

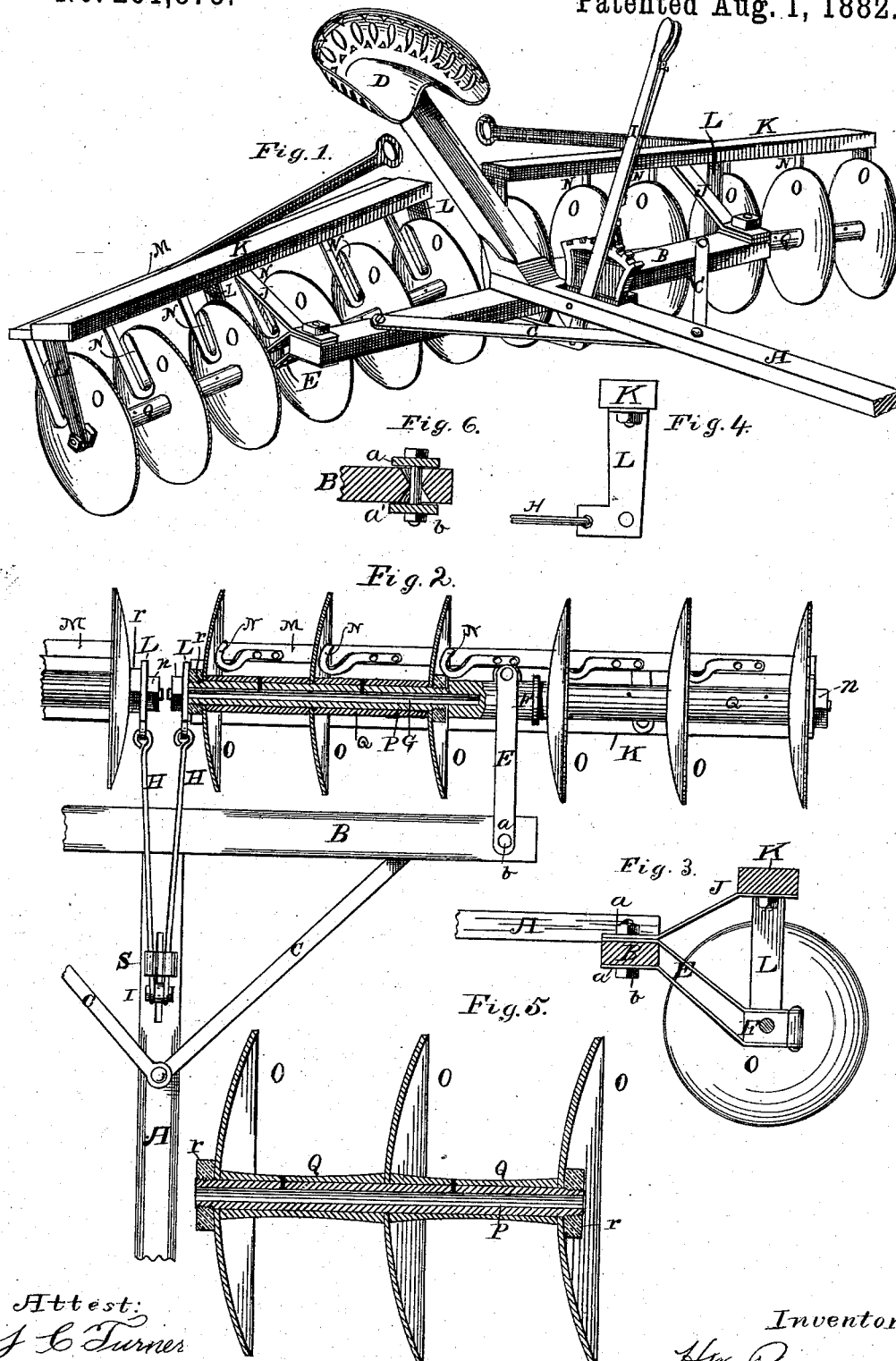
(No Model.)

H. M. ROSE.

DISK HARROW.

No. 261,875.

Patented Aug. 1, 1882.



Attest:
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UNITED STATES PATENT OFFICE.

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DISK-HARROW.

SPECIFICATION forming part of Letters Patent No. 261,875, dated August 1, 1882.

Application filed March 16, 1882. (No model.)

To all whom it may concern:

Be it known that I, HENRY MARTIN ROSE, of Waterman Station, DeKalb county, Illinois, have invented a new and useful Improvement in Disk-Harrows; and I do hereby declare that the following is a full and exact description of the same.

The objects of my invention are to lighten the draft, simplify the construction, and construct the disk-gangs in independent sections, so that they may be interchangeable and capable of removal and use in corn-cultivators, &c.

This machine is provided with two gangs of disks which are independently capable of motion in a horizontal plane, so as to assume various angular positions in respect to the line of advance, and also independent movements in vertical plane to conform to undulations of surface over which it advances. The former is subject to adjustment by the attendant. The latter movements are automatic, and the movement of each gang may or may not be independent of the movement of the other, according as they are coupled or uncoupled. The disks are connected together or mounted in sections, two or more of which constitute the gang. Each section I prefer to construct with three disks, and it is a complete structure in itself, attachable and detachable as a whole, and constitutes an independent member of the machine. The draft is applied to each gang at or near its center of length, and it is there balanced and capable of changing its angular position with small resistance.

My invention therefore relates, first, to the structure of the gang; and it consists in making the same in sub gangs or sections; and, second, it relates to the mounting or attachment of the same to the draft device; and it consists in a pivoted draft attachment connected with a non-rotating axle at or near the center of the gang between said sections.

That others may fully understand my invention, I will particularly describe it, having reference to the accompanying drawings, wherein—

Figure 1 is a perspective view of my machine. Fig. 2 is a bottom plan including a section of the gang in the plane of the gang-axle. Fig. 3 is a side elevation of the bracket. Fig. 4 is an elevation of the inner hanger. Fig. 5 is a

central longitudinal section of a disk-section. Fig 6 is a longitudinal section of the bracket-joint.

A is the draft-tongue, provided at its rear end with a cross-piece, B, and braces *c c* for the same. This constitutes the main frame of the machine, upon which the driver's seat D is mounted.

At each extremity of the cross-piece B an arm or bracket, E, is attached with a connecting-joint, which will permit said arm to swing in a horizontal plane and also to partly rotate on a horizontal longitudinal axis. This joint I find it economical and convenient to make by inclosing said piece B between two plates, *a a'*, which form parts of the arm E, and a bolt, *b*, which passes through said plates and the interposed piece B, the bolt-hole in said piece being enlarged from the center outward in both directions, so as to permit said bolt to rock back and forth in said hole as the arm is partly rotated, as set forth. The cross-piece may be re-enforced with metal at this joint, or the joint may be wholly constructed of metallic parts attached to the cross-piece. The joint-bolt also serves as a vertical axis whereon said arm may swing or vibrate in a horizontal plane.

At the rear extremity of each arm or bracket E there is a block, F, which is attached to said arm by a vertical pivot-bolt, and is therefore capable of a vibratory motion on said arm in a horizontal plane. The non-rotating axle-rod G is passed through said block F, and may be secured rigidly therein, though it is not generally necessary to provide set-screws or other special devices for that purpose, the tension of the nuts *n* being sufficient. At their inner ends the axle-rods G are attached by links H to a hand-lever, I, whereby the driver may move said inner ends of the axle-rods G forward and backward to give them a greater or less angular obliquity to line of progression. Each bracket E is provided with a part or branch, J, which extends backward and upward therefrom, and is supported at its extremity by the plank or string-piece K, which is also supported upon the rod G by hangers or brackets L, one of which is placed at the center, and thus forms a supporting-connection between said arm J and the rear end of the arm E. These string-pieces K are not essential to the working of the machine, but are convenient

supports for weights when the nature or condition of the soil requires the machine to be loaded. They also serve to support the slides M, which bear the scrapers N, whereby the disks
 5 may be cleared of adhering soil or other obstructing matter. The slides M may be connected to hand-levers suitably located, so that the attendant may operate and control the scrapers at will and bring them into or out of
 10 action as occasion may require. These scrapers are knife-edged blades, curved sidewise to fit the curvature of the disk. The point of the blade extends to the edge of the disk, but need not extend beyond it, and when in action the
 15 scraping-edge of the blade is in position radial to the disk, or thereabout. The scraper is attached to its supporting-shank at a distance from its point, so that matter dislodged from the disk may still be free to pass up over the
 20 edge of the scraper and fall in front of the disk. If the scraper descended from above or laterally toward the edge of the disk, the supporting part of the scraper would arrest and hold this detached matter, and the accumulation of
 25 it would be so great sometimes as to cause a stoppage of the machine. I therefore prefer to form the scraper from a rod which descends from the slide M at some distance from the disk to a point near the axle, and then bends
 30 laterally and upward again in a line corresponding with the curvature of the disk. This portion of the rod which bends upward is flattened and sharpened along one edge, and constitutes the scraper, without presenting any
 35 point above the disk against which obstructing matter can lodge.

The disks O are circular plates of steel of suitable thickness, and are made concave, or as is usual. I prefer to mount three disks together on one shaft, and thus constitute a
 40 member of the machine, which I call a "section," and compose the gang of two such sections, though these numbers are of course arbitrary. I think it preferable to employ a non-rotating axle-rod and hollow shafts for the
 45 section, rather than a rotating axle with short bearings at its ends, because in agricultural machines it is more difficult to maintain proper lubrication and exclusion of dirt when the bearings are short. Therefore in constructing
 50 the section I provide a piece of iron tube, P, of proper length for the section, and cut a screw-thread upon each end, and fit thereon nuts *r*. For this purpose ordinary gas-pipe
 55 one inch in internal diameter is both cheap and efficient. The orifice in the center of each disk O is of proper size to admit the pipe P, which is passed through it. One of said disks is placed at the center of the pipe P, and at
 60 each side of it I place a thimble or sleeve, Q, made from a piece of pipe similar to pipe P, but of larger diameter, so that it will pass over said pipe. The length of the thimble Q is equal to the desired distance between the
 65 disks. When the center disk and the two sleeves Q are in place the remaining two disks

are placed on the pipe P in contact with the outer ends of the sleeve Q, and the nuts *r* are screwed on, and these constitute what I call a
 70 "section." When placed in position in the machine the rod G is passed through the pipe P, and forms the axle whereon the section turns. Oil-holes are made through the pipes P Q, or otherwise provided near to the middle
 75 of the section, so that lubricant may be introduced at a distance from the end of the section. The action of the parts will cause a movement of said lubricant toward said ends, and thereby to a certain extent the entrance
 80 of dust and dirt is prevented. This method of construction makes a section a unitary structure, and renders it so stiff in the line of its axis that there will not be in use any flexure or bending of the shaft, whereby extra
 85 friction or cramping would ensue. The sections as I construct them are adapted to be readily removed from the harrow-frame, and as readily placed in a smaller frame and adapted for use as a cultivator.

A sliding link, S, is placed on the rods H, 90 so that the attendant may couple the ends of the gangs and restrain them from independent movement, if that is desirable, by sliding said link to the rear ends of said rods. When it is moved to their front ends, however, the
 95 rods and the gangs are left free from each other.

Having described my invention, what I claim as new is—

1. In a disk-harrow, a gang of disks composed of two independent sections, substantially as described, a non-rotating axis-rod whereon said sections revolve, and a draft-connection attached to said rod at its middle, between said sections. 100

2. In a disk-harrow, a draft-tongue, A, and a cross-piece, B, at the rear of the same, combined with brackets or arms E, attached to said cross-piece with joints which permit said arms to swing in a horizontal plane and also to
 105 partly rotate on a horizontal axis, combined with gangs of disks the axis-rods whereof are pivotally attached to the rear ends of said arms, and are thereby enabled to move in a horizontal and vertical direction, as set forth. 110

3. In a disk-harrow, a draft-frame and gangs of revolving disks, combined with connecting arms or brackets E, each of which is provided with an arm, J, string-piece K, and hangers L, whereby the ends and middle of the axis-
 115 rods G are supported, as set forth. 120

4. In a disk-harrow, a draft-frame and two independent gangs of disks attached by their centers to brackets extending backward from said draft-frame, combined with rods H, extending from the inner ends of said gangs forward to the hand-lever and the slide S, whereby said gangs may be coupled or left independent in their movements, as set forth. 125

5. A section of harrow-disks constructed with a tubular axis, as set forth, to wit: said disks are placed upon a piece of suitable pipe 130

of proper length, spaced by thimbles or sleeves of other pieces of pipe of proper size to slip over the first, and extending from one disk to another, and the whole rigidly fastened and held together by screw-nuts on the ends of the pipe first mentioned.

6. In a disk-harrow, a disk-gang set up in sections upon hollow shafts, as set forth, combined with non-rotating rod, which extends through the gang and constitutes a continuous axis, as described.

7. In a disk-harrow, disk-gangs set up upon tubular hubs, constituting complete and independent sections, substantially as described, combined with non-rotating axis-rods secured to the hangers at their ends, and draft-connections attached to the centers thereof.

8. In a disk-harrow, a set of disks comprising three or other number less than the whole number of the gang, connected rigidly together

and fixed upon a shaft, whereby said section may constitute an independent member of the gang, as set forth.

9. In a disk-harrow, a series of revolving disks combined with U-shaped scrapers, the two vertical portions of each being in a plane or planes substantially parallel with the axis of said disks, one of said vertical parts constituting the scraper contiguous to the face of the blade and extending to the edge of the same, and the other vertical portion constituting the shank attached to that part of the frame whereby the scraper is supported, whereby matters detached from the blade may freely pass over the point of the scraper without arrest by the shank, substantially as set forth.

H. M. ROSE.

Witnesses:

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M. V. SMITH.