July 31, 1962 G. J. KYAME ET AL 3,046,612

AIR-BLAST DOFFER AND CONDENSER

Filed Feb. 19, 1960

FIG. 1

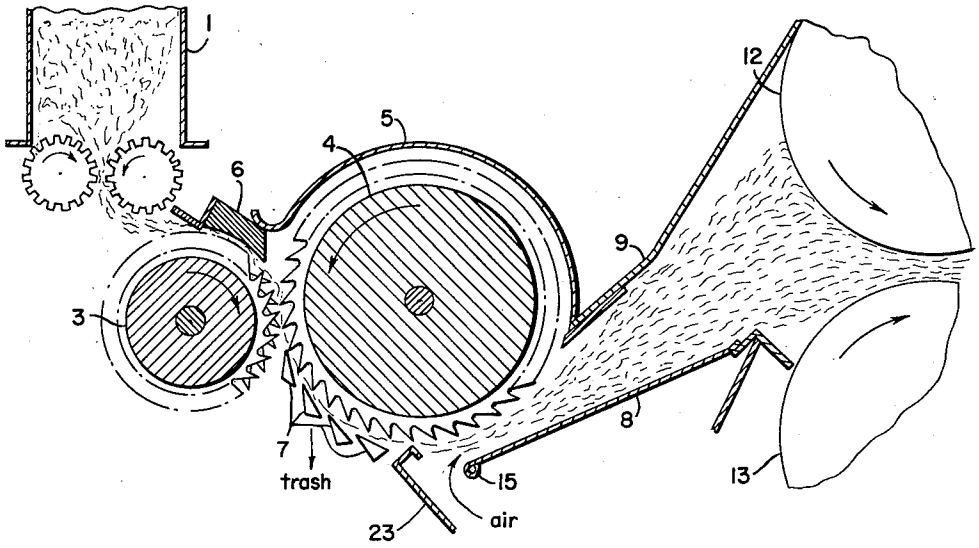


FIG. 2

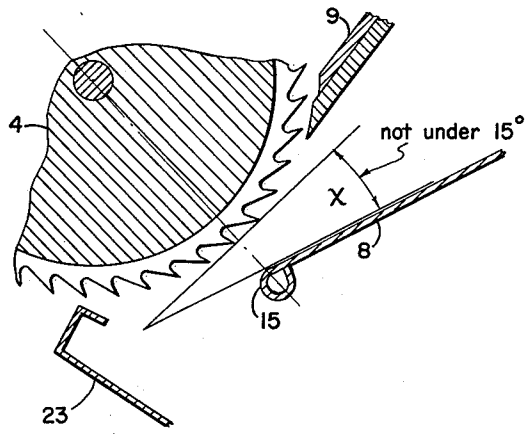
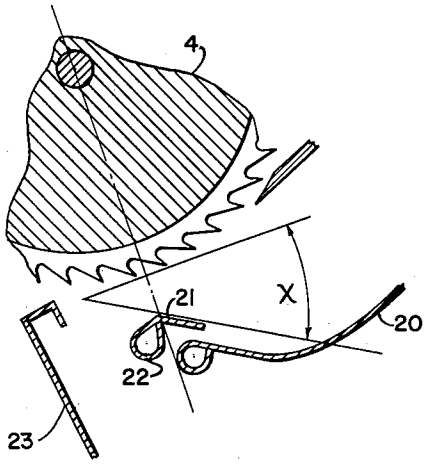


FIG. 3



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AIR-BLAST DOFFER AND CONDENSER

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1 Claim. (Cl. 19—203)
(Granted under Title 35, U.S. Code (1952), sec. 266)

A non-exclusive, irrevocable, royalty-free license in the invention herein described, throughout the world for all purposes of the United States Government, with the power to grant sublicenses for such purposes, is hereby granted to the Government of the United States of America.

This invention relates to a condenser for forming fibers conveyed by air to the condenser into a batting, and in particular to the combination of such condenser with an air-blast doffer which doffs the fibers from a toothed fiber-working cylinder, such as the beater cylinder of a fiber cleaner, and with the conduit which conveys the fibers to the condenser.

An object of the invention is to design the doffer and conduit to give an even distribution of the fibers on the condensers so as to obtain uniformity in the batting which the condenser delivers. The object is accomplished by properly designing the air-blast inlet from the doffer to the conduit which leads to the condenser, the usual suction fan for the condenser supplying the air for the air-blast doffer. The conduit flares outwardly as it leads to the condenser cage in such a manner that the air velocity is rapidly diminished, turbulence decreased, and the flow of air onto the condenser cage is uniform. Details of the design to accomplish the purpose will be set forth in the following description and accompanying drawing in which:

FIG. 1 is a partial showing of a section through a cotton cleaner illustrating the condenser, fiber-working cylinder, air-blast doffer and conduit;

FIG. 2 is an enlarged detail of FIG. 1; and

FIG. 3 is an enlarged detail of a modified form.

Referring to the drawing, ginned cotton contaminated with trash feeds from chute 1 in a conventional manner onto a feed roll 3, thence onto adjacent beater cylinder 4 in housing 5, guard plate 6 acting to prevent premature engagement of the cotton on feed roll 3 with the teeth on beater cylinder 4. The contaminated cotton is carried forward by the teeth of cylinder 4 past spaced grid bars 7, trash being ejected between these bars and the cleaned cotton fibers being carried onward. The parts 3, 4, 5, 6, and 7 correspond in structure and function essentially to the correspondingly numbered parts of Patent No. 2,825,097.

The cleaned fibers are removed from cylinder 4 with an air-blast doffer and are jetted into a conduit having a straight side 8 and opposite side 9 flaring from the straight side, the fibers being deposited directly onto the conventional rotary fiber condenser cage formed by the two screen cylindrical cages 12 and 13. Side 8 terminates in

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nose 15 which, together with partition 23, forms an entrance nozzle through which air is drawn from the atmosphere through the conduit and condenser cage, the nose being positioned sufficiently near the periphery of cylinder 4 to give an air velocity at the nose high enough to act as an air-blast doffer for removing the fiber from the cylinder, The straight side 8 recedes from the periphery of the cylinder, angle x being not less than 15°. The angle is formed by the straight side 8 and a line tangent to the cylinder, the point of tangency lying on a line drawn from the center of the cylinder through the nose 15 as illustrated in FIG. 2. Formation of the side 8 at the angle mentioned results in an immediate expansion of the air after it passes the nose 15 with an orderly decrease in velocity and suppression of eddy currents in the conduit, thus to aid in keeping the fibers more evenly distributed across the sectional area of the conduit as the fibers impinge on the condenser cage.

FIG. 3 illustrates an embodiment in which the side 20 of the conduit is curved as a result of the spatial disposition of the machine components. Doffed lint, in this instance, cannot travel in a straight line to the condenser cages and eddies tend to form in the curved section. The introduction of piece 21 prevents formation of eddies. In this instance the nose 22 is provided on piece 21, the relationship of the nose and angle x to cylinder 4 being the same as described above relative to FIG. 2.

We claim:

In combination a rotatable fiber working cylinder having peripheral teeth, a fiber condenser cage, and an air-flow fiber carrying conduit leading from the fiber working cylinder to the condenser cage, opposite sides of the conduit flaring outwardly to the condenser cage, one of said sides having a straight portion terminating in a nose near the periphery of the fiber working cylinder thus to form an entrance nozzle for an air-blast doffer for removing the fibers from the fiber working cylinder and jetting them into the conduit, said conduit being devoid of any constriction between the entrance nozzle thereof and the condenser cage, air for the air-blast doffer being supplied from the atmosphere and drawn through the conduit and condenser cage, said straight portion of the conduit side forming an angle of not less than 15° with a line tangent to the fiber working cylinder, the point of tangency lying on a line drawn from the center of the fiber working cylinder through the nose, thus to give an even distribution of the fibers on the condenser cage.

References Cited in the file of this patent

UNITED STATES PATENTS

2,876,500 Buresh et al. ---------- Mar. 10, 1959

FOREIGN PATENTS

916 Great Britain ---------- of 1915
7,137 Great Britain ---------- of 1915
381,994 Germany ---------- Sept. 27, 1923