No. 770,582. PATENTED SEPT. 20, 1904.

R. L. HOLLINGSWORTH.

DUST COLLECTOR.

APPLICATION FILED AUG. 29, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

FIG. 2

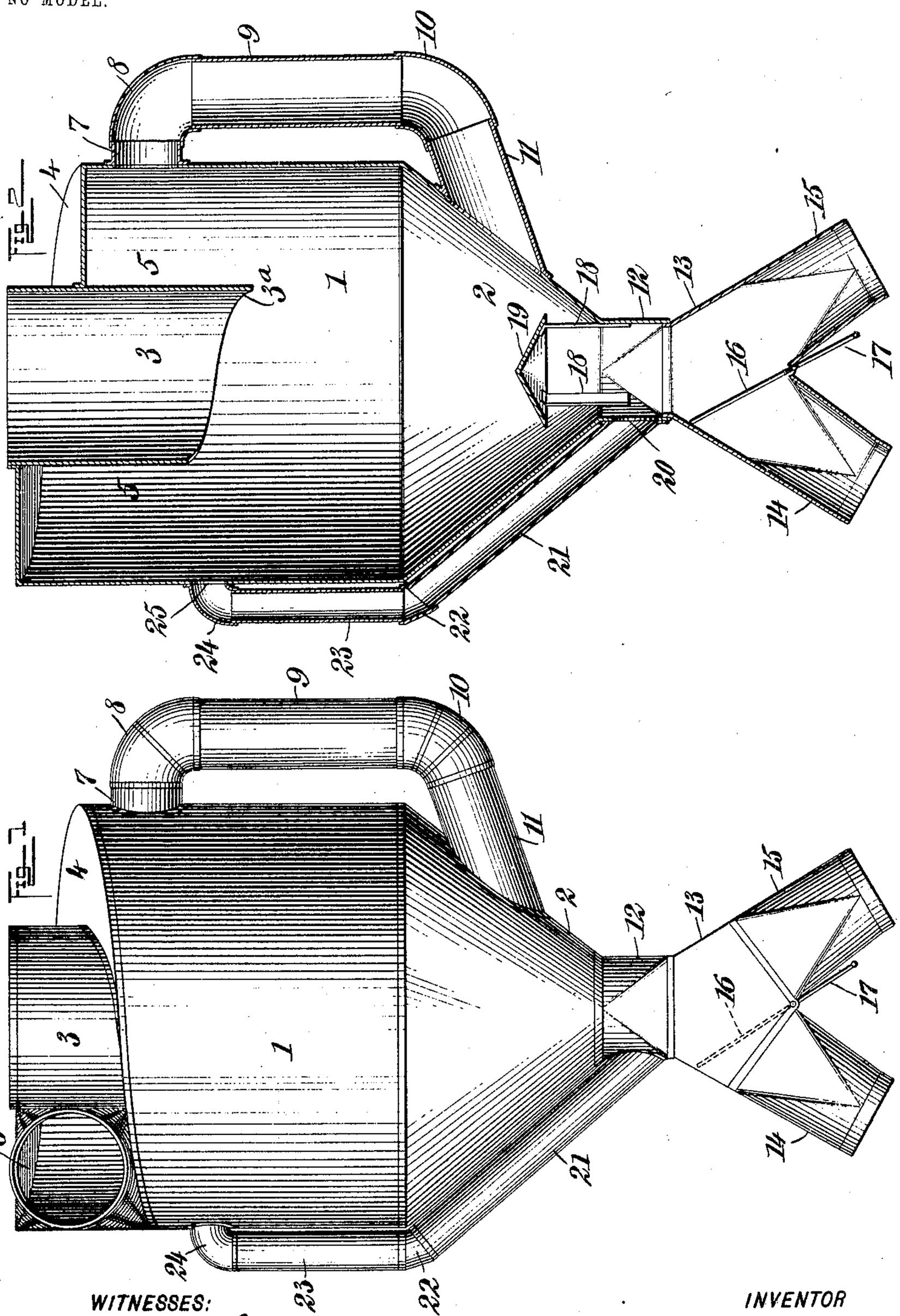

FIG. 1

WITNESSES:

G. L. Cheney

E. E. Ellis

INVENTOR

Robert L. Hollingsworth

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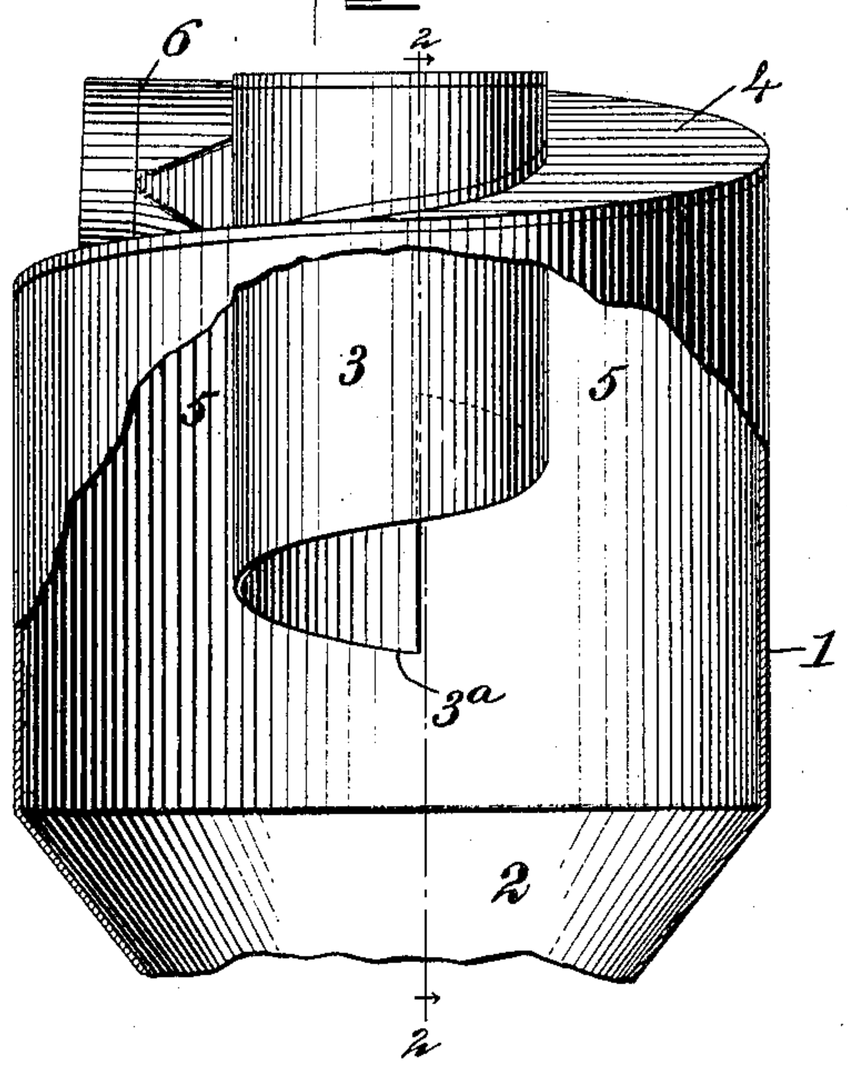
Fig. 5



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G. W. Chaney

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UNITED STATES PATENT OFFICE.

ROBERT LEE HOLLINGSWORTH, OF FAITH, GEORGIA.

DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 770,582, dated September 20, 1904.

Application filed August 29, 1903. Serial No. 171,208. (No model.)

To all whom it may concern:

Be it known that I, ROBERT LEE HOLLINGSWORTH, a citizen of the United States, and a resident of Faith, in the county of Fulton and State of Georgia, have invented a new and Improved Dust-Collector, of which the following is a full, clear, and exact description.

This invention relates to dust-collectors; and it consists, substantially, in the construction, organization, and combinations of parts hereinafter particularly described, and pointed out in the claims.

Though equally adapted for use in other places my improvements are intended more especially for use in factories, mills, and the like for collecting from the air therein any and all dust, shavings, or other solid particles with which such air may be laden; and one of the principal objects of my invention is to provide a device for the purpose named which is simple in construction, besides being comparatively inexpensive to manufacture and thoroughly effective and reliable in operation.

A further object is to provide a device of the character referred to which is not liable to get out of order and which may be easily controlled and regulated and also possessing the capacity for long and repeated service.

The above and additional objects are attained by means substantially such as are illustrated in the accompanying drawings, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of a dust-collecting apparatus constructed and organized in accordance with my improvements. Fig. 2 is a vertical sectional elevation taken substantially in the plane of the broken line 2 2 of Fig. 3; and Fig. 3 is a view in detail, parts thereof being broken out to more clearly illustrate the construction of other parts, said view being also broken off at the lower part thereof.

Before proceeding with a more detailed description it may be stated that in the form of my improvements herein shown I employ a casing of special construction, to the interior of which the laden air is introduced, such air being caused to whirl about such interior centrifugally or in a manner to precipitate the solid particles thereof which gravitate to the lower part of the apparatus, whence they may be conducted away to be utilized in any desired manner. I also employ special means for the escape or outlet of the lighter air at the top of the structure, together with specially-devised means by which practically a continuous circuit of air is established, thereby effectually separating the solid particles from the air, and while I have herein illustrated my improvements in a certain preferred embodiment it will be understood, of course, that I am not limited to the precise details thereof in practice, since immaterial changes therein may be resorted to coming within the scope of my invention.

Specific reference being had to the accompanying drawings by the designating characters marked thereon, 1 represents a cylindrical casing, terminating at its lower end in a conical bottom 2 and having a centrally-disposed vertical tube 3 projecting above the same at the top, said tube extending downwardly within the casing for a suitable distance and having the walls thereof of gradually increasing height circumferentially, as shown at 3^a in Figs. 2 and 3, the tube being open at both ends. The casing is closed between the upper edge thereof and the outer surface of the projecting portion of said tube by means of substantially a spirally-disposed inclined top portion 4, and it will be seen that this top portion practically constitutes the upper side of what may be termed an "inner circular passage" 5, the remaining sides of which are made up by the outer surface of the inner portion of the tube and adjacent parts of the inner surface of the walls of the casing, as shown. Opening into this passage 5, substantially beneath the highest part of the said inclined top portion 4, is an inlet-pipe 6 for the dust-laden air which is caused to enter the interior of the casing via said passage 5, and communicating with this passage at 7 through the upper part of the wall of the casing at one side is an elbow 8, to which is fitted the upper end of a pipe 9, the lower end of which is similarly fitted to another elbow 10, which in turn is connected to the end of an upwardly-

inclined pipe 11, fitted at one end to the conical bottom 2 and communicating with the interior of the latter. (See Fig. 2.) Fitted to the lower contracted open end of said conical bottom 2 is a coupling or neck 12 for connection with such end of substantially a box 13, communicating with the interior of which are the upper ends of preferably divergent pipes 14 and 15, and working in said box is a valve 16 for cutting off communication from either one of said pipes and opening up communication with the other, said valve having a handle 17 for enabling the same to be operated. Said pipes may lead to any desired place or places—as, for instance, one to a storage vault (not shown) for shavings or other solid particles collected from the laden air and the other to a fuel-feed (not shown) for boilers or the like. Fitted to the inner sides of said coupling or neck 12 are the lower ends of suitable vertical supports 18 for an inverted conical hood 19, occupying suitable position within the lower contracted part of said conical bottom 2, and connecting with the edges of an opening 20 in one side of said coupling is the lower end of an upwardly-inclined pipe 21, the upper end of which is united at 22 with the lower end of a vertical pipe 23, having its upper end in communicaion with the lower part of the passage 5 by means of an elbow 24, fitting around the sides of an opening 25 in the wall of the casing 1. (See Figs. 1 and 2.)

As thus constructed and organized, it will be seen that in the use of my improved dust-collector the dust-laden air entering the circular passage 5 through the pipe 6 will be caused to whirl about and the solid particles therein will be thrown outwardly by centrifugal force, but are caused to fall to the conical bottom 2 on striking the inner sides of the wall of the casing, as is apparent. Said particles may be conducted off through either of the pipes 14 or 15, as already described, it being mentioned that eddies of the lighter separated air are formed about the lower inner end of the tube 3, due to the special form of said tube, this lighter air escaping through the upper end of the tube practically free of dust or other solid particles. Some of the air entering at 6 will also pass out at 7 after sweeping around the sides of said passage 5, attention being called to the fact that the spirally and downwardly inclined top portion 4 of the casing serves to deflect the air and assist in the separation of solid particles therefrom. Such quantities of the air as flow out at 7 pass down through the tubes 9 and 11 and back to the interior of the casing, thus establishing a circuit for this air, the hood 19 tending to prevent the force of air at that point from interfering with the proper discharge of the solid particles to the box 13, and thence to said pipes 14 or 15. The opening 25 is practically a vent, and the tubular connection between this opening and the opening 20 also causes practically the establishment of a circuit for the air.

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

1. A dust-collector comprising a casing having a conical bottom, the casing being provided at its upper portion with a centrally-disposed tube projecting above the top of the casing, the casing having a spirally-inclined top portion, connecting the upper edge of the casing with the outer surface of the projecting portion of said tube, the said tube extending downward within the casing and forming with adjacent parts of the latter a circular passage, an air-inlet tube to said passage, a hood supported from the contracted lower end of the casing, and a pipe for conducting air from the upper to the lower part of the casing and opening into the conical bottom at a point adjacent to the hood.

2. A dust-collector, comprising a casing, closed at the top and having a conical bottom, the casing being provided at its upper portion with a centrally-disposed tube projecting above the top of the casing, said tube extending within the casing and forming with adjacent parts of the latter a circular passage, an air-inlet pipe for said passage, an air-outlet pipe therefor, at one side of the casing and connecting with said bottom, and a similar pipe leading from the passage at the opposite side of the casing and connecting with a neck at the lower end of said bottom.

3. A dust-collector, comprising a casing, closed at the top and having a conical bottom, the casing being provided at its upper portion with a centrally-disposed tube projecting above the top of the casing, said tube extending within the casing and forming with adjacent parts of the latter a circular passage, an air-inlet pipe for said passage, an air-outlet pipe therefor, at one side of the casing and connecting with said bottom, and a similar pipe leading from the passage at the opposite side of the casing and also connecting with said bottom, the contracted end of the latter being provided interiorly with a hood mounted at a suitable height, substantially as shown and for the purpose described.

4. A dust-collector, comprising a casing having a conical bottom, the casing being provided at its upper portion with a centrally-disposed tube projecting above the top of the casing, said tube extending within the casing and forming with adjacent parts of the latter a circular passage, an air-inlet pipe for said passage, an air-outlet pipe therefor at one side of the casing and connected with said conical bottom, a similar pipe leading from the passage at the opposite side of the casing, a neck at the lower end of said conical bottom and having an opening in its side with which the lower end of said pipe communi-

cates, substantially divergent pipes connecting with the lower end of said neck, a valve arranged to control communication between either of said pipes and the interior of the casing, and a hood supported from the said neck and arranged within the lower part of the conical bottom.

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

ROBERT LEE HOLLINGSWORTH.

Witnesses:
C. S. FARMER,
R. F. MOULDIN.