Aug. 25, 1942. W. H. GOLDSMITH, JR 2,294,336

STRIPPING APPARATUS FOR CARDING ENGINES

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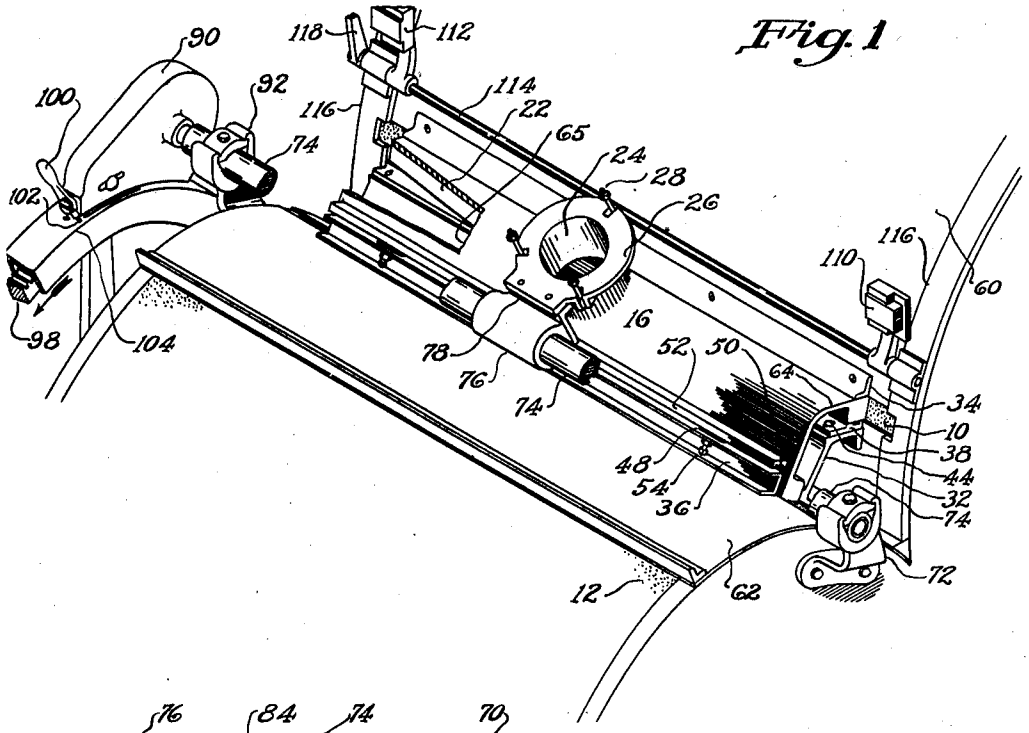
Fig. 1



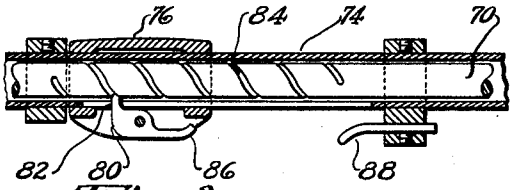


Fig. 3

Fig. 2

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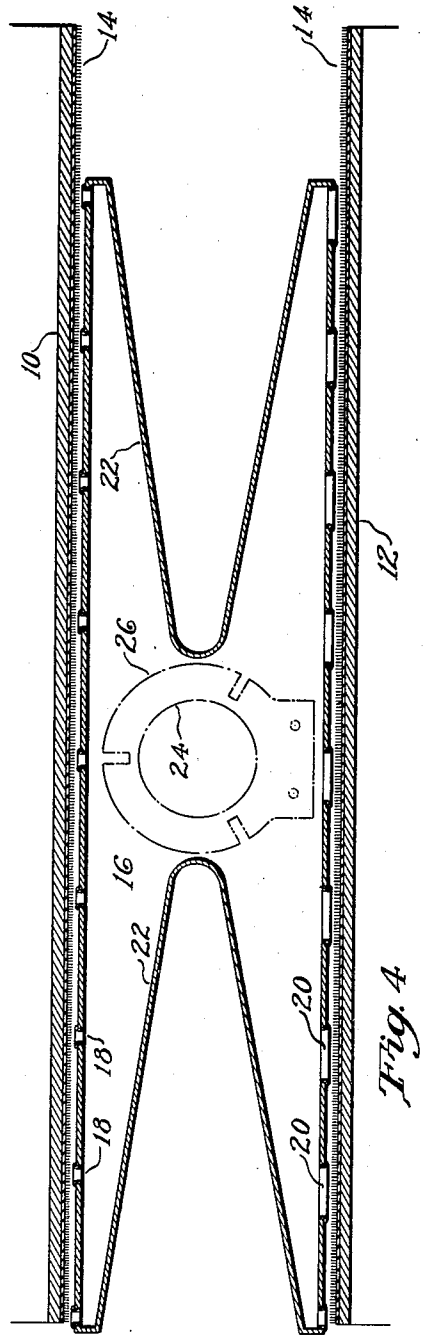

Fig. 4

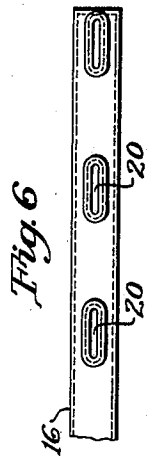

Fig. 6

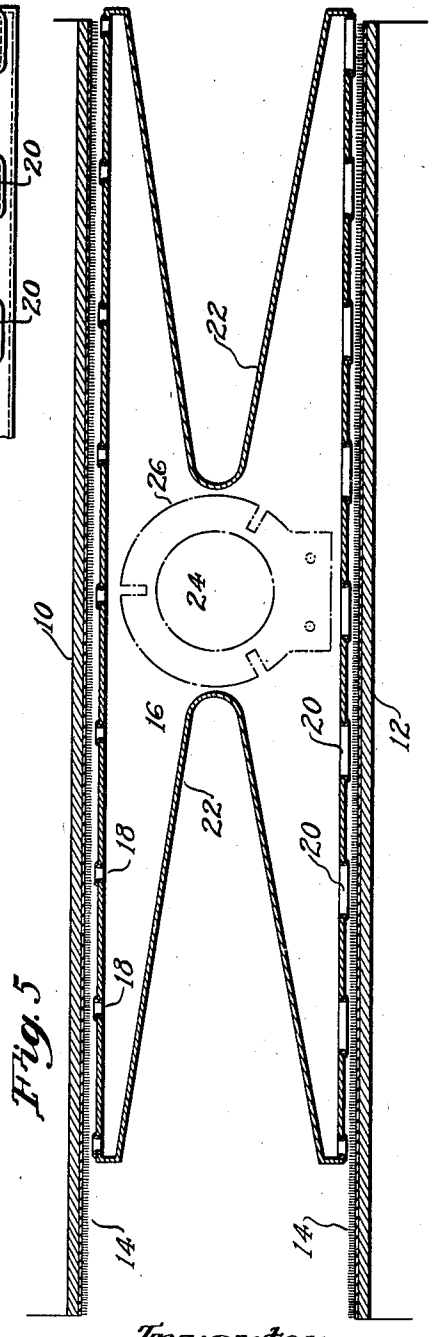

Fig. 5

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UNITED STATES PATENT OFFICE

2,294,336

STRIPPING APPARATUS FOR CARDING ENGINES

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Application May 21, 1940, Serial No. 336,400

10 Claims. (Cl. 19—109)

The present invention relates to apparatus for stripping the working cylinders of carding apparatus, and is more particularly concerned with vacuum stripping apparatus designed to accomplish the complete stripping of both the carding and doffer cylinders, requiring a minimum period of shut-down of the cylinders in process of cleaning.

The purpose and object of the present invention is to provide a mechanism for effectively cleaning the entire surface of the working cylinders in a minimum of time, and to this end I propose the provision of a multiplicity of nozzles or suction openings which shall simultaneously act upon the cylinders to be cleaned, and which are capable of traversing and cleaning the entire surface of the cylinder with a consequently short traverse or movement of the nozzles themselves.

In the illustrated embodiment of the invention, Fig. 1 represents a general top plan view in perspective of a portion of the working cylinders with the multiple stripper assembled therewith; Fig. 2 is a detail showing a section in elevation of the cylinders and accompanying stripper; Fig. 3 is a detail illustrating the traversing member for feeding the suction nozzles lengthwise of the cylinders; Figs. 4 and 5 are details illustrating identical sections of the suction manifold on the line 4—4 of Fig. 2, these views showing the relation of the manifold to the cylinders to be cleaned at the beginning and end of its traverse; and Fig. 6 is a detail illustrating a plan view of the suction openings shown in Fig. 4.

The structure shown in the illustrated embodiment of the invention is applied to a carding engine of somewhat conventional structure, provided with the usual carding cylinder 10 and accompanying doffing cylinder 12, each provided with appropriate teeth 14. As indicated particularly in Figs. 1 and 2, the stripping apparatus is assembled and located approximately in the apex of the angle formed between the peripheral surfaces of the adjoining cylinders, and as shown more particularly in these figures, comprises generally a trunk or manifold 16 having opposite working surfaces, one of which is provided with a series or bank of suction openings 18 in operative relation to the teeth of the carding cylinder 10, and the opposite wall of which is provided with larger suction openings 20 in appropriate relation to the teeth of the doffing cylinder 12. This manifold unit provided with the two series of suction openings is provided with tapered and reentrant end walls 22, as shown more particularly in Fig. 4, which tend to constrict the area within the manifold toward the outlet connection 24. This outlet connection, as shown in Fig. 2, is provided with an attaching flange 26 having hinged bolts 28 through which the connection is attached to and sealed to a flexible suction pipe 30.

Referring again to Fig. 2, it will be observed that the manifold unit is slidably supported in proper relationship to the teeth of the cylinders to be cleaned by a stationary frame or plate member 32 upon which the manifold is slidably supported, the suction openings in the manifold being disposed in planes at an angle or normal to one another. In addition, the manifold is guarded by a bracket 34 and a second bracket 36, which provide oppositely disposed guides for the maintenance of the proper relationship. The position of the suction openings with relation to the teeth of the cylinders to be cleaned may be properly controlled and adjusted through the provision of a plate 38 which is grooved at 40 and engages a spline or tongue 42 on the manifold. This plate is capable of adjustment toward and from the carding cylinder through the bolt 44 and groove 46 to vary the position of the suction openings with respect to the teeth of the cylinder, as will be clearly evident. In a like manner the position of the teeth with respect to the doffing cylinder may be adjusted through the provision of a track 48 engaged by a groove 50 formed in a flange 52 upon the manifold, this track being capable of adjustment toward and from the doffer through an adjustable screw 54.

In the illustration of the suction manifold as exhibited in Figs. 4 and 5, both sides or faces of the manifold are provided with nine openings each spaced on approximately five inch centers. By a movement or traverse of the manifold equal to or slightly greater than the spacing between openings it is obvious that a complete traverse of the entire surface of a cylinder 48 to 50 inches long may be obtained. Actually in the drawings, as shown in Figs. 4 and 5, a movement slightly greater than the spacing between the openings is obtainable and of sufficient amount to traverse each opening throughout the space intervening between it and the next adjacent opening and slightly therebeyond to insure cleaning of the entire surface.

Again referring to Fig. 2 of the drawings, it will be observed that each working cylinder is partially enclosed by the usual cover plates 60 and 62, and these plates are provided with appropriate slotted openings along which the manifold slides and through which the suction openings

are made operative. As again evidenced in Fig. 1, the manifold as a whole may be provided with external rounded plates such as 64 and 65 to strengthen the manifold as a whole, these plates covering the reentrant end walls shown in Figs. 4 and 5.

In the ordinary usage of the multiple stripping device the suction manifold is manually returned to the beginning of its traverse to the left side of its position facing the card, and is thereafter connected with the feeding mechanism for automatically causing it to make its short traverse lengthwise of the cylinders, at the completion of which it is automatically disconnected and so remains until manually returned and reconnected. To this end the mechanism is provided with the usual rotating lead screw 70 journaled at one end in a fixed bearing 72 shown in Fig. 1, the screw rotating within a stationary guide tube 74. The manifold itself is connected with the traversing mechanism through a sliding bracket 76 attached at 78 to the manifold flange, this bracket sliding upon the guide tube 74 as indicated. Connection between the guiding head or tube and the lead screw is made through a driving dog 80, which as shown in Fig. 3 normally drops by gravity into a position where the toe 82 of the dog engages in the groove 84 of the screw. In the position shown in Fig. 3 the suction manifold may be considered as at the beginning of its stroke. As it is traversed to the right by the rotation of the lead screw the dog at the end of the traverse comes in contact through the tail 86 with the fixed disconnector 88 which removes the dog from engagement with the lead screw and causes stoppage of the stripper traverse.

The driving mechanism for the lead screw is of a simple type comprising generally a housing 90 which is mounted at the driving end of the lead screw beyond the journal bracket 92. This housing contains a driving gear 94 operating an intermediate gear 96 mounted upon the end of the lead screw, and the housing with contained gears may be bodily lifted or swung about the lead screw as an axis. This upward swinging movement of the housing and gears disconnects the driving gear 94 from a large gear 98 forming a part of the carding apparatus. Such an action may be accomplished by a mere swinging of the handle 100 having an elevating stop 102 which when swung into vertical position bears upon the frame 104 and retains the housing elevated and the driving gear out of mesh with the gear 98. So long as this position is maintained the lead screw is stationary and is supported after the restoration of the suction manifold by merely dropping the housing with the enclosed gear intermeshed with its driving gear, subsequent rotation of the lead screw on connection causing the appropriate traverse of the suction manifold until the end of the stroke is reached. Thereafter the cyclic operation may be repeated for stripping the card when desired.

It will be observed from an examination of the structure as shown in Figs. 4 and 5 that the suction openings for the doffer are of considerably greater width than those for the carding cylinder, and this is believed advisable because of the prior stripping operation upon the carding cylinder and the possibility of carry-over to the doffing cylinder which must be completely stripped by the openings operating thereon, and which can be better stripped by providing wider stripping areas upon the doffing cylinder which continue in action after the carding strippers have passed therebeyond. In other words, the leading edges of the two sets of stripper openings are in virtual registration with one another, whereas the doffer openings due to their greater width continue to strip the same area after passage of the carding openings from an area in registration therewith.

When not in use the exposed areas of the carding cylinder may be covered by plates 110 and 112, which are pivoted upon a fulcrum rod 114 running lengthwise of the cylinder and supported thereabove as shown in Fig. 1. These plates are intended to fill in the space between opposite ends of the suction manifold and the fixed rings 116 as shown therein. They may be easily dropped into place by the handle 118, as shown, the suction manifold having been previously centered in a manner to equalize the space at each end and permitting the cover blocks to be fitted into place resting upon the lids thereof.

What is claimed is:

1. Pneumatic stripping apparatus, comprising a suction trunk having oppositely disposed working faces each provided with a series of suction openings, a suction conduit communicating with the central portion of the trunk, reentrant end faces constricting the interior of the trunk toward the suction conduit, and means for imparting a traversing movement to the trunk.

2. The combination with carding apparatus having a rotary toothed working cylinder of a suction trunk positioned in proximity thereto and extending lengthwise of the cylinder, the trunk having a plurality of spaced suction openings extending lengthwise of the cylinder and in proximity to the toothed surface, the suction openings designed to have an air-borne suction therethrough, and means for imparting to the suction trunk a short traverse approximating the spacing between adjacent openings, to move the trunk lengthwise of the cylinder and cover the surface.

3. The combination with a carding machine having a rotary toothed working cylinder, of a suction trunk positioned in proximity thereto and extending lengthwise of the cylinder nearly along the entire length thereof, the trunk having a plurality of spaced suction openings extending lengthwise of the cylinder and in proximity to the toothed surface, the suction openings designed to have an air-borne suction therethrough, and means for imparting to the suction trunk a short traverse approximating the spacing between adjacent openings, to move the trunk lengthwise of the cylinder and cover the surface.

4. Pneumatic stripping apparatus comprising a suction trunk having a set of spaced suction nozzles disposed lengthwise thereof and adapted to be positioned adjacent to the carding cylinder of a carding machine, the trunk having a second set of nozzles spaced equally with the first set and adapted to be positioned adjacent to the doffer, and means for traversing the trunk a distance approximating the spacing between adjacent nozzles.

5. Pneumatic stripping apparatus comprising a suction trunk having a set of spaced suction nozzles disposed lengthwise thereof and adapted to be positioned adjacent to the carding cylinder of a carding machine, the trunk having a second set of nozzles spaced equally with the first set and adapted to be positioned adjacent to the doffer, the nozzles of the second set being wider than those of the first set, and means for tra-

versing the trunk a distance approximating the spacing between adjacent nozzles.

6. The combination, with a toothed working cylinder, of pneumatic stripping apparatus comprising a bank of suction nozzles disposed in lengthwise arrangement and spaced with respect to one another, the nozzles being positioned in proximity to the teeth of the cylinder and designed to have a suction draft therethrough, the bank spanning nearly the entire length of the cylinder, and means for imparting to the bank of nozzles a short traverse approximating the spacing between adjacent nozzles and in a lengthwise direction to cover the entire surface of the working cylinder.

7. The combination, with a toothed working cylinder, of pneumatic stripping apparatus comprising a bank of suction nozzles disposed in lengthwise arrangement and spaced with respect to one another, the nozzles being positioned in proximity to the teeth of the cylinder and designed to have a suction draft therethrough, the bank spanning the entire length of the cylinder less approximately the spacing between adjacent nozzles, and means for imparting to the bank of nozzles a short traverse approximating the spacing between adjacent nozzles and in a lengthwise direction to cover the entire surface of the working cylinder.

8. Pneumatic stripping apparatus, comprising a bank of spaced suction nozzles adapted to be positioned adjacent to the carding cylinder of a carding machine, a second bank of nozzles spaced equally with the first set and adapted to be positioned adjacent to the doffer, the banks being of a length, when mounted on the machine, to span nearly the entire lengths of their respective cylinders, and means for simultaneously traversing both banks lengthwise of the cylinders a distance approximating the spacing between adjacent nozzles.

9. Pneumatic stripping apparatus, comprising a bank of spaced suction nozzles adapted to be positioned adjacent to the carding cylinder of a carding machine, a second bank of nozzles spaced equally with the first set and adapted to be positioned adjacent to the doffer, the nozzles of the second bank being wider than those of the first bank, the banks being of a length, when mounted on the machine, to span nearly the entire lengths of their respective cylinders, and means for simultaneously traversing both banks lengthwise of the cylinders a distance approximating the spacing between adjacent nozzles.

10. Pneumatic stripping apparatus, comprising a suction trunk having oppositely disposed working faces each provided with a series of suction openings, a suction conduit communicating with the trunk, reentrant end faces constricting the interior of the trunk toward the suction conduit, and means for imparting a traversing movement to the trunk.

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