SCHROEFFEL & DELL.

Harrow.

No. 101,522. Patented April 5, 1870.

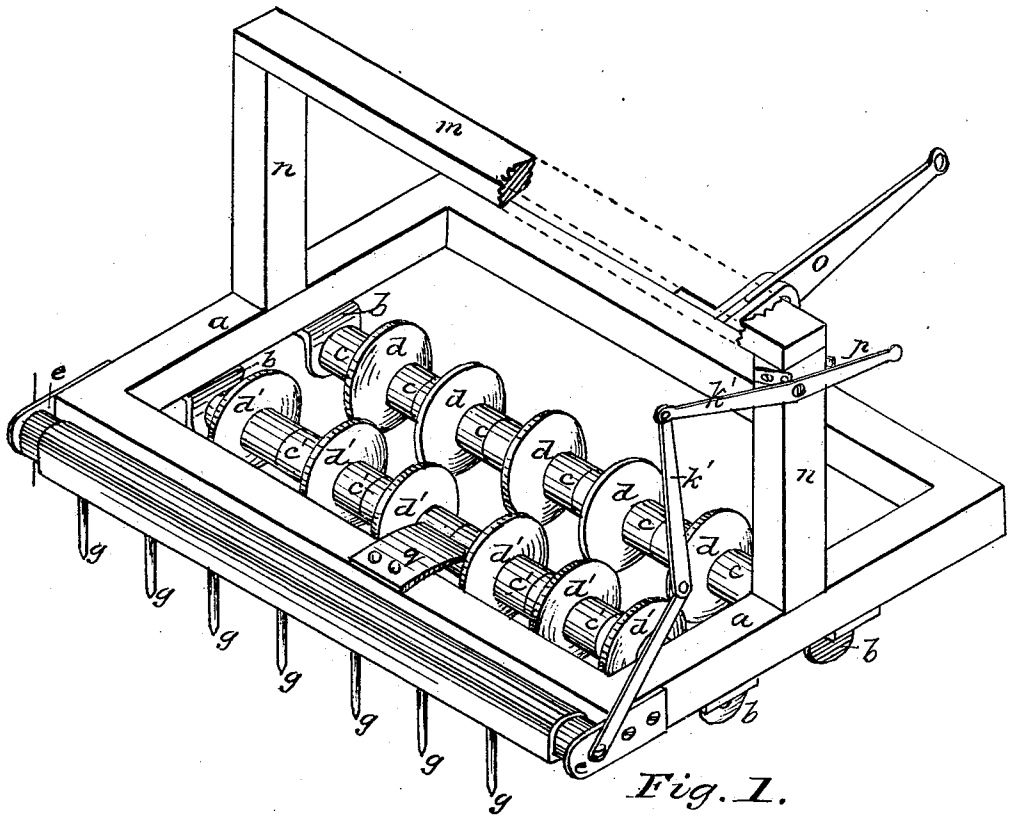

Fig. 1.

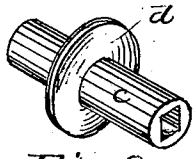

Fig. 2.

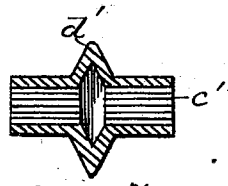

Fig. 3.

Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN SCHROEFFEL AND WILLIAM DELL, OF ALLEGHENY CITY, PA.

IMPROVEMENT IN HARROW AND EARTH-CUTTER.

Specification forming part of Letters Patent No. **101,522**, dated April 5, 1870.

To all whom it may concern:

Be it known that we, JOHN SCHROEFFEL and WILLIAM DELL, of Allegheny City, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Harrow and Earth-Cutter; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of our improved harrow and earth-cutter. Fig. 2 is a like view of a cutting-wheel, and Fig. 3 is a sectional view of the same.

Like letters of reference indicate like parts in each.

Our invention consists in the construction of a combined harrow and earth-cutter, which is composed of a frame-work in which is set one or more shafts with cutting or crushing wheels, of a harrow mounted in journals at the back of the frame, and of a rocking shaft with a tripping device.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and mode of operation.

In the drawings, *a* is the frame of our improved harrow. Attached to the under side of this frame are lugs *b b*, as many as are needed for supporting one or more rollers, *c c'*. These rollers are composed of a shaft and cutting-wheels, *d*, which shaft must be made of such shape that the cutting-wheels (the holes in which are made to correspond to the shape of the shaft) when in position cannot turn thereon, but must turn with it.

Attached to the back of the frame *a* by means of journals *e e* is a rocking shaft, *h*, having harrow-teeth *g*. The rocking shaft *h* is operated by means of a tripping device, which is composed of a lever, *i*, and rods *k* and *l*.

A seat is provided for the driver by the cross-piece *m*, fastened on uprights *n n*, which extend upward from the frame *a*.

The sides of the cutting-wheels are made to converge to their outer edge or rim, so that they may be made sharp or blunt at pleasure.

Our harrow operates as follows: It is drawn by horses, &c., by means of the shaft *c*, and thereby the rollers *c c'* are set in motion. Where there is more than one roller *c* the cutting-wheels are so arranged as to break joints with each other—that is, arranged so that the flange on one wheel, *d*, shall come between the flanges of the two most directly opposite wheels, *d' d'*, on the next shaft *c*. The cutting-wheels *d d'* of the rollers *c c'* cut and break up the heavier lumps or clods of earth, the harrow-teeth *g*, following immediately after, pulverizing it. If the harrow-teeth become clogged with roots, vines, &c., they are cleared by slipping the lever *i* past the pin or catch *p*, and by it pressing down the connecting-rod *k*, which in its turn depresses the upper end of the rod *l*. The lower end of the rod *l* is fixedly fastened to the end of rocking shaft *h*, so that where the upper end of the rod *l* is pressed down the shaft *h* turns in the journals *e e*, so as to throw the harrow-teeth backward and upward, and thus disengages the teeth from the weeds, roots, &c., or allows them to slip past stones or other immovable obstacles they may encounter.

If desired, cleaners or scrapers may be fastened to the frames *a*, as at *q*, for cleaning the faces of the wheels *d*.

The cutting-wheels *d d'* are cast on a chill, so as better to withstand the wear and tear to which they are subjected. The wheels *d*, it will be observed, are made separate, and are slipped onto the shaft *c*, so that when any one is broken it can be removed and a new one put in its place. Heretofore such crushing devices have been cast in one continuous roller, and the breaking of one part injured permanently if it did not spoil the whole roller.

We do not confine ourselves to the particular form of connecting-rods between the rocking shaft *h* and lever *i*, but desire to cover those parts for the purpose set forth, however they may be connected together.

What we claim as our invention, and desire to secured by Letters Patent, is—

One or more series of cutting-wheels, *d*, each series being mounted on a shaft in a frame, in combination with a rocking harrow, *h*, substantially as described.

In testimony whereof we, the said JOHN SCHROEFFEL and WILLIAM DELL, have hereunto set our hands.

JOHN SCHROEFFEL.
WILLIAM DELL.

Witnesses:
THOS. B. KERR,
A. S. NICHOLSON.