Jan. 1, 1929. 1,697,647

W. L. HANCOCK ET AL

COTTON CONDENSER

Filed April 19, 1928 2 Sheets-Sheet 1

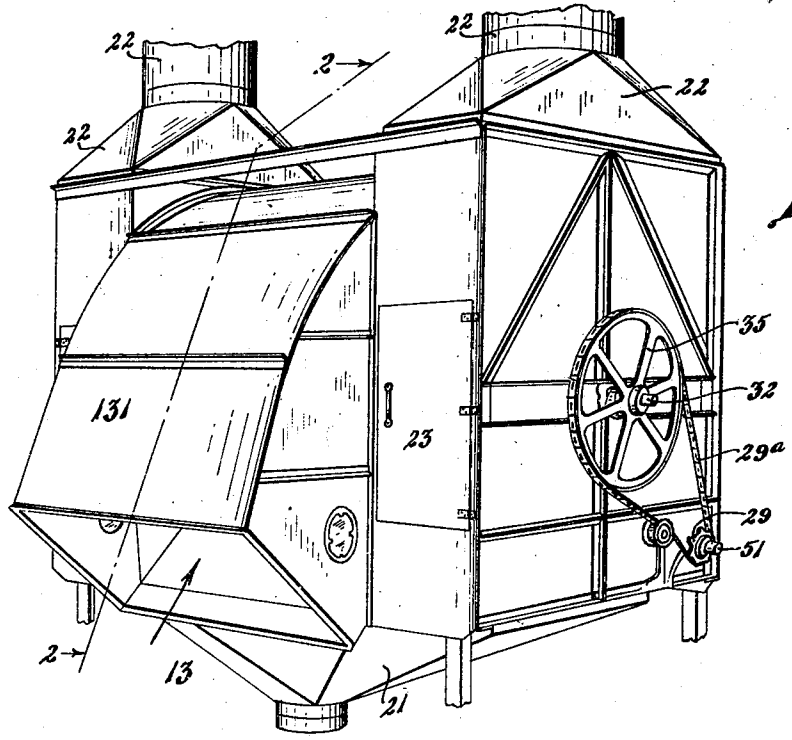


Fig. 1.

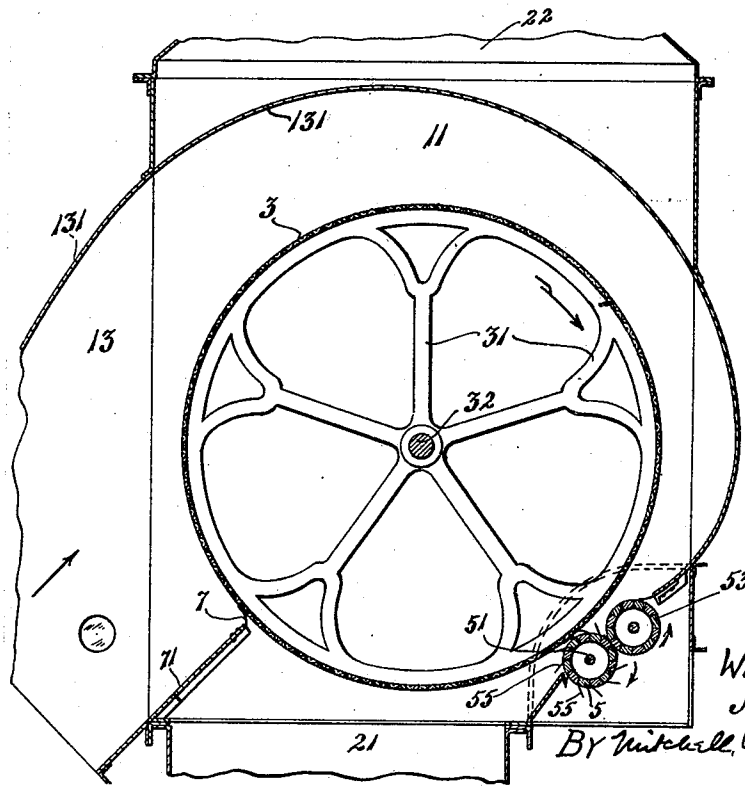


Fig. 2.

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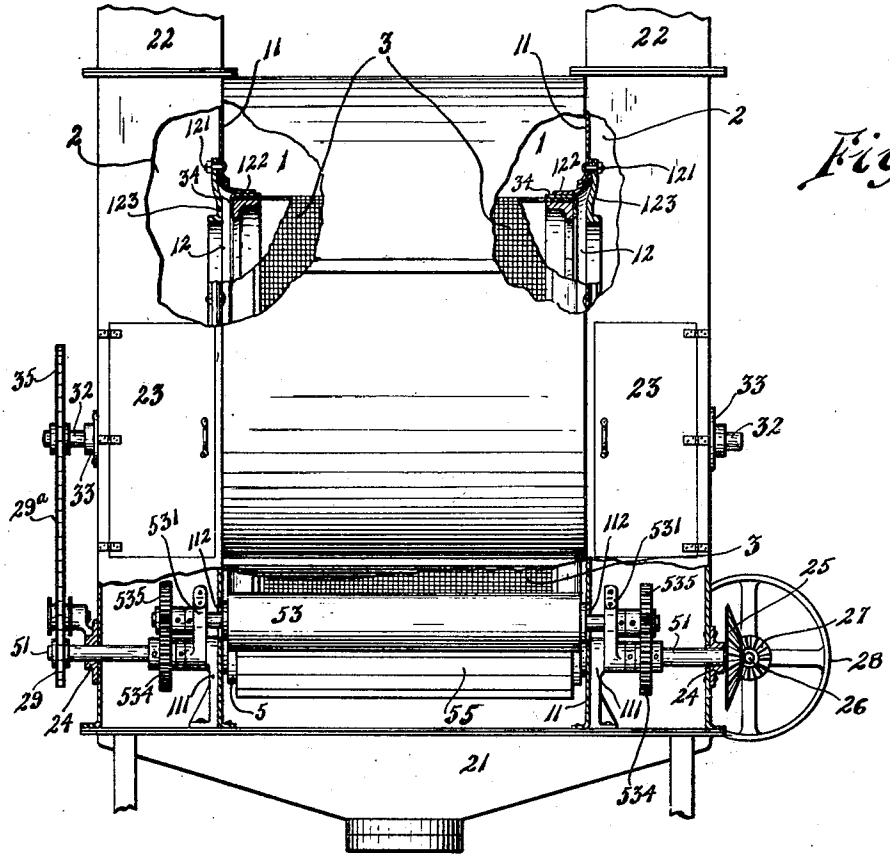


Fig. 3.

Fig. 4.

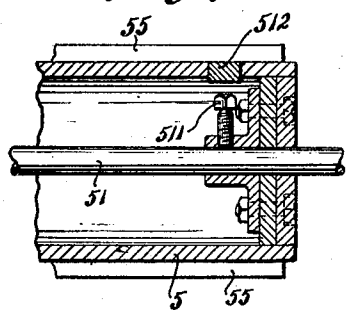


Fig. 7.

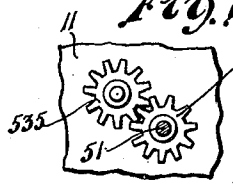


Fig. 5.

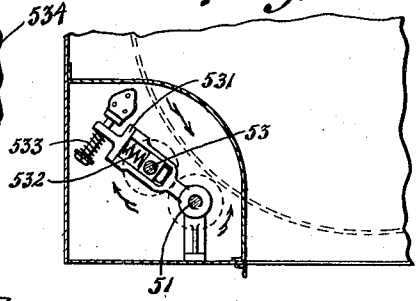
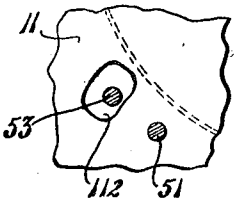


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM L. HANCOCK AND JOHN BLEWETT, OF DALLAS, TEXAS, ASSIGNORS TO THE MURRAY COMPANY, OF DALLAS, TEXAS, A CORPORATION OF TEXAS.

COTTON CONDENSER.

Application filed April 19, 1928. Serial No. 271,177.

Our invention is an improved cotton condenser, of all metal construction, the elements of which are so designed and combined that the utmost economy of assembly and replacement and repair, is accomplished, while the machine as a whole is more efficient in operation than prior machines for the same general purpose.

In the drawings:

Figure 1 is a perspective view of our machine taken from the rear or cotton entry side;

Figure 2 is a cross section on line 2—2 of Figure 1;

Figure 3 is a front elevation, broken away in parts to show interior mechanism;

Figure 4 is a detail, in section, of part of a doffing roller;

Figure 5 is a detail on an enlarged scale, of the doffer roller mounting;

Figure 6 is a detail on an enlarged scale, of the doffer roll shaft openings in the inner heads;

Figure 7 is a detail, of the doffer gears.

As is commonly known, the lint cotton, taken by the gin saws from the seed cotton roll, in the roll box of the gin, is removed from the saws either by an air blast or by rapidly rotating brushes, in either case a current of air being created which is utilized to carry the lint cotton from the saws, through a lint pipe, to the cotton condenser, in which the lint is screened from the air current, and formed into a bat, which passes from the condenser down a lint slide to a baling press. There are several forms of screens employed in various condensers, and the type of condenser to which our improvements are particularly applicable is that in which a rotating screen drum is employed, enclosed in a suitable casing.

In the drawings, illustrating our improved condenser, the casing, within which the screen drum is mounted is divided into three compartments, a central chamber 1, and end chambers 2, the chambers 2 being divided from the central chamber 1, by a partition 11, having a central aperture 12. The screen drum is, as usual, made up of several spiders, 31, mounted upon a shaft 32, and covered with wire mesh, 3, the shaft 32 being carried in bearings, 33, in the end walls of the casing, so that it may be rotated by a sprocket gear 35 mounted upon one projecting end of shaft 32 and driven by a sprocket chain 29ª from a gear 29 on one end of doffer shaft 51 of a doffer 5, the doffer shaft 51 being the power shaft of the machine, driven by bevel gears 25, 27, from a counter shaft 26, actuated by a pulley 28, from a source of power. The interior of chambers 2 is made accessible to the operator, for purposes of cleaning, repair or adjustment, by doors 23. The central chamber 1 is provided with an inlet housing 13 to which the lint flue (not shown) from the gins is connected. Beneath the three chambers, 1 and 2 is a hopper or trough 21, into which dirt or trash from the cotton lint, if any, may fall and be evacuated from the machine. Above each chamber 2 is an air uptake 22, extending to the outer air.

It is obvious that for the best results, the chambers 1 and 2, should be isolated from each other as thoroughly as possible, except through the screen drum and the apertures 12. It is to be noted that the air current relied upon to convey the lint from the gins to the condenser is not a suction current, but is merely produced by the air blast of the gins. As it is customary to raise the condenser on suitable standards or legs, in order that it may be in a position to deliver the lint into the baling chamber of a press, the lint pipe from the gins is slanted upward to connect with the inlet 13 and the course of the air current, is for best results, changed as little as may be. The air current entering the inlet 13, may pass through the screen 3 of the screen drum and with equal ease out through the ends of the drum into the chambers 2 and, continuing its general course upward, pass through uptakes 22, to the outer air. A certain amount of trash and dirt is carried by the lint and passes through the screen 3 and as the air current is not rapid, some of this matter may be too heavy to pass out through the uptakes 22. This matter will gravitate into the hopper 21 and so find its way out of the machine.

In order to keep the air current intact, sealing strips or flashings are provided, to contact with the moving screen drum. One of these is shown in Figure 2, lying across the

inlet 13, marked 7, and consisting of a strip of flexible and resilient rubber or leather or the like, secured to the floor of inlet 13 and bridging the gap between the end of the floor and the adjacent screen surface 3 of the screen drum, flexed upward, in the direction of rotation of the drum surface, to prevent the air current from passing at this point. This flexible strip is preferably secured to a board 71, which may be fastened in place by a bolt at either end, which bolt is readily reached by the attendant, in case of need, by entering the end chambers 2 and unfastening a single bolt at each end of the board.

The most difficult gap to seal is that between the peripheral ends of the screen drum and the adjacent partitions, separating chamber 1 from chambers 2. The ends of the screen drum are open and opposed to the circular openings 12 in the partitions 11, the opening being somewhat larger than the diameter of the screen drum and the edges of the opening are bent inwardly toward the drum (see Figure 3). Around the face of the screen drum, at each end a smooth metallic band 34 is mounted and around the openings 12 at intervals are set a series of bolts, projecting on the outerside of the partitions 11. These bolts, 121, are formed with screw threaded shanks and with thin flat heads. The purpose of the peculiarly thin shape of the bolt heads is to enable the several bolt-heads, when the bolts have been placed in the apertures in partitions 11, to be spot welded to the partition 11 and thus the bolts become an integral element with the partition, free from loosening or maladjustment, the heads hardly projecting from the inner surface of the partition. The flashings or gaskets 122 are preferably segments of a circle, divided, for example, into arcs of 45°, requiring eight strips of material, suitably shaped, to complete the sealing at each end, and these segmental gaskets are pierced to permit them to pass upon the outwardly projecting bolts 121. The gaskets after being mounted upon the bolts 121 and upon the outerside of partitions 11 are clamped in place by a clamp member 123 and the free edge of the gaskets 122 is flexed inward to contact with a band 34. It will be noted that the flexing of the gasket 122 involves no contact with any sharp angular edge, but on the contrary the inwardly bent edge of the opening 12 in partitions 11 sustains the gasket however it may be flexed, without presenting any angular surface. Furthermore, when it becomes necessary to replace a gasket strip, which occurs when the constant flexing, which occurs in use, has caused the fabric to crack, the strip, being clamped to the outside of the partiton 11 is easily accessible and easily removable. The operator may enter chamber 2 and by unscrewing the nuts on bolts 121 may remove a clamping segment 123 and the defective gasket segment, which may be instantly replaced by a new segment, accurately cut and shaped to fit, and the clamping segment replaced, the bolts 121 being integral with the partition, receiving the segment 123.

It will now be apparent that the cotton laden air current, entering through inlet 13 is confined at the top by the wall 131 and at the bottom by the flashing or gasket 7 and at the sides by the flashings or gaskets 122, so that the air must pass through the screen 3 leaving the lint on the screen, which, due to the rotation of the screen drum forms a bat. The passage between the wall 131 and the surface 3 of the screen drum, is closed, at the end remote from the inlet, by a doffer roll 5, carried in bearings in the end walls of the casing, and provided with fabric strips 55, which impinge upon the surface of the screen drum as the doffer rotates, in the direction of the arrow, and strip off the cotton bat, which exits to the lint slide between the doffer 5 and a compacting roller 53 which cooperates with the doffer 5 to compress the bat. This roller 53 is carried at each end in a yoke bearing 531 pivoted on the shaft 51 of doffer 5, so that the roller 53 may swing about shaft 51 to and fro the drum, and at the same time the roller 53 can move to and fro the doffer 5, due to the fact that the swinging yoke carries the bearing of roller 53 in a slot along which it may move. A spring 532 urges the roller 53 toward the doffer 5 and a spring 533 urges the slotted bearing 531 toward the drum. The result is that roller 53 in its relation to doffer 5 has a substantially universal capacity of movement, to and fro the doffer roller and to and fro the screen drum. In order that this capacity may be made effective, the spur gears 534, 535 by which rollers 5 and 53 are connected are designed with extra long teeth so that a considerable separation of the cooperating rollers may be effected without disengagement of their respective driving gears and the walls 11 are also provided with an arcuate slot 112 so that 53 may swing about the shaft 51 of the doffer roll 5.

The doffer roller shaft 51 is mounted in bearings 111 on walls 11 and has in addition a bearing 24 at each end in the outer walls of the casing. At one end shaft 51 carries a driving gear 25 meshing with a gear 26 on a counter shaft 27, driven from a source of power by a pulley 28. At the other end the shaft 51 carries a sprocket gear 29 which, through a sprocket chain 29ª drives a sprocket gear 35 on shaft 32 of drum 3. The shaft 51 is detachably secured within the doffer roll 5 (see Figure 4) by set screws 511, a removable plug 512 being provided in the surface walls of roller 5 so that the shaft may be freed at any time and withdrawn without removing the roller itself. This is a useful feature inasmuch as it enables the driving

equipment, gearing and countershaft to be changed from right to left hand to suit the arrangement of the gin plant, without removing the rollers from the condenser—a slow and laborious operation.

We claim:

1. In a cotton condenser, a casing divided into a central drum chamber and end chambers by apertured partitions; a screen drum within the central drum chamber, its hollow interior opposed at each end to the partition apertures; smooth metallic bands around the periphery of the screen drum at each end; flexible, arcuate flashings secured upon the outerside of the partitions and flexed through the partition apertures to engage the metallic band; an air and lint inlet into the central chamber; a pair of doffer rolls to remove the bat from the surface of the drum, one roller provided with flexible wipers, the other swinging about the wiper roller shaft to and fro the drum and movable also to and fro the wiper roller; an air outlet from each end chamber.

2. In a cotton condenser, a casing divided into a central drum chamber and end chambers by apertured partitions; a screen drum, within the central drum chamber its hollow interior opposed at each end to the partition apertures; a multiplicity of outwardly projecting bolts about the partition apertures; flexible arcuate flashings mounted upon the bolts and flexed through the partition apertures to engage the peripheral end surfaces of the drum; segmental clamping members to pass upon the bolts and clamp the flashing to the outer surface of the partitions; a doffer roll to remove the bat from the surface of the drum; an air outlet from each end chamber.

Signed at Dallas, Texas, this 13th day of April, 1928.

JOHN BLEWETT.
WM. L. HANCOCK.