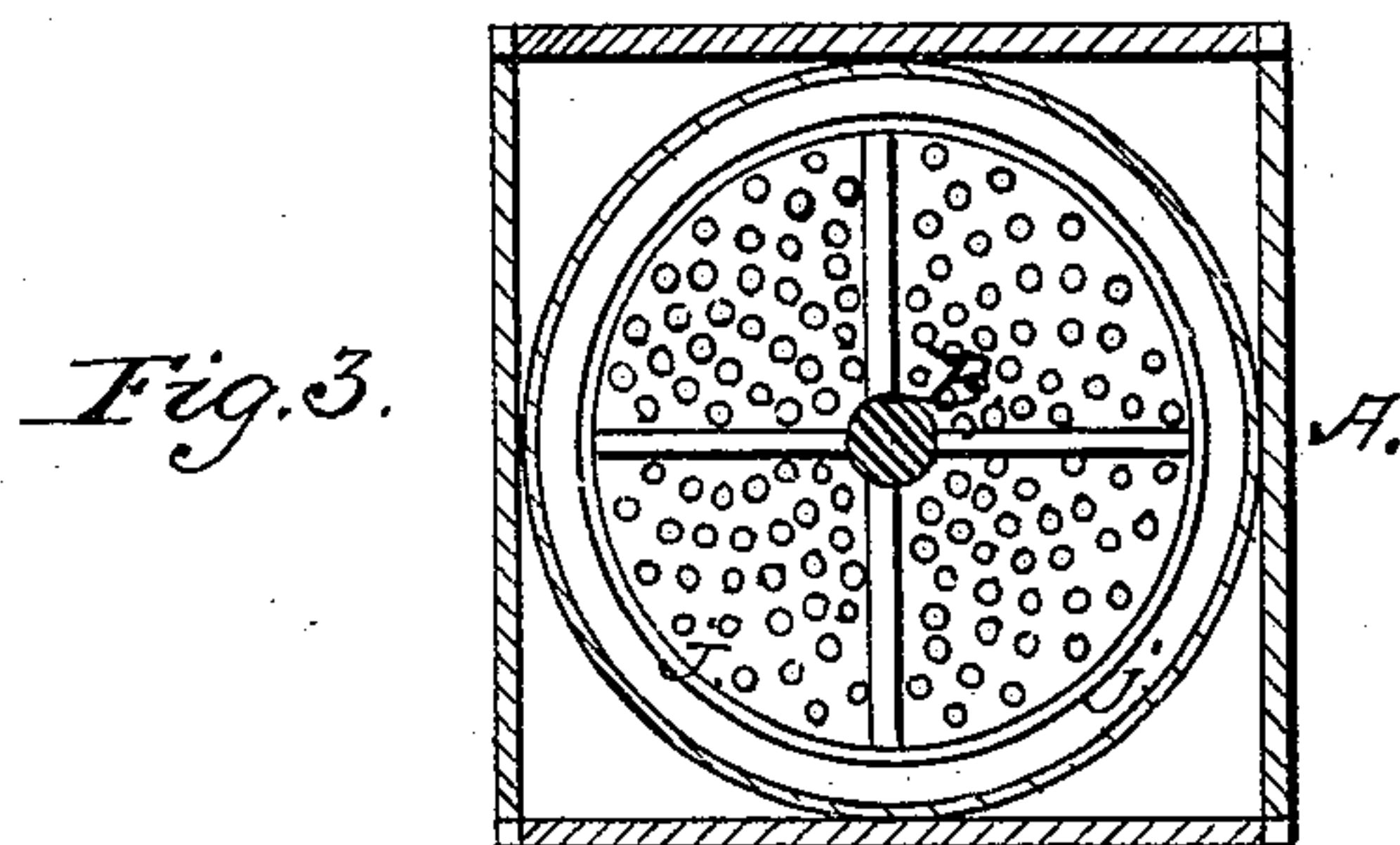
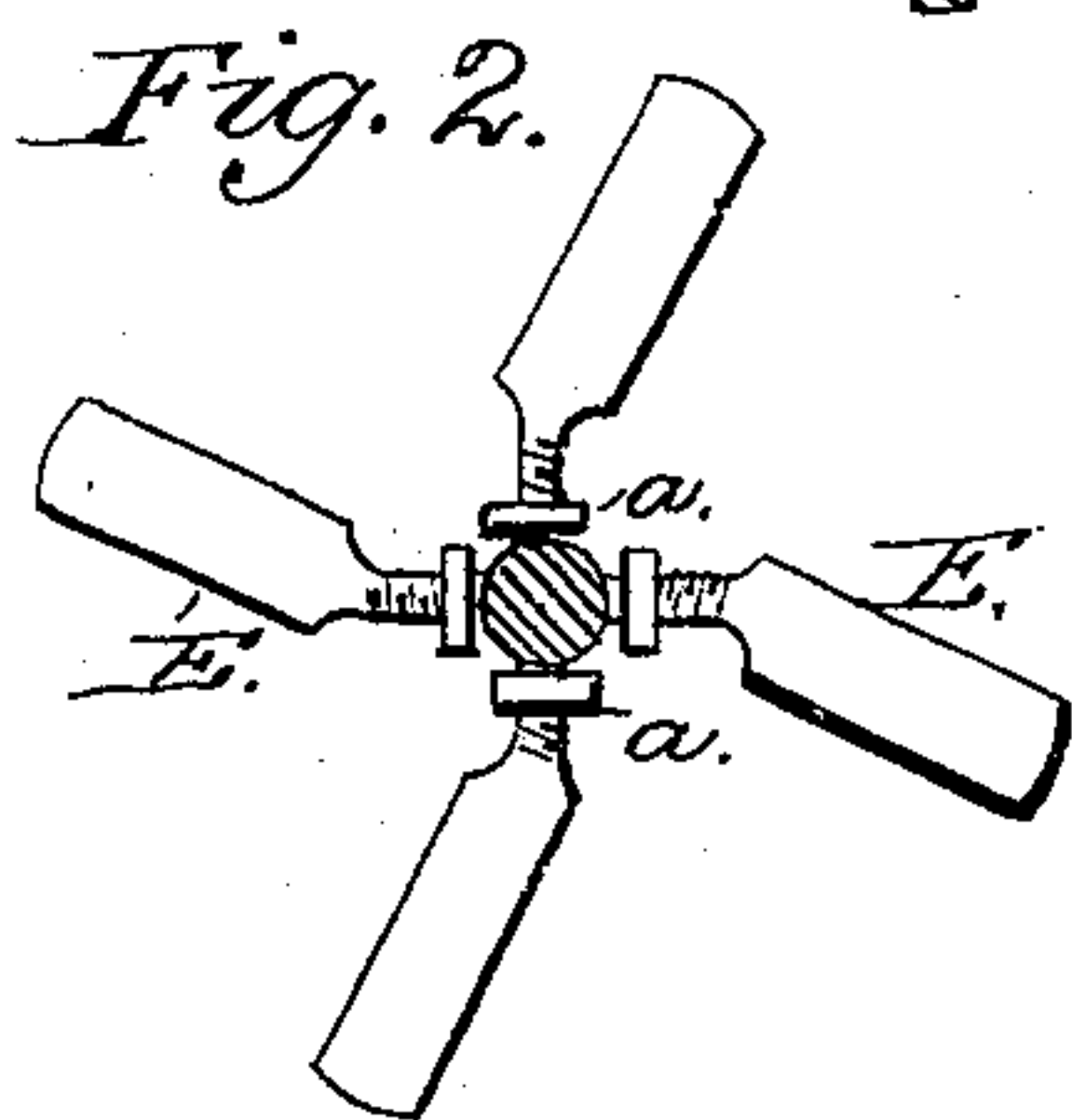
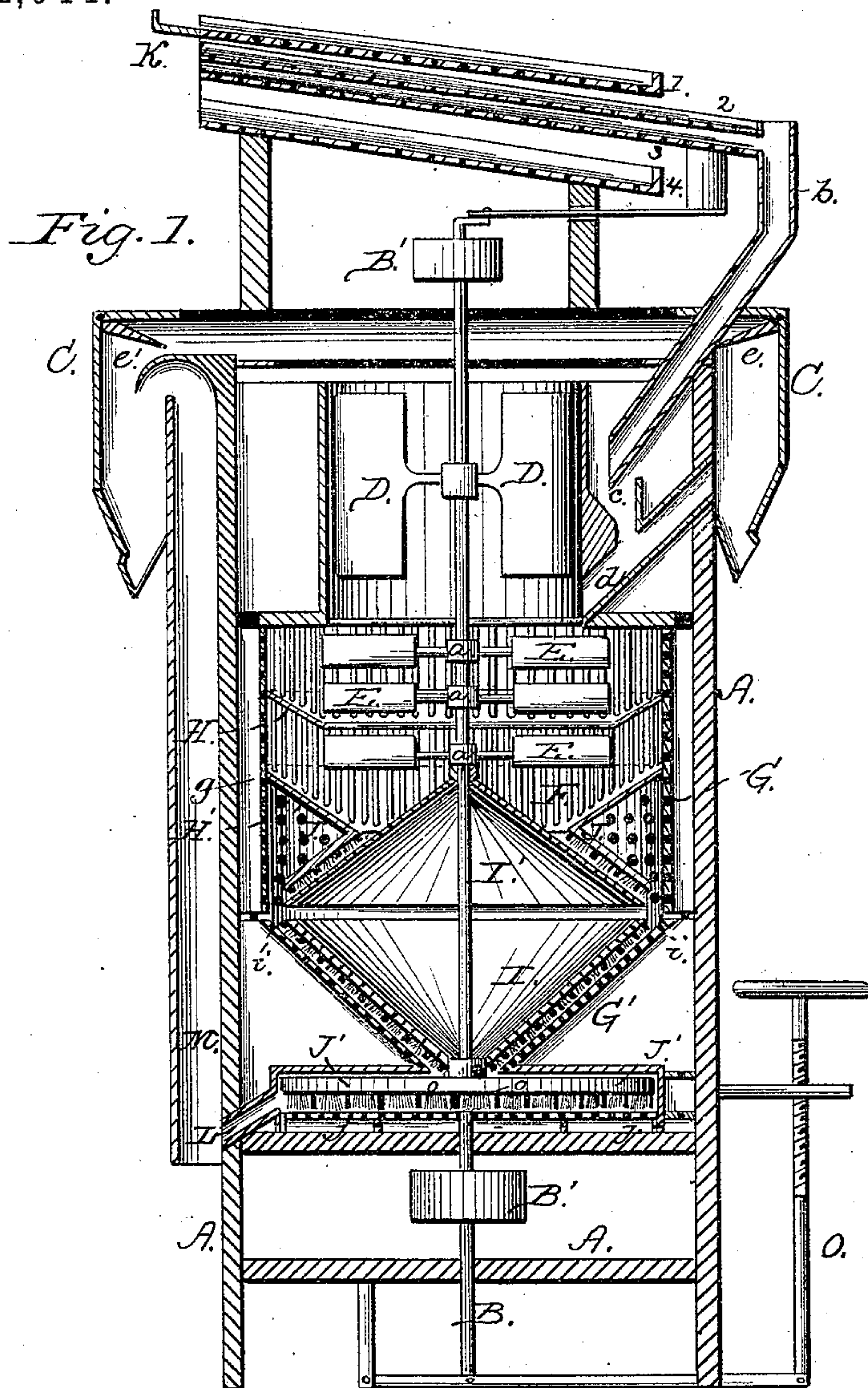


(No Model.)

E. PHELPS.
GRAIN CLEANER.

No. 292,044.

Patented Jan. 15, 1884.



Witnesses:
W. Fred. Keller.
Jos. A. Ryan.

Inventor:
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attn.

UNITED STATES PATENT OFFICE.

ELNATHAN PHELPS, OF HARTFORD, MICHIGAN.

GRAIN-CLEANER.

SPECIFICATION forming part of Letters Patent No. 292,044, dated January 15, 1884.

Application filed October 17, 1883. (No model.)

To all whom it may concern:

Be it known that I, ELNATHAN PHELPS, a citizen of the United States, residing at Hartford, in the county of Van Buren and State of Michigan, have invented certain new and useful Improvements in Grain-Cleaners; and I do declare the following to be a full, clear, and exact description of the invention, such as it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in vertical grain-cleaners, the object being to provide an improved construction whereby the grain will be thoroughly cleaned and the dust and dirt carried off as fast as they are separated from the same; and it consists, essentially, of the details of construction and general arrangement of parts, all as will be hereinafter fully described, and specifically designated in the claims.

In the accompanying drawings, Figure 1 represents a vertical longitudinal section of my complete machine, and Figs. 2 and 3 detail sectional views thereof.

Similar letters of reference occurring on the several figures indicate like parts.

Referring to the drawings, A represents the frame-work of my improved machine, through the central part of which is arranged an upright crank shaft or spindle, B, which is provided with pulleys B', one at the top and the other at the bottom of said shaft, as shown, whereby motion is imparted to the apparatus by suitable power.

To the upper part of the apparatus is attached the ordinary chamber, C, while directly below the same is located the suction-fan D, which is securely attached to the upright shaft or spindle B, so as to revolve therewith.

Beneath the suction-fan D, and adjustably secured to the vertical shaft B by the check-nuts a, is provided a series of inclined distributing beater-blades, E, said beater-blades being arranged one above the other, for throwing the grain upward and outward among the metallic rods F, which are arranged vertically around

the sides of the interior of the perforated casing or jacket G, located at the central part of the apparatus, as shown. An inclined shelf, H, is provided at or about the central parts of the said rods F, while a corresponding shelf, H', is arranged at the bottoms of the same, as fully shown in Fig. 1. The bottom G' of the casing or jacket G is of a funnel shape, and also perforated similarly to the body of the said casing, and within which is adapted to revolve a conical brush-frame, I, which is adjustably secured to the vertical shaft B and adapted to revolve therewith. A brush-frame, I', of a corresponding shape, with its conical point upward, is arranged directly above the lower brush-frame, I, and is also adjustably secured to the vertical shaft B, and revolves beneath an inclosing-frame, J, within the interior of the casing or jacket G. The wheat or other grain which is to be cleaned is delivered on the shaker-shoe K, which is provided with four screens, 1, 2, 3, and 4, of the usual construction. The screen 3 is designed to separate the small wheat which may have passed through the wheat-screen 2 from the screenings and conduct it into the spout b with the larger wheat. The grain or wheat, in passing down the spout b, is spread in a thin sheet at the point c by an upward current of air, which will take with it the smaller impurities, and as the grain passes farther down it meets with another outward and upward current of air at the point d, which will take out the heavier foul impurities—such as chaff, shrunk wheat, or oats—the force of these two currents of air being regulated by the valve e, the heavier particles that are driven out being deposited in the chamber C, and the smaller impurities, passing with the air into the suction-fan D, discharged through a suitable spout or opening. The wheat, having thus passed through two air-blasts, is now struck by the distributing beater-blades E, thereby throwing the wheat upward and outward among the metallic rods F, which are so located with relation to each other as to expose the kernels of the wheat to a heavy jar, scouring the same on every side. A strong current of air, produced by the said beater-blades, carries off each particle of dirt or dust the moment that it is jarred

or scoured from the wheat through the perforations of the steel casing or jacket G into the passage *g*, thence to the suction-fan D, and out into the open air. The wheat, after being thus thrown in among the rods the first time, then falls upon the inclined shelf H, which delivers it back upon a lower row of the said beater-blades, which in turn throw the grain again upwardly and outwardly among the rods beneath the first shelf, H, thereby exposing it to another scouring process, the dust being carried off, as already above described. The wheat, after being thus beaten and scoured by the blades and rods, which are all perfectly smooth, presenting no sharp or rough surfaces which might break or injure the bran, drops upon the second inclined shelf, H', which delivers it to the first brush-frame, J, from which it passes through the opening *i* into the lower brush-frame, I, which revolves upon the stationary perforated bottom of the casing G. The brush revolving around in the same holds the wheat down flat and forces the cockle through the perforations, as also all dust or dirt which may be taken from the wheat. The wheat thus treated then passes on into the brush-frame J', which is attached to the vertical shaft B, and revolves on a stationary level perforated surface, *j j*, which allows the large cockle to pass through the perforations, while the wheat is held flat by the brush, which thoroughly removes any dust which may yet be on the wheat and passes it through the said perforations with the cockle, while the cleaned grain or wheat is discharged through the spout

L into the air-spout M, where any remaining particles of dust are carried into the suction-fan D, the current being regulated by the valve *e'*, and the cleaned grain passes out of the machine by means of the spout M.

Attached or fastened to the brushes I and J are rubber scrapers *o*, so arranged that in revolving over the perforated surfaces they operate to lift out all kernels of wheat that may chance to lodge in said perforations.

By means of the screw-rod O, arranged at the lower part of the apparatus, in connection with a lever, the brushes may be so regulated as to brush the grain, light or heavy, as may be desired, and enabling them to run clear without being empty.

Having thus described my invention, what I claim as new and useful is—

1. In a grain-cleaner, the combination of the vertical shaft B, suction-fan D, distributing beater-blades E, vertical rods F, inclined shelves H H', and brush-frames J, I, and J' with the spout *b*, chamber C, casing G, and frame A, substantially as described.

2. In a grain-cleaner, the inclined distributing beater-blades E, arranged one above the other, in combination with the vertical rods F, inclined shelves H H', and perforated casing G, as shown and described.

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

ELNATHAN PHELPS.

Witnesses:

THOMAS J. JOHNS,
VOLNEY E. MANLEY.