

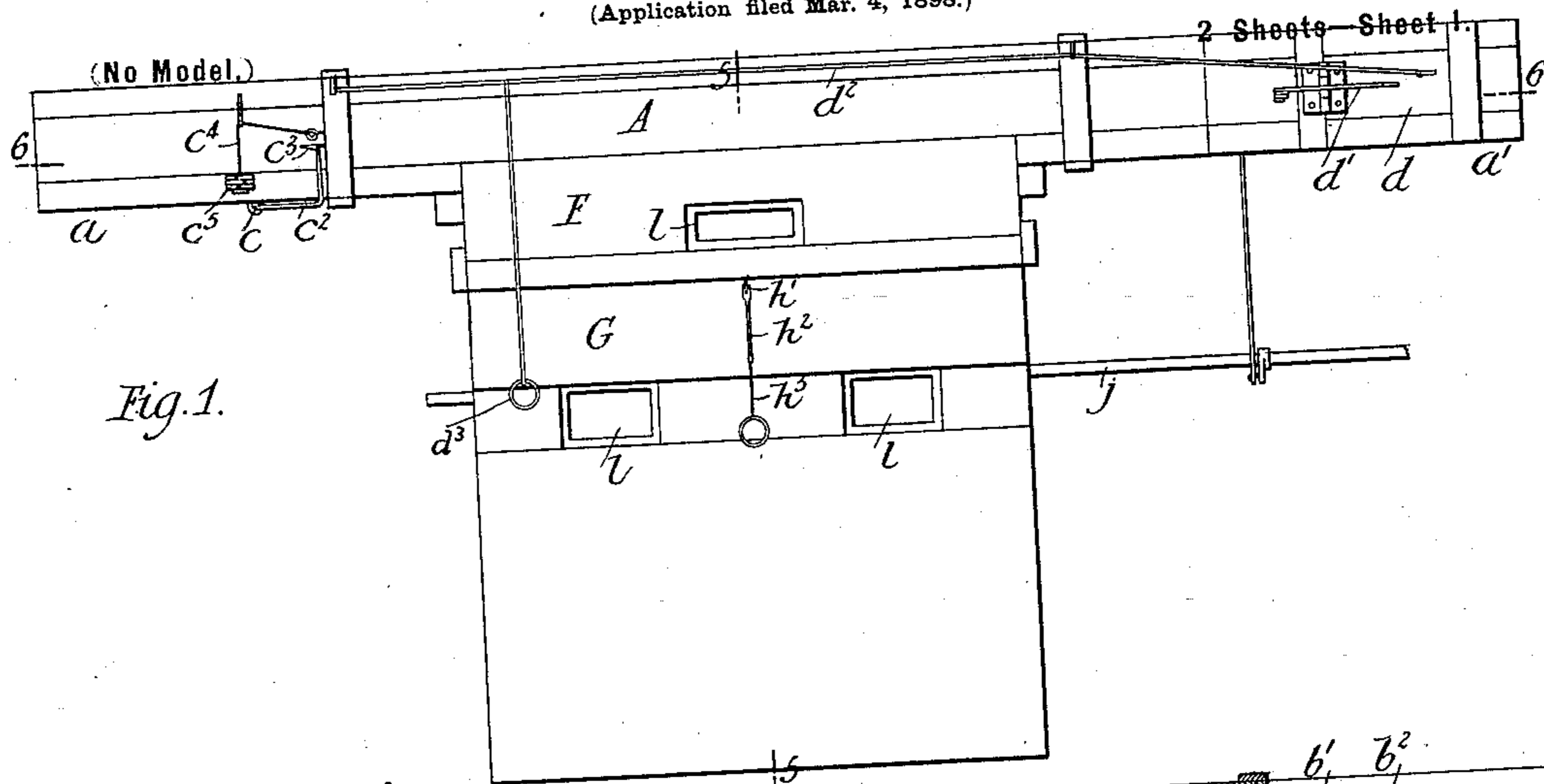
**No. 610,293.**

**Patented Sept. 6, 1898.**

H. J. WHEELER.

**AUTOMATIC COTTON ELEVATOR AND DISTRIBUTER.**

(Application filed Mar. 4, 1898.)



*Fig.1.*

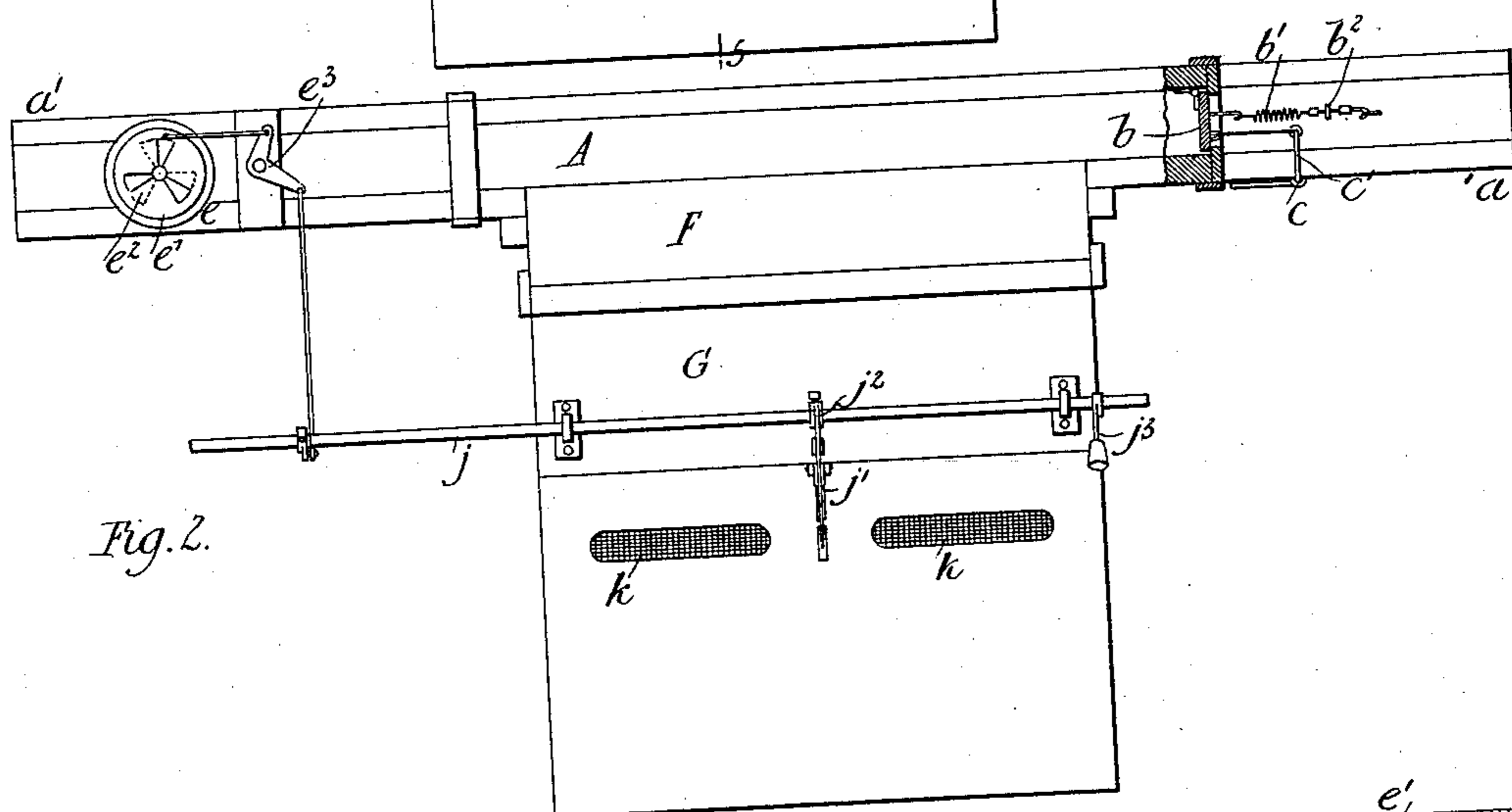


Fig. 2.

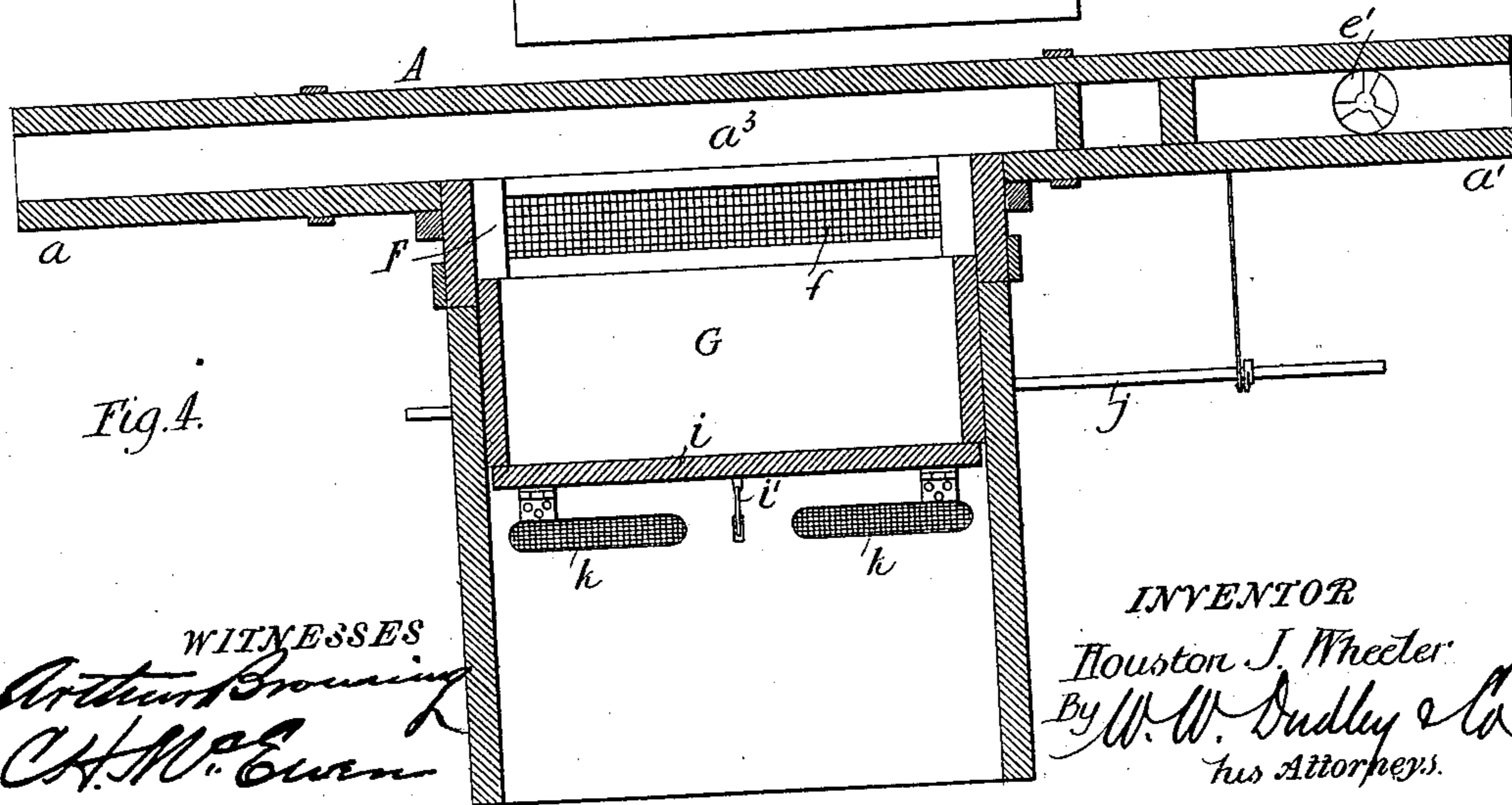


Fig. 4.

*WITNESSES*

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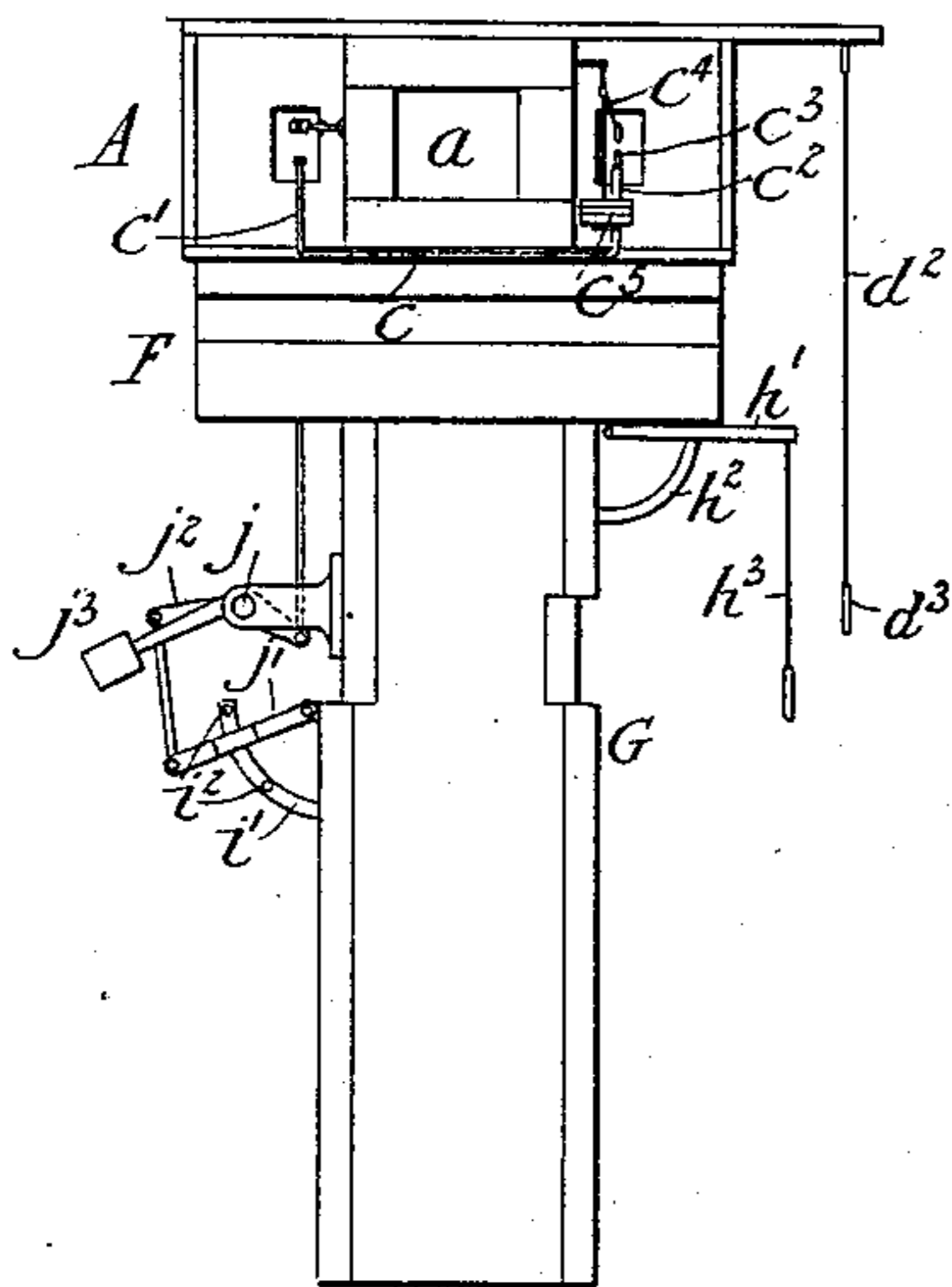


Fig. 3.

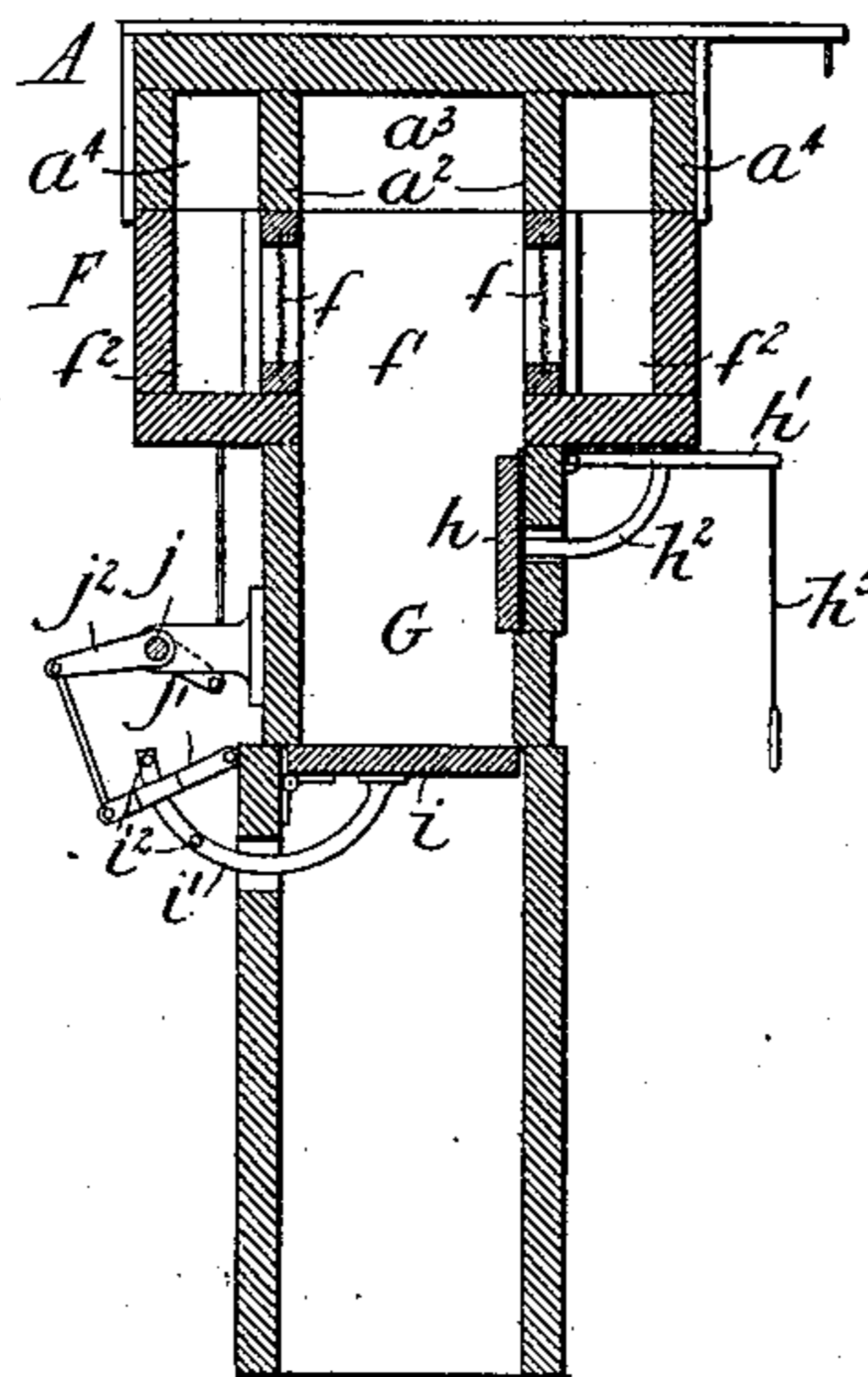


Fig. 5.

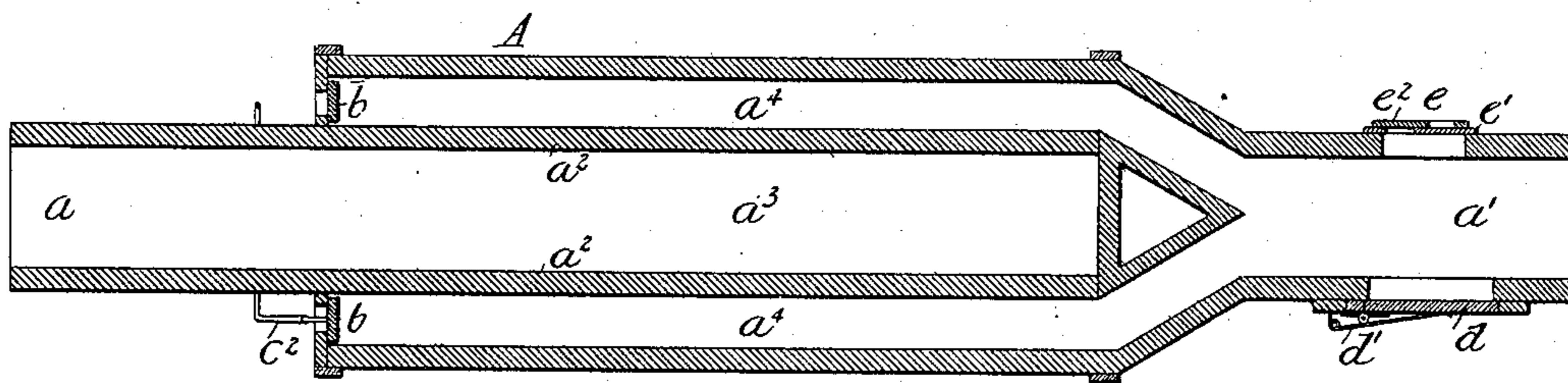


Fig. 6.

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# UNITED STATES PATENT OFFICE.

HOUSTON J. WHEELER, OF HUTCHINS, TEXAS, ASSIGNOR OF ONE-HALF TO  
BENJAMIN D. ATWELL, OF SAME PLACE.

## AUTOMATIC COTTON ELEVATOR AND DISTRIBUTER.

SPECIFICATION forming part of Letters Patent No. 610,293, dated September 6, 1898.

Application filed March 4, 1898. Serial No. 672,578. (No model.)

*To all whom it may concern:*

Be it known that I, HOUSTON J. WHEELER, a citizen of the United States, residing at Hutchins, in the county of Dallas and State of Texas, have invented certain new and useful Improvements in Automatic Cotton Elevators and Distributers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention is directed to improvements in apparatus for elevating and distributing seed-cotton, and contemplates the provision of a comparatively simple and durable appliance which obtains in operation the highest efficiency and is entirely automatic in the sense that no manual acts are necessary to the performance of its functions.

One of the objects of my invention is to secure equality in the distribution of the cotton to the gin-stands regardless of the number comprising the battery, this result being accomplished by the provision of means whereby the feeding of the stands is effected only when all of the distributing apparatus shall have been equally supplied.

Another object of my invention is to largely augment the capacity of appliances of this character by increasing the rapidity of action of its parts, this being effected by rendering the apparatus entirely automatic and continuous in its operation, and as an incident thereto the expense of time and labor is materially reduced.

Another object of my invention is the production of an apparatus in which the factors of friction and disorder are practically removed owing to the absence of gearing or other driven mechanisms, the structure being operated pneumatically and involving but few movable parts, which are in the nature of valves or the like acted upon through the action of the air or through simple connections one with the other.

The details of construction and operation of my improved apparatus are fully and clearly set forth in the following description, which

is to be read in connection with the accompanying drawings, forming a part thereof.

In the said drawings, Figure 1 is a side elevation of an automatic cotton elevating and distributing apparatus embodying my invention. Fig. 2 is an elevation, partly in section, of the opposite side thereof. Fig. 3 is an end elevation. Fig. 4 is a vertical sectional view. Fig. 5 is a vertical transverse sectional view on line 5 5 of Fig. 1. Fig. 6 is a sectional view on line 6 6 of Fig. 1.

Referring to the said drawings by letter, A denotes a conduit, to one end  $a$  of which is attached a tube (not shown) leading to the wagon or other cotton-conveyer or cotton-house, while to the other end  $a'$  of said conduit is attached the air-pipe, (also not shown,) in which is arranged a suitable exhaust-fan. Intermediate of its ends the conduit is separated by longitudinal vertical partitions  $a^2 a^2$  into a central passage  $a^3$  of the same transverse area of and in open communication at one end with the conduit end  $a$ , the other end of the passage being closed, and into two side passages  $a^4 a^4$ , each having a transverse area equal, approximately, to one-half of the area of the passage  $a^3$  and having open communication at one end with the conduit end  $a'$ . To afford the side passages  $a^4$ , the conduit is centrally enlarged, the enlargement tapering at the end toward the fan connection to lessen friction on the air-currents and being squared at the other end, which is the terminus of the side passages, where openings are made which are normally closed by hinged valves  $b$ , openable inwardly against the action of coiled springs  $b'$ , the tension of the springs being controlled by regulating screws and nuts  $b^2$ .

$c$  denotes a rock-shaft journaled on the under side of the conduit adjacent to the valve-openings and provided with arms, one of which,  $c'$ , is flexibly connected with a valve  $b$ , and the other of which,  $c^2$ , is normally in engagement with a hook  $c^3$ , carried by the other valve  $b$ . To the latter valve is attached a cord or chain  $c^4$ , which is passed through an eye on the conduit and supports an adjustable weight  $c^5$ . At one side of the end  $a'$  of the conduit is an opening controlled by a valve  $d$  of the hinged type, a spring  $d'$  being em-

ployed to maintain the normal closed condition of the said valve. The means employed for opening the valve consist of a cord or chain  $d^2$ , connected at one end to the valve  
 5 and at the other end to an arm secured to the conduit near its opposite end, the cord or chain being provided with a depending section, to which is attached a handhold  $d^3$ . At the opposite side of the end  $a'$  of the conduit  
 10 is an opening over which is arranged a valve  $e$ , consisting of a radially-slotted plate  $e'$ , and over said plate is a similarly-slotted rotatable disk  $e^2$ , which is moved to open and close the plate-slots through rod connection  
 15 with a bell-crank lever  $e^3$ , the lever being operated through means presently to be described.

Immediately beneath the conduit is a casing  $F$ , which is longitudinally separated by  
 20 partitions  $f$  into a central chamber  $f'$ , which opens into the conduit-passage  $a^3$  and into side chambers or passages  $f^2$ , which open into the passages  $a^4$ , the partitions  $f$  being screens which are inserted to be readily re-  
 25 moved for cleaning and other purposes. The casing  $F$ , which supports the conduit, has the same transverse diameter as the latter, and the screens  $f$  are in vertical alinement with the conduit-partitions, so that passages in the  
 30 one are in register with the chambers of the other, and communication is established between the central conduit-passage and the side passages through the casing-screens  $f$ . The side chambers  $f^2$  of the casing are closed  
 35 at the bottom; but the central chamber  $f'$  is open to the upper end of a receptacle  $G$ , which is in the nature of a casing having a length equal to that of the casing  $F$ , but having a width or transverse dimension somewhat less  
 40 than that of the latter.

At the upper end of the receptacle is a valve  $h$ , hinged at one side and normally opened. The means employed for raising this valve to close the opening at the upper end of the re-  
 45 ceptacle consists of a pivoted lever  $h'$  and a curved arm  $h^2$ , connecting the lever and valve and movable in a slot in the receptacle-wall.  $h^3$  is a hand-cord for raising the valve to its closed position. Below the valve  $h$  the re-  
 50 ceptacle is widened slightly to afford a seat for a valve  $i$ , which is normally raised by the action of the exhaust to close the receptacle and afford a support for the cotton and is lowered to allow the cotton to discharge by  
 55 the weight of this material. As will presently appear, the action of the valve  $i$  is influenced by that of the valve  $e$ , and means are employed for operatively connecting the valves together, consisting of a rock-shaft  $j$ ,  
 60 journaled in bracket-bearings on the receptacle and having arm-and-rod connection with the bell-crank lever  $e^3$  and a similar connection with a curved arm  $i'$ , carried by the valve  
 65  $i$  and movable in a slot in the receptacle-wall. The arm  $i'$  is provided with projections  $i^2$ , and between the projections the arm is movably confined in a slot in an arm  $j'$ , pivoted

at one end to said wall and having rod connection at its other end with an arm  $j^2$  on the rock-shaft  $j$ . 70

$j^3$  is a weighted arm carried by the rock-shaft to counterbalance the valve  $i$ . In one of the receptacle-walls below the valve  $i$  are screened openings  $k$ , through which air is admitted. 75

$l$  are sight-openings covered with glass to allow of inspection by the operator.

The operation of the apparatus is as follows: The apparatus illustrated in the drawings is for a single gin-stand, and obviously 80 where a battery is employed there will be an equal number of connected apparatus, the first of which will have tube connection with the cotton-wagon and the last of which will have pipe connection with the exhaust-fan. 85 The wagon being brought beneath the tube and the exhaust-fan set in motion the cotton is drawn into the conduit and through the central passage until it reaches the point directly over the casing, when owing to the 90 division of the air-currents the cotton is thrown downward onto the valve  $i$ , which, as previously stated, is maintained in its raised position by the action of the exhaust. The air after leaving the central passage passes 95 through the screens into the casing side chambers and from thence through the side passages of the conduit to the fan. The accumulation of cotton in the receptacle and the central chamber of the casing results in the 100 screens becoming clogged against the passage of air therethrough, and where a series of apparatus are employed the cotton will pass to the next in order until the same is filled, and so on until all have been equally sup- 105 plied. The clogging or choking of the screens prevents the passage of air by the usual channel, and the vacuum created in the side chambers and passages causes the valves  $b$  to open and admit air, the result being that 110 the vacuum is relieved sufficiently to overcome its effect on the valve  $i$ , which latter opening by the weight of the cotton allows the latter to pass downward through the receptacle and into the gin-stands. The move- 115 ment of the valve  $i$  through the described interconnection with the valve  $e$  causes the latter valve to open and further relieve the vacuum, the result being that the valve  $i$  is further opened to permit the discharge of the 120 entire contents of the receptacle. Said valve  $i$  being now relieved of the weight of the cotton is raised partly by the counterbalancing-weight and partly by the inrush of air through the openings  $k$ , and the action of the weight 125 results in the closure of the valve  $e$ . The vacuum produced in the side chambers and passages by the clogging of the screens has the initial effect of opening the valves  $b$  to only a slight extent, or sufficiently to cause 130 the shaft  $c$  to rock and disengage its arm  $c^2$  from the hook  $c^3$ , after which the valves are widely opened. As soon as the contents of the receptacle shall have been discharged and the

5 screens are again open the air is permitted to pass into the apparatus through the central channel, the result being, as before stated, that the valve *i* is again raised to its seat, and in addition the coiled springs *b'* act upon the valves *b* to close them, after which the apparatus is again in condition to be supplied. Obviously where a number of gin-stands and apparatus therefor are employed the conduit and rock-shaft must extend the length of the battery. In this manner, although the apparatus are supplied successively, the discharge of the contents of all is simultaneous, and each gin-stand is fed with an equal quantity of cotton. In the event that the quantity of cotton is insufficient to fill the apparatus and thereby prevent the automatic discharge thereof, the operator by a pull on the cord or chain *d'* opens the valve *d* and admits through the opening a sufficient quantity of air to relieve the vacuum and allow the valve *i* to open and discharge the contents of the receptacle. The weight *c'* is made adjustable in order to regulate the resistance of the valves *b* to the pressure of the exhaust. By raising the valve *h* of any one of the apparatus the cotton is thereby shut out from the respective gin-stand.

From the foregoing it will be observed that my improved apparatus is entirely automatic in operation, that the movable parts are dependent in their action entirely upon the exhaust and upon no extraneous operating mechanisms, and that by my invention it is possible to connect a battery consisting of a large number of stands in such a manner as to obtain in a rapid and efficient way and without manual attendance or labor the distribution to the stands simultaneously of equal quantities of cotton and to accomplish such result without liability of interruption due to improper working or disorder of any of its parts. The apparatus, moreover, is simple in its construction, and hence cheaply made, may be knocked down into a small compass for transportation and readily set up, requires no skilled attendance either for its installation or maintenance, and there being no driven parts other than the exhaust-fan but a comparatively small power is necessary to its operation.

I claim as my invention—

1. In an apparatus of the character described, the combination of a conduit having a passage for the material, and a side passage connected with an exhaust, a relief-valve at the exhaust end of the side passage, a pneumatically-controlled valve at its opposite end, a receptacle beneath the passage for the material having a screened passage leading to the side passage, a valve in said receptacle controlled by the exhaust, and a connection between said latter valve and the relief-valve, substantially as described.

2. In an apparatus of the character described, the combination of a conduit having a passage for the material, and a side passage

connected with an exhaust, a relief-valve at the exhaust end of the side passage, a series of receptacles beneath the passage for the material having screened passages leading to the side passage, a pneumatically-controlled valve in the side passage at each receptacle, a valve in each receptacle normally raised by the action of the exhaust to afford a support for the material, and a connection between the receptacle-valve and the relief-valve, substantially as described.

3. In an apparatus of the character described, the combination of a conduit having a passage for the material, and a side passage connected with an exhaust, a relief-valve at the exhaust end of the side passage, a pneumatically-controlled valve at its opposite end, a receptacle beneath the passage for the material having a screened passage leading to the side passage, a hand-operated valve in said receptacle, a pneumatically-controlled valve in the receptacle below the hand-valve, and a connection between the relief-valve and the pneumatically-controlled receptacle-valve, substantially as described.

4. In an apparatus of the character described, the combination of a conduit having a central passage closed at one end and open at its other end for the reception of the material and side passages commonly connected at one end to an exhaust and provided at their other end with pneumatically-controlled valved openings, a relief-valve at one side of the exhaust end of the side passages, a hand-valve at the opposite side of said end, a receptacle beneath the conduit divided by removable screen-partitions into a central chamber opening into the central passage and into side chambers opening into the side passages, a pneumatically-controlled valve in the central chamber normally raised to afford a support for the material, and a connection between said latter valve and the relief-valve, substantially as described.

5. In an apparatus of the character described, the combination of a conduit having the three passages and the valves as set forth, of a receptacle beneath the conduit having removable screen-partitions dividing the same into three chambers which register with the conduit-passages, a hand-operated valve in the central chamber, a pneumatically-controlled valve in said chamber below the hand-valve and normally raised by the action of the exhaust to afford a support for the cotton, and screened openings for air below said valve, substantially as described.

6. In an apparatus of the character described, a conduit having a central passage closed at its inner end and open at its outer end to receive the material, and having two side passages merged at one end into a passage connected with an exhaust and having openings at their other end, valves at said openings normally closed by the action of adjustable springs, a rock-shaft carrying arms one of which is connected with a valve and

the other of which is in normal engagement with a hook on the other valve, and a weight for the latter valve, substantially as described.

5 7. In an apparatus of the character described, the combination of a conduit having a passage for the material and a side passage connected with an exhaust, a relief-valve in said side passage consisting of a radially-slotted disk rotatably mounted on a radially-  
10 slotted plate, a receptacle for the cotton beneath the conduit, a hinged valve in said

receptacle affording a support for the cotton, a rock-shaft, connections between the receptacle-valve and the shaft and between the shaft and relief-valve, and a weighted arm carried by the shaft substantially as described. 15

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

HOUSTON J. WHEELER.

Witnesses:

F. M. MITCHELL,  
K. A. RAWLINS.