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CYLINDER FOR USE IN COTTON CLEANING MACHINES

Filed March 23, 1931

Fig. 1.

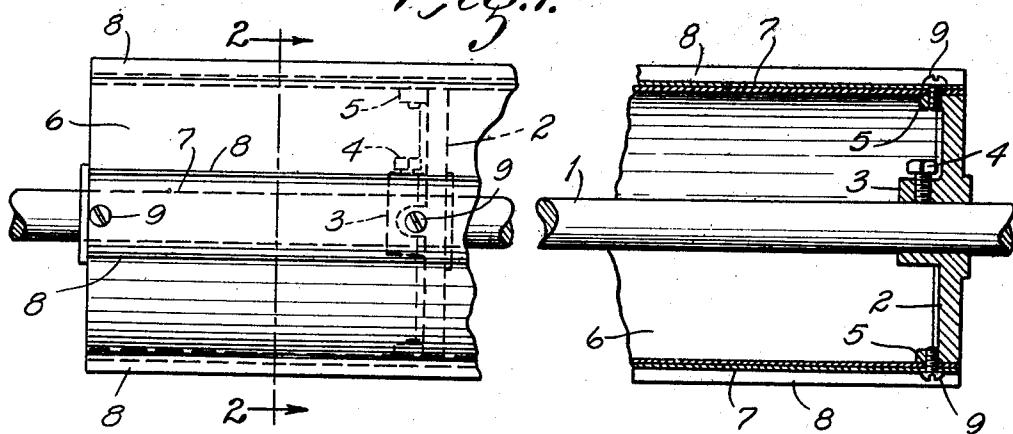


Fig. 3.

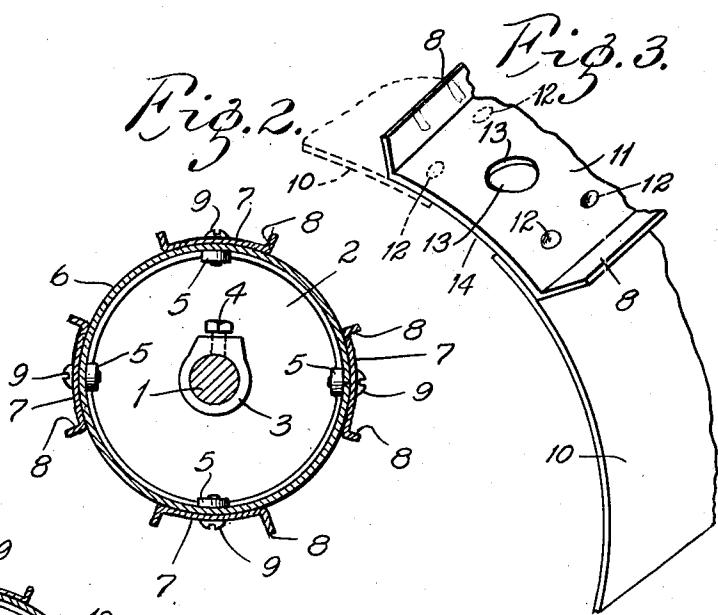
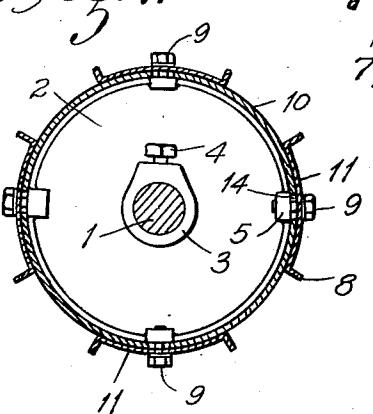


Fig. 4.



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# UNITED STATES PATENT OFFICE

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CYLINDER FOR USE IN COTTON CLEANING MACHINES

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The general object of this invention is to provide a cylinder of novel construction, adapted more particularly for use in cotton cleaning machines.

5 The improved construction of cylinder is designed especially for use as a doffing for removing the cotton from the saw cylinder, and as a kicker roll for knocking the hulls and trash loose from the cotton until the latter is 10 engaged by the teeth of the saw cylinder.

In the past, the commonest form of doffing cylinder used in cotton gins and in cotton cleaning machines, has comprised a number of horizontal brushes held in place by spiders 15 attached to a shaft. Such a construction will be found illustrated, for example, in the prior patent to Orville Mitchell; one of the co-inventors herein, No. 1,727,128, dated September 3, 1929.

There are two objections to the brush type of cylinder: first, the brushes are quite expensive, making the cylinder a costly one; and, second, the brushes wear out rapidly in 20 operation, making the upkeep cost excessive.

In another type of doffing cylinder, the 25 brushes are replaced with metal strips which are secured to a wood frame-work by means of wood screws. The same type of construction has been used in kicker rolls. Cylinders of 30 this general type functioning, respectively, as a kicker roll and a doffing roll in connection with a saw cylinder, may be found illustrated in various prior patents of John E. Mitchell, the other of the co-inventors herein; for example, Patent No. 1,734,592, dated November 5, 1929.

The objection to this type of cylinder is that the wood frame-work warps and shrinks, drawing the cylinder out of balance, and it 40 also occasionally splits, letting the screws that secure the metal strips to the frame-work fall out.

All of these objections are overcome by the present construction of cylinder, which will 45 now be described:

In the accompanying drawings—

Fig. 1 is a view partly in elevation and partly in section illustrating a doffing cylinder or kicker roll constructed according to 50 our invention;

Fig. 2 is a cross-sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a broken perspective view illustrating a modified construction; and

Fig. 4 is a cross-sectional view of a cylinder embodying the modified construction of 55 Fig. 3.

Referring now to the drawings, the numeral 1 indicates a shaft on which is mounted at the ends and at various points throughout its length, a series of metal discs 2. Each of these discs is provided at one side with an integral hub 3, having a screw-threaded aperture for receiving a set screw 4, by means of which the disc is fixedly secured on the shaft. At its periphery each disc is provided with a number of equally-spaced screw-threaded lugs 5, four of such lugs being usually provided on each disc. Surrounding and enclosing the discs is a circular metal drum or 60 casing 6, and mounted on said casing and extending longitudinally from end to end thereof are a number of doffing or cleaning members 7. Each of these members comprises a strip of metal turned outward at right angles at opposite sides to form blades 8, and said strips are secured on the casing 6 by means of screws 9 passing through the center of the strips, the wall of casing 6 and into engagement with the threaded lug 5. 70

According to the modified construction illustrated in Figs. 3 and 4, the cylinder is made in segmental sections 10, one side of each section extending under one side of a flanged strip 11, and being secured thereto, preferably by spot-welding as indicated at 12. The flange strips 11 are the same in construction as the flanged members 7 of Figs. 1 and 2, having the blades 8 and being provided with central apertures 13 for the reception of the screws 9. As will be seen from Fig. 3, the side edge of the section 10 secured to the flanged strip, or cleaning member, 11, terminates short of the apertures 13, and each section with its connected strip 11 forms a covering for one-quarter of the cylinder periphery. In other words, four of these welded units, such as shown in Fig. 3, when fastened to the discs 2 completely enclose or 80 house the cylinder. 95

In assembling the parts, four of the welded units consisting of a casing section 10 and strip 11 are mounted on the discs 2, the free side of each section 10 being placed under the side of a strip 11 opposite to that at which the strip is welded to an adjacent section 10, as illustrated by the dotted lines in Fig. 3. This leaves a space 14 between the sides of adjacent sections through which the screws 9 may pass to be inserted in the screw-threaded lugs 5.

From the foregoing, it will be seen that the modified construction differs from the construction of Figs. 1 and 2 in that the cylinder 15 is made up of four sections, instead of being formed by a continuous sheet of metal; and that instead of forming apertures in the wall of the casing for the passage of the screws 9 therethrough, a continuous space 14 is provided 20 between the side edges of adjacent sections, so that there is a resulting saving in material, and of labor involved in forming the four lines of apertures in the casing of the main construction. The cylinder as a whole 25 may be rapidly assembled, and it will be apparent that, with the welded units of the casing assembled as described, when the screws 9 are passed through the apertures 13 into engagement with the lugs 5, a firm or rigid 30 construction of cylinder is provided.

A cylinder or kicker roll constructed in either of the forms described, may be manufactured at much less cost than the brush construction of cylinder referred to above. 35 Being made entirely of metal, it affords a rigid construction and, therefore, one which will maintain its balance in operation, and the blades 8 whereof will operate satisfactorily for almost an indefinite length of time, 40 so far as ordinary wear and tear are concerned.

A doffing cylinder and a kicker roll constructed according to the present invention differ only in size, the doffing cylinder usually 45 being considerably greater in diameter.

In the interest of brevity, therefore, I will use the generic term "cylinder" in the claim as including both adaptations of the invention.

50 We claim:

1. A cylinder for use in cotton cleaning machines comprising a shaft, a series of discs secured thereon, each of which is provided with a plurality of laterally-projecting apertured lugs, a metal casing surrounding and enclosing said discs, a series of longitudinal strips mounted on the outer surface of said casing and extending from end to end thereof, each of said strips having an upturned edge providing a blade, and securing means passing through the body of each of said strips, the wall of said casing and into engagement with said apertured lugs.

2. A cylinder for use in cotton cleaning machines comprising a shaft, a series of discs

secured thereon, each of which is provided with a plurality of laterally-projecting apertured lugs, the lugs of the respective discs being in alignment, a metal casing surrounding and enclosing said discs, a series of longitudinal strips mounted on the outer surface of said casing directly over the respective lines of lugs and extending from end to end of the casing, each of said strips having an upturned edge providing a blade, and securing means passing through the body of each of said strips, the wall of said casing and into engagement with the corresponding line of apertured lugs.

3. A cylinder for use in cotton cleaning machines comprising a shaft, a series of circular discs secured thereon, each of which is provided with a plurality of laterally-projecting lugs having screw-threaded apertures, the lugs of the respective discs being in alignment with each other, a metal casing surrounding and enclosing said discs, a series of longitudinal strips mounted on the outer surface of said casing directly over the respective lines of lugs and extending from end to end of the casing, each of said strips having its side edges upturned at right angles to provide blades, and screws passing through the center of the body of each of said strips, the wall of said casing and into engagement with the screw-threaded apertures of the corresponding line of lugs.

4. A cylinder for use in cotton cleaning machines, comprising a shaft, a series of disks secured thereon, each of which is provided with a plurality of laterally-projecting lugs, the lugs of the respective disks being in alignment, a series of arcuate metal casing sections, a metal strip secured to each casing section to extend along one side thereof, said strip having an upturned side edge affording a blade and being provided centrally of its body portion with a line of apertures corresponding in number and relative position with the lugs in an aligning series of lugs, such casing sections being mounted on said disks with the free side of one casing section extending under the free side of one of said metal strips, and securing means extending through the apertures in said strips, and into engagement with corresponding apertured lugs.

5. A cylinder for use in cotton cleaning machines, comprising a shaft, a series of disks secured thereon, each of which is provided with a plurality of equally-spaced lugs projecting laterally from one side of the periphery thereof, the lugs of the respective disks being in alignment, a series of arcuate metal casing sections, a metal strip secured to each casing section to extend along one side thereof, said strip having upturned side edges affording blades and being provided centrally of its body portion with a line of apertures located beyond the side of the casing section to

which the strip is secured and corresponding in number and relative position with the lugs in an aligning series of lugs, such casing sections being mounted on said disks with a free side of one casing section extending under the free side of one of said metal strips, and securing means extending through the apertures in said strips, between the side edges of said sections and into engagement with corresponding apertured lugs.

In testimony whereof, we have hereunto set our hands.

JOHN E. MITCHELL.  
ORVILLE MITCHELL.

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