(No Model.) 2 Sheets—Sheet 1.

A. J. TSCHANTZ.

DISK HARROW.

No. 344,293. Patented June 22, 1886.

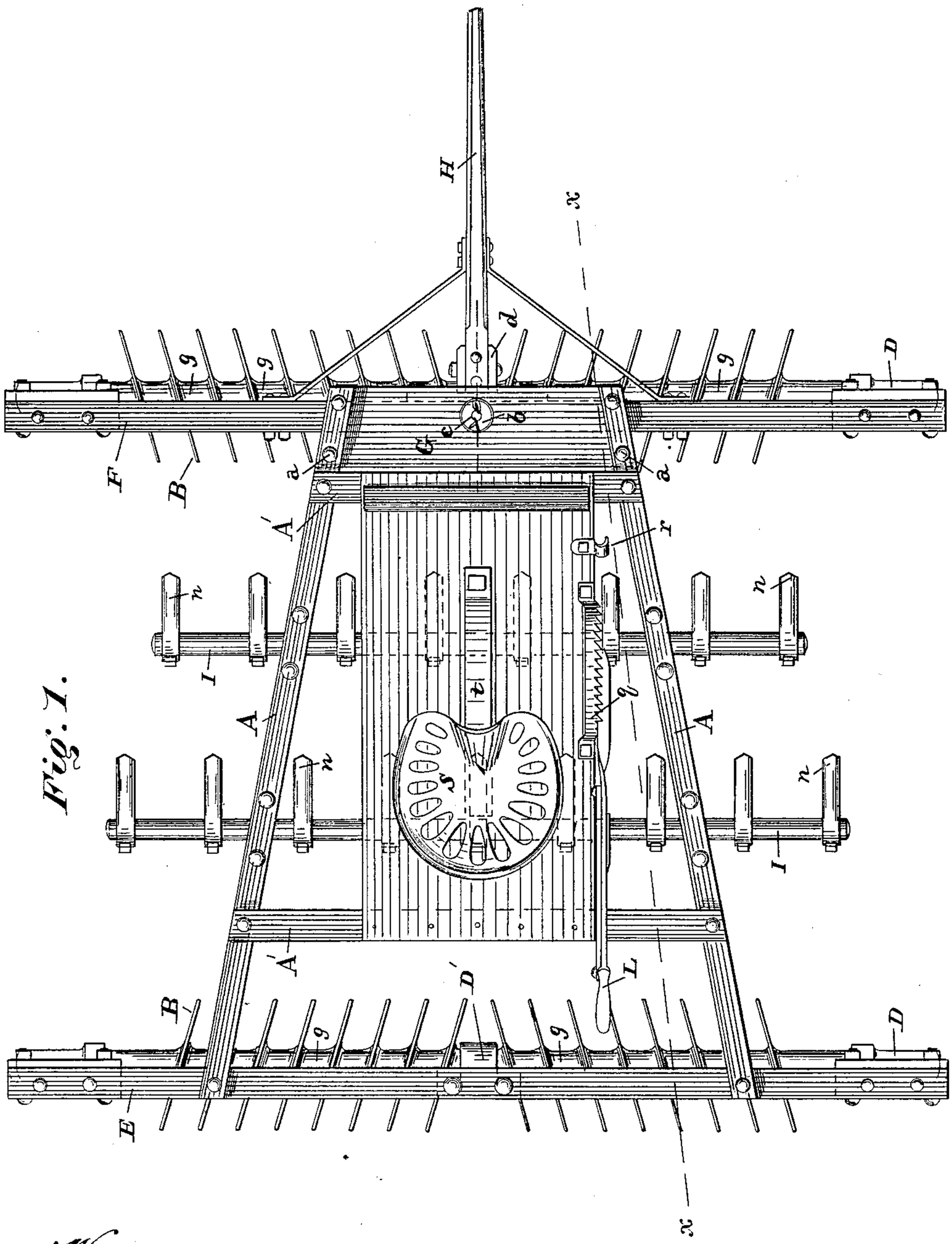

Fig: 1.

Witnesses:

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

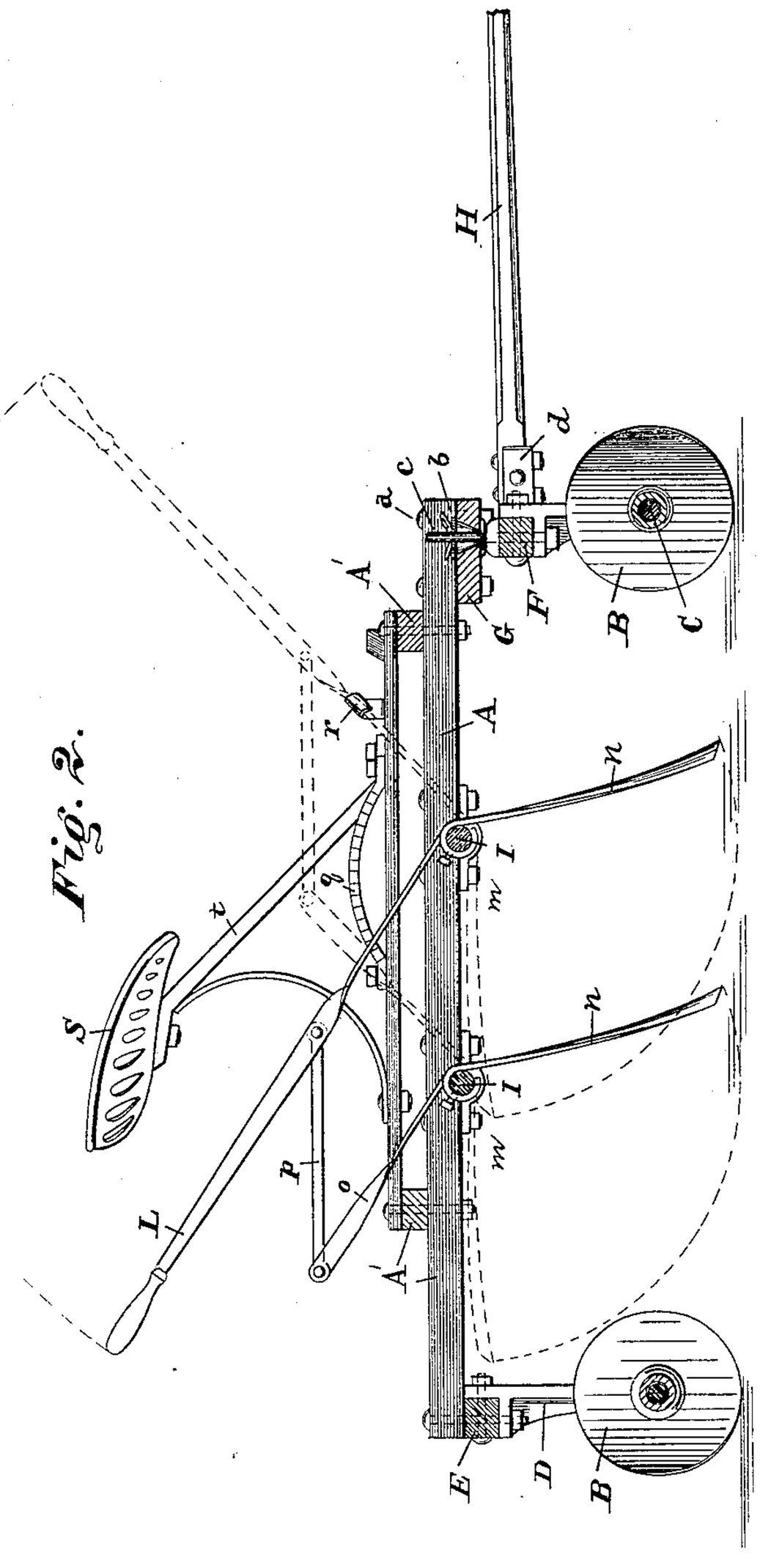
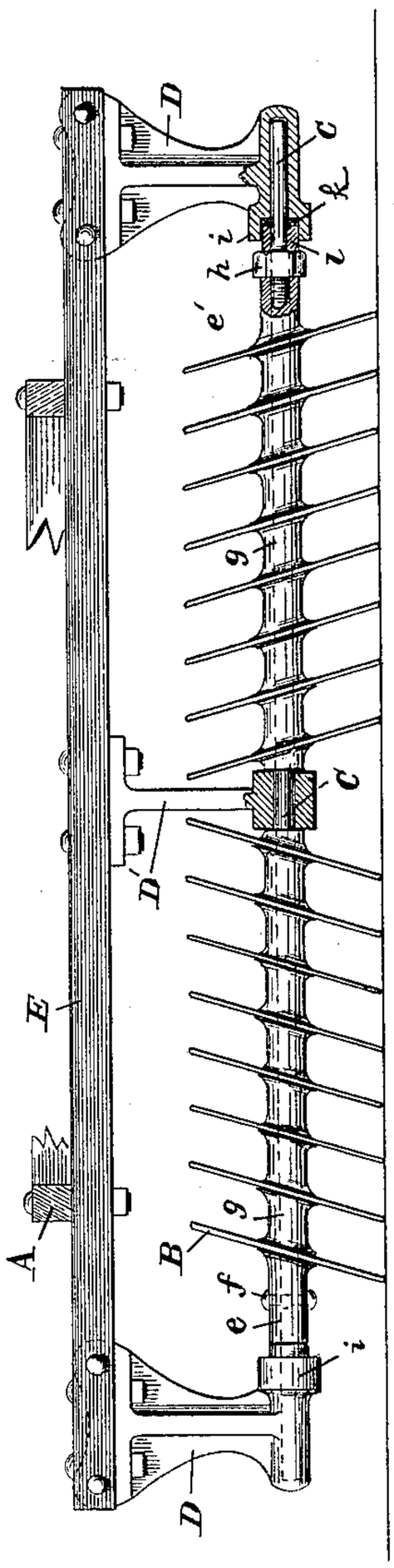


Fig. 3.



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UNITED STATES PATENT OFFICE.

ABRAHAM J. TSCHANTZ, OF ORRVILLE, OHIO.

DISK-HARROW.

SPECIFICATION forming part of Letters Patent No. 344,293, dated June 22, 1886.

Application filed January 27, 1886. Serial No. 189,911. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM J. TSCHANTZ, a citizen of the United States, residing at Orrville, in the county of Wayne and State of Ohio, have invented certain new and useful Improvements in Disk-Harrows, of which the following is a specification.

My invention relates to an improved harrow of that class which have disks mounted on a shaft, and arranged to cut the clods of dirt and prepare the surface of the ground for seeding.

The invention consists in novel parts, combinations of parts, and features of construction hereinafter described and claimed.

In the accompanying two sheets of drawings, Figure 1 is a plan view of the improved harrow. Fig. 2 is an elevation of the machine, partly a side view and partly in section. Fig. 3 is a rear view of the back roller and cross-beam.

The letter A designates two longitudinal bars, and A′ two cross-bars connected therewith. These comprise the frame of the machine. The clod-cutting disks B are fixed rigidly on a shaft, C, at an obliquity or inclination from a right angle, and both shaft and disks revolve. In revolving, therefore, the disks have a wabbling motion. Two revolving shafts are used—one placed in front of the other—and both have like bearings in pedestals D. The pedestals for the rear shaft C are bolted to a stationary cross-beam, E, to which the rear ends of the longitudinal bars A are secured. A center pedestal, D′, sustains the shaft at the center. (See Fig. 3, where this pedestal-bearing is shown in section.) Each of the two shafts C are provided with two sets of disks, each set occupying one-half of the shaft, and the inclination of the two sets of disks is in opposite directions. As the disks are rigid on the shaft, and revolve only as the shaft revolves, this arrangement of inclining the two sets in opposite directions prevents the machine from taking a zigzag course. The pedestals for the front shaft are bolted to a pivoted cross-beam, F. The front ends of the longitudinal bars A are secured by bolts *a* to a stationary bolster, G, which has at its center a taper hole, the top part of the hole being larger than the bottom. A metal plate, *b*, is on top of the bolster, over the hole, and a king-bolt, *c*, passes through the metal plate, the taper hole, and the pivoted cross-beam F. By this construction the front cross-beam, F, may partly turn on the king-bolt, and either end may tilt up to permit the front disks B to pass over an obstruction or to adapt itself to an uneven surface of the soil. A tongue, H, is attached by any suitable means, *d*, to the pivoted cross-beam F. The cutting-disks B are fixed on the shaft C in such way that while they will not turn freely on the shaft (but will revolve only as the shaft revolves) they may be readily removed from the shaft for repairs. The fact that the disks do not turn independent of the shaft is what is referred to by the statement that they are fixed rigidly thereon. First, an end collar, *e*, is secured by a rivet, *f*, to the shaft C. The first disk B is then put on the shaft next to the collar *e*, then a collar, *g*, with both ends oblique and parallel, is placed on the shaft C, close against the first disk, and then other disks and collars until the desired number are on, when an end collar, *e′*, is put on. At this point the shaft C is screw-threaded, and a nut, *h*, turning on the said screw-thread serves to tighten all the disks B and collars *g*. Each pedestal D, besides having a bearing for the shaft C, has a stuffing-box, to prevent sand or grit from reaching the bearing and the end of the shaft in the bearing. This stuffing-box consists (see Fig. 3) of a recessed collar, *i*, cast on the box. A ring of suitable stuffing or packing, *k*, surrounds the shaft and occupies the recess of the collar *i*, and a metal ring, *l*, fits close around the shaft, and has one face entered in the recess of the collar and serves to confine the packing *k*. When the harrow is drawn forward, the rotation and wabbling of the disks produce paths or cuts on the ground of serpentine shape, and from the fact that the disks of the rear shaft are situated from the front shaft a distance greater than the circumference of the disks, it is not possible for the rear disks to run in the same path or cut as the front ones. Both sets of wabbling disks—the front and rear—therefore do effective work. Two rock-shafts, I, have bearings *m* below the longitudinal bars A, and have position between the front and rear set of disks. Each of these rock-shafts has teeth *n*, to rake the clods and

the plowed surface of the ground. The front rock-shaft has a hand-lever, L, and the rear one an arm, *o*, while a rod, *p*, connects the arm with the lever. A curved rack-bar, *q*, is on the frame, and the hand-lever, when thrown back, engages with the teeth of this rack-bar. When the hand-lever is thus back, the teeth *n* are in position to serve as a rake. A hook, *r*, is on the forward part of the frame, and serves to hold the hand-lever L when the latter is thrown forward, in which position the teeth *n* are turned back and up out of the way, as indicated by broken lines in Fig. 2. When the teeth are thus turned back, the front disks and pivoted cross-beam F may be turned on king-bolt *c*, and thereby when the harrow arrives at the end of the field it may be turned around in a short space. A driver's seat, S, has a suitable support, *t*, on the frame.

Having described my invention, I claim and desire to secure by Letters Patent of the United States—

1. A harrow having a frame with a set of cutting-disks at the rear end and a stationary bolster at the front, provided with a center taper hole, a front cross-beam, F, having pedestals D, a shaft, C, carrying disks B, and having its ends journaled in bearings in the pedestals, a metal plate, *b*, on top of the said bolster, and a king-bolt, *c*, through the metal plate, the taper hole, and front cross-beam, as set forth.

2. A harrow having a frame, a rear revolving shaft with disks, a front revolving shaft having disks and mounted in bearings on a pivoted cross-beam, F, a rock-shaft, I, having rake-teeth and mounted on the frame in bearings between the said front and rear shaft, and a lever, L, to turn the rock shaft, whereby when the rake-teeth are turned back the pivoted cross beam may be turned on its king-bolt, as set forth.

3. A harrow having, in combination, a frame, two cross-beams, each having pedestals D, a shaft, C, extending the length of each cross-beam, and having its ends revolving in bearings in the pedestals, and each shaft provided with two sets of disks, B, fixed rigidly thereon at an obliquity or inclination from a right angle, the inclination of one set of said disks being in one direction, while the inclination of the other set is in the opposite direction, as set forth.

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

ABRAHAM J. TSCHANTZ.

Witnesses:
J. NELSON FERRELL,
AMOS M. ESHLEMAN.