No. 677,347. Patented July 2, 1901.

J. T. EWAN.

GRAIN SCOURING MACHINE.

(Application filed Oct. 12, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

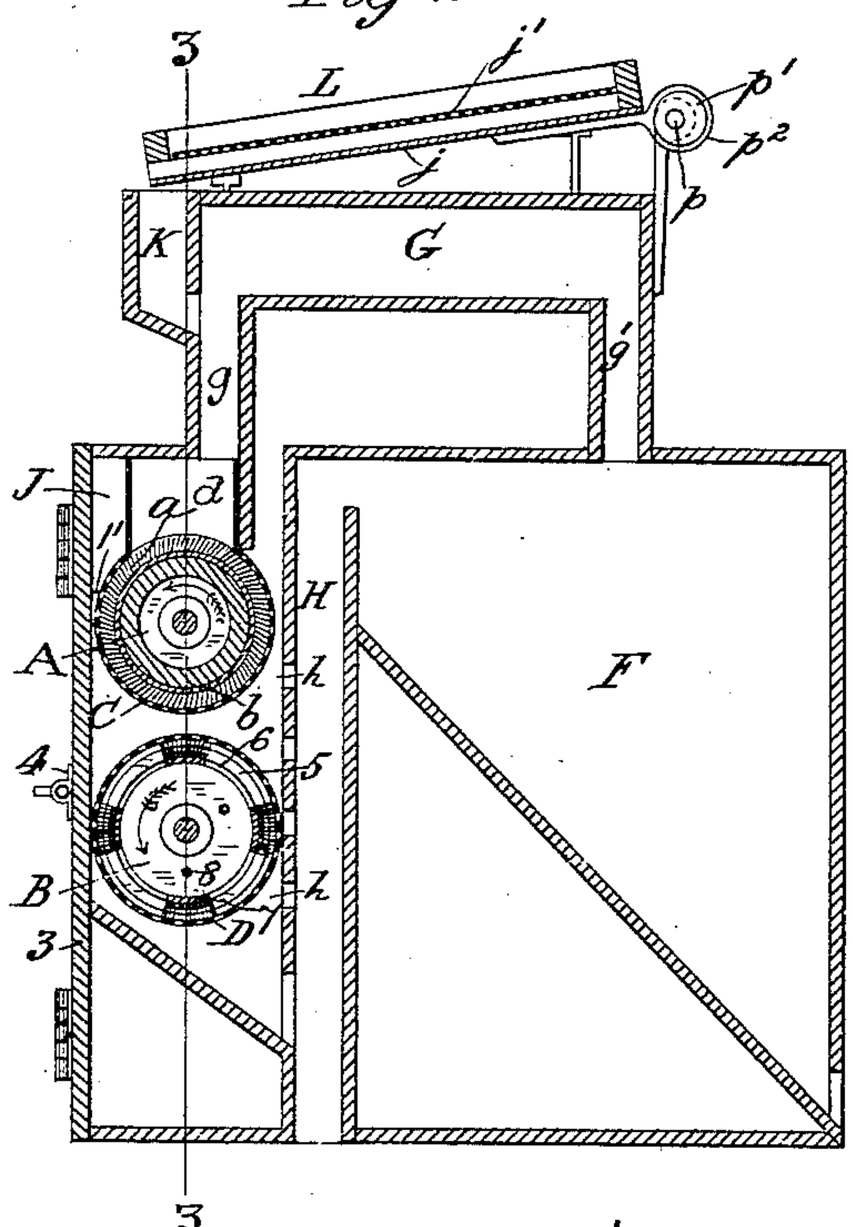

Fig. 2.

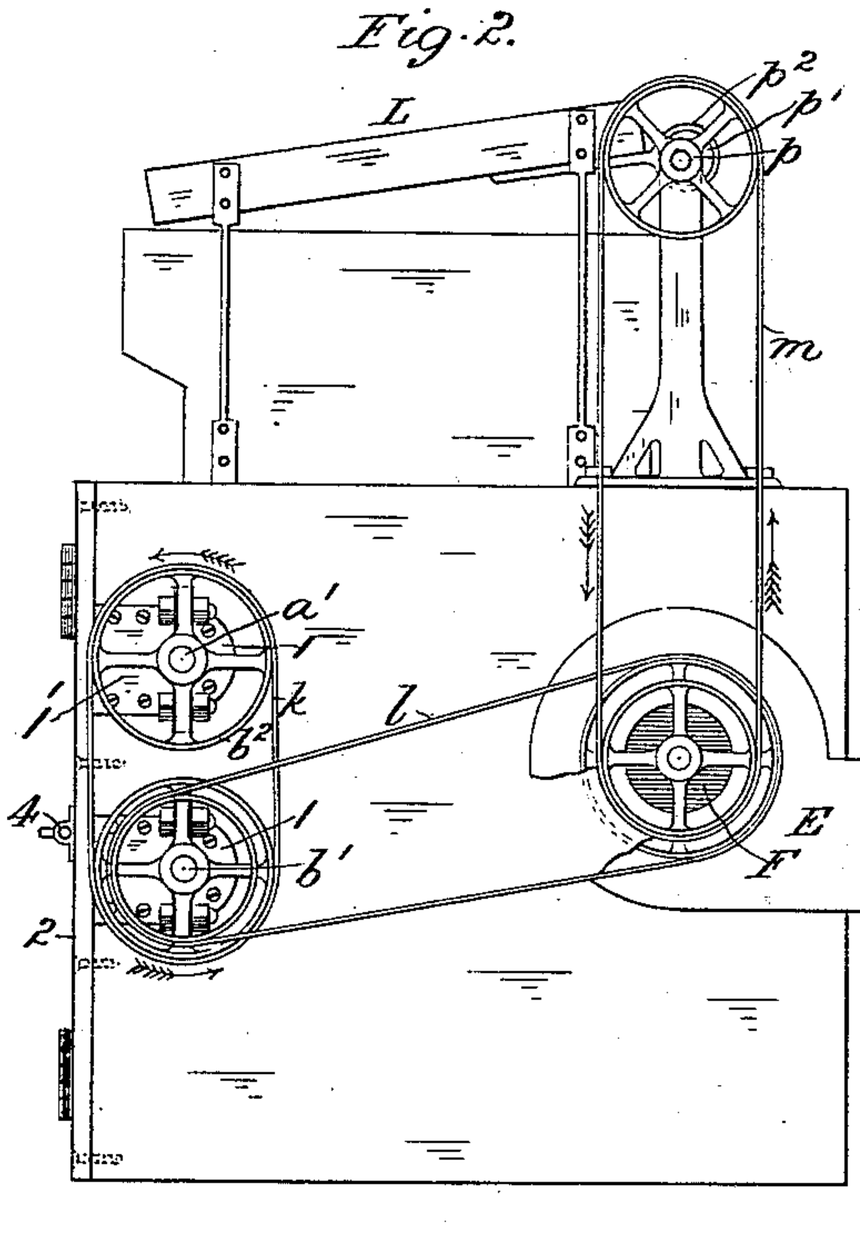

Fig. 3.

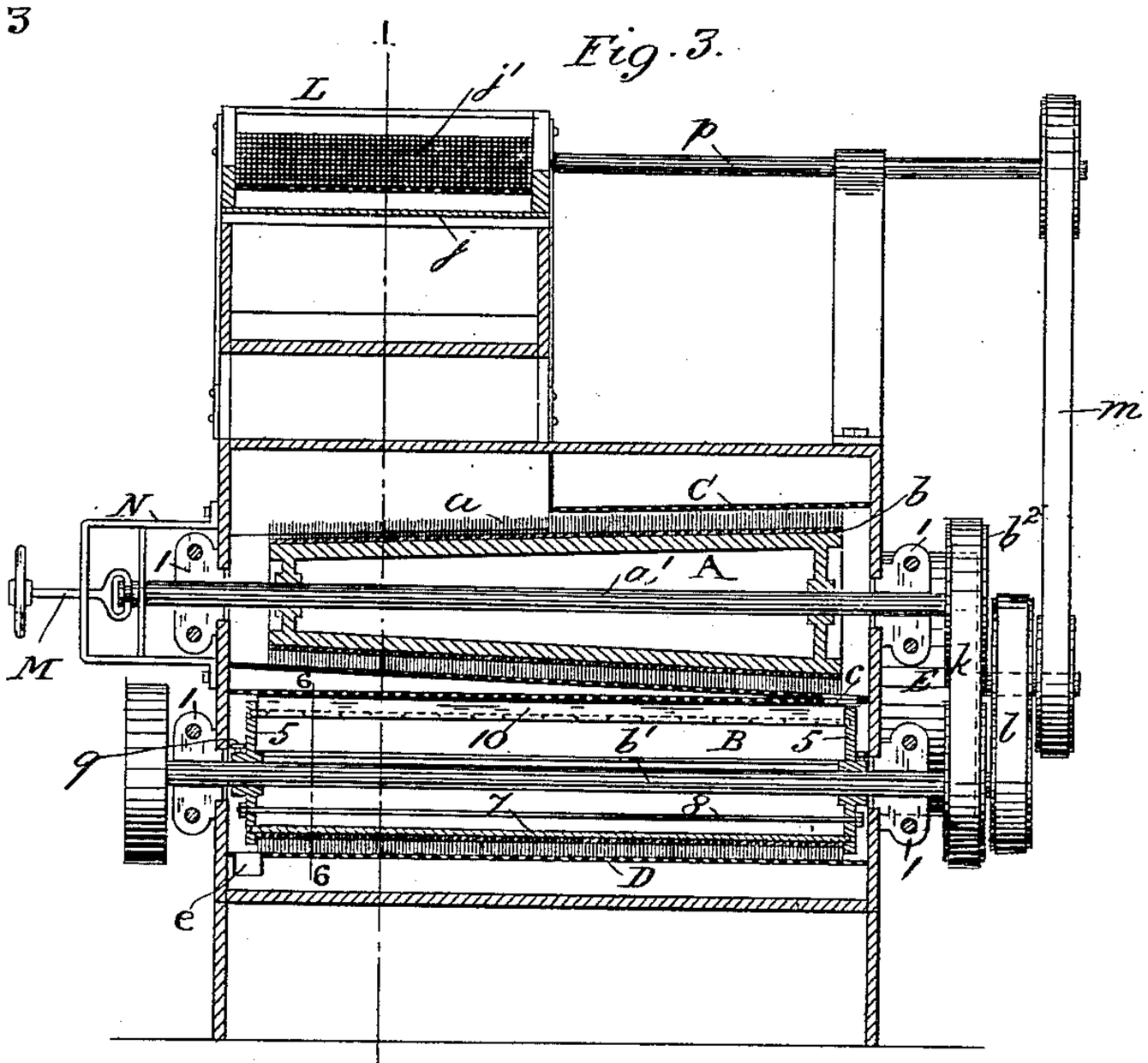

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Fig. 4.

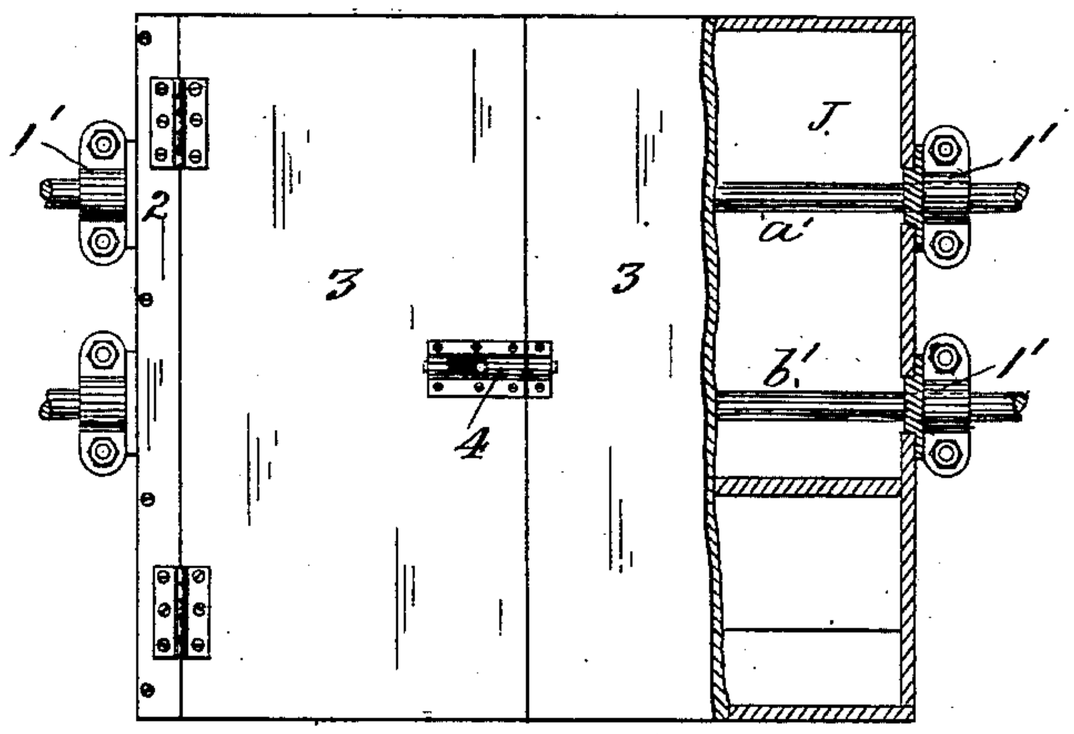


Fig. 5.

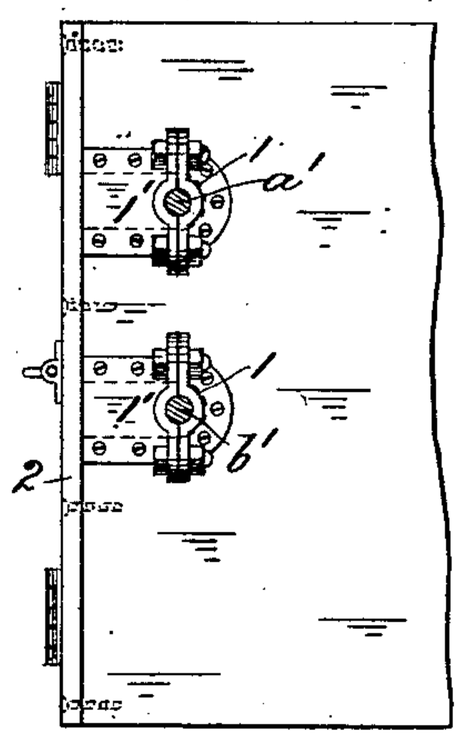


Fig. 6.

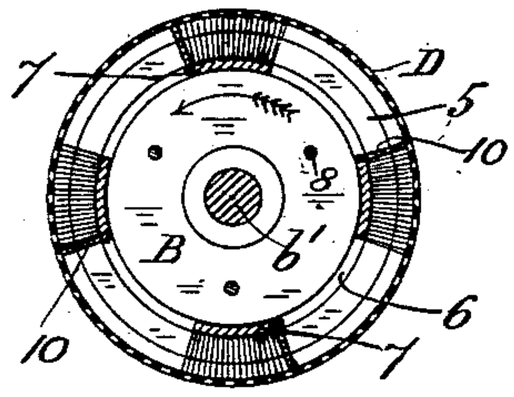
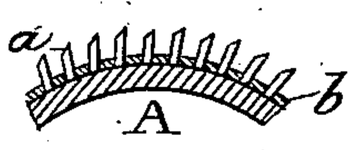


Fig. 7.



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UNITED STATES PATENT OFFICE.

JOHN T. EWAN, OF BETHALTO, ILLINOIS.

GRAIN-SCOURING MACHINE.

SPECIFICATION forming part of Letters Patent No. 677,347, dated July 2, 1901.

Application filed October 12, 1900. Serial No. 32,857. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. EWAN, a citizen of the United States, residing at Bethalto, in the county of Madison and State of Illinois, have invented certain new and useful Improvements in Grain-Scouring Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in machines for scouring wheat and other grain; and it consists in the novel arrangement and combination of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a sectional elevation of the machine, taken on the line 1 1 of Fig. 3. Fig. 2 is a side elevation of the machine with one side of the fan-box removed and a portion of the latter broken away, showing its connection with the suction-chamber. Fig. 3 is a sectional elevation taken on line 3 3 of Fig. 1. Fig. 4 is a front elevation of the lower portion of the outer casing, one of the doors being broken away. Fig. 5 is a detail in side elevation, showing the sectional bearings of the scouring and brushing cylinders, respectively. Fig. 6 is an enlarged sectional detail on line 6 6 of Fig. 3 and Fig. 7 is a detailed sectional elevation of the scouring-cylinder, showing the preferred form of scouring-teeth.

The present invention is an improvement on the construction of scouring-machine shown and described in United States Letters Patent granted to me under date of October 23, 1883, numbered 287,370, and has for one object to qualify the old construction in certain particulars and details, whereby the interior of the machine may be readily accessible for cleaning purposes.

A further object is to improve the construction of the brushing-cylinder, the advantages thereof being better apparent from a detailed description of the several improvements, which are as follows:

Referring to the drawings and reviewing so much of the description as pertains to the old construction, A represents the scouring-cylinder, and B the brushing-cylinder. These are surrounded by the perforated metal casings C D, respectively, and are journaled one above the other in the end compartment J of the main inclosure or casing of the machine, the scouring-cylinder being covered with wire teeth *a*, which scour the grain as the cylinder revolves. The teeth may be secured directly to the cylinder or to leather, canvas, or textile material *b*, applied so as to completely encompass the cylinder circumferentially, or it may be applied thereto in strips, and the teeth may be arranged slantingly or straight or may be beveled, blunt, or plain-pointed.

The perforated casings C D are connected by small pipes or openings *c*, and the casing C receives the grain at *d*, and the grain is discharged at *e*, so that the grain is compelled to traverse the whole length of both cylinders A B in its passage through the machine. Before entering the casing C and all the while during its passage through the machine the grain is subjected to the action of a strong draft or current of air, which is maintained by the exhaust-fan E and which separates and carries off the dust and other impurities mingled with and detached from the grain. The fan E and main casing or inclosure of the machine may be variously arranged to maintain this current or draft of air through the grain as it enters the machine and while under treatment; but I prefer to construct the main inclosure so as to form the suction box or chamber F and passages G and H, which put the box F in communication with the end compartment J—the former through the short passages *g g'*, the latter through the series of holes *h h*—and to arrange the fan E to exhaust the air from the box F, the grain being fed to the perforated casing C from the receiving-chamber K through the passage *g*, where it meets a continuous upward current of air, as will be understood from Fig. 1. The grain enters the receiving-chamber K from the inclined bottom *j* of the shaking-hopper L. Above this bottom *j* is fitted in the hopper the screen *j'*, to which the grain is first fed and which separates the straws, sticks, stones, and other coarse impurities from the grain before it enters the machine.

The cylinder A is by preference made conical, as shown in Fig. 3, and its shaft *a'* is made of sufficient length and its pulley b^2 of sufficient width to permit the shaft *a'* to be

moved longitudinally in the machine for adjusting the cylinder A with respect to the casing C and openings *c* for increasing or diminishing the space between the ends of the teeth *a* and the casing C, thus regulating the violence with which the grain will be scoured and the speed at which it will be admitted to the action of the cylinder, and in order that this cylinder A may be adjusted while the machine is in operation I swivel to one end of the shaft *a'* the rod M, which is supported by the yoke N, so that by drawing or pushing upon the rod the cylinder may be adjusted and the action of the machine regulated by the attendant without the trouble and delay of stopping the machine. The shaft *b'* of the brushing-cylinder B is the power-shaft of the machine, from which through suitable pulleys and the belts *k l m* motion is imparted to the scouring-cylinder A, fan E, and shaft *p*, which through suitable eccentrics *p'* and straps p^2 reciprocate the hopper L.

The foregoing is substantially a review of the machine covered by the patent above referred to. I have, however, qualified the construction in certain details, the advantages of which will become apparent. It will be noted that in the patented construction no provision is made for ready access to the cylinders A B should occasion arise for cleaning or repairing the same. I have accordingly provided the shaft of each cylinder with a sectional bearing, the section 1 being secured to and permanently carried by the side wall of the casing of the machine and the section 1' being adapted to be coupled to the section 1 and simultaneously secured to the casing-wall. Should occasion arise to remove the cylinder from the machine, the sections 1' are uncoupled from the sections 1, and the cylinders, together with the said sections 1' and the shafts *a'* or *b'*, may be withdrawn bodily through the front of the machine. The sections 1' extend forward and are flush with the front edges of the side walls of the main casing. When the bearings 1 1' are once in place, a suitable wooden strip 2 is screwed to the front vertical edge of each side wall, said strip covering the front vertical edge of the section 1'. To these strips 2 the front doors 3 are subsequently hinged, the doors being kept closed and locked by a barrel-bolt 4 of ordinary construction. Should occasion arise to remove the cylinders A B, the strips 2, with their doors, are first removed, when the sections 1' of the bearings may be withdrawn, as already indicated.

The cylinder B in the present instance is not a hollow shell, as in my patent, but is composed of the terminal heads or disks 5, slipped over the shaft *b'*, the said heads having formed along their inner faces the annular grooves 6 for the reception of the opposite ends of a series of staves 7, spaced suitable distances apart, the heads being first tightly drawn against the staves from opposite directions by means of the nuts on the tie-rods 8, after which the heads are clamped to the shaft by the set-screws 9, carried by the hub portions of the heads. In the present instance each stave is provided along the outer surface with ordinary hair bristles or brushes disposed the whole length of the stave, the advancing wall of each brush being protected by a longitudinal (preferably) leather strip 10, secured along its lower edge to the side of the stave. As the series of brushes revolve (in the direction of the arrows) this leather protecting-strip (which is of the same height as the brushes) acts as a deflector or beater for the grain, carrying the latter against the perforated casing D and cleaning the grain. This strip 10 is not only yielding but elastic and does not therefore break the grain, but serves as a wiper therefor, removing all scale or scurf therefrom. Such a strip, as 10, made of leather, is superior to any metallic strip, for the reason that it is elastic and yielding and, as a matter of fact, more durable. With my present construction I am enabled to dispense with the metallic bristles disposed about the cylinder B, but substitute the ordinary hair bristles or brushes.

By spacing the staves 7 apart, as described, the cylinder B becomes open peripherally, allowing a portion of the grain to fall through it and be subsequently picked up by the brushes and scoured over again. In this way thorough scouring is insured. Under the old construction, where the cylinder was peripherally closed, a portion of the grain was liable to escape without the thorough scouring possible under the present improved construction.

It is of course to be understood that I do not limit myself to the precise details herein set forth, any modifications thereof falling within the spirit of my invention, nor do I wish to be limited to the number of cylinders, for while I have here shown two I may use a series of any number from one up.

Having described my invention, what I claim is—

1. In a grain-scouring machine, an outer casing or inclosure, a series of brush-cylinders mounted therein adjacent to the front wall of said casing, sectional bearings for the shafts of said cylinders, the front edge of the outer section of each bearing being located along the vertical edge of the wall carrying the same, whereby the said section may be removed together with the cylinders and their supporting-shafts, and removable doors having their hinge-line spanning the front edge of the outer section of each bearing, substantially as set forth.

2. In a grain-scouring machine, an outer casing or inclosure, a series of revolving cylinders mounted therein adjacent to the front wall of said casing, sectional bearings for the shafts of said cylinders, the front edge of the outer section of each bearing being disposed along the outer vertical edge of the wall carry-

ing the same, strips secured to the said vertical edges, and doors hinged to said strips, substantially as set forth.

3. In a grain-scouring machine, a suitable cylinder comprising terminal heads, annular grooves disposed along the inner adjacent faces of the heads, suitable brush-staves spaced suitable distances apart having their ends inserted into said grooves, tie-rods for drawing the heads against the staves, a central shaft, means for securing the heads to the shaft, and a yielding elastic deflecting-strip carried by each stave in front of the advancing wall of the brushes the latter being disposed along the outer surface of each stave, substantially as set forth.

4. In a grain-scouring machine, a suitable cylinder having a series of peripherally-disposed brush-staves spaced suitable distances apart, the advancing edge of each stave being provided with a yielding elastic leather deflecting-strip extending substantially the full height and length of the brushes the latter being disposed along the outer surface of each stave, substantially as set forth.

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

JOHN T. EWAN.

Witnesses:
EMIL STAREK,
G. L. BELFRY.