W. FRANK

HARROW.

No. 169,798. Patented Nov. 9, 1875.

Fig. 1.

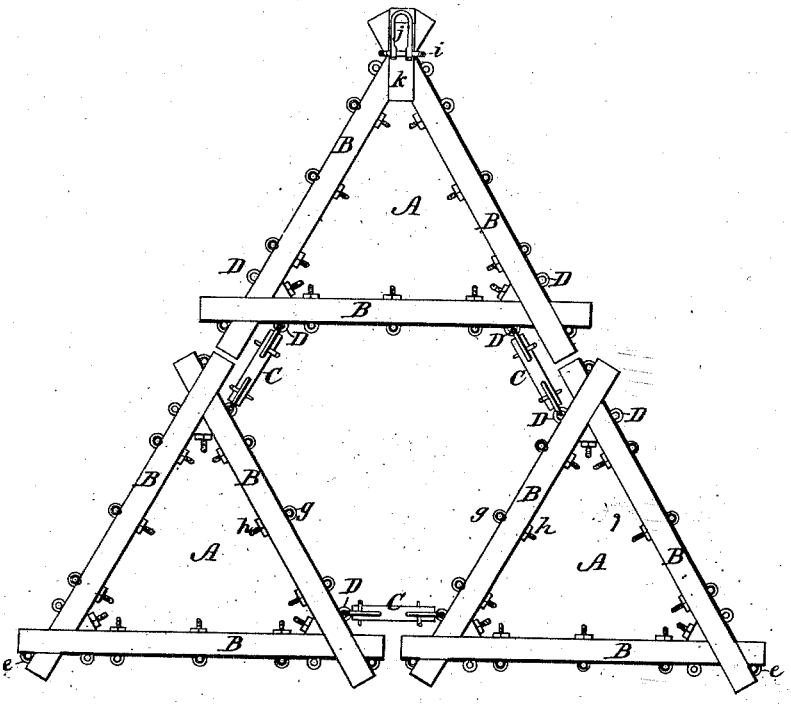


Fig. 6

Fig. 2.

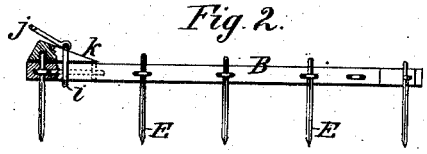


Fig. 5

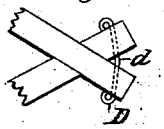


Fig. 3.

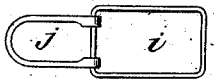


Fig. 4.

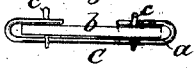
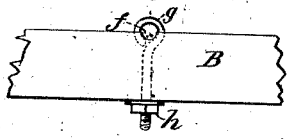


Fig. 7.



WITNESSES:

W. W. Hollingsworth

Solon C. Kemon

INVENTOR:

William Frank

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM FRANK, OF MOUND STATION, ILLINOIS.

IMPROVEMENT IN HARROWS.

Specification forming part of Letters Patent No. **169,798**, dated November 9, 1875; application filed September 23, 1875.

To all whom it may concern:

Be it known that I, WILLIAM FRANK, of Mound Station, in the county of Brown and State of Illinois, have invented a new and Improved Harrow; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is a plan view of the sectional harrow; Fig. 2, a side elevation of one of the sections, with the draft attachment in section; Fig. 3, detail of the link and loop of draft attachment; Fig. 4, detail of the section-coupling; Fig. 5, detail modification of brace-eye; Fig. 6, detail of frame-bar B; Fig. 7, detail showing attachment of teeth.

This invention relates to certain improvements in harrows; and it consists in three equilateral-triangular frames, constituting a sectional harrow, in which the parts are capable of use either singly or collectively. The invention also consists in the peculiar construction of the draft attachment, and the means for coupling the sections together, as hereinafter more fully described.

In the drawing, A A A represent the three equilateral-triangular sections of the harrow, which are each symmetrical in construction. Said sections are composed of frame-bars B, each of which is identical with the other in length, lateral dimension, cut of joints, arrangement of couplings, and teeth-holding devices. By means of this construction it will be seen that each section is a perfect equilateral triangle, which adapts the sections to be used collectively to form a large equilateral harrow, in which the draft attachment may be shifted from one corner to the other, so that when the teeth become worn on one side, instead of taking them all out, the draft attachment is simply changed to one of the other angles, the equilateral construction permitting a perfect draft from either corner. The sections may also be separately and independently shifted in the same way, and may be reciprocally changed, if desired. The bars B being exactly alike, the cost of manufacturing is greatly reduced, for but a single pattern need be used to form the whole frame, and any one of the bars may be readily replaced by a new one without special measurement or delay.

C are the couplings, which detachably fasten the sections together. Said couplings consist of open links *a*, which are inserted in the brace-eyes D, and prevented from becoming accidentally detached by means of blocks *b* and pins *c*, the said blocks confining the eyes to the end of the links, so that they can never come out, and the pins placed inclinedly upon opposite sides of the links, to prevent the lateral displacement of the blocks. Said brace-eyes D consist each of a rod passed through the ends of the bars B, and bent around to form eyes for the couplings C on each side, the said device forming at once a brace for the ends of the bars B, and eyes on each side for the reciprocally-interchangeable sections. The said brace-eyes may be located inside the junction of the bars, as in Fig. 1; or they may be placed outside the same, as in Fig. 5, in which event they form in the angle a draft attachment at *d*, which takes the place of the separate bolt and eye *e* in Fig. 1.

E are the teeth of the harrow, which may be of any shape, and are secured to the frame B by means of vertical grooves *f*, in the frame and eyes *g*, with screw-threaded stem and nuts *h*, upon the inside, by means of which the shanks of the teeth are drawn into the grooves, which latter serve to hold them stiffly in position.

The part of the harrow used as the front is provided with a specially-constructed draft attachment, which consists of a link, *i*, pivoted loop *j*, and wedge-block *k*, with an underneath cavity or hole to receive the end of the front harrow-tooth. Said draft attachment, like the other parts of the harrow, is detachable, so that it can be applied to any corner of the harrow. When it is to be transferred the link and loop are thrown backward, the front end of the wedge elevated until the top of the front tooth is out of the hole, when the wedge may be withdrawn and the loop and link taken off by being turned horizontally, so as to pass over the divergent ends of the bars. This form of draft attachment, while being detachable, is a very secure one, for the greater the strain the stronger the devices are held together.

I am aware of the fact that it is not new to construct harrows in a triangular form, and that they have also been grouped together to form a sectional harrow; but heretofore one angle has been made sharper than the other, which prevents the reversible, detachable, and reciprocally-interchangeable use displayed in my invention, in which the equilateral construction secures the above-described advantages, and the construction of the entire frame is simply a reduplication of one of the bars B.

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

1. A harrow composed of detachable equilateral-triangular sections, which are adapted to be used either singly or collectively, and with either corner for the front, as and for the purpose described.

2. The draft attachment consisting of the link *i*, loop *g*, wedge-block *k*, provided with a hole, the divergent ends of the bars B, and the front tooth, combined and arranged as shown and described.

3. The section-couplings consisting of the open links *a*, blocks *b*, and pins *c*, combined and arranged as shown and described.

The above specification of my invention signed by me this 21st day of September, 1875.

WM. FRANK.

Witnesses:

SOLON C. KEMON,

CHAS. A. PETTIT.