No. 679,635. Patented July 30, 1901.

C. E. PARKER.

FEEDING DEVICE FOR COTTON PRESSES, &c.

(Application filed Dec. 31, 1900.)

(No Model.) 2 Sheets—Sheet 1.

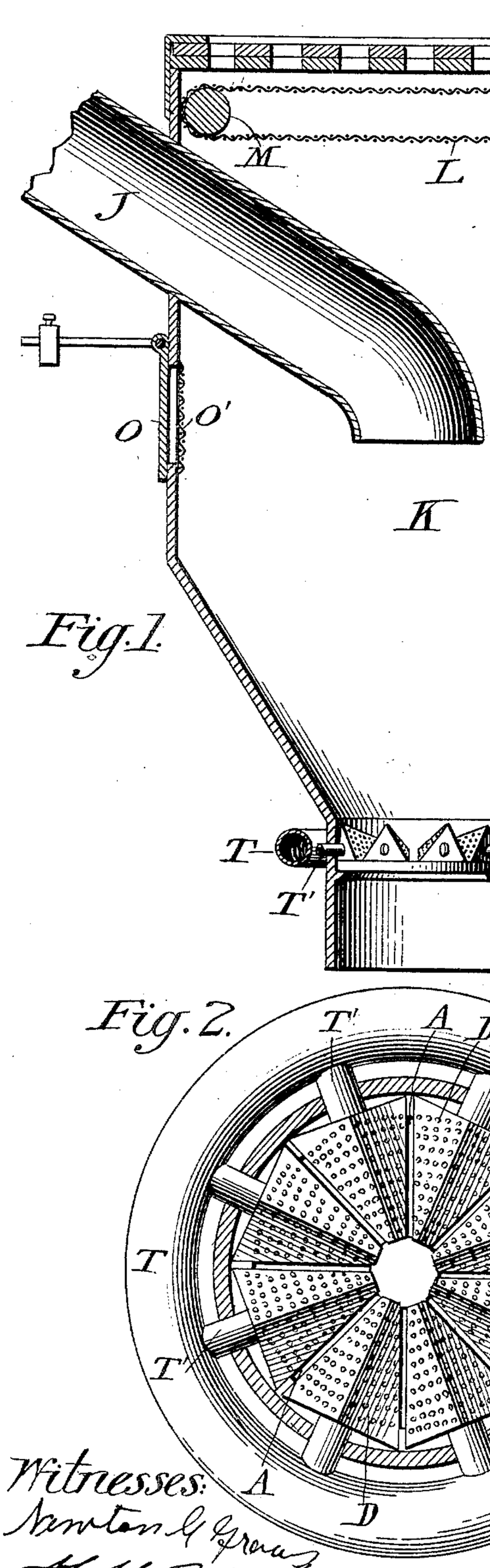


Fig. 1.

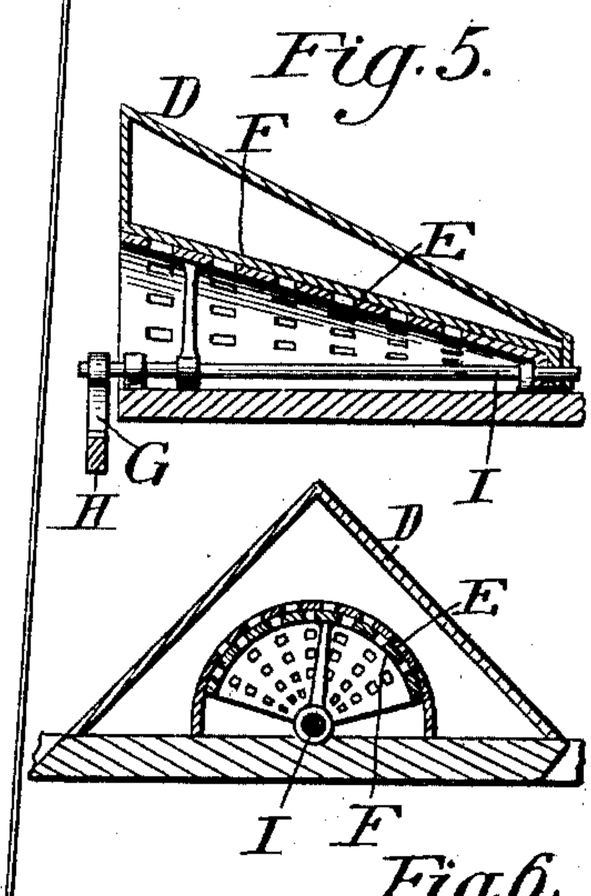


Fig. 5.

Fig. 6.

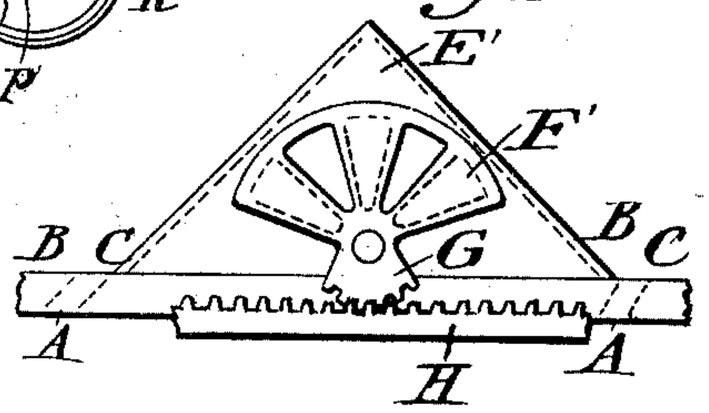


Fig. 7.

Fig. 2.

Witnesses:
Newton L. Grow
H. H. Burton

Inventor:
Chas. E. Parker.

No. 679,635. Patented July 30, 1901.

C. E. PARKER.

FEEDING DEVICE FOR COTTON PRESSES, &c.

(Application filed Dec. 31, 1900.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 3.

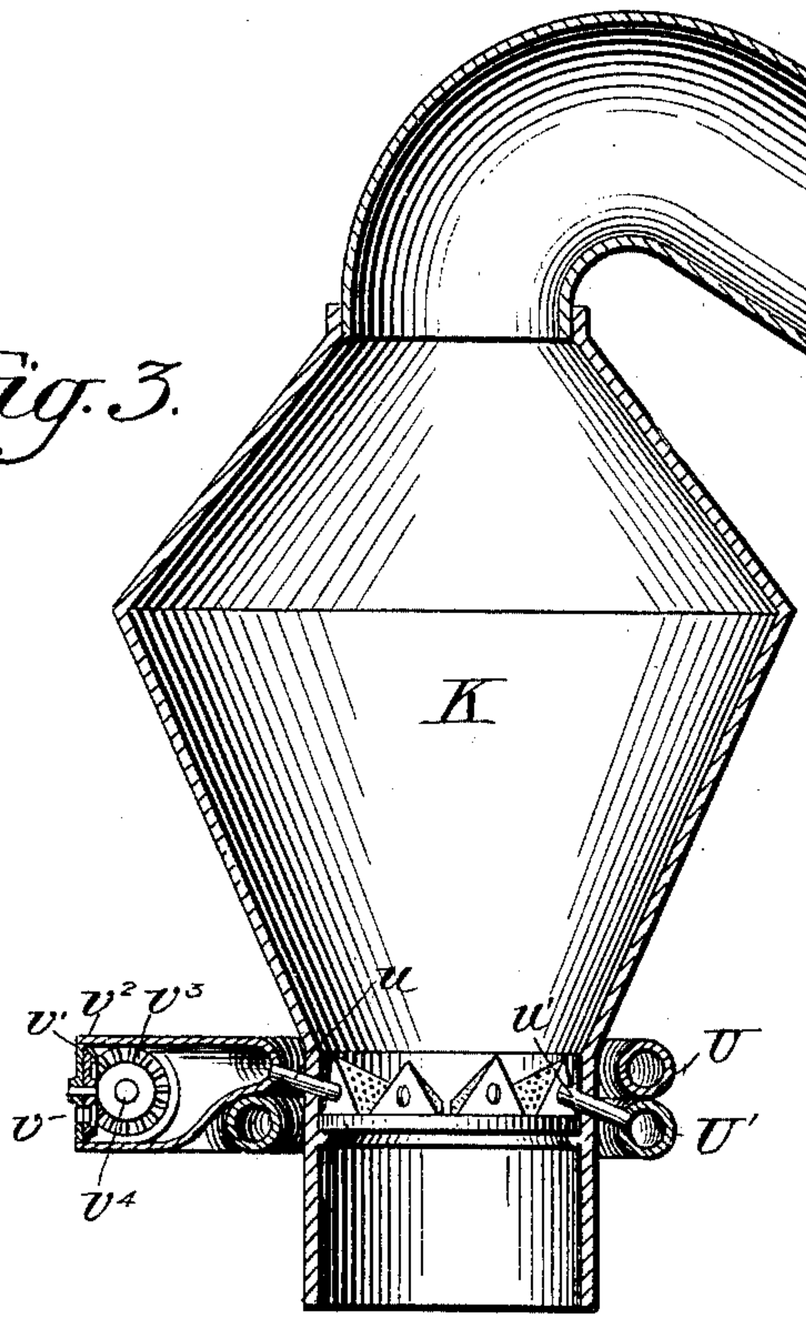
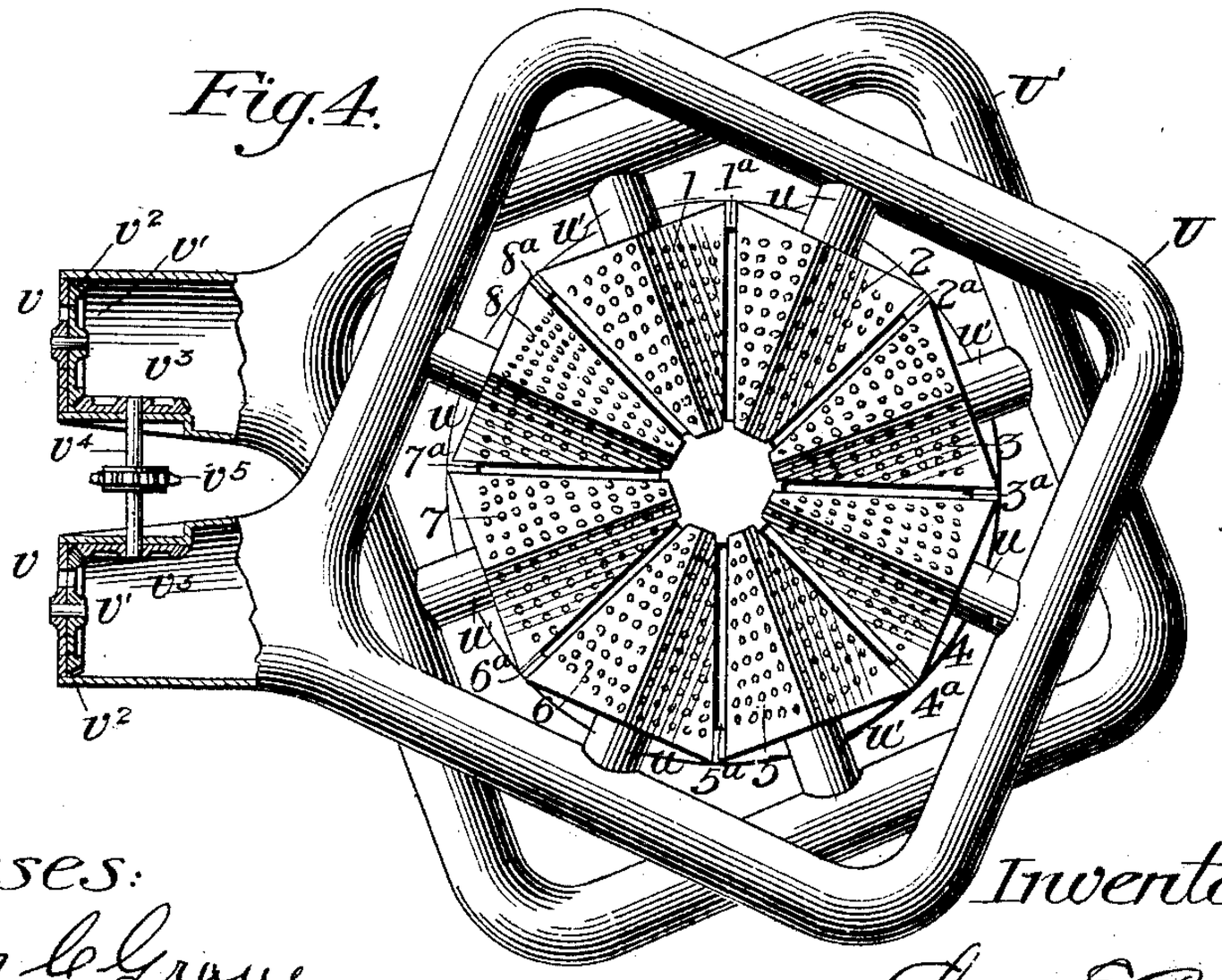


Fig. 4.



Witnesses:
Marion L. Graves
H. H. Burton

Inventor.
Chas. E. Parker,

UNITED STATES PATENT OFFICE.

CHARLES E. PARKER, OF ORANGE, NEW JERSEY.

FEEDING DEVICE FOR COTTON-PRESSES, &c.

SPECIFICATION forming part of Letters Patent No. 679,635, dated July 30, 1901.

Application filed December 31, 1900. Serial No. 41,560. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. PARKER, a citizen of the United States, residing at 150 Alden street, Orange, in the county of Essex and State of New Jersey, have invented a new and useful Feeding Device for Presses for Cotton and Similar Fibrous Material, of which the following is a specification.

This invention is subordinate to that disclosed in my applications, Serial Nos. 41,558 and 41,559, filed on even date herewith.

In application Serial No. 41,558 I have disclosed a mechanism for forming and delivering a substantially uniform bat or layer of cotton or similar fibrous material, and I have therein stated that such continuous bat or layer might be delivered to any suitable mechanism in or by which it may be wound or laid in a form to facilitate further treatment or handling or transportation, but that the invention was not limited for use in connection with any of the forms of mechanism referred to or illustrated.

In application Serial No. 41,559 I have disclosed a type of press to which my broad invention is particularly applicable—viz., the Lowry round-bale press—such as is fully disclosed in the patent to George A. Lowry, No. 630,369, dated August 8, 1889, (although I have stated in said application that the invention is also applicable to a type of square-bale press operating to form a bale of layers lapped back and forth under heavy pressure, provided said square-bale press has a head with a feeding-slot one or both of the edges of which may be provided with my feeding device,) and I have in said application disclosed how the invention is to be applied to the Lowry round-bale press to meet the peculiar requirements of the operation of such press. I have stated in said application that when my invention is applied and adapted to the Lowry round-bale press the foraminous surface or surfaces upon which the layer or layers of cotton is or are pneumatically deposited should be interposed in a current of air that is to be pulsated, said current being created either by a suction or exhaust fan or pump in the rear of said surface or by the gin or gins from which the cotton is supplied to said press, or by both agencies combined. I have in said application disclosed means for creating said current by either of said agencies; but I have not therein limited myself in the broadest claim to either of said agencies for producing the current. I have, however, claimed therein specifically means for creating said current by suction and have claimed the particular means necessary to the proper pulsation of a current produced by suction. I desire in certain instances, however, to create said current entirely through the agency of an air-blast-producing means, preferably from the gin brush or brushes. I therefore disclose and claim such matter in this application.

The object of my invention is to feed to the Lowry round-bale press, provided with one or more radial feeding-slots, a layer or quantity of material for each feeding-slot, which layer or quantity shall extend from one end of the feeding-slot to the other and throughout such extent shall where the slot delivers the cotton to the compressed mass be of uniform density and thickness, so that each layer of the complete bale will be of uniform density from center to circumference, as will be hereinafter fully described.

My invention therefore as set forth in this application consists of a chamber or receiver of any desired form and an abutment having a feeding passage or passages through which material is delivered to said chamber or receiver, means to impart relative rotation to said chamber or receiver and abutment, means to deliver fibrous material in operative proximity to the feeding passage or passages of the abutment by means of a blast of air from the gin or gins, and means to intermittently discharge or pulsate or intermittently interrupt said air-blast.

In the accompanying drawings, Figure 1 is a sectional view of the chamber into which cotton is delivered by a blast of air created by the gin-brushes and which communicates with the head-plate of a Lowry round-bale press having my improvements applied thereto. Fig. 2 is a plan view of the head-plate of said press provided with my improvements. Fig. 3 is a sectional view of another construction of cotton-receiving chamber with a modified arrangement of blast-discharge at the head-plate of the press. Fig. 4 is a plan view of the head-plate of said press provided with

said modified arrangement of blast-discharge. Fig. 5 is a sectional view of a shed having a blast-discharging valve therein. Fig. 6 is a sectional view of the shed provided with said form of valve taken just inside the periphery and looking inward, and Fig. 7 is an illustration of a shed provided with an external blast-discharging valve.

In my application Serial No. 41,559 I have described the operation of the Lowry press, which, however, is fully disclosed in the patent to George A. Lowry, No. 630,369, above referred to. It is therefore unnecessary to repeat that description here. I have also in said application stated that an ideal Lowry bale is one in which each layer is of uniform density from center to circumference and wherein each layer is of uniform density with every other layer. I have also therein stated why I consider a pneumatic feed the ideal one for insuring the disposition of cotton in a Lowry bale in a layer of uniform density and have stated why a continuous or uninterrupted pneumatic feed is not effective in securing a Lowry bale of uniform density throughout. I have therein shown how such a bale—that is, a Lowry bale of uniform density throughout—may be produced by pneumatically depositing the cotton upon a foraminous surface and by pulsating or intermittently breaking the current of air by which the cotton is deposited, or, in other words, by intermittently altering or pulsating the degree of pressure of air through said surface. It is therefore unnecessary to repeat such matter in detail in this application. I have in said application stated that when the current of air that is to be pulsated is produced by suction or is augmented by suction it is not necessary that at any given instant of time the quantity of cotton next to be deposited be just sufficient to supply the denuded portions of the various foraminous surfaces and that the pulsations be so timed that enough foraminous surface be denuded to accommodate all the cotton that would be deposited at such instant, but that when a blast, created preferably by the gin or gins, is relied upon to carry forward the cotton and to deposit it upon the foraminous surfaces, which blast is to be pulsated, it is essential that denuded portions of the foraminous surfaces be presented fast enough to accommodate and receive all the descending cotton.

Since in this application I disclose and claim only means for pneumatically depositing cotton upon the head-plate by a blast of air created, preferably, by the gin or gins, as by the brushes thereof, which blast of air is to be pulsated, and since such blast of air is of considerable volume, I have found it necessary to devise means for accommodating and discharging all of said blast, so that it may not react upon the gin-brushes and interfere with the proper action of the gin. The mechanism disclosed and specifically claimed in my application Serial No. 41,559 is therefore modified and supplemented, as will be specifically described. It is necessary when the cotton is pneumatically deposited by an air-blast and said blast is not augmented by suction to deposit the cotton as close as possible to the feeding slot or slots or to employ either gravity or a mechanical feeder, or both, to assist the feeding of the cotton to the slot or slots. It is also essential that I provide as great a foraminous surface as possible for the discharge of the air-blast, such foraminous surface being as near as possible to the slots, unless, as just stated, I employ either gravity or a mechanical feeder, or both, to assist the feeding of the cotton to the slot or slots. I have found that these conditions are best met by forming between adjacent feeding-slots of the head-plate a shed, preferably such as shown in section in Fig. 6, and covering all the space between said slots and by forming the entire surface of said shed (except the outer end) as a foraminous surface. I have also provided additional means, to be specifically described, for permitting the escape of a portion of the air when the air-blast is pulsated as a whole, as will be specifically described.

I may employ an individual blast-pulsating valve for each shed, as shown in Figs. 5, 6, and 7, or I may employ one blast-pulsating valve which is common to all the sheds, as shown in Figs. 1 and 2, or I may provide two blast-pulsating valves, each controlling the discharge of the blast through four of the sheds, as shown in Fig. 4. Further modifications of the system shown in said Fig. 4 are obvious.

In all the views of the drawings corresponding parts are indicated by the same letters of reference.

A indicates a feeding-slot in the head-plate of a Lowry round-bale press; but my invention may be adapted to various forms of head-plate of this type of press.

B and C indicate the edges of the slot, B being the working edge thereof. Between adjacent slots I dispose a shed D, which I show as having two faces, one sloping to one feeding-slot and the other face sloping to the other feeding-slot, the shed being thus triangular in cross-section. The shed may, however, in cross-section be a triangle of any other desired form or be curved or be of any desired polygonal shape. As shown, the face of each shed is of substantially triangular formation, so that were the sheds extended to the exact center of the head-plate each would there terminate in a point. Since in the Lowry round-bale press the amount of cotton drawn in at any point along a feeding-slot is proportional to the distance of that point from the axis of the bale, the amount increasing toward the outer end of the slot, I have formed the feeding-face of the sheds triangular, as shown, so that the layer of cotton deposited on each face may (in the substantially continuous formation thereof and the sub-

stantially continuous feeding thereof into the press) conform to a sector of a layer of the formed bale. The development of such a layer—that is, the uninterruped extension or continuation thereof in the operation of the press—produces a layer of the forming bale. Thus a face of a shed so developed would conform in shape and size to a layer of the bale. I would state that whether I feed in an absolutely continuous layer or whether the layer be more or less separated or made thinner at intervals or whether it be entirely separated at intervals depends entirely upon the rate of feeding in relation to the rate of operation of the press. While I may feed in a continuous layer and may prefer to do so, I need not necessarily do so. The foraminous surface of each shed constitutes a receiving-surface, and it is so located in relation to its feeding-passage that material deposited thereon in layer form may be discharged with such formation unimpaired into the forming bale. I form both faces of the shed as entirely foraminous surfaces; but I do not restrict myself to such construction. I may employ within each shed a mechanical feeding device working through certain of the apertures thereof; but as such a mechanical feeding device is fully disclosed in my application Serial No. 41,559 I consider it unnecessary to illustrate the same in this application. If a mechanical feeding device be not employed in the shed and I use an individual valve for each shed, then I prefer to place the valve that is to pulsate or intermittently discharge or interrupt the air-blast in the shed itself, as shown in Figs. 5 and 6, wherein E is the stationary member of the valve and F the movable member, said valves being preferably curved in cross-section for convenience in operation, though this is not necessary. As one means for operating the movable member of the valve I pivot the same upon a shaft I, having a toothed sector G thereon, which is in mesh with a toothed rack H, adapted to be reciprocated in any suitable manner. The rack H may be a curved rack extending around the head-plate and meshing with all the sectors, so as to operate all the valves in the same phase, thus interrupting the flow of the air-blast through all the valves at once, thereby pulsating the air-blast as an entirety, or each valve may be independently operated by its individual rack H or in any desired manner, or the rack H may operate any desired number of the eight valves that will be provided for the usual Lowry head-plate—such as the first, second, third, and fourth, or the first, third, fifth, and seventh—the remaining valves being operated by a similar rack, or all the valves may be operated by the one rack and the sectors be so disposed that when some of the valves are closed the others are open. It is regarded as unnecessary to illustrate these various modifications, since they are obvious. Even though each shed is provided with an individual valve, I may provide the chamber above the press-head with a valve such as shown in Fig. 1, which when open may permit the escape of air, so that if I choose to operate all said sheds in the same phase I may prevent the air-blast from reacting upon the gin when it is intercepted or pulsated as an entirety at the head-plate, as will be described.

If I wish to employ a mechanical feeder within the sheds or even if no mechanical feeder be employed, I may place the individual valve, which I here designate as E′ F′, at the end of the shed, as illustrated in Fig. 7, wherein a nearly semicircular valve is shown, that may be operated as is the valve shown in Figs. 5 and 6, or, if desired, I may locate each valve in a pipe or extension leading from a shed. Any suitable form of individual valve other than that shown in Fig. 7 may be employed, if desired—as, for example, a rotating valve.

J in Fig. 1 indicates a pipe leading from a gin or battery of gins, no condenser being directly interposed between the gin or gins and the foraminous surfaces upon the head-plate, the cotton being deposited upon the foraminous surfaces of the head-plate by a blast of air, preferably created by the gin-brushes. The pipe J discharges into a chamber K, directly over the head-plate, and preferably at the top of this chamber I mount a screen L, suitably mounted upon rolls M, the shaft of one of which carries a large gear-wheel M′, actuated by pinion M^2, meshing therewith, the screen being thereby slowly driven.

N indicates a rotating scraper of any well-known type, its function being to discharge from the screen L any small portion of cotton that may from time to time accumulate thereon. This form of screen is but one of several that may be employed. It may be otherwise constructed so as to rotate, or it may be cleaned in any suitable manner other than by rotating or moving the screen. It will be observed that the area of the upper portion of the chamber K is large compared with that of the gin-flue J. The area of the operative portion of the screen L relative to the cross-sectional area of the gin-flue J may be increased, if it be found necessary. The cotton discharged from the gin will upon its delivery into the chamber K be pneumatically deposited upon the sheds of the head-plate of the press. The function of the screen L is to intercept any cotton that may when the air-blast is pulsated as a whole, as hereinafter described, be carried upward toward the top of the chamber by the blast in a manner to be particularly described. I have mounted the screen above the point where the pipe J discharges into the chamber K, and the area of the upper portion of said chamber is so large in proportion to the cross-sectional area of the pipe J that when the air-blast is pulsated as a whole, and hence in one phase of its pulsation has no escape through the head-plate, but is

compelled to escape through the said screen, the force of the air-current as it approaches said screen is so weakened that little or no cotton is carried to the screen to lodge thereon. Such cotton as does lodge thereon will be removed by the rotary scraper N. When the pulsation-creating valve or valves to be described are open, I intend that they shall permit the free escape of the entire blast of air from the gin; but should the valve when open be somewhat inadequate for this purpose I provide a weighted or equivalent valve O, normally closing a screened opening O′, and which will be opened by such surplus current of air. When, however, the pulsation-creating valve or valves are closed, I must provide or prefer to provide other means of escape for the current of air to prevent its reacting upon the gin-brushes. This I do by mounting above the screen L a valve P P′, the movable member P being suitably operated by a rod P^2, connected to a lever p^3, pivoted at Q, and adapted to be reciprocated by a link Q′, connected to a crank q^2 upon the shaft of the sprocket-pinion m^2, previously referred to. The said valve may, however, be independently operated or in any suitable manner, provided it be properly phased.

I have thus far described a construction (shown in Figs. 5, 6, and 7) wherein an individual blast-pulsating valve is provided for each shed and have stated that each valve may be so operated by the rack or racks H that all said valves may be in the same phase, thus pulsating the blast as an entirety, in which case other means of escape will be provided for the air-blast, or that said valves may be grouped in any desired manner, in which case the blast would not be pulsated as an entirety. I have also described with reference to Figs. 1 and 2 an arrangement wherein one blast-pulsating valve common to all the sheds is employed, whereby the blast is pulsated as an entirety and the employment of the valve P P′ is necessitated.

I will now describe the system or grouping of the sheds shown in Figs. 3 and 4. In these figures I have shown the sheds so grouped that when the air-blast is intercepted at four of the sheds it is permitted a free escape at the other four, and vice versa. This I do by providing two pipes U U′, the pipe U by the branches u being connected with the sheds 2, 4, 6, and 8, and the pipe U′ by the branches u' being connected with the sheds 1, 3, 5, and 7. Said pipes U U′ are each provided with a valve v v', the movable members thereof being provided with a bevel-gear v^2, meshing with the respective bevel-gears v^3 upon a shaft v^4, having thereon a sprocket-wheel v^5, adapted to be rotated in any suitable manner. The valve v v' controlling the discharge of the air-blast through the pipe U is oppositely phased to the valve v v' controlling the discharge of the air-blast through the pipe U′. Thus in the rotation of the sprocket-wheel v^5 the blast will be permitted to escape by means of the pipe U through the sheds 2, 4, 6, and 8, at which instant the blast is intercepted at the sheds 1, 3, 5, and 7. In the further rotation of said sprocket-wheel v^5 the valve controlling the discharge of the blast through the pipe U′ will be opened, and the blast will therefore be permitted free escape at the sheds 1, 3, 5, and 7. At the same time the valve v v' controlling the escape of the blast through the pipe U will be closed, thus intercepting the blast at the sheds 2, 4, 6, and 8. Since in this system or grouping the air-blast is at any given instant of time escaping through the sheds of one group or the other, it is unnecessary to provide a valve in the chamber K, such as is indicated at P P′ in Fig. 1.

When the valves controlling the various sheds are not all operated in the same phase, I have stated that at any given instant the blast is permitted free escape at certain of the sheds and is intercepted at the other sheds. When the escape of the blast is prevented at one shed and is permitted at another shed, it will be understood that at each shed the air-blast is being pulsated, the phases of the pulsation being opposed at said sheds—that is, each pulsation of the blast involves two phases, one phase occurring at or being occasioned by an open shed and the other phase occurring at or being occasioned by a closed shed. Thus the two phases occur coincidently when we consider two sheds one of which is opened and the other closed, and at any one shed the two phases succeed each other, one occurring when the shed is open and the other when it is closed. It will be understood that the air-blast (considered as a whole) will seek the open sheds to escape therethrough. The air-blast at any given time escapes through certain of the sheds, (unless they are all closed together and opened together,) and then when these open sheds are closed and the others opened the blast is deviated from its course by this operation to the other sheds. It will be understood that such deviation of the blast constitutes a true pulsation thereof at the respective sheds.

When I employ a shed having both faces thereof formed as a foraminous surface, it will be seen that each shed pneumatically delivers to the two feeding-slots between which it is situated. Thus, considering Fig. 4, it will be seen that shed 1 pneumatically delivers to slots 8^a and 1^a, shed 2 to slots 1^a and 2^a, and so on throughout the series of eight sheds and eight slots, if this number be employed. Thus when the air-blast is intercepted at sheds 1, 3, 5, and 7 and is permitted free escape at sheds 2, 4, 6, and 8 the said sheds 1, 3, 5, and 7 will pneumatically deliver to all the feeding-slots of the press. Then in the further rotation of the sprocket-wheel v^5, as previously described, the blast will be intercepted at the sheds 2, 4, 6, and 8 and permitted free escape at sheds 1, 3, 5, and 7, and said sheds 2, 4, 6, and 8 will likewise pneu-

matically deliver to all the feeding-slots of the press.

It will be understood that when the blast is permitted free escape through the sheds of either group the sheds of such group will not pneumatically deliver to the feeding-slots of the press—that is, that for these sheds there is occurring a period of restraint of the cotton.

It is obvious that there may be provided modifications of the system or grouping shown in Fig. 4—as, for example, but two sheds may be in communication with each blast-discharge pipe, in which case four discharge-pipes will be provided, each with its individual blast-pulsating valve, and said sheds may be adjacent sheds or any others, as desired.

I wish it to be clearly understood that it is immaterial, so far as my invention is concerned, whether I pulsate the air-blast as a whole at the foraminous surfaces—that is, whether the phases of pulsation coincide at all the surfaces—or whether I do not pulsate the air-blast as a whole, but by arranging the surfaces in groups of opposite or different or alternating phases pulsate the air-blast in opposite or different or alternating phases at different surfaces. I intend the term "pulsate the air blast or current" to cover both cases and so use the term and similar terms in the claims.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a press for cotton and similar material, a chamber or receiver, an abutment having a substantially radial feeding-passage therein, means to impart relative rotation to said chamber or receiver and abutment, a receiving-surface in operative relation to said feeding-passage, means whereby the material may be deposited by an air-blast upon said surface, and means to intermittently discharge or pulsate or intermittently interrupt said air-blast, substantially as described.

2. In a press for cotton and similar material, a chamber or receiver, an abutment having a substantially radial feeding-passage therein, means to impart relative rotation to said chamber or receiver and abutment, a foraminous surface in operative proximity to said feeding-passage and upon which cotton may be pneumatically deposited by the blast of air that discharges the cotton from a gin, and means for pulsating said blast of air at said foraminous surface by intermittently interrupting the escape thereof through said surface, substantially as described.

3. In a press for cotton and similar material, a chamber or receiver, an abutment having a substantially radial feeding-passage therein, means to impart relative rotation to said chamber or receiver and abutment, a foraminous surface in operative proximity to said feeding-passage and upon which cotton may be pneumatically deposited by the blast of air that discharges the cotton from a gin, means for pulsating said blast of air at said foraminous surface by intermittently interrupting the escape thereof through said surface, and means for preventing said blast of air from reacting upon the gin when its escape is intermittently interrupted through said surface, substantially as described.

4. In a press for cotton and similar material, a chamber or receiver, an abutment having a substantially radial feeding-passage therein, means to impart relative rotation to said chamber and receiver or abutment, a foraminous surface in operative proximity to said feeding-passage and upon which cotton may be pneumatically deposited by the blast of air that discharges the cotton from a gin, means for pulsating said air-blast at said foraminous surface by intermittently interrupting the escape thereof through said surface, and means for otherwise permitting the escape of air when its flow through said surface is broken, substantially as described.

5. In a press for cotton and similar material, a chamber or receiver, an abutment having a plurality of substantially radial feeding-passages therein, means to impart relative rotation to said chamber or receiver and abutment, a foraminous surface in operative proximity to each of said feeding-passages, and upon which cotton may be pneumatically deposited by the blast of air that discharges the cotton from a gin or gins, and means for pulsating said air-blast at each of said foraminous surfaces by intermittently interrupting the escape thereof through each of said surfaces, substantially as described.

6. In a press for cotton and similar material, a chamber or receiver, an abutment having a plurality of substantially radial feeding-passages therein, means to impart relative rotation to said chamber or receiver and abutment, a foraminous surface in operative proximity to each of said feeding-passages, and upon which cotton may be pneumatically deposited by the blast of air that discharges the cotton from a gin or gins, means for pulsating said air-blast at each of said foraminous surfaces by intermittently interrupting the escape thereof through each of said surfaces, and means when the air-blast is pulsated in the same phase at each of said surfaces, for otherwise permitting the escape of said air-blast, substantially as described.

7. In a press for cotton and similar material, a chamber or receiver, an abutment having a plurality of substantially radial feeding-passages therein, means to impart relative rotation to said chamber or receiver and abutment, a foraminous surface in operative proximity to each of said feeding-passages, and upon which cotton may be pneumatically deposited by the blast of air that discharges the cotton from a gin or gins, and independent means for pulsating said air-blast at each of said foraminous surfaces by intermittently interrupting the escape thereof through each of said surfaces, whereby the air-blast may be pulsated as an entirety or said surfaces

may be arranged in groups according to the phase of pulsation of said air-blast at the surfaces constituting each group, substantially as described.

8. In a press for cotton and similar material, a chamber or receiver, an abutment having a plurality of substantially radial feeding-passages therein, means to impart relative rotation to said chamber or receiver and abutment, two foraminous surfaces in operative proximity to each of said feeding-passages, one on each side, and upon which cotton may be pneumatically deposited by the blast of air that discharges the cotton from a gin or gins, and means for pulsating said air-blast at each of said foraminous surfaces by intermittently interrupting the escape thereof through each of said surfaces, substantially as described.

9. In a press for cotton and similar material, a chamber or receiver, an abutment having a substantially radial feeding-passage therein, means to impart relative rotation to said chamber or receiver and abutment, a foraminous surface which is in form substantially a sector of a layer of the forming bale and situated in operative proximity to said feeding-passage and upon which a layer of cotton may be pneumatically deposited by the blast of air that discharges the cotton from a gin, and means for pulsating said blast of air at said foraminous surface by intermittently interrupting the escape thereof through said surface so that a continuous layer of cotton may be delivered through said feeding-passage, substantially as described.

10. In a press for cotton and similar material, a chamber or receiver, an abutment having a substantially radial feeding-passage therein, means to impart relative rotation to said chamber or receiver and abutment, a foraminous surface located in operative proximity to said feeding-passage, so that material deposited in layer form thereon may be discharged with formation unimpaired into the forming bale, means whereby the material may be deposited by an air-blast upon said surface, and means to intermittently discharge or pulsate or intermittently interrupt said air-blast, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHAS. E. PARKER.

Witnesses:
D. S. KISSAM,
JAMES LOWEY.