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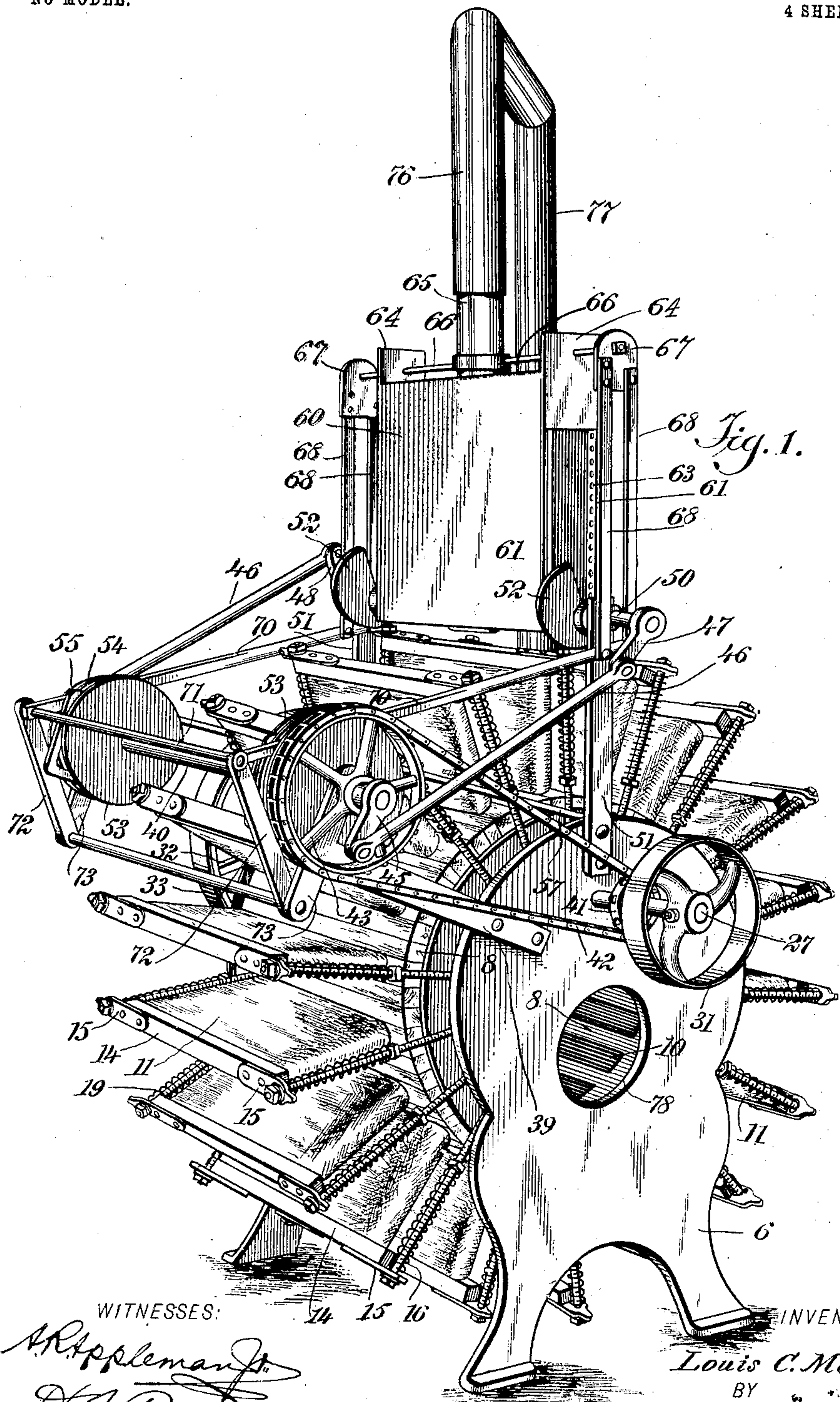
PATENTED AUG. 25, 1903.

L. C. MEYEROTT.  
DUST COLLECTOR.

APPLICATION FILED NOV. 6, 1902

NO MODEL.

4 SHEETS—SHEET 1.



WITNESSES:

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No. 737,438.

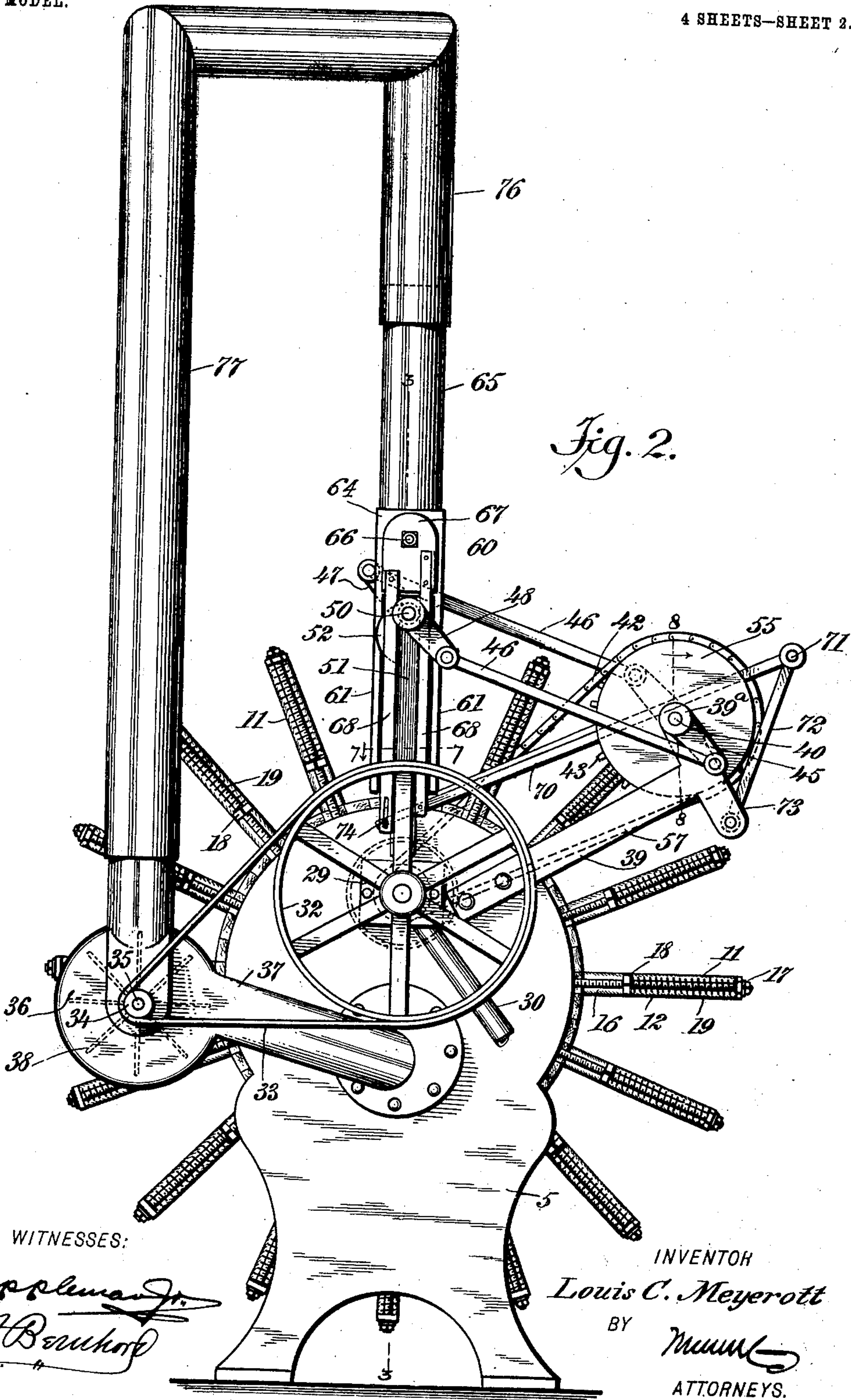
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NO MODEL.

4 SHEETS—SHEET 2.



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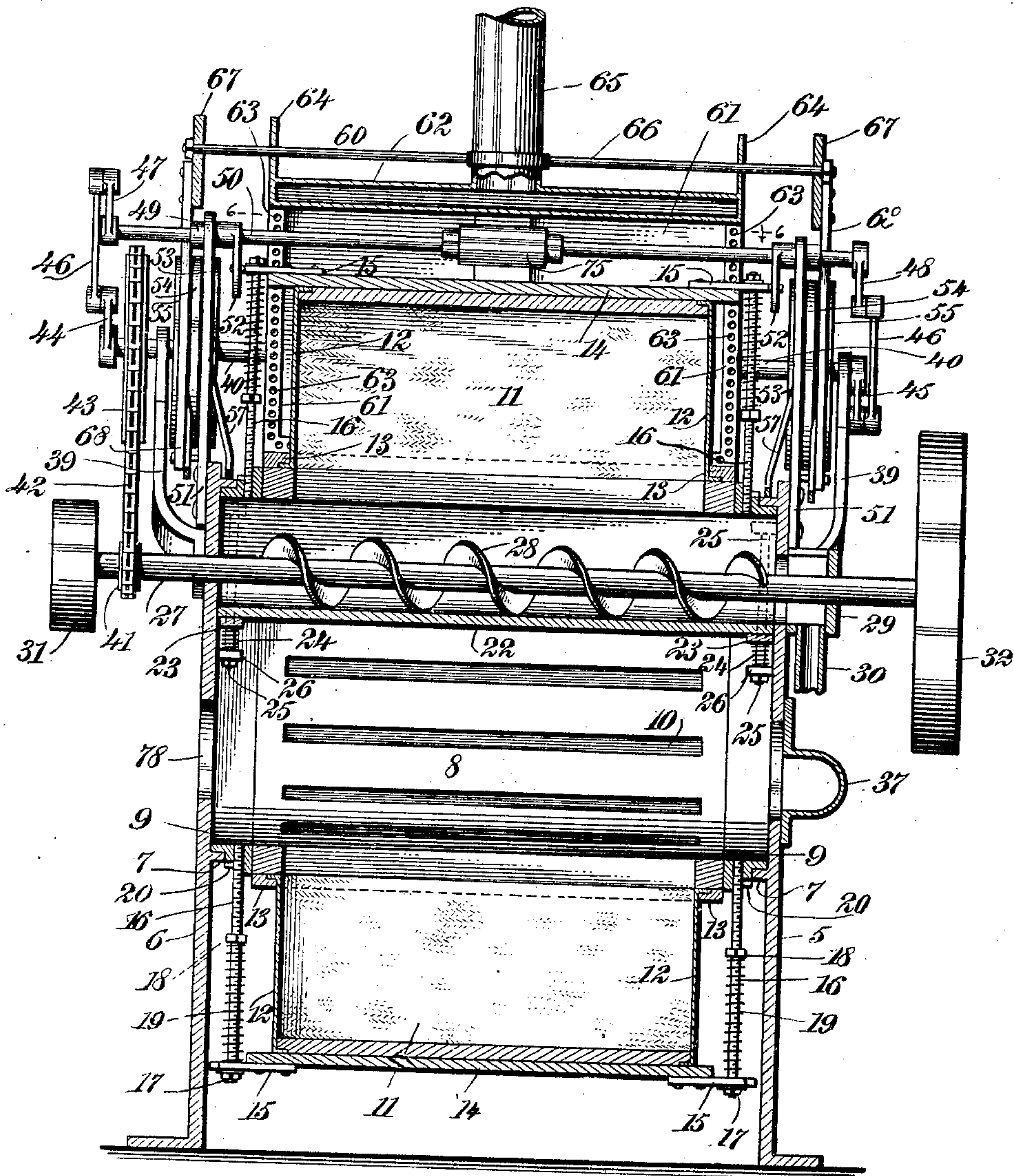
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4 SHEETS—SHEET 3.

Fig. 3.



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4 SHEETS—SHEET 4.

Fig. 4.

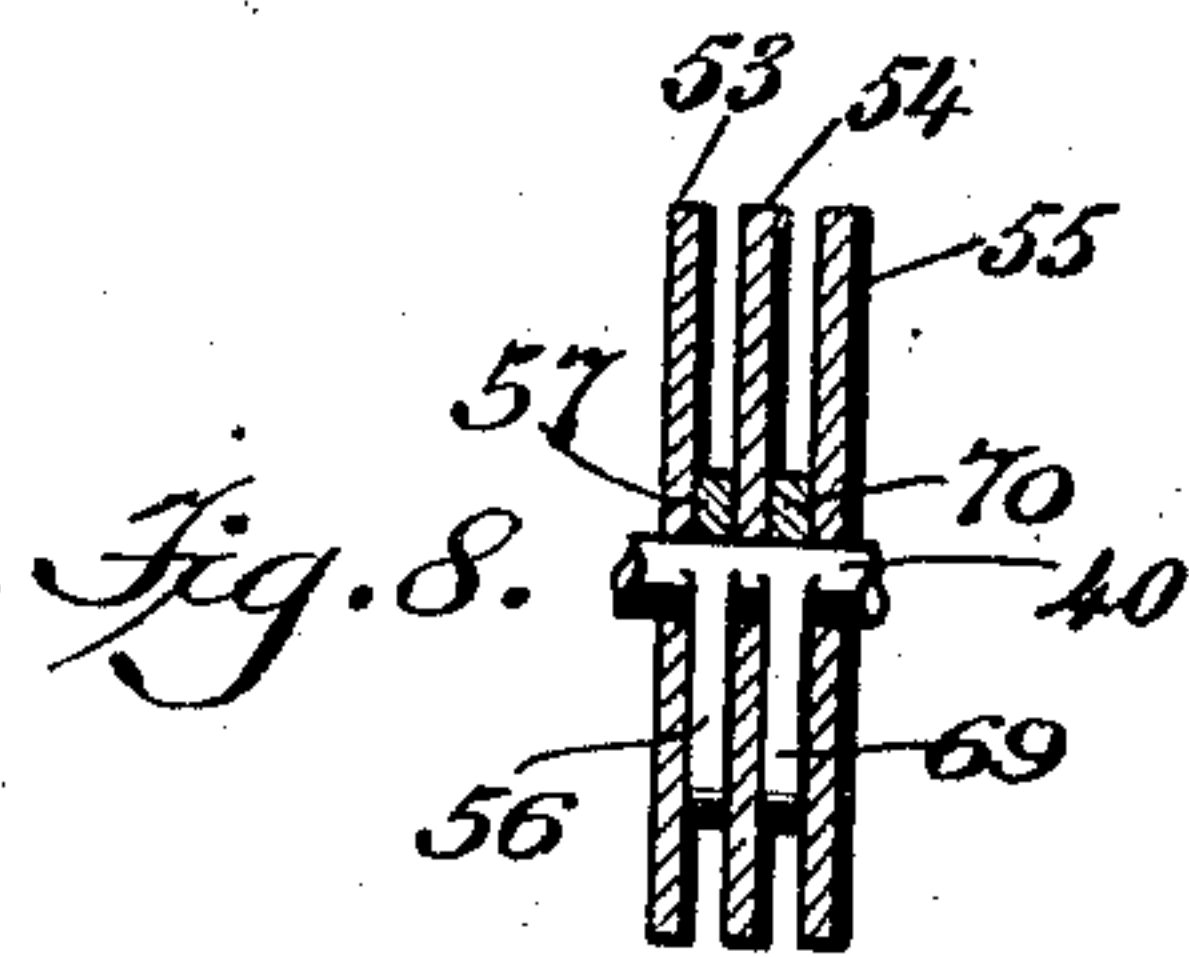
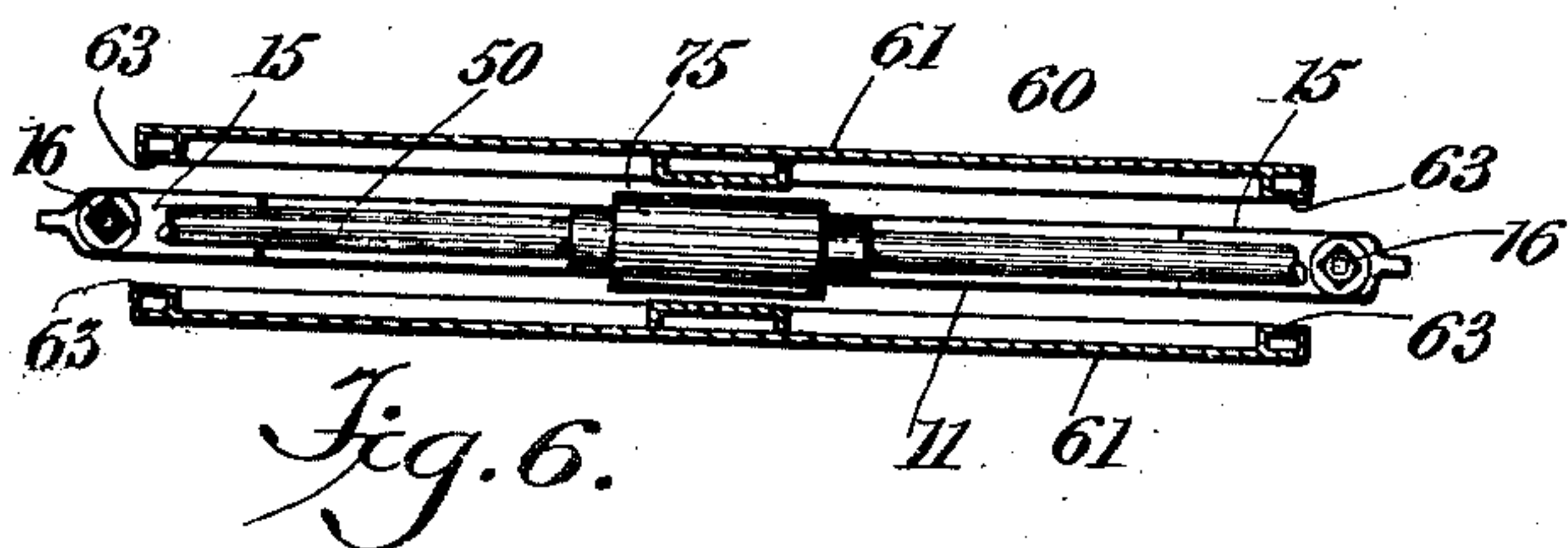
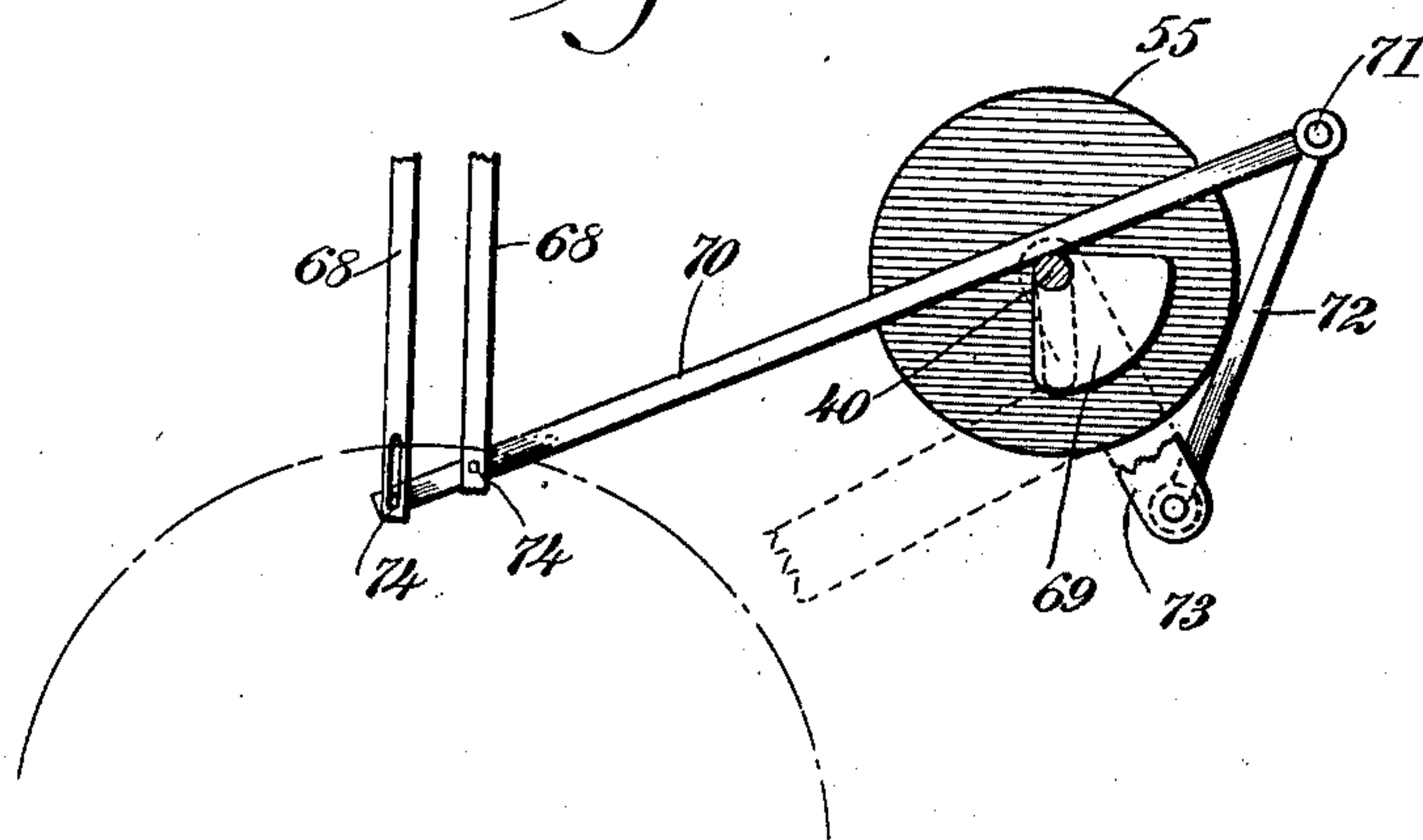
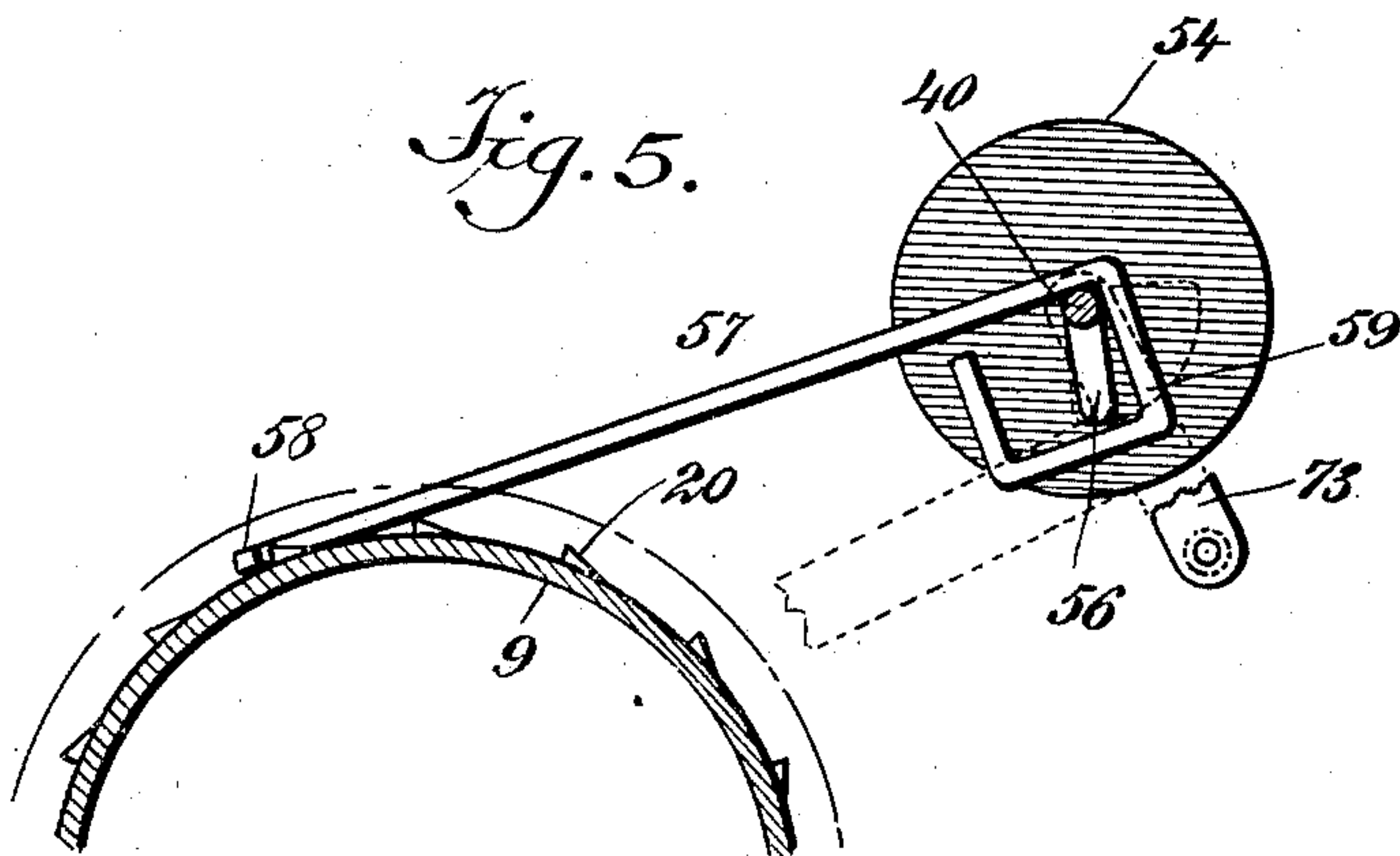


Fig. 5.



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# UNITED STATES PATENT OFFICE.

LOUIS C. MEYEROTT, OF EVANSVILLE, ILLINOIS.

## DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 737,438, dated August 25, 1903.

Application filed November 6, 1902. Serial No. 130,276. (No model.)

### *To all whom it may concern:*

Be it known that I, LOUIS C. MEYEROTT, a citizen of the United States, and a resident of Evansville, in the county of Randolph and State of Illinois, have invented a new and Improved Dust-Collector, of which the following is a full, clear, and exact description.

My invention relates to dust-collectors, the same being intended as an improvement on devices of the class disclosed in prior Letters Patent of the United States issued to me on July 31, 1900, No. 654,997, in which I have disclosed a structure having a revoluble drum provided with a series of radial fabric pockets designed to eliminate the dust from a laden current of air drawn from a mill or other place whereby the air-current may in a large measure be purified from the floating particles of dust suspended mechanically therein. One object that I have in view is the provision of means for collecting the dust that escapes on the outside of the filtering-pockets when they are jarred or shaken successively, the outside dust being collected by pneumatic devices which carry the dust back again to the machine.

A further object is to provide means for automatically raising and lowering the external dust-collecting devices in order to lower the same to an operative position over the filtering-pockets and to raise such collecting devices out of the path of the pockets on the rotation of the drum.

A further object is to equip the machine with means for automatically turning the drum with a step-by-step motion in order to present the pockets successively to the collecting devices, all the parts working in harmony.

Further objects and advantages of the invention will appear in the course of the subjoined description, and the novelty will be defined by the annexed claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of a dust-collector constructed in accordance with my present invention looking at one end of the machine and showing the external cap in its raised position. Fig. 2 is an elevation look-

ing at the opposite end of the machine and with the dust-collecting cap in its lowered position. Fig. 3 is a vertical longitudinal section through the machine in the plane of the dotted line 3 3 of Fig. 2. Fig. 4 is an enlarged detail view, partly in section and partly in elevation, illustrating the means for intermittently raising and lowering the external cap. Fig. 5 is a view similar to Fig. 4, but showing the means by which the drum and its series of pockets may be rotated with a step-by-step movement. Fig. 6 is a sectional plan view through the dust-collecting cap, the plane of the section being indicated by the dotted line 6 6 of Fig. 3. Fig. 7 is a detail cross-sectional view through the means for guiding the dust-collecting cap, the plane of the section being indicated by the dotted line 7 7 of Fig. 2; and Fig. 8 is a detail section on the line 8 8 of Fig. 2.

The main frame for supporting the working parts of the machine may be of any suitable construction; but, as herein shown, this frame consists of the end plates 5 6, adapted to be fastened to a suitable base or to a floor and to remain in positions parallel to each other. The end members of this frame are provided on their opposing faces with concentric circular bearings 7, which are shown by Fig. 3 in the form of annular flanges or rings which project inwardly from the members 5 6. The frame supports a revoluble drum, which is indicated in its entirety by the numeral 8, said drum being disposed between the members 5 6 and mounted on the annular bearings 7 to rotate freely thereon. The drum may be of any suitable dimensions and material; but at its ends said drum is provided with the metallic bearing-rings 9, which engage frictionally with the circular flanges 7, and thereby serve to support said drum between the end members of the frame. As in my prior patent, to which reference has been made, the drum is provided with a series of longitudinal slots 10, each disposed radially with respect to the axis of the drum, said slots terminating within the annular bearings 9 at the ends of the drum. The drum is equipped with a series of radial pockets 11, each having its side and end walls formed by layers of filtering material, (indicated at 12.) The inner edges of the filtering material 12, forming each radial pocket 11, may be secured to the circumfer-



ence of the drum in any suitable way—as, for example, by means of the cleats 13; but the fabric walls and the cleats of each pocket are arranged to establish communication between  
 5 said pocket and the chamber of the drum through one longitudinal slot 10. Each pocket 11 of the series on the drum is provided at its outer end with a longitudinal slot 14, which extends longitudinally of the pocket  
 10 and serves to reinforce the latter. The slot of each pocket 11 is provided at its end portions with the metallic guide-plates 15, the same being firmly secured to the slot in any suitable way and extending beyond the ends  
 15 of said slot. The said guide-plates are loosely fitted on guide-rods 16, a pair of which is provided for each pocket, and thus a plurality of guide-rods are provided on the drum to properly direct the radial movement of the  
 20 series of pockets. Each pair of guide-rods for each of the pockets is fastened to the heads 9 of the drum in positions at opposite ends of the pockets and substantially in alinement therewith longitudinally of the drum. The  
 25 guide-rods are preferably screw-threaded to accommodate the nuts 17 18, and on these guide-rods are loosely fitted the coiled springs 19, which serve to normally impel the slats 14 and the pockets outwardly for the purpose  
 30 of stretching the filtering material forming the walls of the pockets. The nuts 17 are screwed on the guide-rods of each pocket in order to limit the outward play or movement of the plates 15, and consequently determine  
 35 the stretching of the fabric walls 12; but the nuts 18 are screwed on said rod in positions to afford abutments or seats for the inner ends of the coiled springs 19, the latter acting against the guide-plates 15, as will be  
 40 readily understood by reference to Figs. 1, 2, and 3 of the drawings. The metallic heads 9 at the ends of the drum are provided on their exposed external faces with ratchet-teeth 20, as shown more clearly by Figs. 3 and  
 45 5. These ratchet-teeth extend in series continuously around the drum to form a circular ratchet at each end thereof, and said ratchet constitutes one element of a feed mechanism which is operable to impart a step-by-step rotation  
 50 to the drum and its series of pockets, as will be hereinafter more fully described.

22 designates a trough which is arranged longitudinally of the drum within the latter and in eccentric relation thereto, said trough  
 55 being disposed in the upper part of the drum and lying in the plane of the vertical axis thereof. This trough fits snugly to the inner periphery of the drum and to the inner faces of the members 5 6 at the ends of the frame,  
 60 and said trough is supported yieldably within the drum in order that it may have snug frictional engagement therewith. Any suitable means may be adopted for securing the yieldable supporting of the trough; but, as shown  
 65 by Fig. 3, the trough is provided on its underside with cross-bars 23, against which act the coiled springs 24, that are held in place by ver-

tical bolts 25, which are secured to the inside of the frame members 5 6, the springs 24 being seated on fixed lugs 26, provided on the  
 70 frame members 5 6. The springs operate to normally press the trough upwardly into engagement with the inner surface of the drum; but this trough is capable of a limited slidable movement laterally with relation to the drum. 75

27 designates the main shaft, which extends through the upper part of the drum and through the trough 22, said shaft being journaled in suitable bearings on the end members of the frame. Within the drum and the  
 80 trough the shaft is equipped with a screw conveyer 28, arranged to work close to the inner surface of the trough, and this conveyer discharges the matter collected in the trough into the hopper 29, which is provided  
 85 on the outside of the frame member 5 and which communicates with an offbearing-pipe 30, whereby the dust collected by the machine may be spouted to any desired place of discharge. The shaft 27 is provided at one end  
 90 with a belt-pulley 31, around which may pass a belt (not shown) adapted to communicate motion from a line-shaft or other source of power to the shaft 27, and at the other end of  
 95 said shaft 27 is provided a larger pulley 32, around which passes an endless driving-belt 33, adapted to fit around a small pulley 34 on one end of a fan-shaft 35. This fan-shaft extends through a fan-casing 36, which is supported in any suitable way on the frame-plate  
 100 5, and from this casing extends a spout or tube 37, which has its other end fastened to the frame-plate 5 in a way to discharge the current from the fan-casing 36 into the drum 8 at a point below the trough 22. The shaft  
 105 35 is equipped with a rotary fan 38, (indicated by dotted lines in Fig. 2,) and this fan is positively driven by the described train of gear connections from the shaft 27.

39 designates a pair of supporting-arms, 110 which are secured to the end plates 5 6 of the main frame and extend in inclined directions outwardly therefrom. These supporting-arms are rigidly fastened to said frame to remain steadily in place thereon, and said arms are  
 115 provided at their outer ends with journal-bearings 39<sup>a</sup> to accommodate a transverse cam-shaft 40, the latter being arranged in a horizontal position at one side of the machine and lying parallel to the main shaft 27. Said shaft  
 120 27 is provided near the pulley 31 with a sprocket-gear 41, around which passes an endless sprocket-chain 42, which is fitted around a sprocket-wheel 43, secured near one end of the shaft 40, thus making provision for posi-  
 125 tively rotating the shaft 40 through the train of gear connections with the shaft 27. The shaft 40 is equipped with a plurality of cams adapted to actuate the feed mechanism, which rotates the drum 8, the means for forcibly depressing the pockets 11, and the means to raise  
 130 and lower the dust-collecting cap. I will therefore refer to the shaft 40 as the "cam-shaft" in the further description of the machine in



order to distinguish this shaft 40 from the shaft 27. At its end portions the cam-shaft is provided with cranks 44 45, which extend at different angles from said shaft and are rigid therewith, so as to be rotated by the shaft, and to these cranks are pivoted the pitmen 46, said pitmen being disposed at the end portions of the machine and at opposite ends of the drum and its pockets. (See Figs. 1 and 3.) The other ends of the pitmen are pivotally connected to cranks 47 48, which are secured to opposite ends of a rotary shaft 50, said cranks 47 48 being disposed at different angles to the shaft 50, and they occupy such relations to the cranks 44 45 that the motion of the cam-shaft 40 is communicated to the shaft 50 in a way to rotate the latter. This shaft 50 is arranged in a horizontal position across the machine and in the vertical plane of the shaft 27, and said shaft 50 is journaled in suitable bearings 49, which are provided at the upper ends of fixed posts 51, the latter being firmly secured to the end plates 56 and extending upwardly therefrom for suitable distances, whereby said shaft 50 is held in a proper operative relation to the stretched pockets 11.

The shaft 50 is provided with depressing-cams 52, which are made fast with said shaft to rotate therewith and are disposed in corresponding positions thereon, and these cams lie in the path of the guide-plates 15 of the pockets 11, whereby at each step in the rotation of the drum the guide-plates of one pocket are brought into operative relation to the cams 52, and at the proper period in the rotation of the shaft 50 these cams ride against the plates 15, and thereby depress said plates and the slat 14, thus resulting in compression of the springs 19 during the period that the drum remains at rest in the intervals between the feed of the mechanism which imparts the rotation to the drum. When the shaft 50 and its cams turn, the pocket 11 is collapsed; but when the shaft turns far enough the cams clear the plates 15 and allow the springs 19 to suddenly react, thus imparting a shaking or jarring motion to the fabric walls of the pockets, which has a tendency to free the pockets from the particles of dust which adhere thereto.

The cam-shaft 40 is provided near each end thereof with a series of spaced disks 53 54 55, and between two of the disks near each end the shaft is provided with cranks 56. These cranks operate feed-rods 57, (see Fig. 5,) said feed-rods extending rearwardly from the shaft 40 and resting loosely on the metallic heads 9 of the revoluble drum. The inner end of each feed-rod 57 is provided with a tooth 58, which is adapted to successively engage with the series of teeth 20, constituting one ratchet at one end of the drum; but the other end of this rod 57 is provided with a bent portion, forming a yoke 59, which fits loosely around the shaft 40 and embraces the crank 56, the latter being arranged to ride

against the yoke 59 in order to impart reciprocatory movement to the feed-rod 57. The two feed-rods which are employed near opposite ends of the drum are operated in unison by the cranks 56 on the shaft 40, and at proper periods the cranks impinge the yokes 59 to positively move the rods 57 in outward directions, and thereby make the teeth 58 pull on the ratchet-teeth 20 to turn the drum one step; but at other periods the cranks impinge the yokes 59 of the feed-rods in order to return them to positions for engagement with the next succeeding teeth of the ratchets 20.

The jarring or shaking movement given to the collapsible filtering-pockets 11 successively during the rotation of the drum shakes free the dust which adheres to the fabric walls thereof, and in practical experience with the machine it is found that a certain quantity of the dust shaken from the pockets escapes to the outside of the machine. I have provided means for pneumatically collecting the dust which escapes externally of the machine, and the preferred embodiment of means whereby this result is attained will now be described.

60 designates a dust-collecting cap or hood which is arranged to fit over the pockets 11 successively on the presentation of the pockets to the upper open side of the trough 22, and this cap or hood is slidably mounted for movement toward and from the pockets 11 in order that the hood may be raised out of the path of the pockets previous to the intermittent turning movement being imparted to the drum. The hood consists of end members 61 and an upper member 62, which connects the end members. The hood is hollow—that is to say, the end members 61 and the connecting member 62 are chambered and communicate with each other. The end members 61 are disposed in parallel relation and at a sufficient distance to enable either pocket 11 of the series to be snugly received within the hood, and said end members 61 are provided on their inner faces with a series of inlet-perforations 63, one of these series of perforations being provided at each side portion of the hood, as shown by Fig. 6. The hood is provided at its end portions with upstanding plates 64, and from the middle of the connecting member 62 of said hood rises a short length of pipe 65. A tie-bar 66 is fastened to the pipe 65 and passes through the plates 64, and to the ends of this tie-bar are secured the plates 67, to which are fastened the guide-rods 68. These guide-rods are disposed at opposite ends of the hood and depend from the plates 67, and said rods 68 are slidably fitted on the vertical posts 51. Any suitable means may be employed to slidably confine the rods 68 on the posts 51, and said rods and posts cooperate in limiting the hood to vertical movement with relation to the uppermost vertical pocket 11 of the series, said hood being guided in its rising movement by the rods and posts, so that said hood cannot



assume a position out of alinement with the pocket which is to be presented thereto, while the downward movement of the hood is guided by the posts and the rods in order to make  
 5 said hood properly slide over the pocket 11, which is presented in a position for the hood to engage therewith. The hood is automatically raised and lowered by lifting devices which are actuated from the eccentrics on the  
 10 shaft 40, one of said eccentrics being shown in Fig. 4 and indicated at 69. The eccentrics 69 are made fast with the shaft 40 between a pair of the disks thereon, and said eccentrics ride against suitable lifting-bars 70, each lifting-bar being fitted between two of the disks  
 15 of said shaft 40 in a position to be loosely confined in place thereby. The lifting-bar 70 is hung at its outer end, as at 71, on a link 72, which is pivoted to a depending lug 73 on  
 20 one supporting-arm 39, and the inner end of this lifting-bar 70 is connected pivotally at 74 to the lower ends of the pair of guide-rods 68, which are made fast with one end portion of the hood. It will be understood that two of  
 25 these lifting-bars and their complementary parts are provided for properly elevating and lowering the hood or cap, and these bars are positively raised by the eccentrics 69 in order to raise the hood to a position above the path  
 30 of one of the pockets 11, said hood being maintained in the raised position by the eccentrics 69 and the bars 70 during the period that the drum is turned one step in order to carry a cleaned pocket away from the position below the hood  
 35 and to present the next pocket of the series in a position where it lies immediately below the raised hood, after which the eccentrics 69 clear the bars 70 and the hood drops by gravity to its lowered active position in order to inclose  
 40 the newly-presented pocket. The shaft 50 passes freely through the hollow hood below the connecting portion 62 thereof and between the parallel members 61, and on this shaft is a suitable guide for the hood, said guide being  
 45 shown by Fig. 3 in the form of a roller 75, adapted to impinge the members 61 and to cooperate with the guides in holding the hood against displacement when it is raised and lowered. The upstanding tube 65 of the hood  
 50 is arranged to rise and fall therewith, and this tube is fitted slidably or telescopically in a depending member 76 of a suction-pipe 77, the latter being fastened to the fan-casing 36 and communicating therewith in a way to deliver the dust which is collected by the hood.  
 55 The dust-laden current of air from a mill or any other place is carried to the machine by a flue or pipe, (not shown,) and this air-current is discharged into the drum 8 through an  
 60 opening 78, which is provided in the frame-plate 6. (See Figs. 1 and 3.)

In operation the current of air is discharged through the opening 78 into the drum, and the air passes through the series of slots 10 and  
 65 the pockets 11, the dust being eliminated mechanically from the air by the layers of filter-

ing material 12, which form the walls of the pockets. At the proper period the eccentrics 69 operate the bar 70 to raise the hood or cap, the tube 65 of which slides in the branch 76  
 70 of the suction-pipe 77. The feed-rods 57 are now operated by the cranks 56 to turn the drum one step, and the eccentrics 69 then lower the cap over the pocket which was presented below said cap by the described turning  
 75 movement of the drum. The cams 52 ride against the guide-plates 15 on the newly-presented pocket in order to compress the springs, which impart a sudden outward movement to the pockets when said cams clear  
 80 the plates, thus shaking the dust free from the pocket under treatment. The suction created by the fan through the pipe 77, its branch 76, and the tube 65 draws in air through the perforations 63 in the cap, and the inflowing air  
 85 carries with it the dust which surrounds the pocket that has just been vibrated by the action of the cams 52 and the springs 19, whereby the dust outside of the machine is collected by the cap and carried to the suction-fan,  
 90 which in turn discharges the dust into the machine. The dust that drops from the pocket when it is shaken passes through one of the slots 10 of the drum and accumulates in the trough 22, from which the dust is mechanically removed by the action of the conveyer  
 95 28, that serves to discharge the dust to the spout 30, adapted to carry the accumulation away from the machine. The described operation of lifting the cap or hood, turning the  
 100 drum, and lowering the cap is repeated indefinitely; but the movement of the cap to clear the pockets does not in any way interfere with the action of the suction created by the fan 38.

Having thus described my invention, I  
 105 claim as new and desire to secure by Letters Patent—

1. A dust-collector having a series of pockets, a suction-hood movable to inclose each pocket of the series, means for raising said  
 110 hood out of the path of the pockets, and means for successively presenting said pockets in active relation to said hood.

2. A dust-collector having a revoluble drum carrying a series of pockets, a suction-hood  
 115 to inclose said pockets, means for rotating the drum with a step-by-step movement, and means for moving said hood out of the path of the pockets and automatically bringing said hood into position to inclose the pockets  
 120 successively.

3. A dust-collector having a revoluble drum provided with pockets, means for jarring said pockets, means for intermittently turning said drum, a suction-hood, guides in which  
 125 the suction-hood is slidably confined for movement with respect to the pockets of said drum, and means for raising the hood out of the path of the pockets prior to the turning movement of the drum.

4. A dust-collector having a revoluble drum provided with outstanding pockets, means for  
 130



rotating the drum with a step-by-step movement, means for jarring said pockets to eliminate the dust therefrom, a suction-hood, and mechanism to automatically raise and lower said hood in the intervals between the successive movements of the drum and its pockets.

5. In a dust-collector, a suction-hood comprising chambered end members, and a chambered connecting member in communication with said end members, said hood being provided with suitable inlet-perforations, in combination with a series of pockets, means for advancing said pockets, means for moving the hood into position to inclose said pockets, and a suction-fan communicating with said hood.

6. In a dust-collector, a hollow suction-hood having end members provided with inlet-perforations, in combination with a series of pockets, means for moving the hood into position to inclose said pockets, means for advancing the pockets, means for jarring said pockets to eliminate dust therefrom, and a suction-fan in communication with said hood.

7. In a dust-collector the combination of a revoluble drum provided with outstanding pockets, a chambered suction-hood having inlet-perforations, means for moving the hood into position for inclosing the pockets, means for rotating the drum, a suction-fan, telescopic connections between the suction-hood and said fan, and means for raising and lowering said hood.

8. In a dust-collector the combination of a revoluble drum having outstanding pockets, a suction-hood provided with an upstanding tube, a suction-fan, a suction-pipe connected to said fan and having a member in which is telescopically fitted the upstanding tube of said suction-hood, means for raising and lowering the suction-hood, and means for rotating the drum with a step-by-step movement.

9. In a dust-collector, the combination of a revoluble drum having outstanding pockets, a suction-hood, means for limiting said suction-hood to slidable movement toward and from the path of the pockets in said drum, lifting-bars connected with said hood, eccentrics

to actuate said bars and positively lift the hood, and a feed mechanism for said drum. 50

10. In a dust-collector, the combination of a revoluble drum having a plurality of pockets, means for intermittently turning the drum, a suction-hood for inclosing the pockets of the drum successively, means for imparting reciprocating movement to the hood, a suction-fan having a discharge connection with the drum, and a pipe connecting the suction-hood with a casing of said suction-fan. 55

11. In a dust-collector, the combination of a revoluble drum provided with spring-distended pockets, a suction-hood, means for imparting reciprocating movement to said hood, a cam-shaft extending through the hood, cams carried by the shaft and arranged to ride on the pockets, and means for imparting a step-by-step movement to said drum. 60

12. In a dust-collector, the combination of a revoluble drum having outstanding pockets, a main shaft, a cam-shaft driven by the main shaft, a shaft driven by the cam-shaft and provided with cams arranged to positively depress the pockets, a suction-hood, means actuated by the cam-shaft to raise and lower said suction-hood, and a feed mechanism actuated by the cam-shaft to impart step-by-step rotation to said drum. 65

13. In a dust-collector, the combination of a frame having upstanding posts, a revoluble drum provided with outstanding pockets, a shaft journaled in said posts to overhang the drum and provided with means for jarring the pockets successively, a suction-hood having means slidably fitted to said posts and arranged to limit the hood to vertical movement relative to said pockets, means for rotating said shaft, means for rotating the drum with a step-by-step movement, and means for positively lifting said suction-hood. 70

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 75

LOUIS C. MEYEROTT.

Witnesses:

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T. J. WAGNER.