(No Model.) 3 Sheets—Sheet 1

S. D. MURRAY.

APPARATUS FOR ELEVATING, DISTRIBUTING, AND FEEDING SEED COTTON TO GINS.

No. 472,607. Patented Apr. 12, 1892.

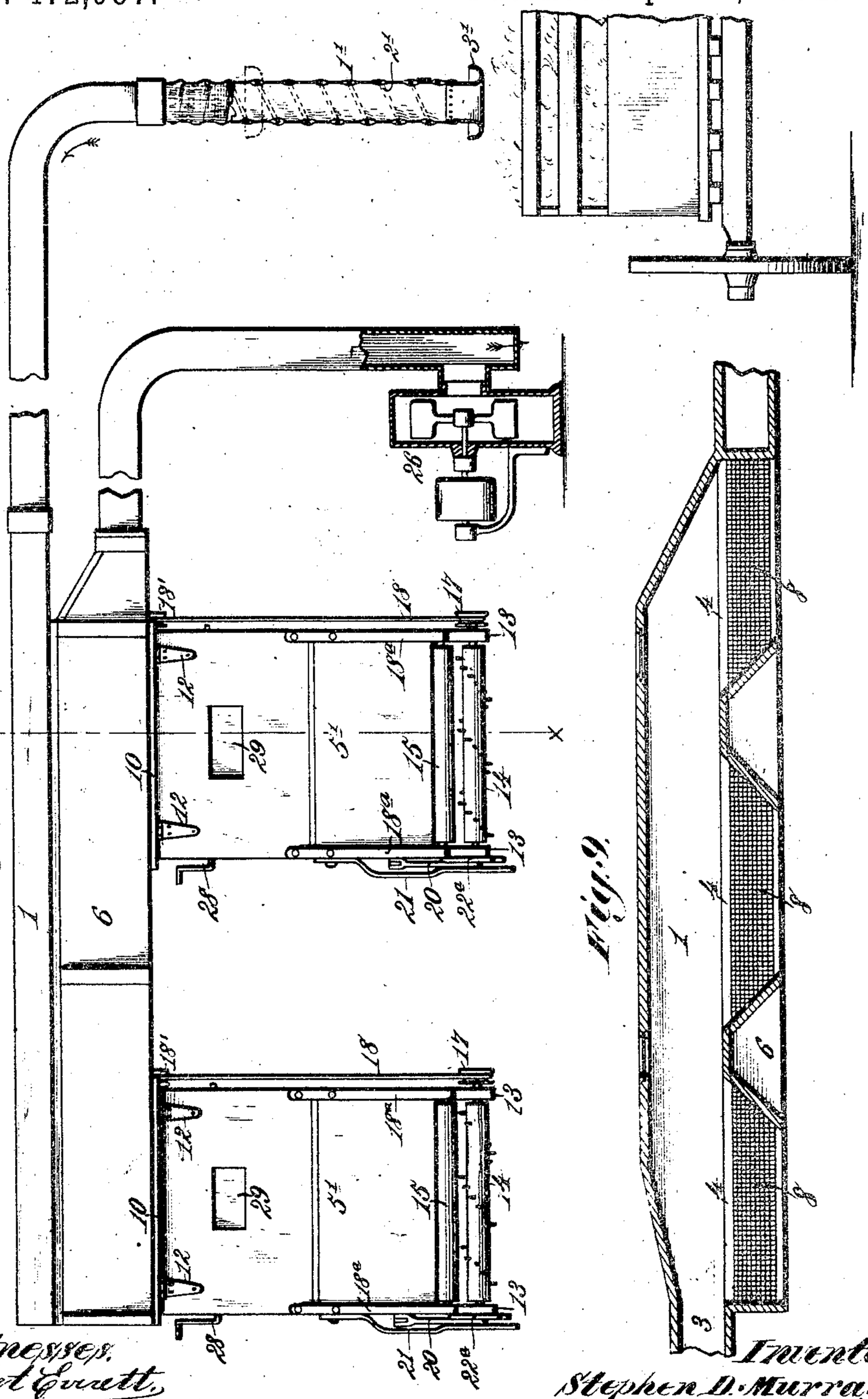

Fig. 1.

Fig. 2.

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(No Model.) 3 Sheets—Sheet 2.

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Fig. 2.

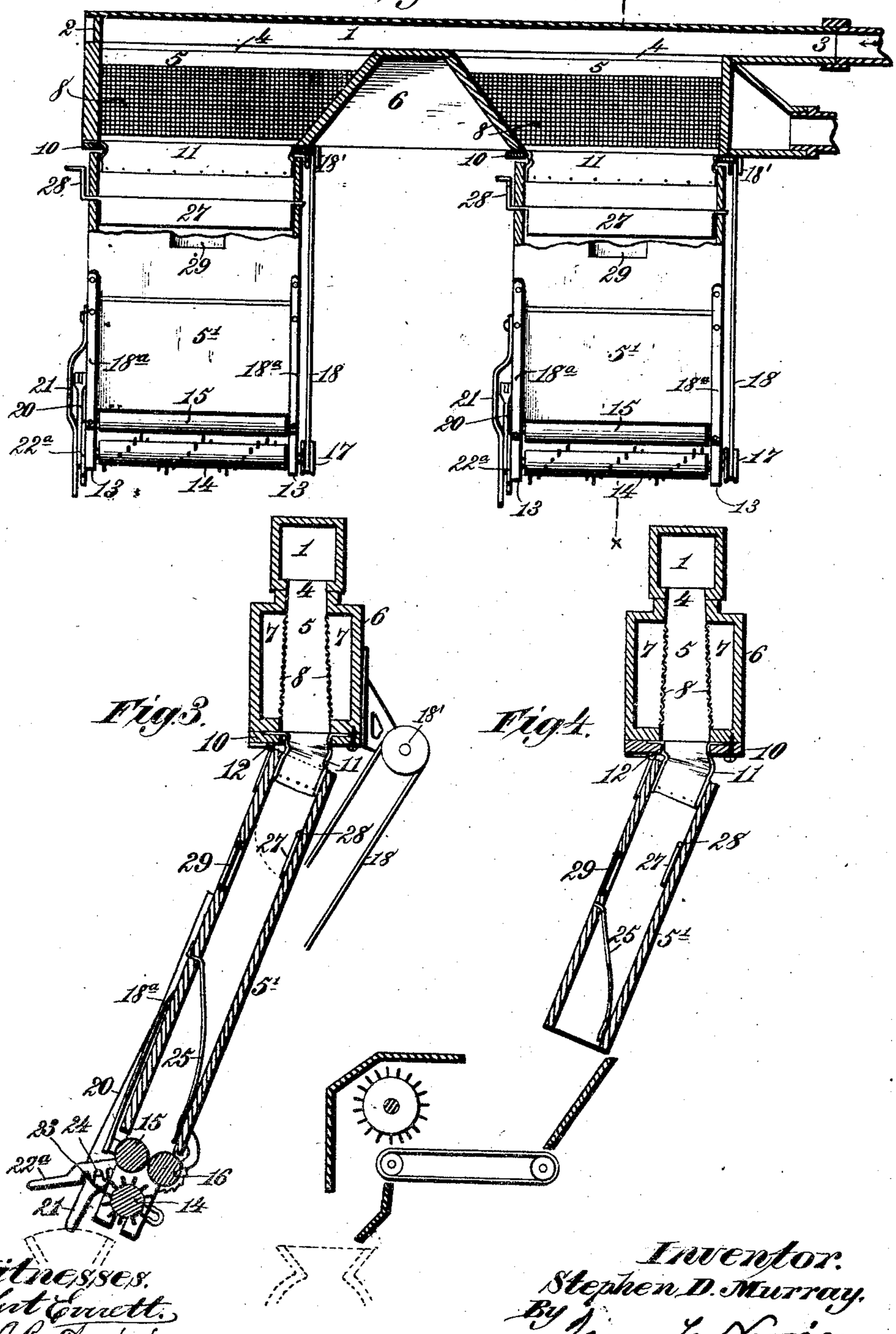

Fig. 3.

Fig. 4.

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(No Model.) 3 Sheets—Sheet 3.

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Fig. 5.

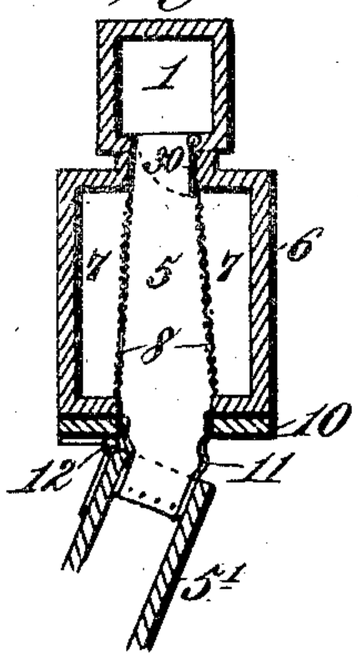


Fig. 6.

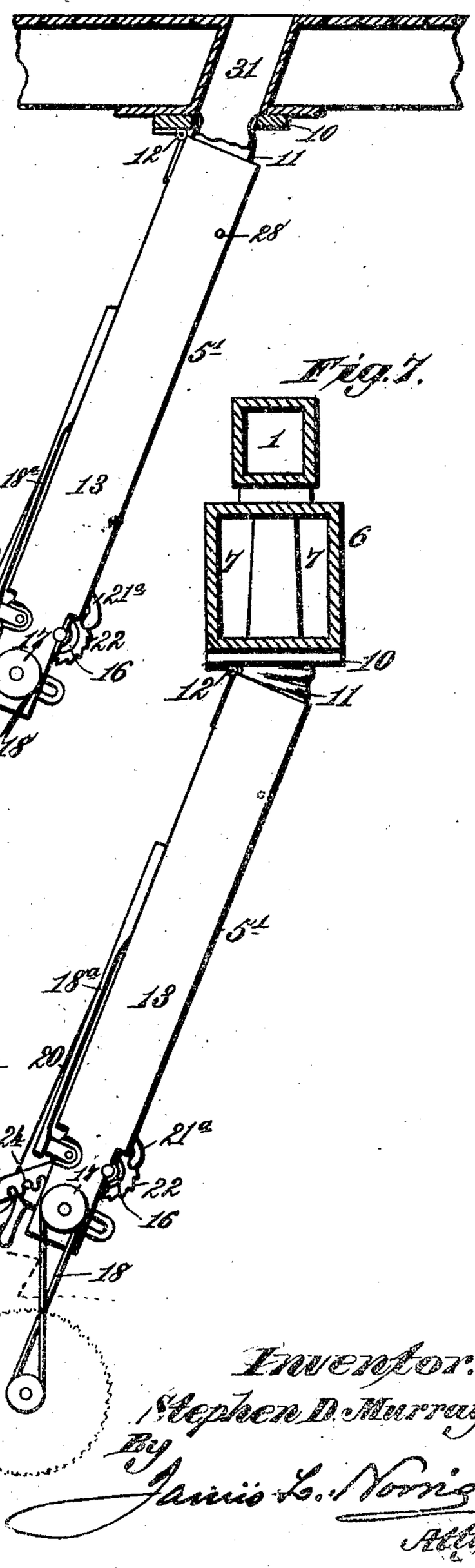
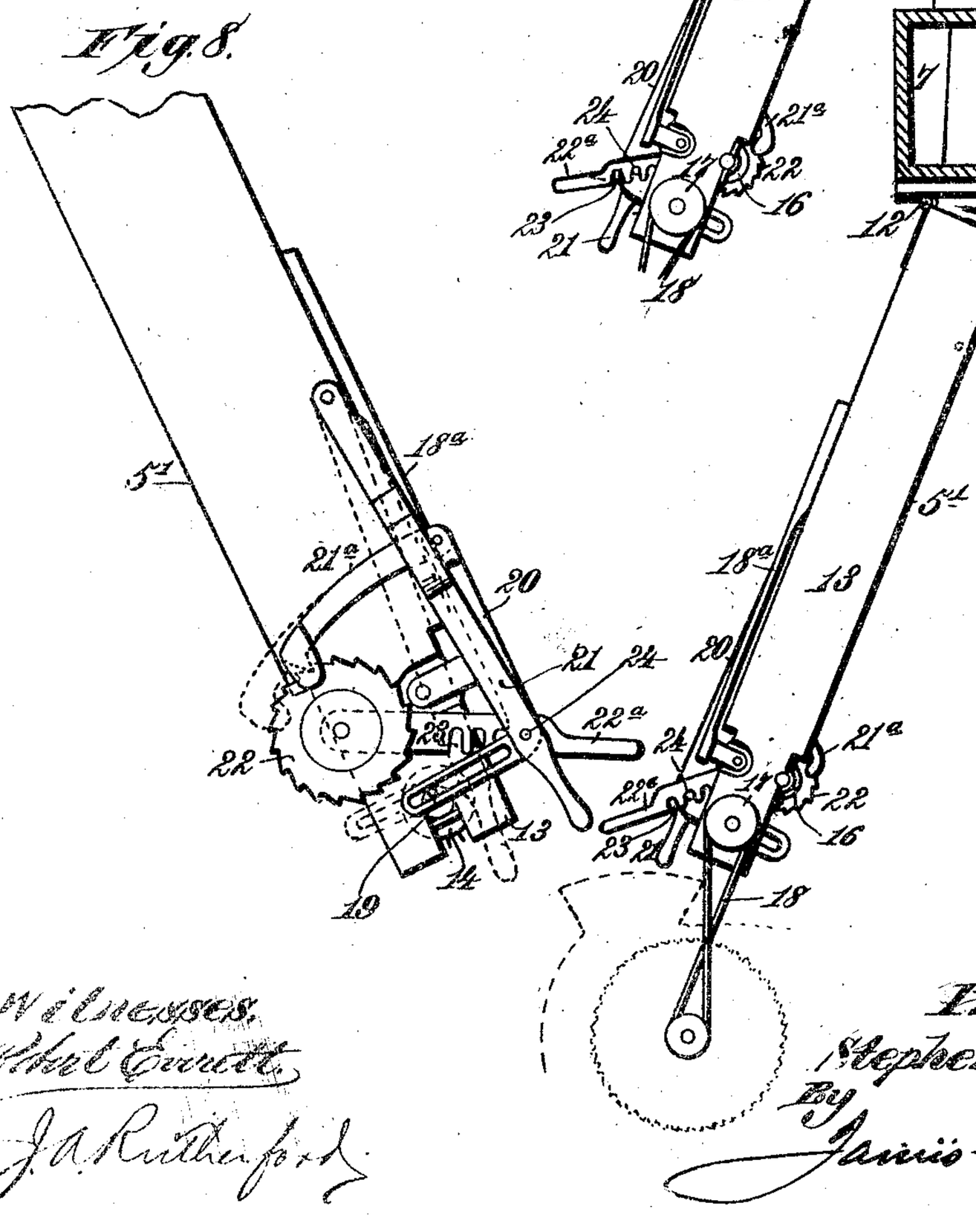


Fig. 7.

Fig. 8.



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UNITED STATES PATENT OFFICE.

STEPHEN D. MURRAY, OF DALLAS, TEXAS, ASSIGNOR TO WILLIAM BURR, OF SAME PLACE, AND JOHN H. DEEMS, OF ST. LOUIS, MISSOURI.

APPARATUS FOR ELEVATING, DISTRIBUTING, AND FEEDING SEED-COTTON TO GINS.

SPECIFICATION forming part of Letters Patent No. 472,607, dated April 12, 1892.

Application filed May 29, 1891. Serial No. 394,581. (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 Apparatus for Elevating, Distributing, and Feeding Seed-Cotton to Gins, of which the following is a specification.

This invention relates to certain new and useful improvements in machines or apparatus for elevating, distributing, and feeding seed-cotton to gins; and it consists, substantially, in such features of arrangement, construction, and combination of parts as will hereinafter be more fully described and claimed.

The invention has for its object to provide a machine or apparatus which shall enable seed-cotton to be elevated, distributed, and fed directly to two or more gins at the same time without greatly increasing the consumption of power beyond that required for performing the same work in connection with a single gin.

The invention has for its further object to provide a machine or apparatus of the character referred to, which can be adapted to any ordinary gin or gins or any arrangement of gins.

The invention has for its further object to enable ready access to be had to all parts of the gins, and also to greatly economize in space over many former inventions for a like purpose.

The invention has for its still further object to provide a machine or apparatus of the character referred to which shall possess the quality of great durability, and one in which the moving parts are comparatively few and not liable to become as quickly worn as when of a more delicate construction.

The invention has for its still further object to greatly reduce the quantity of machinery usually employed to do the work of elevating, distributing, and feeding cotton to gins, and thereby rendering the machine or apparatus much less expensive to build.

The invention has for its final object to provide means whereby the cotton is fed to the gins in a compressed sheet or bat, and also to provide simplified devices for actuating and regulating the speed of the feed-rolls, all substantially as will more fully hereinafter appear when taken in connection with the accompanying drawings, wherein—

Figure 1 represents a longitudinal side elevation of a cotton elevating, distributing, and feeding machine constructed in accordance with my invention, and Fig. 2 is a longitudinal sectional elevation thereof, taken about centrally through. Fig. 3 is a vertical cross-section taken on the line *x x* of Figs. 1 and 2, the said figure more clearly indicating the interior construction and arrangement of parts. Fig. 4 is a similar view representing a modification designed for elevation and distributing cotton to the ordinary gin feeder or feeders, and Fig. 5 is also a similar view representing a further modification. Fig. 6 is a sectional view representing the manner in which my improved feeder may be suspended beneath an opening in the floor of a gin house, the said figure also showing the driving mechanism for the feed-rollers arranged at the bottom of the feeder. Fig. 7 is a vertical elevation of the movable or hanging feeder, taken from one side thereof and showing more clearly the manner in which the feed-rollers are driven from the saw-shaft of an ordinary gin. Fig. 8 is a similar view taken from the opposite side and representing the devices for regulating and controlling the feed between the rollers, the dotted lines indicating the position of said regulating devices when arranged to furnish the most rapid or greatest extent of feed. Fig. 9 is a longitudinal sectional view of the preferred form of the suction-tube and screen-spaces.

In carrying my invention into effect I provide a horizontally-arranged pipe or tube, into which the seed-cotton is drawn by suction, and this pipe or tube communicates with a horizontally-arranged box or casing, which is divided up into two or more spaces, into which the cotton falls and then passes by gravity into the feeders, which are suspended beneath the box or casing and which are in communication with said spaces. The feeders themselves are suspended to the bottom of the box or casing in such manner as to be capable of being moved or swung from one side to the other, and this enables them to be

easily carried back at any time, so as to give easy access to the gins. The particular form of feeder referred to is easily adapted to be used either in feeding the cotton to gins or in feeding the same to bins and similar places.

I also employ in connection with my apparatus an arrangement of valves, as well as regulating and controlling devices for the rollers, through which the cotton is fed to the gins, all as will more fully hereinafter appear on reference to the drawings by the reference-numerals marked thereon, of which—

1 represents the horizontally-arranged suction pipe or tube, the same being closed at one end at 2, while its other end is curved downwardly and left open at 3. The under side of said pipe or tube is formed with a longitudinal opening 4, by which communication is had with the central spaces 5 of the horizontally-arranged box or casing 6, which is secured to the under side of said suction pipe or tube in any suitable manner. Lengthwise of the said box or casing on each side is an air-passage 7, which communicates with the central space 5 by wire-gauze screens 8, and it is through these wire screens that the incoming air passes thence through the passages 7 out to the exhaust. It is preferable to have the intermediate walls between the central spaces constructed in an inclined manner, as shown in Figs. 2 and 9, since by this construction the spaces are given increased dimensions and the cotton is caused to be forced or fed more easily to the feeders beneath.

Attached to the open end of the suction-pipe 1 is a coliapsible or extensible tube 1′, which is intended to be placed over the wagon or other receptacle which contains the cotton-supply, the said tube being constructed of a coiled spring 2′, which is inclosed between an inner and outer layer of flexible material, such as ducking-cloth or the like. A connection such as the tube affords may be moved about over the surface of the cotton in the wagon, and said tube can be readily distended or contracted to any desired point with but little trouble. On reference to Fig. 1 it will be seen that to the lower end of the said extensible tube is attached a portion 3′, which is designed to be grasped by the hand whenever it is desired to move or change the length or position of said tube. This hand portion is turned up on its lower edge, so as to form an annular pocket for the reception of a suitable weight to hold the tube down to whatever position it may be brought. It will be evident with what ease the entire flexible connection or tube can be moved about and lengthened and shortened at will, and it will also be evident that on releasing the weight from the lower end thereof after the cotton has been unloaded the reaction of the coiled spring will collapse the tube in such manner as to carry the same up out of the way of the operator. The central spaces 5 may be arranged any desired distance apart, according to the requirements, and there could be many variations in the general construction of the box or casing, as well as in the form of the suction-pipe. For instance, instead of having the suction and exhaust at the same end of the apparatus, I might have the suction at one end and the exhaust at the other, in which event I should resort to the construction of pipe and casing such as I have shown in Fig. 9. In this figure it will be seen that the spaces 5 are three in number instead of two; but it will be understood my invention is intended to include two or more, according to the number of gins to be fed by the apparatus.

Suspended to the bottom of the hollow box or casing and communicating with the central spaces 5 is a feeder or chute 5′, constructed in accordance with my invention, and which, instead of being rigidly secured in place, is so attached as to be capable of being moved or swung from one side to the other, thus enabling the feeder to be conveniently arranged in position over an ordinary gin-feed or over the roll-box of a gin, and then when access to the gin is desired the said feeder can be easily turned backward out of the way. The said feeder 5′ could be attached in many ways to admit of it being moved in the manner explained; but preferably I employ a plate 10, provided with screw-holes for securing the same in place, and to this plate the feeder is attached by means of a leather or other flexible connection 11, and in this way it will be seen that a very simple and cheap construction is obtained. In some instances, in order to lend strength to the connection, I employ suitable hinges 12, such as I have shown in the several figures of the drawings, Figs. 1 and 2.

In addition to the great advantage possessed by the hanging or movable feeder it will be seen also that the same can be readily detached or removed at any time and for any purpose whatever. It will be observed that the two sides 13 of the feeder are somewhat extended at the bottom, and between the said sides at this point the feed-rolls 14, 15, and 16 have their bearing, as shown. The roller 14 is the driven roller, and it has on one end of its shaft a pulley 17, which connects by means of a cord or chain 18 with a similar pulley carried either by the saw-shaft of the gin or by an upper drive-shaft 18′. The opposite end of the shaft of said roller 14 is formed or provided with a small crank 19, which actuates the roller 16 through the medium of the regulating and controlling devices for said rollers. The roller 15 is held by the lower ends of self-adjusting springs 18^a, secured to the front of the feeder at the sides, the tendency of such springs being to force said roller 15 into contact with the roller 16 and be operated by friction therewith. In some instances I dispense with the lower roller 14, so as to enable the cotton to pass directly from between the rollers 15 and 16 to the gin-breast or wall-box in a com-

pressed sheet or bat. Of course it will be understood that with such change in the rollers the driving mechanism is also changed accordingly, and which can be effected in a very simple manner by simply causing the roller 16 to become the driver-roller.

In order to regulate the degree of turning of the rollers 15 and 16, I employ an elbow-lever 20, one arm of which is slotted and works upon the crank 19, as shown, the said lever being pivoted to the inner side of an upright hand-lever 21, the upper end of which is pivoted to the side of the feeder. Loosely attached to the upper end of the elbow-lever 20 is a pawl 21^a, which falls or takes into the teeth of a small ratchet-wheel 22, fastened on the end of the shaft of roller 16, and also loosely held on the same end of said shaft is a locking-lever 22^a, having therein a number of notches 23, into which the inner end of the pin or rivet 24, which holds the elbow-lever, is designed to be received. At whatever position these devices may be brought this lever serves to hold or lock the same thereto, so as to insure the proper degree of movement or turning of the rollers 15 and 16. From the construction of said devices it will be seen that as the roller 14 is being driven the crank 19 on the end thereof will impart a rocking or vibrating movement to the elbow-lever, and thereby cause the pawl 21^a to take into the teeth of the ratchet-wheel 22 and move or turn the roller 16 intermittingly and to an extent corresponding to the reach of said pawl. The slotted arm of the elbow-lever permits adjustment of the devices, so as to alter or change the degree of movement of the said rollers 15 and 16, and consequently the feeding of the cotton will be correspondingly altered or changed.

In the drawings, Fig. 8, the full lines represent the position of the adjusting devices when furnishing the slowest feed, while the dotted lines indicate the position to which they are shifted when the most rapid or greatest extent of feed is desired. It will of course be understood that adjustments can be made to any point between the two limits, the locking-lever 22^a securely holding the devices in place.

In the lower part of the hanging feeder a flexible check-valve 25 is arranged, which valve, when the suction-fan 26 is put in operation, is kept closed tight by the pressure of the external air from beneath. By means of said valve I am enabled to obtain the full and effective force of suction upon the cotton-supply, and it serves also to support the cotton until it has acquired a certain depth, whereupon it opens and allows the cotton to fall down upon the rollers 15 and 16. This valve will be referred to hereinafter in connection with the description of the operation of the apparatus.

In the upper part of the feeder or chute 5′ is arranged a thin sheet-iron valve 27, the same being held or suspended by a rod 28, which extends through the sides of said feeder and is bent at one end into the form of a crank or handle 28^a, as shown. The purpose of this valve is as follows: By observations made through a glass 29, arranged in the side of the feeder, the operator can always tell when the cotton has gotten below the valve 27, and just as the operator is about finishing the ginning of one lot or bale of cotton he can close said valve until the spaces 5 above the same have become filled up by the cotton of the next lot or bale, and then when the first lot is finished a portion of the second lot is ready to fall down upon the rollers 15 and 16, which it is allowed to do by opening the valve. In this way no lost time is had in the ginning operation, which is a great desideratum in this class of apparatus.

The operation of my invention as thus far described is as follows: The open end of the box or casing 6 being connected to the fan-casing in the manner shown, the fan 26 will cause a strong suction of air up through the lower open end of the suction-pipe 1 as soon as it is started, and it is evident that any supply of seed-cotton arranged below the end of said pipe will be carried up in the manner indicated by the arrows. As soon as the suction is started the flexible check-valve 25 becomes closed by pressure of the external air, and the cotton passing up with the incoming air-currents is intercepted at the spaces 5 by the wire-gauze screens or walls, through which spaces it falls by gravity into the suspended feeders. The falling cotton will accumulate upon the flexible valves 25 until it has acquired a vertical depth of, say, about fifteen inches, at which depth the weight of the cotton begins to overcome the external air-pressure on the flexible valves, and pushing these valves out of the way the cotton will fall down upon the rollers 15 and 16. As soon as the cotton rests upon the feed-rollers 15 and 16 the said rollers may be put into operation to feed the cotton to the spiked roller 14, which latter drops it in the roll-box of the gin. When the cotton accumulates in the feeders too fast and reaches to the top of the screen-walls of the space 5, it is evident that the suction from pipe or tube 1 will be cut off and the cotton will cease to be drawn in; but as soon as one or more of the feeders have fed out sufficient of the cotton to allow some part of the screen-walls to be free or open the suction again becomes effective in the manner already explained. The purpose and action of the valve in the lower part of the feeder has already been explained, and will not here be repeated.

Fig. 4 represents the employment of my invention in supplying the cotton to an ordinary gin-feeder instead of feeding the same to the gin direct, as in the preceding figures, and Fig. 5 represents the manner of feeding the cotton to one or more stalls or bins. In this latter connection the top of each space 5 is provided with a valve or gate 30, and should

it be desirable to have the cotton pass through but one of a series of such spaces (when two or more are employed) the valves or gates of the remaining spaces would be kept closed. This would prevent the cotton from falling into the spaces where it was desired not to have it go.

In Fig. 6 I have represented my improved hanging feeder as suspended beneath an opening 31 in the floor of a gin-house, in which instance the cotton is swept or raked into the feeders instead of being supplied thereto by the suction of an air-blast. The air in its passage through the screen-walls relieves the cotton of a large percentage of dirt, which it carries off through the exhaust, as indicated by the arrows.

Having thus described my invention, what I claim is—

1. In apparatus for elevating, distributing, and feeding seed-cotton to gins, the combination, with a suction pipe or tube, of a box or casing having side air-passages and a central screened space and a chute or feeder communicating with said space, substantially as described.

2. In apparatus for elevating, distributing, and feeding seed-cotton to gins, the combination, with a suction pipe or tube formed in its under side with an opening, of a box or casing having a central space communicating with said pipe or tube and provided with side air-passages having inner screen-walls and a chute or feeder communicating with said central space, substantially as described.

3. In apparatus for elevating, distributing, and feeding seed-cotton to gins, the combination, with a suitable opening or supply, of a hanging or movable chute suspended beneath such opening or supply and having in the bottom thereof a set of feed-rollers, substantially as described.

4. In apparatus for elevating and distributing seed-cotton, the combination, with a horizontal supply pipe or tube, of a hanging chute or feeder hinged at one edge to the pipe or tube and having its remaining edges connected to said pipe or tube by flexible material, substantially as described.

5. In apparatus for elevating and distributing seed-cotton, the combination, with a suitable supply device, of a hanging chute or feeder hinged at one edge to the supply device and having its remaining edges connected to said supply device by flexible material and feed-rollers journaled within the lower portion of the chute or feeder, substantially as described.

6. In apparatus for elevating, distributing, and feeding seed-cotton to gins, the combination, with the suction pipe or tube 1 and the box or casing 6, of the chute or feeder suspended beneath the casing by a flexible connection, substantially as described.

7. In apparatus for elevating and distributing seed-cotton to gins, the combination, with a swinging chute or feeder, of feed-rollers journaled in the chute or feeder at its lower end portion, and a flexible check-valve located in the chute or feeder above the feed-rollers, substantially as described.

8. In apparatus for elevating, distributing, and feeding seed-cotton to gins, the combination, with the chute or feeder, of the valves 25 and 27, located therein at near the top and bottom, respectively, substantially as described.

9. In apparatus for elevating, distributing, and feeding seed-cotton to gins, the combination, with the chute or feeder, of a set of feed-rollers supported at the bottom of said chute or feeder and means for regulating the feed of said rollers, substantially as described.

10. The combination, with the rollers 14, 15, and 16, of the self-adjusting springs for causing frictional contact of the two last-named rollers, substantially as described.

11. The combination, with the feed-rollers 14, 15, and 16, the former having a crank on its shaft and the latter having a notched wheel, of the elbow-lever slotted and working on said crank, the pawl carried by said lever, the shifting hand-lever, and the locking-lever formed with the notches, substantially as described.

12. The combination, with a suction-pipe, of the box or casing constructed of two or more central spaces and provided with the screened air-passages and a chute or feeder suspended beneath each of said central spaces, substantially as described.

13. The combination, with a suction-pipe, of the box or casing constructed of two or more central spaces and provided with the screened air-passages and a chute or feeder suspended beneath each of said spaces and adapted to be turned or swung to one side, substantially as shown, and for the purposes described.

14. The combination, with the box or casing having the central spaces 5, of a valve or gate 30, adapted to close such space, substantially as described.

15. The combination, with the suspended or hanging feeder, of a pair of compression-rollers arranged in the bottom thereof and adapted to feed the cotton directly therefrom in a compressed sheet or bat, substantially as described.

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

STEPHEN D. MURRAY. [L. S.]

Witnesses:
M. G. STIRMAN,
E. T. LEWIS.