

(No Model.)

2 Sheets—Sheet 2.

H. L. FLESHER.
HARROW.

No. 569,492.

Patented Oct. 13, 1896.

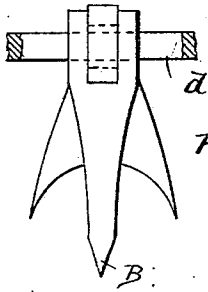


Fig. 1.

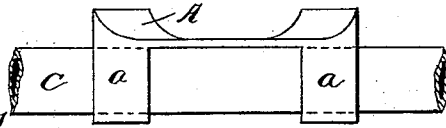


Fig. 2.

Fig. 4.

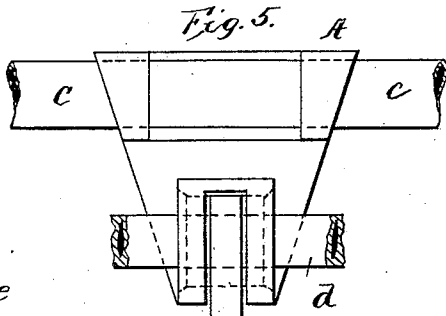


Fig. 3.

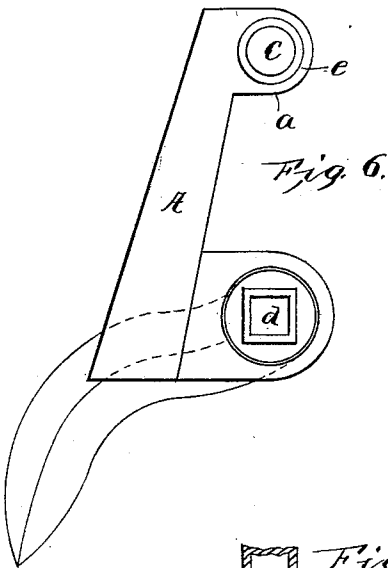


Fig. 6.

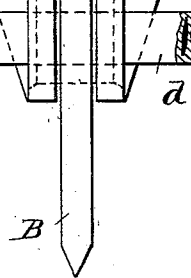


Fig. 5.

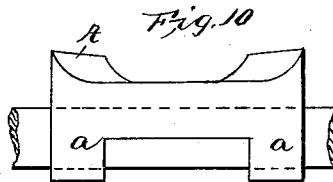


Fig. 10.

Fig. 9.

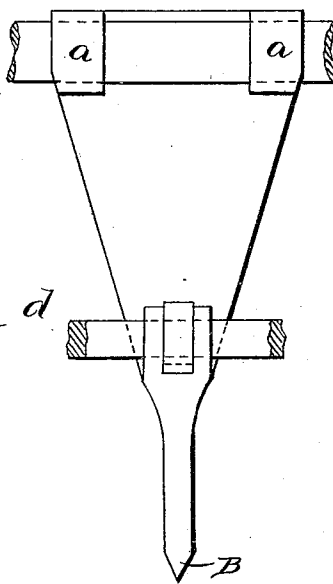


Fig. 8.

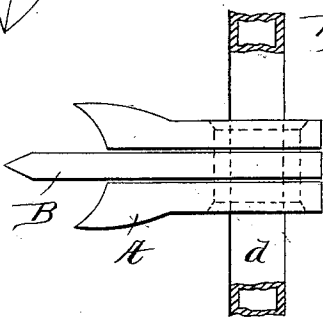
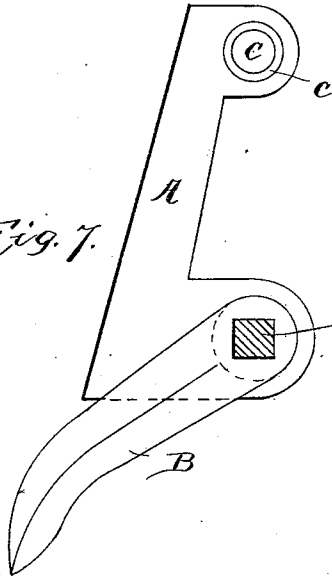


Fig. 7.



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UNITED STATES PATENT OFFICE.

HENRY LOGAN FLESHER, OF PRAIRIETON, INDIANA.

HARROW.

SPECIFICATION forming part of Letters Patent No. 569,492, dated October 13, 1896.

Application filed June 16, 1896. Serial No. 595,795. (No model.)

To all whom it may concern:

Be it known that I, HENRY LOGAN FLESHER, of Prairieton, in the county of Vigo and State of Indiana, have invented certain new and useful Improvements in Harrows; and I do hereby declare that the following is a full, clear, and exact description of the invention, which 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 the letters of reference marked thereon, which form part of this specification.

This invention has relation to harrows, clod-breakers, and pulverizers combined, and has for its object to level and prepare ground for the reception of seed. I am aware that there are many contrivances for accomplishing this object having more or less merit, and therefore do not claim that I am the first to invent a harrow or pulverizer; but what I do claim for my invention is a simple construction, easily operated, cheap of first cost and repair, readily put together, the interchanging of parts, and when in operation is durable and efficient.

To these ends my invention consists in forming a frame preferably made of iron tubing, which frame is made up of sections of two of these tubes running longitudinally and parallel to each other, and upon which are mounted what I term "shoes" or "hoppers." These shoes are tapering or wedge shape and when in sections unite two of the tubes or rods and hold them a predetermined distance apart. Upon one of these tubes I also mount knives or crushers. The tube or rod carrying the crushers work loosely in the shoes in such manner as to be capable of raising and lowering said crushers at will and may be kept in such a position by means of a quadrant or sector, notched and provided with spring-handle in the usual manner.

It further consists in forming a framework above the harrow-frame and resting thereon. The quadrant and operating-lever are supported by this latter frame. The lever being fulcrumed thereon also carries the seat of the operator.

It further consists in the arrangement of the operating-links and connecting-rod and

their relative position on the harrow-sections and to the quadrant, lever, and seat.

The pulverizers are raised and lowered to the required depth in the soil or kept out altogether; and the invention consists in further details of construction, as will be hereinafter described, and pointed out in the claims.

Referring to the drawings the same letters indicate like parts in all the figures.

Figure 1 shows an end elevation of the harrow, also the frame, quadrant, the links, connecting-rod, and seat. Fig. 2 shows a top plan view showing the seat approximately in the center of the harrow and also the several sections connected together. It will be observed that the rods carrying the crushers are loosely journaled in the end connections as well as in the small end of the shoe. Fig. 3 shows a rear or back view of the harrow when ready for operation. Fig. 4 shows a front view of shoe with sharpened flanges and lugs through which one of the tube-rods passes. Fig. 5 is a detail plan view of one of the shoes detached with round tube-rod in the lug and flat tube-rod in the small end of the shoe and in the pulverizer. Fig. 6 shows a detail side view of shoe with lugs on each end, and to the rear one the pulverizer is secured, having a square washer to carry said pulverizer and a round bearing which permits the pulverizer to be raised and lowered. This washer is what might be called a "plug-washer," having an inner square hole and a round exterior, forming a journal. Fig. 7 shows an end view of Fig. 6, clearly illustrating the sharp edges or wings of the shoe and the crusher about midway of the shoe and in rear thereof. Figs. 8, 9, 10, and 11 are modified forms for mounting the pulverizers. In this instance solid rods are used upon which to carry the pulverizers and which work in trunnions on the shoe. Fig. 12 is a perspective view of a shoe and pulverizer, which show the manner of gathering the clods at its larger end, concentrating them at the smaller end, where they are brought in contact with the pulverizer, by which they are crushed and disintegrated. Fig. 13 shows one of the pulverizers rigidly secured to the hollow shaft, said shaft having a square hole through its center, by which it is turned and held in po-

sition by means of a square bar passing through it.

In the drawings the same letters indicate like parts in all the figures, in which—

5 A is the shoe, having lugs *aa* at its large end and upwardly-projecting arms *bb* at its small end. These arms have journal-bearings *cc* in their upper ends, in which is fitted bearings which work therein and through
10 which a square rod *d* (solid or hollow) works, and to which the pulverizers B are secured and carried, the said rod *d* being for the purpose of elevating or lowering the pulverizer.

The lugs *aa* on the wide end of the shoe
15 A are journals through which the hollow rods pass and freely work therein. Several of these shoes A are carried end to end on these rods O, and when the rods *d* are passed through the arms *bb* on the small end of the
20 shoe the two rods, shoe, and pulverizer make up a section of the harrow. Fig. 2 shows three of these sections connected together, but there may be more or less, according to the condition of the ground and the soil to
25 be pulverized. On the ends of the rods O and *d*, I locate eye-sockets N, the socket portion being screw-threaded and screwed on the ends of the said rods. The connecting-
30 rods *oo* pass through these eye-sockets, to which they are secured and by which the sections of the harrow are connected together.

It will be observed that the shoes A A are loosely journaled on rods O, while the pulverizers are journaled in arms *bb* of the
35 shoe, the shoe and the pulverizer each being free at the rear end, the pulverizer, however, being capable of being raised or lowered a predetermined depth into the soil by means of the lever and quadrant F I, which will be
40 more fully hereinafter described.

The frame carrying the driver or operator rests upon the sections of the harrow and is supported by upwardly-projecting arms *ff* and a cross-bar *g*, to which is connected links
45 E. K is another cross-bar, to which the other ends of said links are connected, there being a link for each section of the harrow. The quadrant is rigidly secured to the cross-bar *g*, which quadrant is notched in the usual
50 manner. The lower end of lever H is also connected to lever *g* and fulcrumed to cross-bar K. The lever H is provided with the handle *e* and spring-catch *f*, as usual. The purpose of this handle is to operate the pul-
55 verizers to a greater or lesser depth in the soil through the means of said cross-bar and links, or through them raised out of the ground, if desired.

Upon the front end of cross-bar *g*, I arrange a clip *h*, to which I rigidly secure a flat spring, preferably ogee in shape, and upon this spring I locate and secure the driver's seat and in such proximity to the operating-lever that it can be readily handled. This
60 lever is provided with the usual knife-edge to correspond and fit into the notches on the quadrant, so that moving the handle the bar

K moves the links E and the rod *d*, and finally the pulverizers B.

The operation of the machine-harrow is as
70 follows: The ground being plowed, it is generally cloddy, having deep furrows and lumps, and practically when subsoiling or deep plowing is done over sod-land or the like the sur-
75 face is very rough, ordinary tooth-harrows having but little effect in pulverizing and leveling it. With my harrow the shoes, being large and wide at the front end, gather the lumps, crushing them partially, and pass-
80 ing over them they are gathered to the rear and small end, where they are met by the pulverizer, which breaks them up. This is not accomplished by a single section of the harrow, so that the clods missing one section
85 are caught up the next following section. The sections are so arranged that the shoes and pulverizers are alternate, that is, the next adjacent shoe is opposite the space of its pre-
90 ceding shoe, so that the entire surface of the ground is gone over. The rearmost rod carries an additional set of pulverizers alter-
95 nately between the rear ends of the shoes, so that when the harrow is passed over the ground it is generally level, smooth, and in good condition to receive the seed. In light
100 soil, loam, and such like this harrow will suffice to prepare ground without plowing, as the sharp edges of the shoes will sink pretty well into the ground and the pulverizers may
105 be forced sufficiently deep into the subsoil and answer all purposes of the plow. Of course the shoe cuts the soil, gathers lumps, and by the weight of the harrow-machine crushes the clods before they escape from be-
110 neath it, the pulverizers completing the job.

It will be readily seen that slight changes may be made in the form and construction of the different parts and the arrangement thereof without departing from the spirit
115 and scope of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A machine-harrow made up of sections, said sections comprising two parallel rods,
115 shoes preferably tapering and connecting said rods, each of said shoes being adapted to carry a pulverizer, said pulverizer being journaled on said shoe, as set forth.

2. The combination in a machine-harrow
120 composed of two or more sections, each of said sections having shoes provided on their upper surface with lugs at one end and supporting-arms in which are journals on the other end and rods passing through said lugs
125 and journals by which a more or less number of said shoes are connected in each section, substantially as described.

3. A machine-harrow consisting of two or more sections, each section being composed
130 of two parallel rods, shoes mounted thereon, pulverizers mounted on said shoes, the said sections being connected together for joint operation substantially as described.

4. A machine-harrow consisting of two or more sections connected together, each section having shoes with downwardly-bent sharp edges and tapering from front to back
5 and provided with lugs and journal-arms, rods for connecting said shoes by passing through said lugs and journals and adapted to carry pulverizers, for the purpose set forth.

10 5. In a machine-harrow, the combination of the shoe A, the lugs *a*, the upwardly-ex-

tending arms *b* and the pulverizer B, pivoted between said arms *b*, substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of 15 two witnesses.

HENRY LOGAN FLESHER.

Witnesses:

CHARLES H. BENTLEY,
J. A. JUERGENS.