

J. B. THAYER & H. E. COOK.
Magnetic Grain-Separator.

No. 225,029.

Patented Mar. 2, 1880.

Fig. 1.

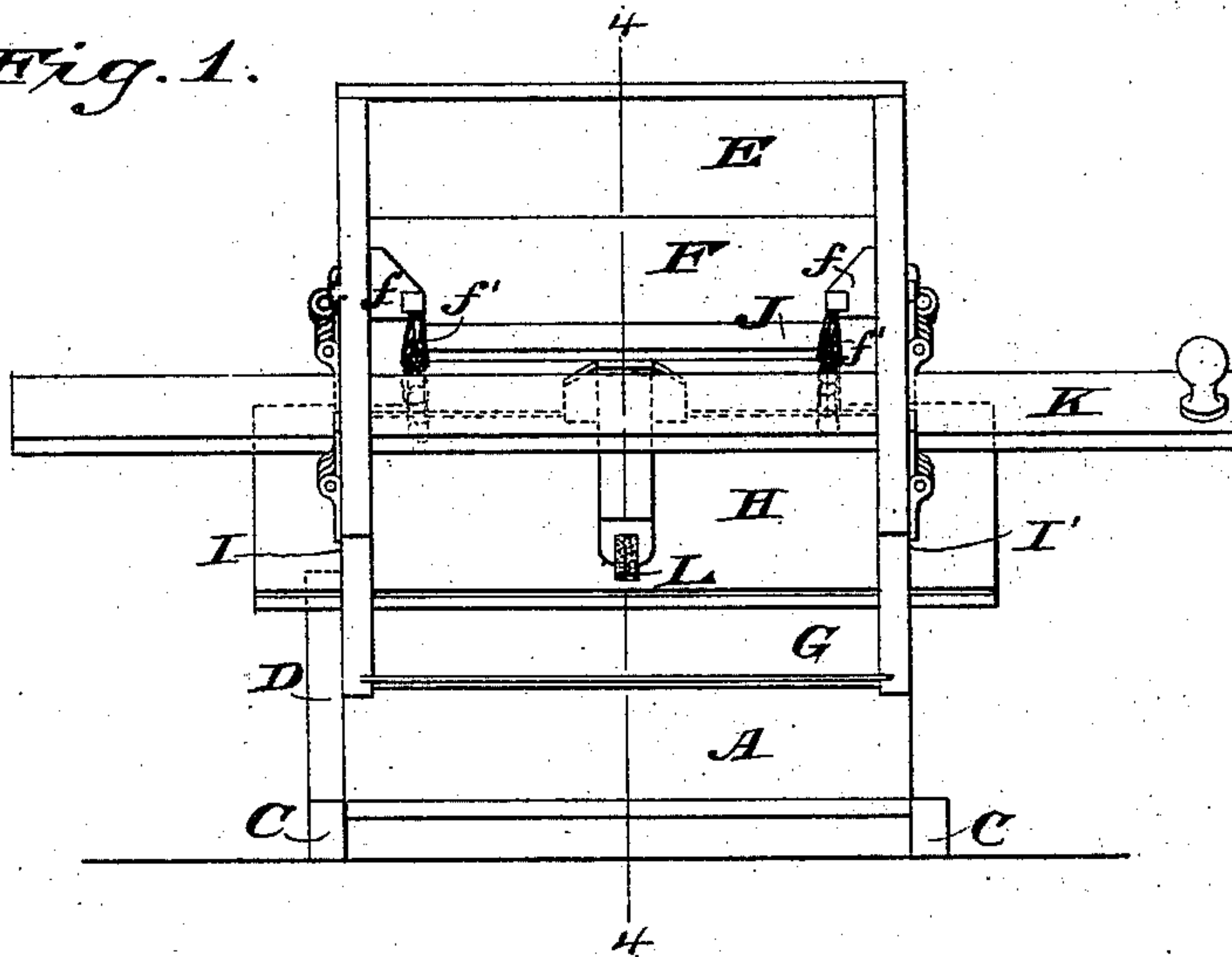
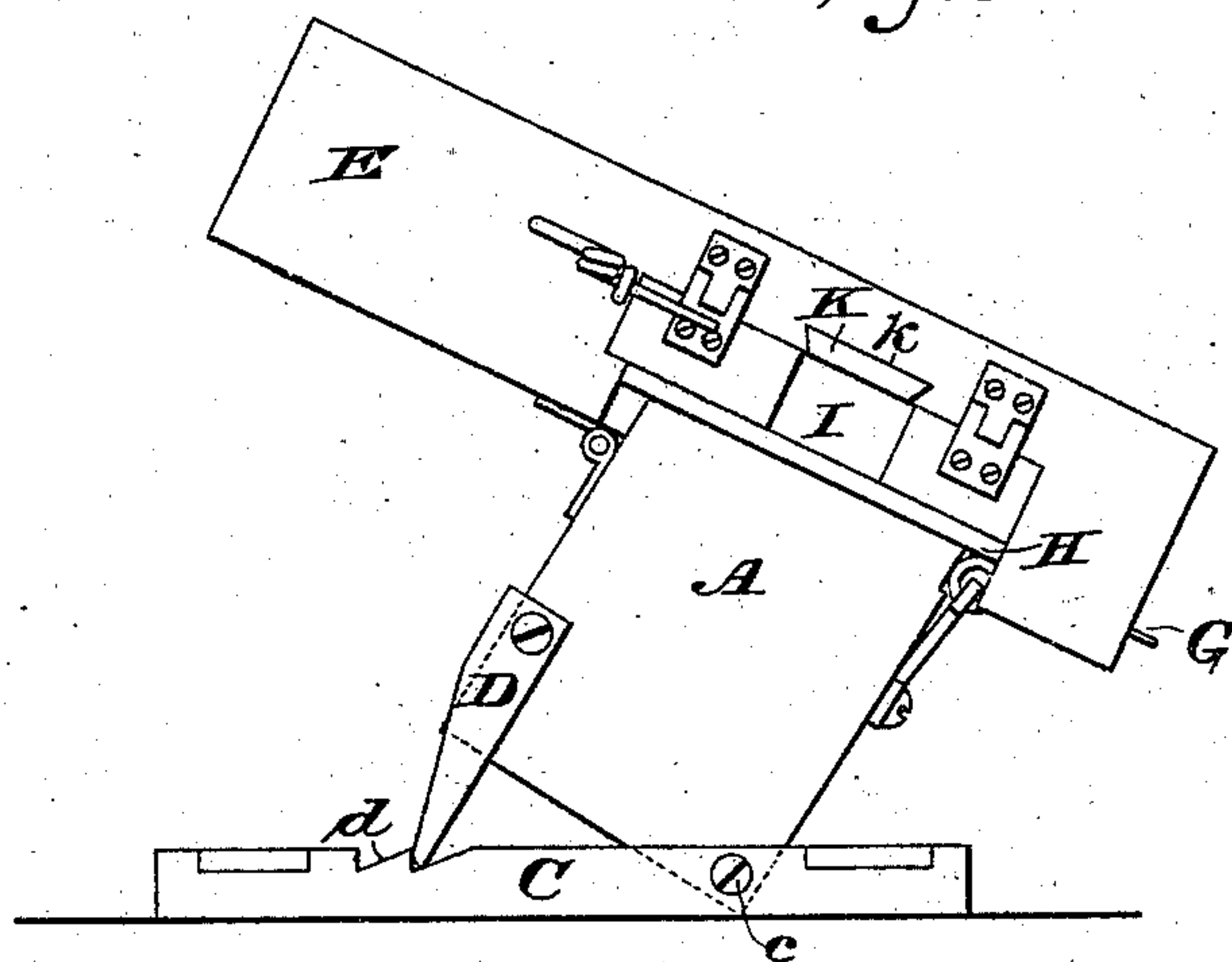


Fig. 2.



WITNESSES

Wm. A. Sprink
Wm. C. Kilgore

INVENTORS

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Fig. 3.

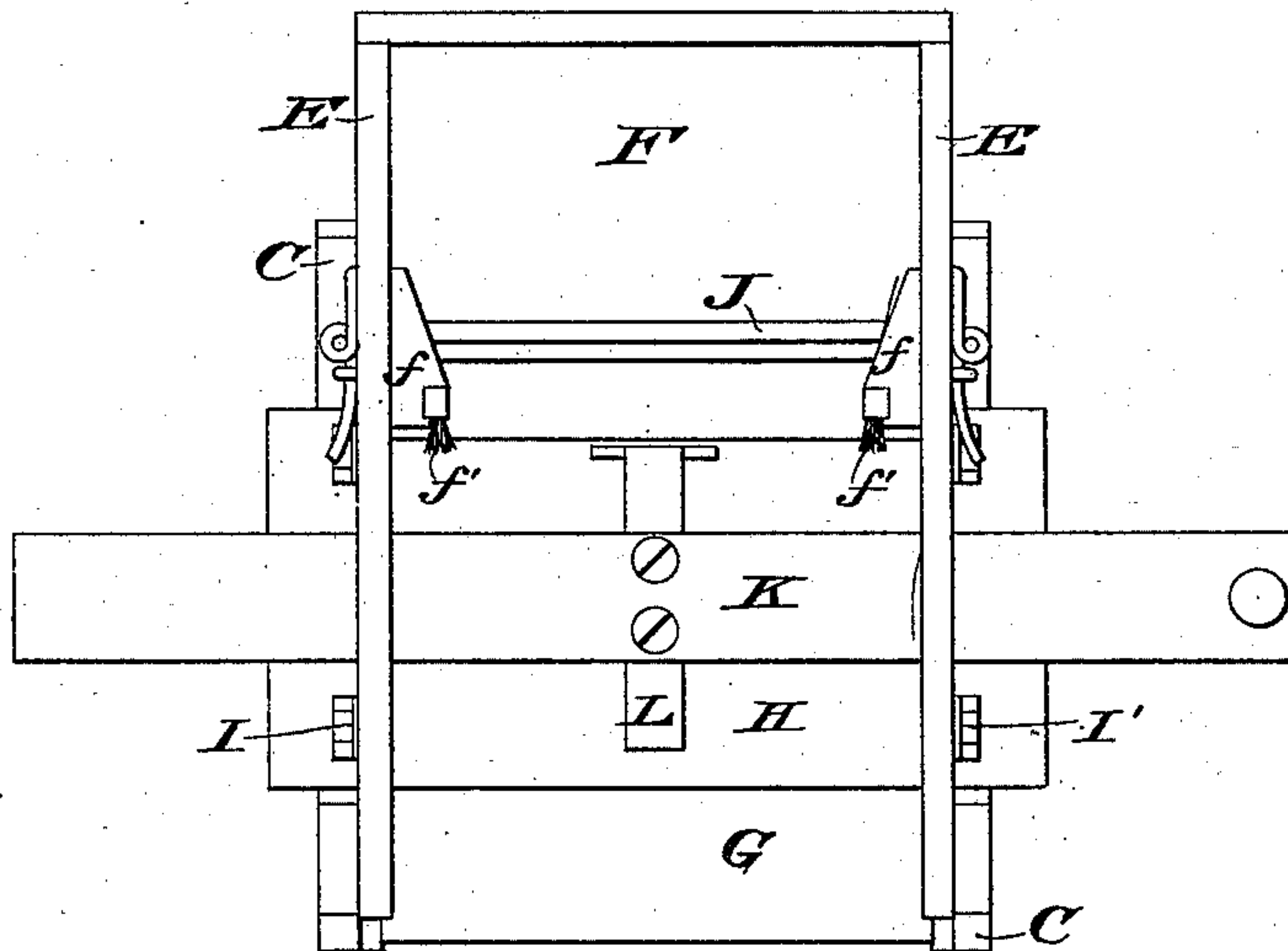


Fig. 4.

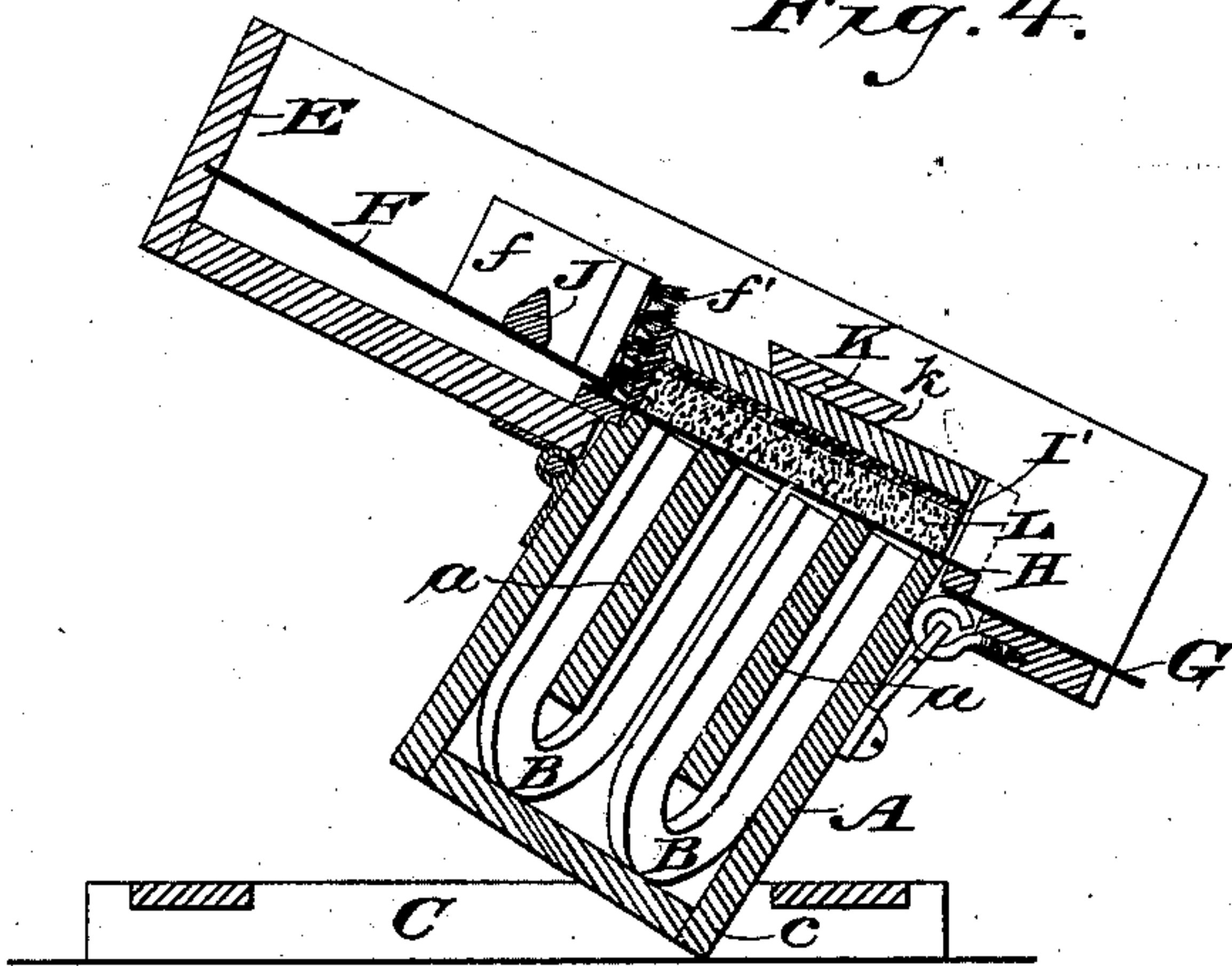
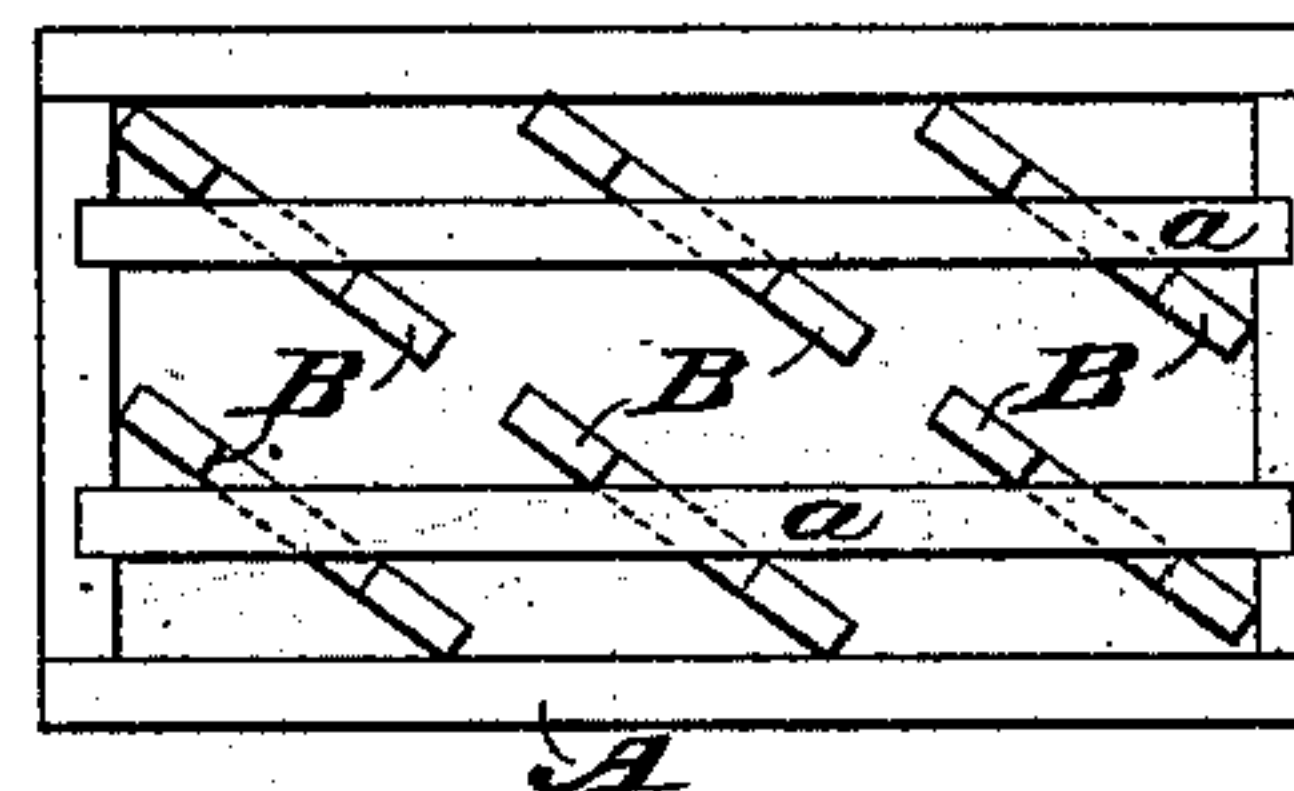


Fig. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

JESSE B. THAYER AND HENRY E. COOK, OF RIVER FALLS, WISCONSIN.

MAGNETIC GRAIN-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 225,029, dated March 2, 1880.

Application filed June 27, 1879.

To all whom it may concern:

Be it known that we, JESSE B. THAYER and HENRY E. COOK, both of River Falls, in the county of Pierce and State of Wisconsin, have
5 invented certain new and useful Improvements in Magnetic Separators, of which the following is a specification.

Our invention relates to that class of magnetic separators in which magnets are placed
10 beneath a conveying-surface and exert their influence through said surface to retain the magnetic particles thereon.

The object of our invention is to conveniently move the magnetic particles retained
15 upon the conveying-surface, and also to vary the inclination of the conveying-surface at pleasure and afford ready access to the magnets.

In the accompanying drawings, illustrating
20 our improvements, Figure 1 is a front elevation. Fig. 2 is a side elevation. Fig. 3 is a plan view with the conveying-surface in a horizontal position. Fig. 4 is a section on the line 4 4 of Fig. 1; and Fig. 5 is a plan view of the
25 magnet-containing box with the superposed parts removed.

The box A is provided with removable partitions *a a*, in which horseshoe-magnets B are secured in a diagonal position, as shown in
30 Fig. 5. This box is pivoted at *c* in a bed-frame, C, and is provided with a pawl, D, which engages with a rack, *d*, on the frame, by which the inclination of the box and its superposed parts may be changed as desired.

A frame, E, is hinged to the box A and carries the conveying-surface over which the material to be operated upon flows. The conveying-surface is shown in this instance as composed of three parts—a plate, F, on which the
40 material falls from the hopper, a plate, G, and the diaphragm H. It might, however, be made in one piece. The frame E is provided with spring-doors I I' above the diaphragm H, for a purpose hereinafter set forth.

A breast or dam, J, is placed across the plate F near its lower edge, and brackets *f f*, provided with brushes *f' f'*, are secured to the frame E, as shown. A reciprocating bar, K, works through apertures *k k* in the frame
50 E, and carries a T-shaped wiper, L, which bears upon the diaphragm H. The surface of

the wiper in contact with the diaphragm should be composed of some flexible material, such as rubber or leather.

When the apparatus is in position for work-
55 ing the frame is swung down on the box A, so as to bring the diaphragm H over the magnets, and is held in place by a suitable catch on the box, and the inclination of the whole is adjusted by the pawl and rack. The material
60 to be operated upon falls upon the plate F and is banked up by the dam J, so as to be fed over it in a thin stream. As the material moves over the diaphragm H the magnetic particles will be retained thereon by the at-
65 traction of the magnets, while the non-magnetic particles will flow on and be delivered into a suitable receptacle.

When it is desired to remove the magnetic particles from the diaphragm the bar K is
70 caused to move the wiper L, which accumulates and carries the magnetic particles with it across the diaphragm until the head of the wiper comes in contact with one of the brushes
75 *f'*, when the material flowing over the dam will be prevented from entering the space inclosed by the wiper and bracket, and any non-magnetic material therein will run out. As the wiper continues its movement it forces
80 open the spring-door and deposits the magnetic particles outside beyond the influence of the magnets, where, as they accumulate, they will be delivered into a suitable receptacle. As the wiper reverses its movement the spring-
85 door closes after it, and the operation is repeated on the opposite side of the machine.

When the apparatus is connected with machinery it will be found advantageous to impart to the conveying-surface a slight vibratory movement, as is well understood.
90

The brackets *f' f'* might be dispensed with and the head of the T-shaped wiper made a little longer, if found necessary; or the brackets could be made a little deeper and the wiper formed straight, without the cross-piece, as
95 will be obvious; but the T-shaped wiper is preferable, because the cross-piece prevents the material flowing over the conveyor from coming in contact with the magnetic particles accumulated as the wiper moves across the
100 diaphragm, for should the material be allowed to flow over these accumulated particles

it would tend to carry them down with it beyond the influence of the magnets.

The reciprocating bar might be dispensed with and the T-shaped piece attached to the center of a reciprocating diaphragm, in which case the diaphragm would have to be increased in length.

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

1. The combination of the reciprocating bar, the wiper, the diaphragm, and the spring-doors, substantially as described.

2. The combination of the reciprocating bar, the wiper, and the brackets, substantially as described.

3. The combination of the bed-frame, the

magnet-containing box pivoted therein, and the conveyer-frame hinged to the magnet-containing box, substantially as described. 20

4. The combination, in a magnetic grain-separator, substantially as set forth, of the inclined diaphragm upon which the magnetic material is held by magnetic force, and the wiper, which traverses at substantially right angles to the direction of flow of the grain over the diaphragm. 25

In testimony whereof we have hereunto subscribed our names.

JESSE B. THAYER.
HENRY E. COOK.

Witnesses:

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EDWARD BELL.