

D. D. HARDY.
Magnetic Grain-Separator.

No. 222,627.

Patented Dec. 16, 1879.

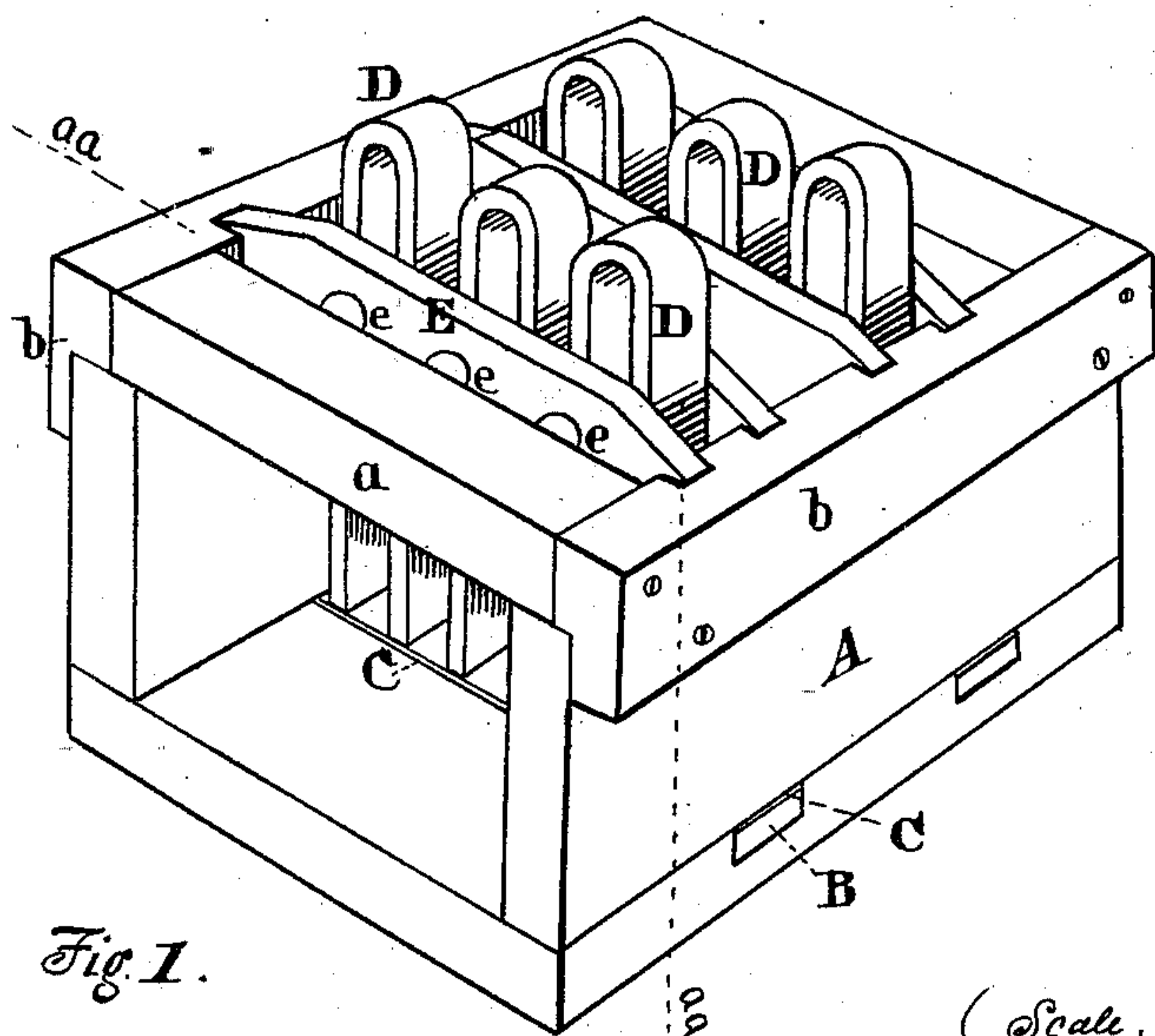


Fig. 1.

(Scale, "Magnets" are
6 inc. in length)

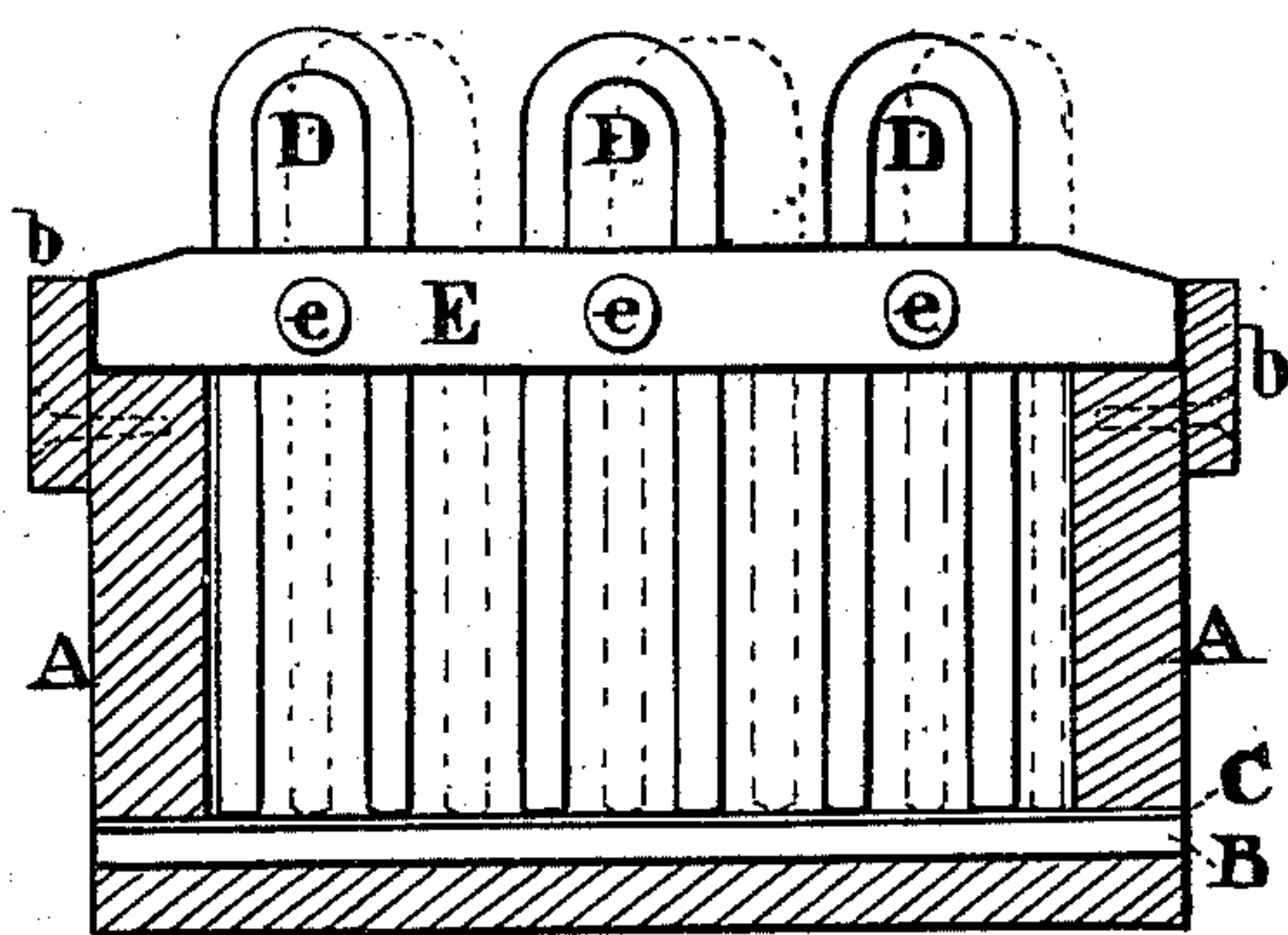


Fig. 3.

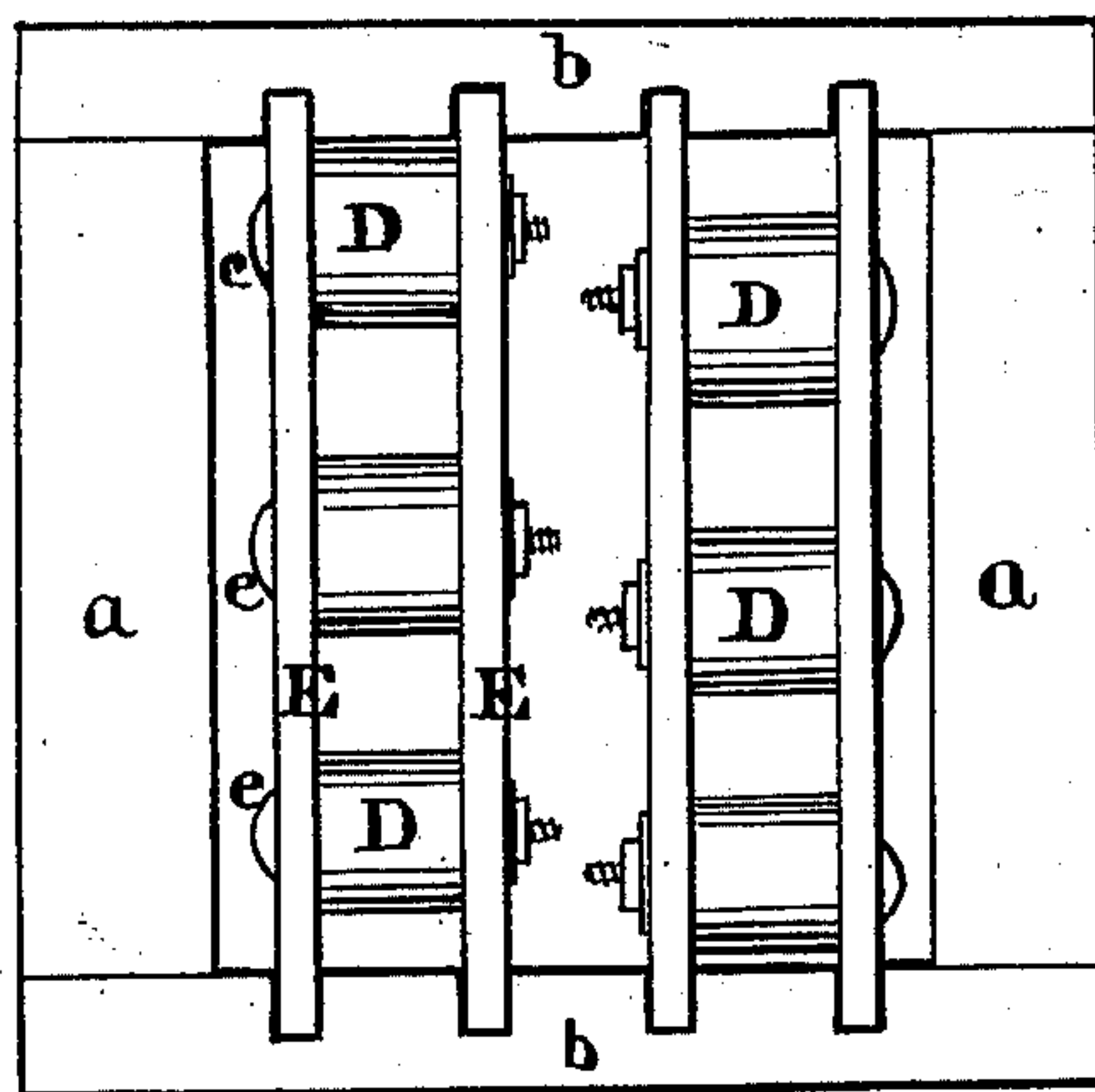


Fig. 2.

Witnessed
Angus Vandoren
Syndhurst Thurlow

Dexter D. Hardy
by E. Thurlow his atty.
in fact

UNITED STATES PATENT OFFICE.

DEXTER D. HARDY, OF DELAVAN, ILLINOIS, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO QUINTUS ORENDORFF.

IMPROVEMENT IN MAGNETIC GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. 222,627, dated December 16, 1879; application filed July 25, 1879.

To all whom it may concern:

Be it known that I, DEXTER D. HARDY, of Delavan, in the county of Tazewell, in the State of Illinois, have invented an Improvement in Magnetic Devices for Extracting Fragments of Metal from Grain; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawings, making a part of this specification, in which like letters of reference refer to like parts, and in which—

Figure 1 represents a perspective view; Fig. 2, a plan view; Fig. 3, a vertical cross-section on line *a a a*, Fig. 1.

This invention consists of a magnet or series of magnets made and arranged in a grain-trough, in the manner as hereinafter described, in combination with a shield or shields of a slightly magnetic or non-magnetic character, interposed between the magnet and armature, for the purpose of placing the armature as near the magnet as is necessary to accomplish the purpose of preventing the impairment of the strength of the magnet as much as possible consistent with sufficient attraction of said magnet upon metal fragments usually present in uncleaned grain to gather them up; also, in the combination of transverse parallel bars and clamping-bolts for securing the magnets in position in the trough, as will be hereinafter more fully explained.

The form in which I construct my devices (magnets and trough) is as follows: A is a section of an ordinary grain-spout, strengthened at top crosswise by means of a brace, *a*, and having cleats *b b* on either upper edge of said trough, having vertical slots to confine the ends of the strips E E, (which confine the magnets.) Parallel grooves are cut in the floor of the trough A (beneath the respective rows of magnets) to admit the several armatures B C.

B represents the armatures, (used to preserve the power of the magnets,) which are each faced on that side next to the magnets above them with a thin strip or facing of copper or other substance sufficient to separate the magnet from the armature, and at the same time to conserve the strength of the former as much as possible consistent with sufficient attrac-

tion for metal particles in the grain. Each transverse line of magnets rests over a common armature and its shield C, and for convenience each shield is soldered to its armature, its face being flush with the floor of the trough-A.

D represents the magnets; and these are arranged equidistantly across the trough, and are confined within their strips E, with their edges at a right angle to said strips. The latter are confined to each other, with the magnets between them, by means of bolts *e e*, the magnets in such a position that they are equidistant from each other, the distance being the same, or nearly so, as that between the arms of the respective magnets. I make said magnets of inch by one-fourth inch bar-steel, (preferably,) sixteen inches in length, bent so as to form parallel arms about one inch apart, the same distance as that between each magnet of a row.

The rows of magnets are so arranged that their arms (poles) are opposite to the spaces between the arms of opposite rows of magnets, so as to break the better the current of grain up into continually smaller currents. It will thus be seen that one of these magnets, so constructed and arranged, breaks the grain-current in two parallel lines, so that two rows of three magnets each break said current in twelve places—a great advantage over an equal number of the ordinary horseshoe or U magnet, in which the widest part of its substance is in the plane of its flexure, thereby economizing the number of magnets, (*i. e.*, my six magnets accomplish as much work by this arrangement as twelve magnets with their respective poles arranged in one line, as in the U-magnets.)

By my plan one-fourth of the magnets may be removed to clean them, while three-fourths of the whole number are in place, whereas in the U system of magnets it would be necessary to remove one-half of their number, leaving as many as one-half in service.

What I claim as my invention is—

1. The transverse parallel bars E, arranged to secure the magnets in a line or row across the bottom or base of the trough of a grain spout or conveyer by means of the clamping-

bolts *e*, passed between the poles of the magnets, the poles of the said magnets having their edges toward the flow of the grain in the trough, substantially as described.

2. A magnet for grain or conveyer spouts bent at a right angle to the width of its material into two arms, so as to intercept a current of grain, &c., in two places, (across the line of said current,) in combination with the shield C and armature B, substantially as described.

3. A magnet for grain or conveyer spouts bent at a right angle to the width of its material into two arms or poles, so as to intercept a current of grain, &c., in two places, (across the line of said current,) in combination with shield C, armature B, and trough or spout A,

substantially as and for the purposes described.

4. The combination of the armature B, shield C, and trough A, substantially as described.

5. The construction and arrangement of the trough A, armatures B, shields C, magnets D D, confining-bars E E, bolted together and resting in sockets in the sides of the trough A, as described.

In testimony that I claim the foregoing I have hereunto set my hand this 18th day of July, 1879.

DEXTER D. HARDY.

Witnesses:

JOHN I. CULBERTSON,

Q. ORENDORFF.