No. 641,986. Patented Jan. 23, 1900.

J. A. McANULTY.

FLOUR BOLT.

(Application filed Dec. 8, 1897.)

(No Model.) 4 Sheets—Sheet 1.

Fig. 1.

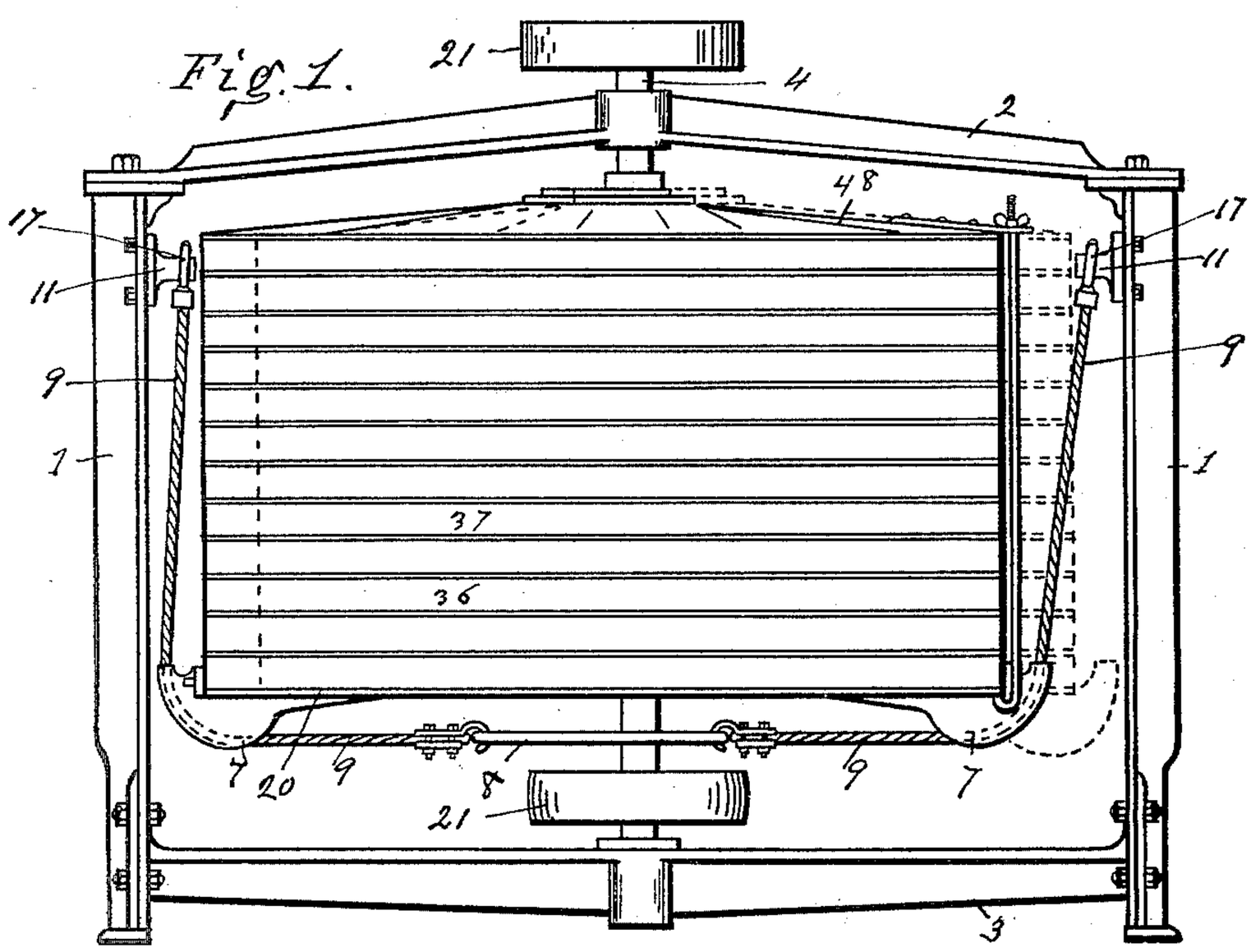


Fig. 2.

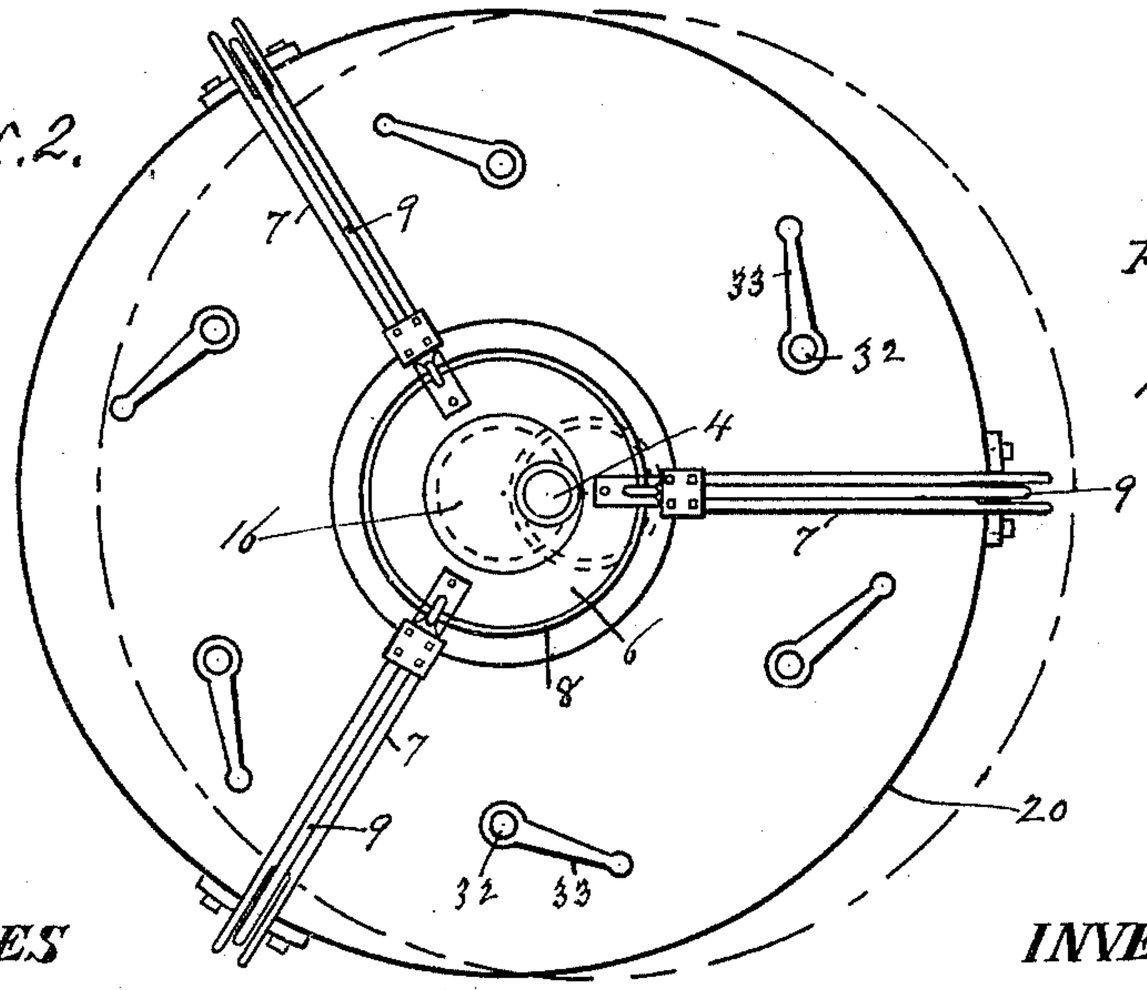
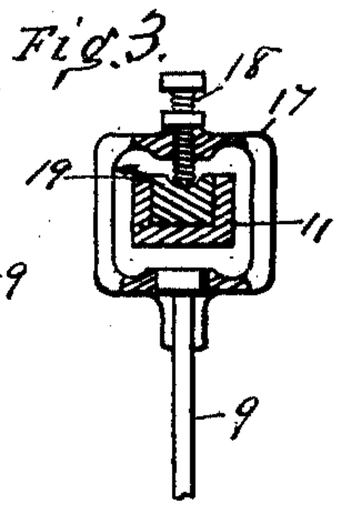


Fig. 3.



WITNESSES

J. J Richardson

Donald. M. Stevenson

INVENTOR

John A. McAnulty

No. 641,986. Patented Jan. 23, 1900.

J. A. McANULTY.

FLOUR BOLT.

(Application filed Dec. 8, 1897.)

(No Model.) 4 Sheets—Sheet 2.

Fig. 4.

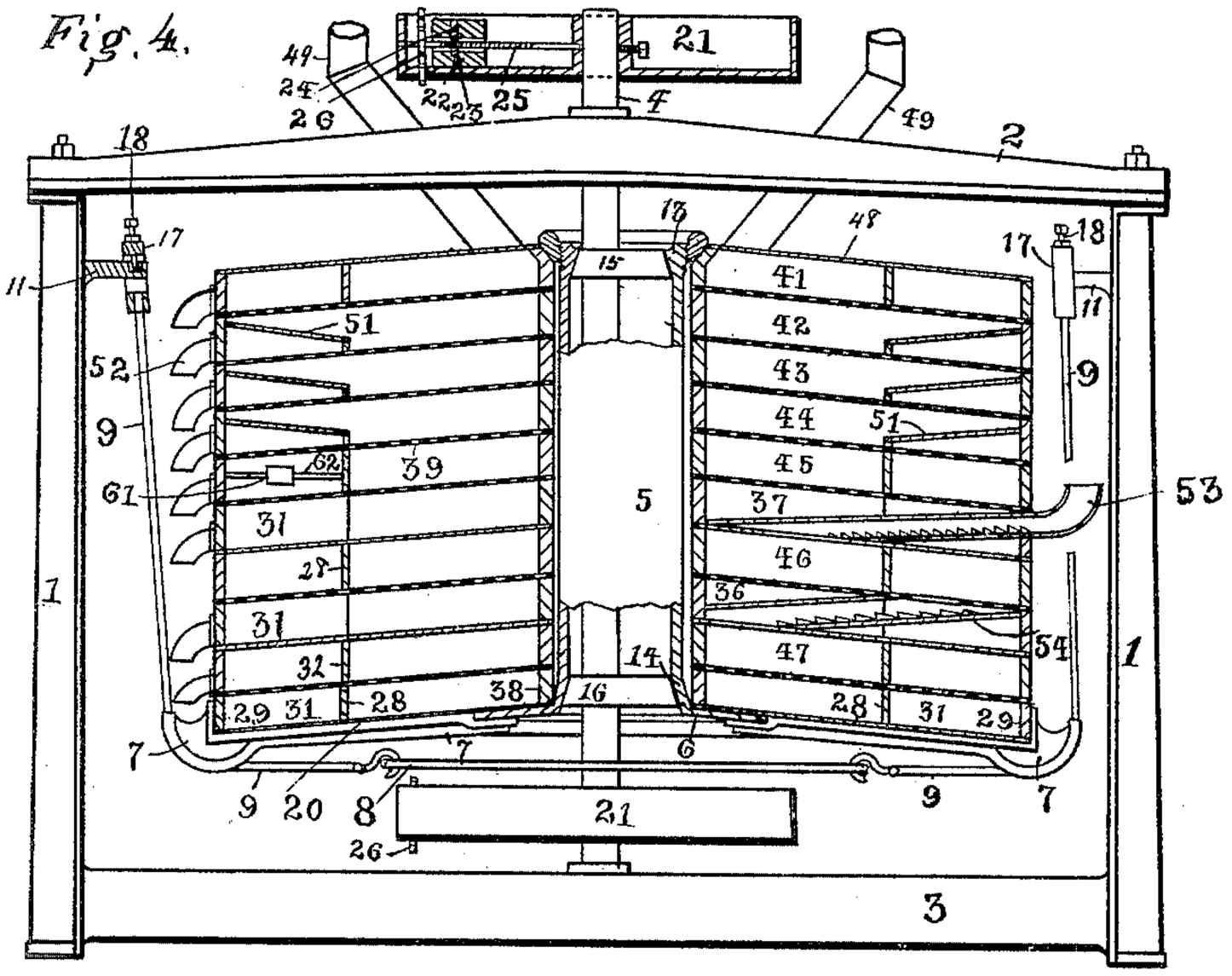


Fig. 6.

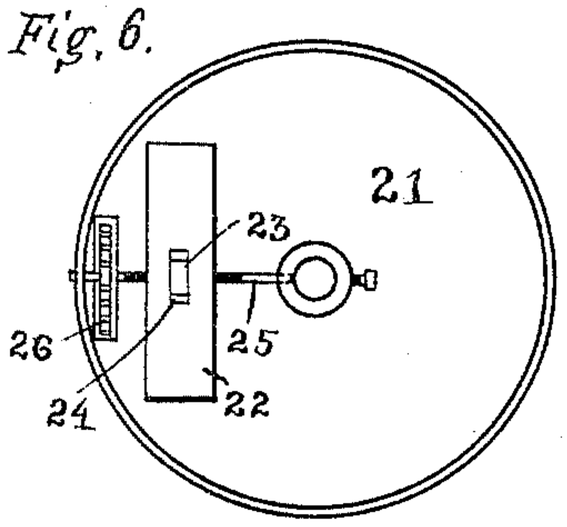


Fig. 5.

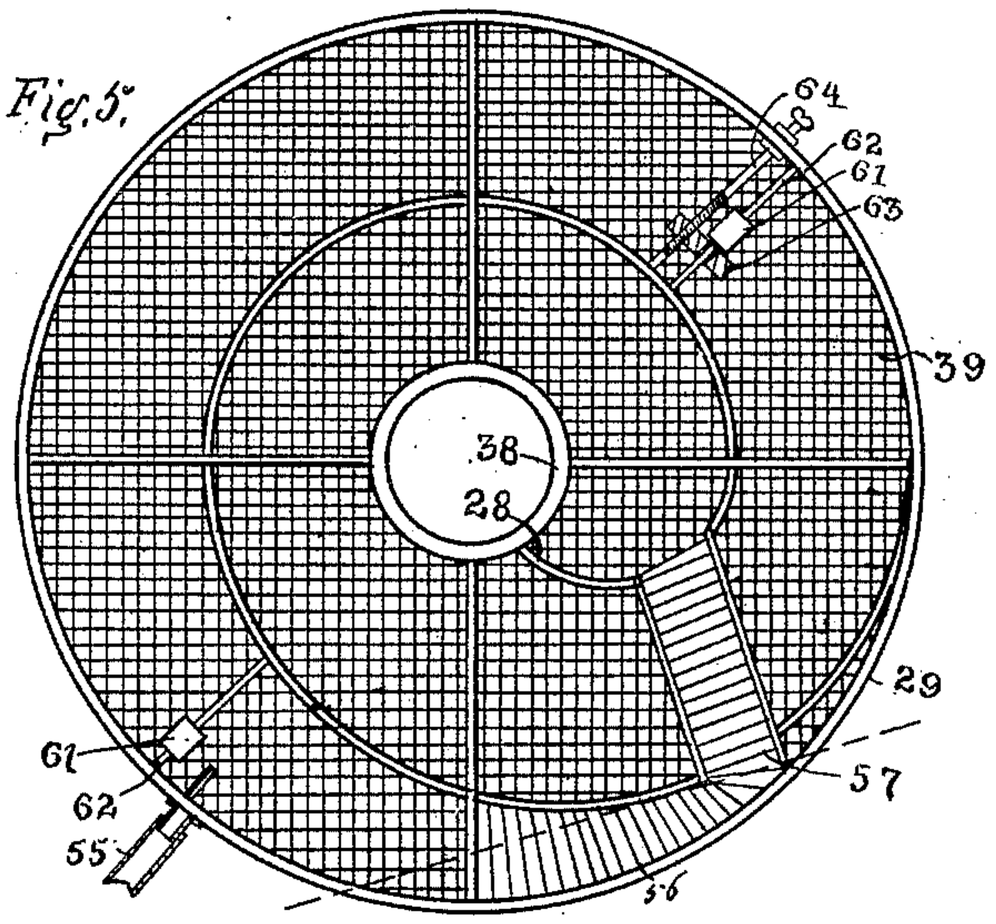
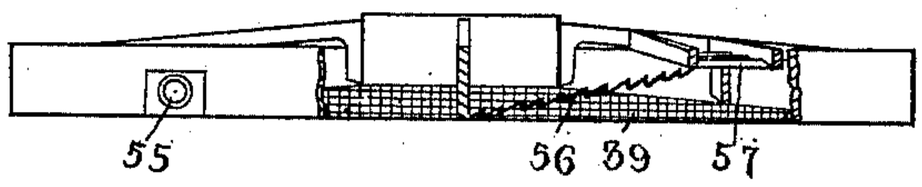


Fig. 7.



WITNESSES.

W. H. Pugh

M. E. Carr

John A. McAnulty. INVENTOR.

By Robert S. Carr. Atty.

No. 641,986. Patented Jan. 23, 1900.

J. A. McANULTY.

FLOUR BOLT.

(Application filed Dec. 8, 1897.)

(No Model.) 4 Sheets—Sheet 3

Fig. 8

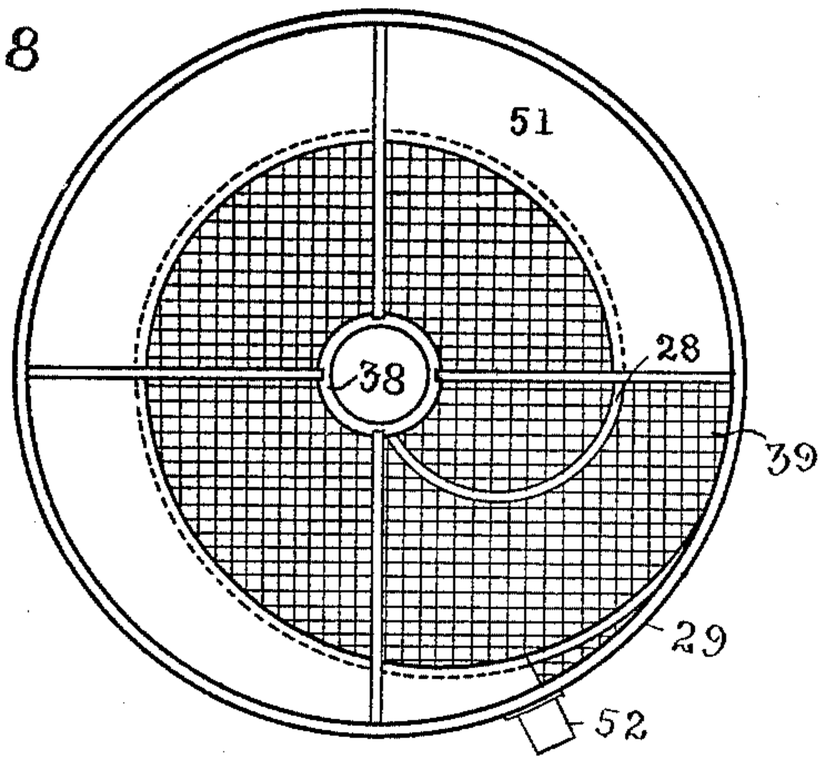


Fig. 9.

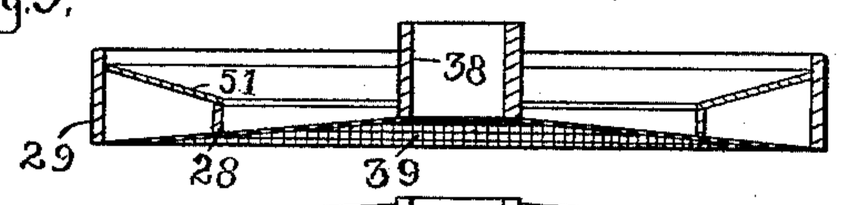


Fig 12.

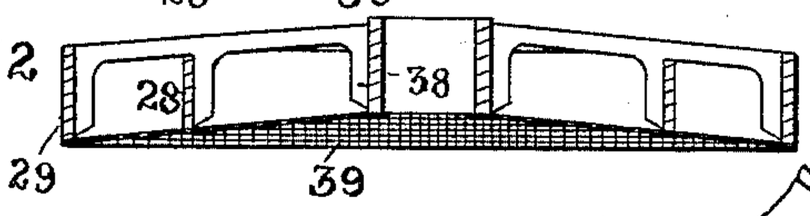


Fig. 10.

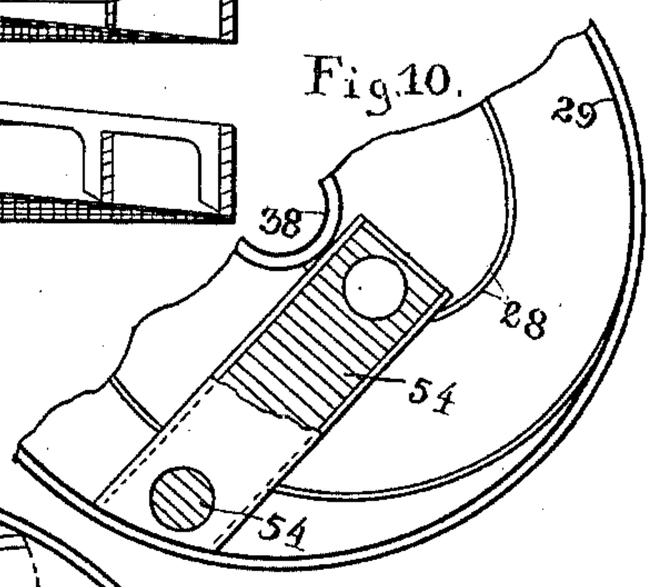
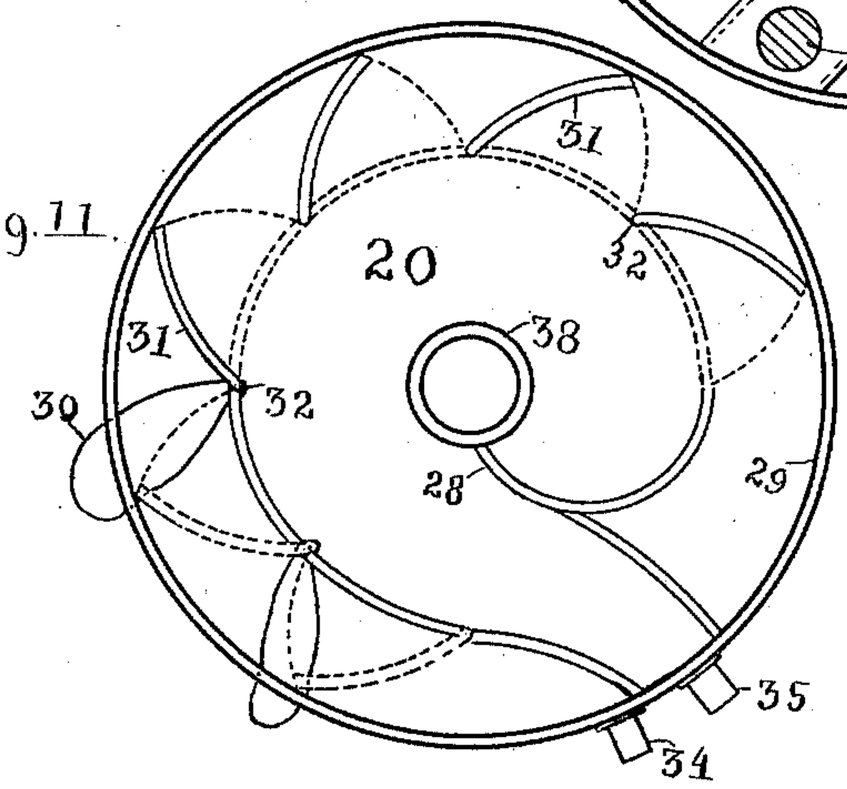


Fig. 11.



WITNESSES,

H. H. Pugh

Mary Card.

John A. McAnulty, INVENTOR.

By Robert S. Carr, Atty.

No. 641,986. Patented Jan. 23, 1900.

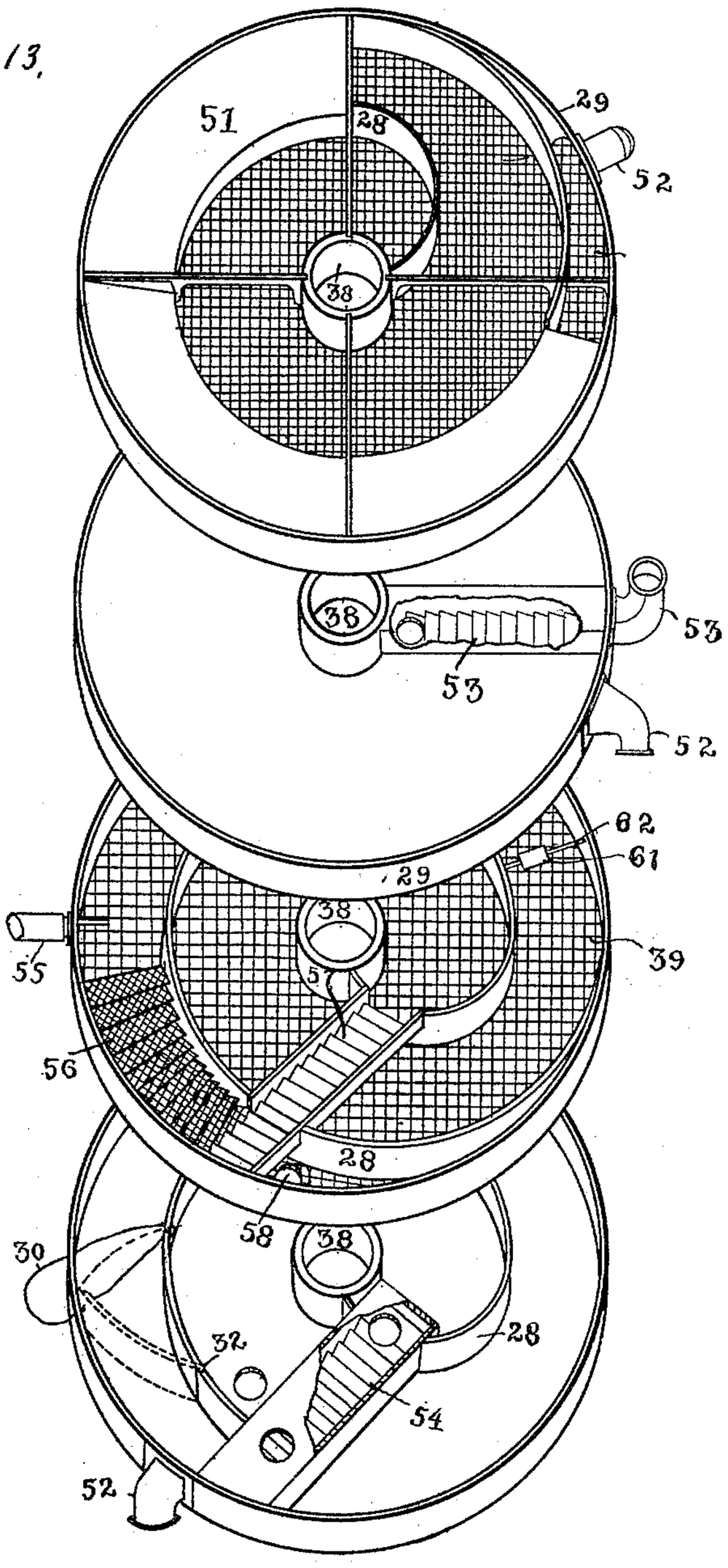
J. A. McANULTY.

FLOUR BOLT.

(Application filed Dec. 8, 1897.)

(No Model.) 4 Sheets—Sheet 4.

Fig. 13.



WITNESSES,
A. H. Pugh
M. E. Carr.

John A. McAnulty, INVENTOR.
By Robert S. Carr. Atty.

UNITED STATES PATENT OFFICE.

JOHN A. McANULTY, OF HAMILTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WALTER MORRIS, OF SHANDON, OHIO.

FLOUR-BOLT.

SPECIFICATION forming part of Letters Patent No. 641,986, dated January 23, 1900.

Application filed December 8, 1897. Serial No. 661,131. (No model.)

To all whom it may concern:

Be it known that I, JOHN ARMSTRONG McANULTY, a citizen of the United States, residing at Hamilton, in the county of Butler and State of Ohio, have invented certain new and useful Improvements in Flour-Bolts, of which the following is a specification.

My invention relates to flour-bolts; and the object of my improvement is to provide a gyrating-sieve machine capable of accomplishing all of the separations required to be made in converting cereals into flour and other merchantable products. This object is attained in the following-described manner, as illustrated in the accompanying drawings, in which--

Figure 1 is a front elevation of a machine embodying my improvements; Fig. 2, an inverted view showing the bottom of the sieve structure; Fig. 3, a vertical elevation, with parts in section, of the adjustable pivotal engagement of the swing-support 9 with the bracket 11 of the frame; Fig. 4, a vertical section of the machine with parts in elevation and the sleeve partly broken out; Fig. 5, a plan of one of the sieves, showing the bridge and approach thereto for carrying the cleaning material over the passage formed between the guides and depositing it near the center of the sieve and showing also the intake-spout 53 with parts broken out, the knocker 61 with its supporting and adjusting mechanism, and the flexible tubing 55; Fig. 6, a plan of the driving-pulley, showing mechanism to adjust the balancing-weight 22 while the pulley is in motion; Fig. 7, a vertical section of Fig. 5 on a line drawn longitudinally through the approach 56 to the bridge; Fig. 8, the plan of a sieve provided with deflecting or cant board 51 and showing position of discharge opening or spout 52; Fig. 9, a vertical section through the center of Fig. 8, showing the slant of the cant-board 51; Fig. 10, the plan of a portion of a discharge-board and of a conducting-passage 54, leading therethrough, with parts broken out; Fig. 11, the plan of a discharge-board, showing the segments 31 of the spiral partition of guide 28 and means of adjusting them; Fig. 12, a diametrical section of a sieve, showing interior construction where the cant-board is not used; Fig. 13, a perspective view of sieves and flour-boards, as separated in a vertical line to disclose the interior relations of each to the others.

In the drawings, 1 represents posts of a framework of any suitable construction having top and bottom cross-ties 2 and 3, in which is journaled an upright eccentric-shaft 4 for the purpose of imparting gyratory motion to the sieve structure. To this end the eccentrics are surrounded by a vertical sleeve 5, which is provided at its base with an outwardly-extending flange 6. Fastened to and projecting radially from said flange are arms 7, upon which rest a series of superposed discharge-boards and sieves. Said sieves and discharge-boards have central circular openings to fit loosely around the sleeve to permit of their ready removal. The sleeve, arms, and surperposed discharge-boards and sieves are supported and prevented from partaking of the rotary movement of the eccentric-shaft by means which will permit the same to have imparted to them a gyratory movement in a horizontal plane due to the relation of the eccentric-shaft. These means consist in the present instance of the swing shown in Figs. 1, 2, and 4 and consist of a ring 8, encircling the eccentric-shaft, having one end of each support 9 of the swing attached to it at suitable intervals, the other end of said supports being pivotally attached to brackets 11, which project inwardly from the posts of the framework. These supports 9 pass around the sheave-shaped ends of the arms 7, and in which they may slide, if necessary, when the sieve structure is set down upon them until the concaved eccentric-straps 13 and 14, formed in the upper and lower ends of the sleeve 5, find their proper bearings in contact with the respective conical-shaped eccentrics 15 and 16. Top eccentric 15 is smaller than bottom eccentric 16 to permit the sleeve to be removed. Provisions for taking up any wear incident to the continued use of the machine may be made by any of the well-known methods of lengthening and shortening extensible bodies or bars that may be attached to the brackets. I prefer that form of construction shown in Figs. 1, 3, and 4, in which a clevis-shaped connection

17 is rigidly attached to the upper end of one or more of the supports and contains a lighter screw 18, that extends down through its upper part and into cup 19, formed in the corresponding bracket. By this means the turning backward of the lighter screw extends the support and lowers its connection with the ring, which equalizes the lengthening or shortening between the connecting-supports that together form the swing, thus raising or lowering the sieve structure until the desired contact between eccentric bearings and straps are had. The tendency of the weight of the sieve structure to cause the tapering eccentrics to bind in their bearings tends to rotate the sleeve and twist the swing until it lifts the sleeve enough only to automatically adjust the bearings.

Balancing-wheels 21 are mounted on the eccentric-shaft above and below the sieve structure, and either may be used as a drive-pulley. Each of said wheels may contain an adjustable balance-weight 22, preferably formed as shown in Figs. 4 and 6, in which the balance-weight is connected, by means of a loose nut 23, dropped into a recess 24, formed in it, with a threaded bar 25, journaled in the hub of the wheel at its inner end and journaled in the rim of the wheel at its outer end and upon which is a fixed sprocket-wheel 26, having its teeth extending above and below the rim of the wheel and by which it may be revolved either to the right or left when the machine is in operation. By this movement in one direction the balance-weight is moved outward toward the rim of the wheel, and by the movement of the same in the opposite direction the balance-weight is moved inward toward the shaft.

Directly upon the arms 7 rests a discharge bottom board 20 of imperforated material and which is constructed lower at its circumference than near its central part and which is fastened to an annular rim or circular piece of framework 38, surrounding the sleeve 5. To this central annular rim is connected the inner end of a partition 28, which thence extends in a spiral path to the periphery of the said bottom board 20 and around which extends the rim 29. The spiral partition 28 may make a partial, an entire, or several turns around the central ring in its course to the rim. This bottom discharge-section 20 is preferably formed as shown in Fig. 11, in which the spiral partition 28 is divided into a series of segments 31, each being hinged to the discharge-board by means of bolts 32, connecting them through holes in said board 20 with movable arms 33, operating under the said discharge-board and pressing upward against its bottom sufficiently hard to hold the segments in any position desired and by which any material precipitated into said board through the sieve above may be discharged at either of the discharge-openings 34 or 35. The series of segments 31, that may be formed in similar discharge boards or sections 36 and 37, located in the body of the cluster or nest of sieves, are each hinged to the bottom of the respective discharge-boards and are operated from the outside of the machine by means of cords 30, having one end attached to the movable end of respective segments 31 and then passing out through a hole in the rim and being returned through a separate hole therein to and around the hinge of the next segment and thence connected with the movable end of the respective segment at the same point at which the other end of the cord is attached and by which means the segments may be independently moved at the will of the operator when the machine is in operation.

The discharge-board or bottom 20 forms a base upon which may be mounted one or more sieving-frames 41 to 47, inclusive, of like or different patterns and adapted to the proper separation of the several kinds or classes of material to be operated upon, as well as intermediate discharge-boards 36 and 37 for carrying off the finished product. The terminating upper sieve 41 is provided with a cover 48, having suitable receiving-spouts 49 attached thereto and to which flexible receiving-spouts (not shown) may be attached. To the under surface of the circular outside rim 29 and inner rims 38 and the spiral partitions 28 are fastened silk or wire netting, which forms the bottom 39 of the sieves. The second sieve 42 from the topmost one in the series for purposes of grading and to increase its capacity for bolting may be constructed as shown in Figs. 8 and 9, where it will be seen that a portion of the surface between the outer rim 29 and spiral partition 28 is covered over with an imperforated deflecting-board 51, canting downward toward the center from the outside rim in such a manner that material sifting through the netting attached to the top sieve onto the deflecting-board is deflected into the space between the inner rim 38 and the spiral partition 28 and is compelled in its course to pass under cover of board 51 to opening 52, where it is discharged free from any of the finer particles, which otherwise would be precipitated into it near to the discharge-opening 52. In practice a repetition of this form of sieve grades off material of different sizes, terminating with a discharge-board 37 for removing the finished product of the last sieve.

Intake-spout 53 leads from the outside of discharge-board 37 to an opening near its center and is adapted to conduct material from an outside supply through said board and deliver it on and near the center of sieve 46 thereunder. Conducting-passage 54 connects the discharge-opening in the edge of sieve 46 with an opening through and near the center of discharge-board 36 thereunder and is adapted to conduct the tailings from said sieve 46 through the opening in said discharge-board to the middle portion of sieve 47 thereunder. Both the intake-spout 53 and the conducting-passage 54 are preferably con-

structed with serrated bottoms to facilitate the movement of the material therethrough during the motion of the machine.

In separating materials which are coarse there is usually no necessity for the use of any means for keeping the meshes of the cloth or gauze from clogging and filling up; but in separating fine ground material the meshes of the gauze are liable to become clogged up. To prevent such clogging up, I place upon the cloth a quantity of seeds, pieces of leather, or other similar material, which circulates with the materials being sifted and prevents any clogging up of the gauze. As the required quantity of such cleaning material varies with the different conditions of the material being separated, I provide for the insertion and removal of more or less such cleaning materials while the machine is in action by forming a hole in the rim of each sieve, to which is attached a section of flexible tubing 55 of sufficient length to prevent the gyrating action of the machine from pulling it out of the operator's hands and through which the seeds or other cleaning material may be inserted by holding upward the hose and depositing the cleaning material therein and by which the same may be withdrawn by holding the hose downward, owing to the action of the machine throwing the cleaning materials against the rim and into the opening to which the tubing is attached.

To make each separate sieve separately controllable in the use of cloth-cleaning devices, the sieves are provided with approaches 56, formed of coarse gauze and with lateral serrations or separating-steps and bridges 57, as shown in Figs. 5 and 7, which lead from the surface of the bolting cloth or gauze, gradually rise over the discharge 58 for the material being bolted and is carried by the bridge over the space included between the outer and inner portions of the spiral partition and discharges into the central part of the sieve, leaving space underneath the approach and adjacent to the discharge-spout 58 to permit of the free discharge of the material from the sieve.

The cleaning material being introduced through the tubing 55, is carried by the action of the machine toward the approach 56 by its separating-steps, which catch and throw them upward and onward while the ground material passes through the meshes thereof. After ascending sufficiently they are thrown inward and across bridge 57 into the central part of the sieve, from which they pass onward and outward with the material being sifted, passing the point at which they were introduced, and continue their course around in the path described.

To prevent flour from clogging against any part of the sieves or flour-discharge boards or in the meshes of the sieves, jarring devices are affixed to the sieving and discharge boards, as shown in Figs. 4 and 5, where it will be seen that small weights 61 are loosely journaled on bars 62, attached to the rim and spiral partition. Said weights slide back and forth with every gyration of the machine, gently jarring against the rim and partition alternately and preventing accumulation of flour on any of the parts. Stop 63 is movable on bar 62 by means of thumb-screw 64 being threaded therein and projecting through the rim to limit the movement of weight 61 from the outside of the screen.

Having fully described my improvement, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination with a frame, a vertical shaft journaled therein, eccentrics secured on the shaft, a sleeve provided with eccentric-straps adapted to movably engage with the respective eccentrics, and a sieve-supporting base secured thereto, of a swing adjustably suspended from the frame and arranged to support the base, said swing being formed with a ring under the base to encircle the shaft without contact therewith.

2. The combination with a frame, a vertical shaft journaled therein, eccentrics on the shaft, a sleeve mounted on the shaft by means of eccentric-straps therein that movably engage with the respective eccentrics, and a sieve-supporting base carried by the sleeve, of a swing arranged to adjustably support the base and consisting of a plural number of members each depending from a pivotal connection with the frame, said swing being formed with an opening under the base for the passage therethrough, without contact, of the shaft.

3. The combination with a vertical shaft journaled in a frame and eccentrics secured thereon and toward its respective ends each eccentric being in form the frustum of a cone, the upper eccentric being smaller than the other of a removable sleeve provided with tapering eccentric-straps to engage with the respective eccentrics, a sieve-supporting base secured to the sleeve and a swing adjustably depending from the frame to support the base and sleeve, whereby the sleeve is automatically adjustable on the shaft.

4. The combination with a circular screen provided with a discharge-opening and formed with a rim and with a spiral partition of a canting-board declining toward the center of the screen from the rim and over said partition.

5. The combination with a screen containing a partition and arranged to receive gyratory motion of a weight arranged to automatically slide on a rod, said rod being secured at its respective ends to the partition and to the rim of the screen and in a horizontal plane and adjusting mechanism projecting without the rim and arranged to limit the movement of the weight from without the screen.

6. The combination with a circular screen arranged to receive gyratory motion in a horizontal plane and being formed with a rim and with a spiral partition of a bridge spanning

the distance between the rim and the partition and having transverse corrugations in its floor and a perforated and laterally-corrugated approach to the bridge from the sifting-surface of the screen.

7. The combination with a circular flour-board formed with a rim of a substantially spiral partition therein, a portion of said partition consisting of a series of segments each having one end hinged to the board and movable to engage the other end with the rim.

8. The combination with a circular flour-board formed with a rim of a partition of substantially spiral form therein, a portion thereof consisting of segments each having one end hinged to the board and means communicating with the outside of the board and with the respective segments and being arranged in a manner to permit the movement of the free end of the segments to or from the rim during the action of the board.

JOHN A. McANULTY.

Witnesses:
ROBERT S. CARR,
J. J. RICHARDSON.