

(No Model.)

2 Sheets—Sheet 1.

M. DALEY.
DISK HARROW.

No. 411,376.

Patented Sept. 17, 1889.

Fig. 1.

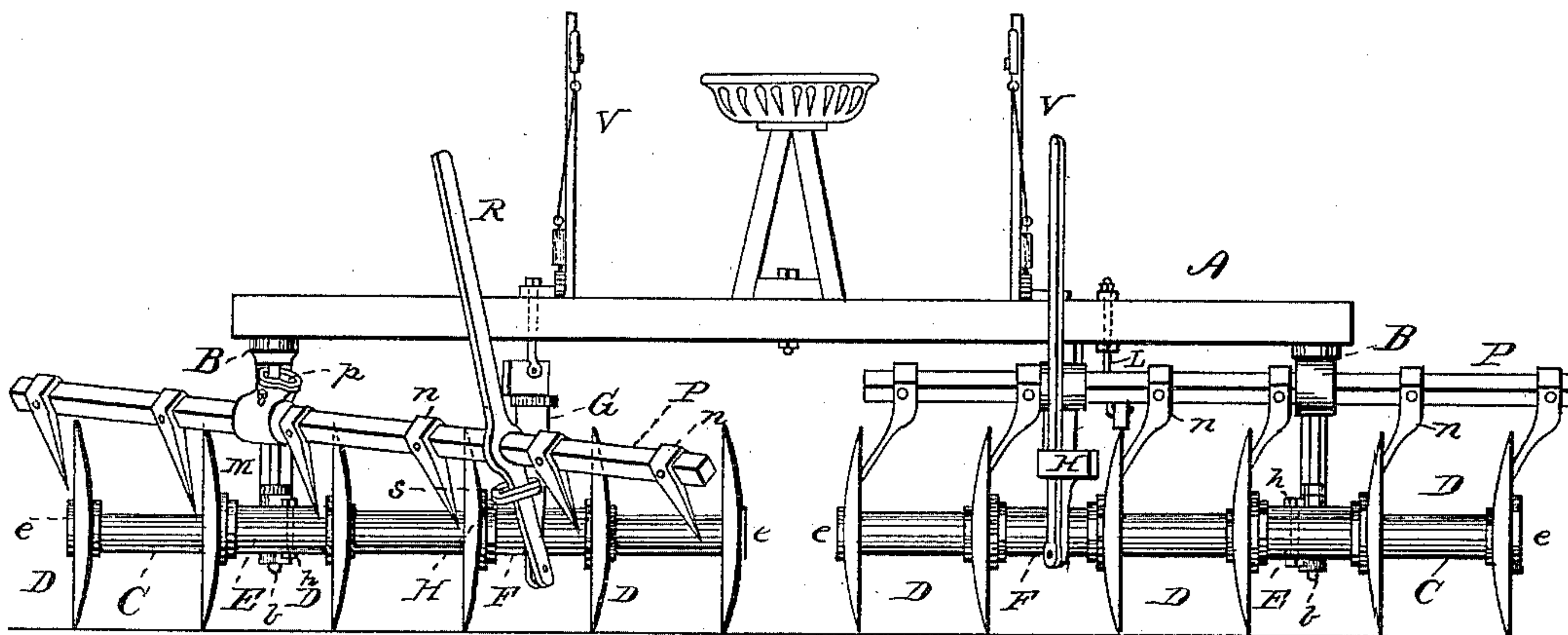


Fig. 2.

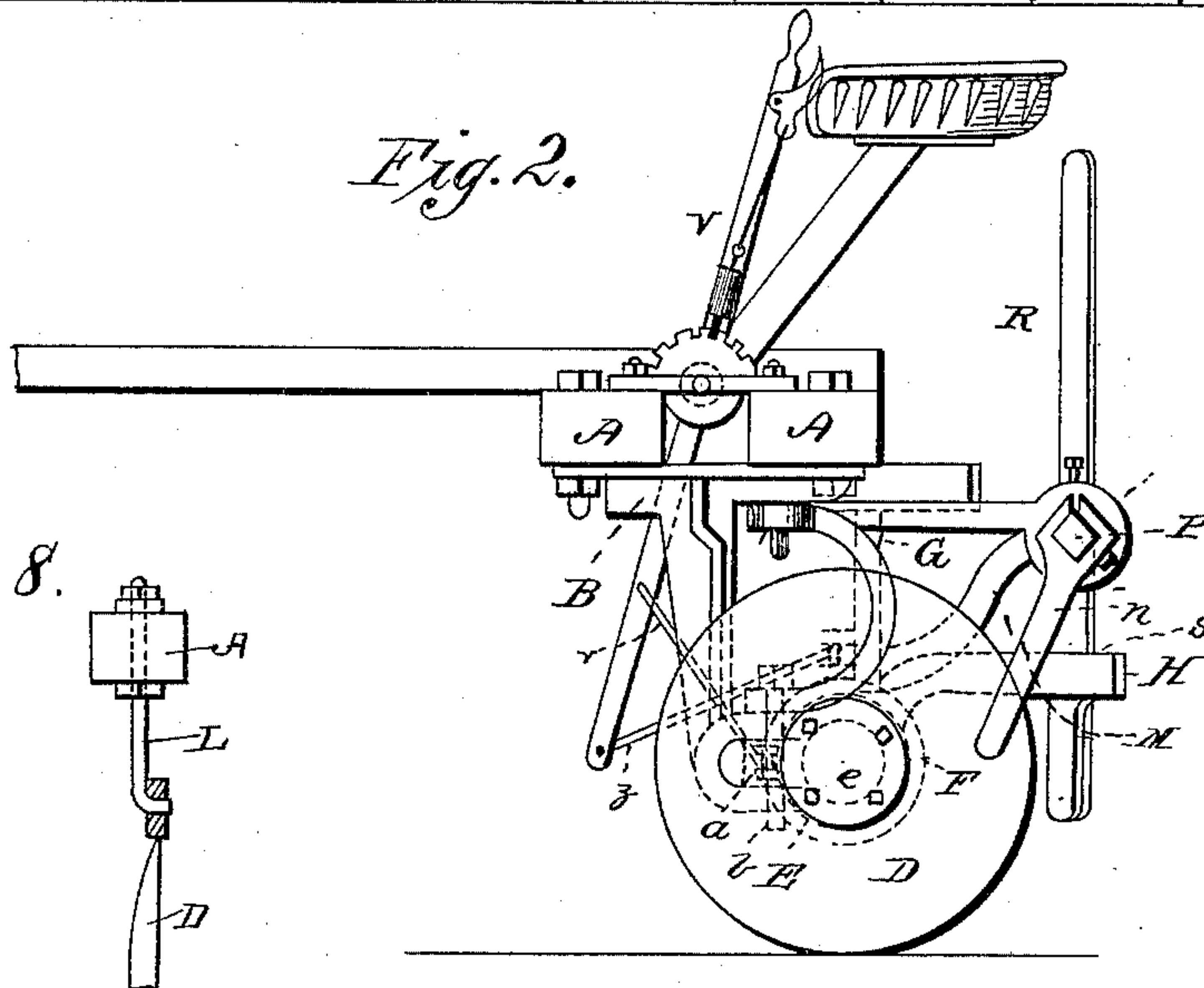
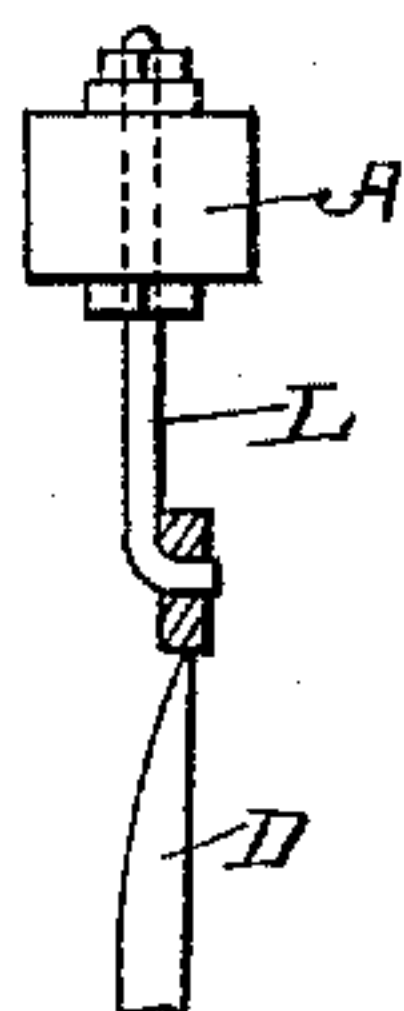


Fig. 8.



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UNITED STATES PATENT OFFICE.

MICHAEL DALEY, OF DE KALB, ILLINOIS, ASSIGNOR TO THE DALEY MANUFACTURING COMPANY, OF SAME PLACE.

DISK HARROW.

SPECIFICATION forming part of Letters Patent No. 411,376, dated September 17, 1889.

Application filed December 21, 1888. Serial No. 294,328. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL DALEY, a citizen of the United States, and a resident of De Kalb, in the county of De Kalb and State of Illinois, have invented certain new and useful Improvements in Disk Harrows; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a representation of a rear view of the harrow. Fig. 2 is a side view of the same. Fig. 3 is a sectional view. Figs. 4, 5, 6, and 7 are details. Fig. 8 is a detail perspective view of the leveler-bar or contrivance.

This invention has relation to disk harrows or pulverizing-machines; and it consists in the construction and novel combination of devices, all as hereinafter set forth, and pointed out in the appended claims.

In the accompanying drawings, the letter A designates the transverse framing-bars, and B the coupling-standard bolted thereto. Two gangs of disks are provided, each gang being independent of the other and having a separate axle C, to which the standard B is connected through the medium of a coupling-sleeve. Upon each axle are mounted three pairs of disks D, each pair rotating upon the axle independently of the other pairs. Each axle is therefore provided with a middle pair of disks and with an outer lateral pair and an inner lateral pair. Between the middle pair of disks and the outer pair is the coupling-sleeve E, having a lug *a*, which is pivoted to lugs of the coupling-standard by a bolt *b*, passing through an hour-glass-shaped perforation in said lug *a*. Between the middle and inner pairs of disks is a coupling-sleeve F, which carries an upright bearing G and a bracket-arm H, extending rearward. This coupling-sleeve is also provided with connection-lugs *c*, and similar lugs *d* are provided on the bearing G. Between the disks of each pair is a hub-spool I, to the flanges of which the disks (which are concavo-convex) are

bolted. At the ends of the axle a cap-plate *e* is applied and is bolted to the flange of the hub-spool, the bolts passing through the end disk, which is embraced between the cap-plate and flange. In this manner the axle is guarded at its ends to exclude soil and grime. Protection for a like purpose is devised between the end pairs of disks and the middle pair in the following manner: Each interior disk is held firmly between its hub-flange and a flanged ring J, which is formed with an annular offset *f* around its eye, which engages the end flange of a sectional sleeve K, which is within the main coupling-sleeve. These sectional sleeves or dirt-guards are formed with oblique inner ends *g*, which lap each other and are perforated for the passage of a bolt *h*, which also passes through the axle and coupling. The offset *f* of the ring J is formed with an outer shoulder *k*, which turns within an annular guard-flange *l* at the end of the coupling-sleeve, as shown. These sectional dirt-guards hold the pairs of disks in position and take the end-thrust, which is therefore independent for each pair of disks.

L indicates the leveler-bar, which is adjustable and is designed to regulate the depth of work of the inner disks of each gang. This leveler-bar is hinged or pivoted at the forward end, and its rear end is adjusted by means of a hook-bolt *m* and nuts, in connection with the main bars of the frame. This bar engages the laterally-spread top *n* of the upright bearing G.

The scrapers or cleaner-arms N are attached to a squared bar P, which is secured to the rear end of a laterally-swinging bracket M, which is pivoted to the main standard B of the frame. The upper bearing or hinge of this bracket has a slotted construction, as indicated at *p*, to allow for the change of level when the scraper-bar is thrown in or out of work. A lever R, pivoted to a depending portion of the bracket-arm H of the coupling-sleeve F and engaging the scraper-bar P, works in an oblique slot of said bracket-arm, and when this lever falls back the scrapers are drawn obliquely to the rear, out of position with regard to the disks. When thrown forward, the scrapers operate to clean the disks. The scraper-bar P passes through a

round aperture in the lever R, so that this lever affords a bearing for the inner end of said scraper-bar. It will be observed that while two of the scrapers are outside of the bracket M four are interior to said bracket and govern the action of the gang of scrapers, for the motion of rotation of the majority of the disks being in the forward direction required, when said disks are clogged and the scrapers are thrown forward the clogged disks will hold the scrapers forward to their work until the disks are cleaned, when, the friction being relieved, the gang of scrapers will fall back, being actuated by its own gravity.

V represents the levers, which are operated to change the angular relation of the disk gangs to the line of draft. The end of this lever V is connected to the inner coupling-sleeve F, which carries the upright bearing or projection G, by the crossing connecting-rods *v z*, which are pivoted to the connection-lugs *c* and *d*. This construction serves to hold the upright bearing G in the vertical position, whatever be the angular adjustment of the gangs, because the axle is not turned. This is important, in order that while the gang is kept down to its work by the engagement of the upright bearing with the leveler-bar it may nevertheless be allowed to drop at its inner end when passing a concavity or depression in the ground.

Having described this invention, what I claim, and desire to secure by Letters Patent, is—

1. In a disk pulverizer, the combination, with the disks, their hub-sleeves, and offset rings, of the coupling-sleeves and the sectional

dirt-guards having end flanges engaging the offsets of said rings, substantially as specified.

2. A disk pulverizer having two angularly-adjustable gangs of separately-revolving pairs of disks and automatically-disengaging gangs of cleaners, substantially as specified.

3. In a disk pulverizer, the combination, with the gang of disks, of the main coupling-sleeve E, its connections, and the inner coupling-sleeve F, of the adjusting-lever and its crossed connections with the latter coupling-sleeve, substantially as specified.

4. A disk pulverizer having gangs of disks connected to the draft-frame nearer their outer than their inner ends, adjustable leveler-bars attached to said frame above said gangs, and coupling-sleeves nearer their inner than their outer ends, carrying upright bearings G and attached by crossing connections to the adjusting-levers, substantially as specified.

5. In a disk harrow or pulverizer, the gangs of disks, in combination with the gangs of cleaners attached to a swinging bracket pivoted at or near the axle, and the lever whereby a majority of the cleaners are brought into contact with the disks by a motion in the direction the disks revolve, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

MICHAEL DALEY.

Witnesses:

DON F. WILLIAMS,
ELBERT MOON.