

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

No. 216,258.

Patented June 10, 1879.

Fig 2.

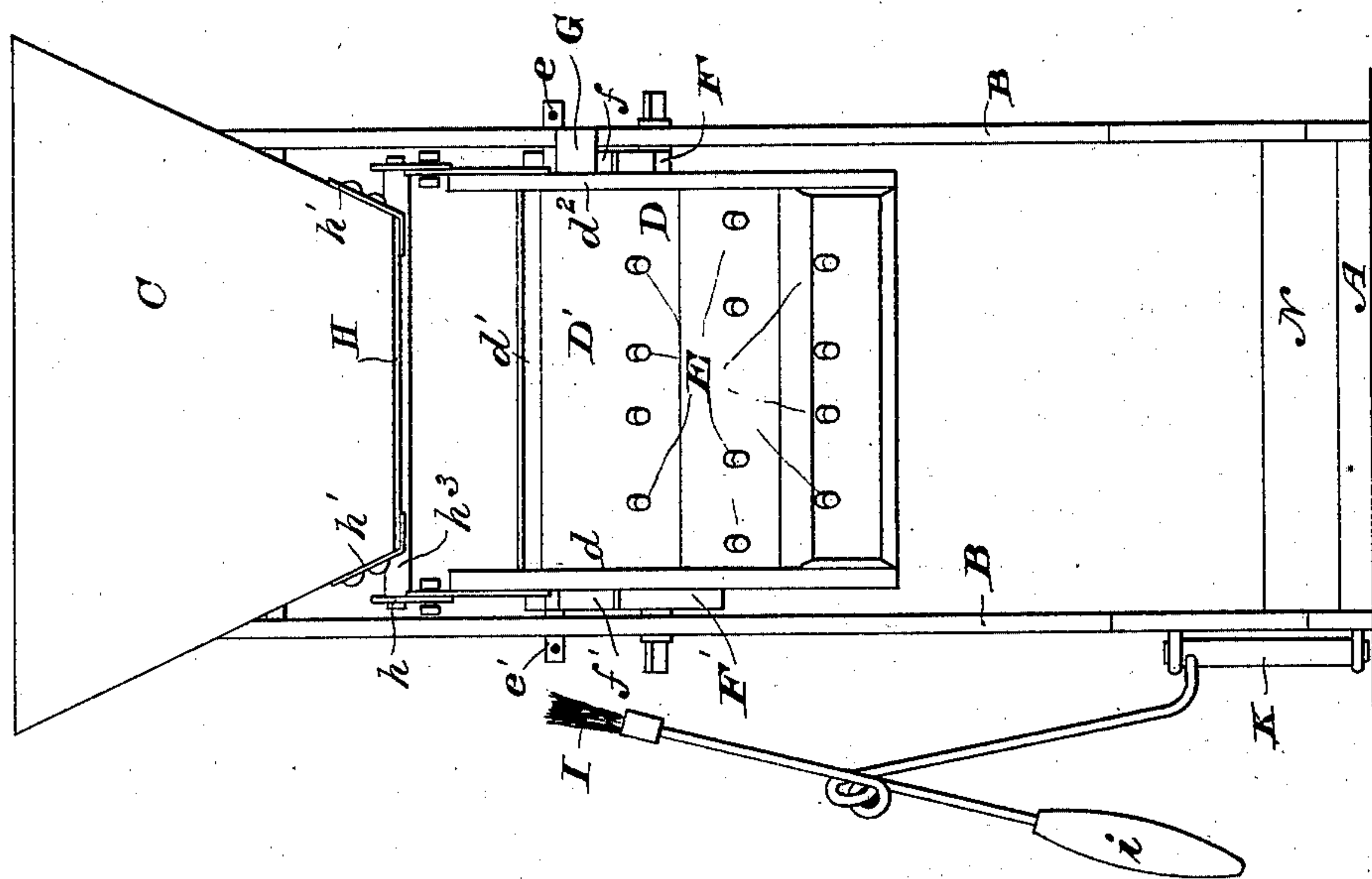
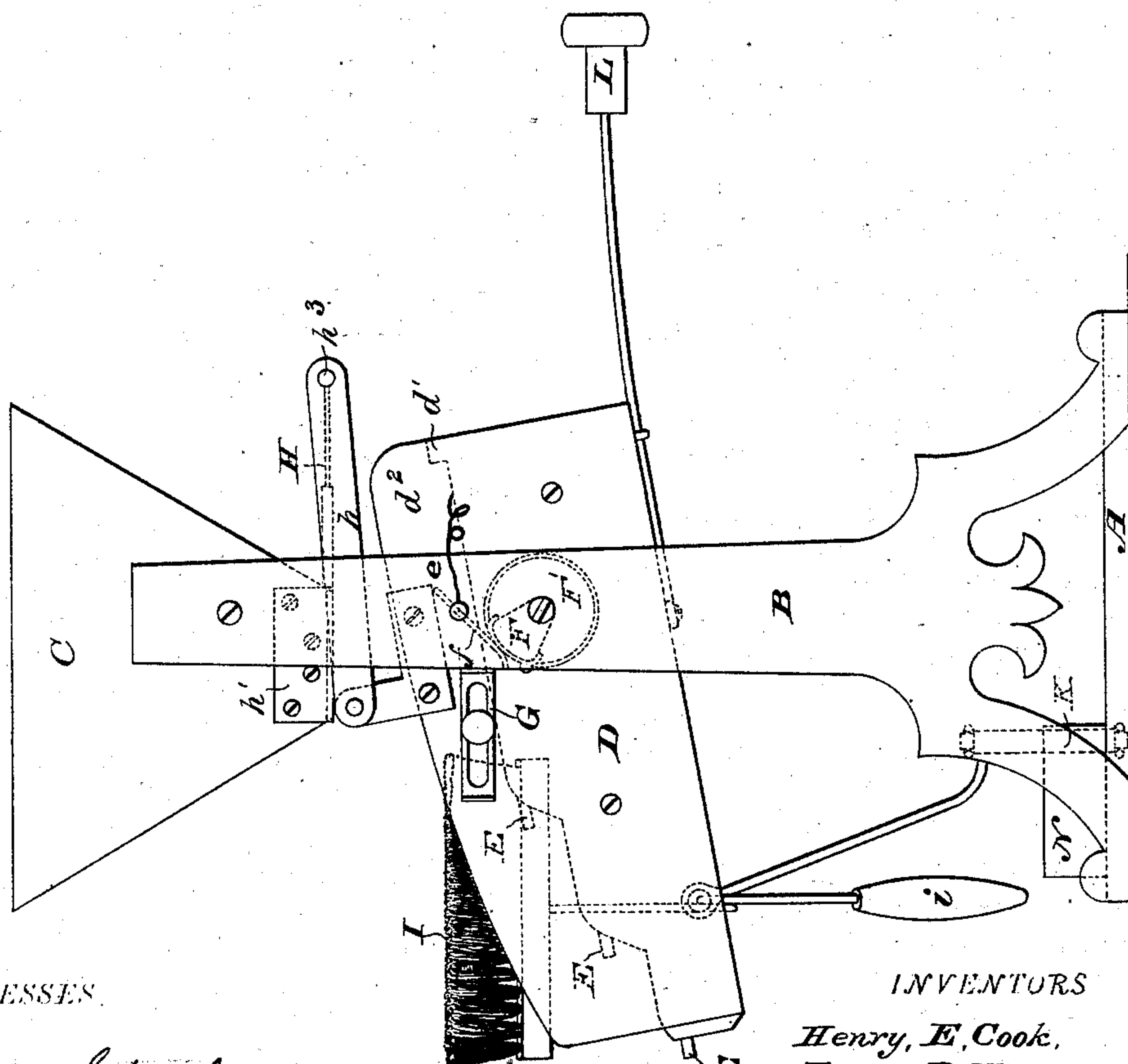


Fig. 1



WITNESSES.

Wm A. Skinkle.
Geo W Breck.

INVENTORS

Henry, E. Cook,
Jesse, B. Thayer.

By their Attorneys

Baldwin, Hopkins, & Preston.

UNITED STATES PATENT OFFICE.

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

IMPROVEMENT IN MAGNETIC SEPARATORS.

Specification forming part of Letters Patent No. **216,258**, dated June 10, 1879; application filed May 3, 1879.

To all whom it may concern:

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

Our invention is designed more especially to separate from grain the metallic particles which collect therein on account of the use of wire in binding the sheaves, or from other causes; but it is of course applicable to the separation of metallic or magnetic particles from any other substances.

Our invention relates to that class of magnetic separators having movable conveyers and magnets projecting therefrom, as shown in Letters Patent of the United States No. 214,025, granted to us on the 8th day of April, 1879; and consists in certain new and useful improvements hereinafter set forth.

In the accompanying drawings, Figure 1 is a side elevation, and Fig. 2 is a front elevation, of our improved apparatus.

A suitable frame, B, mounted upon a bed-plate, A, carries a hopper, C, and a conveyer, D, pivoted in the frame below the hopper. The sides d d^1 d^2 of this conveyer extend above the conveying-surface D' , to prevent the grain from escaping at the rear and sides. The conveying-surface is stepped, as shown. The steps are preferably rounded on the edges, and the angle formed by the two plain surfaces of each step is an obtuse one, so that the grain will flow along the sides of the steps and not jump from step to step. By this construction the stream of grain is retarded, and is broken and distributed over the magnets, so that the magnetic particles are more effectually separated than where the conveying-surface is plain.

Several series of magnets E project from the conveyer, preferably from the steps, slightly below their rounded edges, into the path of the grain. These magnets are arranged, as shown in the drawings, so that those in the first series come opposite the spaces in the second, &c. Permanent magnets might be used; but we prefer electro-magnets, as shown.

The wires are connected to the pins e e' ,

which are provided with contact-pieces f f' , one of which, f , bears upon a sector, F, and the other of which, f' , bears upon a circular plate, F'.

When the outer end of the conveyer is swung down a sufficient distance the contact-piece f will run off of the sector F, and the current will be interrupted and the magnets demagnetized.

An adjustable stop, G, which abuts against the frame, limits the movement of the conveyer in both directions. By adjusting this stop the angle of inclination of the conveyer may be varied as desired.

The hopper is provided with a sliding bottom, H, which is connected with the conveyer by rods h h , pivoted at one end to a cross-bar, h^3 , on the sliding bottom, and at the other to brackets h^1 h^1 on the conveyer, so that when the outer end of the conveyer is depressed the flow of grain will be cut off.

A brush, I, having a suitable handle, i , is mounted upon a bracket, K, on the frame B, so that when the outer end of the conveyer is depressed the magnets can be swept by the brush to remove any metallic particles that may still adhere to them.

The conveyer is provided with a counter-balance, L, which retains it in its normal position.

The operation is as follows: The grain from the hopper falls upon the inclined stepped conveyer and flows over and around the magnets, which catch and retain the magnetic particles, and falls into a grain-receptacle. When it is deemed that the magnets are sufficiently loaded the outer end of the conveyer is drawn down by the attendant. The flow of the grain is thus cut off, the electric current interrupted, the magnets are demagnetized, and the magnetic particles fall into the receptacle N. The attendant then sweeps the magnets and conveying-surface with the brush to remove any magnetic particles that may still adhere to them. Upon releasing the conveyer the counter-balance restores it to its normal position, the electric current is again established, and the grain again commences to fall from the hopper.

We have shown a conveyer having three

steps and three series of magnets; but of course this number may be varied without departing from our invention.

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

1. In a magnetic separator, a conveyer having a stepped conveying-surface with magnets projecting therefrom.

2. The combination of the swinging bracket

and the brush mounted thereon with the pivoted swinging conveyer carrying magnets, substantially as described.

In testimony whereof we have hereunto subscribed our names.

HENRY E. COOK.

JESSE B. THAYER.

Witnesses:

W. P. KNOWLES,

EDWARD BELL.