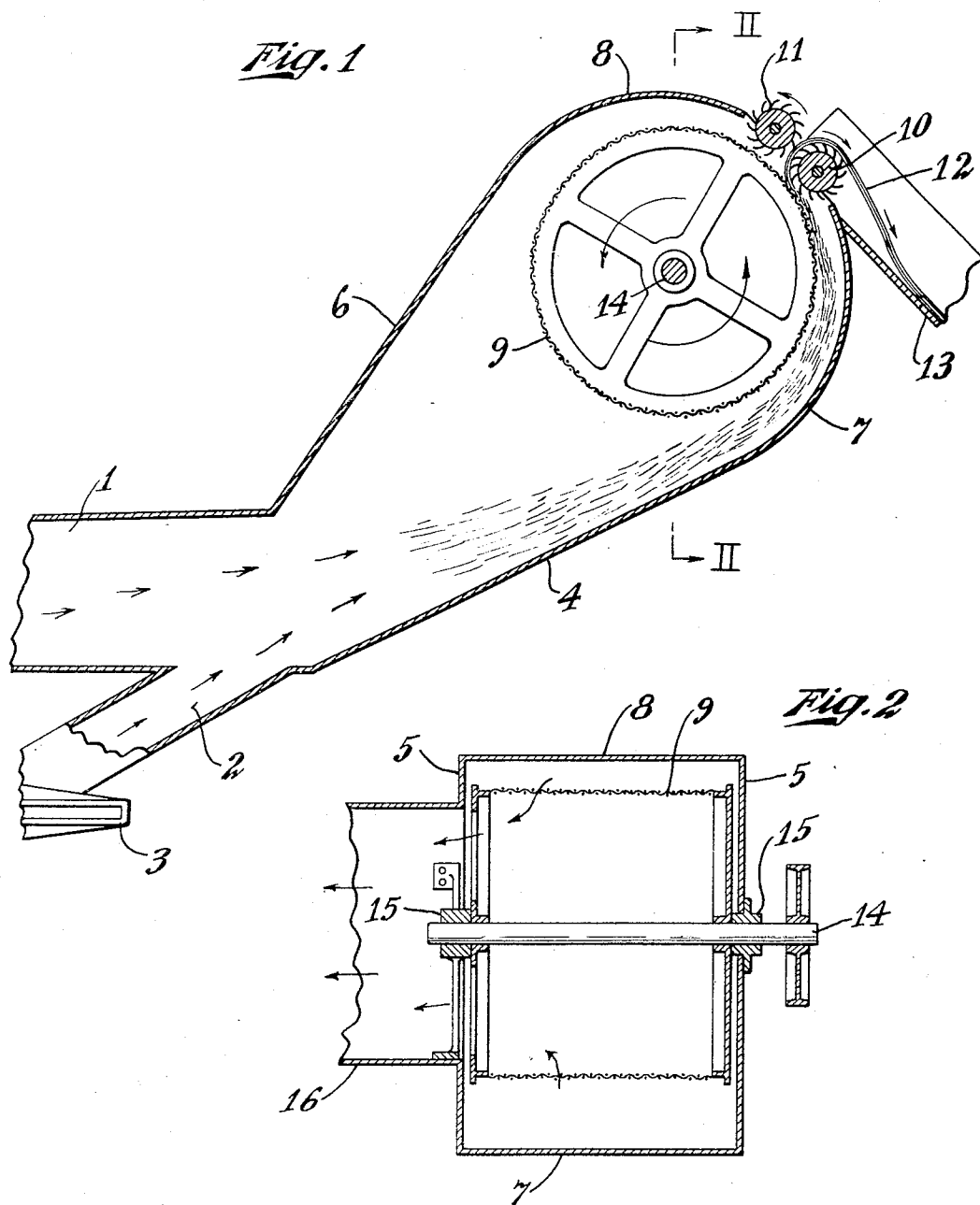


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T. ELLIOTT
COTTON CONDENSER
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INVENTOR

Thomas Elliott

BY

Johnston & Jennings

ATTORNEYS

WITNESS

Charles H. Bassett

UNITED STATES PATENT OFFICE

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COTTON CONDENSER

Thomas Elliott, Birmingham, Ala., assignor to
Continental Gin Company, a corporation of
Delaware

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My invention relates to cotton condensers of the single drum type in which the lint bearing air current from the gins has the lint collected therefrom and delivered by suitable doffing rolls in bat form to the tramper mechanism or other point of use.

It has long been recognized in this art that the operation of the gins in respect of the loss of cotton with the hulls and also in respect of their moting operation, would be materially improved if the condenser drum could be kept clear of cotton so that the discharge of the lint bearing air current from the condenser would not be restricted and thus the condenser would not create or build up any back pressure on the gins.

The chief object of my present invention is to so design the condenser casing and to so relate it to the lint flue that the condenser drum will have practically its whole foraminous surface exposed and maintained at all times substantially free and clear of cotton, whereby the maximum outflow of air through the open end of the drum is maintained and the possibility of creating any back pressure on the gins is avoided. To this end my invention contemplates making the condenser casing elongated and of expanding cross sectional area so that it will act to reduce the rate of flow of the lint bearing air current entering from the lint flue and permit the cotton to be more easily and effectively removed therefrom.

Another feature of my invention is to provide the condenser casing with a bottom wall inclined at a relatively small angle to the line of the inflowing air current from the lint flue and rising sufficiently to cause practically all of the lint borne by the entering air, to impinge against and be collected on this wall and to be driven up along it and over a curved condenser wall to the point of discharge. The cotton mass is held against the condenser wall so as to leave the screen drum substantially free and clear throughout of lint.

Another distinctive feature of my invention consists in so disposing and rotating the screen drum that its surface toward the lint flue will be disposed above the line of travel of the entering air current and will move downwardly, as by this means any lint tending to collect on the drum will do so only on its downgoing under side and thus will have only a relatively short travel until it falls off or is removed by the doffing rolls.

A further distinctive feature of my invention consists in maintaining an ample clearance

about the entire peripheral surface of the drum except opposite the doffing rolls, thereby giving the air current full and free access to practically the whole screen drum surface.

A further feature of my invention consists in arranging the doffing rolls above the center line of the drum and on the side thereof remote from the lint flue, this arrangement bringing the major portion of the condenser below the point of discharge of the bat and reducing the overhead clearance required for the apparatus, which is often very important.

In its preferred embodiment, the condenser casing is expanded substantially symmetrically from its inlet end, where it connects with the lint flue, to its curved or arcuate portions surrounding the drum in spaced relation thereto, and preferably the doffing point is in a central plane through the casing which is upwardly inclined to bring the drum well above the path taken by the cotton entering on the air current.

My invention further comprises the novel details of construction and arrangements of parts, which in their preferred embodiment only are illustrated in the accompanying drawing which forms a part of this specification, and in which:—

Fig. 1 shows my improved condenser in vertical longitudinal cross sectional view through the casing and drum with the lint flue and a portion of one of the gin flues broken away.

Fig. 2 is a section on the line II—II of Fig. 1. Similar reference numerals refer to similar parts throughout the drawing.

While I have shown my invention as applied to a battery of gins, it will be understood that it may be used with one or more gins and with any suitable type of lint flue. As shown, 1 indicates the main lint flue and 2 one of the several flues, each leading from a gin connection 3 and delivering a lint bearing air current induced in the gin, into the lint flue 1.

The lint bearing air current flowing through the lint flue 1 enters the casing of the condenser which comprises a flat inclined bottom wall 4, side walls 5, a top wall 6, and the end arcuate or curved wall sections 7 and 8 which surround the screen drum 9. The walls 4 and 6 diverge to provide a symmetrical casing of gradually increasing cross sectional area as it approaches the drum and the wall 4 leads upwardly on a gradual slope from the bottom level of the flue 1 to a point above the plane of the upper level of the flue 1 and thereafter it merges tangentially into the lower curved section 7.

The angle of the bottom wall 4 to the axis of the lint flue 1 is important in that it should be small enough to insure that the major portion of the cotton, entering from the lint flue, will collect on this wall 4 and be driven up along its surface onto the wall 7 against which it will be held by centrifugal force so as to keep it away from the drum until it reaches the doffing rolls 10 and 11 which coast with the drum 9 to collect the lint in the form of a bat 12 and deliver it to the lint slide 13 of the tramper mechanism, not shown.

If the wall 4 rises too abruptly it will act as a baffle to create eddy currents and throw the lint all through the upper part of the casing, whereas I desire that as nearly as possible all lint shall collect and slide up on the wall 4 and no appreciable amount shall pass to the level of the drum to collect thereon.

The rolls 10 and 11 are interposed between the curved walls 7 and 8. The drum is mounted on a drive shaft 14 having bearings 15 and any suitable drive mechanism, not shown, adapted to rotate the drum in a counter-clockwise direction, Fig. 1. The air currents passing out of the condenser through the foraminous peripheral wall of the drum 9 will escape from the open end of the drum through an outlet 16 in a side wall 5 of the casing.

It will be noted that the doffing rolls are disposed above the center line of the drum and substantially in line with a central plane through the casing and drum. This arrangement is preferred but not essential. It will also be noted that the curved wall sections 7 and 8 are suitably spaced from the drum, affording free access of the air currents to practically the whole surface of the drum.

In operation, the air current bearing lint is discharged in the direction of the arrows shown from the lint flue 1 into the casing and the expanding area of the latter slows up the speed of the air current and permits the ready deposit of the lint on the gradually rising bottom inclined wall 4. The lint as driven along by the air blast slides up this drum wall 4 and strikes the curved wall 7 at a tangent, sliding around this wall until it practically reaches the doffing roll 10. The wall 4 will not disturb the air currents causing the cotton to be driven through the casing but will insure that practically all of the cotton collects as indicated along the walls 4 and 7. Any floating lint or fiber that may pass up with the air current as it flows around and through the drum will not deposit sufficient lint on the drum to interfere with the free discharge of air therethrough and such small amount as collects on the drum will practically all be below the central plane of the drum head and will thus have short travel until it falls off or is removed by the doffing rolls.

In my condenser I thus maintain the drum practically clear and free of cotton and by dis-

charging the cotton high up near the top of the condenser the major portion of the condenser can be dropped below the upper end of the tramper lint slide. This reduces the head room required for the condenser and its cost of construction.

Though I have described with great particularity the details of the embodiment of the invention herein shown, it is not to be construed that I am limited thereto, as changes in arrangement of substitution of equivalents may be made by those skilled in the art without departing from the invention as defined in the appended claims.

What I claim is:—

1. In a condenser for lint cotton, a condenser casing having an inlet for air borne cotton, an air outlet and top and bottom upwardly inclined walls that flare apart from said inlet and merge into a curved end wall, a foraminous drum rotatably mounted above the level of the inlet and in spaced relation to said curved wall, with its downgoing side toward said inlet, and rolls to discharge the lint in a bat.

2. In a condenser for lint cotton, a condenser casing having an end inlet for air borne cotton and a side air outlet, top and bottom upwardly inclined walls that flare apart from said inlet and merge into a curved end wall, a foraminous drum rotatably mounted above the level of the inlet and in spaced relation to said curved wall, and doffing rolls in the curved end wall to discharge the lint in a bat.

3. In a condenser for lint cotton, a casing having an end inlet for air borne cotton, top and bottom walls upwardly inclined and diverging from the inlet, a curved end wall merging into the top and bottom walls, a rotary foraminous drum horizontally disposed within the casing and spaced substantially from the top and bottom walls and end wall permitting free access of air entirely around the drum, doffing means in the curved end wall, and air outlet means in the casing communicating with the end of the drum.

4. In a condenser for lint cotton, a casing having an end inlet for air borne cotton, top and bottom walls inclined upwardly from the inlet, a curved end wall merging with the top and bottom walls, a foraminous drum horizontally disposed within the casing and spaced substantially from the top and bottom and end walls to permit free access of air entirely around the drum, means to rotate the drum in a direction whereby its side toward the inlet is moving in a downward direction, side walls for the casing closely spaced with respect to the drum, doffing means in the curved end wall, and air outlet means in the side of the casing communicating with the end of the drum.

THOMAS ELLIOTT.