

(No Model.)

2 Sheets—Sheet 1.

N. McKAY.
CENTRIFUGAL SNOW WHEEL.

No. 529,042.

Patented Nov. 13, 1894.

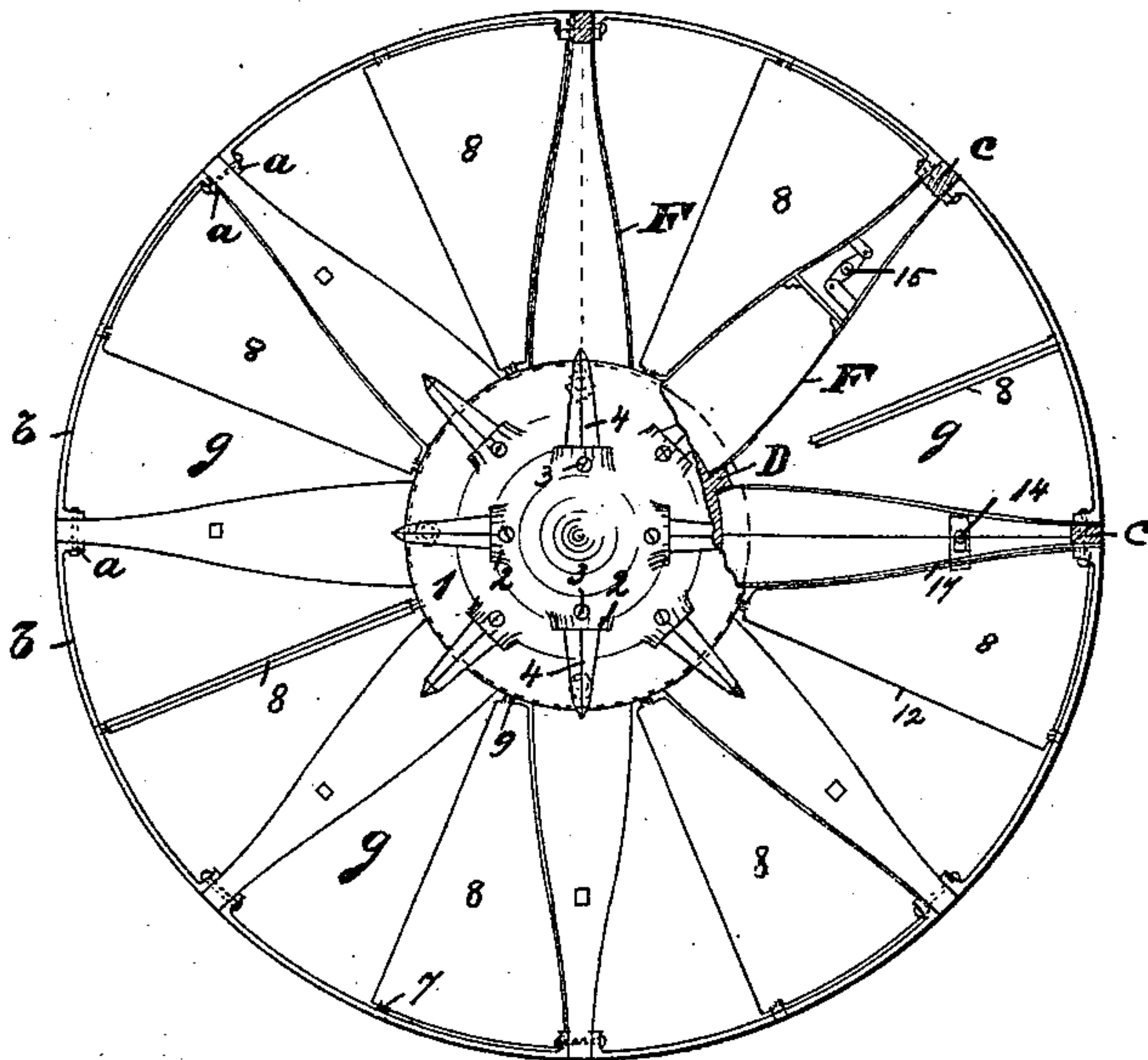
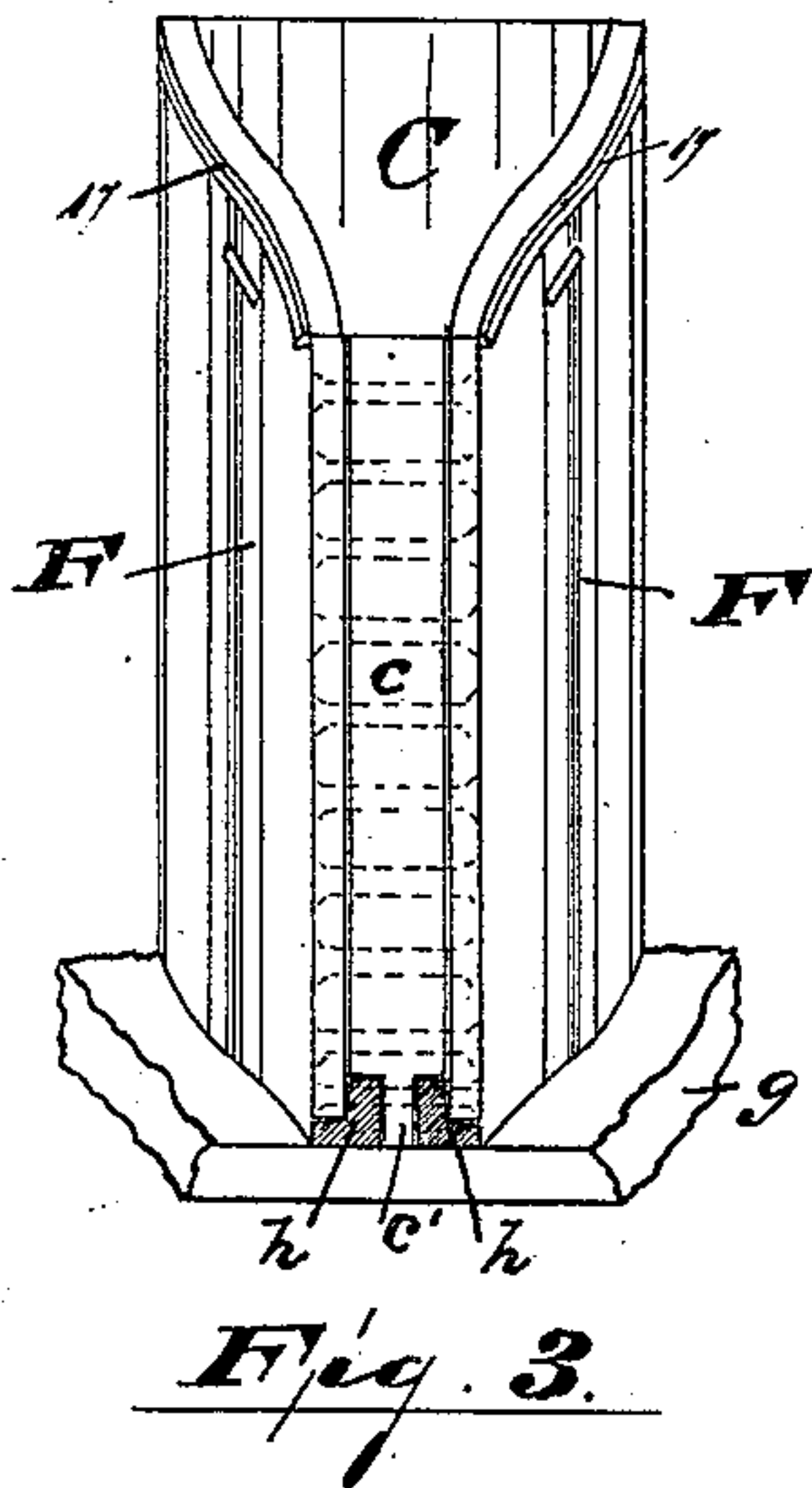


Fig. 1.

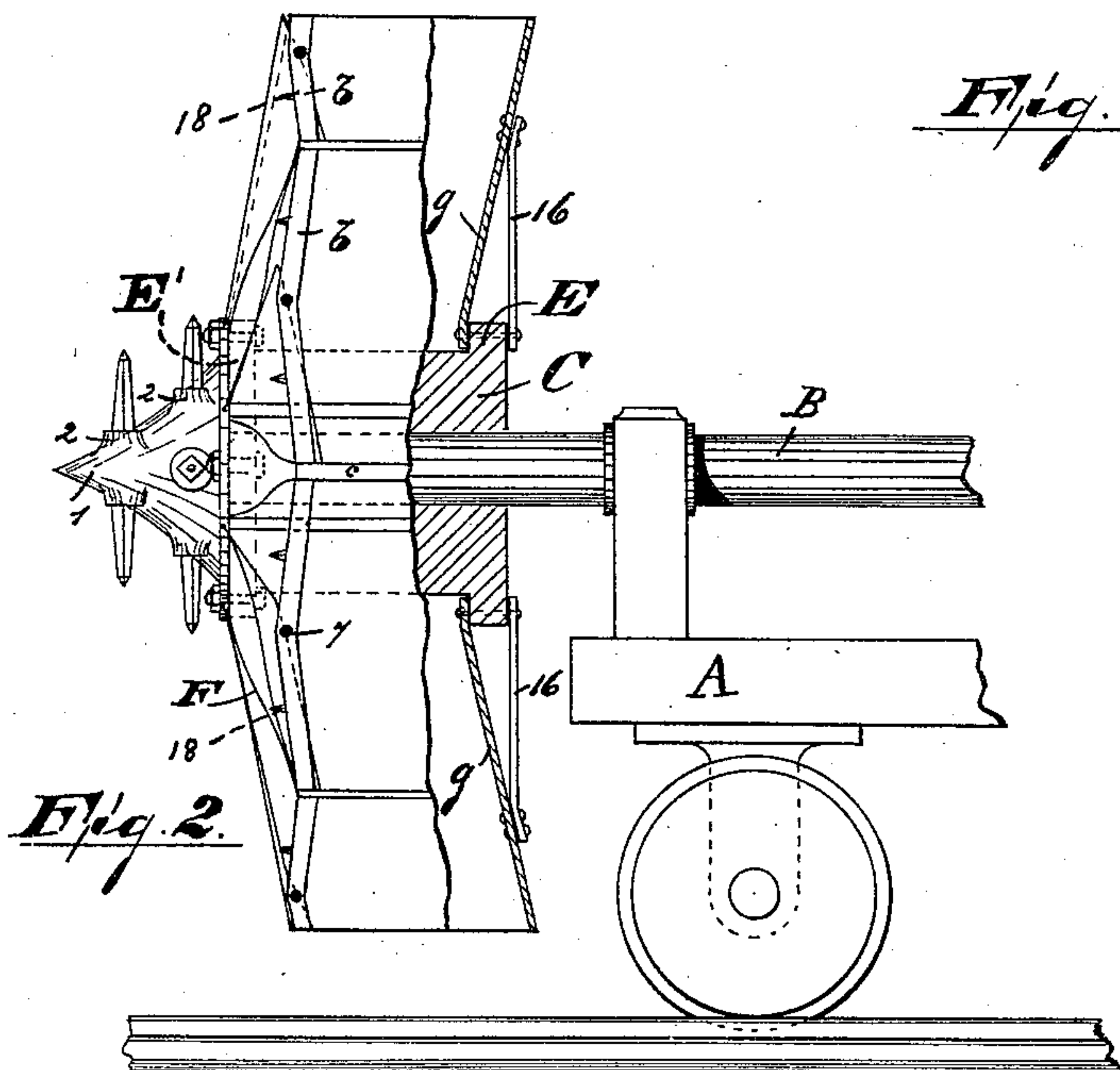


Fig. 2.

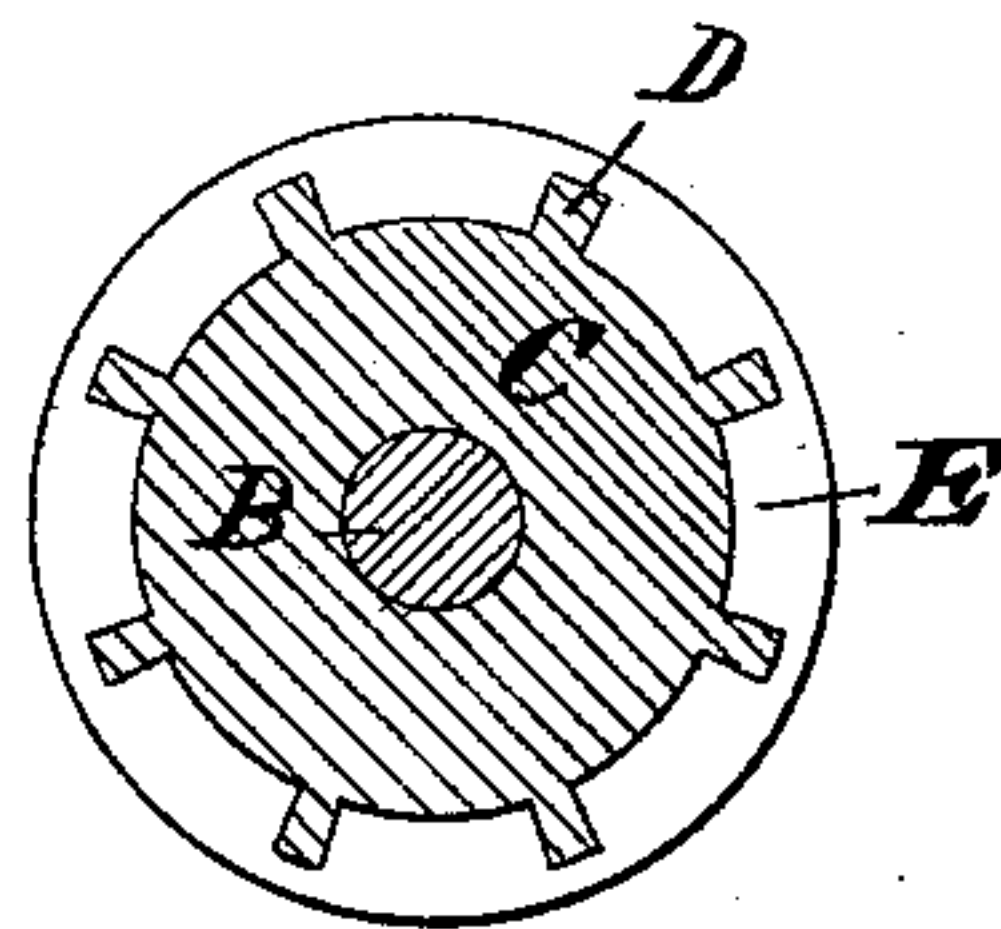


Fig. 4.

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INVENTOR:

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(No Model.)

2 Sheets—Sheet 2.

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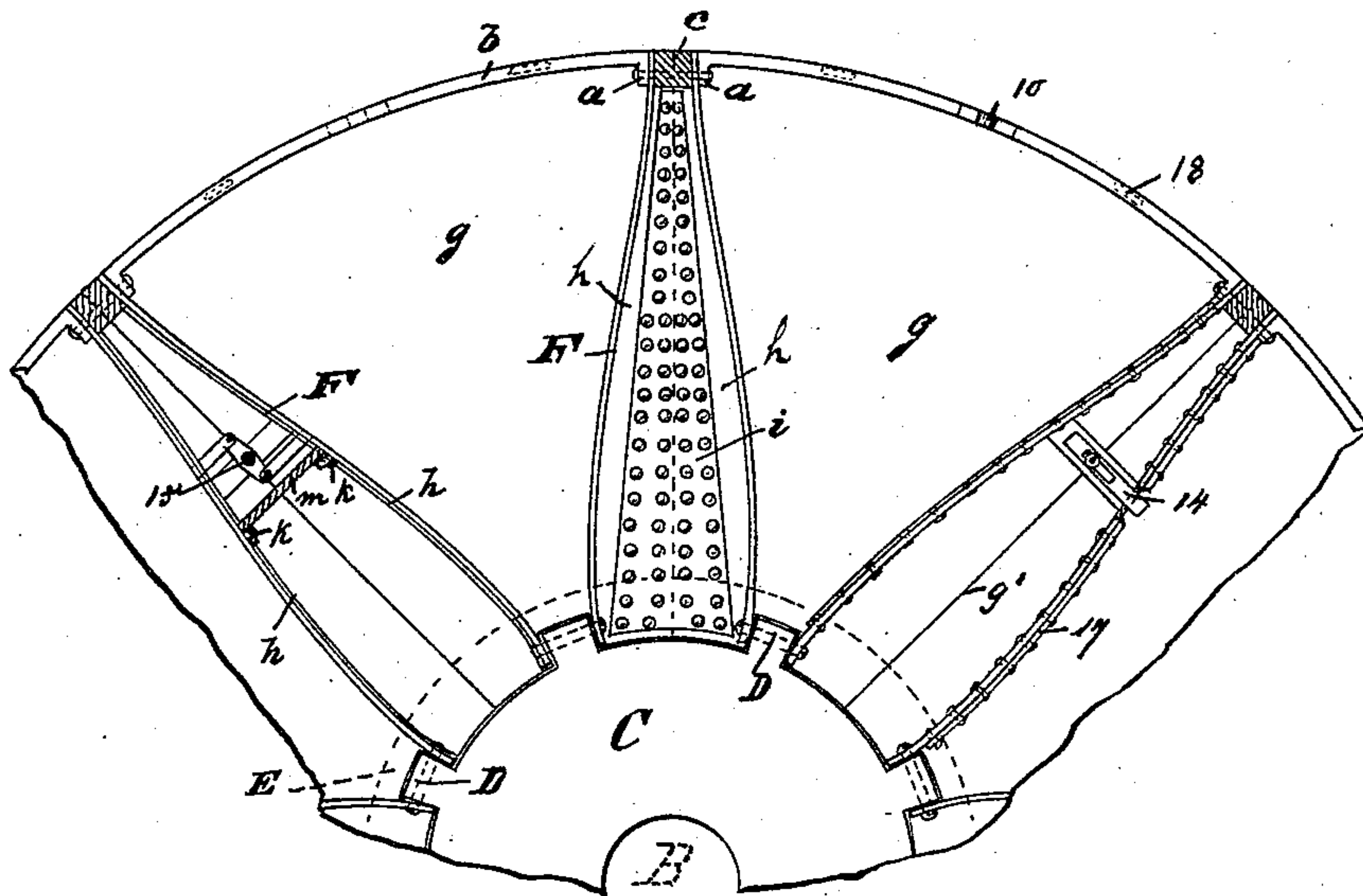


Fig. 5.

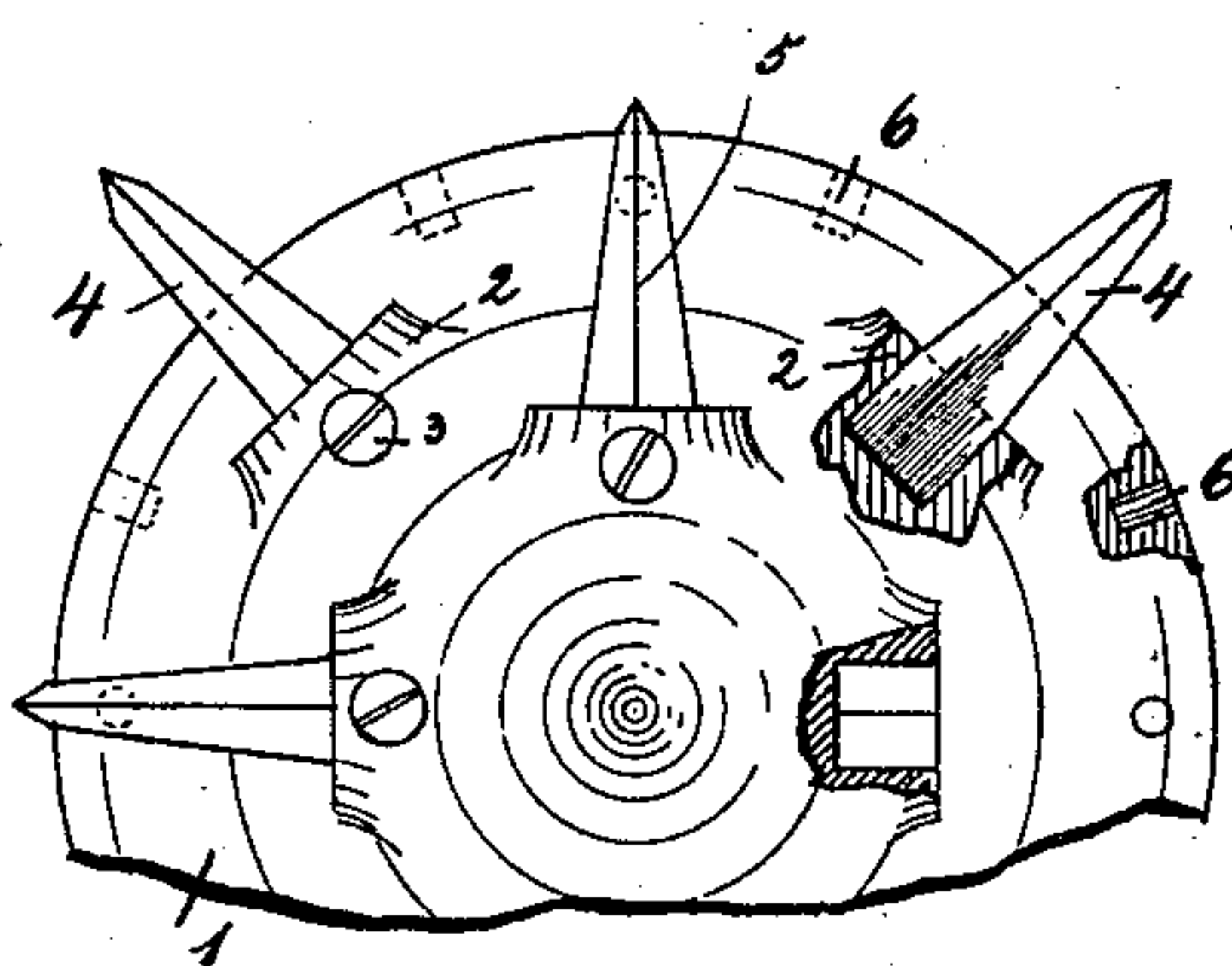


Fig. 6.

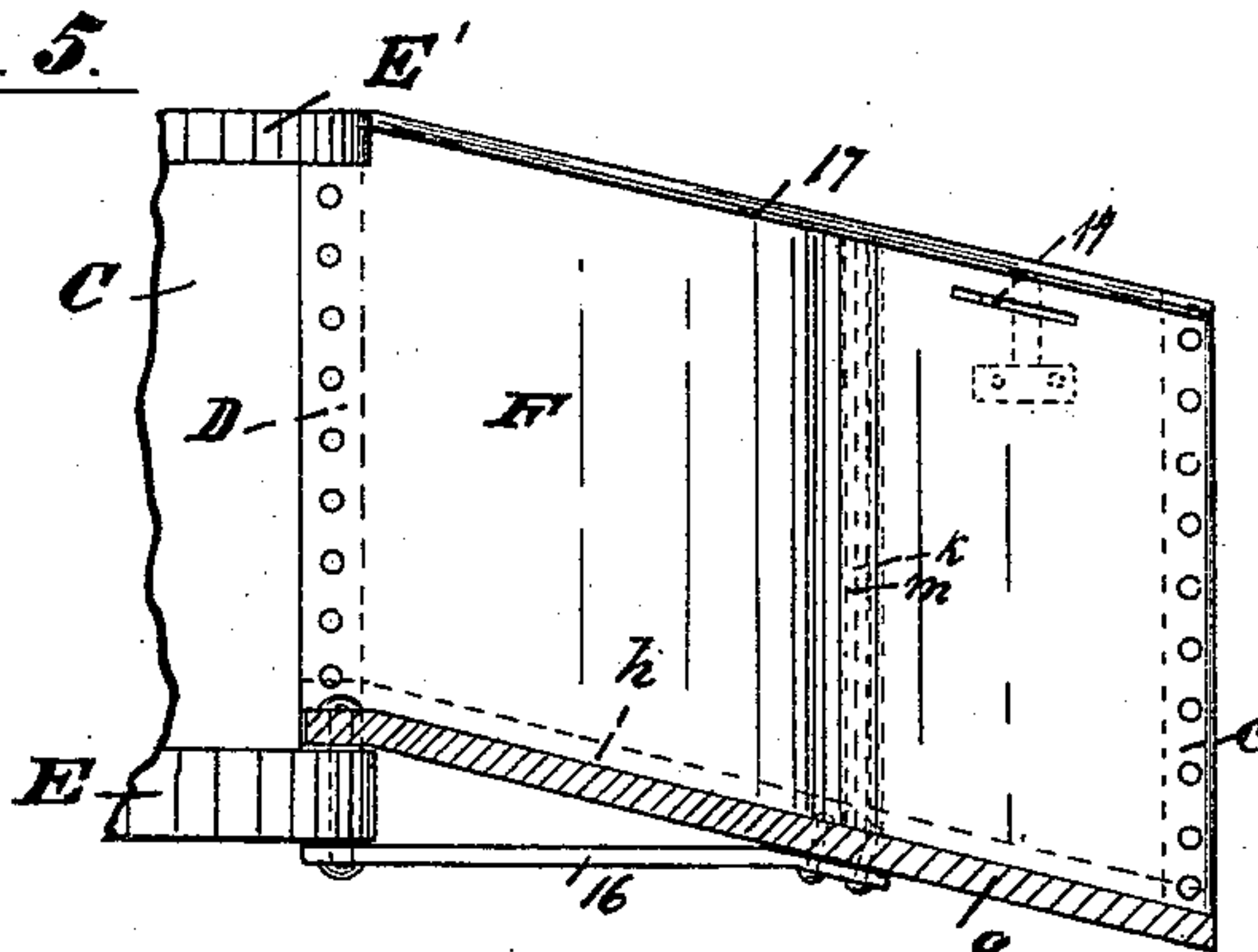


Fig. 7.

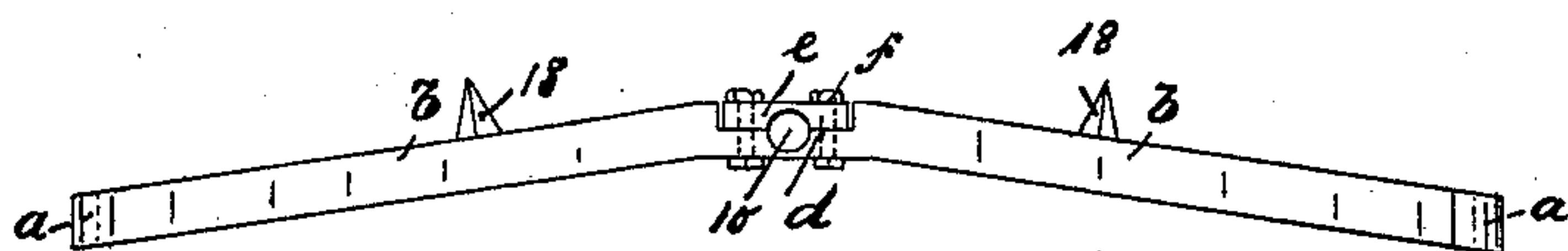


Fig. 8.

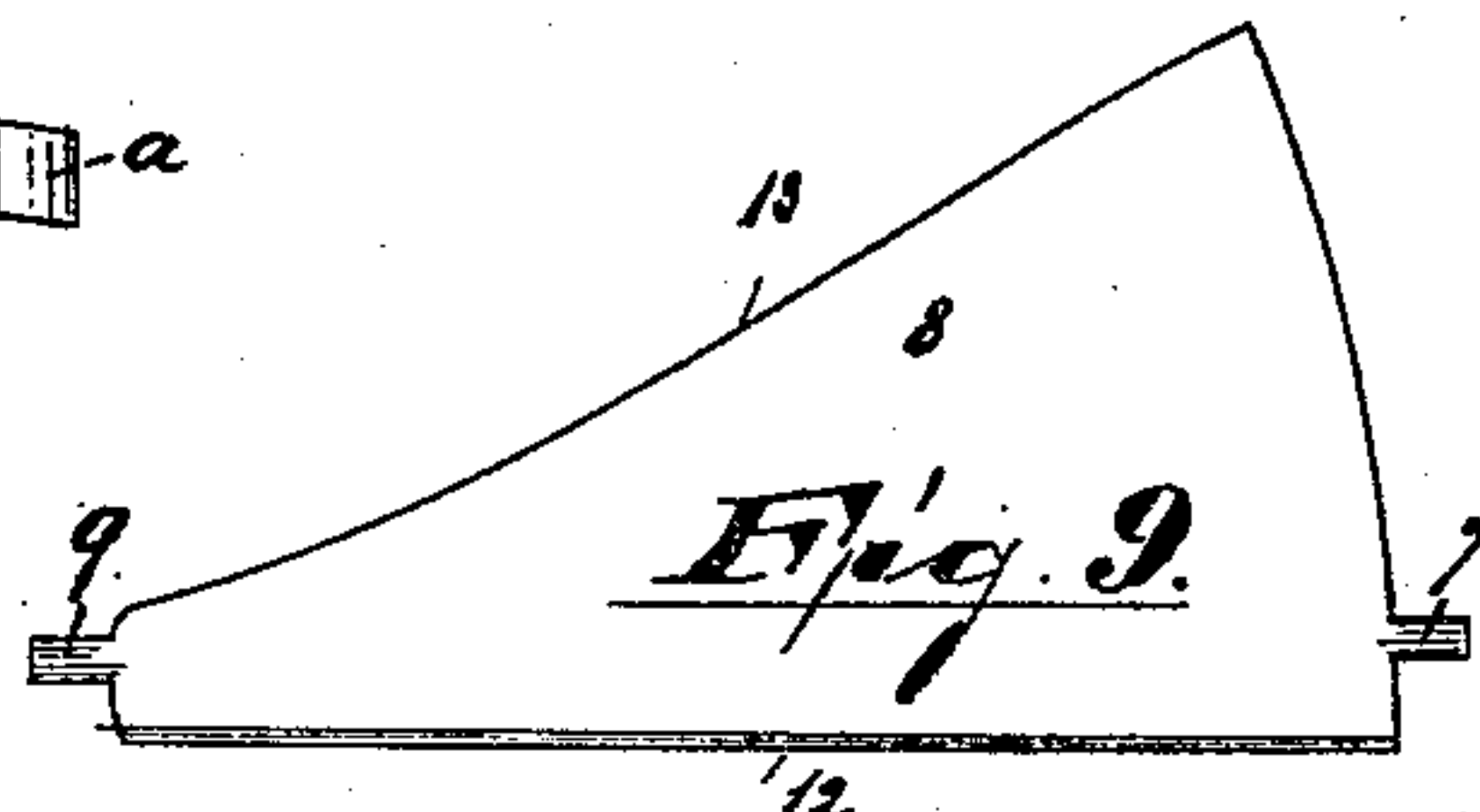


Fig. 9.

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UNITED STATES PATENT OFFICE.

NEIL MCKAY, OF PATERSON, NEW JERSEY, ASSIGNOR TO CHARLES H. OTIS,
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CENTRIFUGAL SNOW-WHEEL.

SPECIFICATION forming part of Letters Patent No. 529,042, dated November 13, 1894.

Application filed February 16, 1891. Serial No. 381,560. (No model.)

To all whom it may concern:

Be it known that I, NEIL MCKAY, a citizen of the United States, residing at 220 Mill street, in the city of Paterson and State of New Jersey, have invented certain new and useful Improvements in Centrifugal Snow-Wheels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters and numerals of reference marked thereon, which form a part of this specification.

This invention relates to that class of snow plows in which the cutting mechanism is revolved or rotated, and the snow disintegrated sufficiently to cause it to be thrown out to either side of the track by centrifugal force.

The object of the invention is to provide a simple, new and improved snow plow, whereby the snow may be quickly and effectually cut and removed from the track in front, to simplify the cutting mechanism, and prevent the cutters or knives from being clogged when in operation.

The invention consists in the novel construction of a chambered drum or wheel; the employment of shears or cutters pivoted in the chambers of said drum and provided with only one cutting edge, and means for securing the cutters in position; and also in the combination and arrangement of the various parts, substantially as will be hereinafter more fully described and pointed out in the claims.

Referring to the accompanying drawings, in which like letters and numerals of reference indicate corresponding parts in each of the several views, Figure 1 is a front view of a snow plow embodying my improvement, portions of the device being shown in section and the cutters being shown in different positions. Fig. 2 is a side view of the same showing the driving shaft and a portion of the car on which it is mounted. Fig. 3 is an end elevation of one of the arms or divisions forming the pockets or chambers of the drum. Fig. 4 is a cross section of the hub on the shaft supporting the plow. Fig. 5 is an enlarged front view of a section of the revolving plow and hub showing details of construction. Fig. 6 is a front

elevation of the head on the front of the hub, a portion being broken away to show the sockets in the lugs. Fig. 7 is an elevation of the inside of one of the arms or divisions of Fig. 5. Fig. 8 is an enlarged top edge view of one of the segmental divisions forming the rim, and Fig. 9 is an enlarged view of one of the shears or cutting knives.

In said drawings A represents a car upon which is mounted in suitable bearings a driving shaft B. Upon the forward end of this shaft is secured in the ordinary manner an elongated hub C provided on its outer periphery with a series of outwardly extending flanges D. The inner end of this hub is provided with an annular shoulder or flange E as shown more clearly in Fig. 4, and on the outer or forward end of the hub is another flange E' shown in dotted lines in Fig. 2 and broken away in Fig. 7.

To the outside surfaces of the flanges D are securely riveted or fastened in any desired manner, outwardly extending plates F. These plates may be straight or curvilinear as shown in Fig. 5, but are so arranged that when secured to the flange, the outer ends of two of the plates shall come nearly together, thus forming an arm or spoke of a wheel as shown in Fig. 5. The outer ends of the plates F, forming an arm or spoke, are securely riveted or fastened respectively to inwardly turned flanges *a* on a segmental section *b*, these segmental sections forming when successively fastened to the arms and connected therewith a sectional ring or band on the outer edge of the plow drum as shown in Fig. 1. The space or opening between the outer ends of the plates F is filled with a rectangular horizontal bar *c* through which pass the rivets securing the plates to the segmental sections *b*, as also the rivets securing the ends of the plates to the bar *c* below the ring or band. This bar *c* at its rear end is made smaller with rectangular shoulders as shown at *c'* Fig. 3, to fit on and between angle irons *h*, *h*, to which it is securely riveted or fastened. The sections *b* are preferably made in the form shown in Fig. 8, the central portion being flattened and slotted and grooved as shown at *d* to receive the pivoted end of a cutter, and an upper bearing *e*, secured thereto by bolts *f*.

The space between the plates forming an arm or spoke can be filled with wood or any other substance when desired. The outer or top edges of the plates F, are sloped or made on a decline and the bottom or base edges are made parallel therewith or nearly so, and the outer edges a little more open or flaring to aid in the clearance of the snow from the pockets as shown in Fig. 7.

Upon the upper or outer surface of the flange or shoulder E of the hub C are secured the inner ends of segmental triangular plates g, the outer corners or ends of said plates being securely fastened or riveted to the under or outer surface of the angle irons h, h, as shown in Fig. 3. The side edges of said plates are flush against each other as shown at g' and are each firmly riveted to an overlying plate i, lying between the angle irons h, h, as shown in Fig. 5. The angle irons h, h, extend from the outer end of the arms F, to the flange on the hub C, and the arms F are securely riveted to these angle irons h, throughout their length. The plates g are also firmly riveted to these angle irons, thus firmly securing the plates and arms together. By this construction and arrangement the back of the drum of the plow is formed of a series of depressed flat triangular surfaces, the apex of the triangle forming the depressed portion around the hub.

Midway between the ends of the contiguous plates F and on the inner surfaces thereof are secured radial angle irons k, k, as shown in Fig. 5, to which is firmly secured a transverse brace or support m.

Upon the front or outer surface of the flange E' on the hub C, is secured in any desired manner a cone-shaped head or point 1, shown in Figs. 1, 2 and 6, provided with recessed lugs or projections 2, extending outward at right angles to the axial line of the shaft. In the recesses in these lugs are rigidly secured by screws or bolts 3, pyramidal pins or breakers 4, tapering to a point at their outer end, and so arranged and secured in their respective recesses that one edge shall form a front radial cutting edge as shown at 5, Fig. 6. This head or cone is machine turned on its base and is secured thereto by bolts or screws passing through the base of the cone or head and flange and preferably between the plates forming the arm or spoke as shown in Fig. 2.

Projecting from the segmental divisions b, and about midway between the center and the ends of the divisions or sections are secured points or breakers 18, similar to those on the head or point and extending outward far enough to form a clearance for the bearing e of said divisions as shown in Figs. 2 and 8.

In the outer periphery of the base of the head or cone 1 are recesses or slots 6, in each of which rests and rotates a pin or pivot 9, on the small end of a triangular shaped cutter or shearer 8, shown in Fig. 9, the pivot 7

on the other end of the cutter being inserted in and adapted to revolve or rotate in slot 10, in one of the segmental sections v. The cutting edge of this cutter is on line 12 as shown in Fig. 9.

Upon the outer or top side of each of the plates F are secured longitudinal lugs 17 on a line parallel with the front edge thereof and nearly flush therewith, and against the under side of which the edge 13, of the cutter is adapted to rest and be held firmly in position according to the direction the plow is revolved. This cutter 8, is held in position against the lug 17, by a slide bolt 14, or when preferred by a lever operating device as shown at 15, Fig. 1.

To the rear of the flange E on hub C is secured one end of supporting rods or braces 16, the other end being secured to the rear wall or back of the plow as shown in Fig. 2.

In operating my improved plow the cutters are first all arranged so that the body of the cutter shall be at the rear of the cutting edge as the shaft revolves, and they are then secured in that position by means of the locking bolts. As the plow revolves and is advanced, the pins or breakers on the cone or head first make an opening in the snow, and as the plow advances, the stationary cutters will shear or cut the snow, and, as fast as cut, the snow will fall under or back of the cutter into the pocket and be driven out therefrom by centrifugal force.

The advantages gained by constructing snow plows according to the manner herein described, are that they are simple in construction, easily put together, and any broken or injured part easily and quickly replaced, and on account of the peculiar and novel construction and arrangement of the various parts, great strength is obtained and the resisting power increased.

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

1. In a snow plow, a revolving wheel provided with a series of cutting blades pivoted thereto on the line of their cutting edge and contiguous thereto substantially as described and set forth.

2. In a revolving snow plow the combination of a driving shaft, a hub secured to said shaft, lugs on said hub, radial arms secured to said lugs, and a series of flat triangular plates secured to said radial arms and hub, substantially as described and set forth.

3. In a revolving snow plow the combination with a revolving wheel, provided with a central hub, and radial arms, of a series of segmental strips forming a segmental band, and adapted to connect the outer ends of said radial arms together substantially as described and set forth.

4. In a revolving snow plow the combination with a revolving wheel provided with a central hub, and radial arms secured to said hub, of a series of segmental strips forming

a circular band connecting the outer ends of said radial arms, and a series of cutters pivoted to said band and said hub on the line of their cutting edge, substantially as described and set forth.

5. In a revolving snow plow, a cutter locking mechanism combining therein a cutter pivoted to the plow wheel, lugs secured to the arms against which the rear of the cutter rests, and a reciprocating bolt or slide attached to the arm, and adapted to hold and secure the rear of the cutter to said lug, substantially as described and for the purposes set forth.

6. In a revolving snow plow the combination with the segmental sections of a band connecting the ends of the arms, of pointed break-

ers 18, secured to said segmental sections and projecting therefrom substantially as described and for the purposes set forth.

7. In a revolving snow plow the combination with the chambered drum and the shaft provided with a hub to which said drum is secured, of supporting braces 16, secured at one end to said hub, and at the other end to the rear of said drum substantially as described and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 23d day of January, 1891.

NEIL MCKAY.

Witnesses:

R. E. VAN HOVENBERG,
E. L. SHERMAN.