

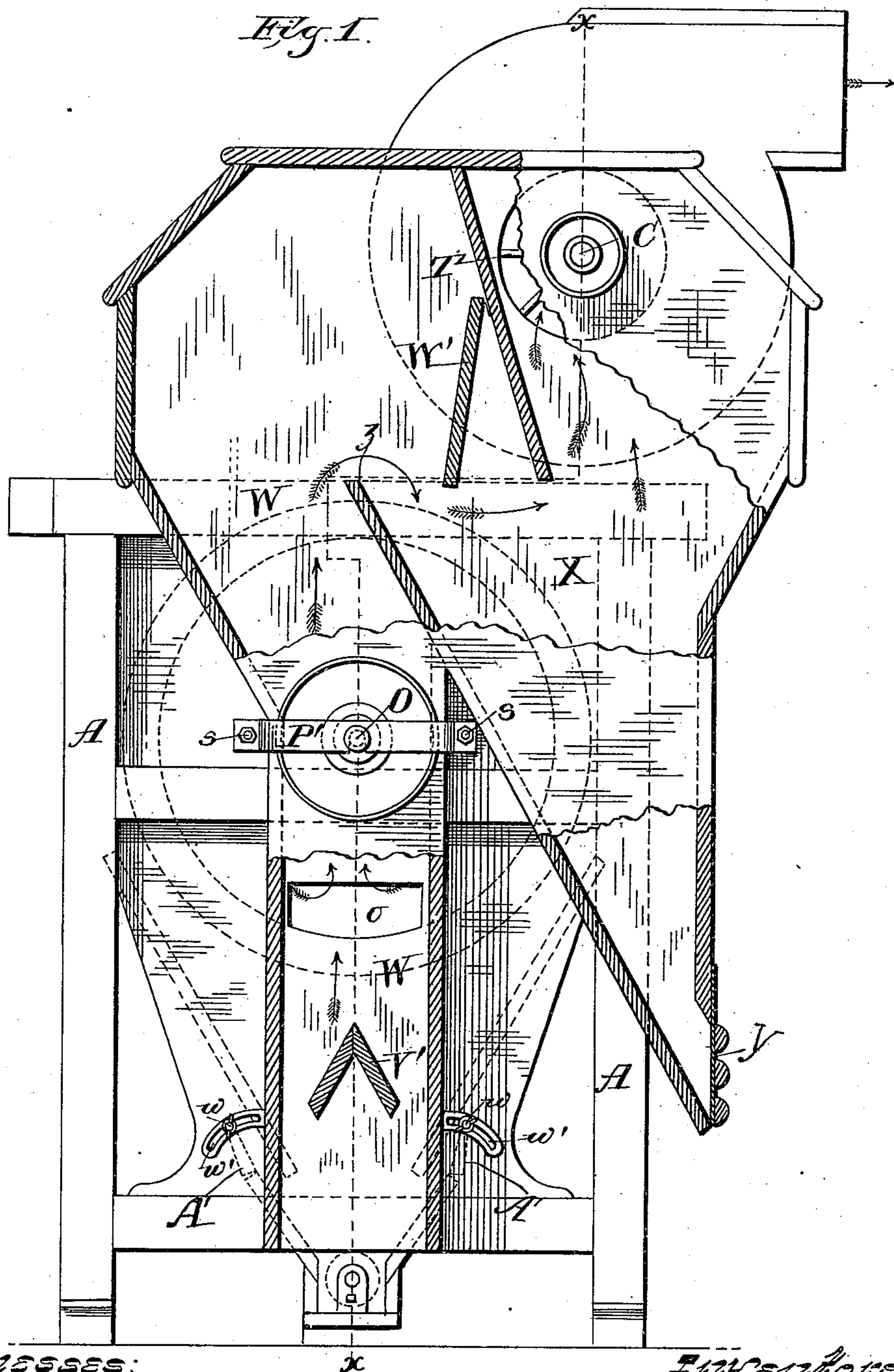
(No Model.)

3 Sheets—Sheet 1.

G. A. GILBERT & W. RICHARDSON.
GRAIN CLEANING AND SCOURING MACHINE.

No. 355,520.

Patented Jan. 4, 1887.



Witnesses:
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N. E. Oliphant

Inventors:
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Attorneys

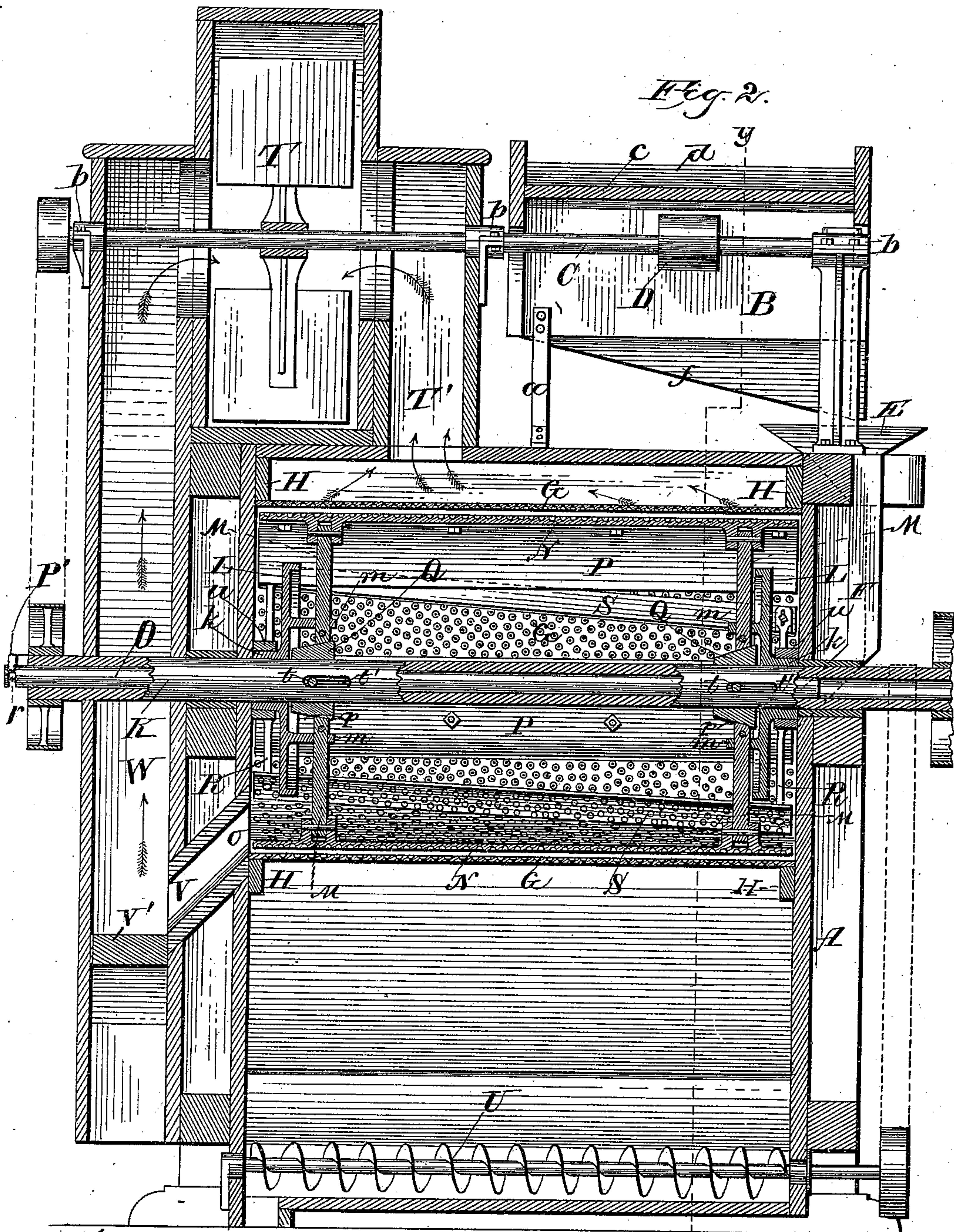
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Patented Jan. 4, 1887.



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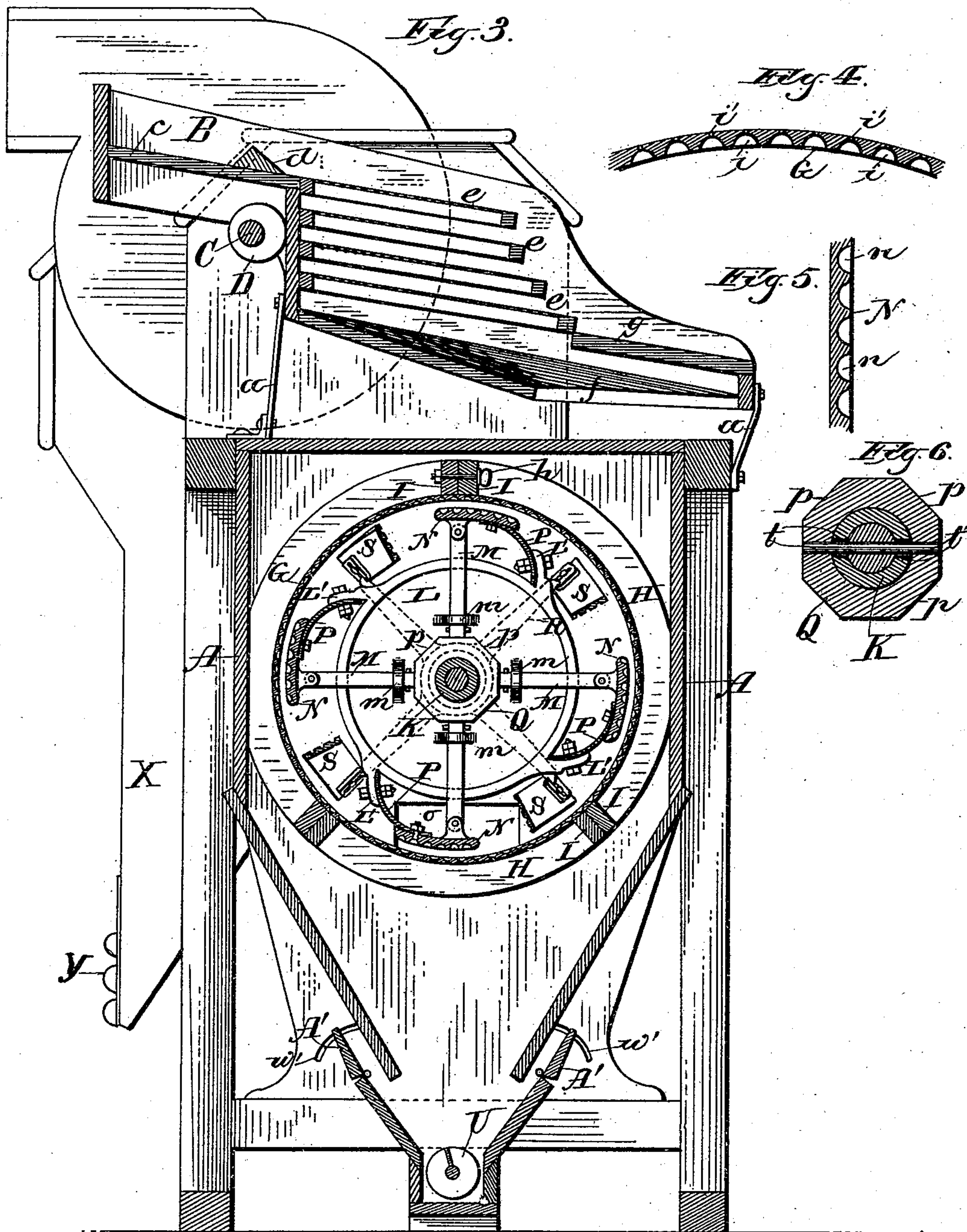
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Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE A. GILBERT AND WILLIAM RICHARDSON, OF MILWAUKEE, WIS.

GRAIN CLEANING AND SCOURING MACHINE.

SPECIFICATION forming part of Letters Patent No. 355,520, dated January 4, 1887.

Application filed May 27, 1886. Serial No. 203,374. (No model.)

To all whom it may concern:

Be it known that we, GEORGE A. GILBERT and WILLIAM RICHARDSON, of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Grain Cleaning and Scouring Machines; and we do hereby declare that the following is a full, clear, and exact description thereof.

Our invention relates to machines for cleaning and scouring grain; and it consists in certain peculiarities of construction and combination of parts, as will be fully described hereinafter with reference to the accompanying drawings, and subsequently claimed.

In the drawings, Figure 1 represents an elevation of the tail end of our machine, partly in section; Fig. 2, a vertical longitudinal section on indirect line *x x*, Fig. 1; Fig. 3, a vertical transverse section on indirect line *y y*, Fig. 2; Fig. 4, a detail view of a portion of the scouring-cylinder; Fig. 5, a similar view of a scouring-paddle, and Fig. 6 a like view of an adjustable collar.

Referring by letter to the drawings, A represents a casing, and B a shoe supported above said casing by means of spring-arms *a*. A fan-shaft, C, journaled in suitable bearings, *b*, is provided with an eccentric, D, that operates against the shoe B to move the same in one direction, while the spring-arms *a* cause a return of said shoe to its normal position. Being actuated by the eccentric and springs, as above described, a constant vibratory movement is given to the shoe B during the operation of the machine, the fan-shaft C being driven by means of suitable belt-and-pulley gearing connecting said fan-shaft with the main shaft, to be hereinafter more particularly described.

The grain fed to the shoe B first falls on an inclined deck, *c*, to the rear of a prismoidal cleat, *d*, that is transversely secured thereto, this latter part serving to dam up said grain and prevent it from running in a stream to inclined sieves *e*, these latter being also transversely arranged in said shoe, and of such number and graduation as may be found convenient or desirable. By the vibratory movement of the shoe B the accumulated grain is caused to pass over the upper edge of the prismoidal cleat *d* in a thin sheet, and thus an

even distribution of said grain in its passage to the sieves *e* is accomplished. The grain falls through the sieves *e* onto the inclined floor *f* of the shoe, while the chaff and other refuse fall upon a deck, *g*, and are thrown clear of the machine by the vibratory movement of said shoe.

The grain that has been acted upon as above described falls from the shoe-floor *f* into a hopper, E, and from thence is conducted by a spout, F, to a stationary scouring-cylinder, G, supported in the casing A by means of a frame consisting of hoops H, united by longitudinal brace-pieces I, said hoops being each preferably composed of three sections. The brace-pieces I are secured to the ends of each hoop-section, so that when the cylinder-supporting frame is set up the brace-pieces of each two of the sections will come flush against each other and bear against said cylinder, bolts *h* being employed to retain the parts thus together. The scouring-cylinder G has its inner face provided with a series of concave indentations, *i*, and perforations *i'* are made through the material composing said cylinder in line with the centers of the indentations, this construction being best illustrated by Fig. 4.

Centrally extended through the scouring-cylinder G is a tubular main shaft, K, having secured thereto, within said cylinder, the hubs *k* of the circular heads L, these latter having their inner faces provided with a series of lugs, *m*, that are slotted to permit the passage of arms M, having pivotally connected to their outer ends paddles N, that are connected by means of spring-plates P to ears L', projected from the peripheries of the circular heads. These paddles N have their outer faces provided with a series of concave indentations, *n*, Fig. 5, that oppose those in the inner face of the cylinder G, and the grain in its passage from the spout F through said cylinder to the outlet *o* thereof is acted upon and thoroughly scoured, the peculiar construction of the opposing faces of said parts G N serving to cause a positive scouring action on each individual kernel. The inner ends of the arms M bear against the beveled faces P of polygonal collars Q, that are adjustable on the shaft K. To accomplish this adjustment the tubular shaft has inserted therein another shaft, O, that has

its outer end provided with a circular groove, r , to engage a keeper, P' , secured to the tail end of the casing A by means of adjusting-bolts s ; and laterally extended through these shafts K O and the polygonal collars Q are pins t , that operate in longitudinal slots t' in said shaft K . When the keeper P' is moved in toward the casing A , a forward movement of the collars Q is accomplished, and the arms M being held against the faces p of these collars by the force of the spring-plates P , the paddles N are drawn in a direction toward the shaft K to increase the space between them and the inner face of the cylinder G , accordingly as the diameter of said collars in line with the arms M is diminished. To bring the paddles N nearer the inner face of the cylinder the movement of the collars Q is reversed, and this adjustability of said paddles so readily effected enables the machine to be varied to suit different grades of grain, and thereby accomplish a perfect scouring of the individual kernels regardless of size, said adjustment being performed at any time without stoppage of the machine.

Secured on the hubs k of the heads L are hubs u , having radiating arms R , to which latter are secured the respective ends of beaters S , arranged at an angle to the vertical plane of the cylinder G , to form spirals that act as a means to convey the grain from its point of entrance into said cylinder to the outlet therefrom, and the outer faces of these beaters are provided with indentations similar to those in the paddles N , in order to insure a thorough scouring, and particularly to act upon such kernels as may have escaped the action of the paddles.

During the operation of scouring, an exhaust-fan, T , draws the air from the lower part of the casing up through the perforations i' of the cylinder, which carries with it dust and other light impurities, that find their way through a flue, T' , into the fan-casing, whence they are finally discharged, while the particles that are so heavy as not to be drawn up by the suction of said fan find their way by gravity into a conveyer, U , operated by belt-and-pulley gearing connecting with the main shaft K .

The amount of air let into the lower part of the casing A is regulated by means of hinged valves A' , having projections w , that operate in curved slots w' , cut in the ends of said casing. The scoured grain is discharged from the outlet o of the cylinder into a spout, V , that leads to a distributor, V' , located in a flue, W , that leads to the fan T , said distributor consisting of two boards set at an acute angle and meeting at their upper edges, thus forming two sides of a triangle, as illustrated in cross-section, Fig. 1. The distributor causes a diffusion of the grain as it feeds down from the spout V , thereby permitting such impurities as may still remain therein to be readily acted upon by said fan. The suction of the fan draws the impurities up the flue W in the direction of the arrows, Fig. 1, said suction being regu-

lated by a hinged valve, W' . The lighter particles drawn up the flue W escape into the fan-casing, and are finally discharged, while such grain or other heavy particles as may have been carried up by the suction of the fan fall down a chute, X , after passing a point, z , this operation being accomplished by the increased air-space in said chute and the corresponding decrease of suction. The lower end of the chute X is provided with a flap-valve, Y , that is automatically opened by the weight of the heavy particles as they accumulate in sufficient quantities against said valve. The opening of the valve Y permits the discharge of the heavy particles thus accumulated, and this operation being accomplished, its own weight causes its automatic return to a closed position.

By the above-described construction we provide a simple and effective grain cleaning and scouring machine that can be manufactured at a less cost than those usually employed, and in case any of the operating parts become worn or broken they may be readily replaced with but little outlay of time, labor, or expense.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a grain cleaning and scouring machine, the combination of a main casing, a scouring-cylinder supported in the casing and having its inner face provided with a series of centrally-perforated concave indentations, a series of revolving paddles having concave indentations in their outer faces, a series of revolving beaters, also having their outer faces provided with concave indentations, and an exhaust-fan, substantially as and for the purpose set forth.

2. In a grain cleaning and scouring machine, the combination of a main casing, a scouring-cylinder supported in the casing, a main shaft centrally extended through the cylinder, circular heads secured to the shaft, and each having one of its faces provided with slotted lugs and its periphery with ears, polygonal collars having beveled faces and adjustably secured on said shaft, radial arms having their inner ends passed through the slotted lugs to rest upon the collars, scouring-paddles pivotally connected to the outer ends of the arms, spring-plates connecting the paddles with the ears on the peripheries of the circular heads, and spiral beaters secured to arms that radiate from the hubs of said heads, substantially as and for the purpose set forth.

3. In a grain cleaning and scouring machine, the combination of a main casing, a scouring-cylinder supported in the casing, a tubular main shaft centrally extended through the cylinder and provided with longitudinal slots, circular heads secured to the shaft, radial arms loosely connected to the heads, scouring-paddles pivotally united to the outer ends of the arms, spring-plates connecting the paddles with said circular heads, bevel-faced polygo-

nal collars loose on the main shaft and arranged to impinge against the inner ends of the radial arms, a longitudinally-adjustable shaft operative in the bore of said main shaft, and lateral
5 pins that pass through both shafts and collars and have their play in the slots of the main shaft, substantially as and for the purpose set forth.

4. In a grain cleaning and scouring machine,
10 the combination of a main casing, a scouring-cylinder supported in the casing, a tubular main shaft centrally extended through the cylinder and provided with longitudinal slots, circular heads secured to the shaft, radial arms
15 loosely connected to the heads, scouring-paddles pivotally united to the outer ends of the arms, spring-plates connecting the paddles with said circular heads, bevel-faced polygonal collars loose on the main shaft and arranged
20 to impinge against the inner ends of the radial arms, another shaft inserted in the bore of said main shaft and provided with an annular groove at one end, a keeper adjustably secured

to the tail end of the machine to engage said groove, and lateral pins that pass through both
25 shafts and collars and have their play in the slots of the main shaft, substantially as and for the purpose set forth.

5. In a grain cleaning and scouring machine, the combination of a main casing, a perforated
30 scouring-cylinder supported in the casing, scouring paddles and beaters revolved within the cylinder, an exhaust-fan located above the cylinder, and hinged valves adjustably connected to the casing below said cylinder, sub-
35 stantially as and for the purpose set forth.

In testimony that we claim the foregoing we have hereunto set our hands, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

GEORGE A. GILBERT.
WM. RICHARDSON.

Witnesses:

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MAURICE F. FREAR.