

No. 775,279.

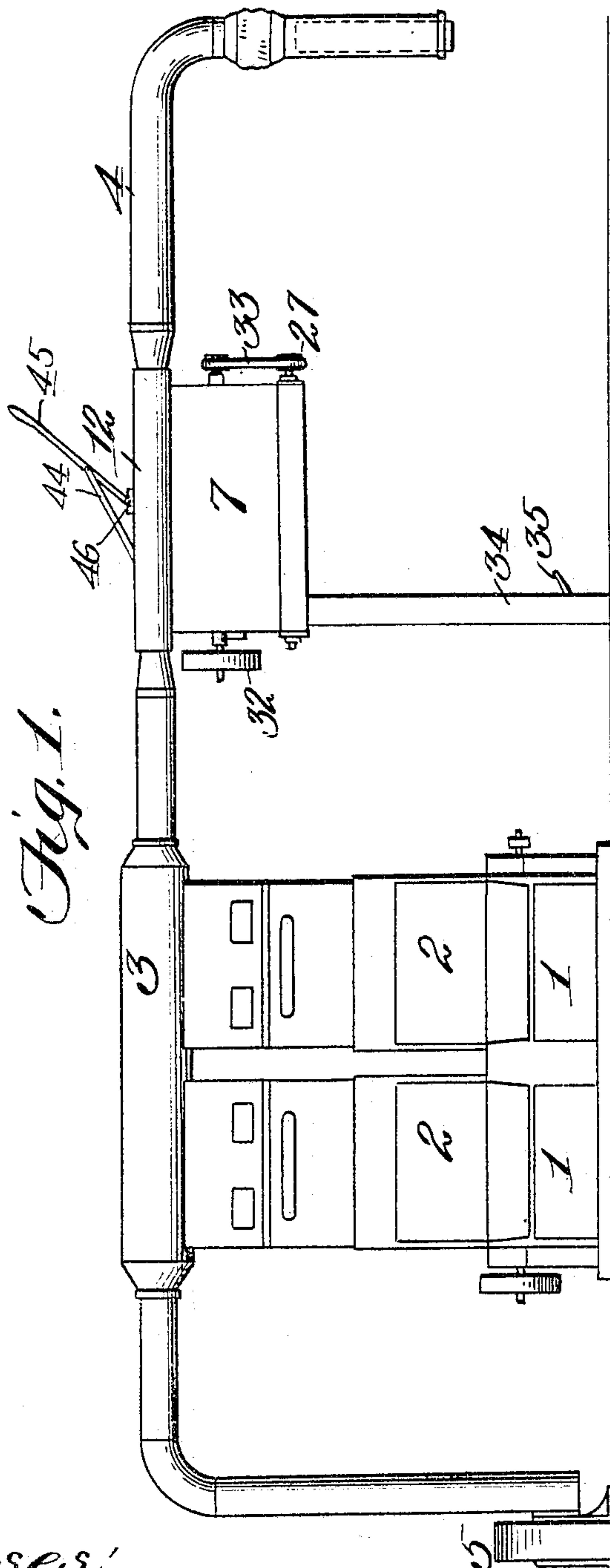
PATENTED NOV. 15, 1904.

S. D. MURRAY.  
COTTON CLEANING APPARATUS.

APPLICATION FILED OCT. 5, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses:  
C. D. Kessler,  
James L. Norris, Jr.

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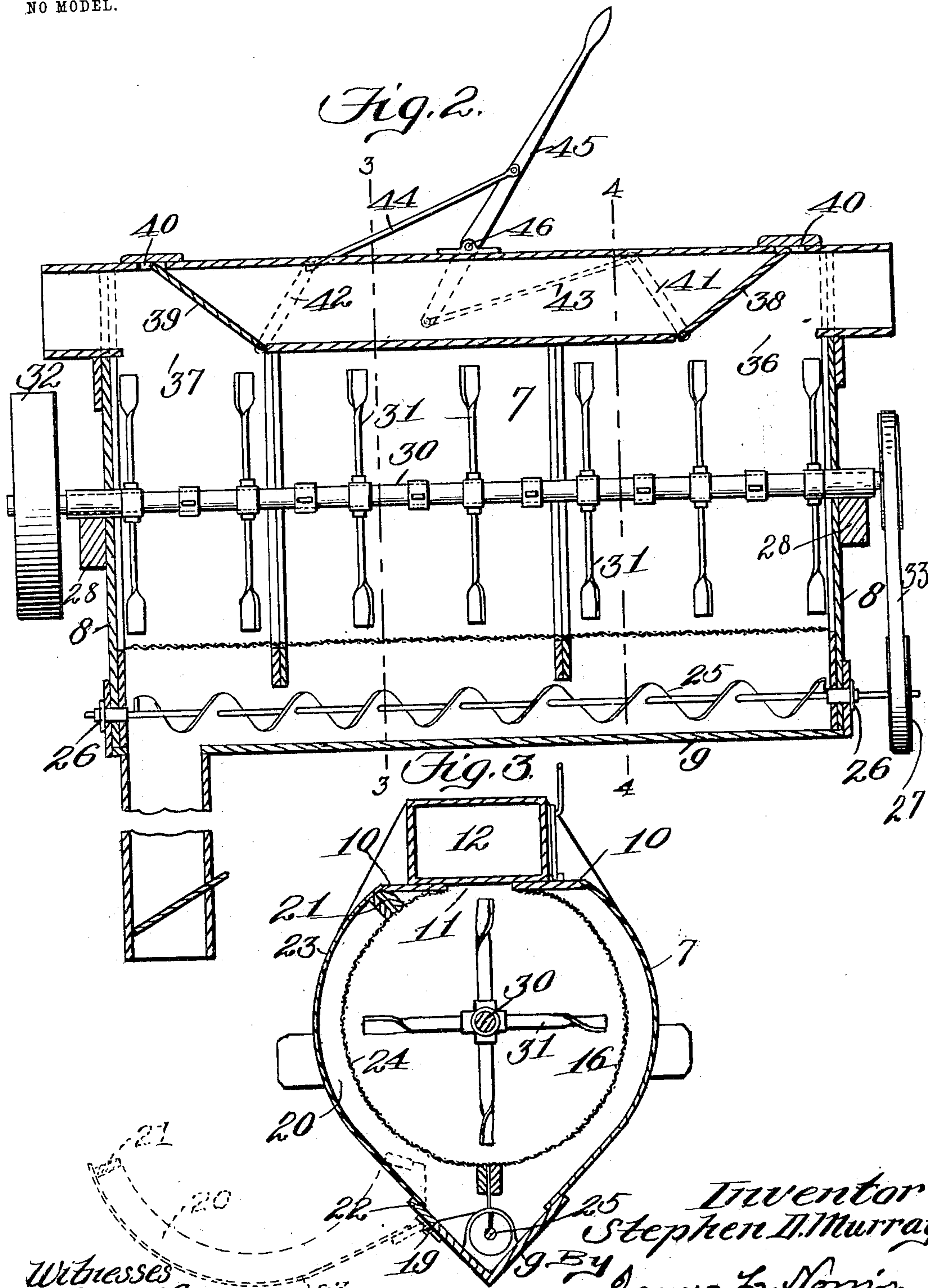
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3 SHEETS—SHEET 2.

NO MODEL.



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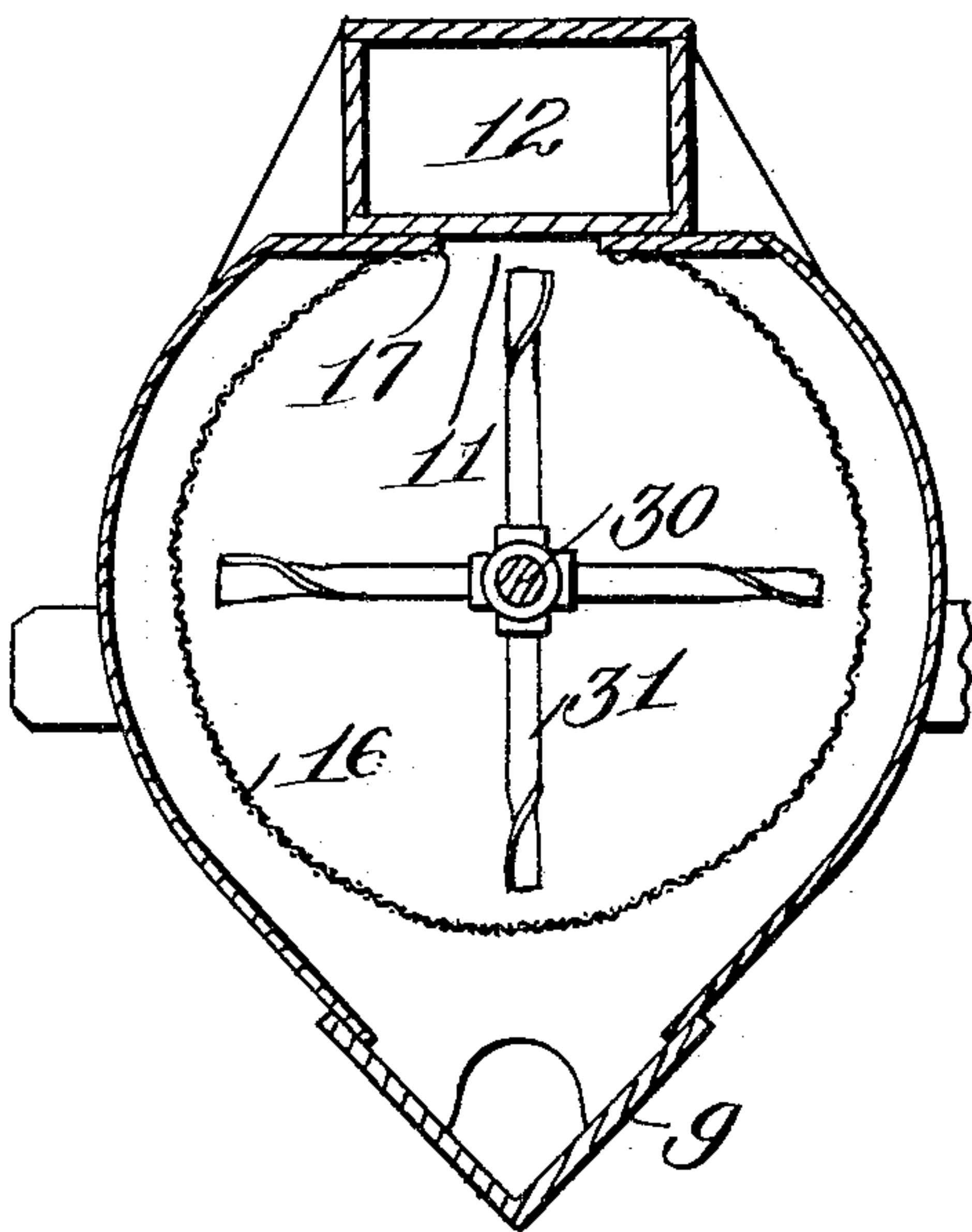
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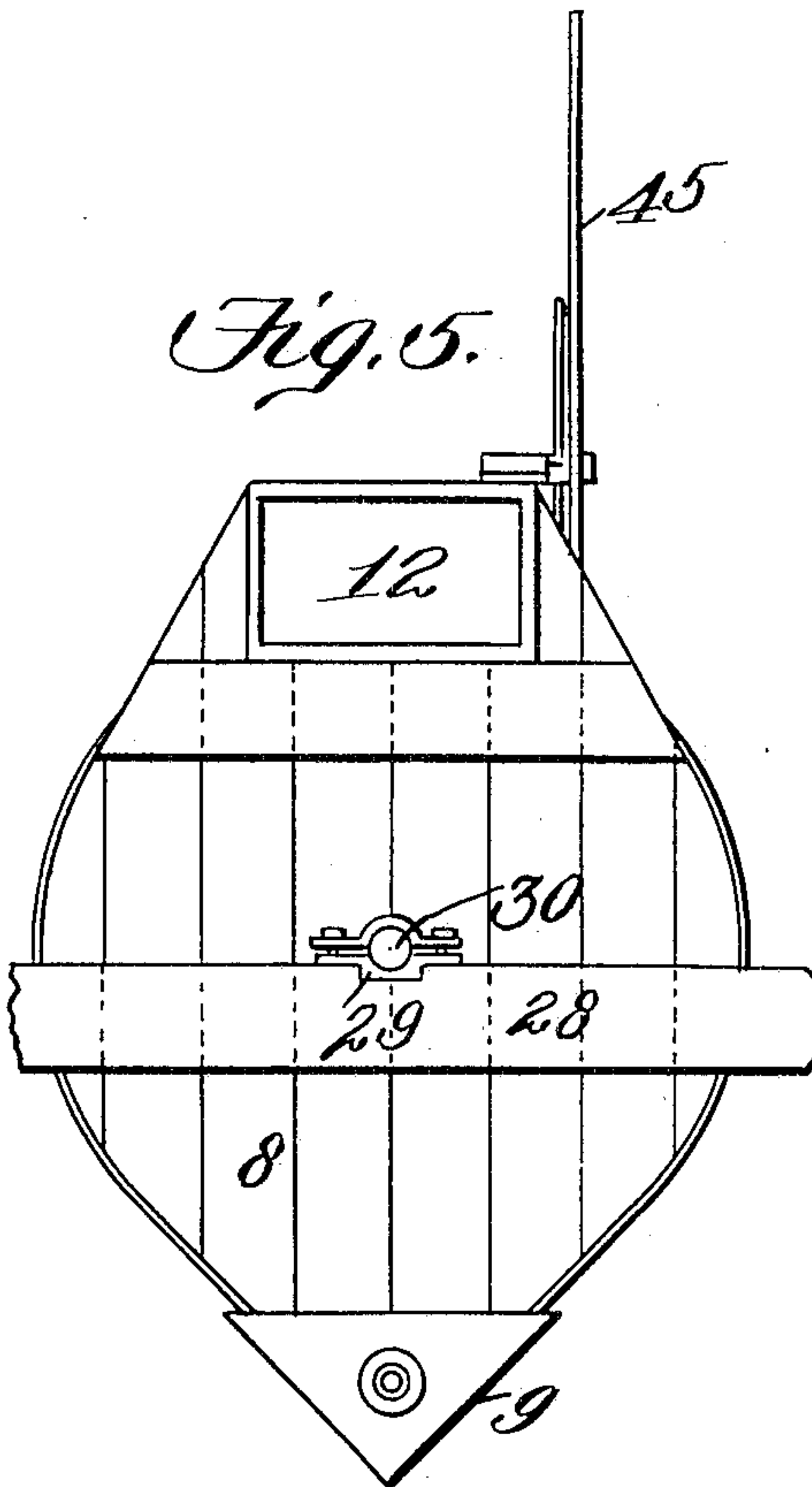
NO MODEL.

3 SHEETS—SHEET 3.

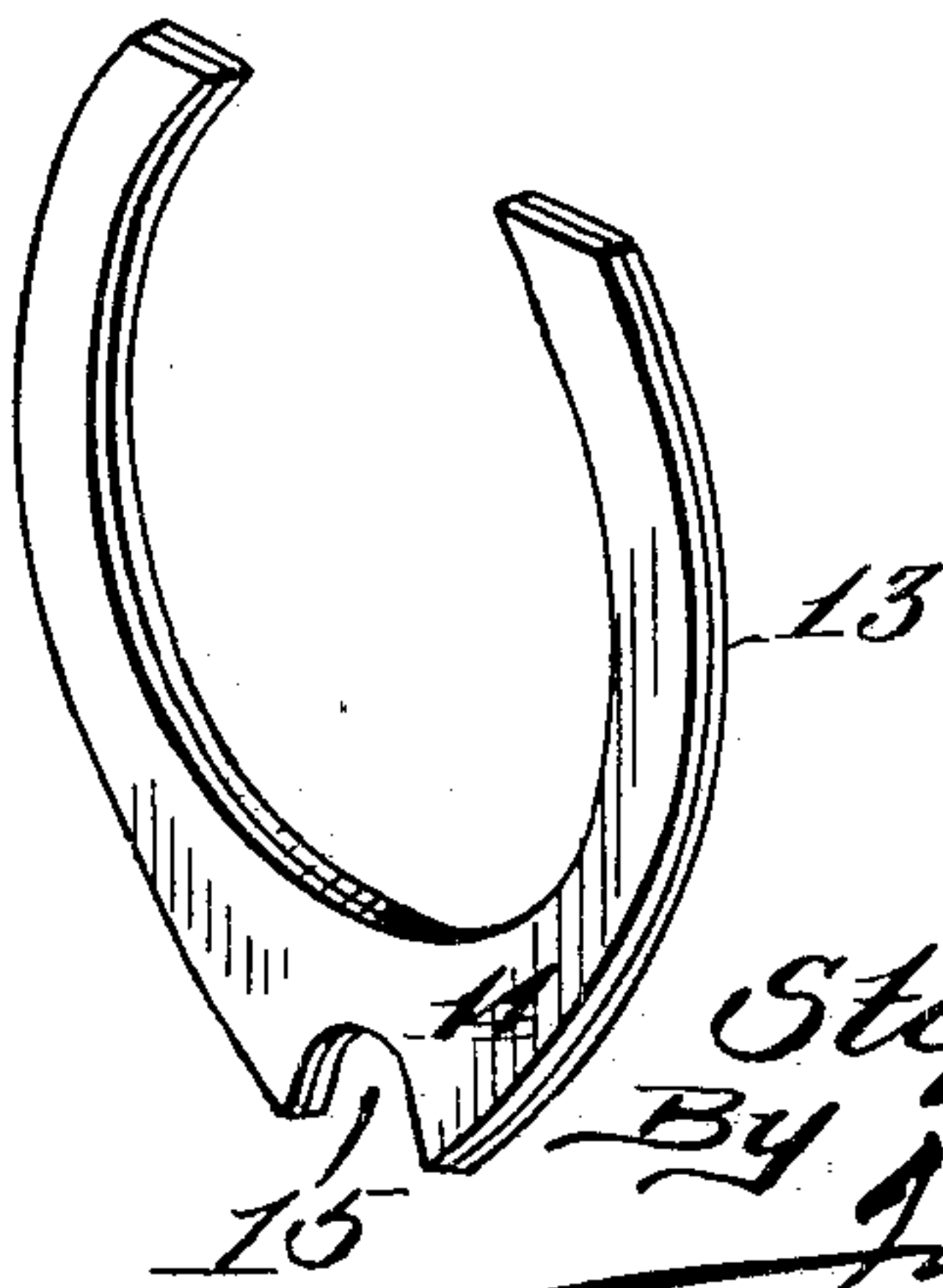
*Fig. 4.*



*Fig. 5.*



*Fig. 6.*



*Witnesses:*  
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# UNITED STATES PATENT OFFICE.

STEPHEN D. MURRAY, OF DALLAS, TEXAS, ASSIGNOR TO THE MURRAY CO., OF DALLAS, TEXAS, A CORPORATION OF TEXAS.

## COTTON-CLEANING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 775,279, dated November 15, 1904.

Application filed October 5, 1903. Serial No. 175,814. (No model.)

*To all whom it may concern:*

Be it known that I, STEPHEN D. MURRAY, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented new and useful Improvements in Cotton-Cleaning Apparatus, of which the following is a specification.

This invention relates to cotton-cleaning apparatus and is in the nature of an improvement on the cotton-cleaner shown and described in United States Letters Patent granted to me on the 8th day of October, 1895, No. 547,671. In said patent there is shown and described a cotton-cleaner comprising a stationary foraminous case or drum having an inlet-opening in its upper side or small end, a rotary shaft extending centrally through the case or drum and having a plurality of spirally-arranged beater-arms and an air-forcing fan arranged at the large end of the foraminous case and having a discharge-pipe for conveying the cotton to the point where it is to be deposited or discharged. In said patented device a suction-fan is also required. These patented machines have heretofore been used independently of any operative connection with the cotton-gin—that is, a machine was usually installed at some convenient place in a cotton-ginnery and a cotton-pipe was extended from the foraminous case or drum to the wagon or other source of cotton-supply and the machine set in such position that it discharged its clean cotton on the floor and at a point in the gin-house where the cotton could be reached by a suction-pipe from a pneumatic elevator which was employed for elevating and distributing the cotton to the gin. Cotton to be ginned was first passed through the cleaner and then taken up by the pneumatic elevator which was installed to supply the gin. It was necessary in such an arrangement to have an attendant to feed the cotton to the cleaner suction-pipe and then after it passed through the cleaner another attendant was necessary to feed the cleaned cotton to the suction-pipe of the pneumatic elevator which supplied the gin. In such an apparatus it was necessary to furnish a fan for the cleaner. It has thus necessi-

tated the use of two fans in the ginnery, one for said cleaner and one for the cotton-elevator. The great objection to such an arrangement resides in the expense of the extra attendant, the greater room required for installation, the greater cost of the apparatus by reason of the extra fan required, and also the great amount of power consumed by the operation of the said fan. Furthermore, all cotton does not require cleaning before ginning, some of it at certain periods of the season being free from dirt and may be turned directly into the elevator and fed to the gins without passing through the cleaner. The former patented apparatus referred to makes no provision for accomplishing this purpose.

It is the object of the present invention to avoid these objections and to provide a strong, durable, and rigid cleaner which will be simple in construction and efficient in operation.

It also has for its object to arrange such cleaner in operative connection with a single fan, elevator, and supply-pipe and to provide the supply-pipe and cleaner with means whereby the cotton may in its transit from its source of supply to the gin be caused to pass through the cleaner, whereby it is cleaned prior to being ginned, or the cotton may be passed directly to the gin at the will of the operator without passing through the cleaner.

It also has other objects in view, which will hereinafter be made apparent.

To these ends my invention consists in the features and in the construction, combination, and arrangement of parts hereinafter described, and particularly pointed out in the claims following the description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a view in elevation, showing my improved cleaner installed in operative connection with two cotton-gins and with an elevator and supply-pipe. Fig. 2 is a vertical sectional view of the cleaner. Fig. 3 is a transverse sectional view taken on the line 3 3 of Fig. 2. Fig. 4 is a similar view taken on the line 4 4 of Fig. 2. Fig. 5 is an end view of the cleaner, and Fig. 6 is a detail view of one of the segmental ribs.



Referring to the drawings, the numerals 1 1 indicate two cotton-gins; 2 2, feeders for feeding the cotton to the gins; 3, a pneumatic elevator; 4, a supply-pipe, and 5 a suction-fan for elevating the seed-cotton and discharging it into the gin-feeders. Interposed between the supply-pipe and the pneumatic elevator is my improved cleaner, which is constructed as follows: The cleaner-casing comprises an approximately cylindrical casing 7, preferably formed of galvanized sheet-iron and closed at its ends by wooden heads 8, constructed in the manner hereinafter explained. As shown, the outer casing 7 is formed of two separate curved sections of sheet-iron the lower ends of which are attached to the upper edges of a V-shaped trough 9, and to the upper edges of said sections are attached horizontal and parallel boards 10, having a longitudinal opening 11 between them, and arranged on and secured to said boards 10 is a wooden box-pipe or conveyer 12, rectangular in cross-section, as is most clearly shown in Figs. 3, 4, and 5. The heads 8 which close the ends of the casing 7 are formed of vertically-arranged boards, some of which are extended vertically to embrace the sides of the conveyer 12, rigidly securing the said conveyer and holding the same square. Arranged at suitable intervals within the sheet-metal casing are segment-shaped wooden ribs 13, (most clearly shown in Fig. 6,) each of said ribs terminating at its lowermost point in an approximately V-shaped extension 14, which fits within the trough 9, and said extension is provided with approximately semicircular recesses 15. Arranged within the segmental ribs 13 is a cylindrical inner casing 16, formed of wire-netting or foraminous metal, the ribs serving as supports for holding the inner and outer casings in place. The upper portion of the inner foraminous or reticulated casing is longitudinally slotted, as at 17, said slot coinciding with the slot 11 formed between the two horizontal boards 10. An opening is formed in one side of the inner and outer casings 7 and 16, and fitted within said opening is a door 18. Two of the segmental ribs 13 are respectively fixed on the opposite sides of the door-aperture and hinged, as at 19, in said aperture and between said ribs is a door which consists of a frame having two segmental sides 20 and two transverse cross-bars 21 and 22, said frame being covered on the outside by a curved piece of galvanized iron 23 and upon the interior with a corresponding piece of reticulated metal 24, the door when closed forming a continuation of the inner and outer portions of the casing. Arranged longitudinally in the trough 9 at the bottom of the cleaner and passing through the recesses 15 in the segment-shaped ribs is a spiral screw conveyer 25, the shaft of which is journaled in suitable bearings 26 in the heads 8, which close the ends of the cleaner-casing, and one end of the conveyer-shaft is

extended and has mounted thereon a pulley 27. Fixed on the outside of the heads 8 of the cleaner-casing are bolsters 28, to which are affixed bearings 29, and in the bearings 29 are journaled the ends of a shaft 30, which has rigidly fixed thereon beater-arms 31. A pulley 32 is fixed on one end of the shaft 30 and is adapted to be driven by a belt from any suitable source of power, and said shaft and the shaft of the spiral conveyer 25 may be conveniently geared together by a belt 33. Leading from one end of the trough 9 is a dirt-discharge pipe 34, provided with a valve 35, which may be opened from time to time to permit of the discharge of the dirt and other foreign matter, as will more fully hereinafter appear. The pipe or conveyer 12, arranged on top of the cleaner, is connected at one end to the supply-pipe 4 and at its opposite end to the pneumatic elevator 3 and is provided on its under side near its opposite ends with apertures 36 and 37, which communicate with the slots 11 and 17 before referred to, said slots at these apertures being the full interior width of the pipe 12. Said apertures are adapted to be closed by hinged valves 38 and 39, arranged in said pipe or conveyer, the upper or free ends of said valves when elevated being arranged to seat in recesses 40, formed in the top of the pipe or conveyer 12. To the hinge-pintles of said valves are fixed cranks 41 and 42. These in turn are connected by connecting-rods 43 and 44 to a lever 45, which is hinged intermediate its ends at 46 to the top of the pipe or conveyer 12, the links 43 and 44 being pivotally connected to said lever on opposite sides of the fulcrum of the lever 45, the arrangement being such that when the said lever is oscillated in one direction or the other the valves will be elevated or depressed, so as to open the apertures 36 and 37 in the conveyer and close the said conveyer against the passage of any cotton thereto or will cause said valves to close said apertures and open a direct passage through the conveyer for the cotton, thus constituting what I term a "bypass," the operation of which will presently be described.

The operation of my improved apparatus is as follows: The gins, feeders, and the exhaust-fan 5 being set in operation the telescopic end of the supply-pipe 4 is lowered into the cotton which it is desired to feed to the gins. If it is desired to clean the cotton preparatory to ginning the same, the valves 38 and 39 are turned to the position shown in Fig. 2 of the drawings by oscillating the lever 45 in the proper direction, thereby uncovering the apertures 36 and 37 and closing the passage through the pipe or conveyer 12. The fan operates to create a partial vacuum in the elevator 4, and the cotton is drawn up there-through and enters the cleaner through the apertures 36. The arms on the beater-shaft are so set on said shaft that all of them con-



stitute, in effect, a screw, inasmuch as they are set spirally—that is to say, are twisted torsionally, as shown—and as the beater is rotated the cotton fed through the aperture 36 will be carried around the internal surface of the casing or drum and caused to traverse the same toward the aperture 37. In such movement of the cotton the dirt, trash, or dust will be expelled through the openings in the casing or in the reticulated casing or drum into the inclosing sheet-metal casing, which latter will effectually prevent the trash, dirt, or dust from gaining access to the room in which the apparatus is located. As the cotton is raised up by the feeder-arms to the aperture 37 the suction in the elevator draws it out through said aperture and through the elevator-pipe, from whence it is discharged into the feeders 2 and by the latter is fed into the gins in a clean condition. The dirt which is discharged through the reticulated casing into the outer sheet-metal casing is fed along the trough by means of the screw conveyor 25 and by the latter is discharged into the dirt-exit pipe 34, and by opening the valve 35 in the latter from time to time the dirt may be permitted to drop by gravity into any suitable receptacle or to the exterior of the ginnery building. Should the cotton be in such condition that it is unnecessary to clean the same before feeding it to the gins, the valves 38 and 39 may be lowered by turning the lever 45 in the proper direction, so as to close the apertures 36 and 37, and the elevator and its fan 5 will then operate to feed the cotton directly from the source of supply to the gins without the cotton passing through the cleaner. It will be seen that by providing the by-pass constructed in the manner described and forming a component part of the cleaner and elevator and supply-pipe the cotton may be fed from the source of supply to the cleaner and to the gins or may be fed directly to the gins without passing through the cleaner, a single fan alone sufficing to feed the cotton to the gins in either event. By providing the hinged door constructed in the manner described access may readily be had to the interior of the cleaner whenever such becomes necessary or desirable.

Having described my invention, what I claim is—

1. In an apparatus of the character described, the combination with a gin and a pneumatic elevator and supply-pipe for feeding cotton to the gin, of a cotton-cleaner interposed between and connected with the elevator and supply-pipe, a part of the latter extending across the top of the cleaner and having direct communication therewith, and means operative in the cleaner and portion of the supply-pipe arranged thereover for causing the cotton to pass through the cleaner before being fed to the gin or to pass directly to the gin without entering the cleaner.

2. In an apparatus of the character described, the combination with a gin, and a pneumatic elevator and a supply-pipe for feeding cotton to the gin, of a cotton-cleaner interposed between and connected with the elevator and supply-pipe, a portion of the latter being disposed over the top of and directly communicating with the cleaner, means for conveying the cotton either through the cleaner before being fed to the gin or directly to the gin without entering the cleaner, and a single exhaust-fan connected to the supply-pipe at a point beyond the gin for moving the cotton through said pipe, cleaner and pneumatic elevator.

3. In an apparatus of the character described, the combination with a gin, a pneumatic elevator and a supply-pipe for feeding cotton to the gin, of a cotton-cleaner interposed between and directly connected at its opposite ends respectively with the supply-pipe and elevator, a part of the supply-pipe extending in a straight line across the top of the cleaner in close relation to the latter and having openings near its opposite ends communicating with the interior of the cleaner-casing, and valves arranged to control said openings, the part of the supply-pipe at the top of the cleaner practically forming a portion of the latter.

4. In an apparatus of the character described, the combination with a gin, a pneumatic elevator and a supply-pipe, of a cotton-cleaner interposed between and connected with the supply-pipe and elevator, a tubular conveyor fixed longitudinally on the top of the cleaner and connected at opposite extremities to the supply-pipe and elevator, and an exhaust-fan arranged in operative connection with the elevator and disposed at a distance from the end of the gin farthest from the cleaner, and valves in the conveyor to control the passage of the cotton through the cleaner before being fed to the gin or to pass directly through the gin without traversing the cleaner.

5. In a cotton-cleaner, the combination with a cleaner-casing comprising an inner reticulated shell, an outer imperforate shell, and heads closing the ends of the cleaner-casing, of a pneumatic conveyor fixed longitudinally on top of the said casing and provided near its opposite ends with openings communicating with the interior of the reticulated shell, valves controlling said openings, and a rotary beater arranged centrally in the interior of the inner shell, substantially as and for the purpose specified.

6. In a cotton-cleaner, the combination with a cleaner-casing comprising an inner reticulated shell, an outer imperforate shell, and heads closing the ends of the cleaner-casing, of a pneumatic conveyor fixed longitudinally on top of the said casing and provided near its opposite ends with openings communicat-



ing with the interior of the inner reticulated shell, valves controlling said openings, and a rotary beater arranged centrally in the interior of the inner shell, said heads consisting of vertical boards secured together edge to edge, certain of the outer boards being extended vertically at their upper ends and embracing the opposite sides of the conveyer, substantially as and for the purpose specified.

7. In a cotton-cleaner, the combination with a cleaner-casing comprising an inner reticulated shell, an outer imperforate shell, heads closing the ends of the cleaner-casing, and segmental ribs interposed between and secured to the inner and outer shells, of a pneumatic conveyer fixed longitudinally on the top of the said casing and provided near its opposite ends with openings communicating with the interior of the reticulated shell, valves controlling said openings, and a rotary beater arranged centrally in the interior of the inner shell, substantially as and for the purpose specified.

8. In a cotton-cleaner, a cleaner-casing comprising an inner reticulated shell, an outer imperforate sheet-metal shell and heads closing the opposite ends of the casing, said shells having formed in one side registering apertures, a hinged door closing said apertures and consisting of a segmental frame provided with an inner lining of reticulated material and an outer casing of imperforate sheet metal, said lining and casing when the door is closed respectively registering with the inner and outer shells, in combination with a rotary feeder arranged in the inner reticulated shell, and means for feeding the cotton to and discharging it from the casing, substantially as and for the purpose specified.

9. In an apparatus of the character described, the combination with a cotton-gin and a pneumatic elevator and supply-pipe for feeding the cotton to the gin, of a cotton-cleaner interposed between and directly connected with the elevator and supply-pipe, a dirt-discharge connected to the cotton-cleaner, cleaning mechanism movably disposed in the cleaner and operating to feed the cotton toward the outlet extremity of the latter, and means for causing the cotton to pass through the cleaner before passing to the gin or to be carried directly to the gin without entering the cleaner.

10. In an apparatus of the character described, the combination with a gin and a pneumatic elevator and supply-pipe for feeding the cotton to the gin, of a cotton-feeder interposed between and connected with the elevator and the supply-pipe, a conveyer on the top of the gin terminally engaging the elevator and supply-pipe and having valved openings at opposite extremities communicating

with the cleaner, torsional beaters rotatably disposed in the cleaner, and a single exhaust-fan at a distance from the end of the feeder farthest from the cleaner for drawing the cotton through the supply-pipe, cleaner, and pneumatic elevator.

11. The combination with a gin-feeder, of a pneumatic conveyer for supplying cotton thereto, a cotton-cleaner arranged between the intake end of said conveyer and the gin-feeder, and a by-pass forming a part of the upper portion of said cleaner and having communication with the latter at opposite extremities, the by-pass being longitudinally disposed.

12. The combination with a gin-feeder, of a pneumatic elevator for supplying cotton thereto, a cotton-cleaner arranged between the intake end of the elevator and said feeder, and a by-pass pipe integrally formed with and constituting a part of the upper portion of the cleaner, the said pipe having openings at opposite extremities communicating with the cleaner and provided with valves, and the cleaner having means for causing the seed-cotton to progress regularly therethrough toward the gin-feeder.

13. In a cotton-cleaner, the combination of a casing comprising an inner reticulated shell, an outer imperforate shell and heads closing the ends of said shell, a pneumatic conveyer fixed longitudinally on the top of said casing and provided near its opposite ends with valved openings communicating with the interior of the inner reticulated shell, and a rotary beater arranged centrally in the interior of the inner shell, the said heads having extended portions which embrace the opposite sides of the conveyer, substantially as described.

14. The combination with a gin-feeder, of a pneumatic elevator for supplying cotton to said feeder, a cotton-cleaner provided with a pneumatic conveyer at its upper portion terminally communicating with the elevator and feeder, said conveyer extending in a straight line longitudinally across the top of the cleaner and having openings at opposite extremities directly communicating with the latter, valves in said openings to regulate the passage of the seed-cotton either through the cleaner or directly through the gin-feeder, and means in the cleaner for causing the seed-cotton to progress regularly therethrough from the inlet toward the outlet thereof under such influence.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

STEPHEN D. MURRAY.

Witnesses:

H. McEvoy,

E. E. McLEMORE.