

(No Model.)

G. A. STAFFORD.

PNEUMATIC CONVEYER FOR UNLOADING COTTON.

No. 481,434.

Patented Aug. 23, 1892.

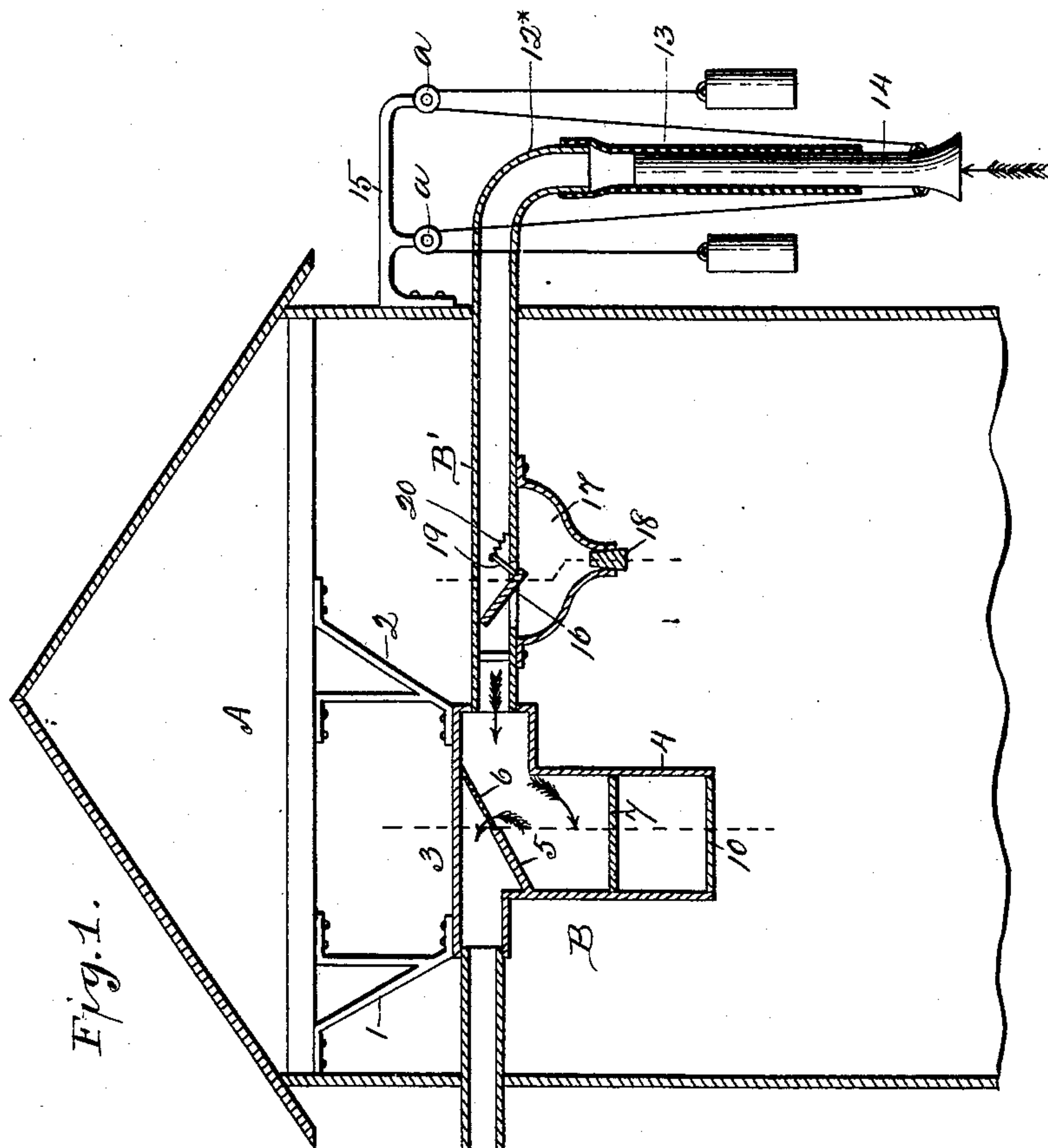


Fig. 1.

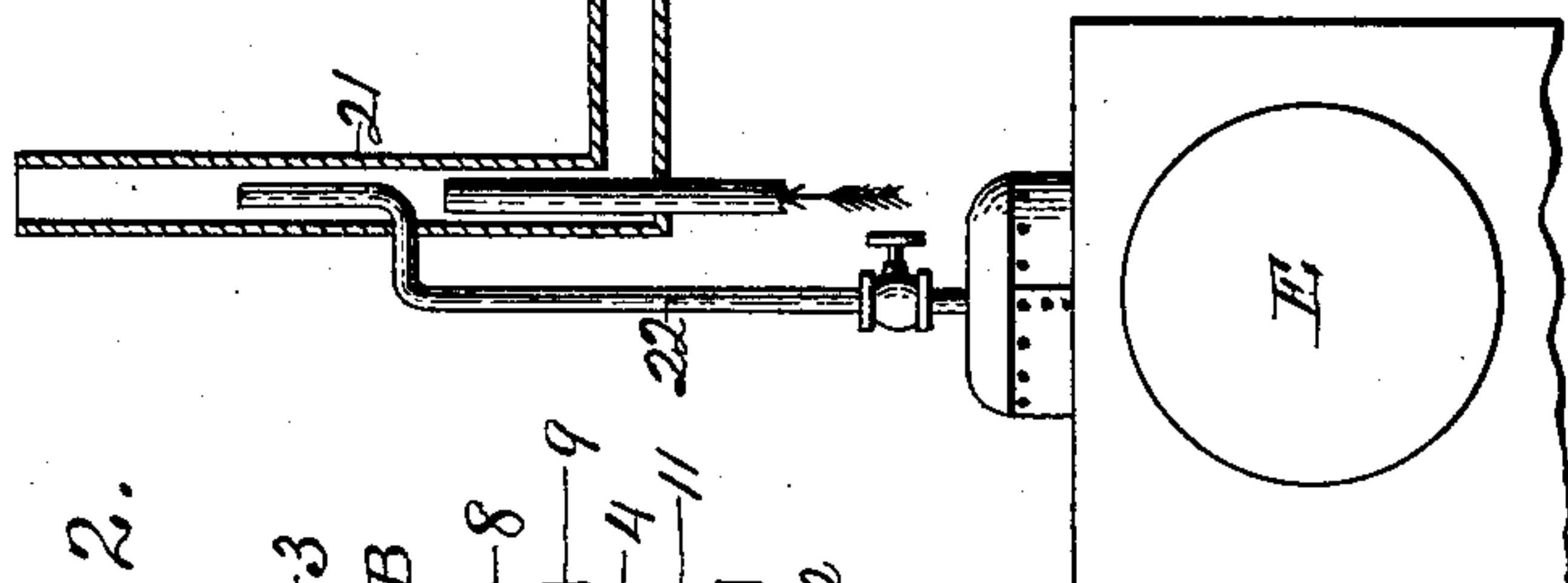


Fig. 2.

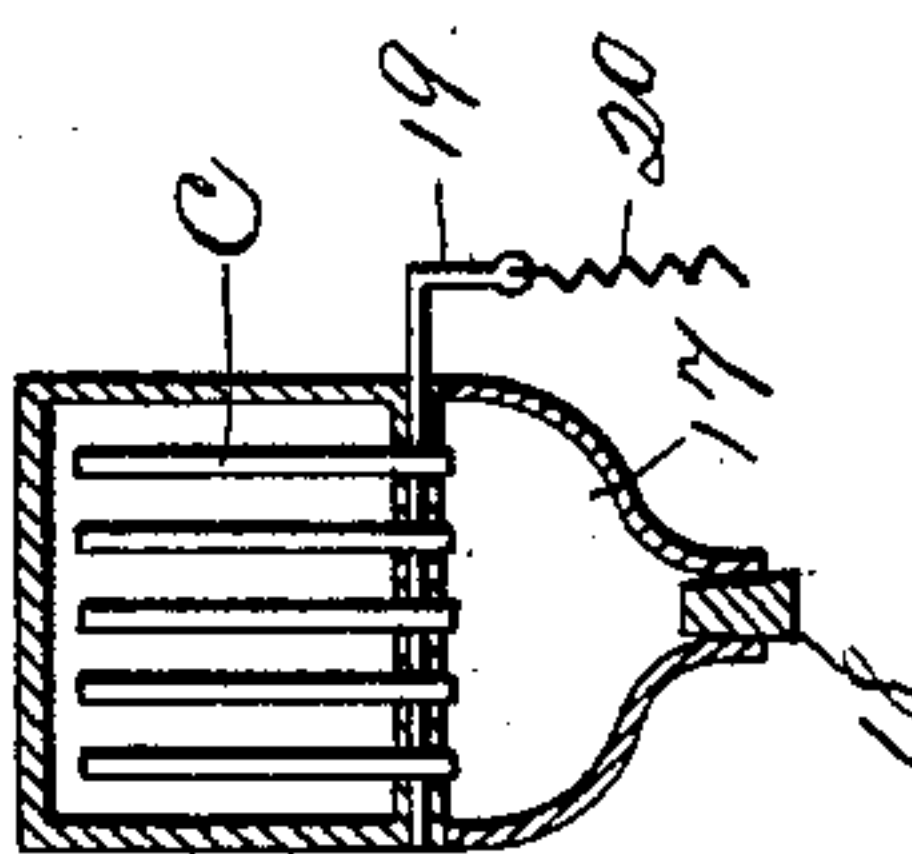


Fig. 3.

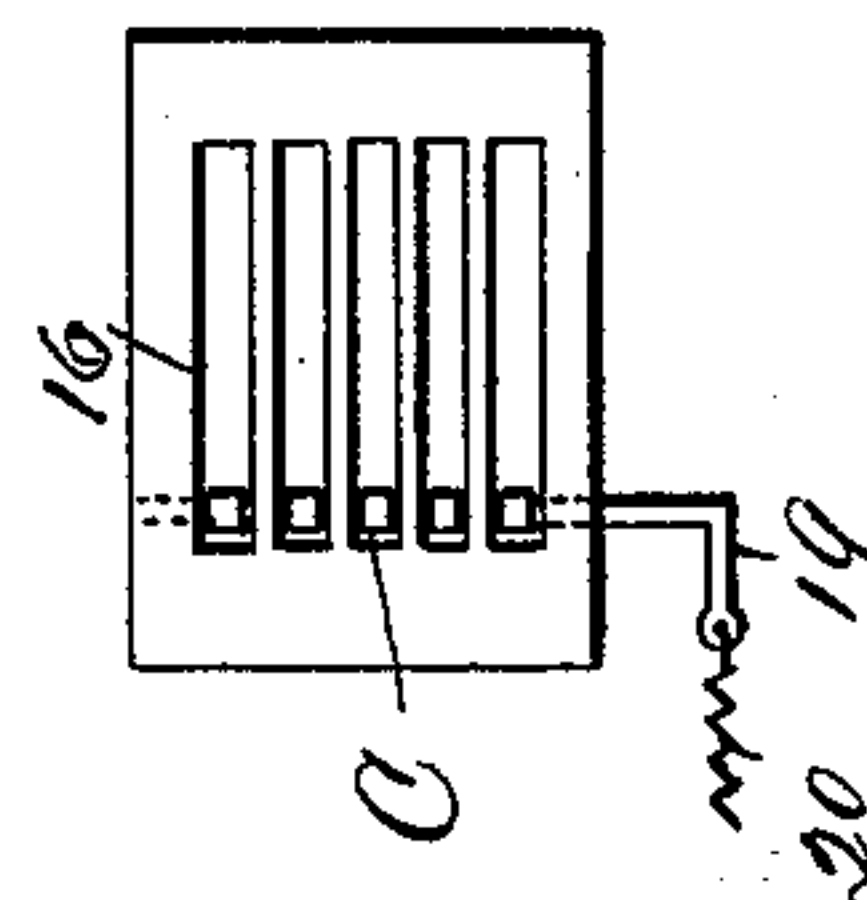


Fig. 4.

Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE A. STAFFORD, OF MONTAGUE, TEXAS.

PNEUMATIC CONVEYER FOR UNLOADING COTTON.

SPECIFICATION forming part of Letters Patent No. 481,434, dated August 23, 1892.

Application filed February 20, 1892. Serial No. 422,296. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. STAFFORD, a citizen of the United States of America, residing in Montague, in the county of Montague and State of Texas, have invented certain new and useful Improvements in Pneumatic Conveyers for Unloading Cotton, of which the following is a specification.

My invention relates to improvements in pneumatic conveyers of that class or style adapted for unloading cotton from a wagon and depositing it on the gin-stand or other place; and the object is to provide a machine whereby cotton may be readily, conveniently, and expeditiously taken from the wagon or other vehicle or dumping-platform and carried or conveyed through a pneumatic tube and deposited on the gin-stand or similar floor for ginning.

I have fully and clearly illustrated my invention in the accompanying drawings, wherein—

Figure 1 is a sectional view of a cotton-house having my apparatus associated therewith, showing the pneumatic tube, the cotton-box, the tube leading therefrom, and the steam-pipes to produce the requisite suction-draft. Fig. 2 is a detail of the dropping bottoms or doors in the cotton-box. Fig. 3 is a section through the pneumatic tube, showing the beaters; and Fig. 4 is a plan view of the slotted or grated bottom of the pneumatic tube constituting the feed-pipe.

A designates the cotton-house in which the cotton-box and pneumatic tubes are suitably mounted or supported. I have shown the cotton-box supported from the girders or rafters of the cotton-house by supports or hangers 1 2, suitably braced, substantially as shown.

B designates the cotton-box into which the cotton is drawn and delivered from the feed pipe or tube leading thereto, as hereinafter specified. This cotton-box consists of a substantial casing 3, made air-tight and having the necessary open ends adapted to receive the delivering and discharging pneumatic pipes or tubes and also having a depending or deepened lower portion 4, constituting the discharging portion of the cotton-box, substantially as shown in Figs. 1 and 2 of the drawings.

In the cotton-box is a board 5, arranged at an incline, as shown, to direct or deflect the moving cotton into the lower part of the same, and extending from the upper portion of the board 5 to the top of the box is a screen 6, to permit the free passage of the current through the cotton-box in the direction of the exhaust.

About midway of the depth of the part 4 are hinged doors 7 8, having arms extending outward, as shown, to the ends of which are attached weights 9, the force of which when the doors are forced open by the weight of the cotton and the cotton is discharged close the doors as soon as relieved of the pressure; and to the bottom of the part 4 are hinged another set of doors 10 11, having arms and weights 12, whereby they are closed when pressed open by the weight of the cotton from within. The object or purpose of these respective closures is that when a sufficient quantity of cotton is delivered to the box above the first set of doors to overcome the force of the weights the doors will be opened and the cotton discharged into the space beneath these doors and onto the closed lower doors, so that while the upper doors are open the lower set is closed, and the current through the cotton-box not lessened or disturbed by an opening permitting an upward suction from that direction or source. It is apparent that should there be but one set of doors, and these being open, a current would be established through the cotton-box from that direction and consequently the suction through the inlet or feed-pipe be stopped or so far abated as to prevent the cotton from being lifted from the wagon and carried into the cotton-box by a continuous current.

B' designates the pneumatic tube constituting the feed-pipe, opening into the cotton-box and extending outside of the cotton-house, being preferably curved downward, as at 12^x, and having flexibly connected thereto a pipe 13, substantially as shown, so that the depending part 13 can be carried or directed to different parts of the load being removed.

In the depending part 13 of the feed-pipe is adjustable and extensibly fitted a tube or pipe 14, whereby the tube may be conveniently extended or shortened to meet the exigencies of the delivery of the cotton from the wagon. To lift the tube 14 a brace-piece 15 may be

fixed to the house, and sheaves *a* journaled in the ends of the brace, over which ropes may be arranged having their lower ends fastened to the tube 14. The bottom of the feed-pipe is slotted or has a grate arranged therein, as 16, (see Fig. 4,) and underneath this is fixed a receptacle 17, having a removable bottom or closure 18, whereby any dirt in the receptacle accumulating during the passage of the cotton may be removed.

C designates "beaters" mounted on a bearing or fulcrum over the slotted part or grate of the tube and receptacle 17 to stand normally at an upward incline, as shown, and adapted to strike the moving cotton as it progresses through the tube. To retain these beaters in their inclined position and to give them a yielding and resilient function I fix an arm 19 on the bearing or fulcrum of the beaters, and to the end of the arm attach one end of a spring 20, the other end being properly anchored to give the spring its desired function. This arrangement of the elements gives them a springing motion so that they strike the cotton as it passes over them, tending to disturb it, and thus clean it of much of the dirt and dust, which then drop down into the receptacle 17, from which it may be removed by taking off the closure.

D designates the pneumatic tube, constituting the exhaust-pipe leading from the cotton-box, substantially as shown, and having a vertical extension 21 opening into space. The engine E supplies either exhaust or direct steam in the pipe D and creates a draft through the pneumatic tubes and upper portion of the cotton-box. The draft may be created by steam let through the exhaust-pipe of the engine; or, if this is not sufficient, then the steam may be let into the pipe direct from the boiler, as by the steam-pipe 22.

The operation is as follows: The movable and swaying end of the feed-pipe being adjusted to the load, the steam is turned on to produce a current through the pipes and cotton-box, when the cotton in the vehicle is drawn up through the pipe. As the cotton moves through the feed-pipe it encounters the beaters, in which contact it is deprived of the dirt in consequence of the agitation, the dirt dropping down into the receptacle while the cotton passes on into the cotton-box, where it is deposited in the lower

portion on the upper set of doors, where it accumulates until it bears open the doors and falls down on the lower set of doors and eventually pushes them open and falls on the gin-stand or other receptacle. When the pressure of cotton is moved from either set of doors, they close by the operation of the weights and remain in that position until again forced open. It will be perceived that when one set of doors is open the other set will naturally or automatically close and the current thus be kept continuously.

Having thus described my invention and stated its principle and mode of operation, as required by the statute, I now particularly point out and distinctly claim the parts, improvements, and combinations I claim as my invention, and desire to secure by Letters Patent, as follows:

1. In a pneumatic conveyer for unloading cotton, the combination, with the main feed-pipe, of upwardly-inclined beaters fulcrumed in the pipe and a spring to hold the beaters, whereby they are given a yielding function, substantially as described.

2. In a pneumatic conveyer for unloading cotton, the combination of the main feed-pipe formed with a grating in the bottom, a dust-receptacle under and inclosing the grating, and beaters yieldingly fulcrumed in the bottom of the pipe and over the grating and dust-receptacle, substantially as described.

3. The herein-described pneumatic apparatus for handling cotton, comprising a feed-pipe B', having a grating in the bottom thereof, beaters yieldingly fulcrumed over the grating, and a dust-receptacle under the grating, a cotton-box provided with a deflecting board and screen and formed with an extending lower portion 4, automatically-operating doors 7 8 midway in said portion 4, automatically-operating doors 10 11 to close the bottom of said portion 4, an exhaust-pipe D, leading from the cotton-box, and an exhaust mechanism, all combined substantially as and for the purpose specified.

In witness whereof I have hereto set my hand in the presence of two attesting witnesses.

GEORGE A. STAFFORD.

Attest:

B. H. BAKER,
H. B. LOCKETT.