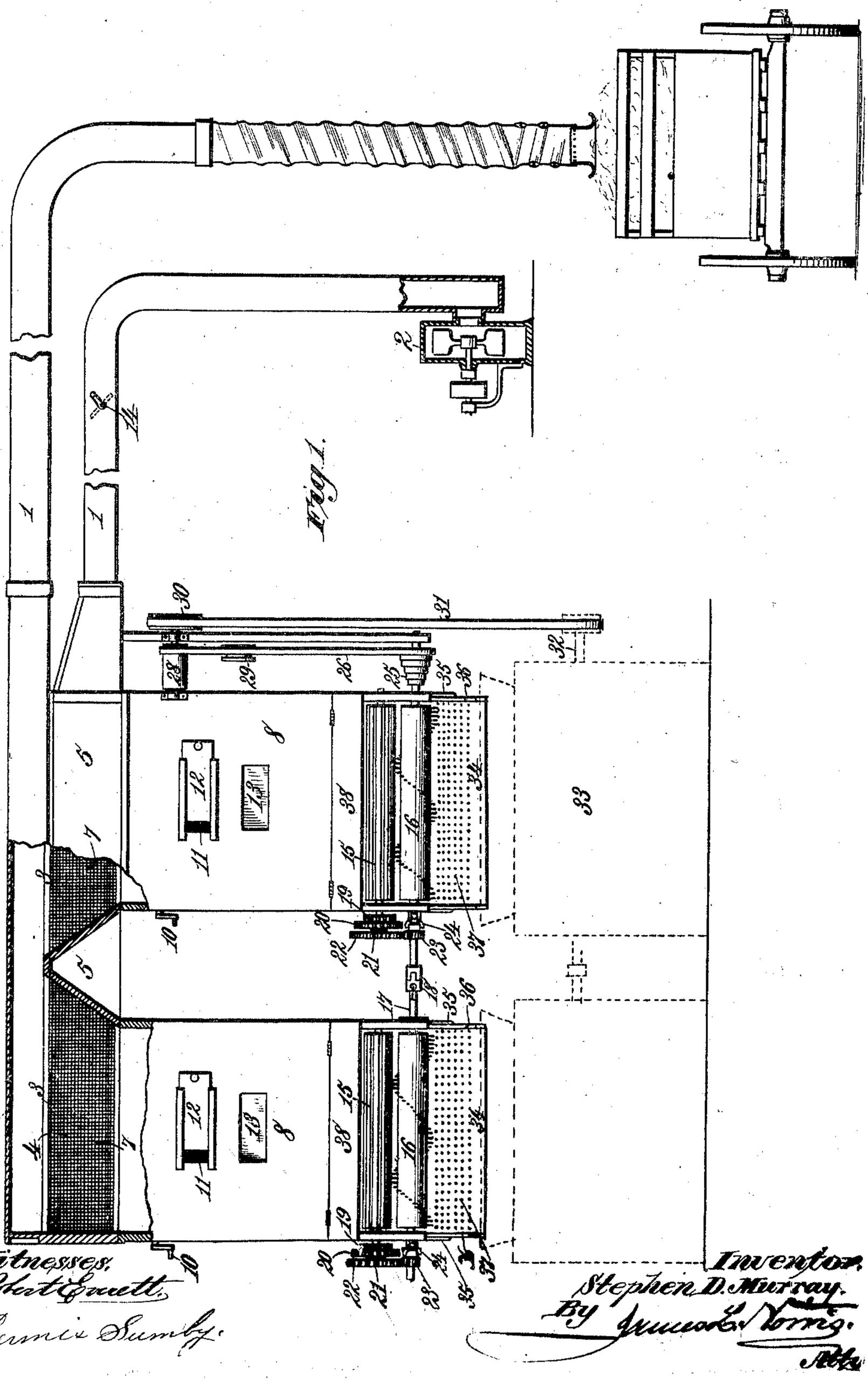
(No Model.) 2 Sheets—Sheet 1.

S. D. MURRAY.

APPARATUS FOR FEEDING SEED COTTON TO GINS.

No. 488,446. Patented Dec. 20, 1892.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

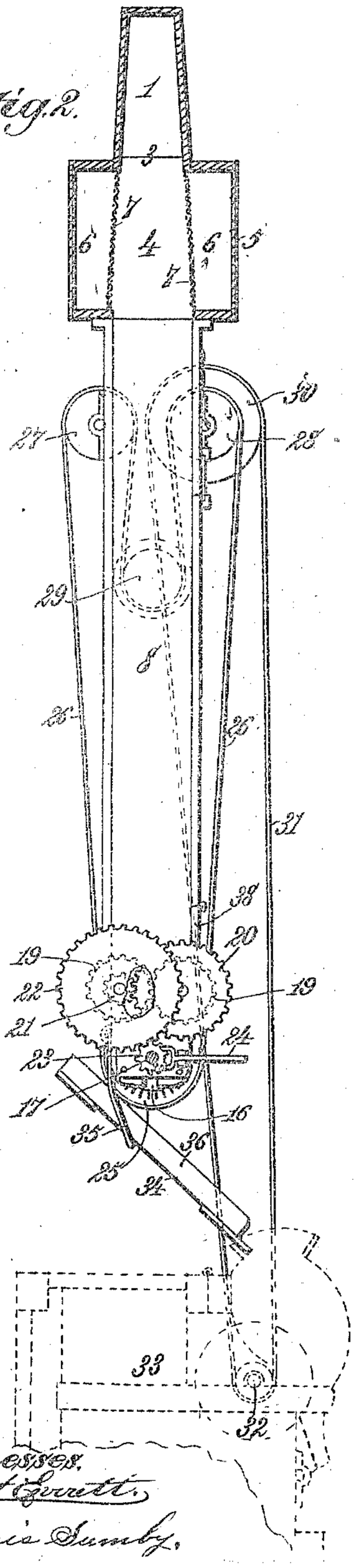
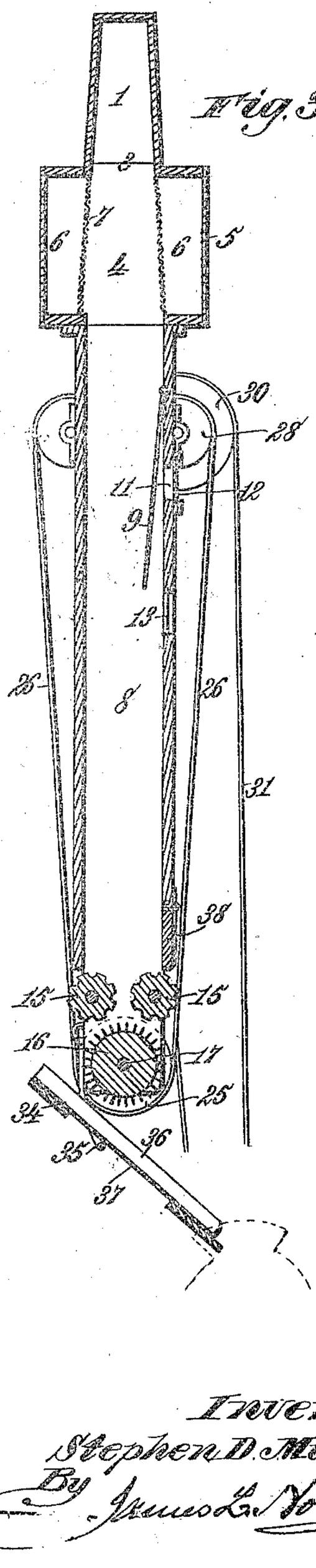


Fig. 3.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR FEEDING SEED-COTTON TO GINS.

SPECIFICATION forming part of Letters Patent No. 488,446, dated December 20, 1892.

Application filed April 2, 1892. Serial No. 427,502. (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 Feeding Seed-Cotton to Gins, of which the following is a specification.

This invention relates to that class of apparatus which is designed for elevating, distributing and feeding seed-cotton to gins and has for its special object to improve and simplify the feed mechanism of such machines or apparatus and provide means whereby a number of rigidly depending chutes or feeders can be operated as one feeder without standing in the way of allowing access to any part of the gins, when required.

Another object of my improvements is to provide a simple arrangement and operation of devices for filling or supplying the feeding chutes.

The invention also has for its objects to provide simple means for gearing the feed roller shafts with a continuous picker roller shaft and mechanism for applying power and changing the speed at one point on said shaft in such a manner that any feeder can be thrown out of action without interfering with the work of the others.

The invention consists in the construction, combination and relative arrangement of parts in an apparatus for feeding seed-cotton to gins, as hereinafter more fully set forth.

In the annexed drawings illustrating the invention—Figure 1 is a partly sectional side elevation of a cotton elevating, distributing and feeding apparatus constructed according to my improvements. Fig. 2 is a partly sectional end elevation of the apparatus. Fig. 3 is a vertical transverse section of the apparatus through one of the rigidly depending chutes or feeders.

Referring to the drawings, the numeral 1 designates a pneumatic tube through which the cotton to be cleansed and distributed may be either drawn or blown by means of an air draft. As shown, a fan 2 may be arranged in communication with the tube 1 in such a manner that when in operation the air will be exhausted from said tube and thereby cause the cotton to enter the tube from a wagon or other source of supply with which one end of the pneumatic tube will communicate. It is obvious that instead of exhausting the air from the tube 1 a blower may be employed to force the cotton into and through said tube.

The horizontal portion of the pneumatic tube 1 is provided in its under side with a longitudinal opening 3 through which communication is had with the central distributing spaces 4 of a horizontally arranged distributer-box or casing 5 which is secured to the under side of the said horizontal portion of the tube 1 in any convenient manner.

On each side of the several central spaces or compartments 4 of the box 5 is an air passage 6, which passages are separated from said compartments 4 by wire gauze screens 7 that permit the passage of air and the separation and escape of dust, while retaining the cotton.

The construction and arrangement of the pneumatic tube 1 and attached casing 5 is substantially the same as described in my Letters Patent No. 472,607, dated April 12, 1892.

In the distributer-box or casing 5 may be arranged any desired number of the distributing compartments 4 arranged at convenient distances apart, as required. Beneath each of these compartments and rigidly secured to the bottom of the box or casing 5 is a feeder or chute 8 arranged to conduct the cotton from the distributing compartment to the roll box of a gin, or other point. The feeder 8 is provided in its upper portion, on one side, with a valve 9 that may be hinged, pivoted or otherwise supported at its upper end. This valve may be arranged to be operated by suction or it may be provided with a crank-handle 10, extended to the outside of the feeder or chute, by which it can be operated by hand.

In the wall of the feeder 8 at the rear of the valve 9 is an air-inlet 11 that can be controlled by a movable gate 12 to permit, or cut off, the entrance of air.

At a suitable point below the valve 9 is arranged a transparent panel 13 through which the height of cotton in the feeder can be observed.

The cotton that is conveyed into the tube

1 by the action of the air draft passes into the several distributing compartments 4 and falls thence into the feeders.

When the apparatus is put into operation the suction of the exhaust fan will cause the valve 9 to close, or by means of the crank 10 said valve can be closed by hand. While the valve 9 is closed the cotton coming in from above will accumulate on the upper side of said valve 9 until it reaches to the top of the screens 7 and obstructs the passage of the air currents. The operator now causes the valve 9 to give way, either by means of its crank 10 or by closing a valve 14 in the pneumatic tube. By closing this valve 14 the air draft is cut off and the weight of the cotton acting on the upper side of the valve 9 will overcome the air pressure on the under side of said valve and cause it to open downward and permit the passage of the cotton into the lower part of the feeder. The same result will be effected if the valve 9 is opened by hand. After the cotton has passed below the valve 9 it will be again closed, either by hand or by opening the valve 14 to restore the air draft, and this action of the said valve 9 will be repeated about twice on the commencement of ginning so as to get the feeders full and enable the cotton to pass down by its own weight as long as it is continuously brought into the distributing compartments at the top of the feeders.

In changing from one bale of cotton to another, or at any interruption to the supply, the operator will observe through the glass 13 when the cotton is fed down below said glass and may then close the valve 9 by hand or open the air-gate 12 to admit air to the back of said valve and permit it to be closed by the suction of the fan. The cotton will now be again accumulated above the valve 9 in readiness to be dropped to the lower part of the feeder, as before described and when the feeders are again filled the several gates 12 may be closed and remain closed until another change in the supply is to be made.

In the lower end of each feeder 8 is journaled a pair of feed rollers 15 immediately above a picker-roller 16 that is mounted firmly on a rotary shaft 17 which carries all the picker-rollers of the several feeders. This shaft 17 may be continuous through all the feeders or it may be made in sections connected by couplings 18 to permit removing the picker-roller of any feeder. As shown, the feed rollers 15 may be corrugated longitudinally to enable them to take better hold of the feeding cotton, while the picker-roller is provided with teeth or spikes to pick the cotton from the feed rollers.

On the shafts or spindles of the feed rollers 15 are secured spur gears 19 that mesh with each other in position to cause said rollers to revolve toward each other and feed the cotton downward. The shaft or spindle of one of the feed rollers has secured thereon a spur gear 20 which meshes with a pinion 21 that is integral with a spur gear 22 which, together with said pinion, is loose on the shaft or spindle of the other feed roller. A clutch-pinion 23 on the shaft 17, when fast therewith and revolving rapidly, gives motion to the loose gear 22 and through its pinion 21 to the gear 20 which transmits its motion through the gears 19 to both feed rollers. By means of a clutch shifter 24 connected with each clutch-pinion 23 the said pinion can be made either fast or loose on the shaft 17, as required, and in this way any one of the several pairs of feed rollers may be started or stopped at will.

To one end of the rotary shaft 17 is secured a speed-changing cone-pulley 25 which is connected by a belt 26 with elongated pulleys 27 and 28 that are suitably mounted in an elevated position, a heavy flanged wheel or belt-tightening pulley 29 being hung upon a depending portion of said belt, below the pulleys 27 and 28 to keep the belt taut and at the same time allow it to run on any part of the cone pulley below for the purpose of increasing or diminishing the feed. To a pulley 30 on the shaft of the pulley 28 is applied a belt 31 that may take power from a rotary shaft 32 of a gin 33 located below the feeder.

The rigidly suspended feeders 8 do not extend quite to the several gins with which they may co-operate, and in order to conduct the cotton without loss or waste from the feeder to the gin an inclined board or trough 34 is located between the lower end of the feeder and the gin. This inclined board or trough is pivoted to the lower ends of hangers 35 which are pivotally engaged at their upper ends with the rigidly suspended feeder 8, whereby the board or trough receives the cotton from the picker roll 16 and delivers it to the gin. The trough 34 is preferably provided with sides 36 to serve as guides for the cotton and its bottom may in part be composed of perforated sheet metal to serve as a screen 37 through which sand and dirt can sift. By hinging or flexibly suspending the trough 34 from the lower end of a rigidly depending feeder, in the manner described, the said trough can be readily swung entirely out of the way for the purpose of allowing the gin breasts to be turned up for giving easy access to all parts of the gin. If desired, the lower end of the feeder 8 may be provided on one side with a door 38 to permit the removal of any foreign substance that may have dropped therein.

The advantages of this improved apparatus for distributing and feeding seed cotton to a number of gins will be obvious in the simplicity and ease with which a series of feeders can be operated as one, the convenient manner in which any feeder can be thrown out of action without interrupting the work of the others, and in the means for instantaneously increasing or decreasing the feed as required. By rigidly suspending the several feeders or chutes 8 all the picker-rollers can be connected and together with

the feed rollers, be driven from a single shaft, which arrangement also permits employment of a single mechanism for changing the speed of the feed devices. My improved construction and arrangement of feeders also permits a considerable diminution in the quantity of belting and gearing usually required for operating a number of feeders. The placing of the adjustable suspended troughs 34 intermediate the gins and the rigidly depending feeders permits the feeders to be elevated or shortened sufficiently to obviate their standing in the way of getting at the gins and at the same time enables the cotton to be fed to the gins without loss.

What I claim as my invention, is:

1. In an apparatus for feeding seed-cotton to gins, the combination of a pneumatic tube, means for causing an air draft through said tube, a chute or feeder communicating with the pneumatic tube and provided near its upper end with an air inlet and a trasparent panel, a valve suspended in said feeder above the said air inlet which inlet is adapted to admit air to the rear and under side of the valve, and a gate for controlling the air inlet, substantially as described.

2. In an apparatus for feeding seed-cotton to gins, the combination of a pneumatic tube provided with a valve, means for causing an air draft through said tube, a chute or feeder communicating with the pneumatic tube and provided near its upper end with a controllable air inlet, a valve suspended in said feeder above the said air inlet which is adapted to admit air to the rear and under side of the valve, and a transparent panel inserted in the wall of the feeder below said valve, substantially as described.

3. In an apparatus for feeding seed-cotton to gins, the combination with a suitable supply device, of a rigidly depending chute or feeder, feed rollers mounted in the lower end of said feeder, a valve located in the feeder above the feed rollers, and an inclined board or trough adjustably suspended beneath the feeder to deliver the cotton to the gin, said trough being capable of adjustment to allow turning back of the gin breasts to give access to the gin, substantially as described.

4. In an apparatus for feeding seed cotton to gins, the combination with a gin, a distributing box or casing, and a depending chute or feeder rigidly suspended from the distributing box or casing above the gin, of a board or trough located between the feeder and the gin, and hangers pivotally engaging the chute or feeder and suspending the board or trough so that the latter can be swung out of the way of the gins, substantially as described.

5. In an apparatus for feeding seed-cotton to gins, the combination with a gin and a rigidly depending chute or feeder suspended above the gin, of an adjustably suspended board or trough provided with a screened bottom and located intermediate the feeder and gin, substantially as described.

6. In an apparatus for feeding seed-cotton to gins, the combination of a chute or feeder, feed rollers mounted in the lower end of the feeder, and a door arranged in one side of the lower portion of the feeder above the feed rollers to permit removal of foreign substances, substantially as described.

7. In an apparatus for feeding seed-cotton to gins, the combination of a chute or feeder, a pair of feed rollers mounted in the lower end of the feeder and having their shafts provided with intermeshing spur-gears, a spur-gear and pinion loosely mounted on the shaft of one of said feed rollers, a rigidly attached spur-gear on the other feed roller shaft meshing with said pinion, a picker roller secured to a rotary shaft below the feed rollers, a clutch-pinion mounted on the picker roller shaft and meshing with the loose spur-gear on the shaft of one of the feed rollers, a clutch shifter for making said clutch-pinion fast or loose on the picker-roller shaft, and means for applying power to said picker-roller shaft, substantially as described.

8. In an apparatus for feeding seed-cotton to gins, the combination of a chute or feeder, a pair of feed rollers mounted in the lower end of said feeder, a picker-roller mounted below the feed-rollers and having its shaft geared with the feed roller shafts, a speed changing cone-pulley secured to one end of the picker-roller shaft, two pulleys mounted in elevated positions above said cone-pulley, a belt connecting said cone pulley with the elevated pulleys, a belt-tightener hung in a depending portion of said belt above the speed changing cone pulley, and means for applying power to the shaft of one of the elevated pulleys, substantially as described.

9. In an apparatus for feeding seed cotton to gins, the combination with a suitable supply device, and a series of rigidly depending chutes or feeders each having a pair of feed rollers journaled in its lower end, of a rotary shaft carrying a number of picker-rollers one of which is arranged beneath each pair of feed rollers to co-operate therewith, gearing connecting the feed roller shafts with the rotary shaft that carries the several picker-rollers, and speed-changing mechanism connected to one end of said picker-roller shaft. substantially as described.

10. In an apparatus for feeding seed-cotton to gins, the combination of a suitable supply device, a series of rigidly depending chutes or feeders having feed rollers journaled in their lower ends, a rotary shaft composed of sections connected by couplings, a picker-roller secured to each section of said shaft beneath the feed rollers of the several chutes or feeders, and gearing connecting the feed roller shafts with the shaft that carries the picker-rollers, substantially as described.

11. In an apparatus for feeding seed-cotton to gins, the combination of a series of rigidly depending chutes or feeders each having a pair of feed rollers journaled in its lower end.

a rotary shaft carrying a number of picker-rollers one of which is arranged beneath each pair of feed-rollers, intermeshing gears secured to the shafts of the feed rollers, a spur-gear and attached pinion loosely mounted on the shaft of one feed roller in each pair, a rigidly attached spur-gear mounted on the shaft of the other feed roller in each pair and meshing with said loose pinion-gear, clutch-pinions mounted on the rotary picker-roller shaft and meshing with the loose spur-gears of the feed-rollers, clutch-shifters for making said clutch-pinions fast or loose on the picker-roller shaft, and mechanism for applying power to and changing the speed of the picker-roller shaft, substantially as described.

12. In an apparatus for feeding seed-cotton to gins, the combination of a pneumatic tube having a horizontal portion provided in its under side with a longitudinal opening, a distributer-box or casing communicating with the pneumatic tube through said opening and having side air passages and a number of central screened compartments, a series of rigidly depending chutes or feeders communicating with said compartments and provided with valves and feed-rollers, a rotary picker roller shaft carrying a number of picker-rollers one of which is arranged beneath the feed rollers of each chute or feeder, gearing connecting the picker-roller shaft with the shafts of the feed rollers, mechanism connected to one end of the picker-roller shaft for applying power to said shaft and for changing its speed to vary the feed, and a number of swinging troughs suspended beneath the picker rollers—of the several rigidly depending feeders to convey the cotton to the gins, 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:
SYDNEY SMITH, Jr.,
G. KAUFMANS.