

(No Model.)

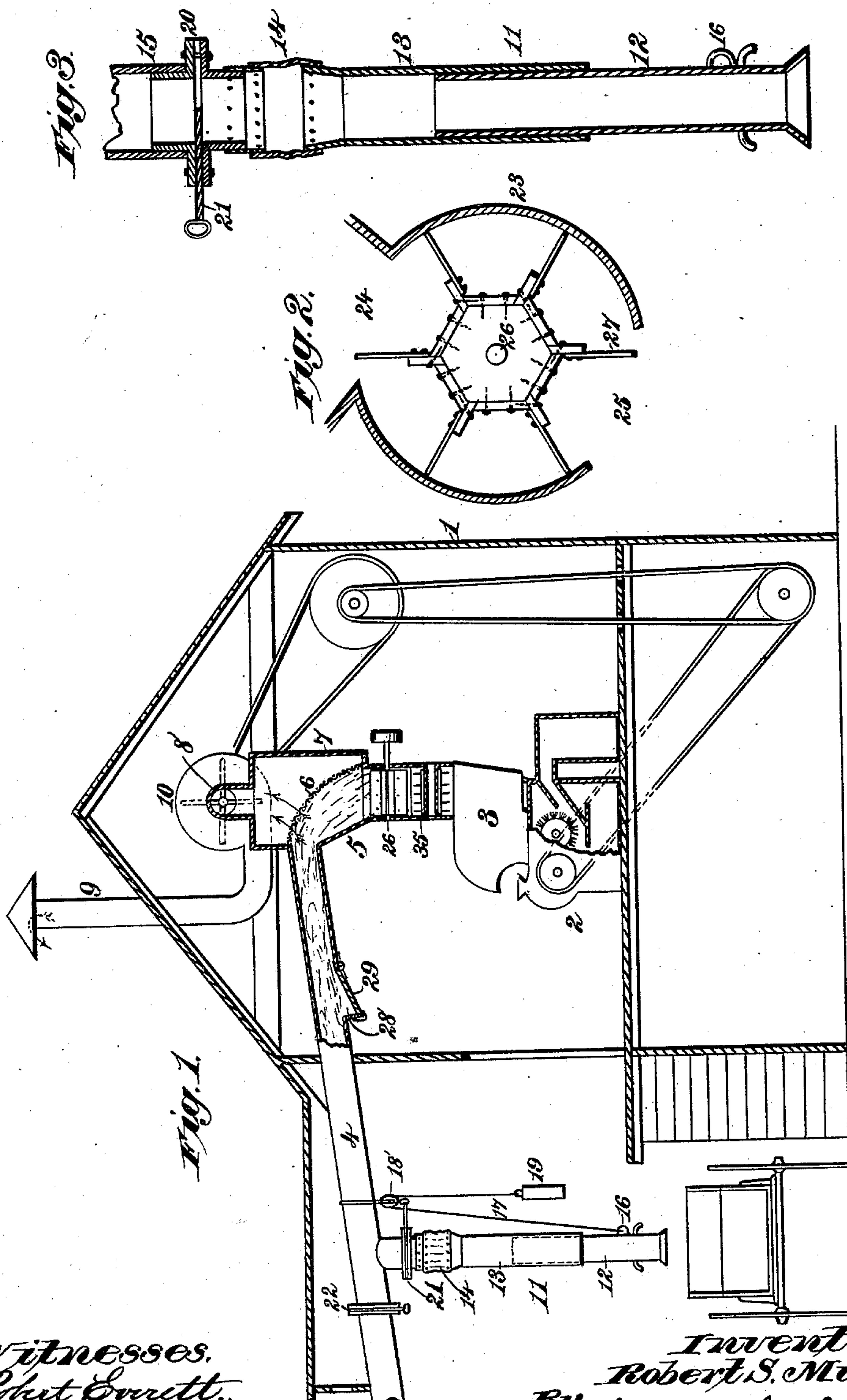
2 Sheets—Sheet 1.

R. S. MUNGER.

APPARATUS FOR HANDLING SEED COTTON.

No. 308,790.

Patented Dec. 2, 1884.



Witnesses.
Robert Everett.
J. L. Coombs

Inventor:
Robert S. Munger.
By James L. Norris.
Atty.

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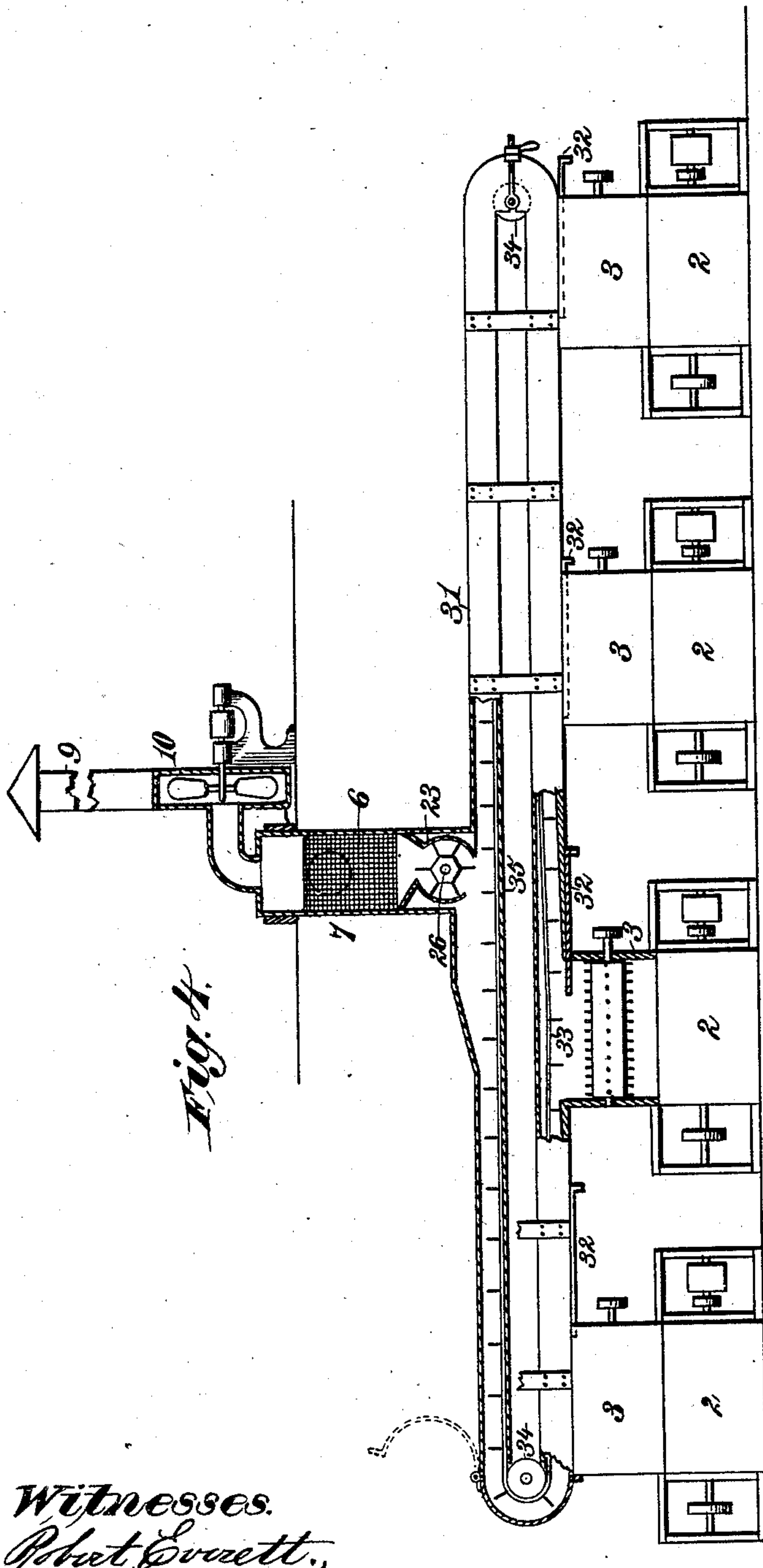


Fig. 4.

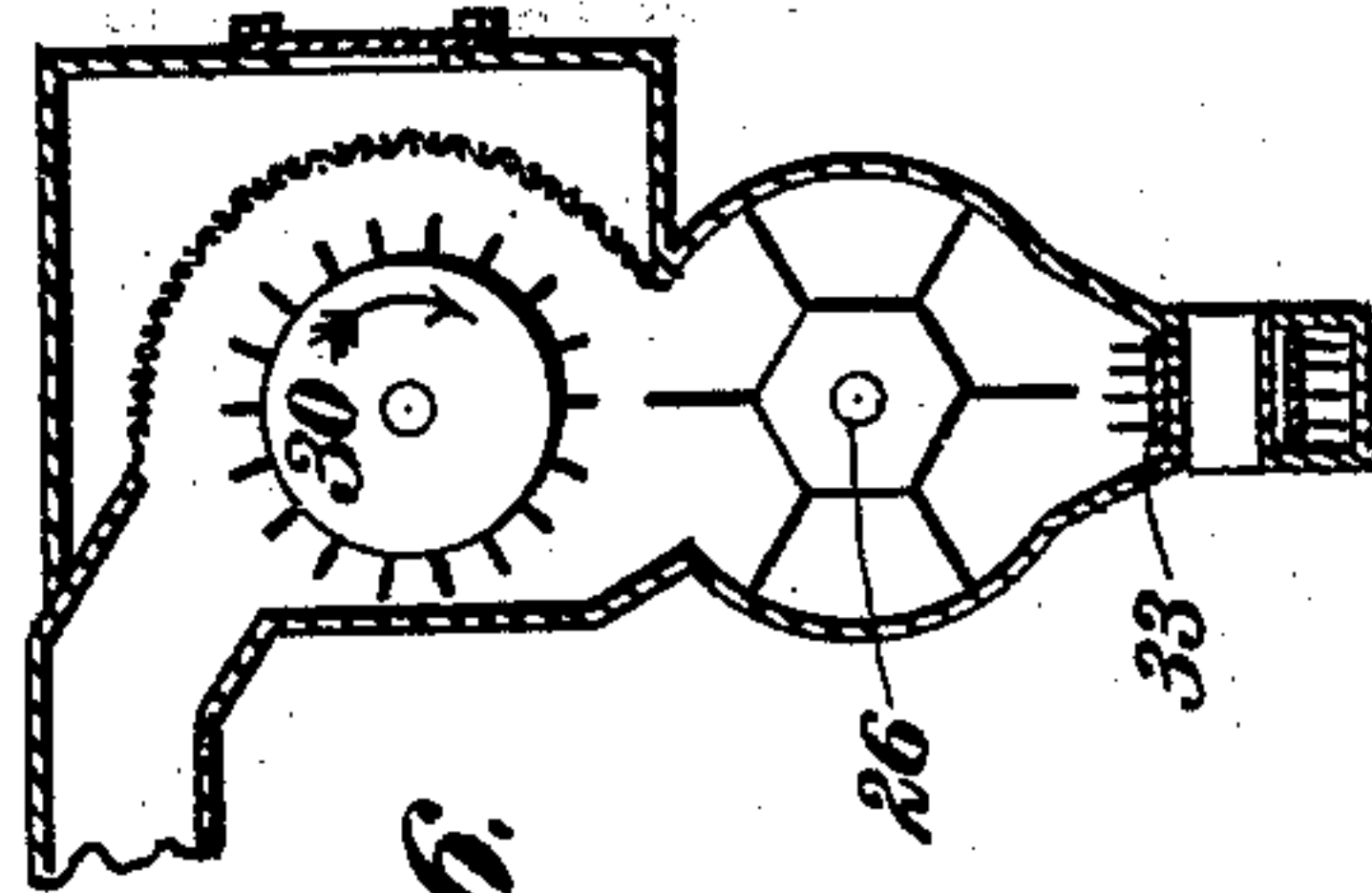


Fig. 6.

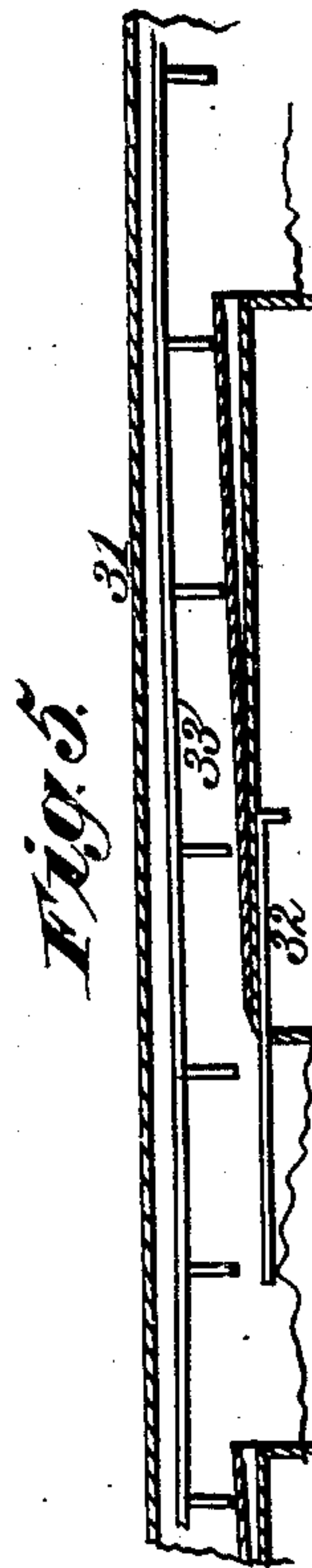


Fig. 5.

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UNITED STATES PATENT OFFICE.

ROBERT S. MUNGER, OF MEXIA, TEXAS.

APPARATUS FOR HANDLING SEED-COTTON.

SPECIFICATION forming part of Letters Patent No. 308,790, dated December 2, 1884.

Application filed June 5, 1884. (No model.)

To all whom it may concern:

Be it known that I, ROBERT S. MUNGER, a citizen of the United States, residing at Mexia, Texas, have invented new and useful Improvements in Apparatus for Handling Seed-Cotton, of which the following is a specification.

My invention relates to mechanism for handling seed-cotton, and has for its purpose to provide novel means for conveying said cotton directly from the wagon or from the cotton-house to the ginning mechanism, whereby the cotton is cleansed and dried during its passage, danger of fire is almost wholly avoided, and all danger of a general or destructive conflagration obviated; to prevent the dust and trash separated from the cotton from entering the ginning-room; to improve the quality of the cotton; to reduce the labor and time involved in handling seed-cotton; to prevent heavy foreign substances being carried with the cotton into the gins; to enable the cotton-house to be placed at any suitable distance from the ginning-house, and thereby avoid the communication of fire from one to the other, thus decreasing the cost of insurance, and to effect a substantial economy in the current expenses of establishments for handling seed-cotton.

My invention consists in the several novel features of construction and combinations of parts, hereinafter fully set forth, and definitely pointed out in the claims.

Referring to the drawings, Figure 1 is a transverse section taken through the gin-house, part of the mechanism being broken away to illustrate its construction. Fig. 2 is a detail section, upon an enlarged scale, of the valve-chamber with its contained mechanism. Fig. 3 is a detail section of the drop or hand pipe detached from the conveyer. Fig. 4 is a view, partly in side elevation and partly in longitudinal section, of the distributor with its immediate connections. Fig. 5 is a detail longitudinal section of a portion of the distributor shown in Fig. 4, enlarged. Fig. 6 is a vertical section through the exhaust-chamber and valve-chamber, showing a modified construction.

In said drawings, the reference-number 1 indicates the ginning-house, which is a separate structure at some distance from the cotton-

house. Within said house are arranged any desired number of gins, 2, of the ordinary construction, each being provided with a suitable feeder, 3. Entering the ginning-house at any suitable part is a pneumatic tube or conveyer, 4, which may be extended far enough to connect the gin-house with a distant cotton-house. At its inner end the pipe or conveyer is provided with a screen or diaphragm, 6, having a comparatively large surface, and above and behind said diaphragm, and wholly inclosing the same, is an exhaust-chamber, 7, which also forms a dust-receptacle. Opening from the latter is an air-pipe, 8, communicating with a chimney, 9, through which a current of air is driven outward and upward by an exhaust-fan, 10. This current passes, without material obstruction, through the diaphragm 6 in the direction of the arrows in Fig. 1, creating an exhaust or inflowing current through the tube 4, which has a power proportioned to the size and velocity of the fan 10. Outside the house, and at a point suitably adjacent thereto, a drop-pipe, 11, is connected with the conveyer 4. This pipe, which is shown in detail in Fig. 3, consists of two telescoping sections, 12 and 13, the latter being united by means of a flexible section, 14, with a drop-bearing, 15, rigid upon the pipe 4, thereby enabling the drop-pipe to be moved freely in all directions. Upon the lower telescoping section is formed an eye, 16, to which is attached a cord, 17, passing upward and over a pulley, 18, and having upon its other end a weight, 19, which counterbalances the weight of the telescoping end 12. In the drop-bearing 15 is formed a seat, 20, for a slide-valve or gate, 21, by which the communication between the pipe 11 and the conveyer 4 may be cut off, and a similar gate, 22, is also placed in the latter beyond the drop-pipe.

Below the exhaust-chamber 7, and between it and the gin-feeder, or between it and a distributor hereinafter to be described, is formed a valve-chamber, 23. (Shown in detail in Fig. 2.) This chamber is cylindrical in cross-section, and has its ends closed, but is provided with an upper opening, 24, communicating with the conveyer just below the exhaust-chamber, and a lower opening, 25, communicating with the gin feeder or distributor.

Within said chamber, and concentric therewith, is placed a shaft, 26, upon which are mounted valves or buckets 27, which are preferably of leather or other flexible material, so constructed and arranged that each fits the inner walls of said chamber closely. It will be seen that, if rotation is given to said shaft, there will always be at least two of these buckets in engagement with the cylindrical and end walls, and, as this engagement is practically air-tight, all upward or counter currents of air are prevented. I have shown in the drawings six of these buckets or valves; but I do not confine myself to the use of any specific number, as I may use more or less of them, as circumstances require.

In the conveyer 4, at any suitable point or points, I form pockets 28, lying upon the under side of said pipe, and provided with a hinged gate or door, 29, which may have a glass pane to permit inspection, as may also the pipe itself. The function of these pockets will be described hereinafter. If the cotton is to be delivered directly to the gin-feeder 3, the lower opening, 25, of the valve-chamber opens directly into said feeder. If a wagon loaded with cotton is drawn to the gin-house and stationed beneath the drop-pipe 11, the gate 22 in the conveyer is closed, the gate 21 in the drop-pipe is opened, and the operator, by moving the lower portion of said pipe in different directions and lowering or raising the telescoping end 12, can quickly take up the cotton from the wagon, which cotton will be drawn through the conveyer and carried to the gin. While the exhaust or suction is sufficient to accomplish this work rapidly and thoroughly, it is not powerful enough to raise foreign bodies having any material weight, and a partial cleansing of the cotton will therefore take place at this point where the cotton enters the tube. After reaching the main pipe 4, heavy substances—such as nails, stones, and similar matters which may have been embedded in a sufficient mass of cotton to have been raised—will be extremely likely to become disengaged therefrom as the cotton passes onward, and will eventually be caught in the pocket or pockets 28, from which any accumulation may be removed through the door 29. As the cotton reaches the diaphragm 6, the air-current draws the dust and leaf trash through said diaphragm, and drives it out through the chimney 9, the heavier particles—such as sand, &c.—falling into and being retained by the exhaust-chamber 7. This prevents any entrance of dust and trash to the ginning-room, and as the cotton is very thoroughly shaken up and separated in its passage through the pipes the cleansing effected is very nearly complete, and in many instances practically so, before it reaches the gins. In order, however, to render this result certain, I may place opposite the diaphragm 6 a revolving beater, 30, (shown in Fig. 6,) by which the cotton is separated, shaken, and thrown forcibly against the dia-

phragm, whereby a very thorough cleansing from dust and trash is effected. As the cotton leaves the curved arm 5 of the conveyer, or when it leaves the beater, where the latter is used, it drops between the revolving buckets 27 into the valve-chamber 23, and passes out thereof through the lower opening, 25, into the feeder.

Instead of delivering the cotton direct to the feeder of the gin, I may convey it to an intermediate distributor. (Shown most clearly in Fig. 4.) This distributor consists of a casing, 31, extending over and communicating with each gin-feeder by means of an opening, which may be wholly or partially closed, according to the class of feeder employed, by a valve, 32.

Within the casing 31 is an endless spiked belt, 33, carried by suitable pulleys, 34, journaled in each end of the case. The upper web of this belt has horizontal support upon a plate, 35, and receives the cotton as it passes through the valve-chamber 23 at any suitable point. Thence it is carried by the belt over the end pulley, and swept by the spikes mounted upon the belt along the bottom of the casing till it reaches the mouth of the first gin-feeder. The lower horizontal wall of the casing is between each gin inclined slightly upward in the direction of the movement of the belt, as shown in Fig. 5, to prevent the spikes catching against its lower extremity, and at the same time insure contact between the spikes and said casing in order to carry the cotton. As the first gin-feeder is filled, the cotton is swept over the opening to the next, &c., until the distributor supplies all the gins in the series, and it will readily be seen that by this apparatus and by a proper use of the valves the same amount of cotton may be preserved in each feeder, and the cotton kept level and even.

It will readily be seen that by my invention the cotton-house may be separated from the ginning-house by any suitable distance, and thereby any fire which occurs which originates in the gin-house, as almost all fires do, may be cut off in such manner as to save the cotton-house, even if the conflagration within the gin-house be general. Moreover, if the fire is started in the ginning-house, the absence of dust, leaf trash, and similar impurities, and the fact that the cotton is delivered from the conveyer to the gins directly, limits the fire to a comparatively small area, and enables it to be extinguished without involving a general destruction.

By my invention all the dirt, dust, and leaf trash is carried out of the ginning-room instead of being blown or carried into said room, as was done by the methods heretofore in use. Again, the quality of the cotton is improved instead of being injured, since by my invention I draw the cotton directly from the wagon or from the cotton-house through a cleansing pneumatic conveyer, instead of blowing it through the fan, as has been done heretofore,

the latter method causing an injury to the fiber of the cotton, which is very serious, since the passage through the fan breaks the fiber, and, moreover, prevents a proper separation of the dust and other foreign substances mingled with it. Moreover, the rapid motion required by this method is apt to cause a serious injury to the seed by breaking the same and carrying all the dust and foreign impurities directly into the gin-house, as already mentioned.

My invention provides a method of handling seed-cotton whereby comparatively little labor is required, and enables me to effect a substantial economy of the room required to accommodate the necessary machinery. Thus it is clear that in the account of current expenses my invention will save the cost of the apparatus in a comparatively short time.

It is evident that the reduction of risk from fires which results from my invention will effect a corresponding reduction in the premiums upon fire policies, since it will easily be seen that in the event of a fire all communication between the ginning-house and the cotton-house may be instantly cut off. It will also be seen that while the cotton-house may be placed at any suitable distance from the ginning-house, the cotton may be conveyed from the former to the latter through the pneumatic tube by simply closing the gate or valve in the drop-pipe by which the cotton is unloaded from the wagon.

By ginning the cotton conveyed through the pneumatic tube into a common condenser, as set forth in an application filed by me May 31, 1884, Serial No. 133,328, I reduce the risk of fire to such a degree as to render a ginning establishment no more liable to destruction than any cotton-spinning or cotton-weaving mill.

It must be understood that the cotton may, if desired, be stored in the same house with the gins, and may be carried to the latter by the means hereinbefore described.

Instead of using the peculiar form of valve-shaft with the flexible valves shown in Fig. 2, it may be possible to employ a screw-conveyer or other suitable means, which will not only carry the cotton downward, but will cut off the upward air-current.

By the method heretofore in use, which consisted in blowing the cotton directly through the fan to a platform in the gin-house, the risk of fire was greatly increased, since not only was a spark more readily struck in the transit, but the fire when once generated would spread more readily and quickly to every part of the ginning establishment.

What I claim is—

1. The combination, with a cotton-gin, of a pneumatic conveyer for the cotton, means for delivering the cotton from the conveyer to the gin, and an exhaust-fan for creating an air-current through the conveyer, substantially as described.

2. The combination, with a cotton-gin, of a

pneumatic conveyer for the cotton, a screen arranged in the conveyer, an exhaust-chamber inclosing the screen, means for delivering the cotton from the conveyer to the gin, and an exhaust-fan for creating an air-current through the conveyer, substantially as described.

3. The combination, with a cotton-gin, of the pneumatic conveyer for the cotton, the screen in the conveyer, the exhaust-chamber, the valve-chamber, the rotating shaft, the buckets, and means for delivering the cotton from the conveyer to the gin, substantially as described.

4. In an apparatus for handling seed-cotton, the combination, with a pneumatic conveyer, of a telescoping drop-pipe communicating therewith by a flexible joint, a valve placed in said pipe, and a second valve placed in the conveyer beyond said drop-pipe, substantially as described.

5. In an apparatus for handling seed-cotton, the combination, with the ginning-house, of the pneumatic conveyer, and the pockets arranged at suitable points upon the under side of the conveyer to receive and retain heavy foreign substances, substantially as described.

6. In an apparatus for handling seed-cotton, the combination, with the ginning-house, of the pneumatic conveyer, pockets arranged at suitable points on the under side of the conveyer, and hinged doors by which said pockets may be emptied, substantially as described.

7. In an apparatus for handling seed-cotton, the combination, with a pneumatic conveyer having a netted or perforated diaphragm, of an exhaust-chamber inclosing said diaphragm, a valve-chamber below the exhaust-chamber, and a beater intermediate the exhaust-chamber and the valve-chamber, substantially as described.

8. In an apparatus for handling seed-cotton, the combination, with a pneumatic conveyer, of a netted or perforated diaphragm, an exhaust-chamber behind said diaphragm, a revolving beater in front of the diaphragm, a valve-chamber below said beater, having a valve-shaft carrying buckets practically fitting said chamber, and a distributor receiving the cotton from said valve, substantially as described.

9. In an apparatus for handling seed-cotton, the combination of the ginning-house, the pneumatic conveyer entering the same, an exhaust-chamber communicating with the conveyer, and a chimney communicating with the exhaust-chamber, for removing the dust and leaf trash from the cotton and carrying it out of the ginning-room, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT S. MUNGER.

Witnesses:

JAS. L. NORRIS,
JOS. L. COOMBS.

