

(No Model.)

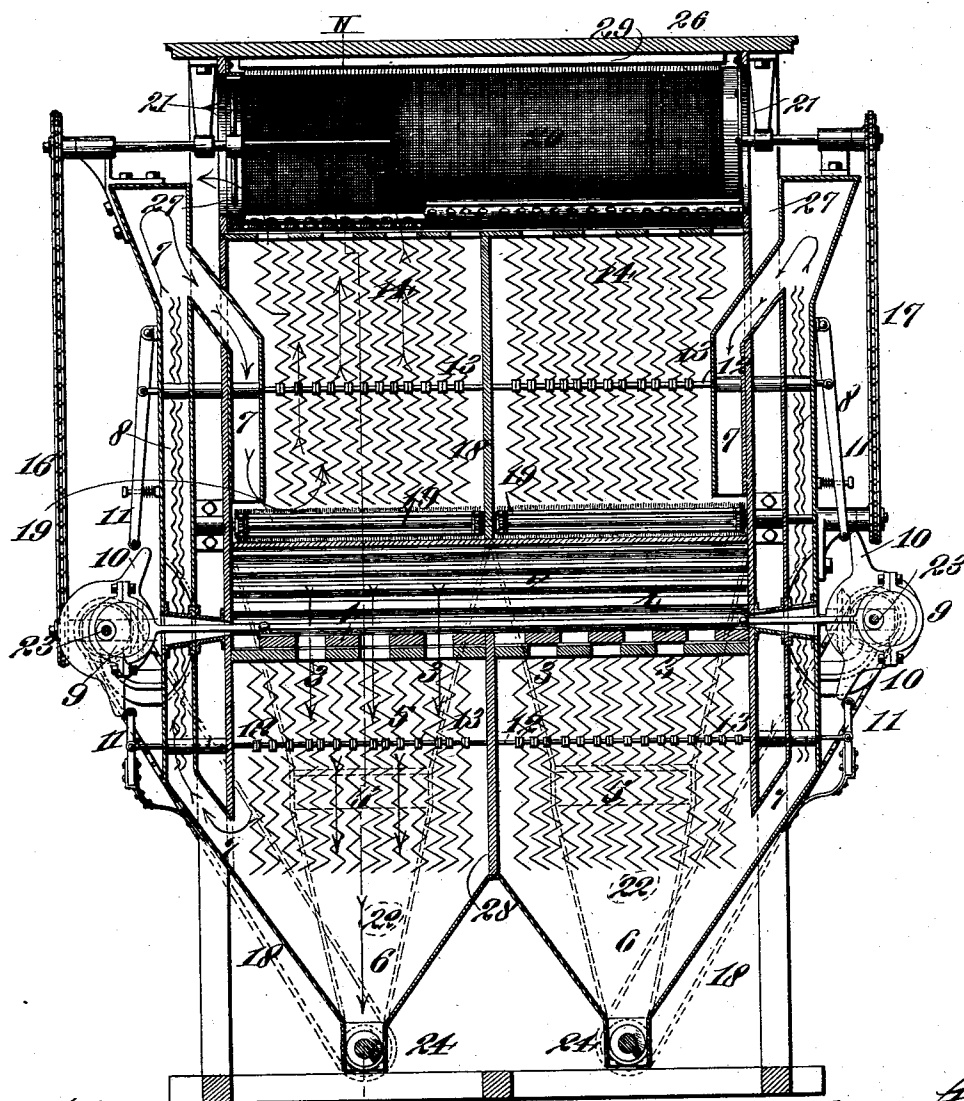
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J. W. WILSON.
DUST COLLECTOR.

No. 568,968.

Patented Oct. 6, 1896.

Fig. I.



Attest:

*Charles Pickles
Stanley Stoner.*

Inventor:

*Jos. W. Wilson
By Knight & Bro. Attys.*

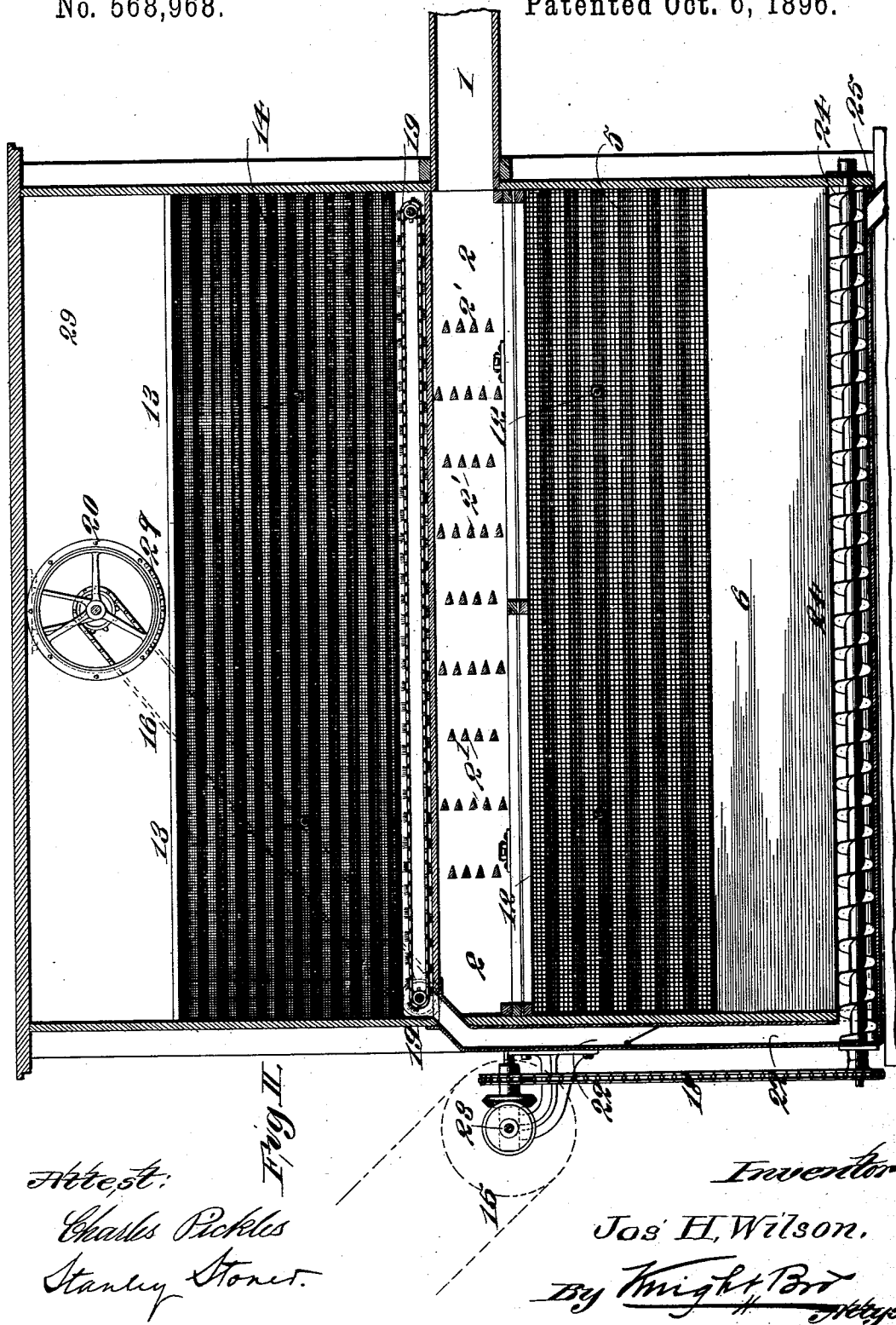
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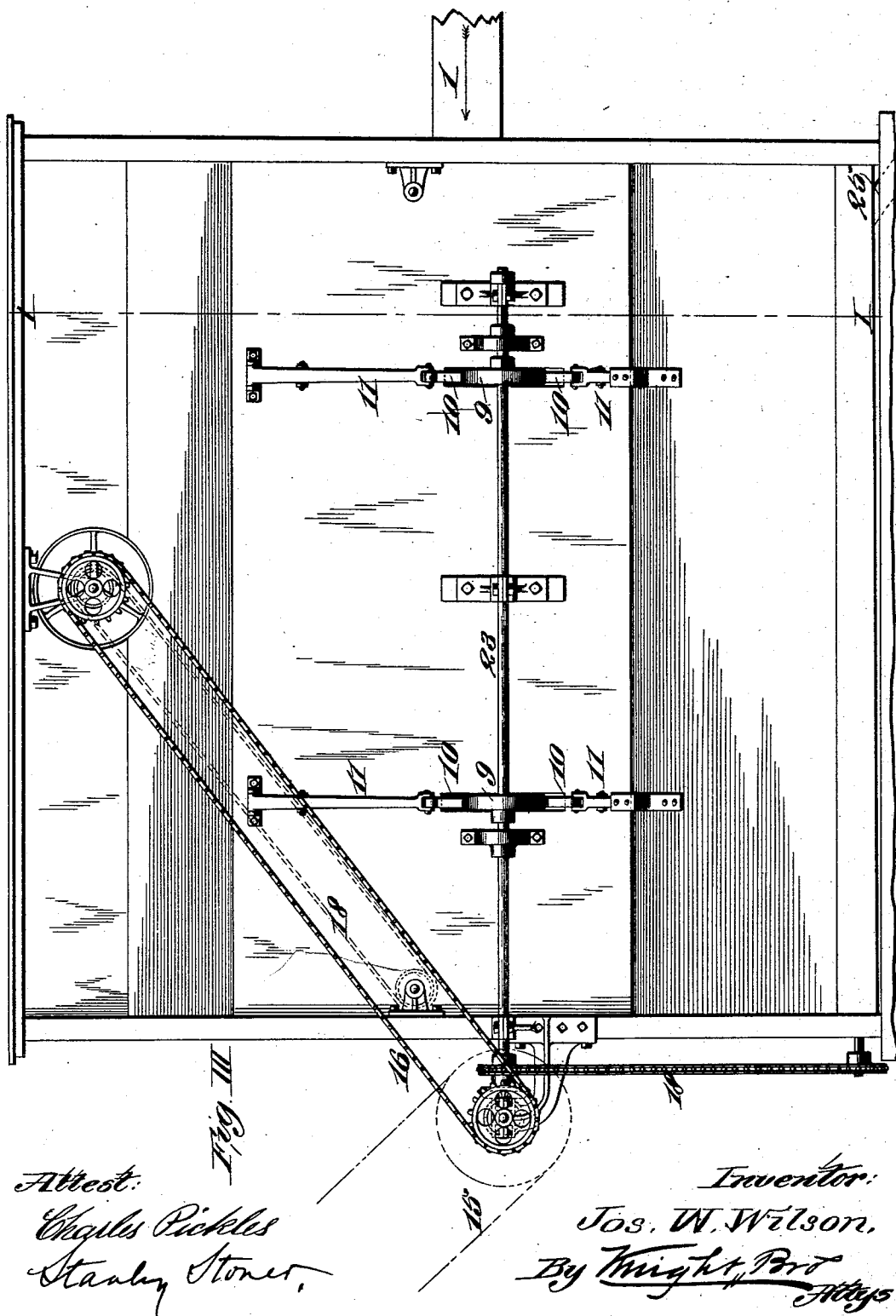
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UNITED STATES PATENT OFFICE.

JOSEPH W. WILSON, OF SALT LAKE CITY, UTAH.

DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 568,968, dated October 6, 1896.

Application filed March 4, 1895. Serial No. 540,451. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH W. WILSON, residing at Salt Lake City, county of Salt Lake, Territory of Utah, have invented a certain new and useful Improvement in Dust-Collectors, of which the following is a specification.

The object of my invention is to provide a device that will direct a dust-laden current of air arising from a machine creating dust through an exhaust-fan and other mechanism in such a way as to entirely separate the dust from the air, and then discharge the said air free from all impurities. I accomplish this object by means of the device illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure I illustrates a cross-section of my invention, taken along the line I I of Fig. III. Fig. II illustrates a longitudinal section along the line II II of Fig. I. Fig. III illustrates a side elevation of the device.

The same numbers refer to the same parts throughout the several figures.

1 is the opening through which the dust-laden air enters, and 2 a chamber into which said air is introduced.

2' are V-shaped deflectors placed in chamber 2 to arrest the current of air and weaken its force, and 3 are openings through which the dust-laden air passes into the lower chamber for performing the first separation of the dust and air, which chamber and also the upper chamber is divided into two compartments by the partition 28.

4 is a sliding valve adapted to partially close and fully open the openings 3, and is so arranged as to admit air into the two compartments alternately.

5 is a series of corrugated or fluted screens placed within the two compartments of the chamber 2. These screens may be of any desired material, but I preferably use heavy bolting-cloth with a coarse mesh, so that the air and dust particles can pass freely through the screen, at the same time effectively separating the same, and thus obviate the back pressure on the fan and the constant knocking which is necessary in the collectors, which

are constructed to allow the air to filter through the cloth in order to keep the cloth-meshes open. The corrugations or flutings are formed by any of the well-known means, as, for instance, stringing wires through the chambers in a zigzag manner and then passing the cloth around the wires in the manner shown and securing them at each end.

6 are hoppers at the bottom of the device adapted to receive the dust.

7 are passages on either side of the device leading from the bottom of the screen 5, first upwardly into an expansion-chamber and then downwardly, as shown.

8 are corrugated or fluted screens, of the same material and arranged in the same manner as the screen 5, placed within the first part of the passage 7 for further separating the particles of dust.

9 are eccentrics carried upon a suitable shaft, and they are attached to a lever controlling the valves 4 to open and close the passages 3.

10 are cams carried on shaft 23 and adapted to strike the knockers 11, which are returned to normal position by means of springs after having been moved.

12 are rods within the chambers of the device, which pass through screens 5 and 14, and they are connected to the knockers 11, so that as the cams revolve the screens are jarred in the chambers. The screens are fastened to the rods at the place of contact by means of clamps 13.

14 are air-chambers situated above the air-entrance box 2, into which the dust-laden air passes for a still further separation. These chambers are also provided with the same kind and arrangement of screens, though they do not necessarily have to overlap as do the screens in the lower chambers.

15 is a belt imparting motion from a source of power to the shaft 23 by means of proper gearing, and 16 is a drive-chain to impart motion by use of a bevel-gear to the revolving cylinder 20.

17 is a drive-chain to impart motion from the shaft of cylinder 20 to the mechanism controlling the traveling brush 19, which is placed

at the bottom of chambers 14 for removing the dust from the chambers.

18 is another drive-chain for the spiral conveyer 24.

20 is a cylindrical screen located in a chamber 29, which is revolved by the means above referred to, through which the air passes before emerging from the device, and the cylinder may be covered with any suitable material, but I prefer to cover it with a fine silk cloth. 21 are the exits therefrom.

22 is a passage leading from the end of the traveling brush 19 to one of the conveyers 24, and 25 is a discharge-opening for the conveyer.

26 is a stationary brush above cylinder 20, adapted to keep said cylinder clean.

27 are air-passages leading from the chambers 14 to the chamber 29, in which the cylinder 20 is located, and from there to the outer air.

The operation of my device is as follows: The current of dust-laden air enters the chamber 2 through the entrance 1, and as the current enters it is divided and weakened by striking the deflectors 2'. It then passes down through the open passages 3 into the compartments 5. Here it strikes the series of corrugated screens and the force of the air is greatly lessened, which allows the rougher and coarser dust to become separated and pass through the meshes to the conveyer, and some of the finer particles cling to the screens. The rods on which the screens are fastened are kept in motion by means of the knockers 11 and cams 10, which causes any particles that might adhere to the screen to drop. The corrugations on these screens overlap each other in the lower chamber, which tends greatly to check the velocity of the current and spread it all through the chamber. The current of air, greatly diminished in force and partially purified, next passes through passages 7, also furnished with the corrugated screens, and from there it passes into the chambers 14, likewise furnished with the corrugated screens. By this time the screens have greatly lessened the force of the current and the greater part of the remaining dust becomes separated from the air and drops onto the traveling brush 19, which conveys it to the passage 22, thence onto a spiral conveyer 24, and thence to the exit 25. The return-current of air from chamber 29, passing alternately down through openings 27 into chambers 14, is very much weakened and aids in depositing all slight impurities in these chambers onto the floor of chamber 14. The pure air now escapes from the exits 21 of the cylinder 20.

The screens employed may be constructed of wire-gauze, but I do not, however, limit myself to the use of any particular material.

I claim as my invention—

1. In a dust-collector, the combination of a

suitable casing having an upper and lower air-chamber, a central air-inlet in communication with said lower air-chamber, corrugated screen located in said air-chambers, the corrugations in the screens in the lower chamber being made to overlap, and suitable passages having corrugated screens located in them for forming a communication between the two air-chambers substantially as and for the purpose set forth.

2. In a dust-collector, the combination of a suitable casing having upper and lower air-chambers, a central air-inlet in communication with said lower chamber, corrugated screens located in said chambers, passages having corrugated screens located therein and forming a communication between the upper and lower air-chambers, and a rotating-screen outlet in communication with said upper air-chamber substantially as and for the purpose set forth.

3. In a dust-collector, the combination of a suitable casing, a chamber in said casing forming a central air-inlet for the casing, a number of compartments also located in said casing and arranged above and beneath said inlet, a passage forming a communication between the upper and lower compartments, a series of corrugated screens located in the compartments and passages, a chamber located above the upper compartments and communicating therewith, and a rotary screen in said chamber for throwing out the purified air; substantially as shown and described.

4. In a dust-collector, the combination of a casing, an air-inlet in said casing, a compartment with which said air-inlet communicates, and screens arranged in a zigzag manner and overlapping, located in the compartment and adapted to be moved therein, and suitable means for moving said screens consisting of rods passing through the screens, clamps for attaching the screens to the rods at the points of contact, a spring-knocker connected with said rod and a cam for engaging said knocker, substantially as shown and described.

5. In a dust-collector, the combination of the casing, the air-inlet, the upper and lower compartments, and the passages forming a communication between them containing the corrugated screens, the spiral conveyer located in the lower compartments, for conveying away the dust, the traveling brush in the upper compartments for conveying away the dust in these compartments, and suitable dust-passages forming communication between the upper and lower chambers, and the lower chamber and the passages containing the corrugated screens, substantially as shown and described.

6. In a dust-collector, the combination of a suitable casing formed with upper and lower compartments and with a central air-inlet having a number of deflectors therein, suit-

able openings in said air-inlet and communicating with the lower air-chamber, a series of valves for said openings and adapted to be automatically moved so as to alternately open
5 and close a part of the openings, corrugated screens located in said upper and lower air-chambers, and passages also provided with

corrugated screens for forming a communication between the said air-chambers, substantially as and for the purpose set forth.

JOSEPH W. WILSON.

In presence of—

M. J. WILSON,

J. P. WILSON.