

No. 827,460.

PATENTED JULY 31, 1906.

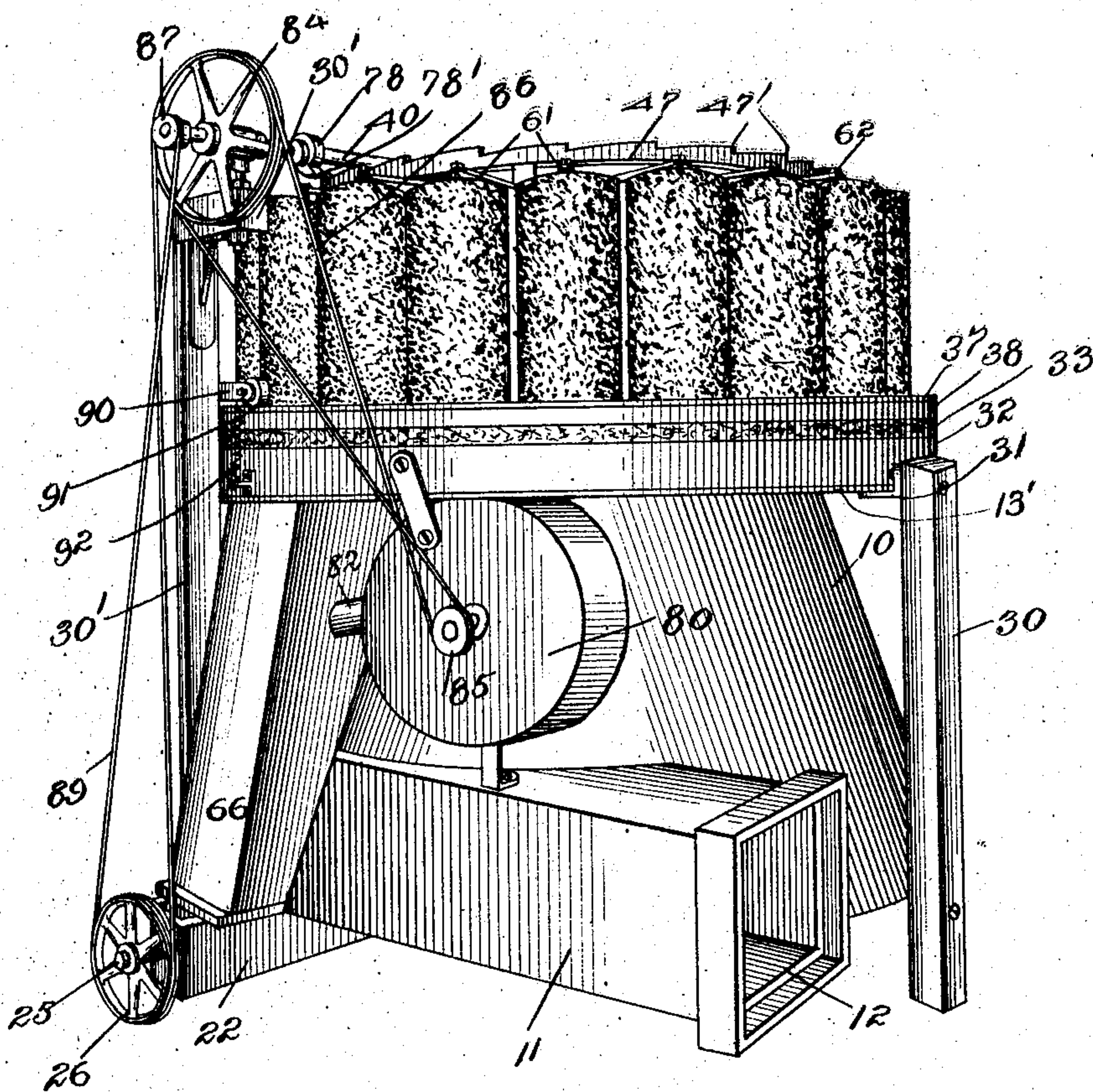
O. M. MORSE.

COMBINED DUST SEPARATOR AND COLLECTOR.

APPLICATION FILED AUG. 19, 1903.

4 SHEETS—SHEET 1.

*Fig. 1*



Witnesses:  
Ray White,  
Harry White

Inventor:  
Orville M. Morse.  
By Jore Bain Atty.



No. 827,460.

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COMBINED DUST SEPARATOR AND COLLECTOR.

APPLICATION FILED AUG. 10, 1903.

4 SHEETS—SHEET 2.

Fig. 2.

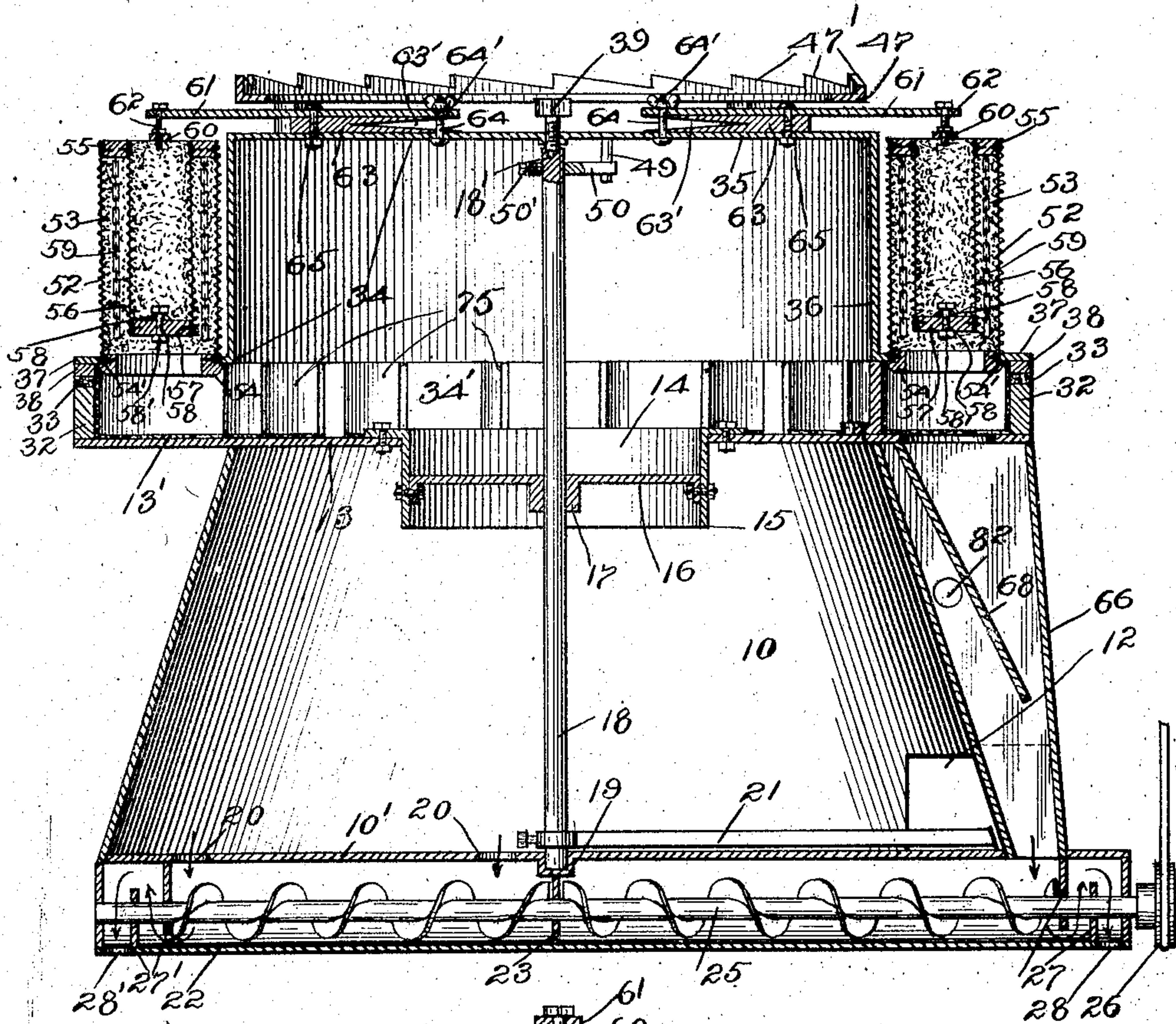
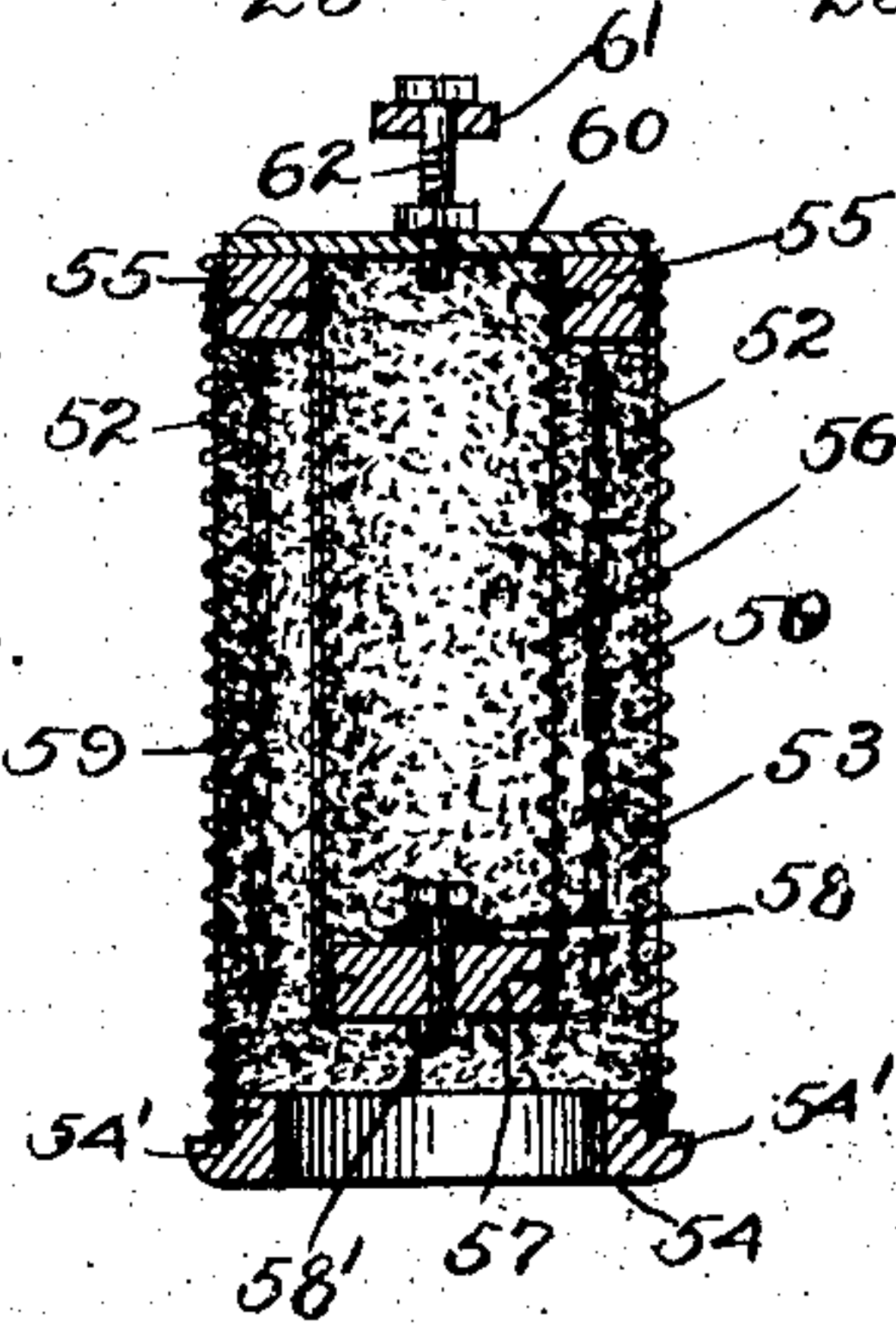


Fig. 6.



Witnesses:  
Ray White.  
Harry White.

INVENTOR:  
Orville M. Morse.  
By J. B. Bain & Co.



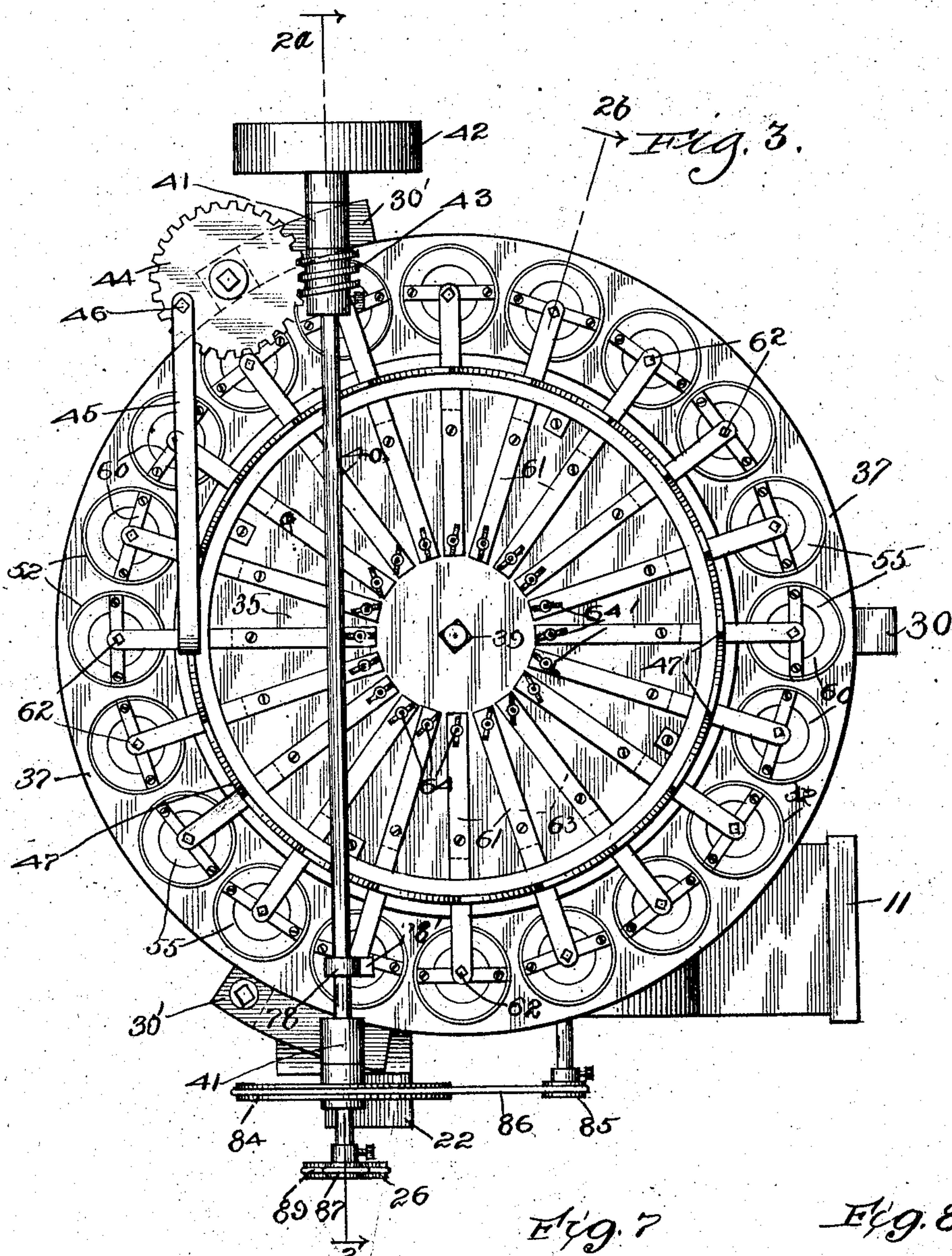
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4 SHEETS—SHEET 3.



Witnesses:  
Ray White.  
Harry Pluhle.

INVENTOR:  
Orville M. Morse.

By Joseph Baint



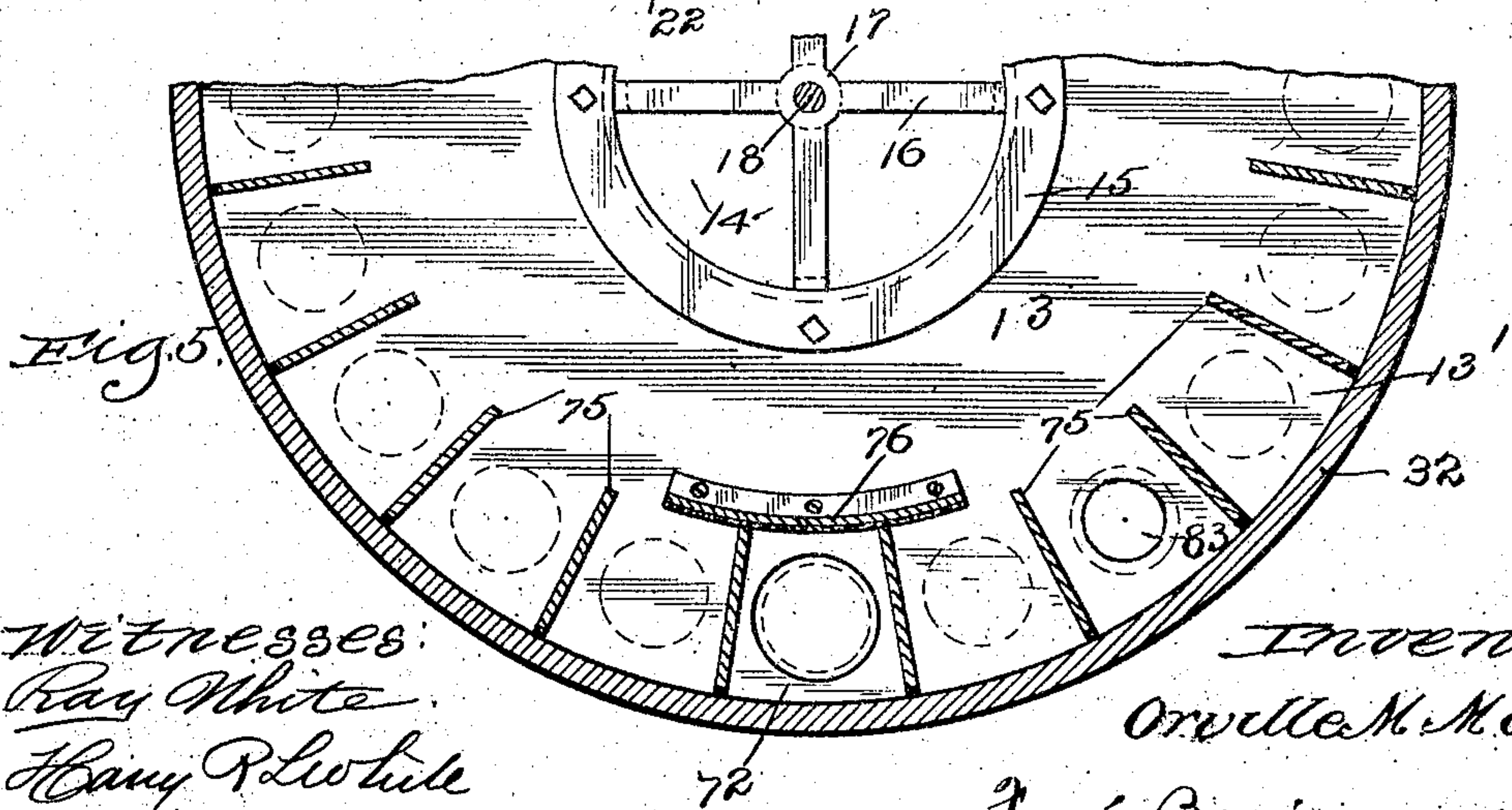
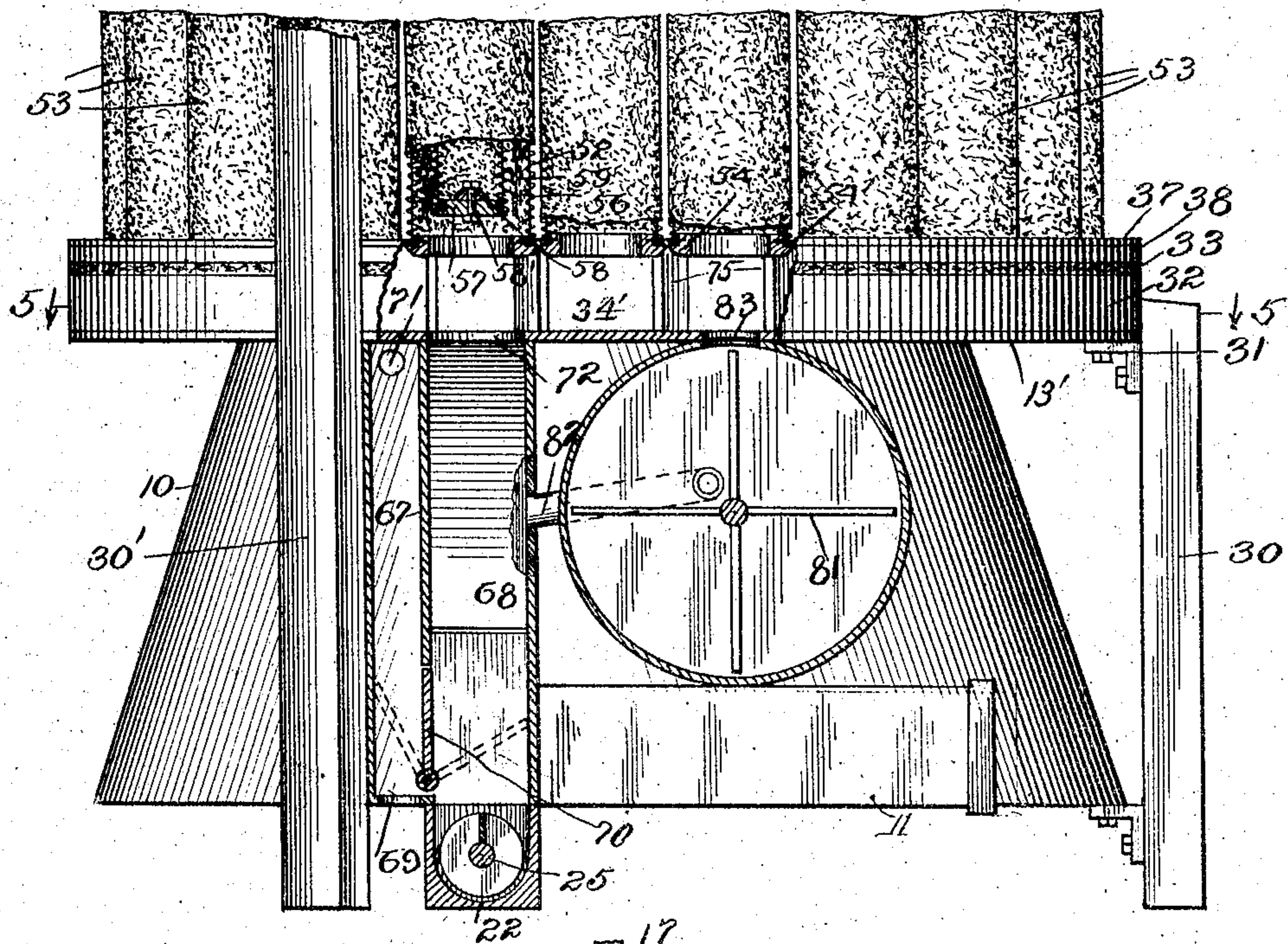
No. 827,460.

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COMBINED DUST SEPARATOR AND COLLECTOR.  
APPLICATION FILED AUG. 10, 1903.

4 SHEETS—SHEET 4.

Fig. 4.



Witnesses:  
Ray White  
Harry R. White

Inventor:  
Orville M. Morse.

By Jere Bain Atty:



# UNITED STATES PATENT OFFICE

ORVILLE M. MORSE, OF JACKSON, MICHIGAN.

## COMBINED DUST SEPARATOR AND COLLECTOR.

No. 827,460.

Specification of Letters Patent.

Patented July 31, 1906.

Application filed August 10, 1903. Serial No. 168,874.

*To all whom it may concern:*

Be it known that I, ORVILLE M. MORSE, of Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Combined Dust Separators and Collectors; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

My invention has for its primary object to provide a machine adapted to receive air laden with dust of all qualities and grades of fineness, such as is handled in a flouring-mill, and which will clarify the air of all dust particles, in the separation of the dust graduating the particles thereof according to size and character.

Another object of my invention is to provide improvements in the general arrangement and the construction of machines of the character specified.

To these ends my invention consists in the combination, arrangement, and construction of parts, and features of construction hereinafter more fully described, and specified in the claims.

In the drawings, Figure 1 is a perspective view of a machine embodying my invention. Fig. 2 is a vertical section therethrough on two planes, as to the conveyer being taken on line 2 2<sup>a</sup> and as to the remaining structure upon the plane of line 2<sup>b</sup>, all of Fig. 3. Fig. 3 is a top plan view of the machine. Fig. 4 is a broken elevation. Fig. 5 is a fragmentary section taken on line 5 5 of Fig. 4. Fig. 6 is a detail showing one of the dust-collecting pockets detached. Figs. 7 and 8 are respectively a side elevation and an end view of the operating-pawl detached.

Throughout the drawings like numerals of reference refer to like parts.

10 indicates a centrifugal separating-chamber or settling-chamber of any suitable configuration, that herein illustrated being in the form of a truncated cone.

11 indicates an intake-spout for the dust and air arranged tangentially relative to the chamber 10 and opening thereinto, as indicated at 12.

13 indicates the flat top or deck of the chamber 10, preferably extending outward throughout the entire periphery of the chamber to overhang its upper edge a suitable distance, such extended zone being indicated as 13'.

14 indicates an air-outlet at the top of the chamber 10; made through the otherwise imperforate deck 13, and 15 a tubular guard therefor depending into the chamber 10.

16 indicates a spider mounted on the guard 15 and provided with a centrally-arranged hub 17.

18 indicates a vertical shaft axially disposed within the chamber 10, finding bearing at its lower end in a step 19, provided therefor in the bottom of the casing and extending upward through a bearing-aperture in the hub 17 to project a suitable distance above the top of the chamber 10, as best illustrated in Fig. 2. The floor 10' of the separating-chamber 10 is provided with suitable perforations (indicated at 20) to permit the escape of particles of dust falling thereon.

21 indicates a cleaning-arm suitably secured to the shaft 18 and arranged to sweep over the floor of the chamber to carry the dust-particles to the apertures 20.

22 indicates a conveyer-trough arranged below the separating-chamber 10, with which the openings 20 in the floor of the separating-chamber communicate.

23 indicates a partition centrally dividing the conveyer-trough.

25 indicates a double spiral conveyer arranged within the trough and designed to feed material outward from the partition-wall 23 toward the ends of the trough on both sides.

26 indicates a driving-pulley mounted upon the shaft of the conveyer 25.

27 27 and 27' 27' indicate walls or partitions arranged within the conveyer-trough at opposite ends thereof and partially closing the trough to form traps of well-known construction.

28 28' indicate corresponding outlets from the traps at the ends of the trough.

The parts thus far described are well known in the art, and therefore need but slight description.

30 and 30' indicate standards or legs arranged to support the machine, two of the legs 30' being extended vertically to approximately the height of the top of the machine to afford support to operating mechanism to be described. The separating-chamber 10 is preferably secured to the legs near their bases, and additional support to the chamber is afforded by brackets 31, connecting the legs with the top extension 13' of said chamber.



32 indicates a circular wall of suitable height mounted on the top 13 of chamber 10 and following the periphery of the extension 13' thereof. 33 indicates packing of sheep-skin or the like applied to the top surface of said wall 32.

34' indicates what I will arbitrarily term the "distribution-chamber," which is a horizontal air-chamber for the reception of partly-purified air from the centrifugal separating or settling chamber 10, formed by the coöperation with the top of chamber 10 and the peripheral wall 32 of the turret-like member 34, comprising a top 35, a depending annular wall of an interior diameter substantially equal to the size of the true top 13 of chamber 10, and an annular extension 37, preferably equal in width to the top extension 13' of chamber 10.

38 indicates an annular running-block arranged on the under side of the extension 37 to contact with the packed edge of the peripheral wall 32.

The turret member 34 is adjustably mounted upon the shaft 18, to this end the upper extremity of the said shaft being recessed, as indicated at 18', and the top 35 of said member provided with an adjustable bearing-screw 39. It will be apparent by the vertical adjustment of screw 39 the weight of the turret member may be distributed to a greater or less extent upon the shaft 18 and the contacting peripheral members 32 and 38.

The turret member is rotatable, and means are provided for effecting the rotation of the same as follows: 40 indicates a shaft mounted in suitable bearing-brackets 41, carried by the extended legs 30' of the machine and preferably arranged in parallelism to the conveyor 25. 42 indicates a driving-pulley secured to one end of the shaft, adapted to be rotated by power transmitted from any suitable source. 43 indicates a worm-gear mounted on the shaft and arranged to drive the pinion 44, arranged in mesh therewith. 45 indicates an operating-pawl, at one end eccentrically pivoted at 46 to the said pinion 44 and at its other end provided with a hook 45', terminating in downwardly-turned separated fingers 45'', designed to straddle a co-acting rack. 47 indicates an annular rack with which the pawl 45 engages, said rack being suitably supported above the top 35 of the turret member concentrically therewith and provided with a series of inclined teeth 47', equal in number to the number of dwells which it is desired to give to the turret member during one revolution thereof.

The arrangement of the turret-rotating parts thus described is such that during the constant rotation of the shaft 40 the worm 43 imparts rotation to the pinion 44, causing the pawl 45 to be advanced and withdrawn during each rotation of said pawl. The fingers 45'' of the pawl-hook overlying the rack

47 maintain said hook in constant engagement with said rack, so that during its forward movement the pawl slides over one of the inclined rack-teeth 47'. Just as the pawl 46 reaches its most advanced position ready to commence its return stroke it passes the upper end of one of the teeth 47', whereon it is traveling, and engages with the shoulder thereof, so that during the return movement of the pawl, occurring during the second half of a rotation of the pinion 44, the rack is drawn forward a distance corresponding to one tooth, rotating therewith the turret and its associated parts.

The turret member 34 and the shaft 18 are connected for rotation by means of a stud 49, secured in depending position to the top 35 of the turret, and a lever-arm 50, suitably secured to the shaft 18, as by a set-screw 50'.

Associated with the distribution-chamber is a series of fabric dust-collecting agencies or filters, such as the pockets or chambers 52, each arranged in communication with the distribution-chamber in the path of air escaping therefrom. Each pocket is preferably of substantially the construction illustrated in Fig. 6—that is to say, generally cylindrical in form and comprising two pocket members, one of which is suspended relative to the other in such manner as to be capable of contact with said other member.

53 indicates the outer fabric pocket member of a height approximately that of the wall 36 of the distribution-chamber, at its lower end secured to a ring 54, having a circumferential flange 54', and at its upper end secured to the outer periphery of a supporting-annulus 55.

56 indicates the inner pocket member or collecting agency, consisting of a fabric cylinder or bag shorter than the outer member, at its upper suspended from the inner periphery of support 55 and at its lower end closed and weighted, as by a wooden disk 57, bearing a weight 58.

59 59 indicate cleaning-chains suspended from the annulus 55 between the fabric cylinders 53 and 56.

The material whereof the pocket 52 is composed is preferably an open-meshed piled fabric—that is to say, a fabric certain threads of which are looped to project on one or both sides of the plane of the warp, so that one or both surfaces of the cloth shall present a multitude of tiny loops of piles distinct from each other and not liable to mat and yet in close arrangement. In practice I have found ordinary Turkish toweling to fulfil requirements, and so prefer to employ such material.

60 indicates a cross-bar extending diametrically across the ring 55 of each pocket to afford means of attachment for the pocket-supporting devices.

A suitable number of pockets 52, corresponding with the number of teeth of the



rack 47, are arranged with their lower ends in register with holes provided therefor in the annular extension 37 of the turret member.

The rings 54 are arranged with their flanges 54' in engagement with the edges in the holes of the turret member to hold said pockets against outward strain.

61 61 indicate a series of springs, one for each pocket, projecting radially over the top 35 of the turret member to pass centrally over their respective pockets 52.

62 62 indicate bolt connections between the supports 60 of the pockets and springs 61 provided therefor. Each spring 61 is preferably adjustable as to tension, to such end being mounted on a supporting-block 63, bifurcated at 63' and arranged on the top 35 of the turret member. A bolt 64, provided with a thumb-screw 64', is arranged for regulating the extent of separation of the bifurcated portions of the support 63.

65 indicates an additional bolt for securing the spring member and its support 63 to the top of the turret.

25 It will be apparent that the thumb-screw 64' being adjusted upon its bolt to compress the bifurcated portion of the support 63, the outward extremity of the spring-arm 61 tends to rise, creating an upward strain upon the pocket, which is resisted by the engagement of the ring 54 with the annular extension of the turret member. Consequently each pocket is under normal conditions stretched taut.

35 Provision is made for removing such dust as may accumulate in the pockets 52 and catching that which may rise to the top of the separating-chamber 10 as follows: 66 indicates what I will call a "dust-chute," comprising a vertically-extending chamber suitably arranged on the exterior of chamber 10, with its upper end arranged for communication with one or more of the pockets 52 during their progression thereover and its lower end arranged for communication with the conveyer-trough 22 or other suitable dust-receptacle. The interior of the chute 66 is preferably divided from front to back into a large and a small compartment by a wall 67, extending from the top of the chute to a point suitably adjacent the bottom thereof, and the larger compartment is divided by an inclined wall 68. The larger compartment of the chute containing the inclined wall 68, as indicated upon the right in Fig. 4, is preferably disposed in vertical alinement with the conveyer-trough 22, the smaller section of the chute being offset with relation to said trough and provided at its bottom with an outlet-aperture 69. A valve 70, pivoted at its lower edge in alinement with the wall 67, is preferably arranged to control the communication of both lateral divisions of the dust-chute with the trough 22 or the aperture 69, as indicated in Fig. 4.

71 indicates an aperture extending through the wall of chamber 10 and connecting the said separating-chamber with the smaller compartment of the dust-chute.

72 is an aperture in the extended portion 13' of the top of chamber 10, communicating with the larger section of the dust-chute in front of the inclined wall 68.

Means are provided whereby the communication of one or more of the pockets 52 with the distribution-chamber 34' may be successively cut off and the said pocket or pockets put into communication with the dust-chute 66. In the present form of my invention I have provided means for accomplishing this temporary segregation of individual pockets as follows:

75 75 indicate radial partitions secured to the revolving turret member and extending inwardly from the periphery thereof substantially to the inner periphery of the annular extension 37 and downward from said extension 37 to the extension 13' of the top of the separating-chamber to form a series of open compartments equal in number to the pockets. These separating-partitions 75 are preferably packed with sheepskin or like material at their exterior and lower edges to make airtight contact with the coacting surfaces of the distributing-chamber.

76 indicates an arc-shaped partition wall, arranged at a point radially inward from the aperture 72, with its curved exterior face coinciding with the path of rotation of the inner edges of the radial partitions 75. The wall 76 extends vertically to meet the under face of the annular extension 37 of the turret and circumferentially a distance sufficient to cover such of the radial compartments as may be in communication with the dust-chute. The peripheral face and upper edge of the wall 76 are preferably provided with a packing of sheepskin or the like, so that when one of the open compartments separated by the partitions 75 arrives in register with the aperture 72, communicating with the dust-chute, the said partition-wall 76, coacting with the partitions 75, serves to form a completely-enclosed air-tight chamber connecting the segregated pocket with the dust-chute and forming substantially an extension of said chute. In such position, therefore, the segregated pocket is in position to deliver its dust to the dust-chute without permitting the escape of any particles therefrom into the distribution-chamber.

While I herein provide for segregating the pockets individually, it will be apparent that groups of pockets might be so separated from the distribution-chamber in a similar manner for purposes to be described.

It will thus be seen that I provide by the coacting parts comprising the walls 32, 75, and 76, the dust-chute, and the communicating portion of trough 22 a continuous dust



box or casing isolated from the distributing-chamber containing in a suitable part the conveyer 25, and with which the filters successively register for the purpose of being  
5 cleaned.

Means are provided for effectively freeing the pockets of dust when in the position described, said instrumentalities being herein indicated as follows: 78 indicates a cam  
10 mounted upon the revolving shaft 40 and provided with one or more projections 78', so disposed that in rotation they sweep over the top of the bolt 62 of the pocket 52 which is at the time in communication with the  
15 dust-chute. The action of the cam, as will be readily seen, is to alternately depress and suddenly release the end of the spring 61, associated with the said pocket 52. 80 indicates a fan-casing suitably mounted adjacent the  
20 dust-chute 66, and 81 indicates an exhaust-fan mounted therein. 82 indicates an inlet-pipe extending from a point below the inclined partition-wall 68 of the dust-chute to a point adjacent the axis of rotation of the fan and  
25 establishing communication between the chute and the fan-casing. 83 indicates an air-outlet from the fan-casing, which may be formed at any suitable point, herein indicated as establishing communication be-  
30 tween the fan-casing and the expansion-chamber 34'. The fan 81 may be geared to be driven from the shaft 40 by suitable pulleys 84 and 85 and the connecting-belt 86. 87 indicates a small pulley on the shaft 40,  
35 connected by belt 89 with the sheave 26, mounted on the conveyer-shaft. 90 indicates a lever pivoted to a suitable portion of the framework at a point approximately in alinement with the path of movement of the  
40 pawl 45 and provided at its outer end with an antifriction-roller 91, constantly held under tension with spring 92 in contact with the upper surface of the annular extension 37 of the turret 34.

45 I will now state the operation of the machine, assuming that it is being used in a flouring-mill. Dust-laden air under sufficient pressure is introduced into the machine by the spout 11, entering the separating-  
50 chamber 10 tangentially, and consequently assumes a whirling or vortical motion. The centrifugal effect of the whirl throws the heavier and denser dust particles out to the periphery of the chamber, along which they  
55 travel in spiral lines, the coarser particles finding their way downward under the influence of gravity to the floor of the chamber and the finer dust particles seeking the area of least pressure, and so rising to the top of the chamber. The coarse dust after reach-  
60 ing the floor 10' is swept by the arm 21 through the apertures 20, whence it is carried off by the conveyer. The finer dust reaching the small end of the chamber, as  
65 aforesaid, whirls about therein until it

reaches aperture 71, through which it escapes into the dust-chute. A portion of the dust introduced into the machine, however, is of such a nature that it is incapable of separation from the air by a centrifugal ma-  
chine, such dust being almost impalpable and so light as to be little influenced by cen-  
trifugal action. This dust escaping from the separating-chamber 10 with the main  
body of air passes up through the tubular  
75 guard 14 into the air-distributing chamber 34', where, having lost its rotary motion, it diffuses itself throughout the chamber and passes out through the dust-collecting pockets 52, distributing itself equally to the va-  
80 rious pockets.

The action of the toweling dust-pockets is peculiar. While the mesh of the piled Turkish-toweling fabric whereof they are preferably composed is open enough to per-  
85 mit free passage of the air therethrough and would naturally seem much too coarse to catch the extremely fine dust particles which find their way into the distribution-chamber, yet it is a fact that fabric of the character de-  
90 scribed is the most efficacious for the purpose of separating this fine dust of any textile material of which I am aware. This efficiency in the separation of the dust par-  
95 ticles I attribute to the peculiar action of the looped surface or pile, the threads whereof serve to break up the flow of the air in every direction, causing the formation of myriad minute eddies or whirls of ever-varying di-  
rections, wherein the finest dust particles are  
100 caught and by the constantly-varying conditions of the whirls deposited upon the fabric; but from whatever cause its efficiency results the fact remains that the cloth described performs its function of catching the  
105 dust in an advantageous manner without becoming clogged by the accumulation of dust therein and is itself readily susceptible to cleaning. Other forms of fabric might be employed for the purpose described, how-  
110 ever, without departing from the spirit of my invention.

During the operation of the machine the shaft 40 is kept constantly in rotation, its worm-gear driving the pinion 44, which  
115 actuates the revolving turret in a manner heretofore described.

The spring-actuated lever 90, with its roller 91, is provided to oppose any lifting action that the pawl might exert upon the  
120 turret in operating upon a tooth of the rack. The revolution of pinion 44 and the consequent step-by-step movement of the turret being slow relative to the speed of rotation of the shaft 40, the turret is allowed to dwell  
125 for a period between its successive movements, and the parts are so arranged that during each dwell one of the pockets is in vertical alinement with the aperture 72 communicating with the dust-chute. Upon such  
130



pocket the cam 78 acts one or more times, as heretofore described, depressing the pocket-holding spring 62 and then suddenly permitting it to return to initial position. This

5 results in slackening the tension upon the fabric of the outer pocket-cylinder 53 and then suddenly jerking it to full tension, which loosens the dust adhering thereto and causes more or less thereof to become detached from the pocket. The jerking of the  
10 pocket by the spring also causes the inner weighted bag or cylinder 56 to be violently thrown about, striking the outer pocket at various points, and thereby assisting in clearing it of dust, and at the same time distorting  
15 itself in such manner as to effectually loosen the dust adhering thereto. This mechanical cleansing is furthered by the provision of the chains 59, which also thrash about, scraping  
20 and jarring the surfaces of both pocket-cylinders presented to the interior of the machine.

The dust in the segregated pockets thus loosened is drawn therefrom by the action of the exhaust-fan 81, which, constantly ex-  
25 hausting air from the dust-chute, creates a reversed draft through the dust-pocket, the air now entering said pocket from the exterior rather than passing out from the interior of the machine, as heretofore. As a result  
30 the dust mechanically loosened is drawn into the dust-chute through the aperture 72, falling upon the upper surface of the inclined partition-wall 68, whence it falls to the bottom of the chute to be disposed of.

35 It will be noted that the point in the chute from which the exhaust-fan draws the air is not directly in the path of the dust falling into the chute from either the aperture 71 or the aperture 72, a partition-wall being inter-  
40 posed between each of said paths and the point of communication with the exhaust-fan. Consequently but little, if any, of the dust in said chute passes into the fan through the pipe 82; but in order to guard against  
45 permitting the escape of any dust I prefer to force the air exhausted by the fan 82 back into some part of the machine, thereby utilizing the pressure generated by said fan.

It will be noted that by the provision of  
50 the valve 70 the outlets provided by the dust-chute for light dust escaping from the top of the separating-chamber and the impalpable dust gathered from the dust-pocket are made independent; but if it is not desired to main-  
55 tain a separation between these two grades of dust the valve may be swung to either side to throw both products together either into the conveyer-trough 22 or through the outlet 69.

60 For purposes of a full disclosure I have herein set forth in some detail one embodiment of my invention which I have found advantageous; but I do not desire to be understood as limiting myself to the construction herein shown for illustrative purposes in

detail, as it will be apparent that numerous changes might be made in the specific embodiment of my invention without departing from the spirit and scope thereof.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a machine of the class described, a centrifugal separator comprising a decked chamber having a tangential inlet and a single air-outlet in its deck, a fabric dust-collector comprising a distributing-chamber communicating with said separator only through said air-outlet, a plurality of fabric pockets normally in open communication  
75 with the distributing-chamber, means for successively cutting off the communication of the pockets with the distributing-chamber, and means for cleansing the pockets so cut off.

2. In a machine of the class described, a centrifugal separator having a tangential inlet and an outlet in its top, a turret member superposed for rotation on the separator and providing a distributing-chamber communicating with the separator only through said  
85 outlet, said distributing-chamber having outlets therefrom, fabric pockets carried by the turret member and communicating with said outlets from the dust-chamber, means for rotating the turret member, means for cutting  
90 off the communication of pockets with the distributing-chamber at a predetermined point, and means for cleansing the pockets so cut off.

3. In a machine of the class described, a centrifugal separator having a tangential inlet and an outlet in its top, a turret member superposed for rotation on the separator and comprising an elevated central portion and a surrounding annular portion forming a distributing-chamber, said annular portion being provided with outlet-openings, a fabric pocket for each outlet into which the outlet  
100 opens, means carried by the elevated portion of the turret for supporting said pockets, means for rotating the turret member, means for segregating pockets from communication with the distributing-chamber, and means for jarring the segregated pockets to  
105 cleanse the same.

4. In a machine of the class described, a centrifugal separator comprising a conical chamber tapering toward its top, having a tangential inlet and a dust-outlet at its lower end, a peripheral dust-outlet at its smaller end, a substantially axial air-outlet at its upper end, a distributing-chamber into which the separator air-outlet discharges superposed upon said separator, having air-outlets, and fabric collecting agencies ar-  
115 ranged to receive the discharge from the distributing-chamber outlets, means for cutting off the communication of pockets with the distributing-chamber, and means for cleansing the pockets so cut off.  
120  
125  
130



5. In a machine of the character described, a centrifugal separator having a tangential inlet and an air-outlet, a rotary turret member mounted on the top of the separator and forming therewith a distribution-chamber, said distribution-chamber being provided with outlets, fabric dust-collectors communicating with the outlets, and devices carried by the turret member arranged to sweep over the top of the separating-chamber to clean the same.

6. In a machine of the character described, a distributing-chamber comprising a stationary member having therein inlet and outlet openings, and a rotary top, fabric dust-collecting pockets arranged on said top and normally communicating with the chamber, means for rotating the top, with its pockets, means for cleaning the pockets when over the outlet in the stationary member, and means for cutting off the pocket being cleaned from communication with the distributing-chamber, comprising radially and circumferentially arranged walls, the radial walls being carried by the rotary top.

7. In a dust-collector, the combination with a fabric pocket of a spring at one end engaging said pocket and extending transversely with reference to the axis of the pocket, and a support for the other end of said spring comprising a bifurcated block and an adjustable clamping device securing the last said end of the spring to the bifurcated ends of the supporting-block and means for actuating the spring.

8. In a machine of the character described, a chamber into which dust-laden air is impelled under pressure, an outlet from said chamber opening to the atmosphere, a fabric dust-collecting agency closing said outlet-opening when in any position, said collecting agency being arranged to present one surface to the area of higher pressure within the chamber and its other surface to the atmosphere, said dust-collecting agency being suspended from its upper end and weighted and free for lateral and upward movement at its lower end, in combination with means for jarring the collecting agency.

9. In a machine of the character described, in combination, a distributing-chamber having an air-outlet, a dust-collecting structure comprising fabric pocket members into which said outlet opens, a support for the upper end of said pocket member having an outlet-opening therein, an inner pocket member suspended from said support and opening at its upper end into the outlet, said inner pocket member being unrestrained as to lateral and upward movement, weighted, and closed, and means for jarring said collecting structure.

10. In combination in a dust-collector, a collecting agency comprising a support having an outlet therein, an outer fabric pocket

member surrounding said support, an inner fabric pocket member suspended from said support and opening at its upper end into the outlet, the lower end of said inner pocket member being unrestrained as to lateral and upward movement, weighted, and closed, means for directing air into the outer pocket member, and means for vertically vibrating the pocket-support.

11. In a machine of the class described, a distributing-chamber having an inlet for the dust-laden air, and comprising a rotatable top portion, having a series of outlets therein, a dust-collecting structure associated with each outlet, one of said dust-collecting structures comprising a fabric pocket member surrounding said outlet and into which said outlet opens, a support for the upper end of said fabric pocket member, said support being provided with an outlet to the atmosphere, an inner pocket member opening into said outlet in the support, and suspended from said support, said inner member being weighted, closed, and unrestrained as to lateral and upward movement, means for rotating the rotatable portion of the distributing-chamber, means for successively cutting off said dust-collecting structures from communication with the inlet to the distributing-chamber, and means for jarring the collecting structure when so cut off.

12. In a dust-collector, a settling-chamber, a horizontal air-chamber disposed above and centrally communicating with the settling-chamber for the reception of partly-purified air, filtering means connected with said air-chamber; and filter-cleaning means including a casing isolated from the air-chamber and communicating with a portion of the filters, and means for setting up suction within said casing.

13. In a dust-collector, a settling-chamber, a horizontal air-chamber disposed above and centrally communicating with the settling-chamber for the reception of partly-purified air, filtering means connected with said air-chamber; and filter-cleaning means including a casing isolated from the air-chamber and communicating with a portion of the filters, conveyer means within the casing, and means for setting up suction within the casing.

14. In a dust-collector, a settling-chamber, a horizontal air-chamber disposed above and centrally communicating with the settling-chamber for the reception of partly-purified air, filters constituting an outlet for air from the air-chamber, and filter-cleaning means including a box within which suction is maintained; said box being isolated from the air-chamber and adapted to communicate with some of the filters.

15. In a dust-collector, a tapering settling-chamber, a horizontal air-chamber disposed above and centrally communicating with the



settling-chamber for the reception of partly-purified air, filters constituting an outlet for air from the air-chamber, and filter-cleaning means including a conveyer-box within which suction is maintained; said box being isolated from the air-chamber and adapted to communicate with some of the filters.

16. In a dust-collector, a settling-chamber, a horizontal air-chamber disposed above and centrally communicating with the settling-chamber for the reception of partly-purified air, filters constituting an air-outlet from the air-chamber, and filter-cleaning

means including a box within which suction is maintained, and means for agitating the filters; said box being isolated from the air-chamber and adapted to communicate with the filters which are being operated upon by the agitating means.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

ORVILLE M. MORSE.

In presence of—

GEORGE J. MAY, Jr.,  
MARY F. ALLEN.