawings, by employing separate pieces of metal $i i' i''$, properly secured together, to form the sides of the triangle. (See Fig. 1.)

It is obvious that after describing our improvement various immaterial modifications may be made without departing from the spirit of our invention. Hence we do not wish to limit ourselves to the exact form and construction described.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In an implement of the kind described, the frame and disks, in combination with the scraper-support having scrapers mounted thereon, and means for moving the bar and scrapers rectilinearly and diagonally toward the disks, substantially as described.

2. In an implement of the kind described, the guide-bars, in combination with blocks movable on the guides and carrying the scraper-bar, and means for raising and depressing the blocks on the guides, substantially as described in a rectilinear and diagonal direction.

3. In an implement of the kind described, the guide-bars, diagonally inclined as described, in combination with blocks, movable on the guides and carrying the scraper-bar, and means for raising or depressing the blocks on the guides, substantially as described.

4. In an implement of the kind described, the diagonally-inclined guide-bars, each provided with a cog-rack section, as described, in combination with blocks movable on the guides, a pinion pivotally mounted on each block in mesh with the cog-rack and provided with an extending lever-arm, means for causing the pinions on the blocks to operate in unison, and a scraper-support carried by the blocks and having scrapers arranged thereon, substantially as described.

5. In an implement of the kind described, the frame and disks, in combination with a scraper-support having open center triangular-shaped scrapers mounted thereon, and means for moving the support and scrapers diagonally toward the disks, substantially as described.

6. In an implement of the kind described, the frame and disks, in combination with a scraper-support having scrapers mounted thereon, means for moving the support and scrapers rectilinearly and diagonally toward the disks, and one or more springs controlling the normal position of the scrapers, substantially as described.

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