

S. D. MURRAY.
COTTON CONDENSER.
APPLICATION FILED MAY 18, 1908.

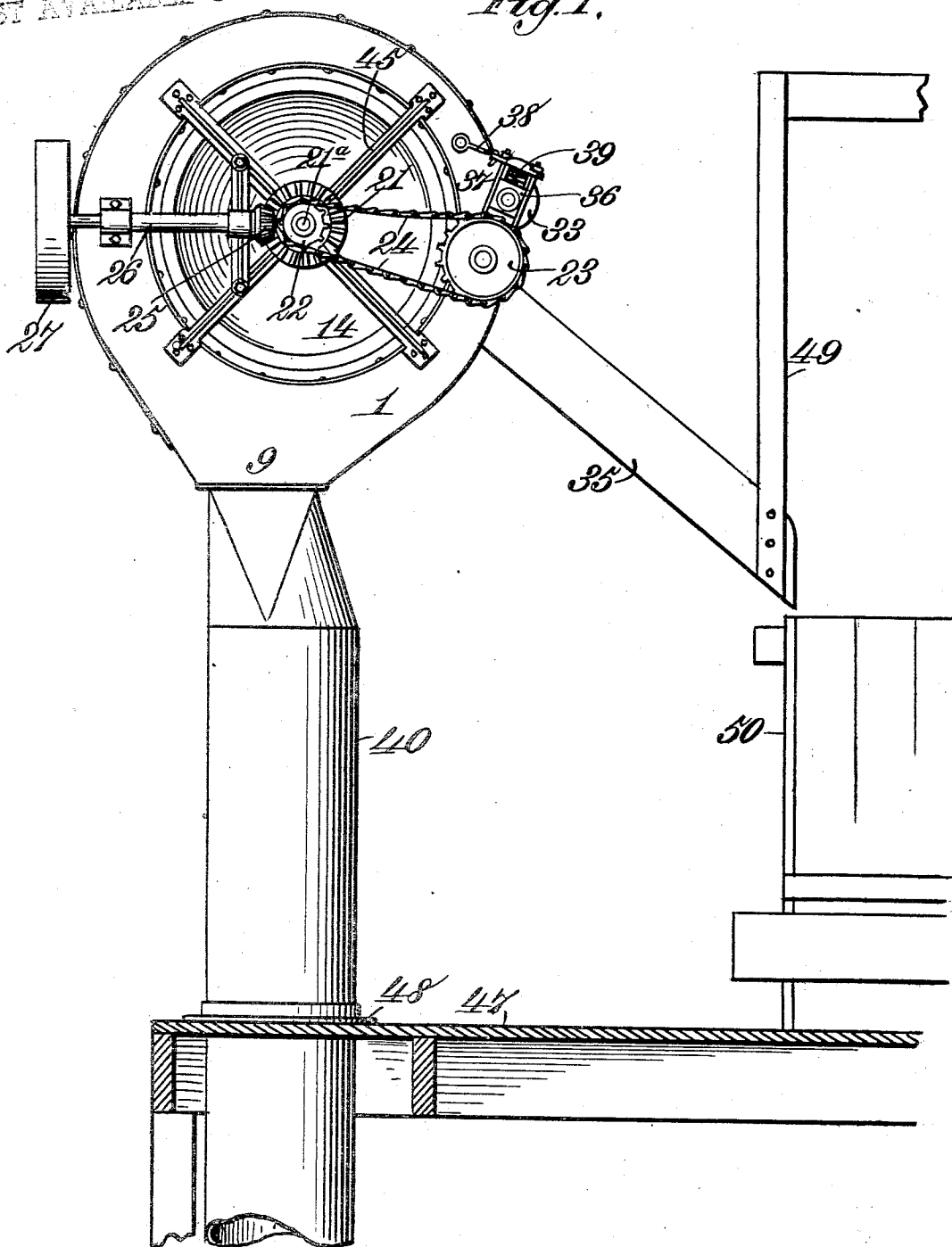
1,059,196.

Patented Apr. 15, 1913.

4 SHEETS—SHEET 1.

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Fig. 1.



Witnesses.
Robert G. Smith.
J. H. K. K. K.

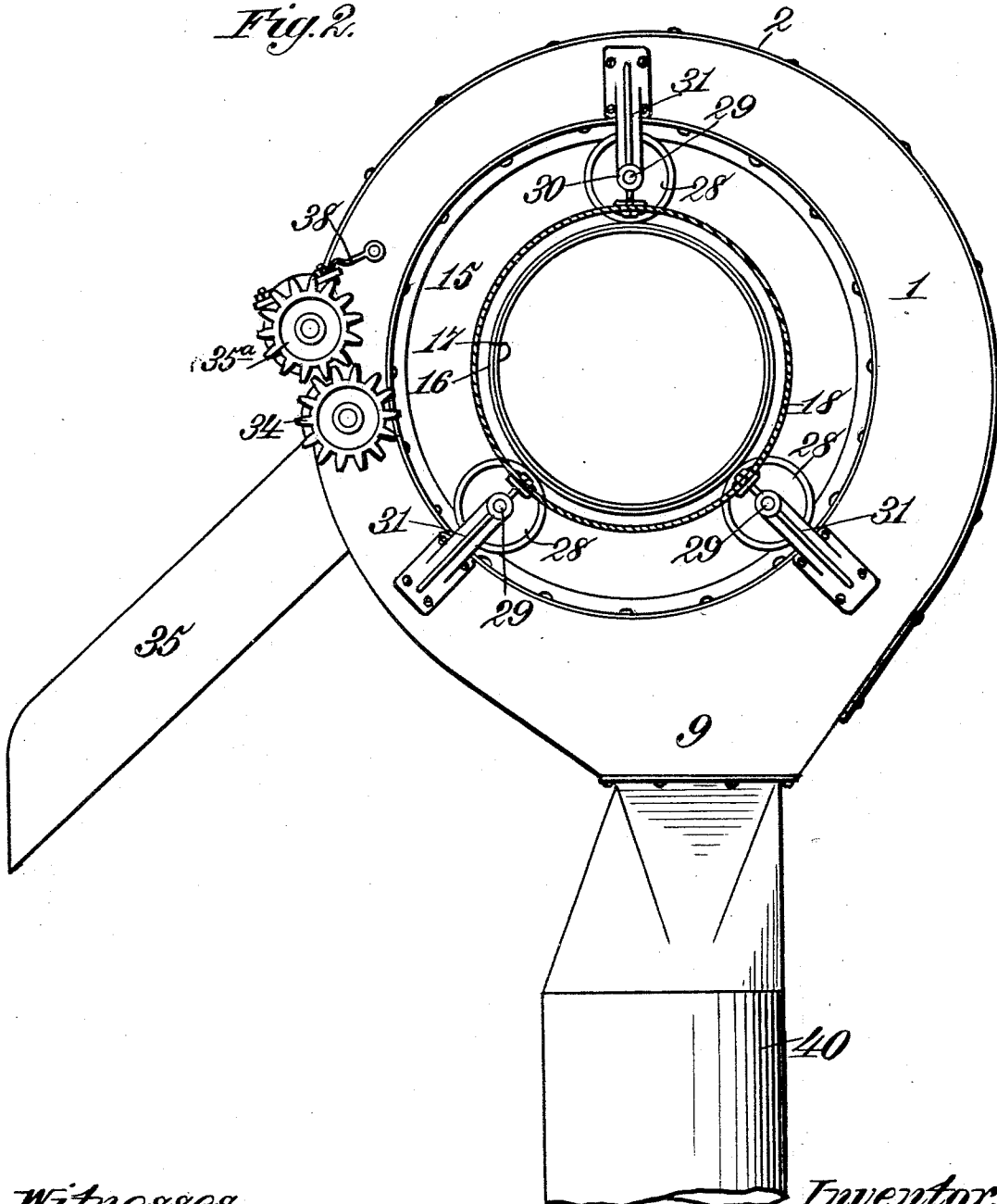
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1,059,196.

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4 SHEETS—SHEET 2.

Fig. 2.



Witnesses.
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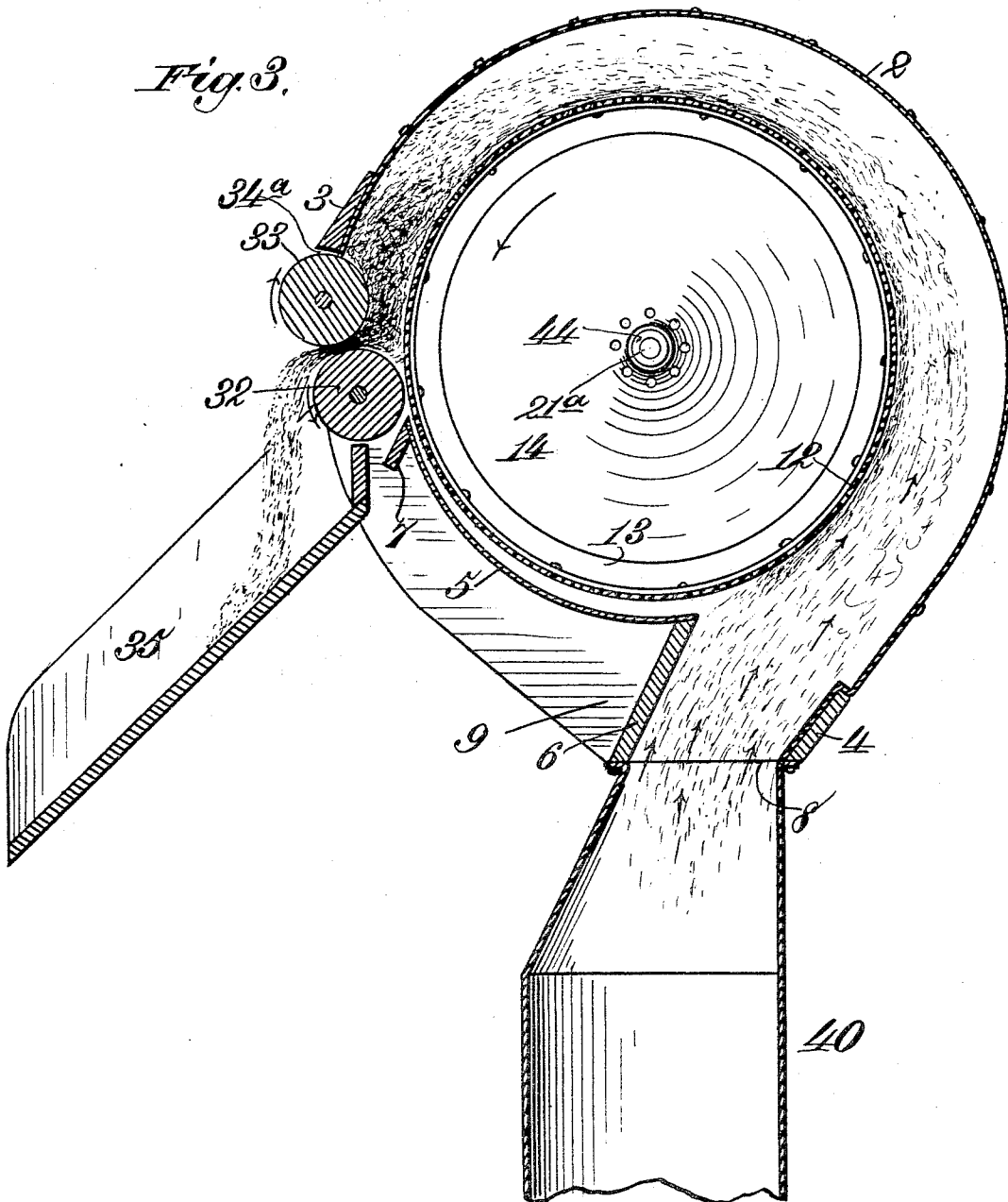
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4 SHEETS—SHEET 3.

Fig. 3.



Witnesses:
Robert Smith,
J. B. Keefe

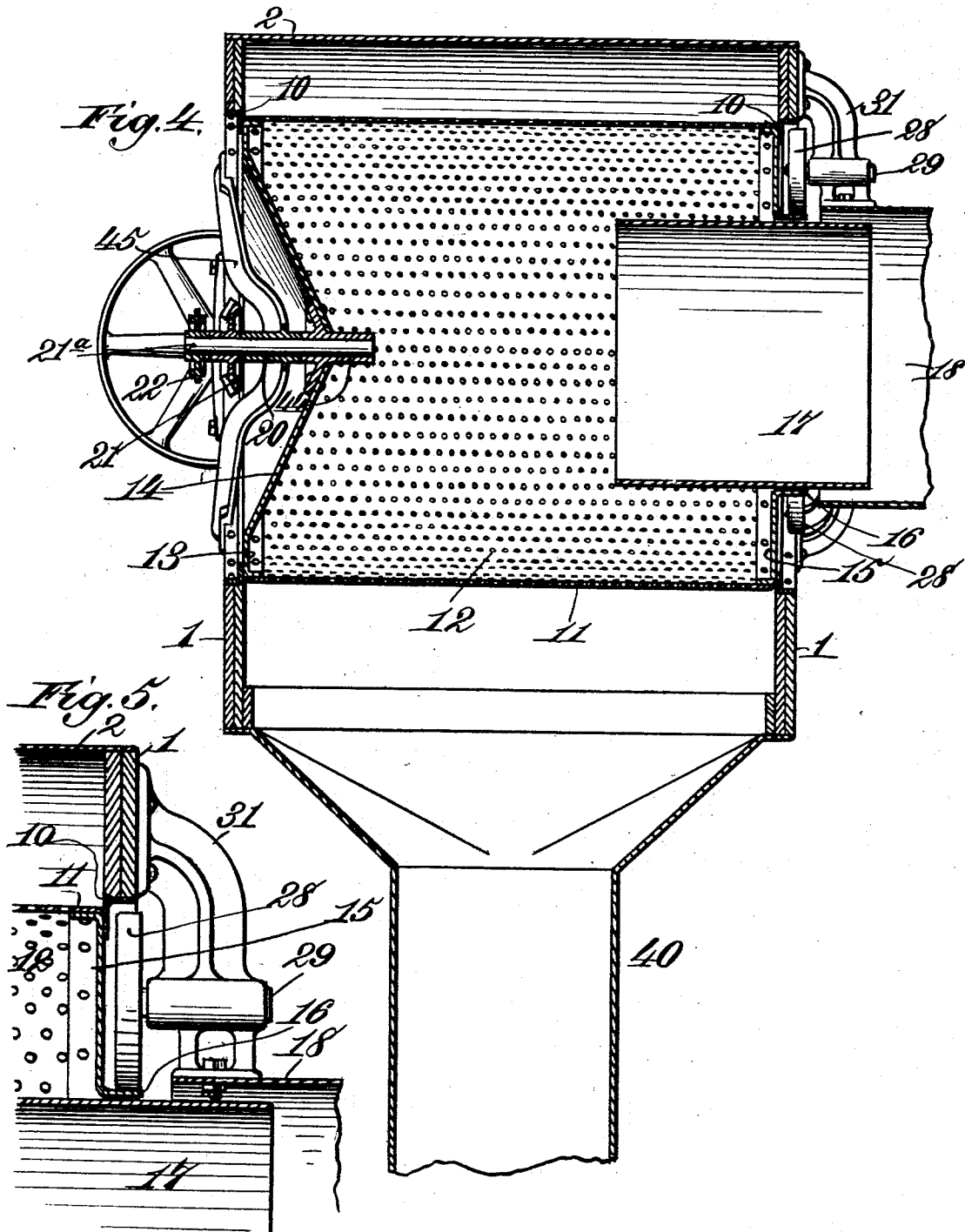
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4 SHEETS—SHEET 4.



Witnesses.
Robert G. Smith,
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UNITED STATES PATENT OFFICE.

STEPHEN D. MURRAY, OF DALLAS, TEXAS.

COTTON-CONDENSER.

1,059,196.

Specification of Letters Patent.

Patented Apr. 15, 1913.

Application filed May 18, 1908. Serial No. 433,494.

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 Cotton-Condensers, of which the following is a specification.

This invention relates to condensers for cotton gins and especially to the type embodying doffing rolls for removing the bat from the condensing cylinder and delivering the same out of the condenser.

From considerations of cleanliness in the ginnery, also the health and comfort of the operatives, and to facilitate handling and baling cotton, and for other considerations, it is important that the lint cotton should issue from the condenser in a thick and compact sheet free from accompaniment of flying lint and dust. It is also important that the sheet or bat of lint cotton should be of even thickness throughout, as in case it is thicker at one edge than the other it causes trouble in the baling operations and injury to the baling apparatus is prone to result from excess of cotton in one side of the baling chamber.

Heretofore and prior to this invention, condensers were handicapped and deficient with respect to the accomplishment of the work in a manner to meet the considerations above specified and other considerations not specified, the work of condensers heretofore being much short of that degree of efficiency which is desirable in the performance of the condenser for cotton gins.

In this invention the parts of the condenser are designed and organized with the object of causing the lint cotton to aggregate at the interior of the condenser in a compact mass along and against the doffing rolls and between one of said rolls and the condensing cylinder to the end of supplying the cotton to the doffing rolls in an abundant and compact mass, which mass is still further compacted when being formed into a bat between the doffing rolls, and thus, by successive stages, the cotton is reduced or compacted to a sheet or bat of considerable density; furthermore, the cotton aggregated at the interior of the condenser as specified thoroughly closes or seals all avenues or openings about the doffing rolls, thus preventing any passage of air or dust into the atmosphere of the ginnery and in this way accomplishing the object of deliv-

ering the bat without accompaniment of flying lint and dust. In addition to this, the aggregated and compacted cotton accomplishes the object of preventing particles of lint being carried past the doffing rolls by the moving surface of the condensing cylinder, the compacted cotton lying along and pressing against the surface of the condenser cylinder acting as a wiper of the condensing cylinder to catch and hold all particles of lint brought forward by the condenser cylinder; whereas, if the aggregated cotton were loose or not compacted it would not act to catch and hold the particles of lint, but would allow the condenser cylinder by frictional contact upon the mass to drag some lint past the doffing rolls. Lint so dragged past the doffing rolls is either wasted by the currents of air which pass out of the building from the condenser, or lodging in the outer casing of the condenser causes choking of the condenser. The foregoing undesirable features have been common characteristics of condensers as heretofore constructed and arranged.

Heretofore it has been the usual practice to operate the doffing rolls in the condenser at the same or a greater peripheral speed than the peripheral speed of the condenser cylinder. Otherwise, the condenser cylinder would be disposed to drag some of the lint past the doffing rolls. Practice seemed based upon the theory that the doffing rolls should remove the lint from the condenser cylinder as rapidly as the cylinder brought the lint forward to the doffing rolls. Obviously, if the condenser was operated at moderate speed the lint would lie thicker on the condenser cylinder than when the cylinder was run at a higher speed, but a layer of lint upon the condenser cylinder would obstruct the passage or escape of air through its foraminous surface, resulting in back pressure at the gins causing choking of the cotton in the gin ribs and wasting of the lint, etc. Since it is of first importance that the gins be unhampered by back-pressure it is not practicable to improve the action of the condenser by reducing the speed of the condenser cylinder, and the practice heretofore has been to operate the condenser at a speed that would permit the gins to operate at somewhat near their maximum efficiency and abide low efficiency in the condenser. Good work at the gins requires a good speed in the condenser cylinder so as

to present to the air currents coming from the gins a large amount of fresh screen area in a given time. The speed of the condenser cylinder should be increased, but the structure of the condenser and the organization and arrangement of its parts, as will hereafter appear, must be such as to result in the performance of novel and useful functions.

In the improved apparatus embodying the features of this invention, the doffing rolls are run at any slow speed required to deliver a bat of any desired thickness and the condenser is run at any greater peripheral speed which may be required to give free passage or outlet to the air from the lint flue or gins, while the cotton is aggregated upon the said rollers and between one of the doffing rollers and condenser cylinder to the end that the doffing rolls may have an abundant compact mass to act upon when forming the lint into a bat, thus enabling the doffing rolls to secure greater compactness in the bat. Furthermore, the said aggregated and compacted cotton acts as before stated to catch and hold all the lint carried around by the condenser cylinder, preventing wasting of the lint and choking of the apparatus. The compacting action imparted to the aggregated cotton by frictional contact of the revolving cylinder tends to drive the cotton closely downward upon the doffing rollers, while the resiliency of the fiber causes it to expand laterally, thereby filling up the soft places in the mass and so assisting in producing a bat of even density throughout and with its edges full and clean-cut, in contradistinction to the thin, round and ragged edges heretofore common.

Heretofore much trouble and labor have been caused in handling and baling cotton owing to the disposition of condensers to deliver the sheet or bat of cotton thicker at one edge than the other. Much labor and study have been expended in trying to overcome this trouble in condensers for cotton gins.

One of the objects of this invention is to construct and arrange a condenser with means to regulate the distribution of cotton in the condenser so same shall issue in a sheet or bat of even thickness throughout its width as will hereafter appear, and also other objects will appear.

The invention also contemplates the combinations, subcombinations, and details of construction and arrangement of the several parts which will be more fully hereinafter specified.

In the drawings: Figure 1 is an end elevation of a condenser shown applied in operative position with respect to the baling box and embodying the features of the invention. Fig. 2 is an end elevation of the condenser looking toward the extremity thereof opposite that illustrated by Fig. 1 and showing

parts in cross-section. Fig. 3 is a transverse vertical section through the condenser. Fig. 4 is a longitudinal vertical section through the condenser. Fig. 5 is a detail longitudinal vertical section of a portion of the condenser shown on a larger scale.

Similar characters of reference are employed to indicate corresponding parts in the several views.

The condenser comprises in its organization annular end members 1 duplicate in construction and therefore advantageous not only in the preliminary preparation of the same, but in the assemblage of the several parts of the complete condenser casing. These end members are approximately circular in contour and have a metal sheathing 2 secured thereto and extending from a front rail 3 rearwardly and downwardly to a rear rail 4. A supplemental sheathing 5 is arranged at the front under portion of the casing and connected at its lower end to a rail or strip 6 and at its upper end to a smaller rail 7 located adjacent to the outlet of the condenser. The rails 4 and 6 are disposed on opposite sides of and contribute to the formation of an inlet 8 at the bottom of the casing, the annular members 1 being extended downwardly as at 9 to serve as end covering means or walls for the said inlet. The casing as thus described is comparatively light in its structure as well as strong and durable, and one of the important features of this condenser organization is the disposition of the inlet or feed opening at the bottom of the casing. Primarily both ends of the casing are open by reason of the annular construction of the end members 1, the openings 10 of the said members being of such diameter as to permit the introduction or placement of the condenser cylinder 11 within the casing. Over the crevice or opening that may exist between the opposite extremities of the cylinder 11 after the latter is inserted within the casing and the walls of the openings 10, packing strips of rubber or other suitable material are applied as at 10* to prevent the cotton and air escaping from the interior of the condenser at these points.

The cylinder 11 is constructed from forminous sheet metal as 12 having a head 13 at one end with a dished center 14 forming a complete closure for the end of the cylinder to which it is applied, and at the opposite end the cylinder has an annular head 15 with an outwardly projecting flange 16 surrounding the opening therein. Sheet metal is preferred in constructing the condenser cylinder because it can be rendered stable and self-sustaining without requiring the use of a frame or cage-like bracing means which is necessary to support a wire cloth or gauze cylinder. Furthermore, the surface of the sheet metal cylinder is smoother than the

wire cloth and is better adapted to the peculiar conditions existing in the present condenser organization and wherein the cotton is caused to accumulate or aggregate and lie along the condenser in a compact mass against the surface of the latter near the doffing rollers, as will be more fully hereinafter explained.

As just explained, one end of the condenser cylinder is closed by the head 13, so that the only outlet or avenue for the escape of air is at the opposite end of this cylinder. To avoid any tendency of the air currents to flow or go too much toward the open end of the cylinder which would result in making the bat thick at that edge, a short tubular member 17 is slipped into the open end of the cylinder. This tubular member or section is preferably made of light thin iron and fits snugly in the open end 15 of the condenser and is simply manually pushed inwardly into the cylinder to a point to cause the escaping air currents to come more from the center of the length of the cylinder. The tubular member or bat regulator 17 receives air in all directions from the interior of the cylinder or permits the passage of the engaging or impinging air currents with relation to the cylinder simultaneously through all foraminous portions. It may be said that the member or bat regulator 17 is adjusted longitudinally in the cylinder or separator 11 to receive air currents moving radially from all parts and through all parts of the said cylinder or separator from the interior of the latter, and, further, the member or regulator receives air currents radially and longitudinally through the separator and is situated at the axis of the latter. This regulates the air currents perfectly and causes the said currents to distribute the cotton evenly or to dispose more of the cotton toward the closed end of the cylinder so as to have the bat issue of even thickness throughout its width. It is only necessary to make a single adjustment of this tubular member or section 17 after the condenser is set and put in operation, and said member or section will remain wherever it is placed. This member or section may also be said to constitute regulable means for making the bat issue from the condenser evenly, or of even thickness throughout its width. The outer extremity of the section or member 17 telescopes or projects into the dust flue 18, which dust flue is intended to be extended through the wall of the ginners to serve as a liberating or escape-means for the air and dust from the condenser cylinder.

The opening 10 formed in the casing of the condenser adjacent to the closed cylinder head and conjointly operating with the dished construction of the latter head allows

the journal bearing 20, the bevel gear 21, the sprocket-wheels 22 and 23, together with the sprocket chain 24 and the mechanism or driving parts cooperating with the pinion 21 and consisting of the bevel pinion 25 on the shaft 26 and the band pulley 27 to be arranged close up to this end of the condenser, whereas otherwise they would be considerably overhung or outwardly projected.

The flanged head 15 of the cylinder 11 is supported by a plurality of antifrictional rollers 28 held on the inner ends of stub shafts 29 engaging bearings 30 at intermediate points in a plurality of radially arranged brackets 31 secured at their outer ends to the adjacent annular member 1 and at their inner ends bearing against and secured to the inner extremity of the dust flue 18. The antifrictional rollers 28 bear against the outer surface of the flange 16 of the head 15 and maintain the adjacent extremity of the cylinder 11 in true position.

Between the rails 3 and 7, doffing rollers 32 and 33 are disposed in an opening 34 formed in the front portion of the casing, and extending downwardly at an incline below the said rollers is a chute 35 which receives the bat or sheet from the rollers and conveys it to a baling box, as shown by Fig. 1, or to any other point desired. It will be understood that the chute may be of any length and it is not restricted in details of construction or material used in its formation. The rollers 32 and 33 have spur gears 34 and 35^a respectively on one end of each, the said gears having long teeth and the lower roller 33 is driven by the sprocket wheel 23 on its opposite end and from the said lower roller motion is imparted to the upper roller through the intermeshing spur gears 34 and 35^a. The bearings 36 at the opposite extremities of the upper roller 33 are mounted in a swinging frame 37 normally held up in operative position by hooks 38 detachably engaging the frame, it being understood that each bearing 36 is mounted in an independent frame, and between the same and the top of the bearing is a spring 39, the springs engaging the opposite bearings acting to yieldingly hold the upper roller 33 in operative adjacency to the lower roller 32. By disposing the upper roller in swinging frames as specified, the said roller may be turned down or opened outwardly and serve as a door to give access to the interior of the condensing chamber. The upper doffing roller 33 is disposed outwardly a greater distance from the cylinder 12 than the lower doffing roller 32, and by this means a pocket wider at its upper portion than at its lower portion is formed between the doffing rollers and the condenser cylinder, as clearly shown by Fig. 3, the lint cotton being massed in this pocket prior to its exit between the roll-

ers and thus more effectively setting up a frictional engagement with the cylinder to clean the latter.

Another novel and valuable feature of the present improvement is that the upper terminal of a vertically arranged lint flue 40 is connected with the lower inlet 8 of the condenser. This arrangement of the condenser on the upper end of the lint flue simplifies and cheapens the condenser construction and dispenses with the necessity of the usual supporting legs. Furthermore, this arrangement adapts the condenser to be installed with any of its sides toward the gins, as it is obvious that the condenser with the vertical portion of the lint flue may be turned to face in any direction without requiring the least alteration in or addition to the lint flue. Below the vertical portion of the lint flue which acts as a support for the condenser in the manner specified, said flue may be disposed in various positions to accommodate proper connection with the gins. Heretofore, condensers have been arranged to receive the lint through a side opening, the lint flue being connected with the opening at an angle, pointing upward. The condenser so arranged was not adapted to face in any direction relative to the gins.

Specific structural details have not been hereinbefore particularly referred to, as the condenser organization is not dependent upon or confined to precise features of construction, especially in the assemblage of the several parts, though it has been found beneficial to use a casting or journal bearing 44 fixed in the center of the dish portion of the head 13 and in which the inner extremity of the shaft 21 is secured, the shaft being intermediately supported by a spider 45 having a hub 46 through which the said shaft extends and located between the bevel pinion 21 and the said casting 44. Furthermore, it will be understood that the upper terminal of the lint flue 40 will extend fully over the inlet 8, from front to rear and from end to end, as shown by Figs. 3 and 4. If the lint flue 40 projects upwardly through a flooring 47, as shown by Fig. 1, it will be stiffened and supported by a suitable angular collar 48 secured thereto and to the flooring, and in some instances the chute 35 may be supported by a hanger frame 49, as shown by Fig. 1, so as to accurately dispose the outlet end of the said chute over the top of the baling box 50.

In the operation of the condenser the condenser cylinder 11 and doffing rollers 32 and 33 are set in motion, the doffing rollers being run at any slow speed required to bring out a bat of any desired thickness and the cylinder rotated at any greater peripheral speed that may be required to give free passage or outlet to the air from the lint flue or gins. The air and lint passing upwardly

through the vertical lint flue 40 enters the inlet 8 into that portion of the condenser chamber 43 having the greatest transverse extent, and the air striking the cylinder passes into the latter and the lint continues upwardly over and is carried around with the cylinder toward the doffing rollers 32 and 33 and compacted there as heretofore explained. The air passing into the cylinder 11 is liberated or escapes through the tubular member 17, and, as heretofore intimated, inequality of air pressure within the cylinder and any tendency toward deterioration in the formation of the bat or sheet thereby is rectified by the said tubular member, which is movable inwardly or outwardly, and may be properly termed a "regulator." This control of the air currents and the compacting of the cotton against the doffing rollers conjointly cooperate to produce a bat or sheet of a uniform or even character and in addition the control of the air currents causes the cotton lint to be distributed equally or evenly along the condenser cylinder. This equality of distribution of the cotton lint on the condenser cylinder is facilitated in the present condenser organization and rendered more effective by having the inlet to the condenser chamber at the bottom and causing the cotton lint to pass upwardly through the condenser chamber and over and downwardly to the doffing rollers, and also in view of the fresh, clean foraminous surface continually presented to the air currents adjacent to the inlet 8.

In testing the condenser by means of suitable inspecting devices it has been found that upon starting the gins the first dash of cotton into the condenser follows the walls of the casing around to the doffing rollers and impinging upon the latter is deflected inwardly to the adjacent portion of the condenser cylinder. In a short time the cotton accumulates on the top of the doffing rollers, the aggregation of the cotton at this point continuing as the operation proceeds. The cotton is not drawn toward and does not adhere to the condenser cylinder 11. Nearly all the available surface of this cylinder remains clear of cotton and is therefore open and effective for passage of air therethrough. The operation is similar to a vortex action, the lint keeping largely to the outer casing wall until it gets around to the region where it is massed upon the doffing rollers and where the pressing or impinging air currents and the frictional contact of the condenser cylinder impart to the mass a preliminary packing or condensing action, while the air, having practically free escape through a large portion of the condenser cylinder, does not concentrate the cotton upon the said cylinder before it reaches the doffing rollers. The effect is in a measure a centrifugal separation of the air and lint

in the condensing chamber, the lint, or heavier body, tending toward the wall of the casing while practically all of the condenser cylinder surface in the condensing chamber is clear and effective for the passage of air, as above noted. This operation is exceptionally advantageous in view of the prior commonly used condenser constructions and wherein the condenser cylinders run at comparatively slow speeds and have the cotton entering at the side of the condenser. Under these conditions the surface of the condenser cylinder was practically covered by cotton and sealed against the passage of air, thus causing the air to seek outlet at and concentrate cotton upon the cylinder surface as fast as the cotton entered the condenser chamber and in a very short time the surface of the condenser cylinder became sealed and obstructed the free passage therethrough of the air. In the present apparatus and as above explained, a large amount of effective condenser cylinder surface is provided for the escape of the air and in addition the cotton is directed upwardly into the condenser instead of directly against the condenser cylinder and caused to follow the circular wall of the condenser casing, and this movement of the cotton, together with the rapid rotation or increased peripheral speed of the condenser cylinder and the circular form of the outer casing results in a more effective and advantageous accumulation of the cotton on the doffing rollers and a free escape of the air.

From the foregoing it will be observed that one of the most essential features is that the condenser cylinder may be run at any rapid speed necessary to always keep a comparatively large, clean screen surface available to the air currents and the slow movement of the doffing rollers to facilitate the cotton lint being carried around and packed against the doffing rollers by the driving action of the air currents and the frictional contact or packing action of the condenser cylinder which closely amasses the cotton lint down on the doffing rollers so as to bring out a bat of ample and even thickness. This operation also permits the condenser cylinder to be made much smaller than heretofore, while at the same time the effective open surface of the condenser cylinder is ample to allow the air to escape in view of the speed at which it rotates.

Having thus described the invention, what is claimed as new, is:

1. A cotton condenser having a casing with a bottom inlet opening, a rotating cylinder disposed in the casing, and an upright lint flue connected to the casing over the bottom inlet opening and serving also as the sole support for the condenser.

2. A cotton condenser having a casing, a rotating cylinder disposed in the casing,

and an upright lint flue connected to and communicating with the bottom of the casing and serving as a means to cause the lint to move upwardly adjacent to and over the cylinder and also as the sole support for the condenser.

3. The combination with a cotton condenser having movable condensing means, of a tubular means connected to the bottom thereof and serving as the sole support for the condenser and also as a feeding means therefor to direct lint cotton upwardly adjacent to and over the said movable condensing means.

4. The combination with a cotton condenser having condensing means therein, of a tubular means connected to the bottom of the condenser and serving as the sole support for the latter and permitting the condenser to be faced in any direction, the said tubular means also serving as a feeding means to direct lint cotton upwardly adjacent to and over the condensing means.

5. A cotton condenser having a lint flue serving as the sole support for the same.

6. In a cotton condenser, a casing having inlet and outlet means, a perforate cylinder rotatably mounted in the casing and having air drawn therethrough, and doffing rollers mounted in the outlet means, both doffing rollers being positively rotated, the cylinder having a peripheral speed greater than the peripheral speed of the doffing rollers, a pocket wider at its upper portion than at its lower portion being formed between the doffing rollers and the cylinder and in which the lint cotton is massed prior to its exit between the rollers.

7. A cotton condenser having a foraminous cylinder and doffing rollers, the cylinder having one end closed and the other end open, and a bat forming regulator adjusted to project partially through the length of the cylinder and disposed in the open end of the latter.

8. A cotton condenser having a foraminous cylinder, doffing rollers cooperating with the said cylinder, the cylinder having one end closed and the other end open, and a bat forming regulator mounted in the open end of the cylinder and rotatable with the latter.

9. A cotton condenser having a foraminous cylinder, doffing rollers cooperating with the cylinder, the cylinder having one end closed and the other end open and running at a peripheral speed greater than the peripheral speed of the rollers, and a bat forming regulator having open ends and adjusted in the open end of the cylinder.

10. A cotton condenser having a foraminous cylinder, doffing rollers cooperating with the said cylinder, the cylinder having a greater peripheral speed than the peripheral speed of the rollers, and a bat forming

regulator having open ends and mounted in one end of the cylinder to receive currents of air from the latter.

11. A condenser having a foraminous cylinder, doffing rollers cooperating with the cylinder, the cylinder having a peripheral speed greater than the peripheral speed of the rollers, and a bat forming regulator mounted in one end of the cylinder and rotatable with the latter to receive air currents therefrom.

12. A cotton condenser having a rotatable cylinder therein, and a tubular outlet means adjusted in one end of the cylinder for receiving air currents simultaneously in all directions through the cylinder to regulate the formation of a bat.

13. A cotton condenser having a rotatable cylinder therein and an adjustable outlet means in one end of the cylinder for receiving air currents simultaneously passing therethrough different circumferential portions of the cylinder both above and below the axis of the said cylinder inwardly toward the said outlet means.

14. A cotton condenser having a rotatable cylinder therein, and an adjusted tubular outlet means in one end of the cylinder for regulating the air currents in their exit through the cylinder, the said outlet means being rotatable with the cylinder.

15. In a cotton condenser, a foraminous separator, bat forming means cooperating with said separator, and an outlet means adjusted longitudinally interiorly of the separator and operating to receive air currents radially and longitudinally through the separator and situated at the axis of the latter.

16. A condenser having a cylinder rotatably mounted therein and provided with a closed end and an open end, a dust flue extending outwardly from one end of the casing adjacent to the open end of the cylinder, and a tubular air regulator mounted in the open end of the cylinder and extending into the latter and also into the dust flue, the said air regulator operating to receive air currents simultaneously from all parts of the cylinder.

17. A cotton condenser having a cylinder disposed therein and formed with a foraminous body, a closed head secured to one end of the cylinder, the opposite end of the cylinder being open, a tubular outlet regulator movably mounted in the open end of the cylinder in central relation to the latter to receive air currents simultaneously from all parts of the cylinder, and bat forming means cooperating with the cylinder.

18. A condenser having a casing with a dust flue extending outwardly through one end, a cylinder rotatably mounted in the casing and having one end closed and the

opposite end open, and a tubular air regulator mounted in the open end of the cylinder and extending into the latter and also into the dust flue, the said air regulator being rotatable with the cylinder and operating to receive air currents simultaneously from all parts of the cylinder.

19. In a condenser, a casing, a cylinder rotatably mounted in the casing and having a closed head at one end and an annular head at the opposite end, operating mechanism connected to the closed head of the cylinder, a tubular regulator disposed in the annular head and rotatable with the cylinder, and antifrictional devices engaging a portion of the annular head of the cylinder.

20. In a condenser, a casing, a cylinder rotatably mounted in the casing and having a closed head at one end and an annular head with an outwardly projecting flange at the opposite end, operating mechanism connected to the closed head of the cylinder, antifrictional devices engaging the flange of the annular head, a tubular air regulating member projecting through the annular head and partially extending through the length of the cylinder, the said air regulating member inducing air currents to be drawn inwardly through a number of circumferential portions of the cylinder above and below the axis thereof at the same time, and bat forming means cooperating with the cylinder.

21. In a condenser, the combination of a casing having duplicate end members with lower extensions, said extensions forming the end walls of a bottom inlet opening, a metal sheathing secured to the end members, both end members being annular, a cylinder rotatably mounted in the casing and insertible in the latter through one of the annular end members, the remaining annular end members serving as an air outlet means from the interior of the cylinder passing through the latter in different directions above and below the axis thereof, and bat forming means cooperating with the cylinder.

22. In a cotton condenser, a casing open at each end and having an inlet and an outlet for the cotton, doffing rollers mounted in the cotton outlet, a perforated cylinder disposed in the casing and cooperating with the doffing rollers, a head completely closing one end of the cylinder and acting also as a closure for one of the open ends of the casing, the opposite end of the cylinder being open and serving as an air outlet from the interior of the cylinder for air passing through the latter above and below the axis of the same, and operating mechanism for the cylinder.

23. A cotton condenser having a casing with inlet and outlet means, doffing rollers

mounted in the outlet means, a cylinder disposed in the casing and cooperating with the doffing rollers and having openings in the body thereof, a dished head completely closing one end of the cylinder, the opposite end of the cylinder being open, and operating mechanism for the cylinder applied to and set closely inward in the dished head.

24. A cotton condenser having a casing open at each end and an outlet and an inlet for the cotton, doffing rollers mounted in the cotton outlet, a foraminous cylinder disposed in the casing and cooperating with the doffing rollers, a dished head closing one end of the cylinder and acting also as a closure for one of the openings in the casing, the opposite end of the cylinder being open, and operating mechanism for the cylinder applied to and set closely inward in the dished head.

25. A cotton condenser having a foraminous cylinder and doffing rollers, and a bat forming regulator adjusted to project par-

tially through the body and one end of the cylinder.

26. A cotton condenser having a foraminous cylinder with an air exit at one end only thereof and doffing rollers, and a bat forming regulator adjusted to project partially through the length of the cylinder and disposed at the air exit end of said cylinder.

27. A cotton condenser having a foraminous cylinder and doffing rollers, the cylinder having one end clear for the discharge of air from its interior, and a bat forming regulator adjusted to project partially through the cylinder and disposed at the clear end of said cylinder.

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

STEPHEN D. MURRAY.

Witnesses:

W. FLOYD FERRIS,
GEORGE T. LOUITT.