(No Model.) 2 Sheets—Sheet 1.

A. D. THOMAS.

PNEUMATIC APPARATUS FOR HANDLING SEED COTTON.

No. 418,087. Patented Dec. 24, 1889.

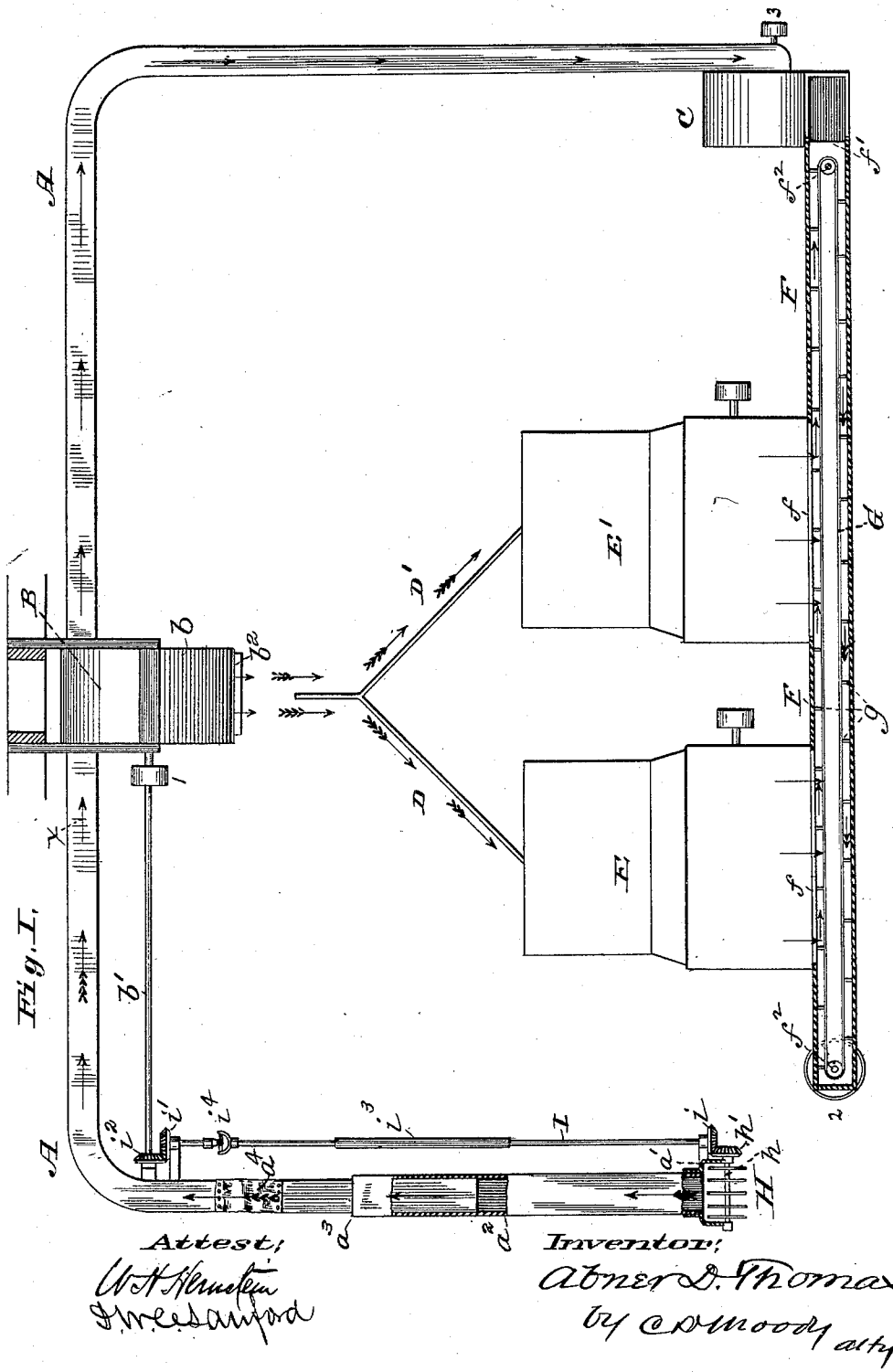


Fig. I.

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N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

A. D. THOMAS.

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Fig. 2.

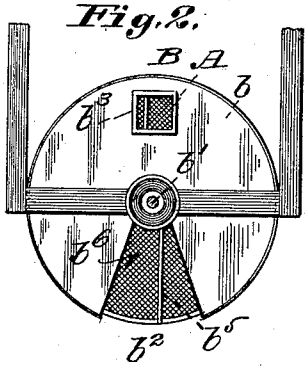


Fig. 3.

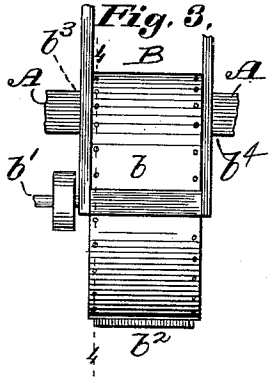


Fig. 4.

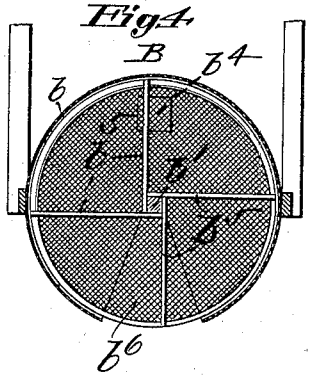


Fig. 5.

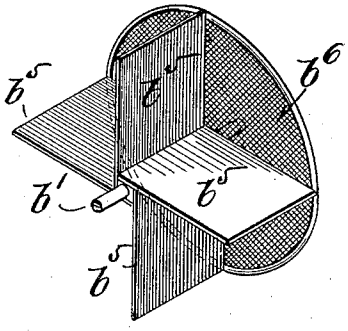


Fig. 6.

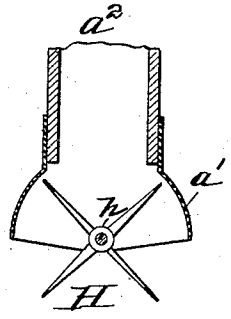
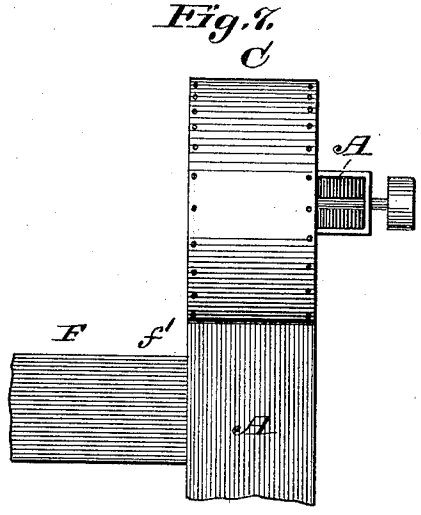


Fig. 7.



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UNITED STATES PATENT OFFICE.

ABNER D. THOMAS, OF LITTLE ROCK, ARKANSAS.

PNEUMATIC APPARATUS FOR HANDLING SEED-COTTON.

SPECIFICATION forming part of Letters Patent No. 418,087, dated December 24, 1889.

Application filed February 19, 1889. Serial No. 300,438. (No model.)

To all whom it may concern:

Be it known that I, ABNER D. THOMAS, of Little Rock, Arkansas, have made a new and useful Improvement in Pneumatic Apparatus for Handling Seed-Cotton, of which the following is a full, clear, and exact description.

This improvement when fully carried out includes a pneumatic tube or flue, an exhaust-fan, one or more gin-stands, mechanism for facilitating the delivery of the seed-cotton into the tube or flue, a cut-off arranged in the tube or flue in front or in advance of the exhaust-fan and adapted to direct the seed-cotton which is being drawn along the tube or flue by means of the exhaust-fan out of the tube or flue and to or toward the gin-stands, and a flue leading from the gin-stands and adapted for the transmission of the cotton-seed therefrom into an extension of the pneumatic tube or flue beyond the exhaust-fan, and in operating the mechanism the fan may also serve to effect the discharge of the cotton-seed from the gin-stands; and the improvement consists partly in the means for facilitating and regulating the delivery of the seed-cotton into the tube or flue, partly in the construction of the cut-off, and partly in the means for discharging the cotton-seed, substantially as is hereinafter set forth and claimed, aided by the annexed drawings, making part of this specification, in which—

Figure 1 is an elevation of the improved mechanism substantially as it appears when all the features thereof are employed, portions of the flues being in section; Fig. 2, a side elevation, looking toward its receiving side, of the cut-off; Fig. 3, an edge elevation of the cut-off; Fig. 4, a vertical section on the line 4 4 of Fig. 3; Fig. 5, a view in perspective of the revolving portion of the cut-off; Fig. 6, a vertical section at the foot of the pneumatic tube or flue; and Fig. 7, a plan of the fan, including the end of the cotton-seed flue. The last six named views are upon an enlarged scale.

The same letters of reference denote the same parts.

A, Figs. 1, 2, 3, and 7, represents the pneumatic flue. It is supposed to lead from the point from which the seed-cotton is taken. The point may be more or less remote from the position of the cut-off B, which is inserted crosswise in the flue to intercept the inflowing cotton-current (indicated by the arrow *x*, Fig. 1) caused by the action of the blower C, which in turn is connected with the flue A at a point farther along therein. The cut-off is essentially a case *b*, connected above, where the shaft *b'* is journaled therein with the flue A, and below the position of the shaft *b'* having an opening b^2, Figs. 1, 2, 3, and 4, through which the seed-cotton is discharged from the case. The opening on the front side of the case *b*, with which the flue A connects, is shown at b^3, Figs. 2 and 3, and there is a similar opening b^4, Figs. 3 and 4, upon the opposite side of the case to establish a connection with that portion of the flue A which is beyond the cut-off. The opening b^4 is also above the shaft *b'*, and preferably directly opposite the opening b^3, as shown. The case contains a peculiarly-constructed part adapted to be rotated within the case. It is composed substantially of the shaft *b'*, provided with the vanes b^5, which radiate from the shaft, and the open-work part or screen b^6, which is attached to the shaft toward the farther end thereof and against the vanes, substantially as shown. The shaft is journaled in the case and the vanes extend outward from the shaft so as to reach the case and form a practically air-tight joint therewith both at the side and top of the case.

Now, a screen has hitherto been used in a seed-cotton-conveyer flue, as well as a revolving cut-off; but the novel feature mainly in the present cut-off is making the screen b^6 to rotate with the series of vanes. As hitherto made the screen has been a fixture, and in consequence the cotton entering the case is liable to be sucked against the farther opening b^4, so as to clog a large portion of it. The cotton will encounter the screen, and by reason of the air-blast will continue to adhere thereto, and thus quite a portion of the exit b^4 is practically closed. This both prevents the air-current from acting to advantage, and also diminishes the opportunity for the dust to escape from the cut-off into the flue beyond. This difficulty is largely obvi

ated by the use of a revolving screen such as here shown, for as soon as any portion of the screen in its revolution passes the opening b^4 any cotton which may have caught thereon is loosened and falls through the opening b^2 in the bottom of the case. The screen is thus cleaned at every revolution thereof, and thus the air-exhaust can be maintained to better advantage and a better outlet for the dust be provided.

The seed-cotton by any suitable means—such as the chutes D D′, Fig. 1—is delivered from the cut-off to one or more gin-stands E E′, which are constructed and operated in the usual manner.

F represents a flue leading from the gin-stands to the blower C. It is air-tight, saving at the points $f\,f$, at which it receives the cotton-seed from the gin-stands, and at its end f', where it connects with the blower. An endless belt G, Fig. 1, is arranged within the flue F for the purpose of delivering the cotton-seed from the gin-stands to the blower. The belt is carried around suitable rollers $f^2\,f^2$, and it is moved by any suitable means—that is, the bearings $f^2\,f^2$ are in practice pulleys mounted, respectively, upon shafts, one of which extends to without the flue F, and is provided with a pulley v, to be driven from any suitable source of power. It is provided with strips g, which extend from the belt so as practically to form an air-tight joint with the shell of the flue F, and thus prevent the blower from practically drawing air from the direction of the flue F. The operation is then as follows: The blower acts to draw the seed-cotton to the cut-off, which in turn in its revolution effects the transfer of the seed-cotton to the gin-stands. The belt G effects the transfer of the cotton-seed to the blower, and the blower, in addition to transferring the seed-cotton, as described, and to drawing the dust from the cut-off farther along into the flue A, and, if desired, to and past the blower, also acts to expel the cotton-seed and dust to any point of delivery more or less remote from the blower by means of an extension of the flue A beyond the blower. So far as the special form of cut-off is concerned, it is practicable to operate it in connection with an air-exhaust current which is independent of any connection leading from the gin-stands for the purpose of removing the cotton-seed therefrom; and, on the other hand, no special form of cut-off must be used to enable the seed-cotton to be drawn to or toward the gin-stands and the cotton-seed to be discharged from the gin-stands by means of a single blower. The best results, however, seem to be attained with the cut-off shown and with the single blower working as described.

An additional feature of the improvement remains to be described.

A portion of the power of the exhaust-fan is liable to be wasted by reason of a large quantity of the seed-cotton being introduced suddenly into the pneumatic tube. This difficulty is partially, if not wholly, overcome by means of a device, the preferable form of which is shown in Figs. 1 and 6.

H represents a revolving rake, whose shaft h is journaled in the foot a' of the leg a^2 of the tube A, and is provided with bevel-gear h'. The leg a^2 by means of the telescoping joint a^3 can be lengthened and shortened, and by introducing a flexible portion a^4 into it the leg a^2 can be turned in any direction. The gear h' engages with a bevel-gear i upon the lower end of a shaft I, which at its upper end is provided with another bevel-gear i', that engages with a bevel-gear i^2 upon the shaft b' of the cut-off. The shaft I is made extensible at i^3, and at i^4 a universal joint is introduced into it. By this means not only can the rake be rotated, but it can be operated as the leg a^2 of the tube A is moved around to reach the seed-cotton, which is usually drawn from a wagon-bed or other place requiring the use of an adjustable leg. The rake loosens and catches the seed-cotton and carries it to be fed into the tube A at a rate which does not exceed the capacity of the tube. This rake is useful in other devices than those used in baling cotton. Any other equivalent device can be substituted for the revolving rake for directing and regulating the delivery of the material into the tube A.

The pulleys shown upon the shaft b' and the blower-shaft, respectively, are to receive belts to enable power to be transmitted and said shafts rotated when desired.

I claim—

1. The combination of the pneumatic tube, a cut-off in said tube, the blower, the gin-stands, the flue leading from the gin-stands to the blower, and the carrying-belt within said flue, substantially as described.

2. The combination of the pneumatic tube, the blower, and the cut-off, said cut-off consisting substantially of a case connected with said tube and having an outlet for the seed-cotton and containing a rotating valve consisting of a shaft, vanes, and screen, said screen rotating with said vanes, substantially as described.

3. The combination of the blower, the pneumatic tube, the cut-off, and the revolving rake, said rake being journaled in the leg of said tube, substantially as described.

Witness my hand this 31st day of January, 1889.

ABNER D. THOMAS.

Witnesses:
L. B. McDONALD,
B. L. WILLIAMSON.