(No Model.)

W. R. SKEELS & W. H. MOORE.

Torsion Spring Tooth Harrow.

No. 235,578. Patented Dec. 14, 1880.

Fig. 1.

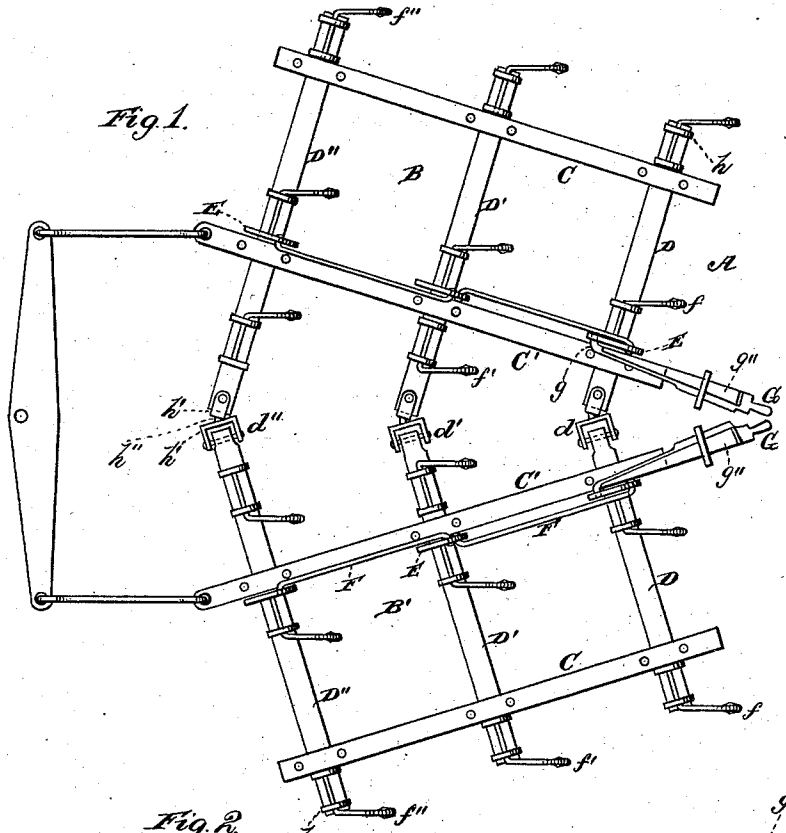


Fig. 2.

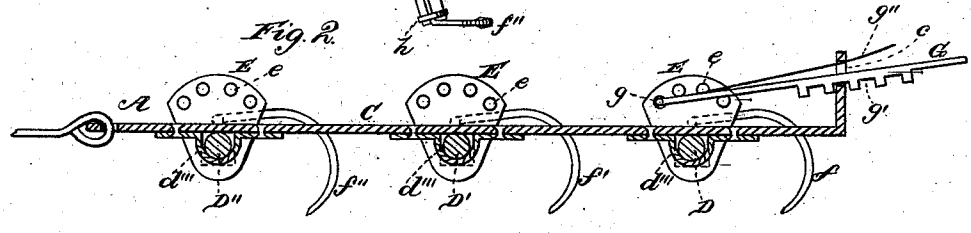
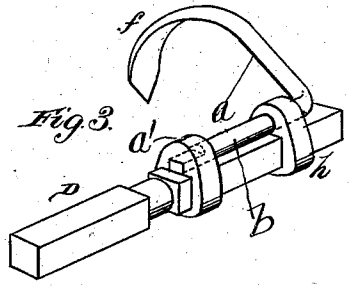


Fig. 3.



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UNITED STATES PATENT OFFICE.

WINES R. SKEELS, OF WATERTOWN, AND WILLIAM H. MOORE, OF RODMAN, NEW YORK.

TORSION-SPRING-TOOTH HARROW.

SPECIFICATION forming part of Letters Patent No. 235,578, dated December 14, 1880.

Application filed September 25, 1880. (No model.)

To all whom it may concern:

Be it known that we, WINES R. SKEELS, of Watertown, Jefferson county, and WILLIAM H. MOORE, of Rodman, in the county of Jefferson, both in the State of New York, have invented a new and valuable Improvement in Torsion-Spring-Tooth Harrows; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a plan of the invention. Fig. 2 is a vertical longitudinal section. Fig. 3 is a perspective detail.

This invention relates to that class of devices known as "harrows;" and it consists in the details hereinafter specified.

In the drawings hereto annexed, A represents a harrow composed of two sections, B B′, each section constructed like the other. These sections are composed of longitudinal bars C C′, supporting in hangers *d‴* the transverse teeth-bearing shafts D D′ D″, the corresponding shafts in each section being united at their inner ends by the double couplings *d* *d′* *d″*, and said shafts being of such varying lengths from rear to front as to cause the sections B B′ to diverge from each other. Upon each shaft, just within the bars C′, there is fastened a loop, E, which extends more than half its length above the shaft, and at the tops has perforation *e*. The loops E on the several shafts are connected by a rod or rods, F.

The rear end of bar C is turned up and an eye, *c*, formed therein. Through this eye *c* there passes a hook, G, whose inner curved end, *g*, takes into the holes *e* upon loop E, attached to shaft D. Upon the lower side of this hook G there is a series of notches, *g′*, to engage with the lower part of eye *c*, and a spring, *g″*, upon the top of the hook holds the said hook firmly against the eye. By this means the shafts can be rocked to give any desired pitch to the teeth.

Upon each shaft there is fastened a series of teeth, *f f′ f″*. These teeth are constructed as follows: A flat curved tooth is provided at the upper end of the shank *a* with a shaft, *b*, forming a continuation thereof, and projecting at a right angle thereto. The end of the shaft *b* is made rectangular, and enters a recess in a clamping-slide, *a′*, encircling the tooth-bar. The remaining portion of the shaft *b* is round, and a sliding clamp, *h*, is slipped upon this portion of the shaft, and it, together with the clamp *a′*, secures the tooth-shaft *b* to the top of the tooth-bar, the clamp *a′* holding the shaft firmly, while the clamp *h* permits it to turn therein, but not to move away from its position on the tooth-bar.

By this construction, as the teeth pass over the ground the resistance produces a torsional action in said teeth, and instead of pulling rigidly there is an elastic give.

One tooth on each shaft is rigidly affixed to the loop E, whereby it is attached to the shaft.

As before stated, the inner ends of the shafts D D′ D″ are attached by the douple loops *d* *d′* *d″*. These loops are made of two U-shaped pieces, *h′*, held at right angles by a swiveling-pin, *h″*, primarily, but capable of turning on said pin. One of these pieces is fastened to a shaft on one section by a pin passing through an eye in said shaft, and the other piece fastened, in like manner, to the corresponding shaft on the other section.

The inner ends of shafts D′, between bars C′ C′, are long enough to accommodate a tooth, but not enough to take one with the body portion turned as shown on the inside of bars C C′; hence we arrange such body portion in the opposite direction.

We are aware that pivot tooth bars are not new in harrows; also, that various means of securing this class of bars in the positions to which they may have been adjusted have been employed. We therefore make no broad claim to either of these constructions, but desire to limit ourselves to the construction herein shown and hereinafter claimed.

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

In a harrow, the curved spring-tooth *f*, having shank *a* and shaft *b* projecting at a right angle therefrom and made rectangular at its end, as shown, in combination with the tooth-bar D and the sliding clamp *a'*, recessed to secure the end of the shaft firmly to the bar, and the clamp *h*, to permit the shaft to turn therein to permit torsional action of the tooth, as set forth.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

WINES RICHARDSON SKEELS.
WILLIAM HENERY MOORE.

Witnesses:
J. B. LYON,
G. B. STRONG.