

No. 792,344.

PATENTED JUNE 13, 1905.

J. W. T. OLÂN.
PROSPECTOR'S DRILL.
APPLICATION FILED JULY 23, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

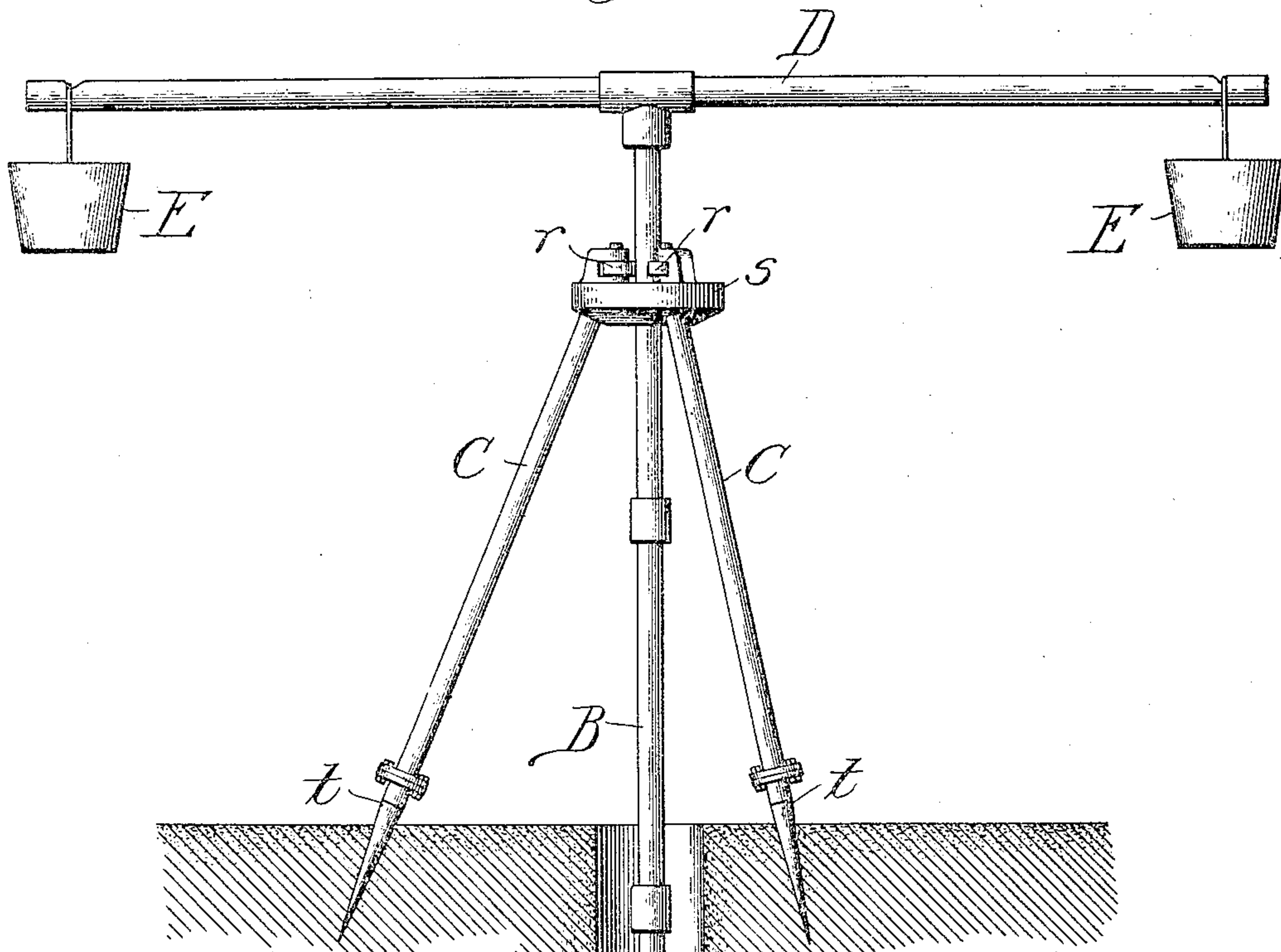


Fig. 2.

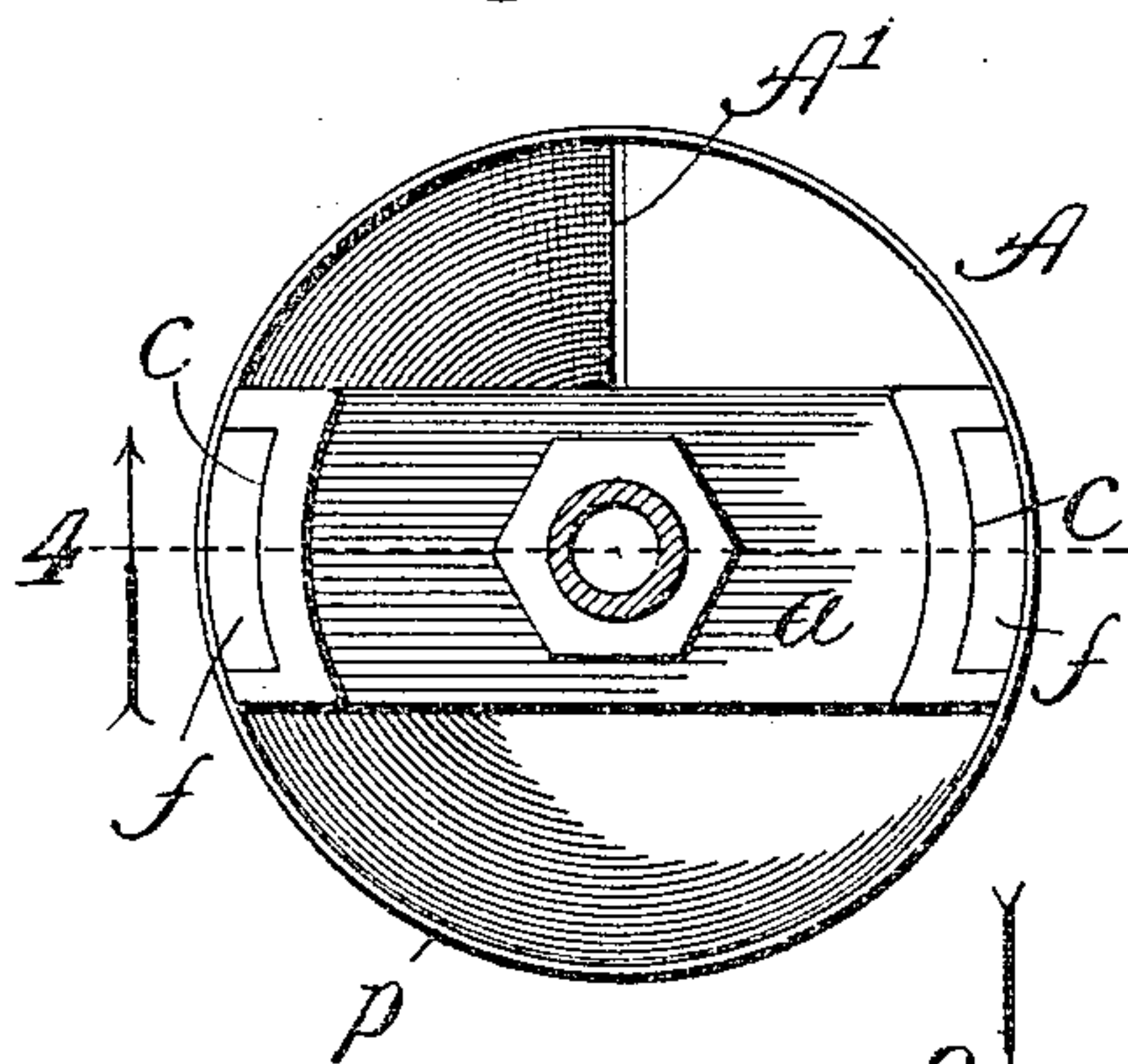
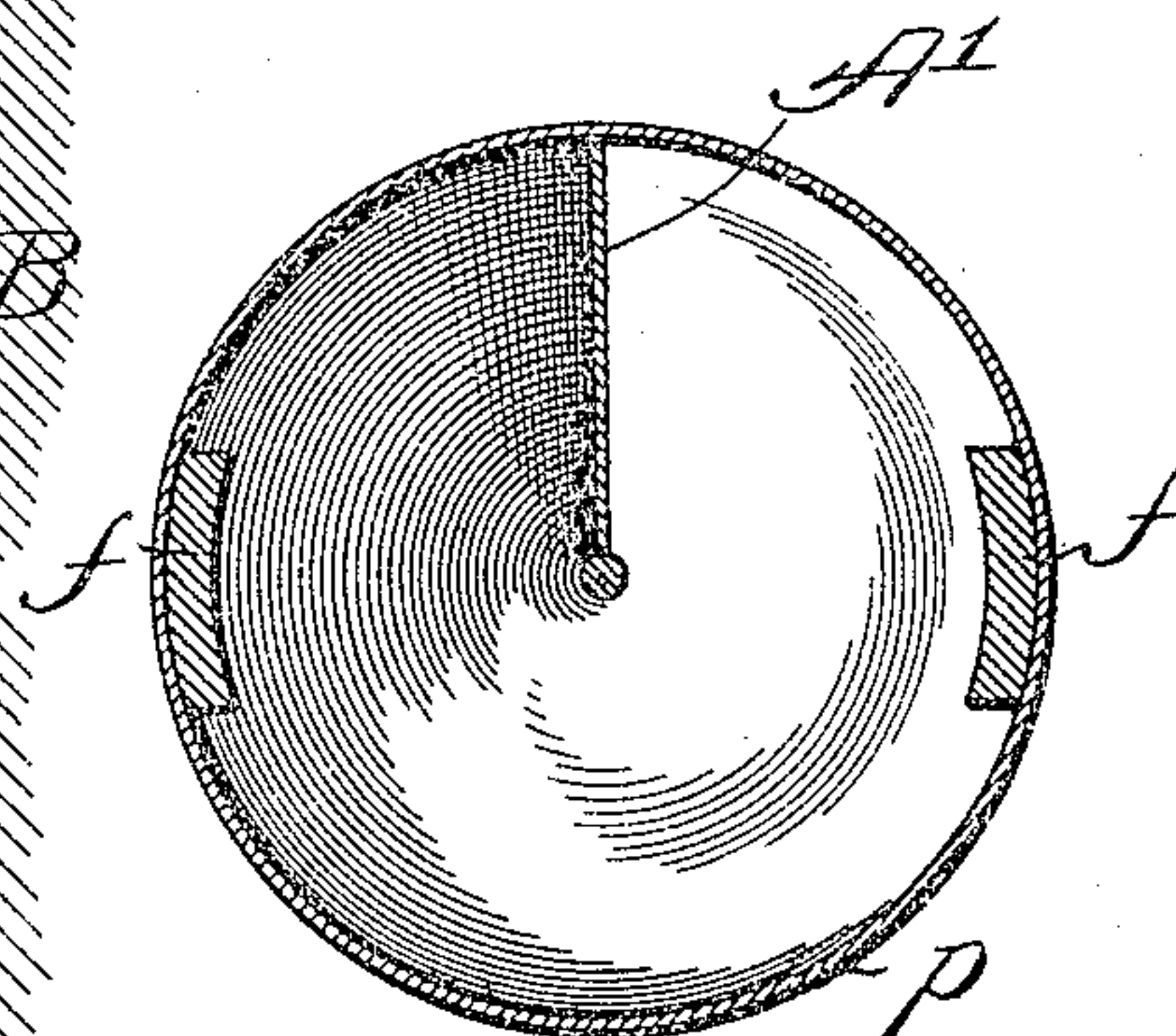


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

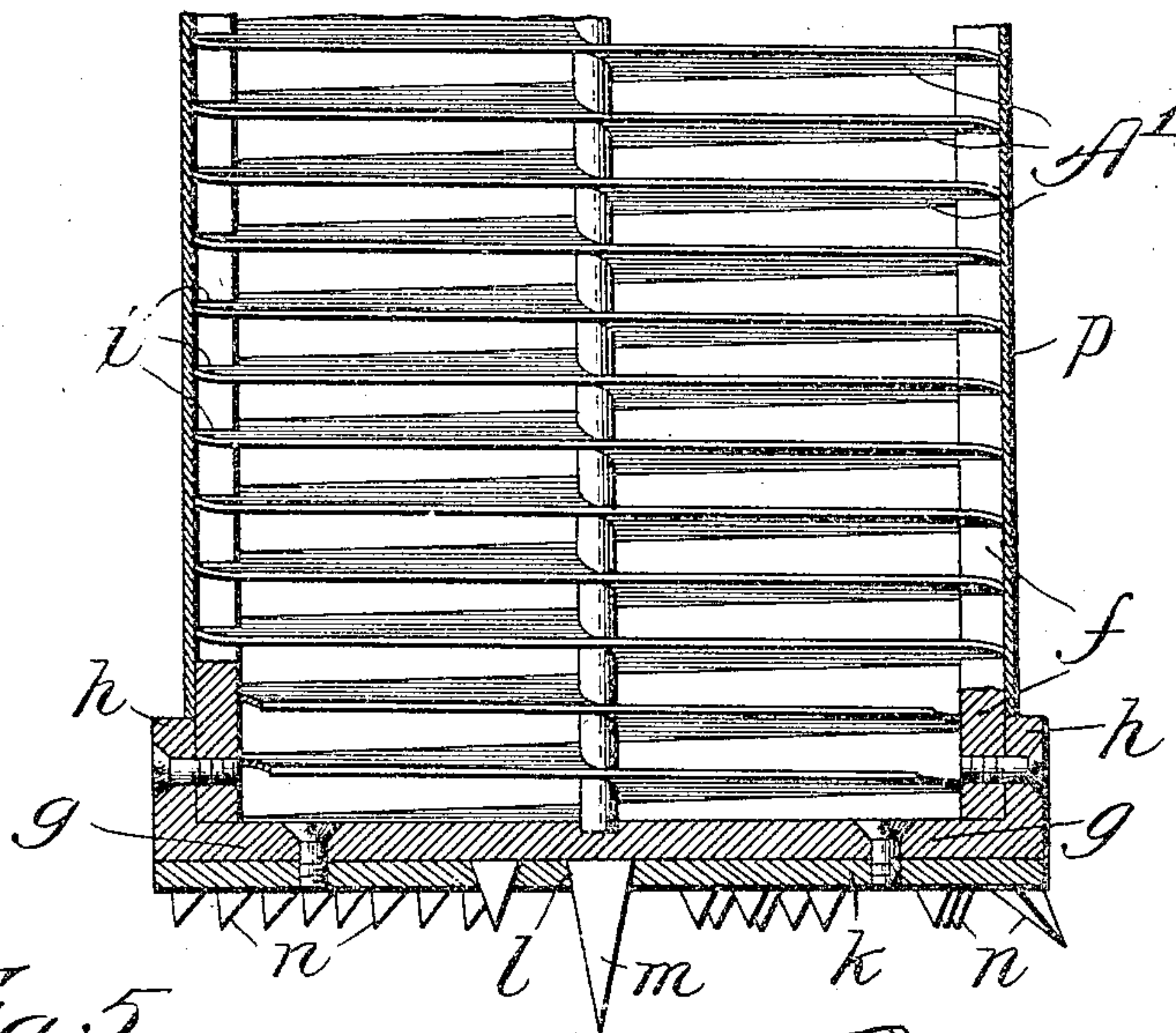
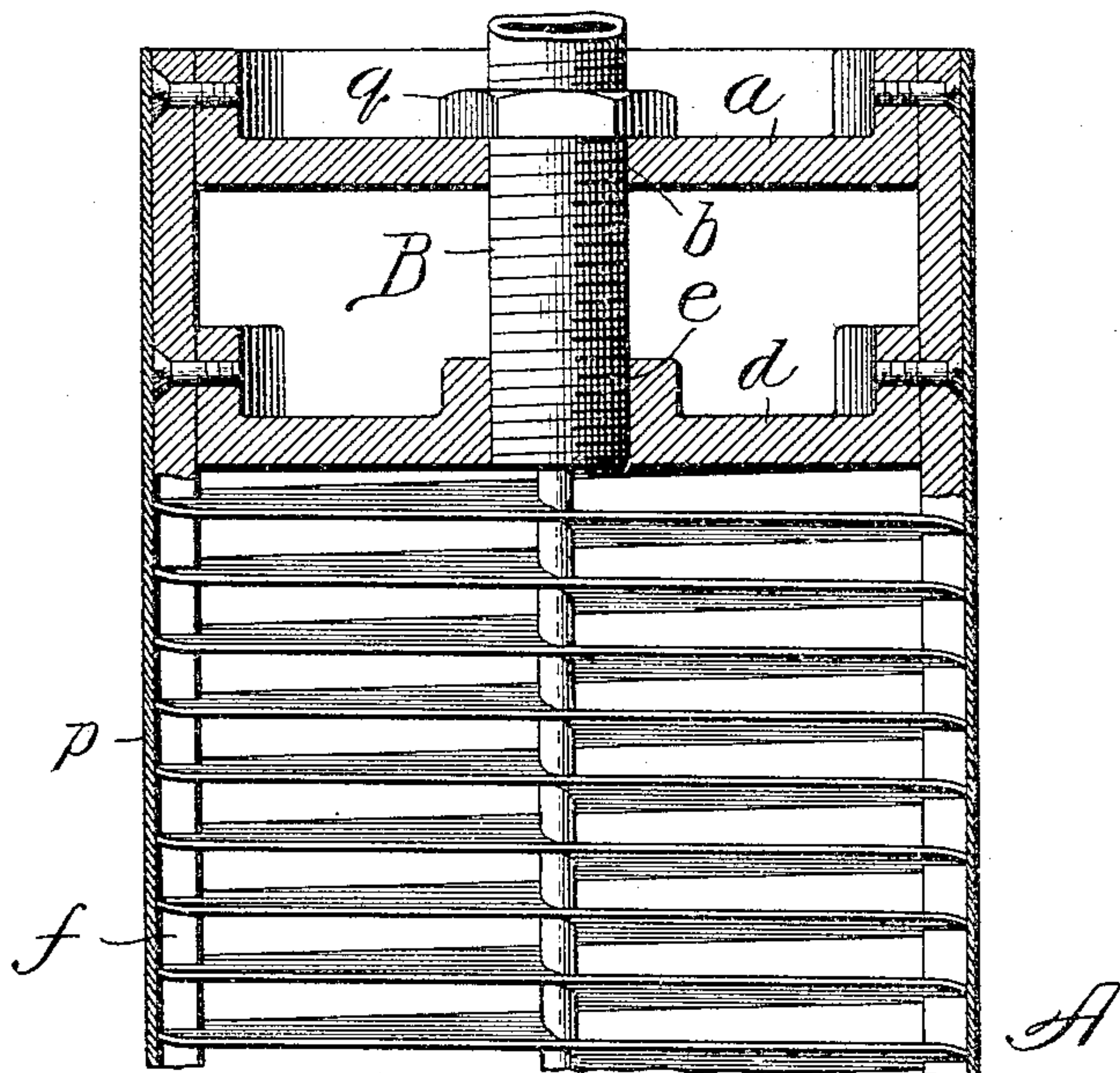
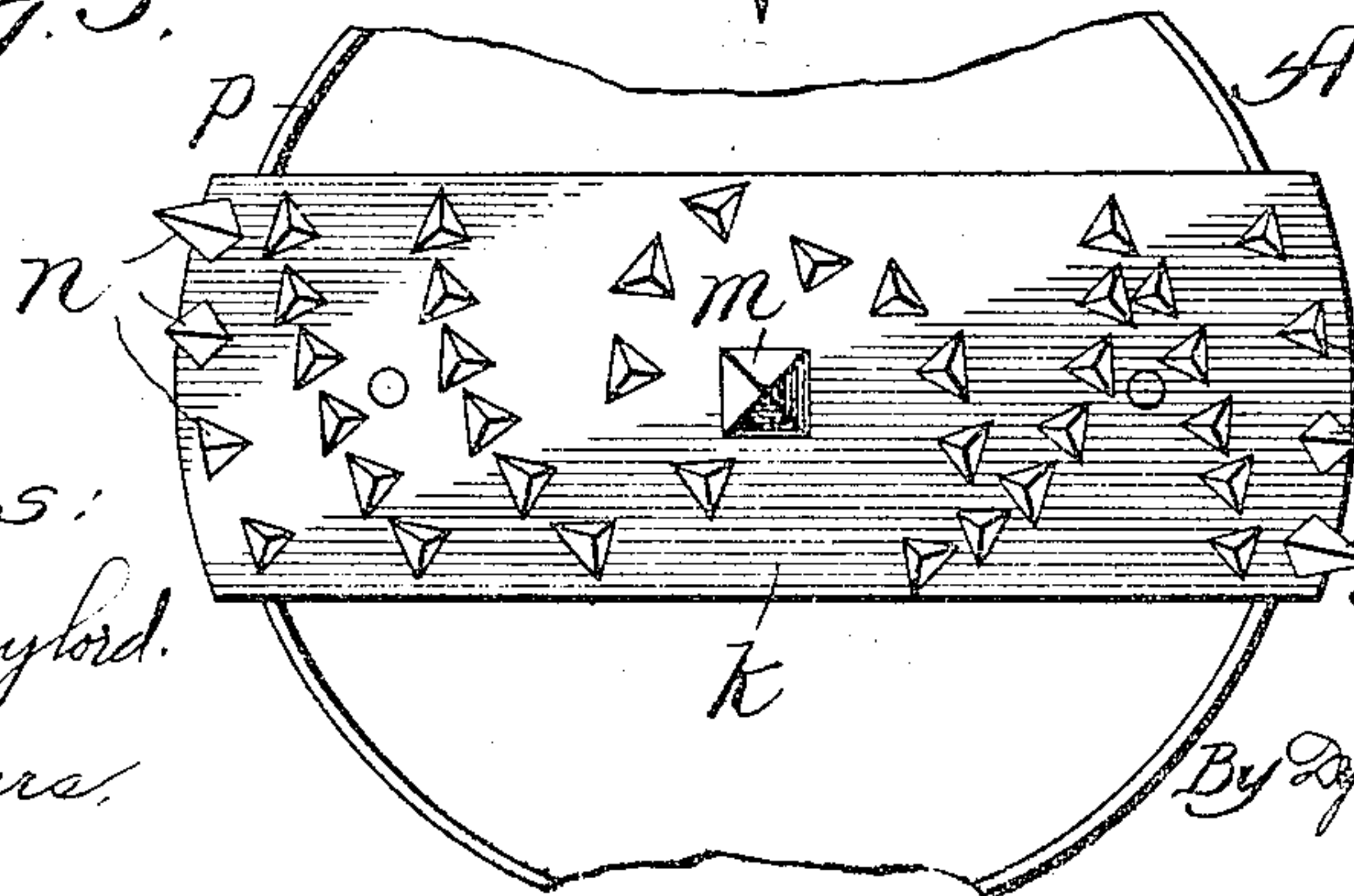


Fig. 5.



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UNITED STATES PATENT OFFICE.

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PROSPECTOR'S DRILL.

SPECIFICATION forming part of Letters Patent No. 792,344, dated June 13, 1905.

Application filed July 23, 1904. Serial No. 217,812.

To all whom it may concern:

Be it known that I, JOHAN W. TH. OLÁN, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented a new and useful Improvement in Prospectors' Drills, of which the following is a specification.

My object is to provide a portable drill or drilling apparatus of generally improved construction adapted for convenient use, more especially for prospecting purposes in frozen ground or in localities where water is not readily obtainable or its use desirable.

The accompanying drawings show my improvements in one desirable form.

Figure 1 is a broken sectional view showing my improved drill device in operative position; Figs. 2 and 3, enlarged plan sections of the device, taken, respectively, on lines 2 and 3 in Fig. 1; Fig. 4, an enlarged broken section taken on line 4 in Fig. 1, and Fig. 5 an enlarged broken bottom plan view of the drill.

A is a hollow drill-head having a frame portion formed of an upper cross-plate *a*, having a central opening *b* through it and flanged ends provided with sockets *c*, a plate *d* beneath and similar to the plate *a*, having flanged and socketed ends and a central threaded opening *e*, oppositely-disposed bars *f f*, segmental in cross-section and fastened, as by the screws shown, in the sockets of the plates *a d*, and a lower cross-plate *g*, having flanged ends *h*, receiving and fastened, as by the screws shown, to the lower ends of the bars *f* to only partly close the lower open end of the drill-head. Confined between the plates *d g* is a screw *A'* with a wide blade of comparatively gentle pitch and of a diameter equal to or approximately equal to that of the arc described by the outer surfaces of the bars *f*. The screw center or core may be comparatively slender, and in the edges of the blade are coincident notches *i*, of a size to receive the bars *f f*. Fitting against and removably fastened, as by the screws shown, to the under face of the plate *g* is a plate *k*, provided with a plurality of preferably angular tapering cutter-point-receiving holes.

A central hole *l*, larger than the others, is

fitted with a comparatively long and preferably four-sided drill-point *m*, which may be of chrome-steel or other suitable hard material. The other holes are of smaller size than the central hole *l* and are adapted to receive and hold, preferably, three-sided cutter-points. The cutter-points I prefer to employ are artificially-formed crystals produced in a manner discovered by me. It will suffice to say in the present connection that they are harder than quartz, can be readily provided of any size or shape desired, and are admirably suited for my purpose both with regard to cost of production and durability. The cutter-points are so disposed with relation to each other that in the turning of the drill-head they will cut concentric overlapping furrows. Thus the entire surface of the base of the hole that is being drilled will be acted upon by the points in each revolution thereof to thoroughly comminute the material to be excavated. The outermost points *n* are set at an angle to the perpendicular and are of greater length than the other cutter-points to extend well beyond the rounded ends of the cutter-point holder formed by the plates *k g* to insure the drilling of a hole of sufficiently-greater diameter than the drill-head to permit the ready withdrawal thereof. The apparently arbitrary arrangement of the points (shown in Fig. 5) is well suited for my purpose. All the points fit removably through the holes in the plate *k* and are held in place thereby against the plate *g*.

Fitting with desired looseness around the screw and bars is a cylinder *p*, which rests at its lower end normally against the shoulders formed by the flanges *h*. The cylinder when in place thus forms the outer wall of the screw-containing chamber of the hollow drill-head.

Passing through the opening *b* and screwed into the threaded opening *e* is one section of a gas-pipe *B*, locked in place by a jam-nut *q*, which bears against the plate *a*. The pipe *B* forms, in effect, the drill-head-operating rod and passes upward between antifriction-wheels *r*, journaled in a bearing-head *s* on a tripod or supporting-frame *C*. Fastened to the top of the rod or pipe *B* is a comparatively long rod or handle *D*, arranged at its ends to

carry removable buckets E, which may be filled with gravel or the like to give them the desired weight.

In operation the drill is turned by means of the handle D, causing the drill-point *m* and cutter-points to pierce, cut, and disintegrate the material being drilled and produce on account of the outward-inclined points *n* a hole of greater diameter than the drill-head, as stated. As the drill-head descends the comminuted material enters the lower part of the drill-head chamber and is gradually raised therein by the turning of the screw A'. A single drilling operation may progress until the chamber is filled. When this is done, the buckets are lifted from the handle and the drill-head is raised to the surface, the screw holding the material in the chamber while the head is being raised. The cylinder *p*, which, as shown, is not fastened to the head, but merely surrounds the frame thereof, is then slid upward on the head to open the chamber at all sides and permit the material to be readily emptied therefrom. When the cylinder *p* is replaced, the drill is ready for another operation.

The pipe-sections are detachably connected together by couplings, and from time to time other pipe-sections may be added as required.

As it is necessary that the frame or tripod C shall remain firmly in one position during the drilling operation, I provide the legs thereof with detachable driving-points *t*, with means for fastening the legs thereto. This construction is adapted more especially for use on frozen ground. The points may be detached from the legs, driven into the ground in proper positions, and then the legs secured thereto, as by the bolts indicated.

My improved drill may be readily operated without water, which is always necessary in annular or core drilling, the parts may be disconnected from each other to render them readily portable, and altogether the device is well adapted for general use, particularly in prospecting.

While I prefer to construct my improvements throughout as shown and described, they may be variously modified in the matter of details of construction without departing

from the spirit of my invention as defined by the claims.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a drilling device of the nature described, the combination of a hollow cylindrical drill-head open at its lower end, a cutter-point holder extending across and partly closing the lower end of said head, a plurality of cutter-points fastened in said holder, a comminuted-material-lifting screw in said head, and means for operating the head.

2. In a drilling device of the nature described, the combination of a hollow cylindrical drill-head open at its lower end, a cutter-point holder extending across and partly closing the lower end of said head, a plurality of cutter-points fastened in said holder disposed, with relation to each other, to cut against the entire surface of the base of the hole being drilled, a comminuted-material-lifting screw in said head, and means for operating the head.

3. In a drilling device of the nature described, the combination of a hollow cylindrical drill-head forming a chamber open at its lower end, a cutter-point holder extending across and partly closing the lower end of said head, a plurality of cutter-points fastened in said holder, a comminuted-material-lifting screw in said head, a readily-removable wall on the head surrounding the chamber portion thereof, and means for operating the head.

4. In a drilling device of the nature described, the combination of a hollow cylindrical drill-head open at its lower end, a cutter-point holder extending across and partly closing the lower end of said head, a plurality of cutter-points fastened in said holder, a comminuted-material-lifting screw in said head, an operating-rod connected with said head, a frame, a bearing on said frame through which the rod passes, and means for steadying said frame comprising driving-points to which the legs of the frame are detachably secured.

JOHAN W. TH. OLÁN.

In presence of—

W. B. DAVIES,
M. S. MACKENZIE.