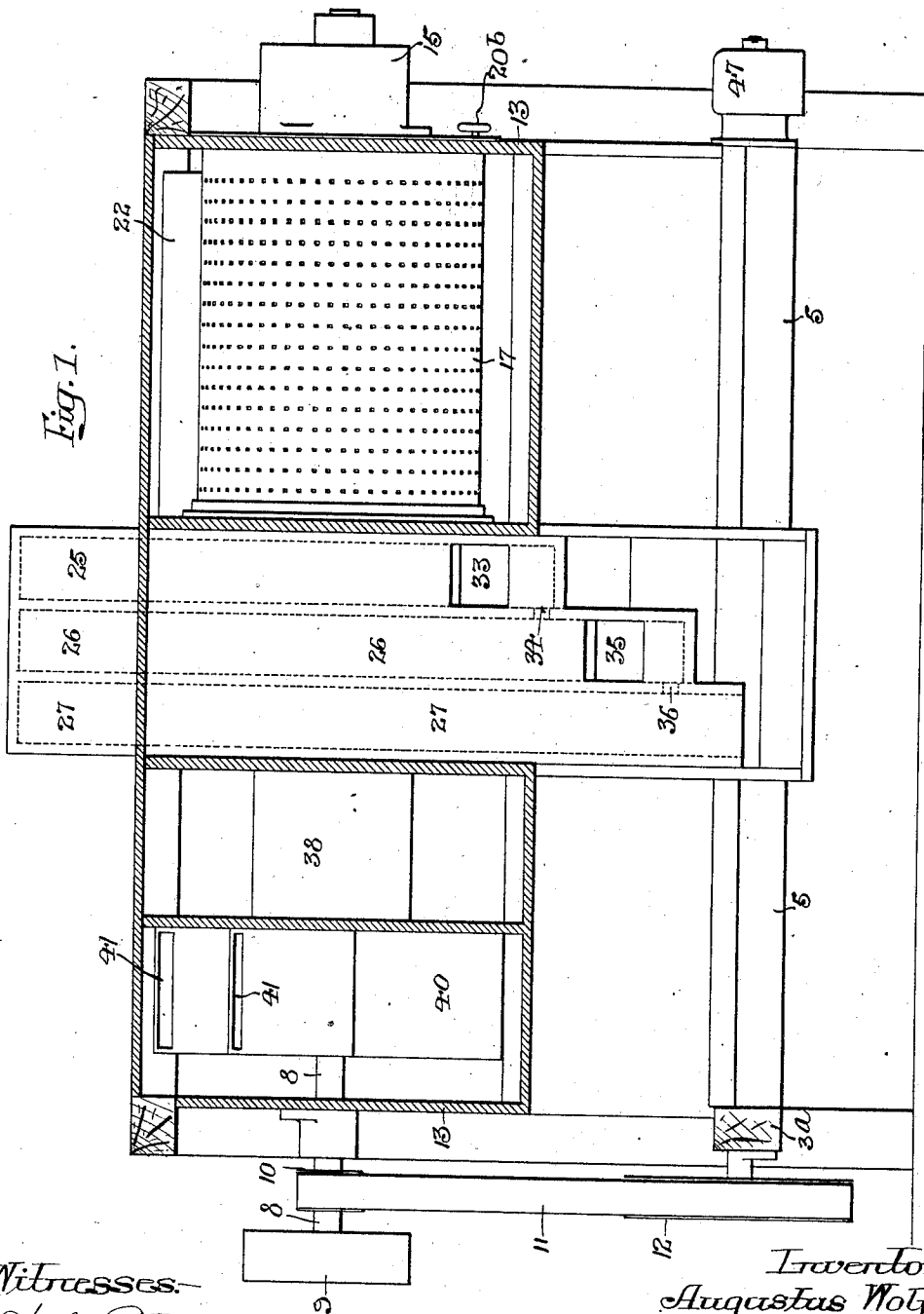


A. WOLF.
GRAIN TREATING MACHINE.
APPLICATION FILED MAR. 5, 1910.

1,040,085.

Patented Oct. 1, 1912.
6 SHEETS—SHEET 1.



Witnesses—
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Willie A. Burrone.

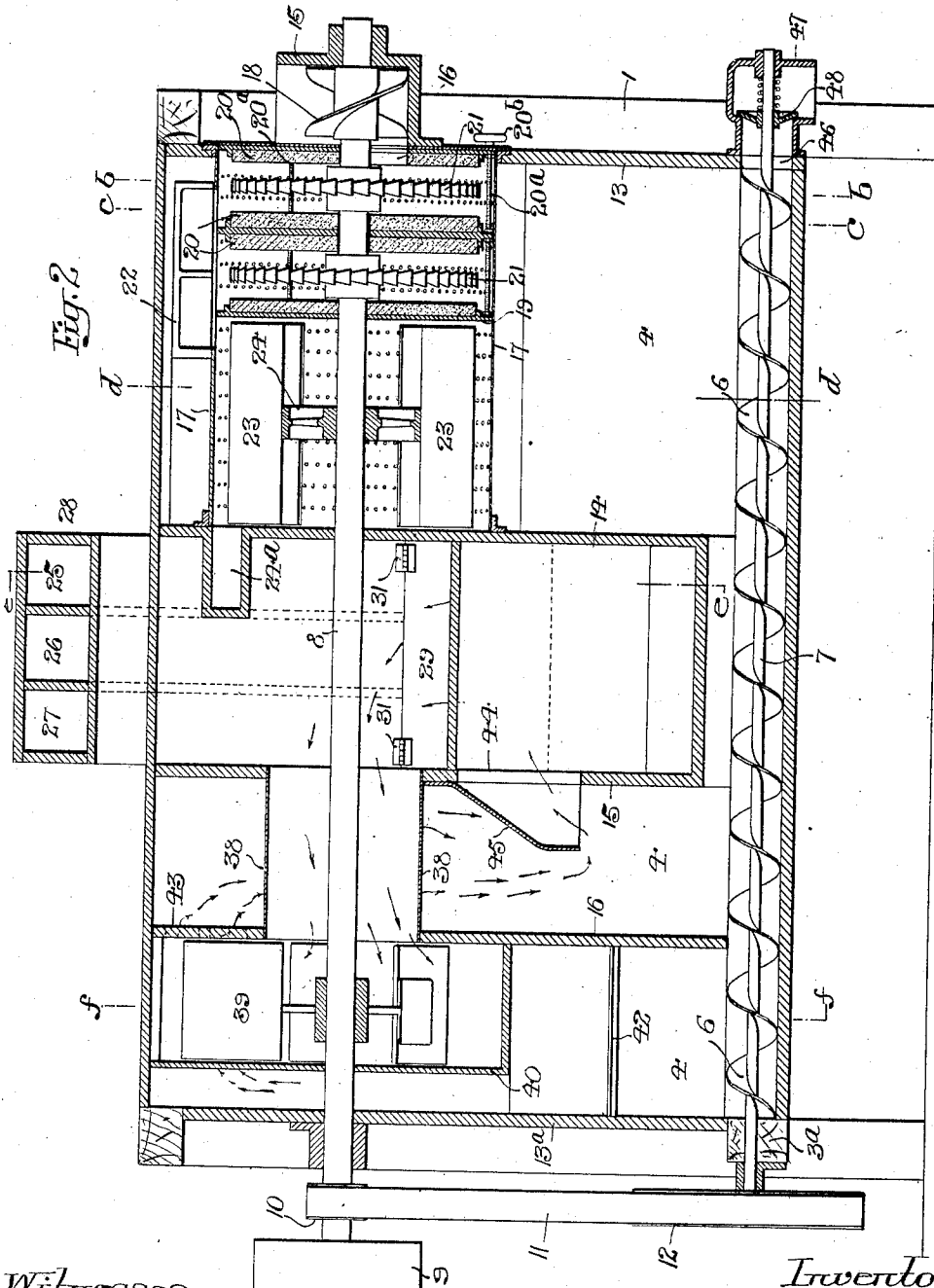
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5 SHEETS—SHEET 2.



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5 SHEETS—SHEET 3.

Fig. 4.

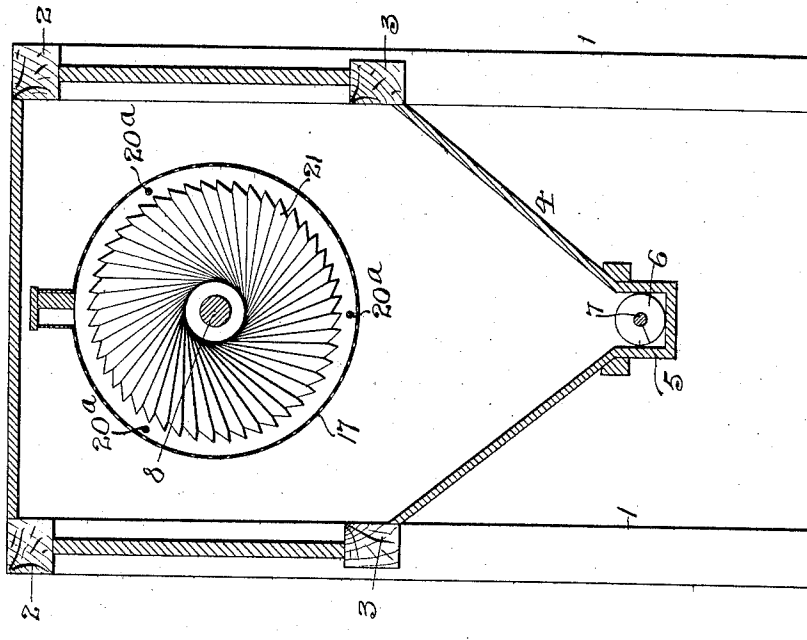
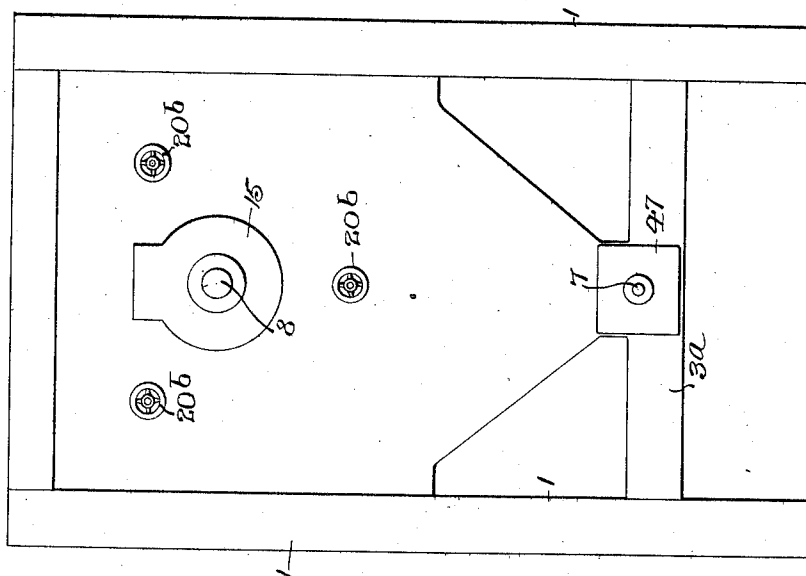


Fig. 3.



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5 SHEETS—SHEET 4.

Fig. 6

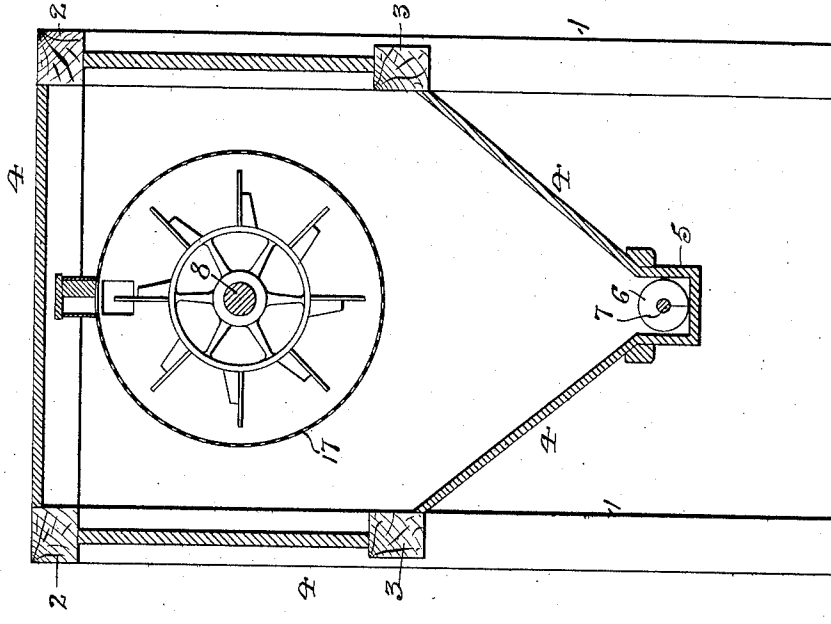
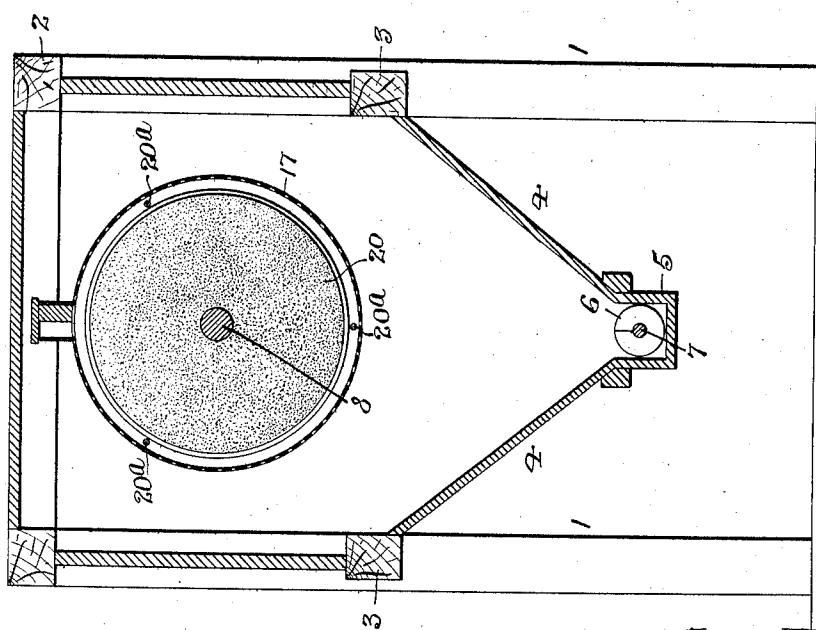


Fig. 5



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5 SHEETS-SHEET 5.

Fig. 8.

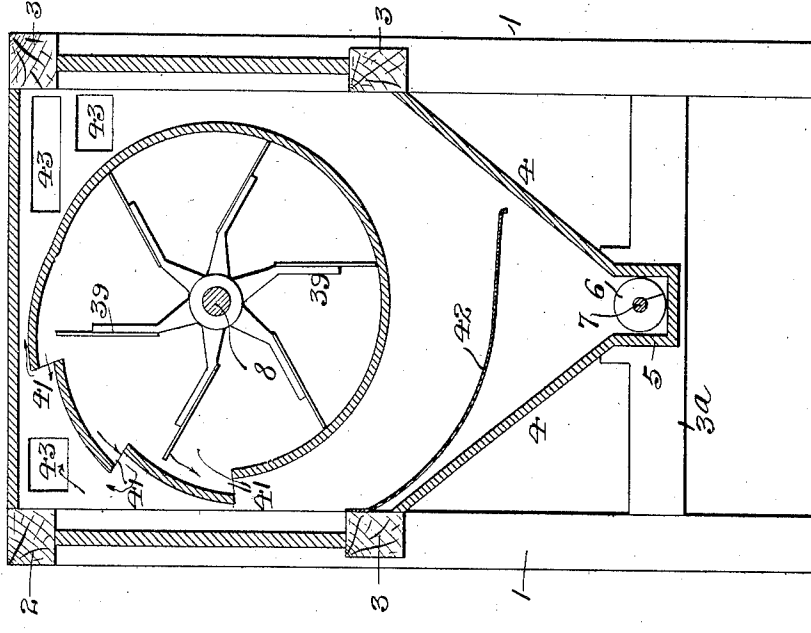
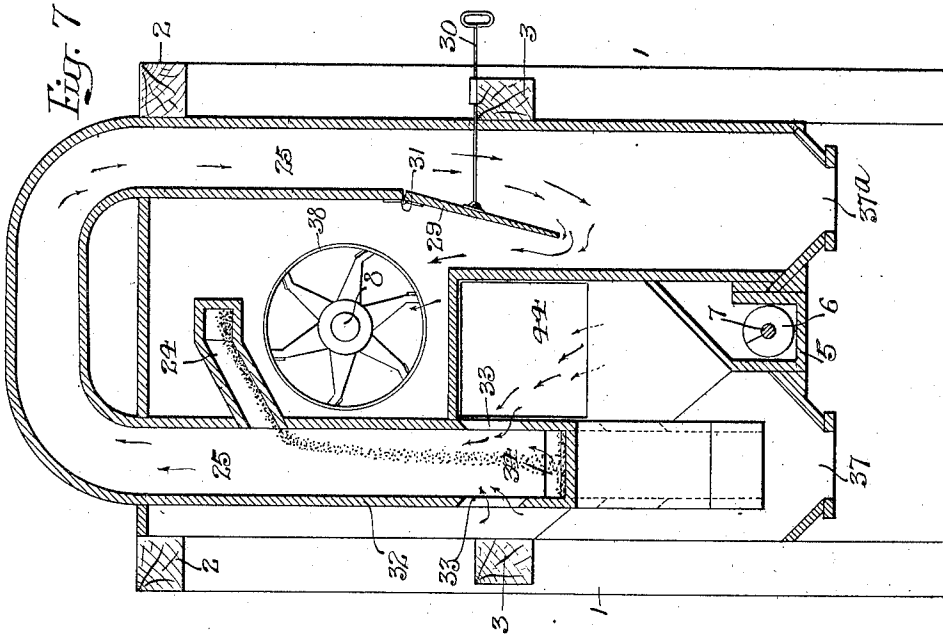


Fig. 7.



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Inventor:
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UNITED STATES PATENT OFFICE.

AUGUSTUS WOLF, OF CHAMBERSBURG, PENNSYLVANIA.

GRAIN-TREATING MACHINE.

1,040,085.

Specification of Letters Patent.

Patented Oct. 1, 1912.

Application filed March 5, 1910. Serial No. 547,493.

To all whom it may concern:

Be it known that I, AUGUSTUS WOLF, a citizen of the United States, residing in Chambersburg, Franklin county, State of Pennsylvania, have invented certain Improvements in Grain-Treating Machines, of which the following is a specification.

One object of my invention is to provide a relatively compact and efficient machine which shall be capable of scouring and polishing grain as well as separating dust and other foreign material therefrom; the invention further contemplating the provision of improved means for collecting the dust and foreign material so separated. I also desire to provide a machine of the character above noted which shall include scouring, polishing and dust separating elements more or less separated from each other and provided with a common dust collecting and discharging device; my invention also involving novel and relatively efficient means for accomplishing the ends desired, which shall be combined with a view to the rapid and most thorough treatment of the grain.

The invention further contemplates means for delivering the grain to the scouring elements and for conducting said grain through the polishing and dust separating compartments; the scouring elements being preferably adjustable.

These objects and other advantageous ends I secure as hereinafter set forth, reference being had to the accompanying drawings, in which;—

Figure 1, is a side elevation of the machine, showing the frame and a portion of the casing in vertical section; Fig. 2, is a longitudinal axial vertical section of the machine, illustrating its detail construction; Fig. 3, is an elevation of that end of the machine into which grain is introduced, and Figs. 4, 5, 6, 7 and 8 are transverse vertical sections on the lines *b-b*, *c-c*, *d-d*, *e-e*, and *f-f*, respectively of Fig. 2.

In the above drawings, 1 represents the upright supporting members of the frame of the machine which also includes two upper horizontal members 2—2 and two lower horizontal members 3—3. Mounted between and supported by these members, is a casing 4 inclosing the machine proper and preferably made with a flat top, perpendicular sides and ends, and an elongated hopper bottom whose lowest portion is

made in the form of an elongated trough 5 extending longitudinally of the machine. In this trough is mounted a screw conveyer 6 whose shaft 7 is carried in suitable bearings supported on the transverse end members 3^a of the frame. Also mounted in suitable bearings supported in any desired manner on the end members of the frame, is a driving shaft 8 extending parallel with the conveyer shaft 7 and provided with a driving pulley 9 connected to any suitable source of power; there being also fixed to said shaft a second pulley 10 which, through a belt 11, is operatively connected to a driving pulley 12 on the shaft 7.

By means of a plurality of transverse partitions;—in the present instance three, the main casing of the machine is subdivided into a number of compartments. The first of these is formed between the end 13 of said main casing and a transverse partition 14; the other two partitions being indicated at 15 and 16 respectively. A cylinder, having the end 13 and the partition 14 as its heads, is mounted with its axis horizontal, in the first compartment and is preferably formed of sheet metal having suitably sized perforations to permit of the escape of dust, dirt or other foreign material which may be present in the grain introduced within said cylindrical screen.

For the purpose of delivering grain to the machine, I provide a receiving hopper 15 mounted around the end of the shaft 8 which passes through the head 13 of the casing; there being a suitable inlet opening 16 from said hopper or receptacle through said head into the interior of the cylindrical screen 17.

In addition I preferably mount a screw conveyer 18 on the outer end of the shaft 8 and within the receptacle 15, for the purpose of feeding grain from the latter into the cylinder. This cylinder is divided, by means of a transverse partition 19, into two sections, and in the first of these I mount two or more sets of scouring units each preferably consisting of two stationary carborundum plates 20, supported in any desired manner in planes at right angles to the shaft 8 and having mounted between them a disk 21 mounted on said shaft 8 so as to turn therewith. Said disks are slidable longitudinally of the shaft, while the plates 20 are likewise slidable within the casing 17 toward and from

the disks, and for the purposes of this adjustment, I preferably mount a suitable number of threaded bolts 20^a in the head 13. For turning these bolts, I provide handles 5 or wheels 20^b. As shown in Figs. 2 and 4, these disks have tangential vanes or grooves in both of their faces whereby any grain adjacent to them is engaged and thrown outwardly as well as sidewise toward the carborundum plates; there being an opening 10 in the top of the perforated screen cylinder 17 immediately above this first section thereof and a casing or other suitable structure 22 mounted on the outside of the top of the cylinder, arranged to receive grain thrown 15 outwardly through the opening. The grain is thereby permitted to move longitudinally of the cylinder from the space between the first pair of carborundum plates, to the space between the second and successive 20 pairs of such plates; it being noted that while I have illustrated but two units or sets of scouring plates, any desired number of these may be employed without departing from my invention.

The casing or cover 22 is so placed as to receive grain discharged over the top of the partition 19 and to guide it into the second section of the cylindrical screen 17; in which 30 is mounted a beater 23 consisting of a number of vanes or paddles fixed on a suitable spider 24, keyed or otherwise attached to the shaft 8; the object of the device being to beat or throw the grain against the perforated wall of the cylinder so as to polish 35 it, as well as to remove from it all particles of dirt or foreign matter.

As shown in Figs. 2, 6, and 7, a conduit 40 24^a leads from the top portion of that end of the first compartment of the main casing which is distant from the grain inlet and is so constructed as to discharge into the first of a number of dust separating trunks 25. Any desired number of such trunks may be 45 employed, but I provide in this instance three, indicated at 25, 26, and 27. Each of them consists of a substantially vertical conduit, the top of which extends in a horizontal direction across the top of the main casing of the machine, as indicated at 28 and is 50 then extended downward into one side of that compartment of said casing between the two partitions 14 and 15; the lower ends of these latter vertical extensions of the 55 trunks all opening into said compartment and being provided with an adjustable air regulating valve 29, whereby the escape of air from them may be governed. For this purpose, said valve is provided with a 60 handle 30 and is hinged at 31 to one side of the lower end of the trunk structure. That portion 32 of the trunk 25 into which the grain from the conduit 24 is discharged has near its lower end on opposite sides, air inlet 65 openings 33, and below these openings has a

grain outlet 34 opening into the lower portion of the second trunk 26. This likewise is provided with one or more air inlet openings 35, below which is a grain outlet 36 70 opening into the lower portion of the trunk 27. The lower end of this latter trunk is open for the inlet of air and for the outlet of grain; the arrangement being such that the grain coming from said trunk is delivered through an opening 37 in the hopper 75 shaped bottom of this compartment of the main casing into any suitable receptacle. Leading from this compartment into the compartment between the partition 16 and the second end or head 13^a of the main casing, is a relatively large and substantially 80 cylindrical conduit 38 for the reception of the dust laden air delivered from the outlet ends of the three trunks 25, 26, and 27 and within this last compartment of the main casing is mounted a fan 39, preferably inclosed within an auxiliary casing 40, which 85 as shown in Fig. 8, is so constructed as to provide any desired number of openings 41, all of which lie in planes radial to the shaft; it being noted that the curvature of those 90 sections of the fan casing 40 leading to and immediately adjacent said openings is eccentric to the shaft 8 on which the fan is mounted.

The main portion of the compartment between the head 13^a and the partition 16 constitutes an enlarged dust settling chamber in which I preferably mount a guard 42 between 100 the bottom of the fan casing 40 and the conveyer 5;—this guard or baffle being inclined downwardly from one side of the compartment across the same to a point relatively near the opposite side thereof so as 105 to receive any dust collected within said compartment without agitating the dust already settled, and deliver it to the inclined side of the bottom 4 of the main casing, from which it is free to pass into the conveyer trough. Suitable openings are provided 110 through the partition 16, as indicated at 43, whereby the air from which dust has been separated is free to pass into the compartment between the partition 16 and the partition 15; there being also an opening 115 through said latter partition whereby said air may be delivered into the compartment between it and the partition 14.

In order that the air may be compelled to take a relatively tortuous course through the 120 compartment between the partitions 15 and 16, I mount a baffle plate 45 adjacent the opening 44, as indicated in Fig. 2. It will be noted that all of the compartments of the main casing open into the conveyer trough 125 5, so that the dust, separated at each step of the operation of the machine, is delivered into said trough and is carried by the conveyer 6 toward an opening 46 in the head 13 of the casing of the machine, from whence 130

it is delivered through an outlet spout 47 provided with an automatic valve 48 whereby such outward passage of solid material is permitted; although air is effectually prevented from entering the casing under normal conditions.

In using my machine, the grain to be treated is placed in the hopper receptacle 15, from which it is fed by the screw conveyor 18 through the opening 16 into the space between the first pair of carborundum plates 20. Inasmuch as the shaft 8 is driven at a suitable speed from any desired source of power, the first grooved or vaned disk 21 is turned in such manner as to force or throw the particles of grain into engagement with the faces of said plates 20 so that it is thoroughly and quickly scoured thereby in the desired manner.

From time to time the more or less perfectly scoured grain is thrown upwardly into the space within the cover 22 of the opening in the perforated cylinder 17, from whence it falls into the space between the second pair of carborundum disks; it being noted that from this entire compartment as well as from that succeeding, all of the heavier particles of solid material such as dirt, dust or foreign material are permitted to pass through the perforations of the cylinder 17, whence they fall into the trough 5.

As before noted, I may provide any desired number of these scouring units and from the last of them lead the grain through the hollow of the cover 22 into the beater section of the perforated cylinder 17. The beater in this section more or less violently agitates the grain, throwing it out against the sides of the cylinder and giving it a high polish as well as causing the particles removed from it, together with any other particles of solid material mingled with the grain, to pass through the perforations in the cylinder to the trough 5.

The polished grain at the innermost end of the beater section is delivered from time to time into the conduit 24^a, from whence it flows into the first dust separating trunk 25 where it meets an upwardly flowing current of air drawn into the casing by the fan 39. Falling through this air current, it passes through an opening 34 into the second trunk 36 where it meets a second upwardly flowing air current and thence passes through the opening 36 into the third trunk. Here also it strikes an upwardly flowing air

current, whose action, like that of the currents in the other trunks, is to separate the relatively light particles of dust and foreign material from the grain and carry them upwardly through said trunks.

The grain is finally delivered from the machine through the outlet 37, while the dust laden air from the three trunks passes out of these latter around the valve 29, which compels it to completely change its direction of flow, the greater part of the material carried by said air being dropped from these trunk outlets through an outlet 37^a which may be connected to lead into any desired receptacle.

The air carrying the lighter particles of dust then passes through the conduit 38 into the fan 39, from whence it is discharged in lines tangential thereto into the relatively large compartment between the head 13^a and partition 16. In this latter the last portions of the dust settle out of the air, which may thereafter flow either into the room in which the machine is situated or may be delivered directly to the air openings 33 and 35 of the trunks 25 and 26.

I claim;—

1. The combination of a perforated casing having an inlet and an outlet for grain; two plates of abrading material in the casing; a grain agitating device between said plates; means for turning said device; and threaded members extending between the peripheries of the plates for adjusting the distance between them and the agitating device.

2. The combination of a perforated casing having an inlet and an outlet for grain; a partition dividing said casing into compartments; a plate of abrading material in one of the compartments; a grain agitating device having a face substantially parallel with said plate; a beater in the other compartment; a conduit extending around the partition and placed to guide grain from the abrading compartment to that having the beater; means for moving the plate and the agitating device relatively to each other; and means for actuating the beater.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

AUGUSTUS WOLF.

Witnesses:

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M. D. LEMASTER.