

J. LAFEVER.  
Soil-Pulverizer.

No. 223,927.

Patented Jan. 27, 1880.

Fig. 1.

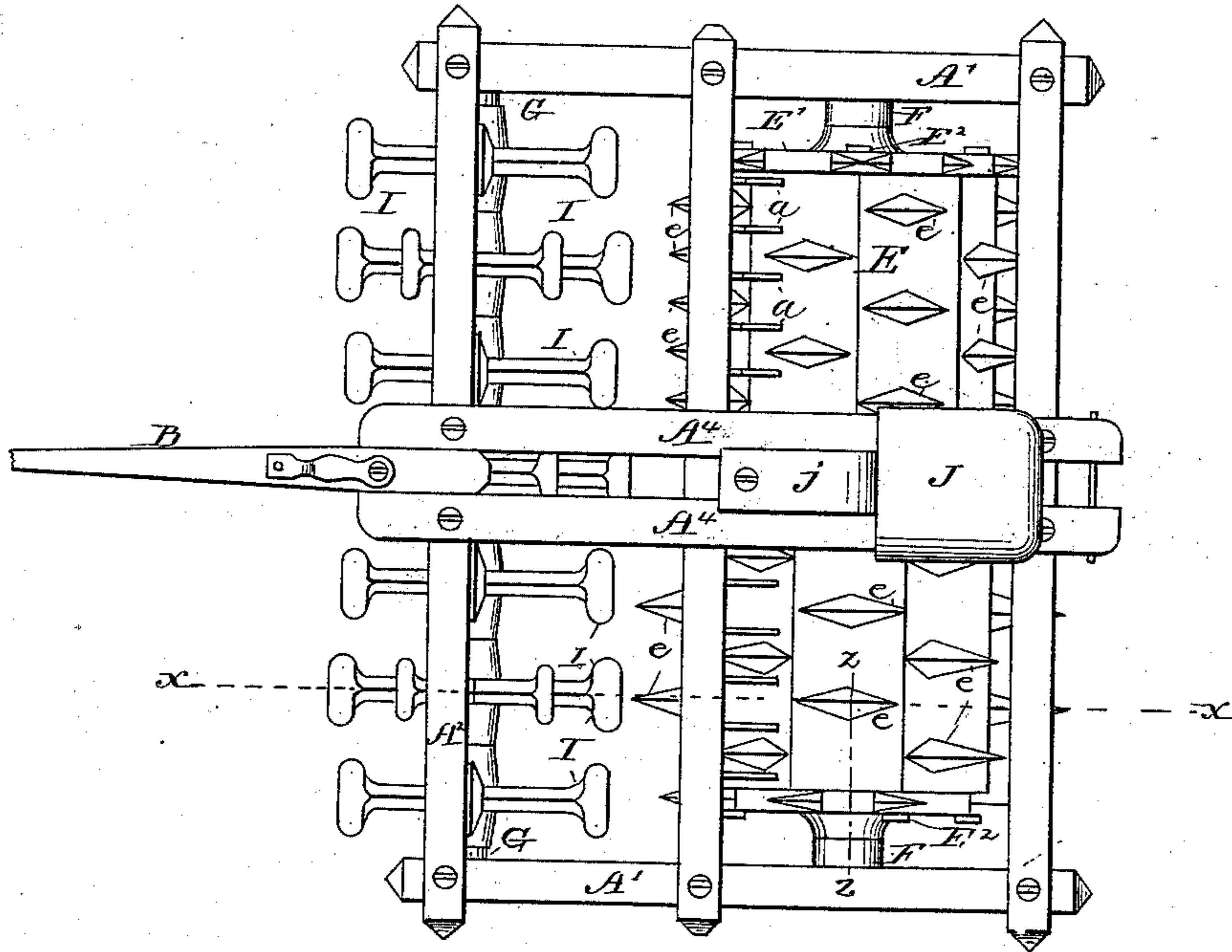


Fig. 3.

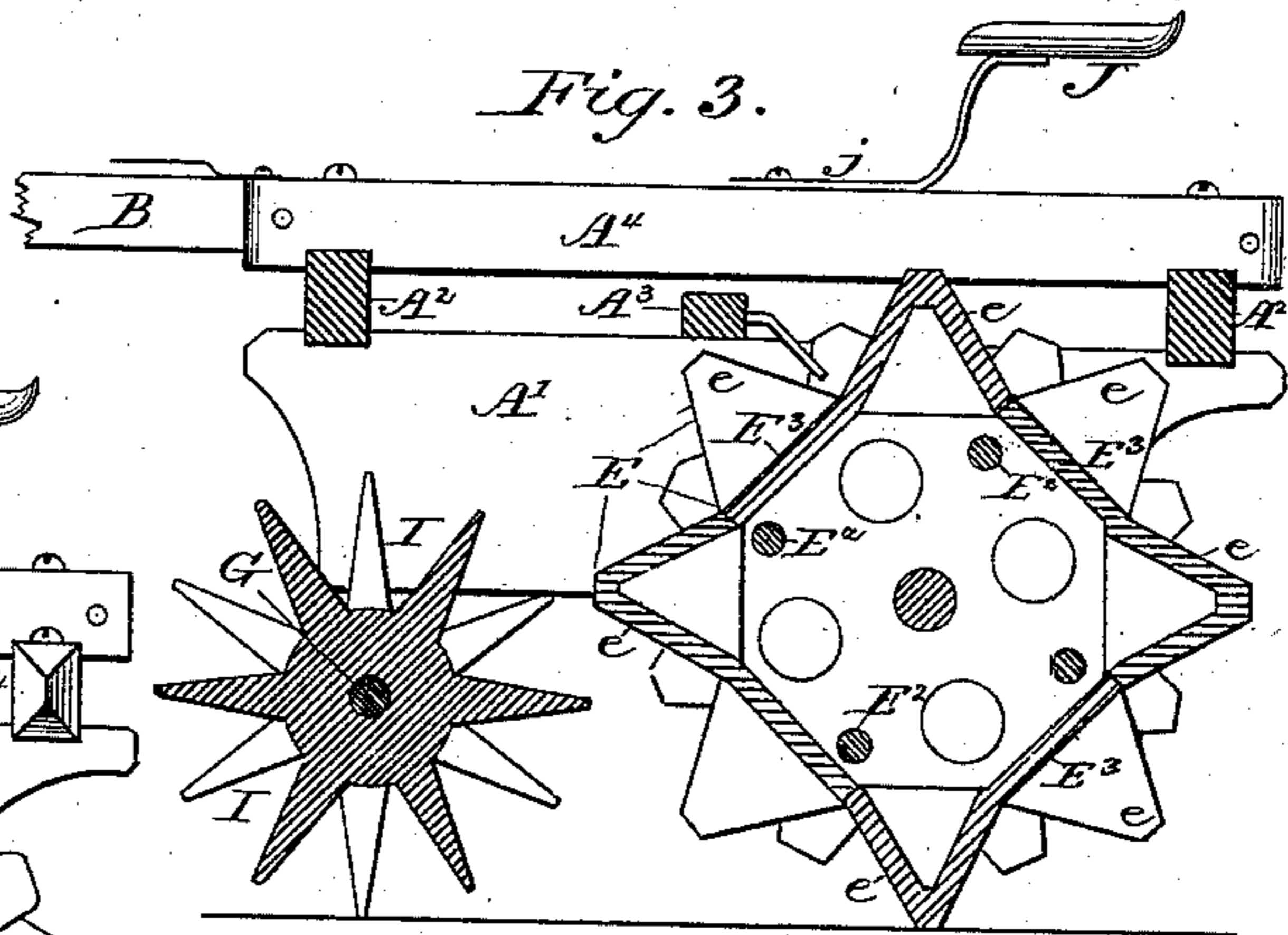


Fig. 2.

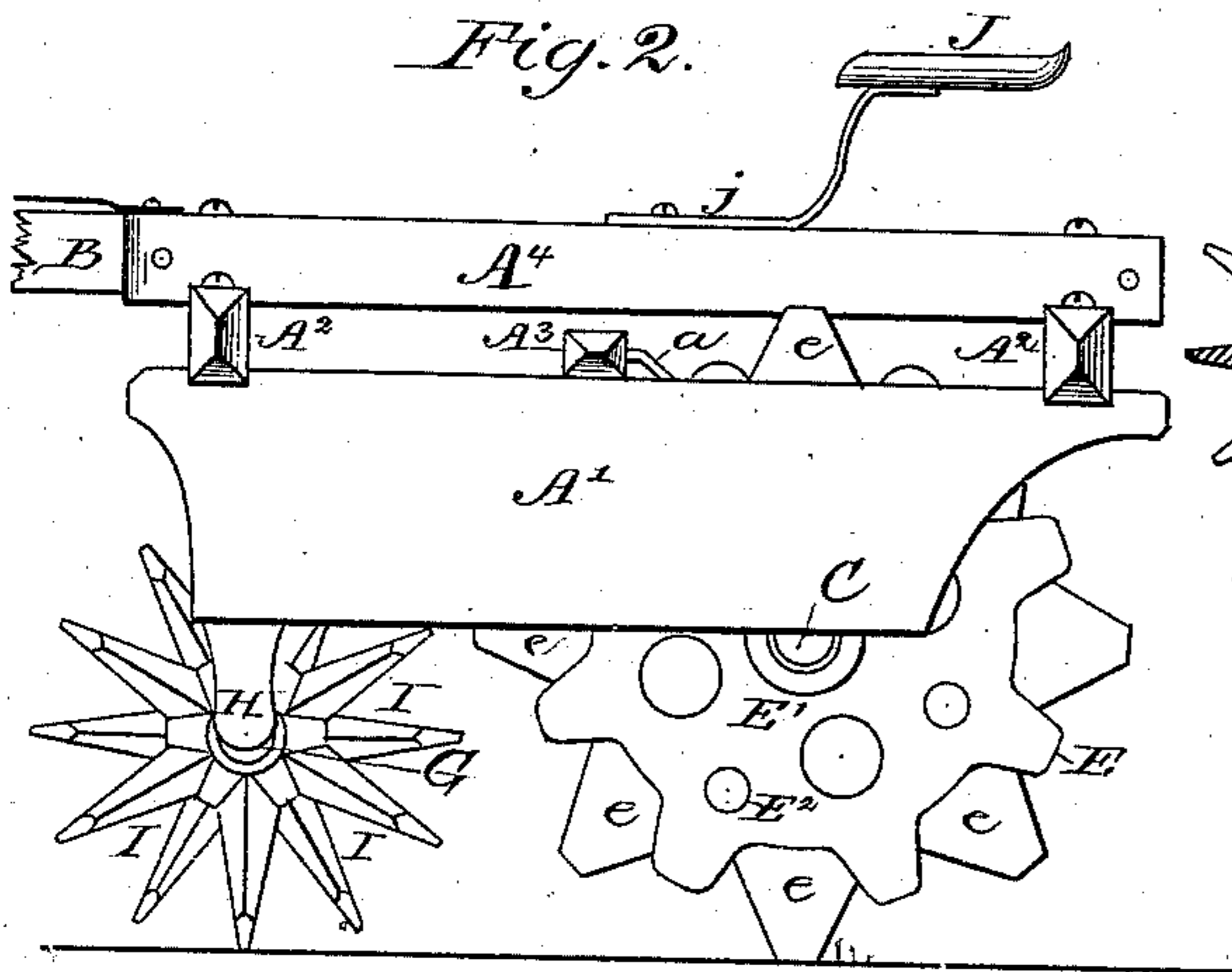
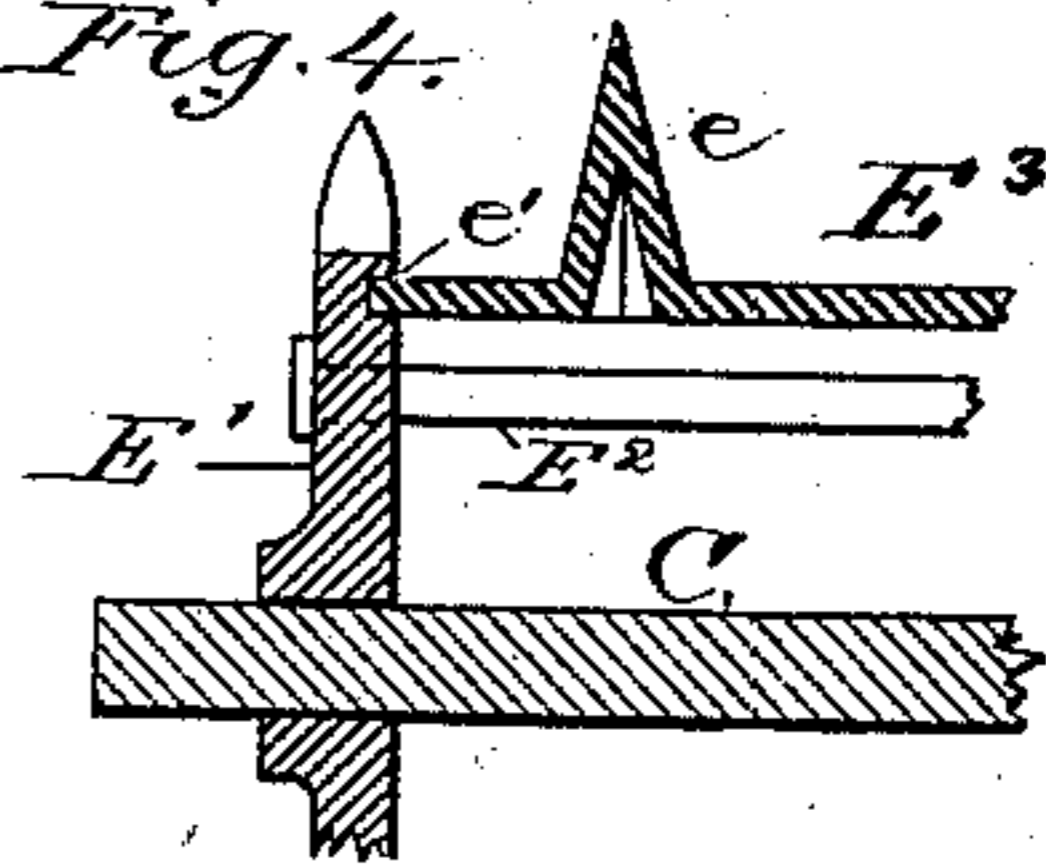


Fig. 4.



Witnesses:

James B. Liguus.  
R. P. Daggett

Inventor:

per James Lafever,  
C. Bradford.  
Attorney

# UNITED STATES PATENT OFFICE.

JAMES LAFEVER, OF INDIANAPOLIS, INDIANA.

## SOIL-PULVERIZER.

SPECIFICATION forming part of Letters Patent No. 223,927, dated January 27, 1880.

Application filed June 27, 1879.

*To all whom it may concern:*

Be it known that I, JAMES LAFEVER, of the city of Indianapolis, county of Marion, and State of Indiana, have invented certain new and useful Improvements in Soil-Pulverizers, of which the following is a specification, reference being had to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts.

Figure 1 is a top or plan view of my improved pulverizer. Fig. 2 is an end elevation thereof. Fig. 3 is a vertical section on the line  $x x$  in Fig. 1. Fig. 4 is a detail section, showing how the sections of the cylinder are joined to the cylinder-heads.

In said drawings, the portions marked  $A^1 A^2 A^3$ , &c., represent the frame-work of my machine, and  $B$  the pole which is attached thereto and by which the machine is drawn.  $C$  is a shaft or axle secured to the frame by the boxes or bearings  $D D$ .  $E E$  are sections of one or more cylinders (I usually prefer two, for the reasons hereinafter given) provided with teeth  $e$  and mounted on the shaft  $C$ . These cylinders are of peculiar construction. The body of each consists of several cast-metal sections,  $E E$ , said sections each having one or two flat outer surfaces, and the teeth being a part of the same casting, and so formed as to readily fit together and upon flanges or into grooves in the cylinder-heads  $E' E'$  without any fitting whatever beyond merely cleaning the castings after they are taken from the sand. The sections and heads being thus placed together, the proper insertion of bolts  $E^2 E^2$  finishes the cylinder and leaves it ready to be used as a part of the machine. The heads  $E'$  are also of peculiar construction. They are cast with flanges or a groove,  $e'$ , upon the inner face thereof, for the reception and proper fastening of the sections of the cylinder, and the edges are serrated, and thus form rows of teeth at the extreme ends of the cylinder. When flanges instead of grooves are used, short bolts, fastening the flanges to the sections, may be employed instead of the long bolts between the two heads.

The teeth of the cylinder are diamond-shaped at the base and taper to a sharp flat point. The long way of the diamond being set on a line

with the course of the machine, the tooth always presents a sharp cutting-edge to reduce the stalks and litter that may be upon the ground, while at the same time it strikes clods in the form of a wedge, thus having the greatest possible amount of splitting and crushing force, and rendering the machine particularly valuable in cultivating hard and clayey soils. The tapering or wedge-shaped form also renders the teeth less liable to clog or become choked up by roots and stones than straight teeth are.

The formation of the sections with flat surfaces makes the cylinder, when put together, of a hexagon, octagon, or other shape, (according to the size,) having corners which assist materially in crushing the clods, and is thus much superior to the ordinary round cylinder.

In constructing this machine I prefer to use two short cylinders instead of one long one, for the reason that I can then, by proper adjustment, use it as a cultivator. At the ends of the cylinders, on the shaft  $C$ , will be seen two large washers,  $F F$ . By removing these from the ends and placing them in the middle between the cylinders there will be left a sufficient space to admit of the machine being driven over a planted field and thoroughly cultivating the entire space between the rows of young plants without in any way disturbing or injuring the plants themselves.

Upon one side of the cylinders (usually in front) I place a second shaft or axle,  $G$ , resting in bearings which project downwardly the proper distance from the frame. Upon this shaft I place a series of star-shaped wheels, having broad cutting ends to the spokes, which split the larger clods and leave the ground in a condition to be more thoroughly pulverized by the roller-cylinders.

When it is desired to use this machine as a stalk-cutter it is best to reverse the order in which the machine runs, which can be done by simply removing the tongue and attaching it to the other end. The cylinders will then crush down the stalks and hold them while the sharp-edged star-wheels cut them into pieces. The seat can be reversed by simply turning it on its pivot  $j$ .

Upon the bar  $A^3$  of the frame-work is a series of projecting pins,  $a a$ , which serve to

clear out any obstructions which might become fastened between the teeth *e e* of the cylinders.

In those cases where it is simply desired to pulverize and render level the surface of the ground, a second set of cylinders may be substituted for the star-wheels without detriment to the machine; but I find it best in most instances to use the machine in the form shown in the drawings.

In using the machine as a cultivator it is, of course, necessary to leave a space in the row of star-wheels as well as between the cylinders. This I do by removing a sufficient number of the wheels from the shaft *G* and replacing them with a sleeve of the proper length.

The object of my invention is to provide a simple and inexpensive machine that can be used as either a roller, clod-crusher, stalk-cutter, soil-pulverizer, or cultivator, and the hereinbefore-described device accomplishes all these purposes in a very satisfactory manner.

In casting the sections for the cylinders I usually cast two rows of teeth on each one and leave the teeth themselves hollow, as shown in Fig. 3. I do this to avoid using the thickness of metal which would be necessary to give them sufficient strength were the sections cast in flat pieces only wide enough for a single row of teeth.

The machine is furnished with a seat, *J*, for the driver, in the usual manner, which may be

turned on its pivot to face in either direction, as shown and before stated.

The bars *H* may be provided with slots, in which the bearings for the shaft *G* may slide, so as to adjust the distance to which the teeth of the star-shaped wheels shall enter the ground; or the bars themselves may be arranged to move up and down on the frame-work to which they are attached.

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

1. In the cylinder to a soil-pulverizer, the heads *E' E'*, said heads serving both their primary purpose of holding the sections of the cylinder together, and, by reason of the formation of their edges, each also serving at the same time as a row of pulverizing-teeth, substantially as shown and specified.

2. A roller or soil-pulverizer composed of the sections *E E*, each having one or more flat surfaces, and provided with teeth *e e*, the heads *E' E'*, and the bolts *E<sup>2</sup> E<sup>2</sup>*, all substantially as herein shown and specified.

In witness whereof I have hereunto set my hand and seal at Indianapolis, Indiana, this 25th day of June, A. D. 1879.

JAMES LAFEVER. [L. S.]

In presence of—

C. BRADFORD,  
HENRY EITEL.