

O. P. STEVENS.

Grain Huller and Scourer.

No. 15,269.

Patented July 1, 1856.

Fig. 1.

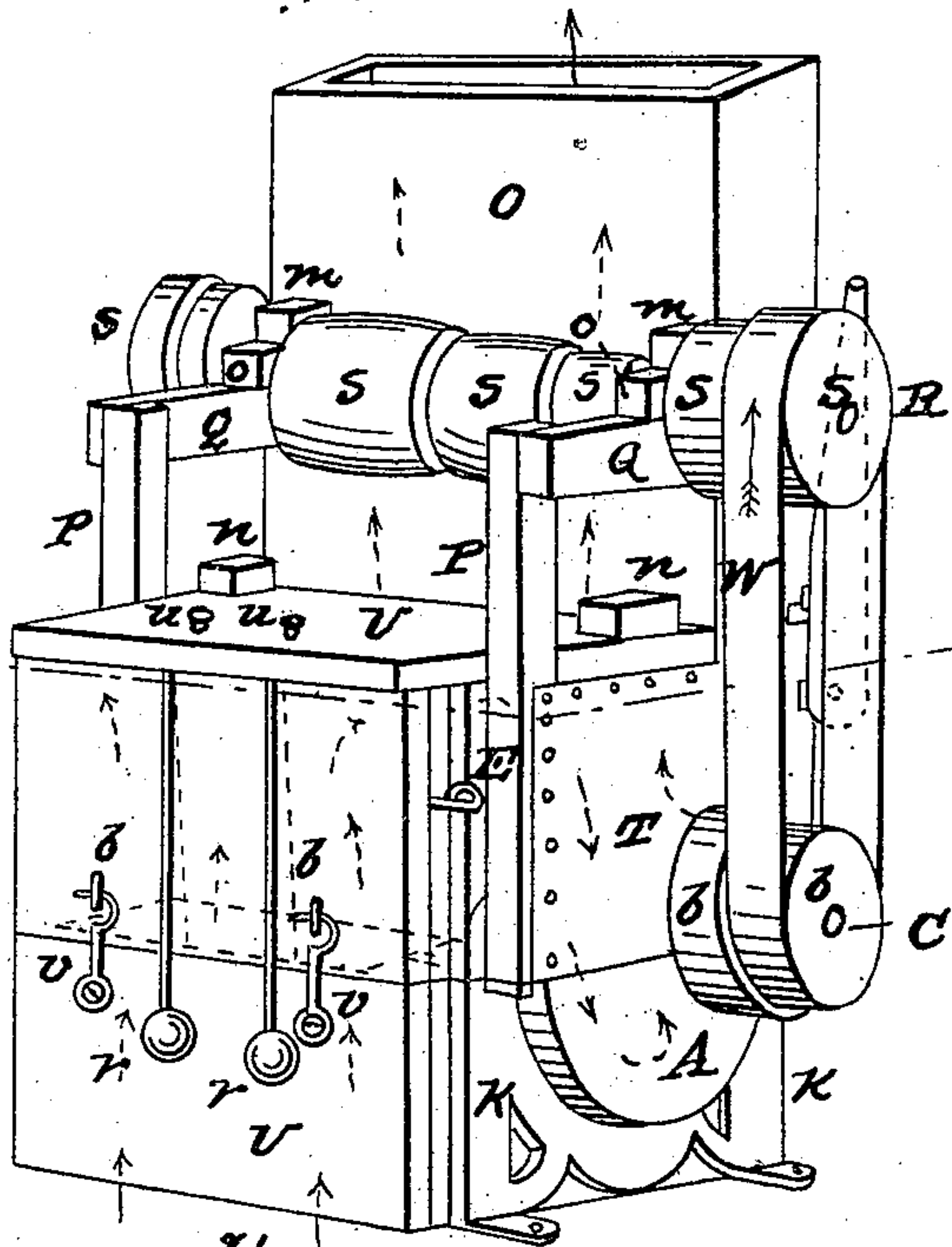


Fig. 2.

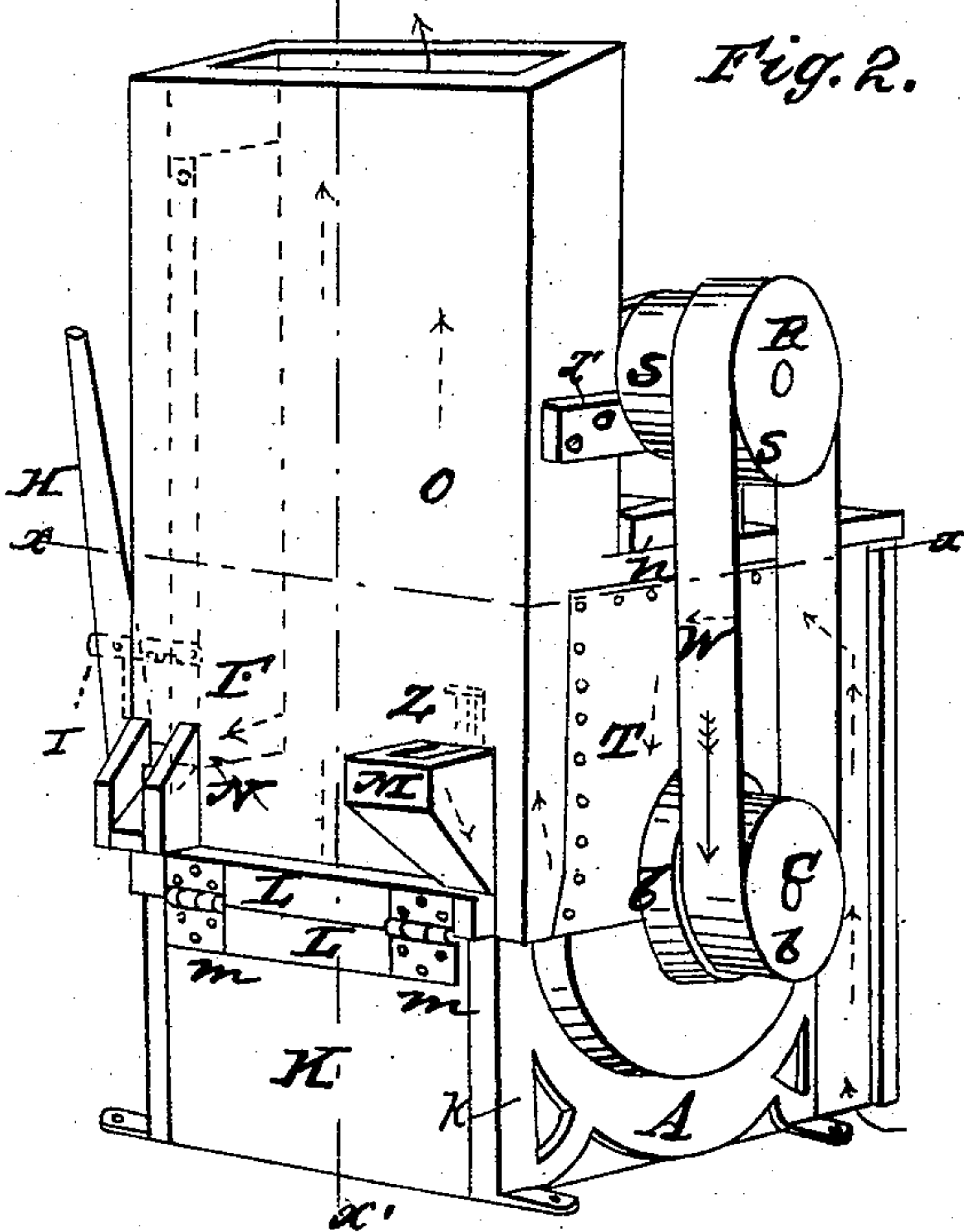


Fig. 3.

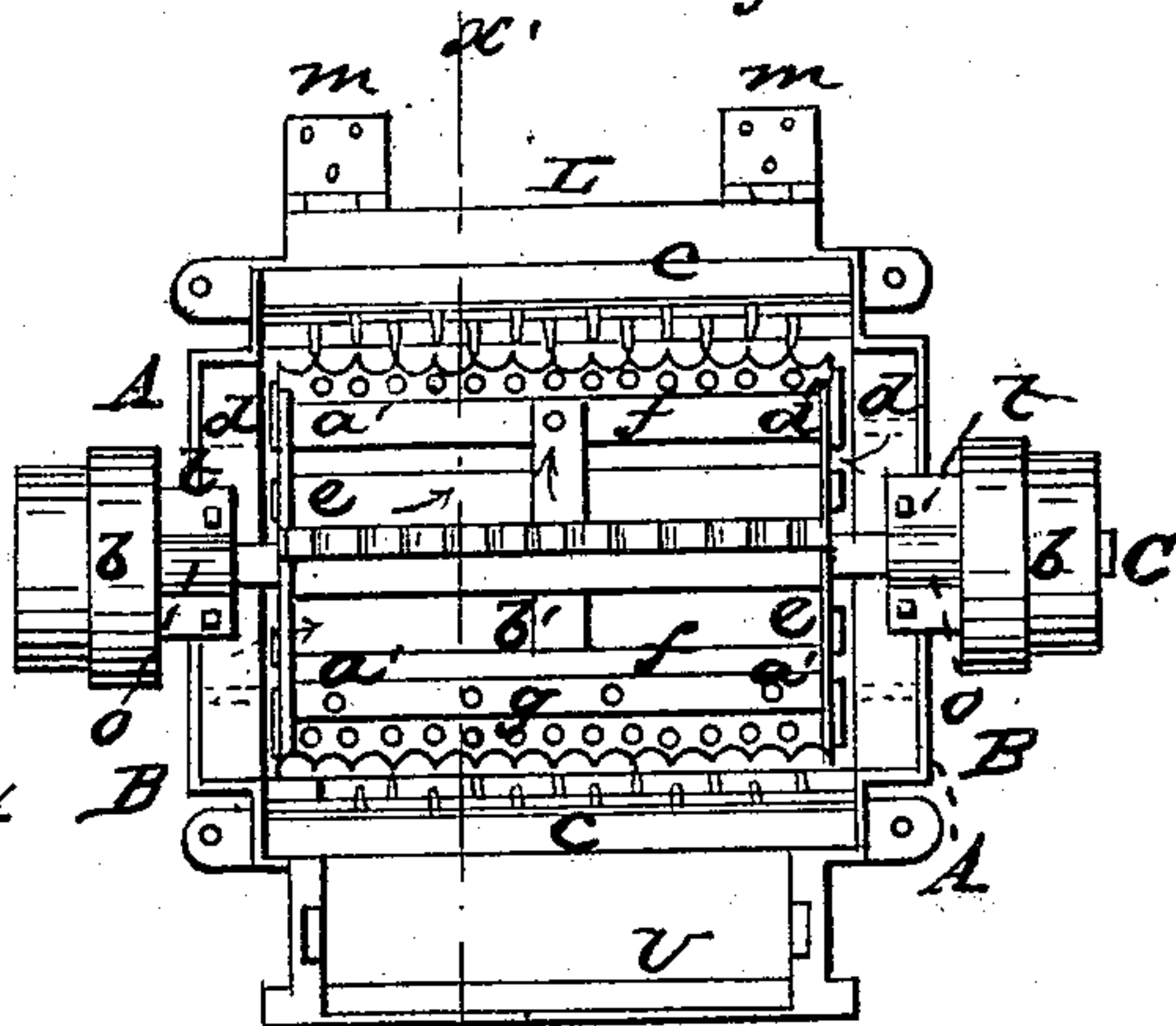


Fig. 4.

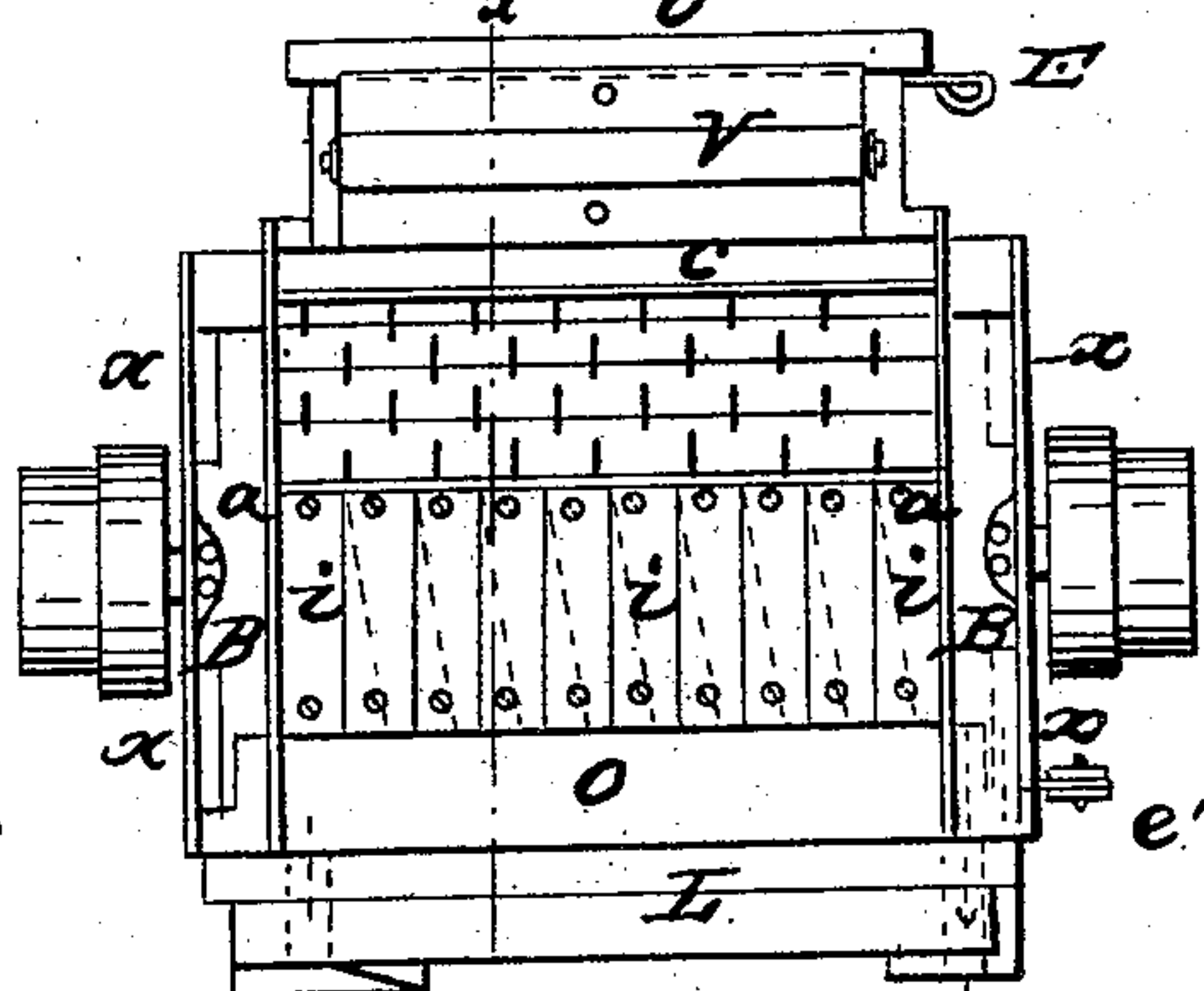
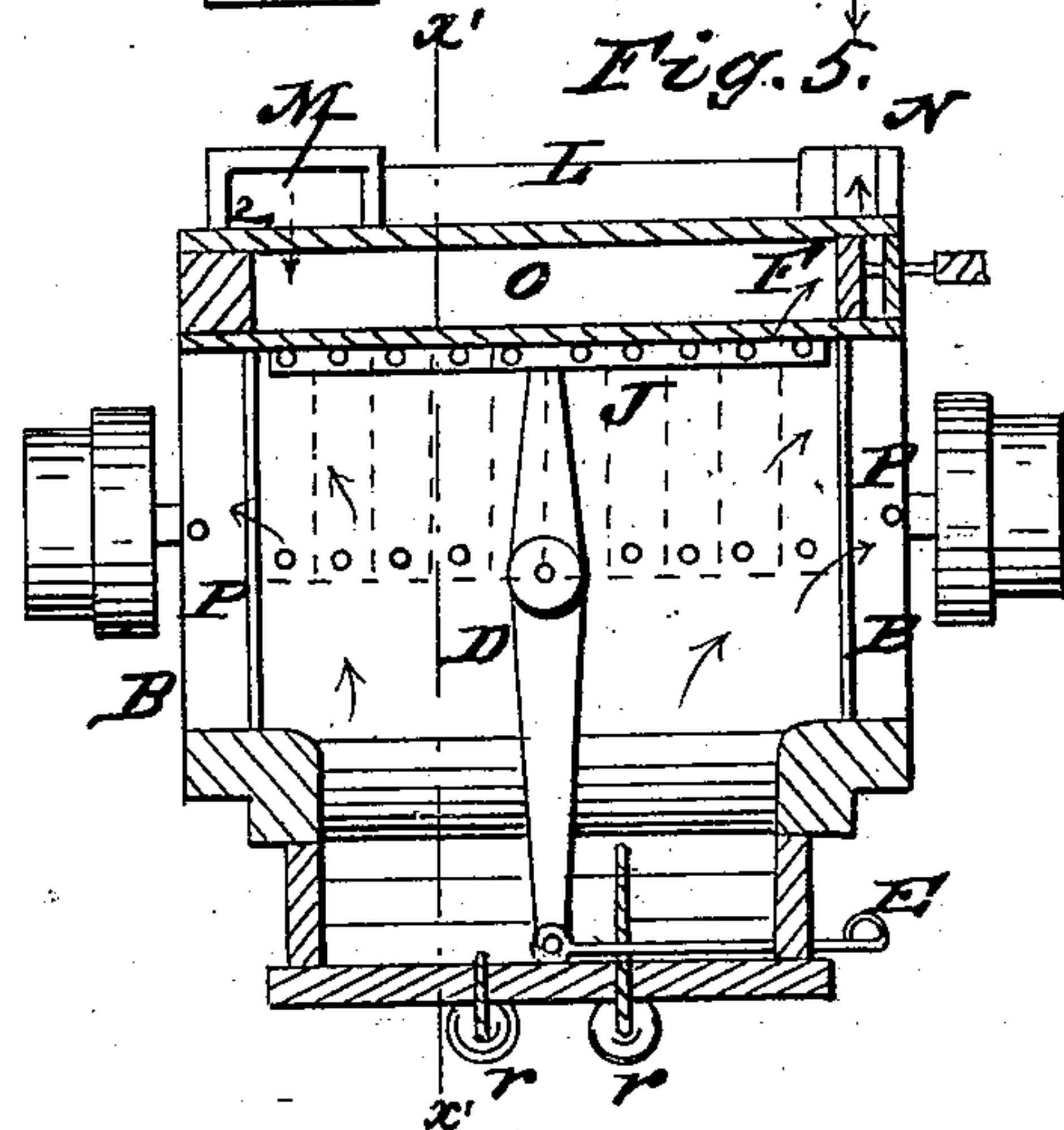


Fig. 5.

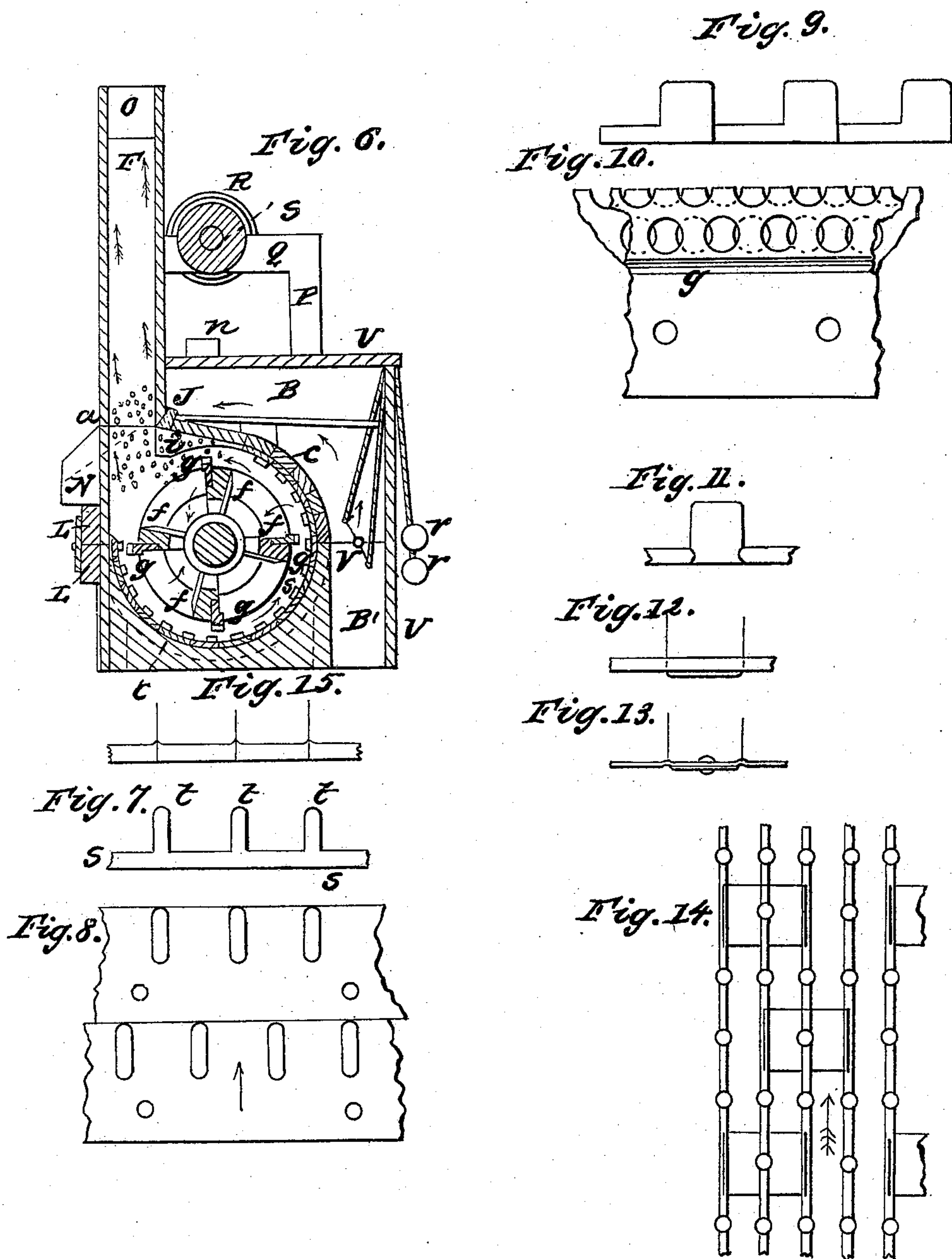


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UNITED STATES PATENT OFFICE.

OLIVER P. STEVENS, OF CLEVELAND, OHIO.

MACHINE FOR HULLING AND SCOURING GRAIN, SEED, &c.

Specification forming part of Letters Patent No. 15,269, dated July 1, 1856; Reissued March 28, 1865, No. 1,923.

To all whom it may concern:

Be it known that I, OLIVER P. STEVENS, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and Improved Mode of Constructing Hulling or Scouring Machines for Grain or Seeds; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a perspective view, Fig. 2, is a perspective view of the sides opposite those shown in Fig. 1. Fig. 3, is a plan view of the lower section. Fig. 4, is a plan view of the upper section inverted. Fig. 5, is a plan view of the middle section, taken at the horizontal line $x\ x$, Fig. 2. Fig. 6, is a vertical section in the direction of the line $x'\ x'$. Fig. 7, is an edge view of a detached section of the lining to the fan-case, which is studded with teeth. Fig. 8, is a plan view of two detached sections of the same. Fig. 9, is an end view of three sections, studded with teeth. Fig. 10, is a detached section of two perforated metallic plates, for arming the fan-wheel. Fig. 11 is an edge view of three steel teeth, set in cast iron. Fig. 12, is a side view of a steel tooth, set in cast-iron. Fig. 13, is an edge view of two thin teeth, in the form of a staple, set in leather. Fig. 14, is an edge view of the same, set in sheet-iron, and fastened with a rivet. Fig. 15, is a plan view of the same, fastened in place, with strips of sheet or hoop-iron, which pass over the horizontal part, and are fastened with nails or screws, driven into the spaces between them; one nail or screw, is put through each staple. Figs. 15, 11, 12, 13, and 14, represent, different modes, for lining, and, providing the fan-case with thin metallic teeth.

A, A, Figs. 1, 2, and 3, represent, cast-iron heads, to the lower section, of the fan-case, with flanges, to support the cylindrical part c which is made of wood, and is fastened to the heads with screws or bolts.

a, a , represent the cast-iron heads to the upper section of the fan-case, with flanges to support the wood casing c , (Fig. 4) and is fastened to it with screws or bolts. There are semi-circular openings in the upper

edges of fan-case heads a, a , to admit air to the fan-wheel.

d, d , represent semi-circular sheet-iron plates, with semi-circular openings in the upper edges (Fig. 3) for admitting air to the fan-wheel as indicated by the red arrows. Said plates are riveted to the cast-iron heads, A, A, at their peripheries, and are connected with these heads by ties, represented by dotted lines (Fig. 3).

C, represents the fan-shaft, which is supported in boxes cast on the heads A, A, and has graduated pulleys b, b , on each end.

t, t , represent caps, with cups to receive the tubes p, p , (Fig. 5).

e, e , represent wheels on the shaft C, with flanges a' , on both sides of the rims. Those on the outside are to prevent hulls, dust, &c., from passing from their peripheries toward the shaft C. Those on the inside support the wooden fans f, f, f, f , which are supported in the middle by the spider b' . The wheels and spider are fastened to the shaft C, in the usual manner, and to the fans f, f, f, f , with screws or bolts.

g , (Fig. 10) represents pieces of perforated metal fastened to the fans f, f, f, f , with screws. The fan-case c, c , is lined with cast-iron strips, or other material set with teeth as seen in Figs. 7, 8, 9, 11, 12, 13, 14, and 15.

i, i , represent metallic guides, or deflectors, formed at right angles, (Figs. 4 and 6). The lower ends are screwed to the board h , and their upper ends are screwed to the rod J, which has a notch in the upper edge to receive the lever D, which has a rod E, attached, for moving the guides i, i , as indicated by the red lines, (Fig. 4). The board h , is lined or covered on the under side with sheet-iron, which projects under the rod J, to the chimney space. There are long holes in this sheet-iron lining for the screws that hold the guides i, i , to the rod J, so that they can be moved.

F, represents a valve—(Figs. 2 and 6) supported at the upper end by a pin, or hinge joint.

H, represents a lever, connected to the machine at the lower end by a link e' , and to the valve F by the latch I. There is a plate screwed on to the outside of the machine for the latch I, to catch upon, (as seen in Fig. 2) to hold the valve F open, or shut.

K, represents a board to support the legs k, k . The opposite side of the machine is made in the same manner, the legs have feet, with holes in them, through which bolts
5 pass to fasten the machine to the floor.

L, L, represent stiffening pieces to which the hinges m, m , are fastened.

M, represents a hopper-shaped spout, with a slide valve Z, in it. There is also a swing
10 valve which is opened by the pressure of the grain, to prevent the escape of air.

N, represents the discharge spout, which has a swing valve that is opened by the pressure of the grain.

15 O, represents the chimney, which should be lined with sheet-iron, to a point a little above, where the grain strikes.

P, P, represent supports, to the bridge trees Q, Q, which supports the shaft R, and
20 are screwed, to the chimney O, at their opposite ends. The said supports, extend down a little below the center of the fan-case, and are fastened to the cast-iron heads a, a .

25 R, represents an auxiliary shaft, with graduated pulleys S, S, on each end, and three graduated pulleys s, s, s , between its bearings.

T, T, represent sheet-iron casings, which
30 have pieces of sheet-iron, riveted to their lower edges, on the inside, forming grooves X, X, (Fig. 4) to receive the upper edges of the cast-iron heads A, A, for inclosing the chambers B, B. The tubes p, p , (Fig. 5)
35 for tallow and oil, are supported near their lower ends by iron straps riveted, to the inside of the sheet-iron casings T, T.

n, n , represent covers to the tubes p, p .

40 m, m , represent covers to short tubes in the caps o, o , (Fig. 1).

U, represents the wood casings, forming the air passages or chambers B, B.

V, represents a valve (Figs. 4 and 6) with cords, and weights r, r , attached. The right
45 hand one, opens the valve V, which is held in position, by winding the cords around, the pins or screws u, u , (Fig. 1), v, v , represent hooks and eye-bolts. The black arrows, Figs. 2, 4, 5 and 6, indicate the passage
50 of the grain, and also the direction in which, the fan-wheel turns.

W, W, represent the belts, by which, the fan-wheel, is driven. The red arrows (Figs. 5 and 6) indicate the direction, of the current of air, to the fan-wheel, which should
55 have a space, between it, and the teeth in the fan-case, of, from, $\frac{1}{4}$ to $\frac{3}{8}$ of an inch, for hulling, and scouring grain. The holes, along the edges of the fans, f, f, f, f , should
60 be from $\frac{1}{4}$, to $\frac{3}{8}$, of an inch for wheat, and from, $\frac{1}{2}$, to $\frac{5}{8}$, of an inch, for corn, or else, put on, with the smallest ends, of the holes forward.

65 The length of the machine, should be, from, three to, four diameters, of the fan-

wheel; and there should be as many fans in the wheel, as it is inches in diameter.

In the construction of this machine, I do not intend, to confine myself, to any particular size, as to the whole, or any of its
70 parts, nor to any particular kinds, of material used.

The operation of this machine, is as follows. The auxiliary shaft, R, and, pulleys S, s, s , are put in motion, by a belt, around
75 one of the pulleys s, s, s , which gives motion to the fan-wheel C, e, f, g , by the belts W, W. The upper ends of the guides i, i , are moved toward the valve F, by pushing in the rod E. The grain, is put into the hop-
80 per shaped spout, at M, (Fig. 2) draw the valve Z, and the grain will slide, into the machine. The current of air, put in motion, by the fan-wheel, moves it along, among
85 the teeth, in the direction, indicated, by the black arrows, (Fig. 6), the sheet of grain, is continually divided, to the right and left, by the teeth, causing it, to act, upon itself, as well, as against the teeth, causing it to
90 fly, so as to come in collision, with the perforated fans, when some of it, passes through the holes, and is thrown, by centrifugal force, among, the teeth, until, it is carried
95 over the fan-wheel, and is thrown, between the guides, i, i , and, against, the vertical face, of the chimney O, from thence, it rebounds, and falls down, through, the constant stream, of grain following after, it
100 now gets more action, of grain, against grain, when it goes another round, of the fan-case, and is caused, to advance, more, or, less, at each revolution, of the fan-wheel,
105 according to the position of the guides, i, i , until, it has passed, to the end of the fan-wheel, when, it is discharged, over the upper edge, of the fan-case head, a , and
110 out, through the spout, N, as indicated, by the black arrows, in Figs. 2, 4, 5 and 6, after the hulls, dust, &c., have been, separated from it, by the constant, current of air passing up through, the chimney O. Said current of air, can be regulated by the valve V, in the vertical trunk B'.

The velocity at the periphery, of the fan-wheel, should be from, 34, to 40 feet per
115 second, for hulling, and scouring wheat. For hulling cotton-seed, and making hominy, it requires about fifty feet per second.

What I claim as my invention, and desire to secure by Letters Patent is,
120

1. I claim the perforated fans f, g , in combination with teeth, set in the fan-case c , as described, for the purposes set forth.

2. I claim the arrangement of the upper section of the fan-case c , in its relation, to
125 the chimney O, in combination with the fans f, g , and guides i, i , in the manner described, for the purposes specified.

3. I claim the adjustable guides, or deflectors i, i , combined as described and oper-
130

ating in the manner and for the purpose hereinbefore described.

4. I claim the air passages, or chambers B, B, arranged in each end, and on the top
5 of the fan-case, in connection with the vertical trunk B', as herein described and for the purpose specified.

5. I claim the valve F, operated in the manner described, in combination with the chimney O, for the purpose specified.

OLIVER P. STEVENS.

Witnesses:

WELLS PORTER,
HANNAH PORTER.

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