

No. 610,767.

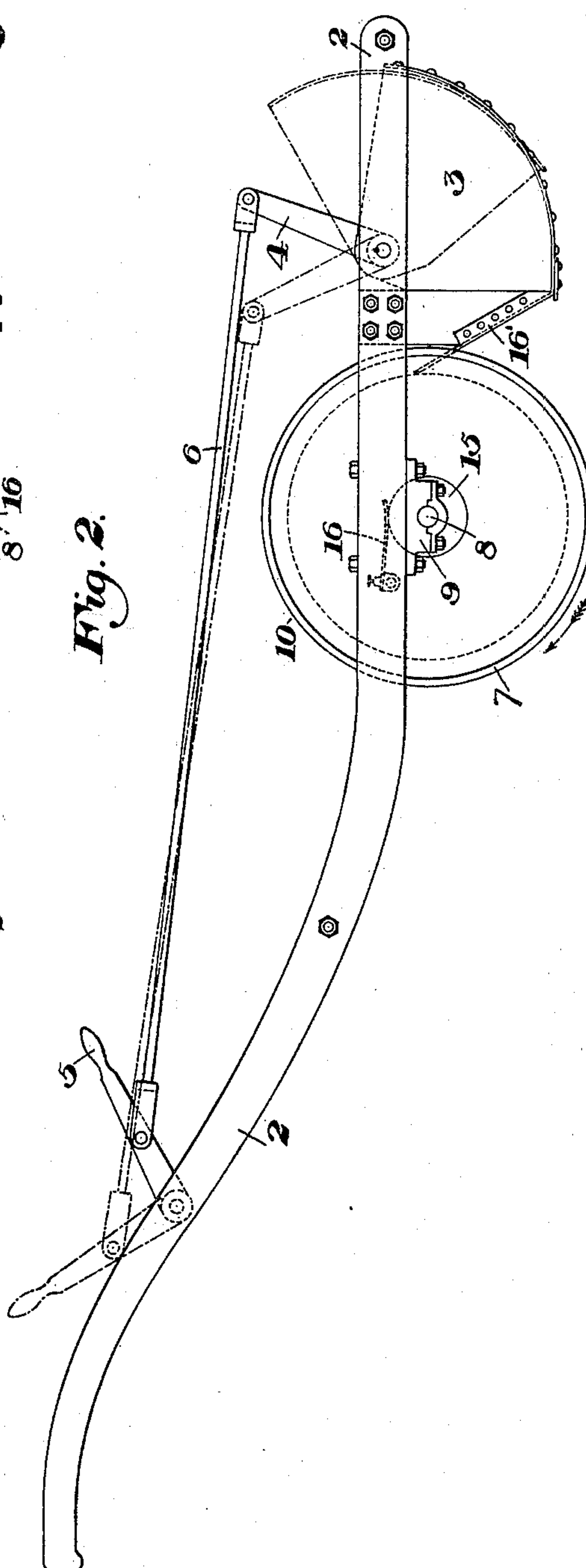
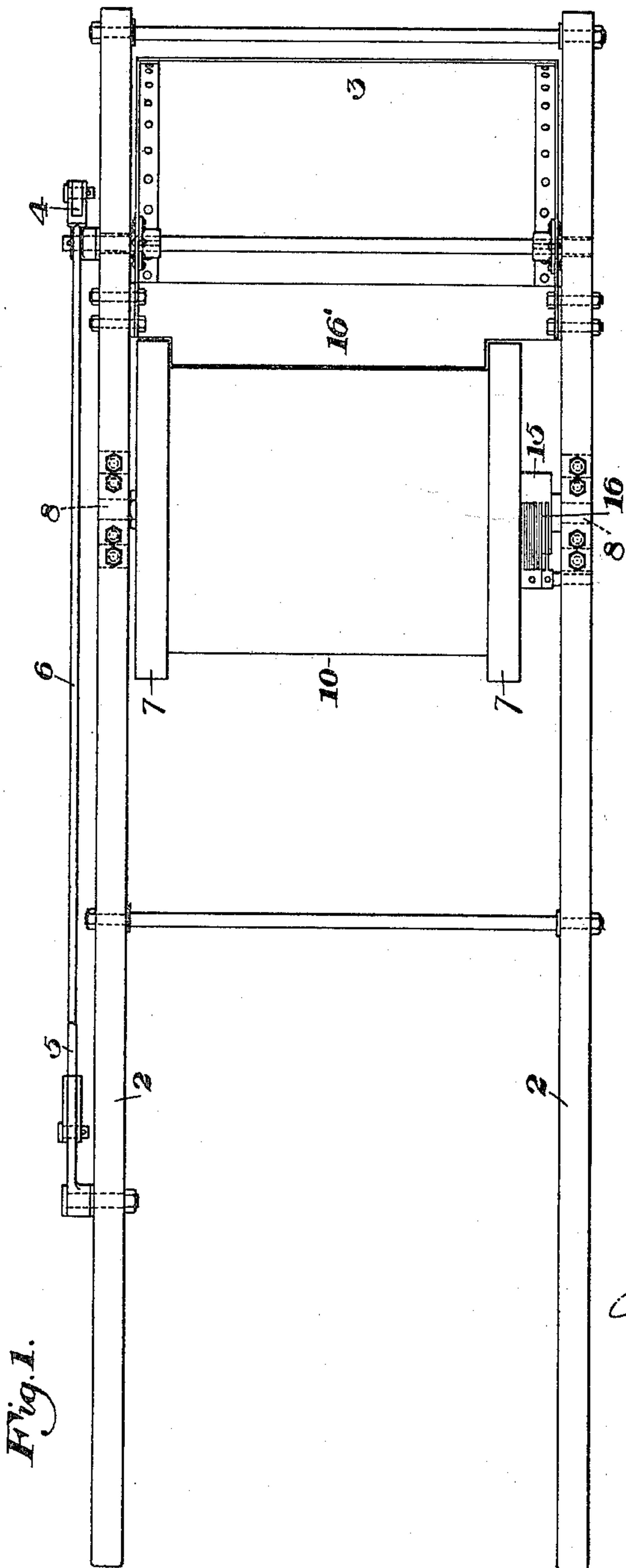
Patented Sept. 13, 1898.

A. MONELL.
MAGNETIC SEPARATOR.

(Application filed Jan. 10, 1898.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES

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No. 610,767.

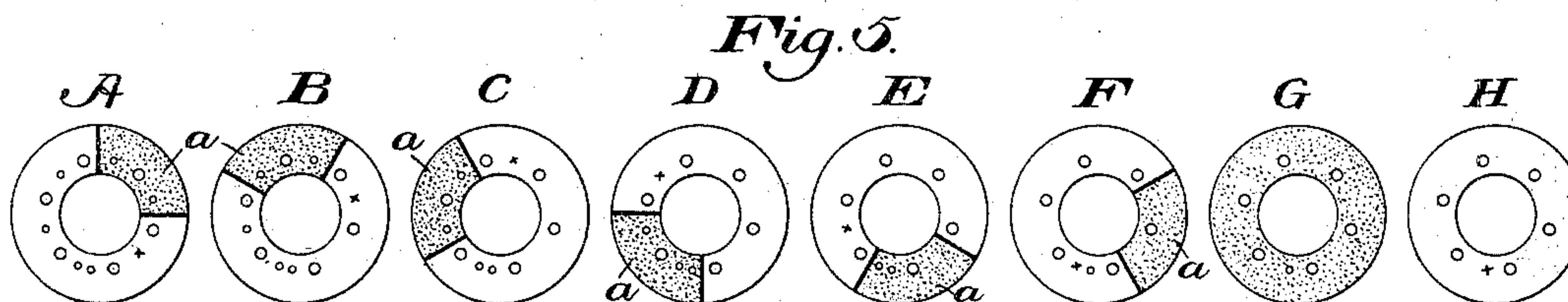
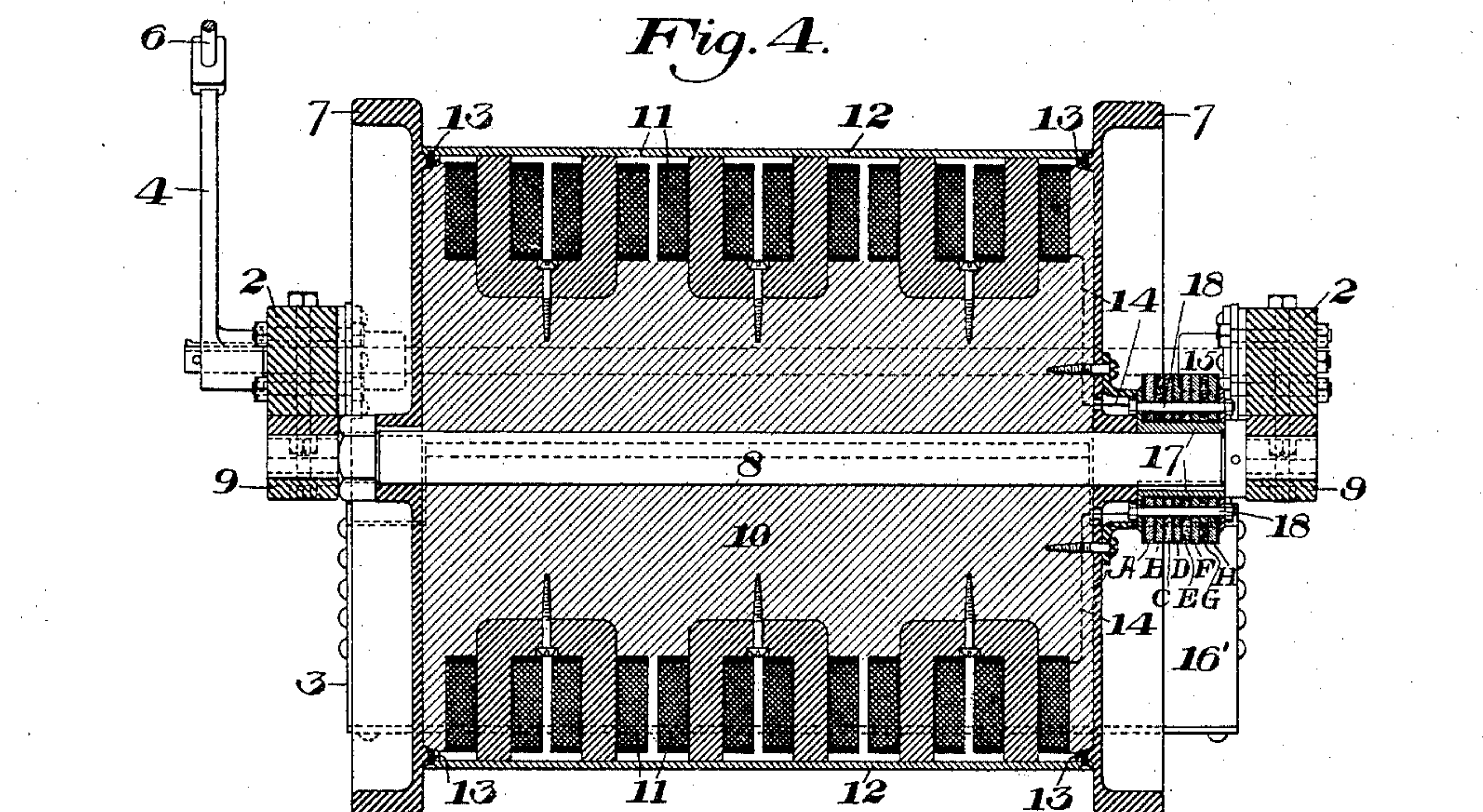
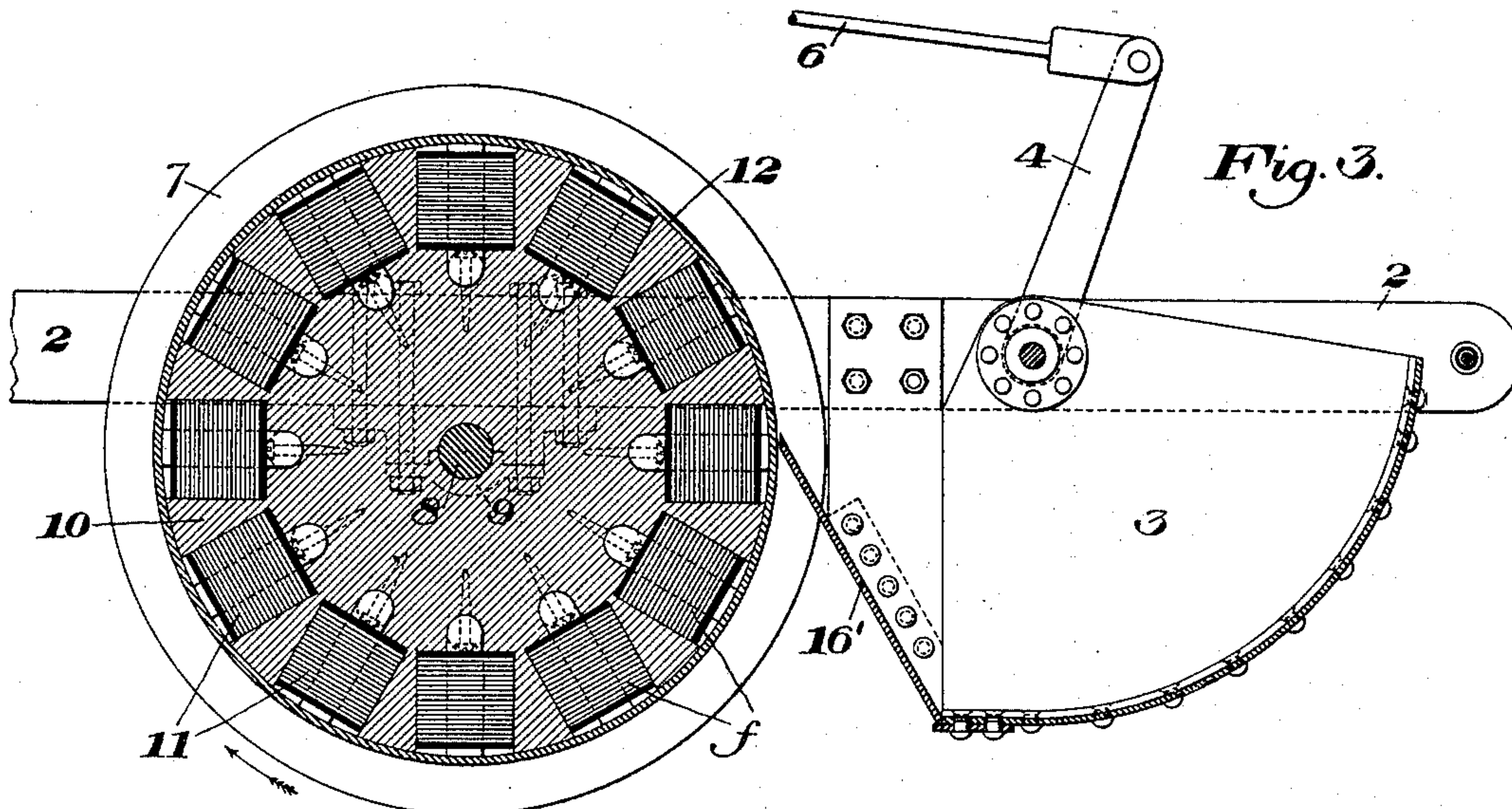
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3 Sheets—Sheet 2.



WITNESSES

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No. 610,767.

Patented Sept. 13, 1898.

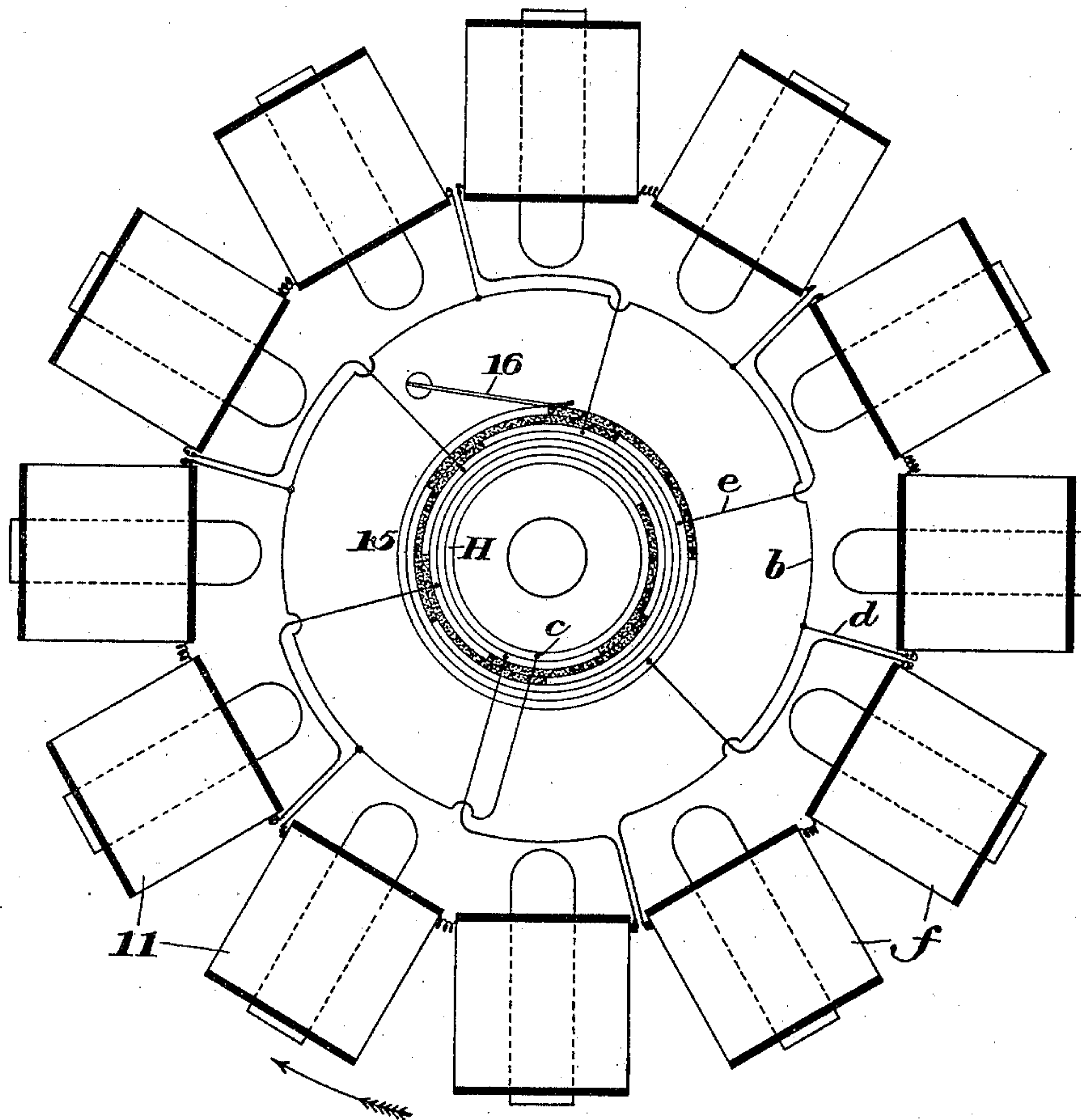
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3 Sheets—Sheet 3.

Fig. 6.



WITNESSES

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UNITED STATES PATENT OFFICE.

AMBROSE MONELL, OF MUNHALL, PENNSYLVANIA.

MAGNETIC SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 610,767, dated September 13, 1898.

Application filed January 10, 1898. Serial No. 666,158. (No model.)

To all whom it may concern:

Be it known that I, AMBROSE MONELL, of Munhall, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Magnetic Separators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top plan view of a traveling truck or barrow provided with my improved magnetic separator or collector. Fig. 2 is a side elevation of the same. Fig. 3 is a partial longitudinal section, and Fig. 4 a transverse section, of the drum employed. Fig. 5 is a detail view showing the series of commutator-sections, and Fig. 6 is a diagrammatic view showing the connections of the magnets upon the drum.

My invention relates to the separation of magnetic particles or pieces of metal from non-magnetic pieces, and more especially to a traveling truck or barrow having thereon a magnetic separator which is arranged to pick up pieces of metal and deposit them in a suitable receptacle carried upon the barrow.

In the drawings, referring to the form of Figs. 1 to 6, inclusive, 2 2 represent the side members of a barrow-frame, between whose front ends is pivotally mounted a receptacle 3, which normally rests in the position shown in full lines in Fig. 2, but may be tilted into the position shown in dotted lines in this figure by means of a lever 4, secured to the shaft of this bucket and actuated by hand-lever 5, connected with the lever 4 by a pivoted link 6. This barrow is mounted upon wheels 7, keyed to a shaft 8, mounted in bearings 9 upon the frame. Between these wheels or rim portions is mounted a drum 10, which is secured to the wheels and is made of wood or other suitable material. The drum is of smaller diameter than its end wheels, and in its outer portion are mounted several parallel circular series of electromagnets 11. These magnets are secured within suitable recesses in the drum and are preferably covered by a brass cylinder 12, secured to inwardly-projecting flanges 13 upon the wheels. The brass cylinder rests upon and is supported by the outer surface of the drum, as shown in

Fig. 3, except in those portions wherein the magnets are set. This prevents injury to the cover-plate 12 and allows the barrow to be rolled over pieces of metal of such size that they will lift the wheels from the ground without injury to the drum. To energize these electromagnets, I provide suitable lead-wires, which may be connected to them in many different ways. In the form which I have shown two longitudinal rows of these magnets are connected up in series by lead-wires 14. The magnets are energized only during a portion of their movement through the circular path, so that pieces of metal over which the barrow passes may be drawn against the drum and raised to a proper point, and the magnets then being cut out they will be dropped into the receptacle 3. For this purpose I provide a commutator 15, secured to one of the end wheels and rotating therewith. This commutator is made of a series of separate sections, which are illustrated in Fig. 5. The sections marked A, B, C, D, E, and F in this figure represent metallic rings, a segment *a* in which is suitably insulated from the remainder of the ring, so that when the commutator-brush rests upon this segment the magnets in the circuit corresponding thereto will be deenergized. These sections are suitably insulated from each other, and at the outer end of the series is placed an insulating-ring G, next to which is placed the ring H, to which all the lead-in wires are connected. I show twelve rows of longitudinal magnets upon the drum, which are connected up in separate series of two rows each, thus making six commutator-sections for lead-out wires, as shown in Fig. 5.

The system of wiring will be understood by reference to Fig. 6. In this figure, *b* represents a circular main which is connected at *c* to the ring H, to which the current is supplied. Each double row of magnets is connected to this main *b* by branch wires *d*, and each double series is connected to a separate commutator-section by wire *e*, the separate commutator-sections being shown diagrammatically in this figure by the series of concentric annular ring portions. The insulated portion of each section is indicated by the dotted portion of each annulus. Thus supposing that the drum is moving in the direction

of the arrow in this figure it is evident that the brush 16 is about to cut in the series of magnets marked *f* in this figure and that these magnets will be energized until in the rotation of the drum the other end portion of the insulated segment of the commutator-section corresponding to these magnets is reached by the brush, when they will be cut out, and the magnets at this moment being at the upper part of their travel any piece of metal held to the drum by their magnetic attraction will be dropped upon the inclined guide 16' and received in the bucket or receptacle 3. The several series of magnets will thus be cut in successively at the same point in their rotary path and be correspondingly cut out at the same point. As the barrow is moved about a yard where pieces of metal are lying about, these pieces of metal will be picked up by certain of the magnets as the barrow passes over them, and thus separated from non-metallic elements and dropped into the receptacle. When the receptacle is filled, it may be moved to any desired point and dumped by swinging it into its upper position by means of the handle 5. The lead-out wire for each series of magnets is of course insulated where it passes through any of the commutator-sections for the other series and is sweated into its section at the points marked *x* in Fig. 5. In this figure I have endeavored to show the several sections in their correct relative positions to each other, as they are threaded in position upon the sleeve 17, surrounding the axle. These sections are bolted together by the through-bolts 18 in the usual manner.

By employing means for rotating the commutator relatively to the drum it is evident that the magnets may be so arranged and connected as to vary their points of cutting

in and cutting out to any desired points in their path.

The advantages of my invention result from the use of the wheeled truck or barrel having the drum carrying electromagnets thereon, this drum being rotated by connections with the wheels of the truck. The ease and rapidity with which pieces of metal lying about a factory-yard may be thus separated and collected is apparent.

Many changes in the form of the magnets, the drum, and the connections between the drum and the wheels of the truck may be made without departing from my invention, since

What I claim is—

1. A wheeled truck or barrow having a receptacle, a drum arranged to be rotated by the wheels of the truck or barrow and carrying electromagnets, and switches for said magnets arranged to be actuated by the rotation of the drum.

2. A wheeled truck or barrow having a drum secured between and concentric with its wheels a series of electromagnets mounted upon the drum, and a commutator arranged to successively supply the current to and cut it off from the magnets.

3. A wheeled barrow having a drum secured between and concentric with the wheels and of less diameter than said wheels, electromagnets set in recesses in said drum, and a cover-plate surrounding the drum and bearing upon its surface.

In testimony whereof I have hereunto set my hand.

AMBROSE MONELL.

Witnesses:

M. S. MURPHY,
G. B. BLEMMING.