

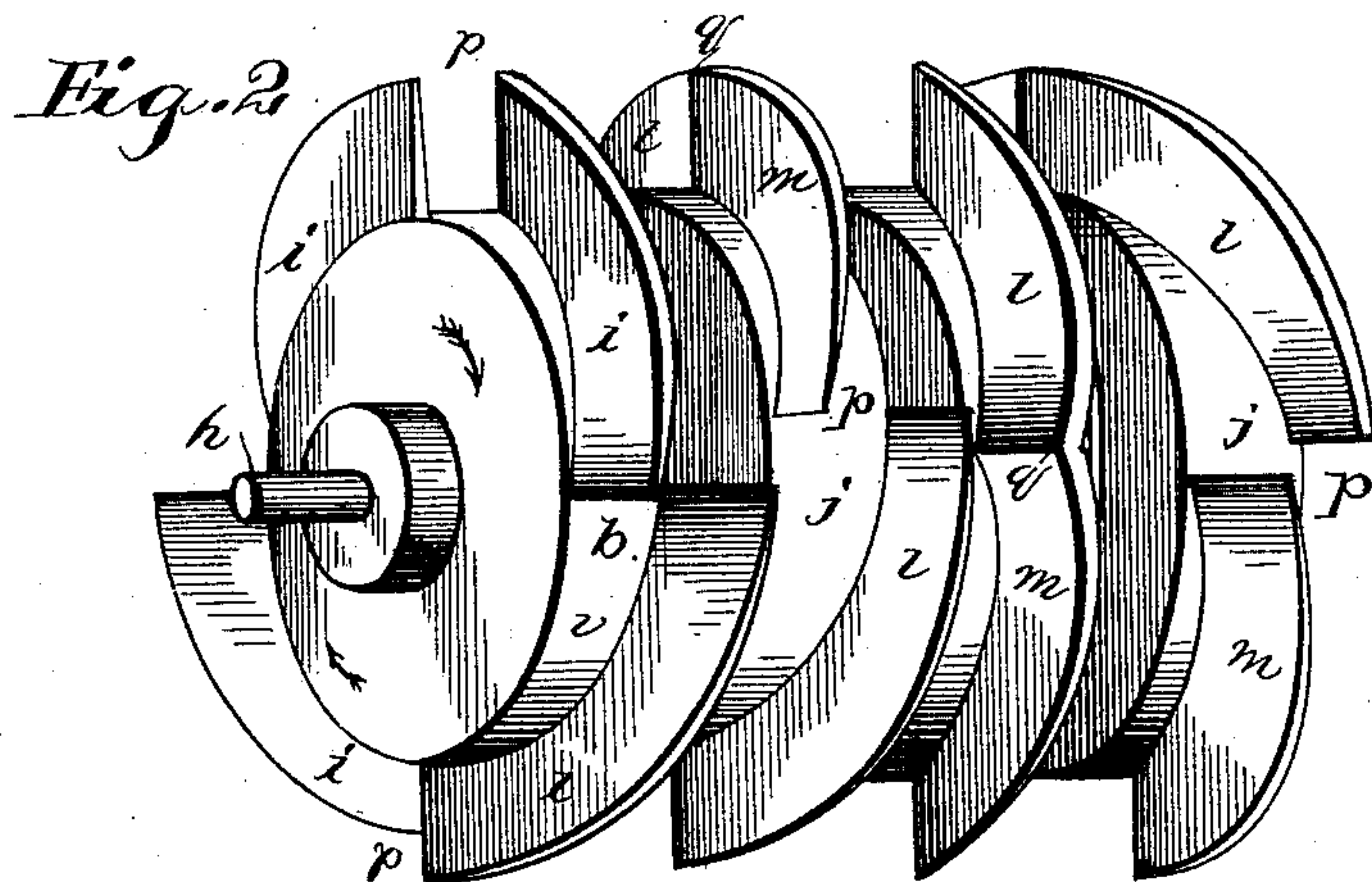
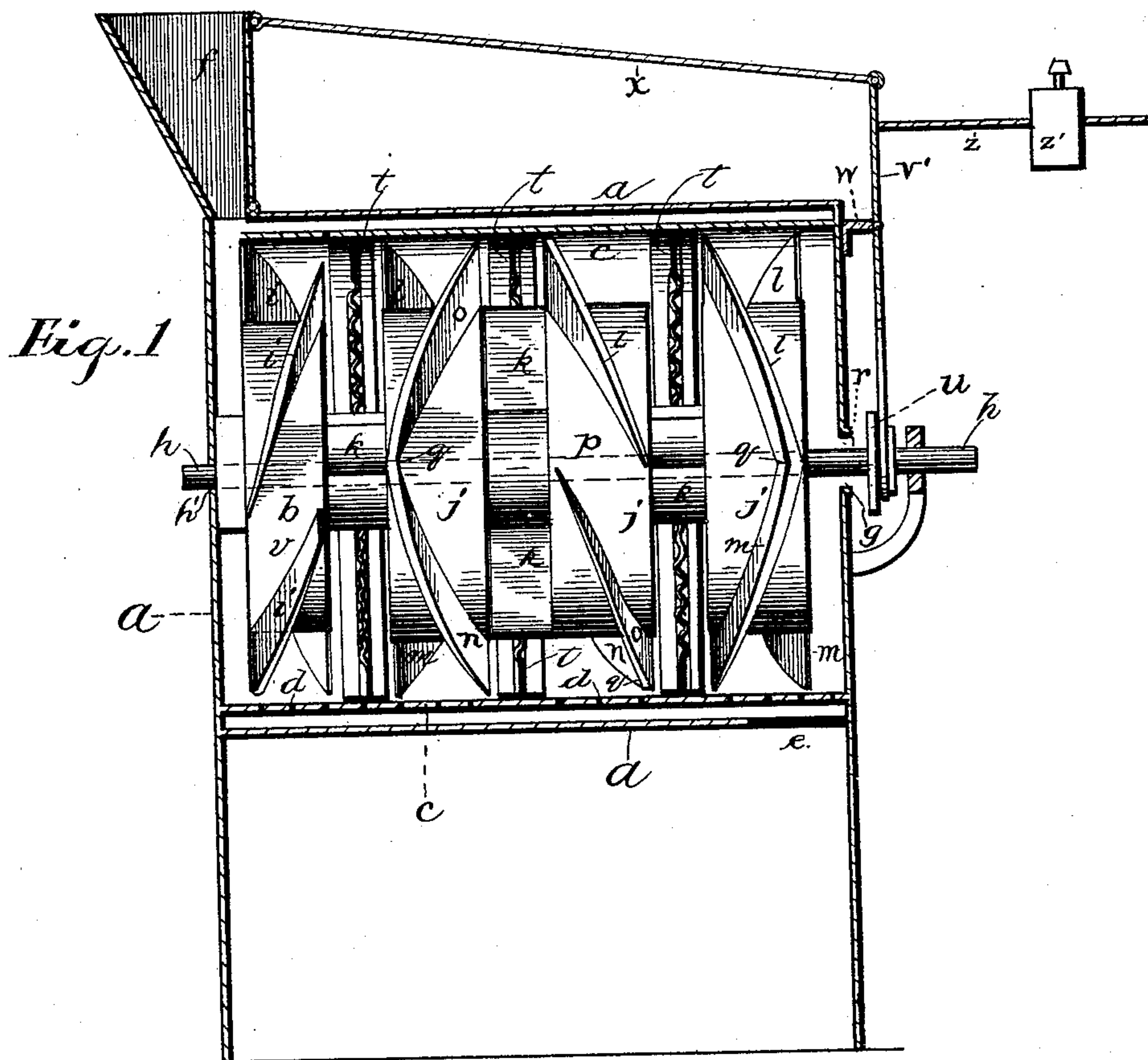
(No Model.)

2 Sheets—Sheet 1.

A. C. BRANTINGHAM.
GRAIN SCOURER.

No. 452,434.

Patented May 19, 1891.



Witnesses

W. C. Burdick
J. E. Davis

Inventor

Allen C. Brantingham
per *C. S. Chesney*
his Attorney.

(No Model.)

2 Sheets—Sheet 2.

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Fig 3

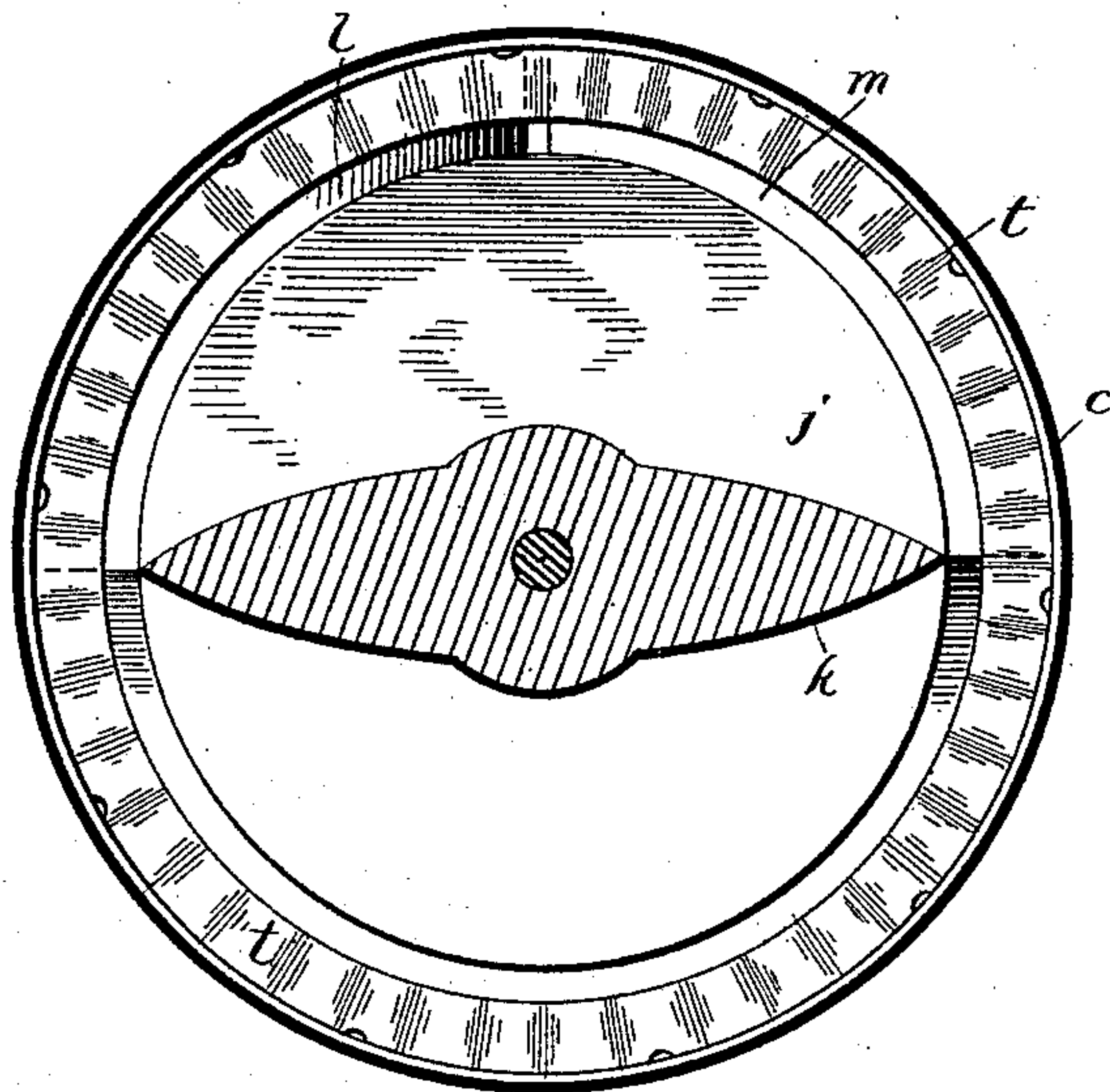
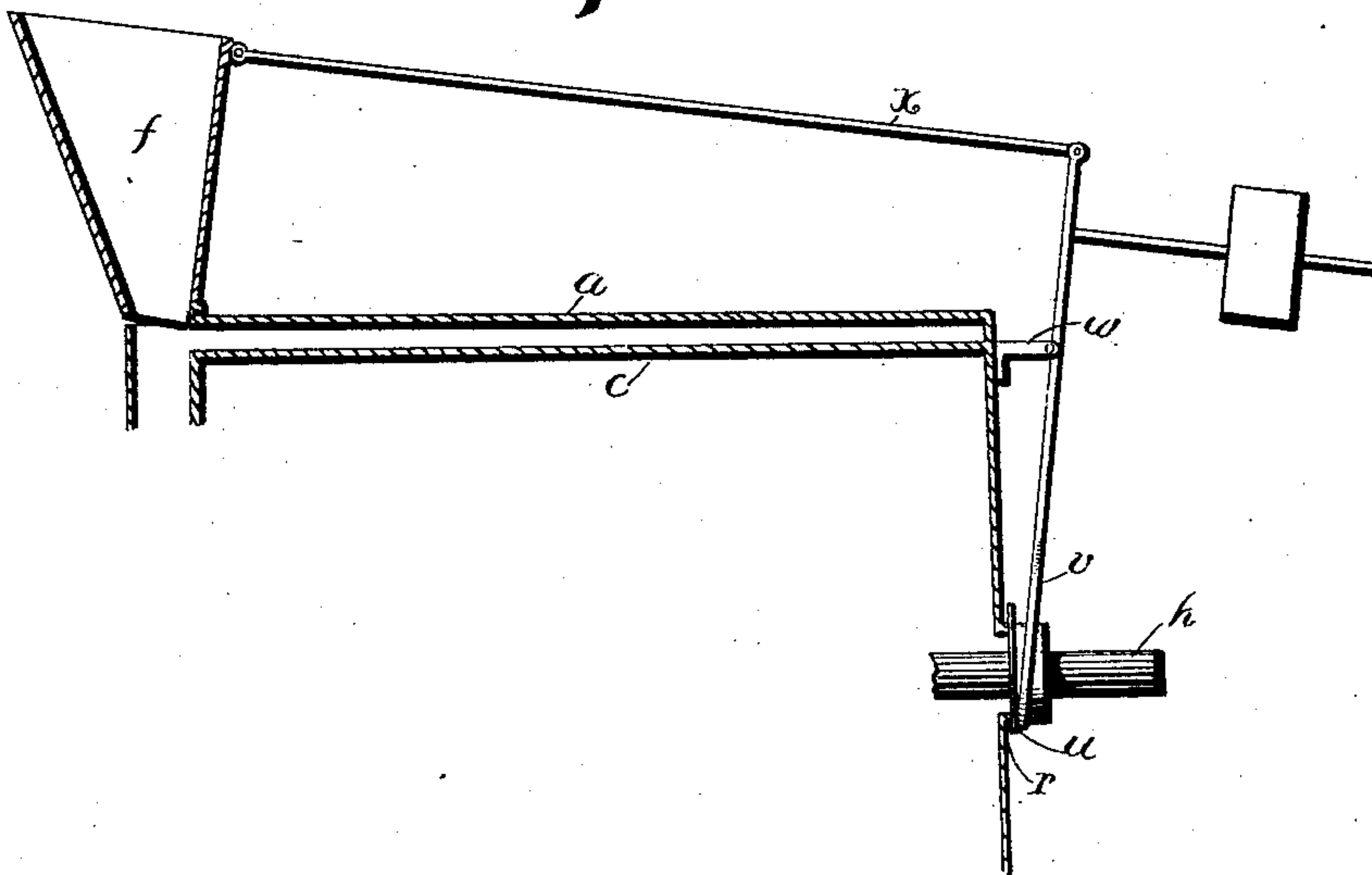


Fig 4



Witnesses
C. C. Burdine
Geo. S. Wheelock

Inventor
A. C. Brantingham
per *C. S. Chesney*
his Attorney.

UNITED STATES PATENT OFFICE.

ALLEN C. BRANTINGHAM, OF WINFIELD, KANSAS.

GRAIN-SCOURER.

SPECIFICATION forming part of Letters Patent No. 452,434, dated May 19, 1891.

Application filed April 16, 1890. Serial No. 348,172. (No model.)

To all whom it may concern:

Be it known that I, ALLEN C. BRANTINGHAM, a citizen of the United States, residing at Winfield, in the county of Cowley and State of Kansas, have invented certain new and useful Improvements in Grain-Scourers; and I do 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 the letters of reference marked thereon, which form a part of this specification.

My invention relates to that class of grain-scourers in which a screw and several flights are employed to move the grain from one end of a cylinder to the other, whereby a grinding and polishing action is effected.

The object sought to be accomplished is to scour the grain to loosen the hull and cuticle in a more thorough and effective manner than has hitherto been done; and with this end in view my invention consists in the peculiar features and combinations of parts more fully described hereinafter, and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a vertical section through my device; Fig. 2, a detail view of the revolving screw and flights; Fig. 3, a cross-section taken on line *x x* of Fig. 1, and Fig. 4 a detail view illustrating the action of the automatic hopper and valve.

The letter *a* represents the main casing, in which the revolving screw and flights are mounted and operate. These are surrounded by a screen *c*, consisting of a sheet-metal casing provided with small perforations *d*, through which the refuse particles pass after having been liberated from the grain by the friction of the kernels of grain against each other and the feathering-blades and against the ring. This refuse matter falls or escapes into the space between the screen and the casing *a*, from whence it escapes through the passage *e* into the lower part of the casing.

Grain is introduced into the upper part of the casing *a* through the receiving-duct *f*, and is conveyed through the screen *c* by the screw and flights, escaping at the outlet-orifice *g*. The scouring screw and flights are secured to

turn upon the shaft *h*, the latter being mounted in bearings *h'* in the casing *a*. Now in order to make the grain follow a more tortuous path when actuated by the screw, whereby the kernels are made to more thoroughly intermingle for the purpose of removing the hulls and cuticle, the series of scouring-flights are given a peculiar formation by beginning at the receiving end of the series, with the separate spiral blades *i* forming the screw *b*. These are attached to the periphery of the disk *v* and operate like an auger to force the incoming grain through the screening-flights within the cylinder toward the right in the old and well-known manner. The remainder of the scouring-blades which form the flights through which the grain is forced are arranged differently by being secured upon the peripheries of a series of drums or disks *j*, having a common axis. Tapering pallets *k* are interposed between the disks *j*, with their longest diameters placed alternately at right angles to each other.

The blades *l m* upon the periphery of the disks *j* are arranged diagonally to their axes and have intersecting planes, being joined at the point of intersection *q*. The opposite sides of the disks *j* are provided with blades arranged in the same plane as the one just described. This is done in order to form a spiral path for the grain to travel in toward its exit at the end of the cylinder and also to throw the grain laterally against the sides of the contiguous blades, thereby assisting in the hulling and scouring operation.

It will be observed that the opening *p* between the ends of the blades is arranged opposite the point *q* of intersection of the blades *l m n o*, in order to give the lateral throw to the grain, as set forth.

In order to retard the circular motion given to the grain by the cylinder, I provide a series of annular dashes *t* opposite the pallets *k* and located between the blades *l, m, n*, and *o*, and said dashes or rings are securely riveted to the inside of the casing *c*. The surface of these dashes is corrugated or otherwise roughened, which causes the kernels of grain to rub against themselves and the rings or dashes, whereby the grain is more thoroughly scoured.

Instead of taking the grain out of the bot-

tom of the machine, I provide an exit or outlet *r* around the axis of the cylinder, and this outlet is commended by a valve *u* upon the lower end of a lever *v'*, fulcrumed upon a bracket *w*. Its upper end is pivoted to a lateral rod *x*, attached to the hopper *f*, which is pivoted to the top of the casing *a*. The upper end of the lever *v'* is provided with a laterally-extending arm *z*, upon which slides a weight *z'*, and upon moving this weight back and forth the pressure upon the valve can be regulated.

In using my machine the shaft is driven in the direction indicated by the arrows, so that the spiral blades *i* will take the grain and move it toward the right as it enters from the inlet-duct *f*. Upon leaving this first flight of blades the grain strikes against the corrugated dashes *t*, falls into the space between the disks *n* and *o*, and then the pallets throw it by centrifugal force against the screening-cylinder. A portion of it is then caught by the spiral blade *l* and carried into the next flight on the right, while the remainder is being dashed about in the cavity formed by the juncture of the two blades, and as the flight revolves this latter portion is caught by the succeeding blade *n* and is carried to the next flight upon the right like the first-mentioned portion, and thus the grain is acted upon by each succeeding flight until it escapes at the outlet-orifice *g*. The spiral blades upon the first disk *j* act upon the grain like an auger and press it along horizontally through the series of flights. It will be seen that the spiral blades *i* first force the grain into the scourer in a diagonal direction to the axis. Then the revolving pallets next flit it out and away from the axis, after which the blades *m n* successively receive and throw it laterally against the incoming current of grain, whereby it is again deflected to the right and taken by the blade *l*. The operation of the succeeding flights upon the right of the one just described is repeated until the grain becomes properly hulled or cleaned.

As the hopper *f* fills with grain it swings back, thereby pulling the lever toward the left against the gravity of the weight and opening the outlet *g* wider. When the hopper becomes empty and the weight of the grain is removed from it, then the weight pulls it toward the right, thereby actuating the lever *v'* and closing the valve *u*. Hence the more grain the hopper contains the wider the valve will be opened, thus making the feeding operation automatic.

In the operation of my peculiarly-formed flights it will be noticed that several separate and distinct movements are given.

The nature of flights is simple and may be varied to suit the occasion, and my invention might otherwise be varied in many slight ways which might suggest themselves to a skilled mechanic.

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

1. In combination with a surrounding screen and exterior casing, a rotary shaft provided with a screw at one end, and a series of disks provided with spiral blades having intersecting planes and being joined together at the point of intersection, as and for the purpose described.

2. In combination with a surrounding screen and exterior shell, a rotary shaft provided with a screw at one end, a series of disks with spiral blades having intersecting planes and being joined at the point of intersection, and tapering pallets interposed between said disks and arranged alternately at right angles to each other, in the manner and for the purpose substantially as described.

3. In combination with a surrounding screen and exterior shell, a rotary shaft provided with a screw secured to turn therewith, a flight consisting of a series of spiral blades arranged upon a drum or disk in separate pairs having intersecting planes, said blades being joined at the point of intersection, and the openings between the opposite ends of the blades being located opposite said point of intersection, in the manner and for the purpose described.

4. In combination with a surrounding screen and exterior casing, a rotary shaft provided with a screw at one end, a series of disks provided with spiral blades having intersecting planes and being joined together at the point of intersection, and corrugated rings secured to the inside of the surrounding casing, as and for the purpose described.

5. The combination, with a grain-scouring cylinder, of a pivoted hopper, a rod connected to the same and hinged to the upper end of a lever fulcrumed at its middle, a valve on the lower end of said lever commanding the outlet from the scouring-cylinder, and a beam extending from said lever and supporting an adjustable weight, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

ALLEN C. BRANTINGHAM.

Witnesses:

E. P. YOUNG,

IDA G. LOCKWOOD.