

No. 677,259.

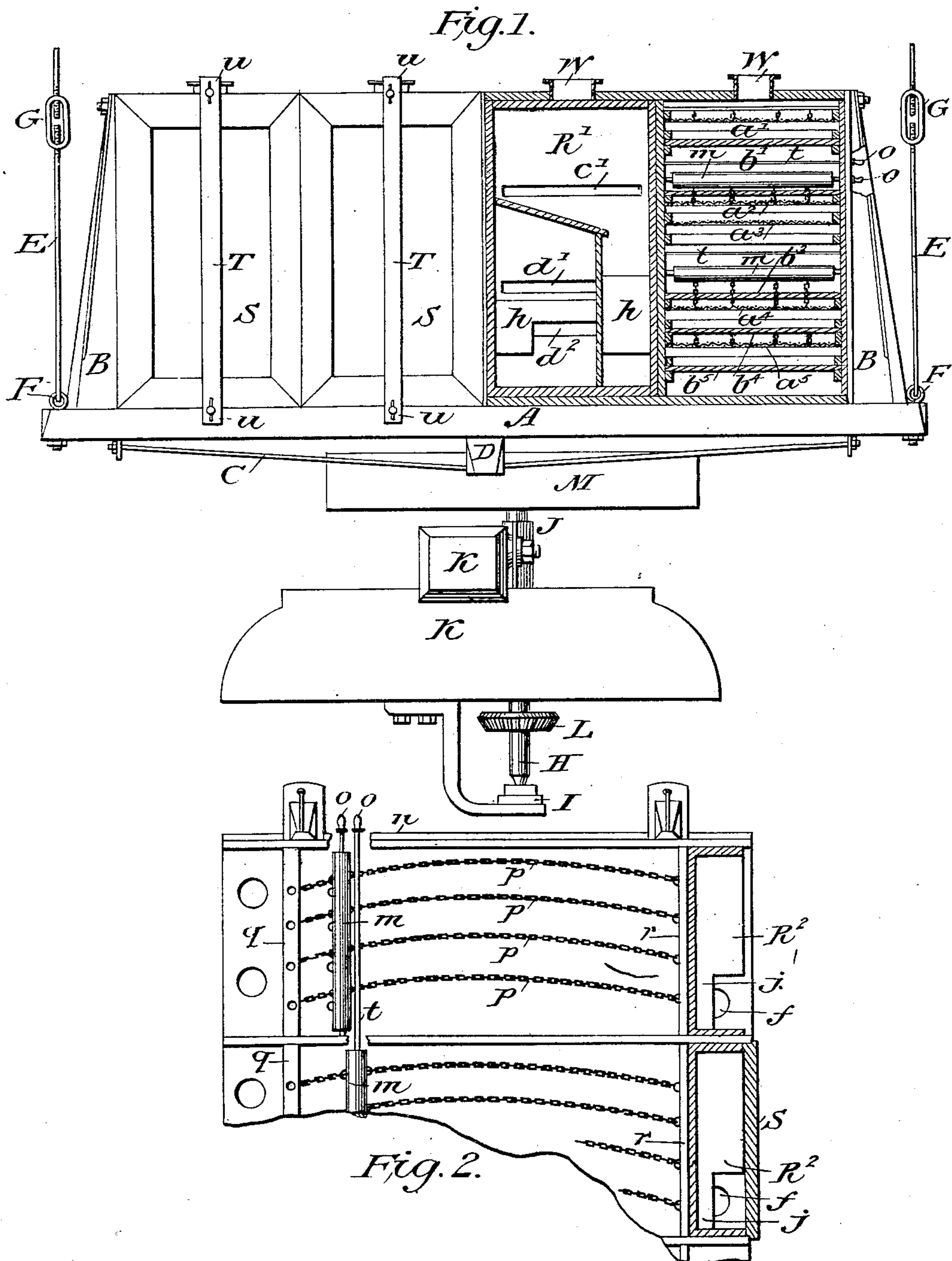
Patented June 25, 1901.

D. R. O'NEAIL.
FLOUR SIFTING MACHINE.

(Application filed Feb. 7, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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2 Sheets—Sheet 2.

Fig. 3.

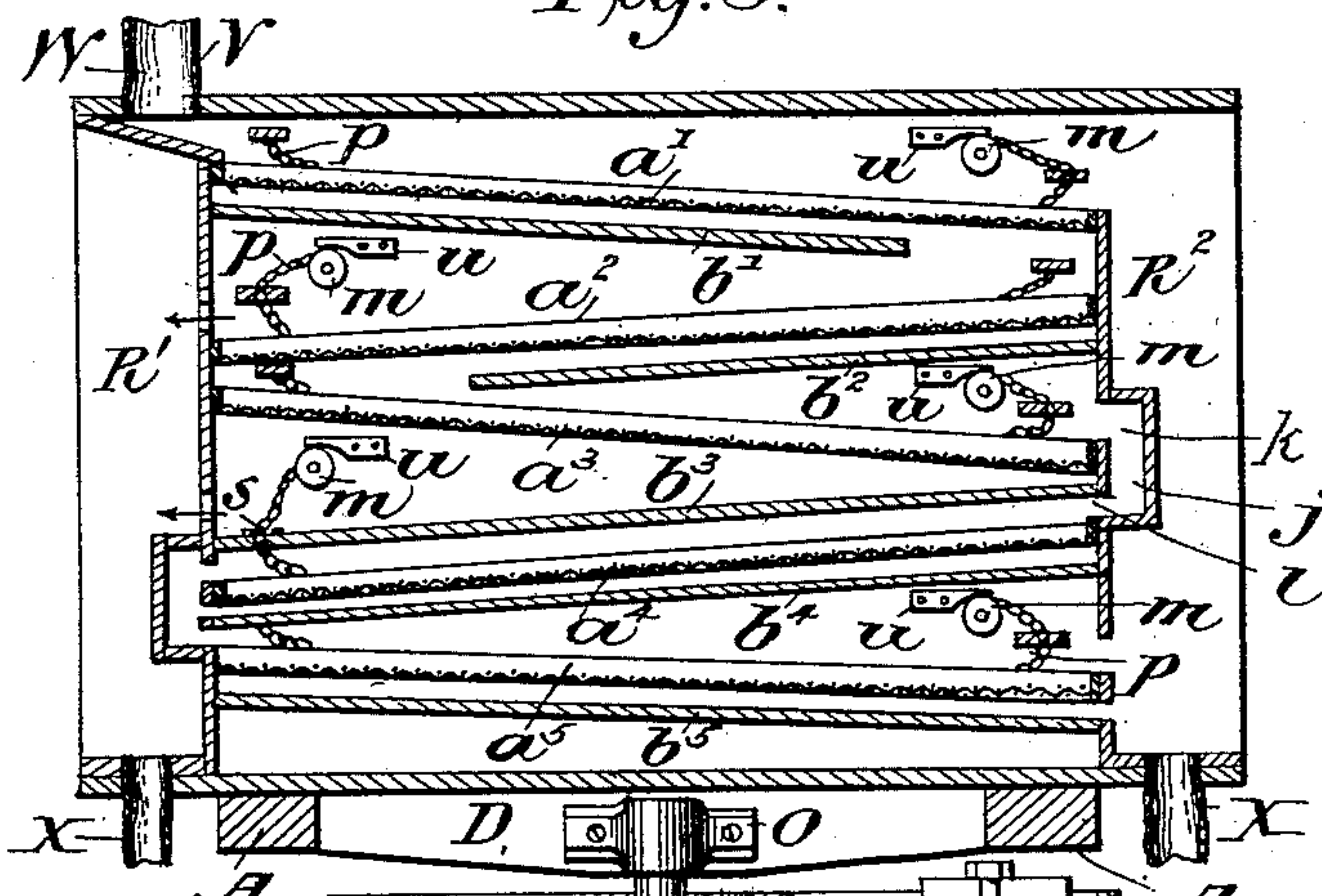


Fig. 4.

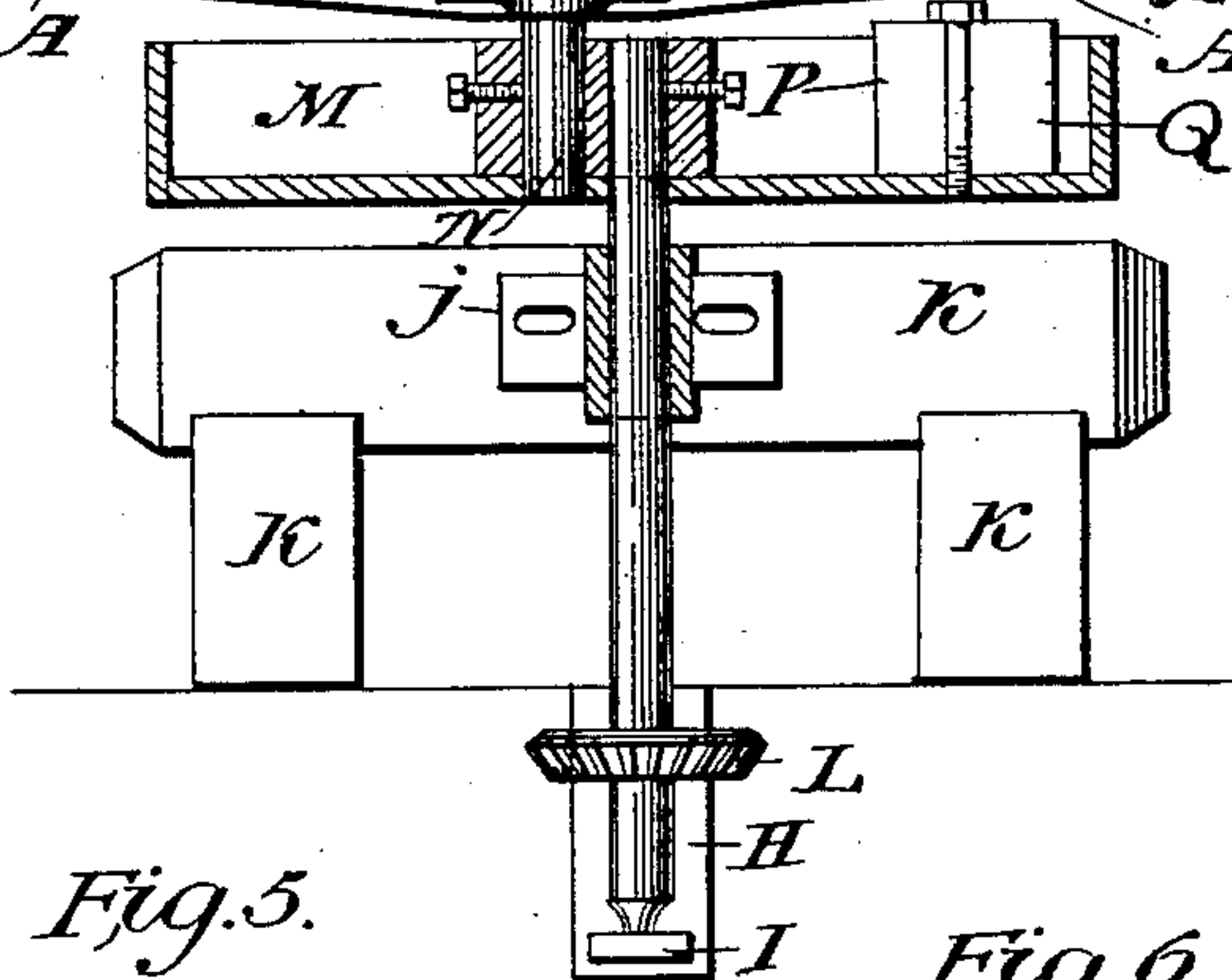
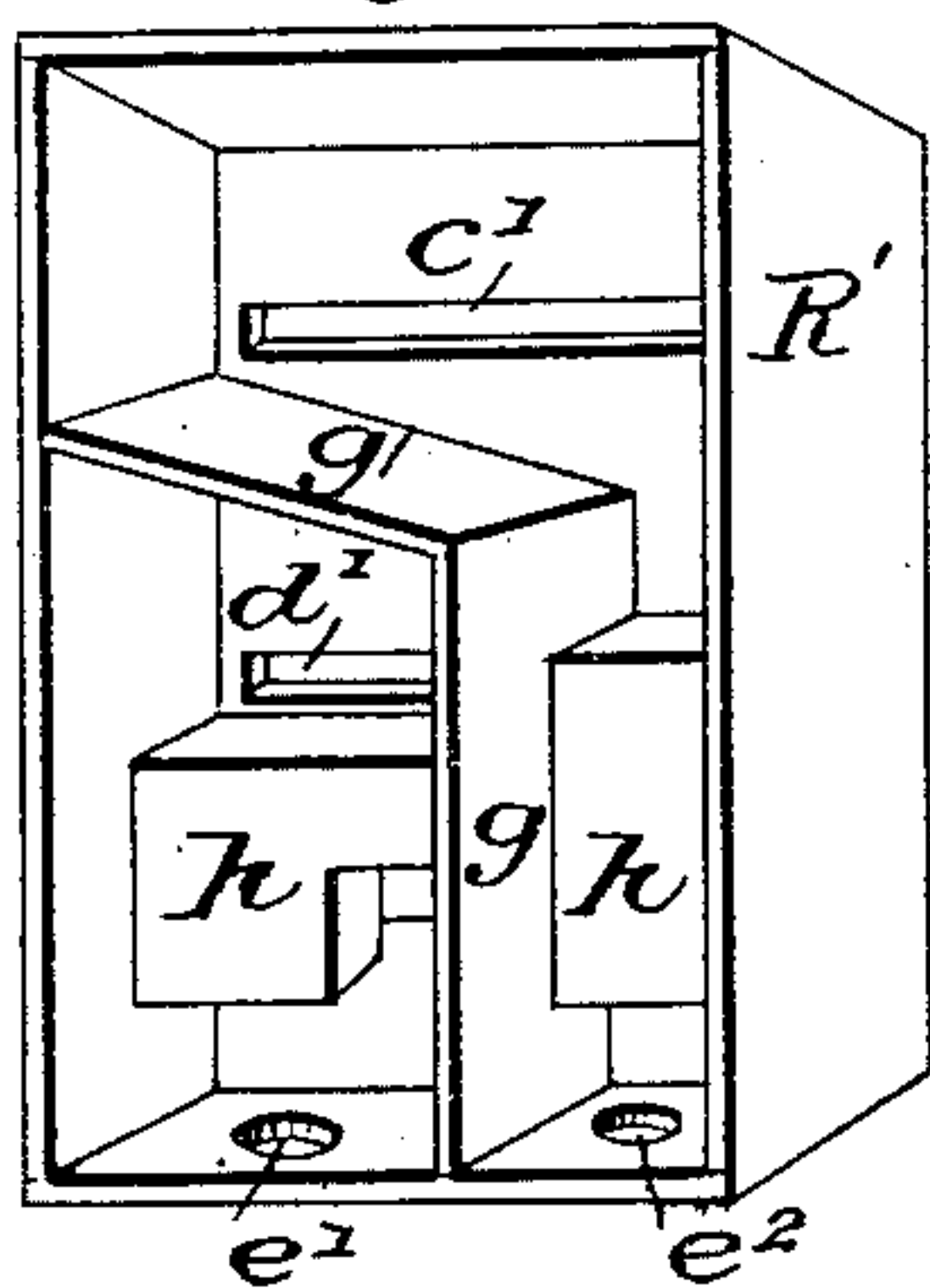


Fig. 5.

Fig. 6.

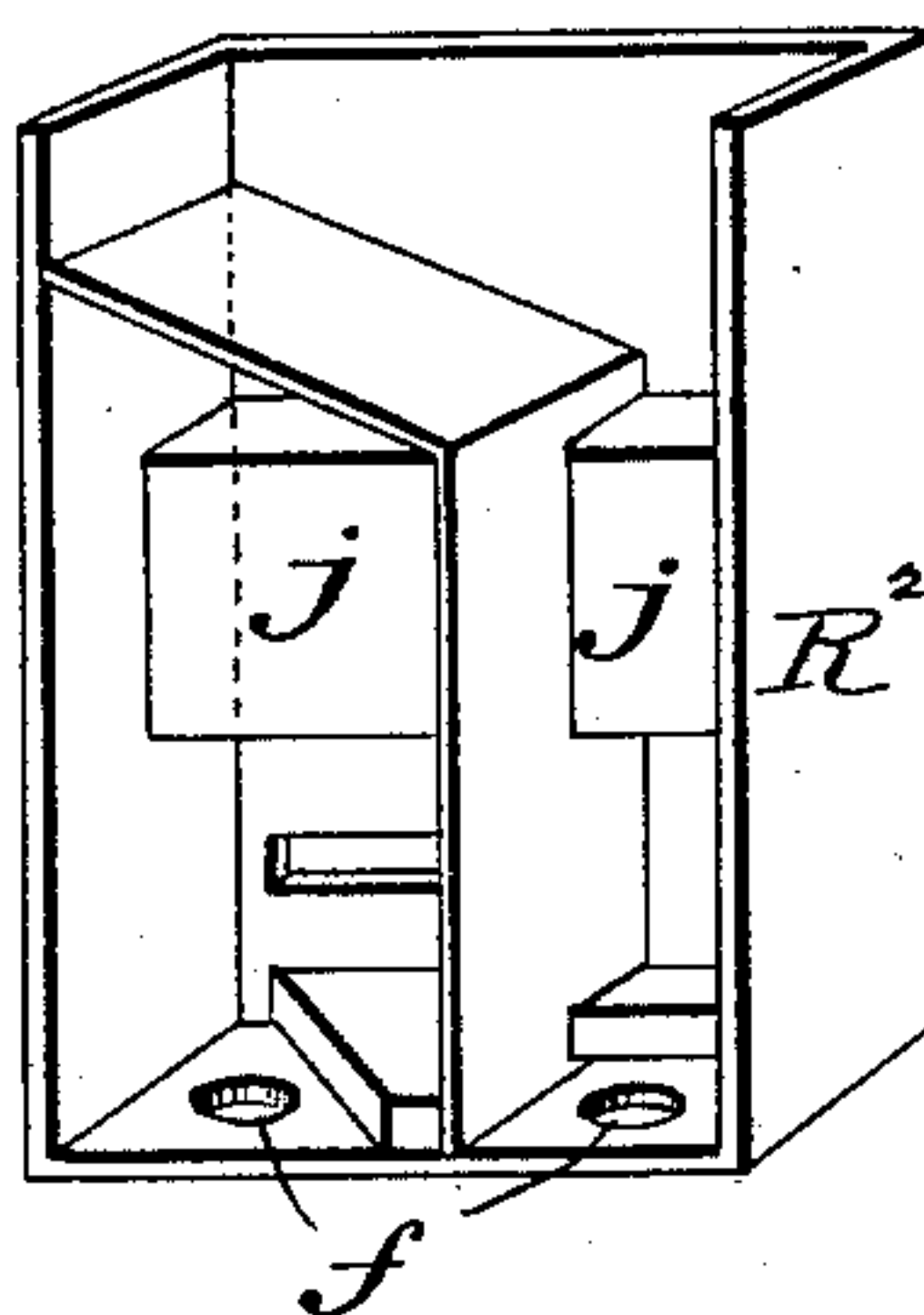
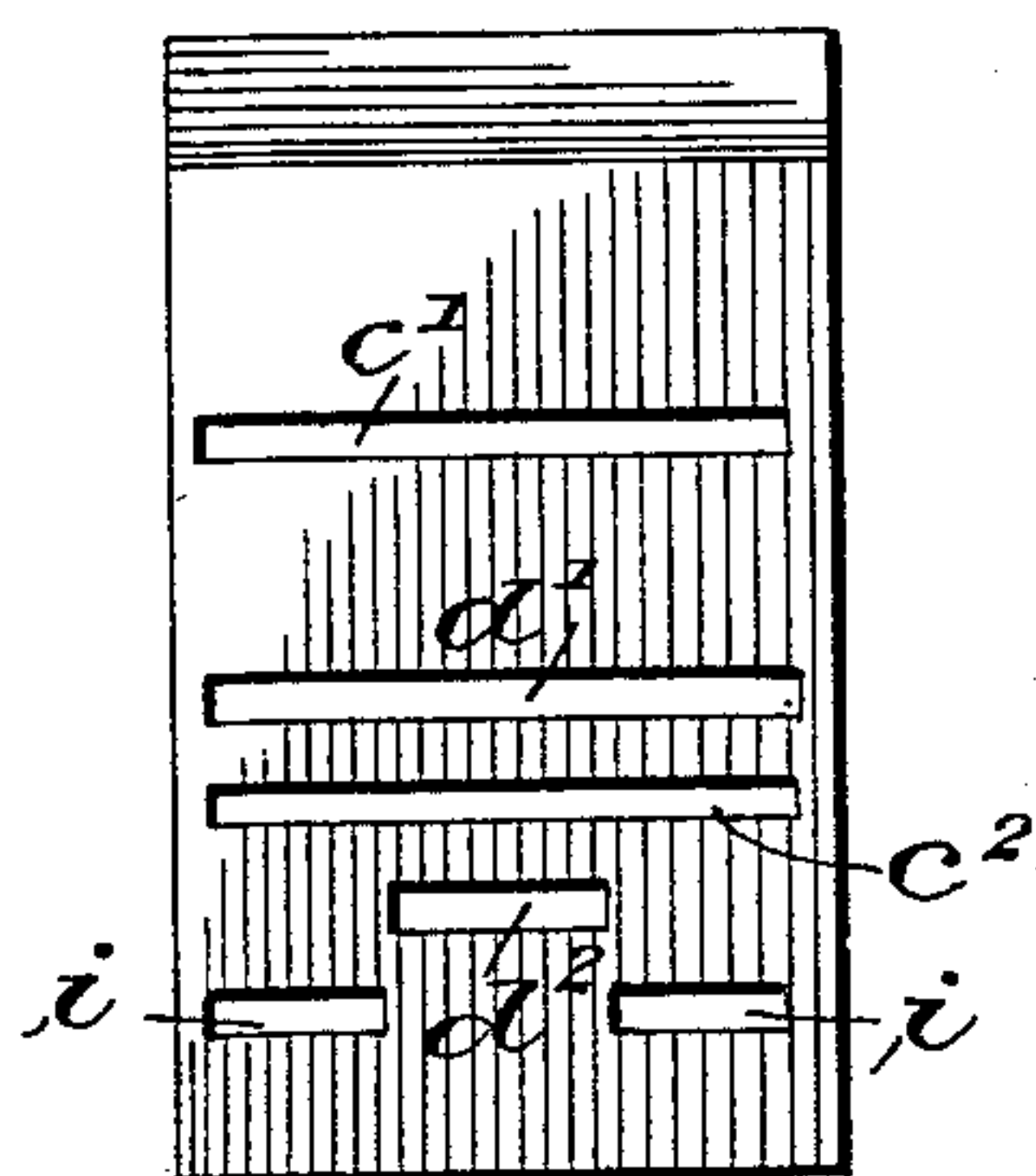
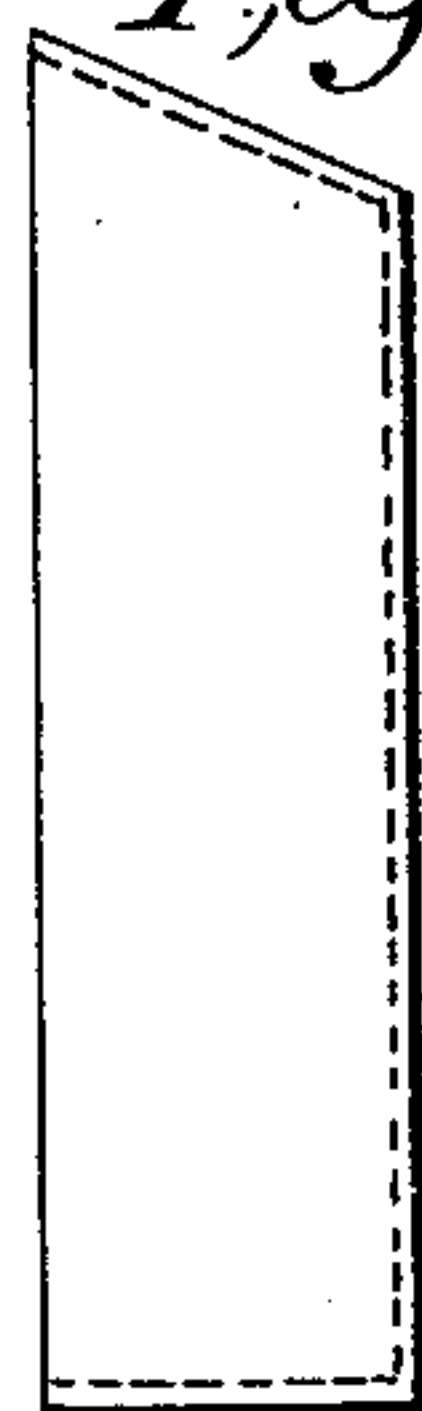


Fig. 7.



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UNITED STATES PATENT OFFICE.

DANIEL RAYMOND O'NEAIL, OF PARIS, CANADA.

FLOUR-SIFTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 677,259, dated June 25, 1901.

Application filed February 7, 1900. Serial No. 4,392. (No model.)

To all whom it may concern:

Be it known that I, DANIEL RAYMOND O'NEAIL, miller, of the town of Paris, in the county of Brant, in the Province of Ontario, Canada, have invented new and useful Improvements in Flour-Sifting Machines; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to improvements in sieve bolting-machines in which a rectangular box divided into one or more sections, each containing a series of sieves arranged one above another, being suspended from above, either from the ceiling or from a suitable frame provided for the purpose, is rotated by means of a crank below; and the objects of my invention are, first, to provide a ready means of access to the interior of the machine in case of choking; second, to facilitate the removal of any sieve in the machine from either end of the same without disturbing the remaining sieves; third, to provide for the removal of finished products from the machine; fourth, to provide means for the return of unfinished products to sieves lower down in the machine, and, fifth, to provide means whereby the bolting being done by the sieves may be regulated while the machine is in motion. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of a four-section machine, in which sections one and two are shown closed, section three is shown with door removed, and section four is shown with both door and removable distributing-box at end of sieves removed. Fig. 2 is a view from above of one section of the machine and part of another as they appear with top and distributing-box at one end removed, showing the bolting-regulators. Fig. 3 is a vertical section of the entire machine. Fig. 4 is a view in perspective of the distributing-box from the head end of one of the sections. Fig. 5 is a rear view of the same box. Fig. 6 is a view in perspective of the distributing-box from the tail end of same section. Fig. 7 is a side view of the distributing-box from the head end of the section, showing the slope of the top.

The section or compartment of the machine shown in Fig. 3 is arranged to handle stock from break-rolls in a flour-mill, the first or top sieve scalping the stock, the second grading off coarse or germ middlings, the follow-

ing two bolting flour; and the lower sieve making a separation between fine and medium middlings. The arrangement of the sieves and the trays under the sieves and the partitions and compartments in the distributing-boxes at the ends of the sieves vary with the class of stock to be handled. At times it would be more convenient to have two or more consecutive sieves slope in the same direction rather than zigzag, as shown.

Similar letters refer to similar parts throughout the several views.

The cross-pieces A A, each supported by the truss-rods C, with the uprights B B and the bridge-tree D, form the framework of the machine. (See Figs. 1 and 3.) To this is firmly secured the sieve box or body of the machine, the whole being suspended from the ceiling or from a suitable frame by means of the rods E E, one at each corner, which engage the eyebolts F F in the ends of the cross-pieces A A and having in their length the turn-buckles G G for the purpose of leveling the sieve-box.

The shaft H, which may be rotated by means of the gear-wheel L from another shaft or by any other suitable means supported in the step I, passing up through the floor, turns in the bearing J, which is bolted to the framework K K K, Figs. 1 and 3. Any other suitable means may be used to carry the bearing J in place of the framework K K K. The shaft H carries upon its upper end the balance-wheel M, on the hub of which a crank-pin N turns in the bearing O, which is bolted to the bridge-tree D, Figs. 1 and 3. The balance-wheel M has within it the movable weight P, held in position by the bolt R for the purpose of counterbalancing the weight of the sieve-box above, Fig. 3.

Within each section of the machine are the bolting-sieves $a a a a a$, also described later on as a^1 , a^2 , a^3 , a^4 , and a^5 , according to their positions in the machine, being light frames of wood covered with wire, gritz-gauze, or silk, as circumstances may require. These sieves do not extend the full length of the sections, but leave room (usually about six inches) at each end for the distributing-boxes R R, Fig. 3. The said sieves are not secured to the body of the machine, but move freely endwise between cleats firmly secured to the sides of the sections in which they are located.

Under the sieves $a a a a a$ collecting decks

or trays $b b b b b$, also described as $b' b^2 b^3 b^4 b^5$, according to their positions in the machine, extend the full width of the section. These trays either extend the full length of the
 5 sieves under which they are placed and discharge into the distributing-box toward which they slope or they are shortened, so as to discharge directly upon the head end of the following sieve.

10 At either end of the sieves are the removable distributing-boxes $R R$, also described as $R' R^2$ and shown in perspective in Figs. 4 and 6. These boxes are not secured to the body of the machine, but slide freely into the
 15 spaces left for the purpose at either end of the sieves in each section, their backs when in position bearing firmly against the ends of the sieves their full width and also against the ends of such of the trays their full width
 20 as are intended to reach them and their outer edges coming just within the other edges of the sections of the machine to which they belong. These boxes being withdrawn, it is apparent that any sieve in the section may be
 25 withdrawn from either end without disturbing the remainder, and it is also apparent that any accumulation of stock in the machine may be easily reached and removed.

30 On the edges of the sieves $a a a a a$ and upon the edges of the trays $b b b b b$ where the boxes $R R$ bear against them are glued strips of cloth to prevent leakage.

In the back of the distributing-box R' oblong openings c' and c^2 are provided, Fig. 5, their lower edges coinciding with the upper
 35 edges of certain of the sieves $a a a a a$ for the purpose of allowing the the overtails of said sieves to enter the distributing-box R' , also the openings d' and d^2 , their lower edges
 40 coinciding with the upper edges of certain of the collecting-trays $b b b b b$ are provided for a similar purpose. In the bottom of the said distributing-box R' circular openings e' and e^2 , which coincide with similar openings in
 45 the bottom of the machine itself, (see $f f$ in Fig. 2,) are provided as exits for the stocks leaving the machine. Within the said distributing-box R' partitions $g g$ are provided for the purpose of keeping separate the different
 50 stocks entering the distributing-box and also for the purpose of guiding said stocks to the exits e' and e^2 . Also within the said distributing-box R' a compartment $h h$ is provided, closed upon all sides except where
 55 the opening c^2 , Fig. 5, coinciding with the upper edge of a sieve-delivering stock into the said compartment, and the openings $i i$, coinciding with the upper edge of a sieve-receiving stock out of the compartment, again appear.
 60

Owing to the necessity of allowing the stock entering the distributing-box through the opening d^2 to reach the exit e' , Fig. 4, the lower part of the closed compartment $h h$ divides and delivers the stock but to the sieve
 65 through the two openings $i i$. A case where this is unnecessary is shown in the distribut-

ing-box R^2 , Fig. 3, where no other stock interfering the overtail from the sieve a^3 discharges into the compartment j , through the
 70 opening k , thence back to the sieve a^4 , through the opening l , both openings being the full width of the ends of the sieves.

For all purposes the box R^2 (shown in perspective in Fig. 6) is for the same purposes
 75 as the box R' described.

The doors $S S$, Fig. 1, when placed in position rest firmly against the edges all around of the distributing-boxes previously described, and also against the edges of such of the partitions within the boxes as are intended to
 80 reach them, the doors $S S$ thus forming the front sides of the distributing-boxes in each section of the machine. The said doors $S S$ being removed, any accumulation of stock in
 85 the boxes $R R$ may be readily relieved.

On the edges of the distributing-boxes $R R$ and upon the edges of the partitions within them where the doors $S S$ bear against them are glued strips of cloth to prevent leakage.
 90

The doors $S S$ when in position are held by the cross-pieces $T T$, which in turn are held by bolts, their one end secured to the body of the machine, but their other ends passing through the extremities of the cross-pieces
 95 $T T$ and engaging the thumb-nuts $u u u u$.

For the purpose of controlling the bolting conveniently placed over each of the sieves are the round wooden rollers $m m m m m$, Fig. 3, which may be solid with a gudgeon in
 100 each end or may be made in halves longitudinally and firmly clamped upon a rod of sufficient length to pass through the side of the machine n , Fig. 2, thence through the length of the roller m into a socket made in the side
 105 of the section to receive it, also projecting on the outside of the machine far enough for the reception of a knob o , by means of which it may be turned. To the said rollers $m m m m m$ at suitable distances across their length
 110 are attached the ends of light chains, usually three or four in number, $p p p p p$, Fig. 2, which then pass through holes in the cross-piece q , placed over the end of the sieve adjacent to the said roller, thence passing along
 115 the length of the sieve, resting slackly thereon, to a cross-piece r , to which their other ends are secured, the cross-piece r being placed in the machine directly over the end of the sieve opposite to the cross-piece q . In
 120 cases where the collecting-trays previously described come conveniently the cross-pieces r are dispensed with, the ends of the chains being secured to the bottoms of the said trays b^3 and b^4 in Fig. 3. Also in some cases for
 125 lack of room it is necessary to place the rollers above the collecting-tray under the previous sieve, in which case the chains have to pass down through suitable openings provided for them in such collecting-trays to
 130 reach the sieve on which they are to operate. (See s in Fig. 3.) In such cases the cross-piece q , Fig. 2, is dispensed with. Also in such cases a small block of wood is placed

about the openings in said trays to prevent the material traveling thereon from passing down through the said openings.

It is not compulsory that chains be used.

5 Rubber straps or strings or beads would serve the purpose; but I prefer the chains.

In the case of the rollers in interior sections of the machine the gudgeons *t*, Fig. 2, are lengthened to cross the intervening sections and reach the outside of the machine.

10 *u u u u u*, Fig. 3, are wooden springs, secured to the sides of the different sections and resting against the rollers *m m m m m*, acting as brakes to prevent said rollers from turning except when rotated by means of the knobs *o*, provided for the purpose.

In practice the chains *p p p p p*, resting slackly upon the sieves, with the motion of the machine move over their surfaces, thus keeping the meshes of the bolting material open. Should the bolting prove too free, the rollers *m m m m m* being rotated by means of the knobs *o* wind up the chains, thus wholly or partially removing them from the surfaces of the sieves, according to the amount of rotation imparted to the rollers, the bolting being checked accordingly.

In Fig. 3, *V* is a flexible spout of cotton-flannel or other suitable material down which the stock to be sifted passes, entering the machine by the circular opening *W* left for the purpose, falling upon the top of the distributing-box *R'*, thence by the motion of the machine to the sieve *a'*.

35 *X X* are flexible spouts by means of which the stocks leave the machine.

I am aware that prior to my invention sieve sifters have been made in which the sieves have each attached to their upper surfaces a series of short chains for the purpose of keeping the cloth clean. I do not attach the chains to the sieves, nor do I use them for the same purpose, but as a part of the mechanism for controlling the bolting. I am also aware that prior to my invention sieve sifters have been made in which a rectangular box of one or more sections, each containing a series of sieves being suspended from above, is rotated by means of a crank below. I therefore do not claim such combinations broadly; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In a sieve bolting-machine, the combination with a suitable sieve box or body divided into one or more sections, means for imparting a gyratory motion thereto, each section having within it a series of collecting-trays arranged one above another, the sides of said section being adapted to receive a series of bolting-sieves one above each tray, of a series of sieves formed to fit therein and adapted to be withdrawn from either end thereof, certain of said sieves and trays being arranged to discharge toward one end of said section, and certain others toward the opposite end thereof, also certain of said collecting-trays

being shorter than the sieve under which they are placed discharge directly upon the surface of the following sieve; a removable distributing-box at each end of said sieves and trays, pockets and chutes in said distributing-boxes communicating with said sieves and trays for the purpose of receiving the discharges therefrom, the pockets being adapted to return the material entering them back to the sieves for further treatment, and the chutes leading to the bottoms of the distributing-boxes and connecting with discharge-orifices whereby the overtails of certain of the sieves and the outsiftings of others may be separately removed from the machine, all substantially as described.

2. In a sieve bolting-machine wherein the sieve box or body of the machine is divided into one or more sections, and means are provided for imparting a gyratory motion thereto, the combination with a series of removable sieves arranged one above another in each section, and a series of collecting-trays, under the sieves, of a removable distributing-box at each end of said series of sieves and trays, the trays under the sieves being for the purpose of catching the material passing through said sieves, certain of said sieves being arranged to discharge the coarse material from off their tops into the distributing-box at one end of said series, and certain others into the distributing-box at the opposite end thereof, certain of the trays under the sieves being arranged to discharge in a like manner, and others, being shorter than the sieves under which they are placed discharge directly upon the surface of the following sieve; pockets and chutes in said distributing-boxes communicating with said sieves and trays for the purpose of receiving the products discharged therefrom, the pockets being adapted to return the material back to the machine for further treatment, and the chutes leading to the bottoms of the distributing-boxes and connecting with discharge-orifices whereby the stocks reaching them may be removed from the machine, all substantially as described.

3. In a sieve bolting-machine wherein a series of removable sieves are arranged one above another in each section, with a collecting-tray under each sieve, and means are provided for imparting a gyratory motion thereto, the combination of a removable distributing-box in each end of each section with a removable door, the backs of said distributing-boxes when in position bearing firmly against the ends of the sieves and trays in said section contained, and the doors when in position bearing against the outer edges of the distributing-boxes and forming the front sides thereof; certain of said sieves and trays being arranged to discharge into the distributing-box at one end of said section and others into the box at the opposite end thereof, pockets and chutes in said distributing-boxes communicating with said sieves and

trays for the purpose of receiving the stocks discharged therefrom, the pockets being adapted to return the material back to the sieves for further treatment, and the chutes leading to the bottom of the machine and connecting with discharge-orifices, whereby the stocks reaching them may be removed from the machine, all substantially as set forth.

4. In a sieve bolting-machine wherein the sieve box or body of the machine is divided into one or more sections and means are provided for imparting a gyratory motion thereto, each section containing a series of removable sieves arranged one above another with a collecting-tray under each, the combination with each end of each section of a distributing-box sliding into said section, the back of said distributing-box, when in position, bearing firmly against the ends of the sieves and trays in said section contained, said boxes being provided in their interiors with pockets and chutes communicating with said sieves and trays, the pockets being adapted to return the material entering them back to the sieves for further treatment, and the chutes leading to the bottoms of the distributing-boxes and connecting with discharge-orifices therein coinciding with similar orifices in the bottom of said section, certain of said sieves being arranged to discharge the coarse material from off their tops into certain of said chutes, and certain of the collecting-trays being arranged to discharge the finer material passing through the sieves into certain other of said chutes, thereby effecting a separation of the stocks substantially as set forth.

5. In a sieve bolting-machine, the combination with a suitable sieve box or body divided into one or more sections, each section having an inlet-orifice in its upper side in close proximity to one end thereof, means for imparting a gyratory motion thereto, a series of removable sieves arranged one above another in each section, a series of light chains above each sieve adapted to rest upon the surface thereof should the meshes become clogged, means for removing said chains from contact with said sieves, and a series of collecting-trays, one under each sieve; of a removable distributing-box at the end of said series of sieves and trays immediately under said inlet-orifice, said distributing-box having a sloping top adapted to receive upon its upper surface the material entering the machine through said inlet-orifice and deliver it quickly to the uppermost of said series of sieves, said uppermost sieve being arranged to discharge the coarse unbolted material from off its top into a removable distributing-box at the opposite end of the section therefrom, the finer material passing through the sieve falling upon the collecting-tray under it and passing thence to the sieves and trays following, certain of said following sieves and trays being arranged to discharge into the distributing-box at one end of said section, and others into the distributing-box at the

opposite end thereof, said distributing-boxes having within them pockets and chutes communicating with said sieves and trays for the purpose of receiving the discharges therefrom, all substantially as described.

6. In a sieve bolting-machine, the combination with a suitable supporting-frame of a suitable sieve structure of one or more sections secured thereto, said frame consisting of two parallel cross-pieces, each supported by means of a truss-rod under it, a central connecting bridge-tree, an upright at each end of each cross-piece, said sieve structure resting upon the upper side of said cross-pieces and being firmly embraced by said uprights, said frame being suspended from above by means of a rod at each corner, and being provided with a means for imparting a gyratory motion thereto; each section of said sieve structure containing a series of removable sieves arranged one above another with a collecting-tray under each, certain of said sieves and trays having an inclination toward one end of said section, and others toward the opposite end thereof, a removable distributing-box at each end of said series of sieves and trays, pockets and chutes in said distributing-boxes communicating with said sieves and trays for the purpose of receiving the stocks discharged therefrom, the pockets being adapted to return the material back to the sieves for further treatment, and the chutes connecting with discharge-orifices in the bottom of the machine, substantially as described.

7. In a sieve bolting-machine having a gyratory motion, the combination with a series of removable sieves arranged one above another, certain of said sieves being provided with collecting-trays one under each, of a removable distributing-box at the end of each series of sieves and trays, the trays under the sieves being for the purpose of catching the material passing through the sieves, said sieves being arranged to discharge the coarse material from off their tops into the distributing-box at their ends, certain of said trays being arranged to discharge in like manner and others being shorter than the next lowermost sieves discharge directly upon them, pockets and chutes in said distributing-box communicating with said sieves and trays for the purpose of receiving the products discharged therefrom, the pockets being adapted to return the material back to the machine for further treatment and the chutes leading to the bottom of the distributing-boxes and connecting with discharge-orifices, whereby the stocks reaching them may be removed from the machine, substantially as specified.

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

DANIEL RAYMOND O'NEAL.

Witnesses:

FRANK. SMOKE,
M. A. RYAN.