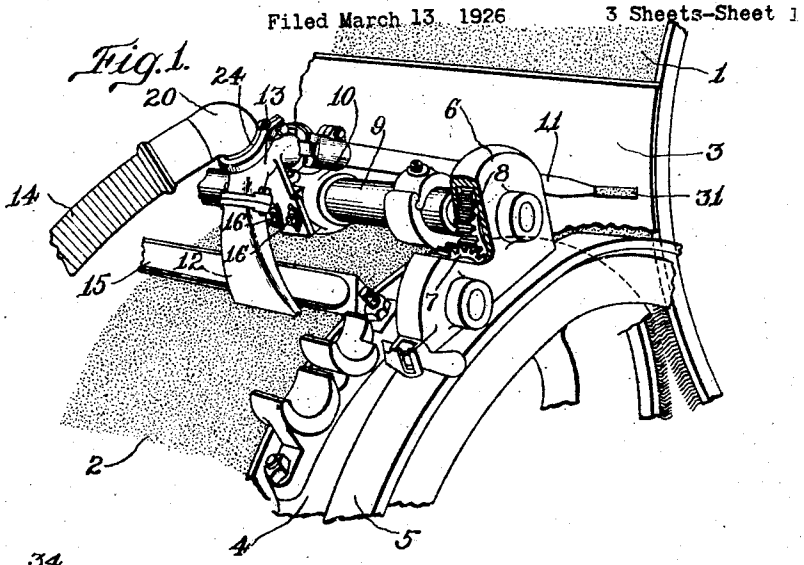
Jan. 11, 1927. E. CLARK 1,614,103

PNEUMATIC STRIPPER ATTACHMENT FOR CARDING ENGINES

Filed March 13, 1926 3 Sheets-Sheet 1

Fig. 1.



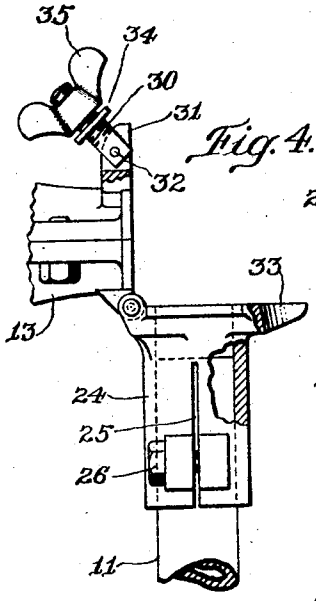


Fig. 4.

Fig. 3.

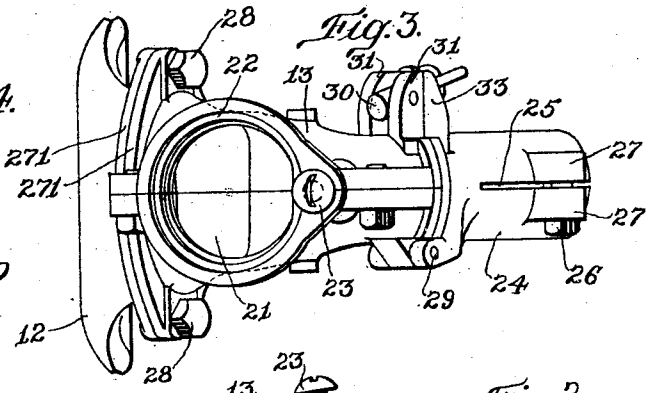
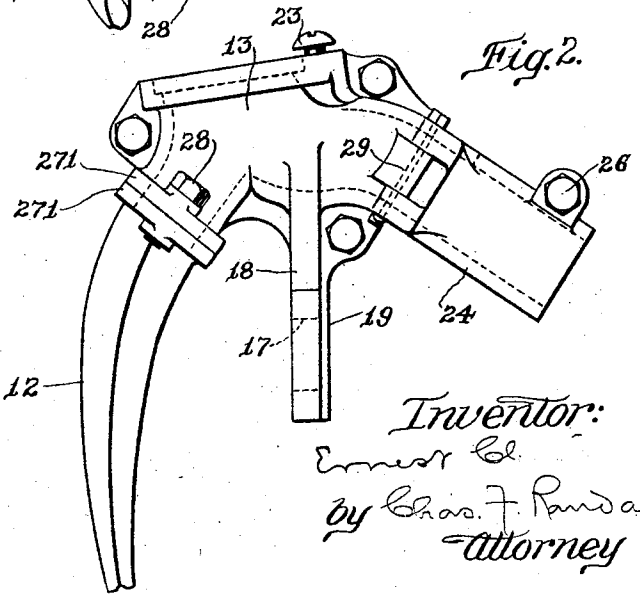


Fig. 2.



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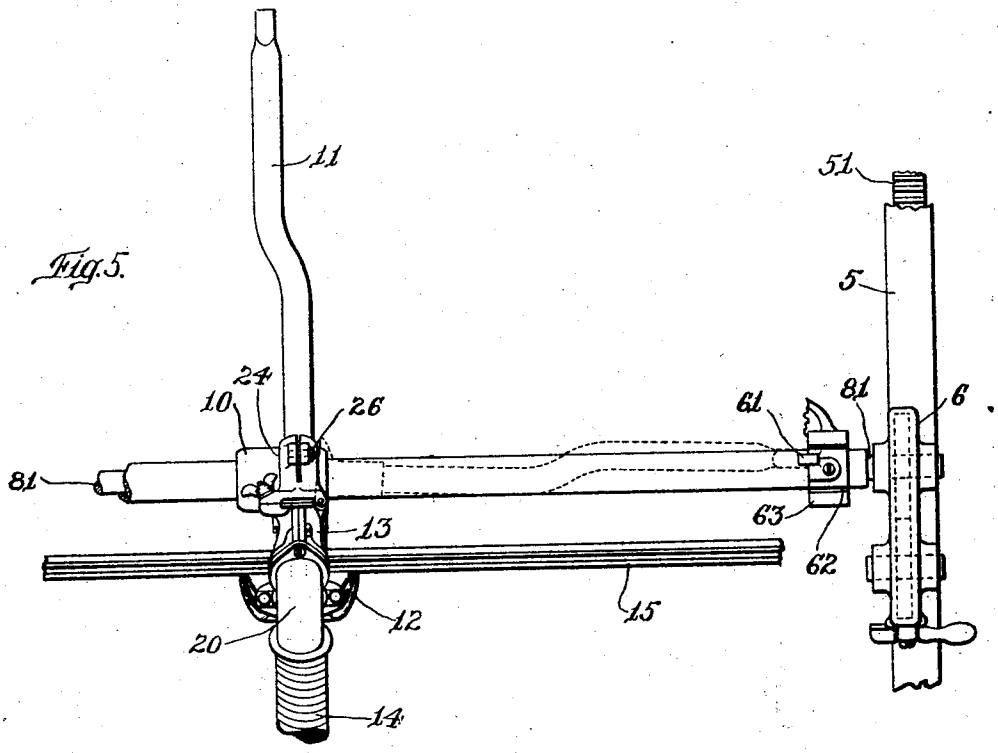
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E. CLARK

PNEUMATIC STRIPPER ATTACHMENT FOR CARDING ENGINES

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Fig. 5.



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PNEUMATIC STRIPPER ATTACHMENT FOR CARDING ENGINES

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Fig. 9.

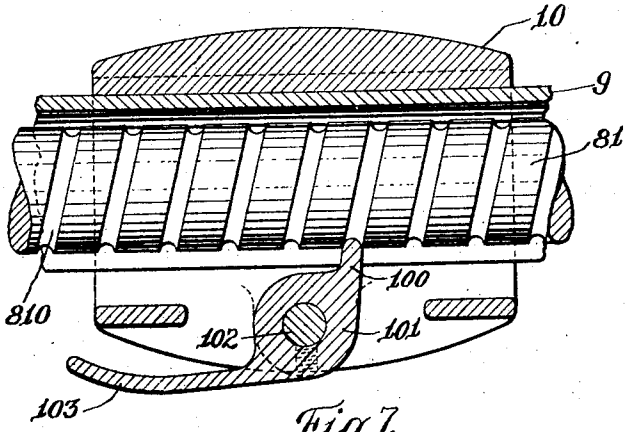


Fig. 7.

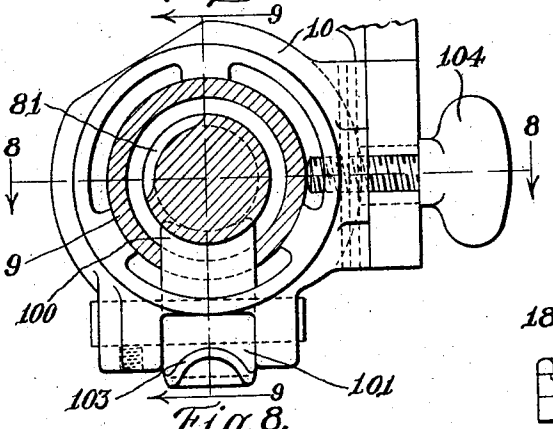


Fig. 8.

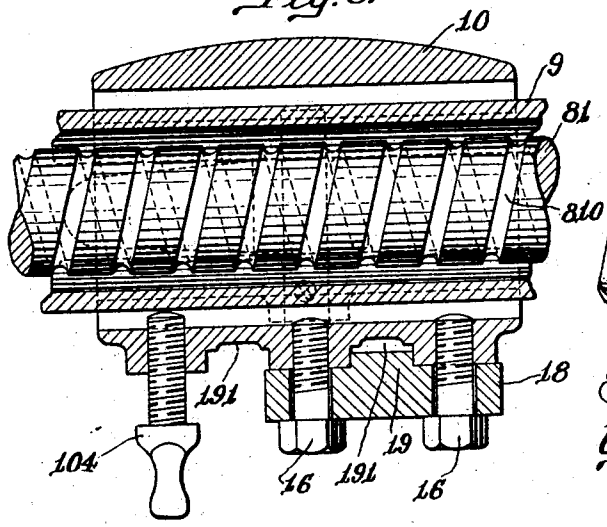
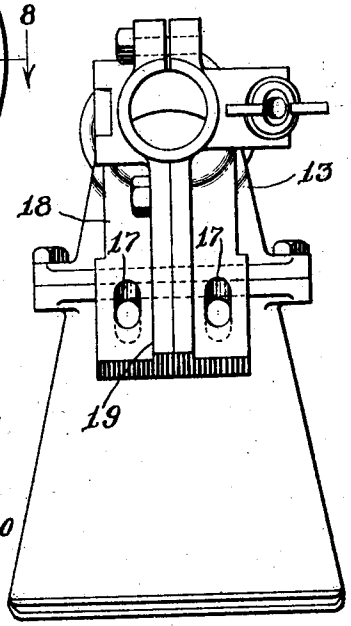


Fig. 6.



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Patented Jan. 11, 1927. 1,614,103

UNITED STATES PATENT OFFICE.

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PNEUMATIC STRIPPER ATTACHMENT FOR CARDING ENGINES.

Application filed March 13, 1926. Serial No. 94,442.

The invention has relation to the pneumatic stripper mechanisms which are employed for removing accumulations of dirt, short fibers, etc., from among the teeth of the card-clothed surfaces of the cylinders and other fiber-working elements of carding engines. Stripper mechanisms of the type to which the invention is designed to be applied have a carriage which has combined therewith means for traversing it across a carding engine, from one side of the latter to the other, lenghwise of the cylinders of such machine. It is customary to employ in connection with the said carriage one or two pneumatic nozzles normally having their open mouths disposed in close proximity to the card-clothed surfaces which are to be stripped. For instance, the well-known Cook's vacuum card stripper in general use in cotton mills comprises two nozzles, one arranged for stripping the main cylinder of a carding engine and the other arranged for stripping the doffer thereof, connected with a suction-box in connection with the carriage, such suction-box being in communication with a pump or other means for exhausting the air from the suction-box. This organization is designed for use in stripping the main cylinder, usually termed the cylinder, and doffer simultaneously in the traverse of the carriage, suction-box, and nozzles, from one side of the machine to the other.

The invention comprises means for use in locking in retracted position a stripper-nozzle which has been withdrawn from working relationship with the cylinder which it is employed to strip. It comprises, further, means for preventing the doffer-nozzle from dropping into contact with the card-clothed surface of the doffer-cylinder, when the cylinder-nozzle is withdrawn from the slot in which it works in the casing-door adjacent the main cylinder. It comprises, further, means for enabling the doffer-nozzle to be shifted properly upon the traversing nozzle carriage relatively to the cylinder-nozzle to compensate for the setting of the cylinder-nozzle to lead in the stripping action in the movement of the carriage.

The features of the invention are illustrated by the accompanying drawings showing pneumatic stripper devices operating on the vacuum principle, representative embodiments of the said features being shown.

Fig. 1 is a perspective view of certain prtions of a carding engine, and of a pneumatic stripper mechanism arranged to cooperate with the main cylinder and doffer-cylinder of the carding engine.

Fig. 2 is a side elevation of the three-way piece and doffer-nozzle, detached, on a larger scale than Fig. 1.

Fig. 3 is a plan view of the parts which are shown in Fig. 1.

Fig. 4 is a partly sectional plan view of certain details in connection with the cylinder-nozzle, illustrating more particularly the hinging of the said nozzle.

Fig. 5 is a view showing certain parts in plan and illustrating in full lines the cylinder-nozzle in its working position and in dotted lines the said nozzle in idle position retracted from the main cylinder of the carding engine with which the stripper attachment is associated.

Fig. 6 is a rear elevation of the three-way piece and doffer-nozzle, shown separately.

Fig. 7 is a partly sectional view of the traversing carriage and associated parts, looking from the left-hand side in Fig. 8.

Fig. 8 is a view of the parts of Fig. 7, shown mainly in horizontal section on line 8—8 of Fig. 7.

Fig. 9 is a view in vertical section on line 9—9 of Fig. 7.

Portions of the main cylinder and the doffer of a carding engine are indicated at 1, 2, in Fig. 1. At 3 is indicated a removable door which forms a part of the cylinder-casing in the angle between the cylinder and doffer, just above the doffer.

At 4, Fig. 1, is a portion of supporting framework at one end of the doffer, 5 being a portion of the guard enclosing the doffer-gear (partly shown at 51, Fig. 5). At 6, Figs. 1 and 5, is a gear-box, resting upon the doffer gear-guard, and partially enclosing the spur-gears 7 and 8 by means of which rotary motion is transmitted from the doffer-gear to the traverse screw 81, enclosed within the stationary traverse-tube 9, and cooperating with the nozzle-carriage 10 to cause the said carriage to travel from one side of the carding engine to the other side thereof, so as to traverse the cylinder

stripping nozzle 11, and doffer stripping nozzle 12, along the peripheries of the cylinder and nozzle, respectively, from end to end of the cylinder and doffer. In usual practice the spiral groove 810, Figs. 8 and 9, of the traverse screw 81 is entered by a follower 100, in this instance constituted by a projecting portion of a lever 101 that is mounted pivotally upon a pin 102 within a slot in the carriage 10. The said lever has a thumb-piece 103 by means of which the lever may be swung on its pivot for the purpose of engaging the follower projection in the spiral groove or disengaging it therefrom.

At 13 is a so-called three-way piece, constituting what may be termed a suction-box, which is mounted upon the stripper-carriage, and to which is attached one end of the suction-pipe 14, Figs. 1, 5 and 6. To the said three-way piece or suction-box are attached the two nozzles 11 and 12, also. The nozzle 11 extends rearwardly from the three-way piece toward the cylinder, its mouth-end being entered into a slot 31, Fig. 1, in door 3, the said slot extending horizontally lengthwise of the cylinder, so that as the carriage is traversed and the said mouth-end moves from one end of the slot to the other the said end of the cylinder-nozzle works close to the face of the card-clothing of the cylinder. The nozzle 12 extends downward from the three-way piece alongside a fixed bar 15, Figs. 1, 5, and 6, extending lengthwise of the doffer, above the latter, the end of such nozzle working close to the face of the card-clothing of the doffer. This construction constitutes a combination nozzle device which is adapted to strip both the cylinder and the doffer at the same time.

The three-way piece 13 is secured detachably to the carriage 10 by means of clamping screws 16, 16, Figs. 1 and 8, occupying slots 17, 17, Figs. 2 and 6, in a plate 18 extending downward from the body of the three-way piece, the stems of such screws entering threaded holes that are tapped in the carriage 10. See Fig. 8. The screws 16, 16, clamp one face of the said plate against the face of the carriage. In order to provide for adjustment of the doffer-nozzle for the purpose of locating its mouth or induct-end closer to or farther from the surface of the card-clothing of the doffer, the slots 17 are made elongated. In order to prevent the three-way piece from assuming a laterally inclined position, the plate 18 is formed with a vertical rib 19, Figs. 2 and 6, and a corresponding groove, 191, Fig. 8, is formed in the opposing face of the carriage 10, the said groove being occupied by the said rib. This rib, and the groove, constitute guiding means to keep the elongated induct or mouth-end of the doffer-nozzle parallel with the face of the card-clothing of the doffer in all positions of adjustment of such nozzle toward and from the doffer.

The suction-pipe 14 is connected with the three-way piece 13 by means of an L-shaped fitting or coupling member 20, Figs. 1 and 5, which is attached to the suction-pipe. The three-way piece is formed at its top with an outlet opening 21, Fig. 3, around which is a depressed seat 22 that receives the free end of said coupling member. The said end is held within the said seat by means of a screw 23, Figs. 2 and 3, screwing into a threaded hole in the top of the three-way piece and engaging by its outwardly extending flanged head over an annular shoulder 24, Fig. 1, on the exterior of such end.

For the connection of the cylinder-nozzle with the three-way piece, the latter is furnished in connection with one of its inlet-passages with a tubular socket, 24, Figs. 2, 3 and 4, within which the butt-end of said nozzle fits. The said socket is slitted longitudinally at 25, at its free end and for a distance therefrom, and thereby is rendered expansible and contractible. It is furnished with means for contracting it upon the inserted end of the cylinder-nozzle, such means comprising in this instance a screw 26 working in lugs 27, 27, with which the socket is furnished at opposite sides of the slit 25. The butt-end of the cylinder-nozzle is adjustable lengthwise within the socket 24, to vary the closeness of approach of the induct or mouth-end of the cylinder-nozzle to the surface of the card-clothing of the cylinder.

For the connection of the doffer-nozzle with the three-way piece, the latter is formed at the outer end of one of its inlet-passages with a flat face against which the flat face of the butt-end of the doffer-nozzle is fitted, laterally projecting lugs 271, 271, being provided upon the three-way piece and the said butt-end, respectively, which lugs are engaged by screws 28, 28, serving to bind the doffer-nozzle to the three-way piece with the contacting faces of both thereof pressed firmly together.

The socket 24 is formed in a piece separate from the three-way piece and connected with a rearward extension of the latter by means of an approximately vertical pivot 29. This hinging of the socket to the three-way piece by such pivot enables the cylinder-nozzle to be swung laterally from its working position in Fig. 1, (see, also, Fig. 3), shown also in full lines in Fig. 5, to one parallel with and close to the traverse-tube 9, as indicated in dotted lines in Fig. 5, substantially at right angles with the said working position. (See, also, Fig. 4.) When in the dotted line position represented in Fig. 5, the cylinder-nozzle is located above the traverse-tube. This hinging of the socket therefore provides for withdrawing

the free end of the cylinder-nozzle from slot 31 in cover 3, and also for locating the cylinder-nozzle in an idle position, out of the way, when the stripper-attachment is not in use. For the purpose of retaining the cylinder-nozzle in its working position when required, keeper-devices are provided, comprising in this instance a screw 30, Figs. 3 and 4, having one end thereof located between upper and lower lugs 31, 31, on the three-way piece, the said screw being pivoted to the three-way piece by means of a pin 32 applied to the lugs 31, 31, the socket 24 being provided with a pair of lugs 33 between which the stem of the screw is adapted to enter as the screw is swung around into the position occupied by it in Fig. 3, and a washer 34 and thumb-nut 35, Fig. 4, being mounted upon the threaded portion of the screw. By tightening up the wing-nut to press the washer against the backs of the lugs 33 the socket may be locked in place with the cylinder-nozzle extending from the three-way piece in working position, with its mouth-portion within the slot 31 in the door 3. After backing off the wing-nut to a sufficient extent, the clamping screw 30 may be swung around so as to carry the washer and wing-nut outward free of the lugs 33, thereby unfastening the socket so as to leave the latter and the cylinder-nozzle free to be swung around laterally.

The feature of my invention which provides for locking the cylinder-nozzle 11 in its laterally withdrawn position represented in dotted lines in Fig. 5, so long as the stripping-attachment is desired to remain upon a carding engine without being utilized to strip, is shown best in Figs. 5 and 6. In these views an inwardly extending projection 61 is provided upon the cap 62 of the traverse-tube bearing 63 adjacent the gear-box 6. This projection is of a size and shape suitable to enter the mouth of the cylinder-nozzle. When it is desired to utilize this lock, the stripping action having been discontinued and the carriage being at rest, the stripper-nozzzle is swung around from its rearwardly extending working position into the dotted line position, parallel or substantially so with the traverse-tube and above the latter, and by movement of the carriage and nozzles toward the side of the carding engine at which the lock is located the mouth of the stripper-nozzle is caused to become engaged with the lock, in this instance by being caused to encircle the locking projection. This movement of the carriage may be produced manually after disengagement of the follower 100 from the spiral groove of the traverse-screw. The form etc. of the locking projection, and mode of its engagement with the cylinder-nozzle may be varied in practice, and other kinds of locking devices may be substituted. The device described constitutes one form of locking means characterized by being made operative to lock the cylinder-nozzle in withdrawn position through movement of the carriage into an idle position.

The means of locking the three-way piece or suction-box to prevent the doffer-nozzle from dropping into engagement with the card-clothing of the doffer after the mouth-end of the cylinder-nozzle has been withdrawn from the slot 31 in door 3, is shown best in Figs. 7 and 8. The said means consists in a clamping or binding screw 104 having its threaded stem screwed into a threaded hole tapped in the shell of the carriage 10. The inner end of such screw is adapted to engage with the exterior surface of the traverse-tube 9, as in Figs. 7 and 8. This screw is backed-off, out of engagement with the traverse-tube, in order to permit employment of the stripper-attachment for stripping purposes, so that the carriage may be free to move in the direction of the length of the traverse-tube. When, however, the stripper-attachment is at rest, and preliminary to withdrawing the cylinder-nozzle from slot 31 in door 3, the screw 104 is tightened up against the exterior of the traverse-tube so as to lock the carriage from turning movement around the tube. Thereby the desired result of locking the doffer-nozzle so as to prevent its mouth-end from dropping into engagement with the teeth of the doffer is attained.

A further result of locking the carriage to the traverse-tube is that movement of the carriage along the traverse-tube in the direction of the length of the latter is prevented. This serves to prevent withdrawal and disengagement of the mouth-end of the cylinder-nozzle from the stationary locking projection after having been engaged therewith.

Fig. 5 shows the cylinder-nozzle 11 disposed properly in connection with the doffer-nozzle to enable its laterally-offset mouth-end to lead relative to the doffer-nozzle in movement of the stripper-nozzles from right to left in such views. When it is desired to dispose the cylinder-nozzle so that it will lead in the stripping action in the movement of the carriage from left to right in the drawings, the clamping screw 26, Figs. 2 to 5, is slackened off to loosen the socket 24 upon the butt of the cylinder-nozzle, the latter is turned over within said socket to the extent of 180° so as to carry its offset mouth-end over to the leading side, and the screw 26 is tightened to cause the socket to clamp the butt of the cylinder-nozzle again firmly.

Fig. 8 shows the provisions for enabling the parts to be adjusted to compensate for the setting of the cylinder-nozzle to lead in the stripping action in movement of the nozzle-carriage in either direction. Having

reference to Fig. 8, the body of the carriage 10 is shown formed with two guideways 191, 191, within either of which the rib 19 of the plate-extension 18 of the three-way piece or suction-box 13 may be received. The three-way piece or suction-box is secured to the nozzle-carriage with its rib 19 in the predetermined guideway by means of the two screws 16, 16. To provide for the transverse shift of the three-way piece or suction-box upon the nozzle-carriage, three threaded holes are tapped in the latter, alternating with the two guideways. In Fig. 8, the rib occupies the right-hand guideway, as required when the cylinder-nozzle is set as in Fig. 5 to lead in a stripping action taking place from right to left. The adjustment by which the rib or tongue is caused to occupy the right-hand guideway in carriage 10 effects a shift of the three-way piece and nozzles somewhat to the right relative to the carriage 10, the result of which is that the carriage is permitted to complete its traverse toward the left, and the cylinder-nozzle to strip clear to the left-hand margin of the card-clothing of the cylinder, before the doffer-nozzle is carried far enough toward the left to make contact with the brackets and other fixed parts which are located at the left-hand side of the carding engine. In this adjustment of the three-way piece or suction-box upon the carriage, the securing screws 16, 16, occupy the right-hand two threaded holes in the carriage. When the cylinder-nozzle is turned halfway over as just described, from its position in Fig. 8 to one 180° therefrom, in order that such nozzle may lead in stripping action taking place from left to right, the three-way piece or suction-box is shifted transversely into a position in which its rib or tongue occupies the left-hand guideway 191.

For this adjustment, screw 104 is removed from the left-hand threaded hole in the carriage, occupied by it in Fig. 8, and the screws 16, 16, in securing the three-way piece or suction-box to the carriage are inserted into the left-hand two of the threaded holes in the carriage. Screw 104 is transferred to the threaded hole at the right-hand side in Fig. 8 after the removal of one of the screws 16 therefrom. This adjustment effects a shift of the three-way piece and nozzles somewhat to the left relative to the carriage 10, the result of which is that the carriage is permitted to complete its traverse toward the right, and the cylinder-nozzle to strip clear to the right-hand margin of the card-clothing of the cylinder, before the doffer-nozzle is carried far enough toward the right to make contact with the brackets and other fixed parts which are located at the right-hand side of the carding engine.

It will be understood that, it being convenient to keep screw 104 always connected with carriage 10, such screw is caused to occupy at all times one or the other of the terminal holes of the series of three threaded holes in the carriage, it being shifted from one terminal hole to the other as the shifts of the three-way piece or suction-box upon the carriage occur.

What is claimed as the invention is:—

1. A pneumatic stripper attachment for carding engines, comprising a traversing carriage, a nozzle, and meass for mounting said nozzle in connection with the carriage with capacity to assume a working position extending from the carriage to the cylinder to be stripped, and also to be swung laterally from the said working position to a withdrawn position parallel with the cylinder-axis or substantially so, and at right angles or substantially so with the working position, and in combination therewith means for positively locking the nozzle in said position parallel with the cylinder-axis.

2. A pneumatic stripper attachment for carding engines, comprising a traversing carriage, a nozzle, and means for mounting said nozzle in connection with the carriage with capacity to assume a working position extending from the carriage to the cylinder to be stripped, and also to be swung laterally from the said working position to a withdrawn position parallel with the cylinder-axis or substantially so, and at right angles or substantially so with the working position, and in combination therewith means with which the nozzle is engaged by lateral movement of the carriage for locking the nozzle in its withdrawn position.

3. A pneumatic stripper attachment for carding engines, comprising a traversing carriage, a nozzle, and means for mounting said nozzle in connection with the carriage with capacity to assume a working position extendng from the carriage to the cylinder to be stripped, and also to be swung laterally from the said working position to a withdrawn position parallel with the cylinder-axis or substantially so, and at right angles or substantially so with the working position, and in combination therewith locking means with which the mouth-end of said nozzle is engaged by lateral movement of the carriage for locking the nozzle in its withdrawn position.

4. A pnuematic stripper attachment for carding engines, comprising a traversing carriage, a nozzle, and means for mounting said nozzle in connection with the carriage with capacity to assume a working position extending from the carrage to the cylinder to be stripped, and also to be swung laterally from the said working position to a withdrawn position parallel with the cylinder-axis, or substantially so, and at right

angles or substantially so with the working position, and in combination therewith, means with which said nozzle is engaged by lateral movement of the carriage, for holding the nozzle in its withdrawn position, and means for locking the carriage from lateral movement such as would disengage the nozzle from the locking means.

5. A pneumatic stripper attachment for carding engines, comprising a traversing carriage, a nozzle, and means for mounting said nozzle in connection with the carriage with capacity to assume a working position extending from the carriage to the cylinder to be stripped, and also to be swung laterally from the said working position to a withdrawn position parallel with the cylinder-axis or substantially so, and at right angles or substantially so with the working position, and in combination therewith locking means with which the mouth-end of said nozzle is engaged by lateral movement of the carriage, for locking the nozzle in its withdrawn position, and means for locking the carriage in place so as to prevent movement thereof resulting in disengagement of the nozzle from the locking means.

6. A pneumatic stripper attachment for carding engines, comprising a carriage, a guide on which said carriage traverses across a carding engine, a nozzle, and means for mounting said nozzle in connection with the carriage with capacity to assume a working position extending from the carriage to the cylinder to be stripped, and also to be swung laterally from the said working position to one parallel with the cylinder-axis or substantially so, and at right angles or substantially so with the working position, and in combination therewith locking means engaging with said nozzle when the carriage is at one side of the carding engine to hold the nozzle in withdrawn position, and means engaging with said guide to lock the carriage from movement which will disengage the nozzle from the nozzle-locking means.

7. A pneumatic stripper attachment for carding engines, comprising a carriage, a traverse-tube on which said carriage traverses across a carding engine, a nozzle, and means for mounting said nozzle in connection with the carriage with capacity to assume a working position extending from the carriage to the cylinder to be stripped, and also to be swung laterally from the said working position to one parallel with the cylinder-axis or substantially so, and at right angles or substantially so with the working position, and in combination therewith locking means engaging with said nozzle when the carriage is at one side of the carding engine to hold the nozzle in withdrawn position, and means engaging the carriage with the said traverse-tube to lock the carriage from movement which will disengage the nozzle from the nozzle locking means.

8. A pneumatic stripper attachment for carding engines, comprising a carriage, a traverse-tube on which said carriage traverses across a carding engine, a nozzle, and means for mounting said nozzle in connection with the carriage with capacity to assume a working position extending from the carriage to the cylinder to be stripped, and also to be swung laterally from the said working position to one parallel with the cylinder-axis or substantially so, and at right angles or substantially so with the working position, and in combination therewith locking means engaging with said nozzle when the carriage is at one side of the carding engine to hold the nozzle in withdrawn position, and a clamping screw by which the carriage is locked to the traverse-tube to prevent movement thereof which will disengage the nozzle from the nozzle-locking means.

9. A pneumatic stripper attachment for carding engines, comprising a traversing carriage, a nozzle, and means for mounting said nozzle in connection with the carriage with capacity to assume a working position extending from the carriage to the cylinder to be stripped, and also to be swung laterally from the said working position to one parallel with the cylinder-axis or substantially so, and at right angles or substantially so with the working position, and a device made operative to lock the nozzle in its withdrawn position by movement of the carriage into an idle position

10. A pneumatic stripper attachment for carding engines, comprising a traversing carriage, a nozzle, and means for mounting said nozzle in connection with the carriage with capacity to assume a working position extending from the carriage to the cylinder to be stripped, and also to be swung laterally from the said working position to one parallel with the cylinder-axis or substantially so, and at right angles or substantially so with the working position, and a device made operative to lock the nozzle in its withdrawn position by movement of the carriage into an idle position, and means for locking the carriage from movement which will unlock the nozzle.

11. A pneumatic stripper attachment for carding engines, comprising a traverse-tube, a traversing carriage mounted thereon, a cylinder-nozzle extending rearward from said carriage, and a doffer-nozzle extending forward and downward from said carriage into close proximity to the surface of the card-clothing of the doffer, and having combined therewith means for locking the carriage from turning movement when no longer restrained through the cylinder-

nozzle, so as through such locking to prevent injury to the said card-clothing.

12. A pneumatic stripper attachment for carding engines, comprising a traverse-tube, a traversing carriage mounted thereon, a cylinder-nozzle extending rearward from said carriage, and a doffer-nozzle extending forward and downward from said carriage into close proximity to the surface of the card-clothing of the doffer, and a screw by which said carriage may be locked from rotation around the traverse-tube so as through such locking to prevent injury to such card-clothing which would result from contact of the doffer-nozzle with the card-clothing.

13. A pneumatic stripper attachment for carding engines, comprising a traverse-tube, a traversing carriage mounted thereon, a cylinder-nozzle extending rearward from said carriage, and a doffer-nozzle extending forward and downward from said carriage into close proximity to the surface of the card-clothing of the doffer, and a screw by which said carriage may be locked to the traverse-tube to prevent the carriage from turning around the traverse-tube, so as through such locking to prevent injury to the card-clothing of the doffer through contact of the doffer-nozzle therewith.

14. A pneumatic stripper attachment for carding engines, comprising a traversing carriage, a nozzle-carrier, a doffer-nozzle carried by said nozzle-carrier, a cylinder-nozzle adjustable to enable it to lead for stripping purposes in either direction of movement across a carding engine, and means for enabling the nozzle-carrier to be shifted transversely upon the carriage to compensate for the lead of the cylinder-nozzle in either direction.

15. A pneumatic stripper attachment for carding engines, comprising a traversing carriage, a nozzle-carrier, a doffer-nozzle carried by said nozzle-carrier, a cylinder-nozzle also carried thereby and adjustable to enable it to lead for stripping purposes in either direction of movement across a carding engine, and means for enabling the nozzle-carrier to be shifted transversely upon the carriage to compensate for the lead of the cylinder-nozzle in either direction.

16. A pneumatic stripper attachment for carding engines, comprising a traversing carriage, a nozzle-carrier, a doffer-nozzle carried by said nozzle-carrier, a cylinder-nozzle adjustable to enable it to lead for stripping purposes in either direction of movement across a carding engine, and seating means for the doffer-carrier enabling it to be shifted transversely upon the doffer-carriage into different positions respectively compensating for the lead of the latter in either direction.

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