June 26, 1923. 1,459,832

P. KESTNER

VACUUM APPARATUS FOR STRIPPING CARDS

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Fig. 1

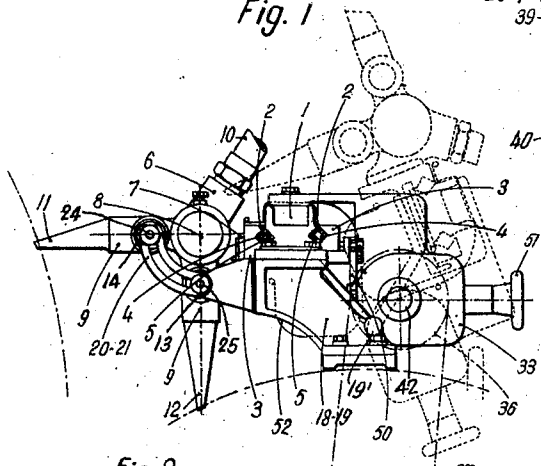


Fig. 6

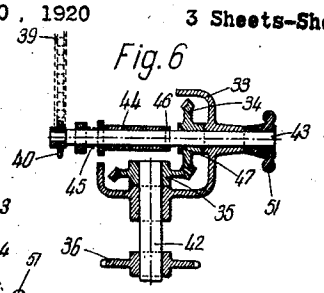


Fig. 7

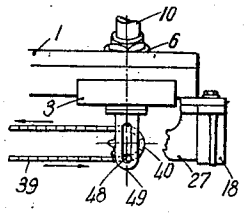


Fig. 2

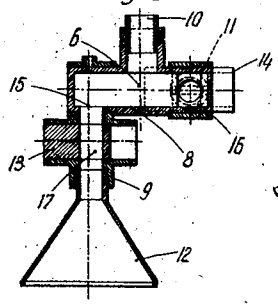


Fig. 5

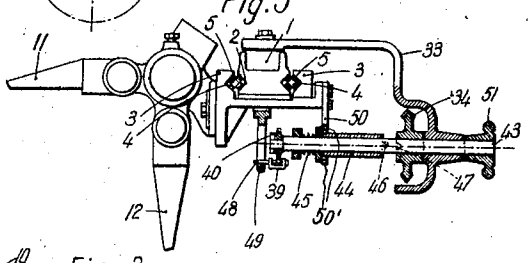


Fig. 3

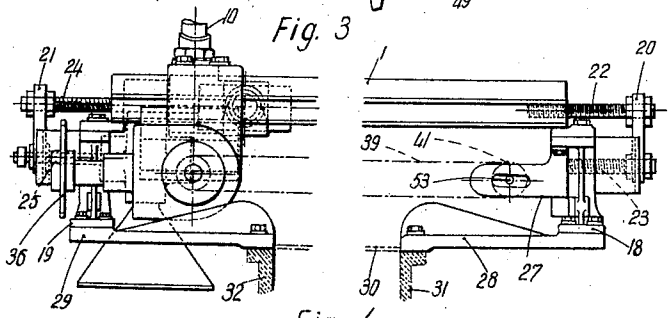
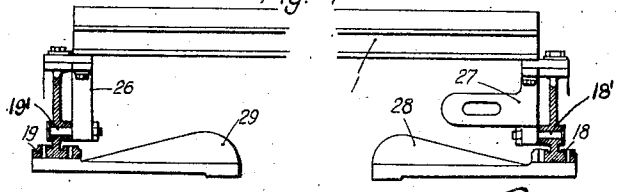


Fig. 4



Inventor.

Paul Kestner

by Chas. J. Hill

Atty

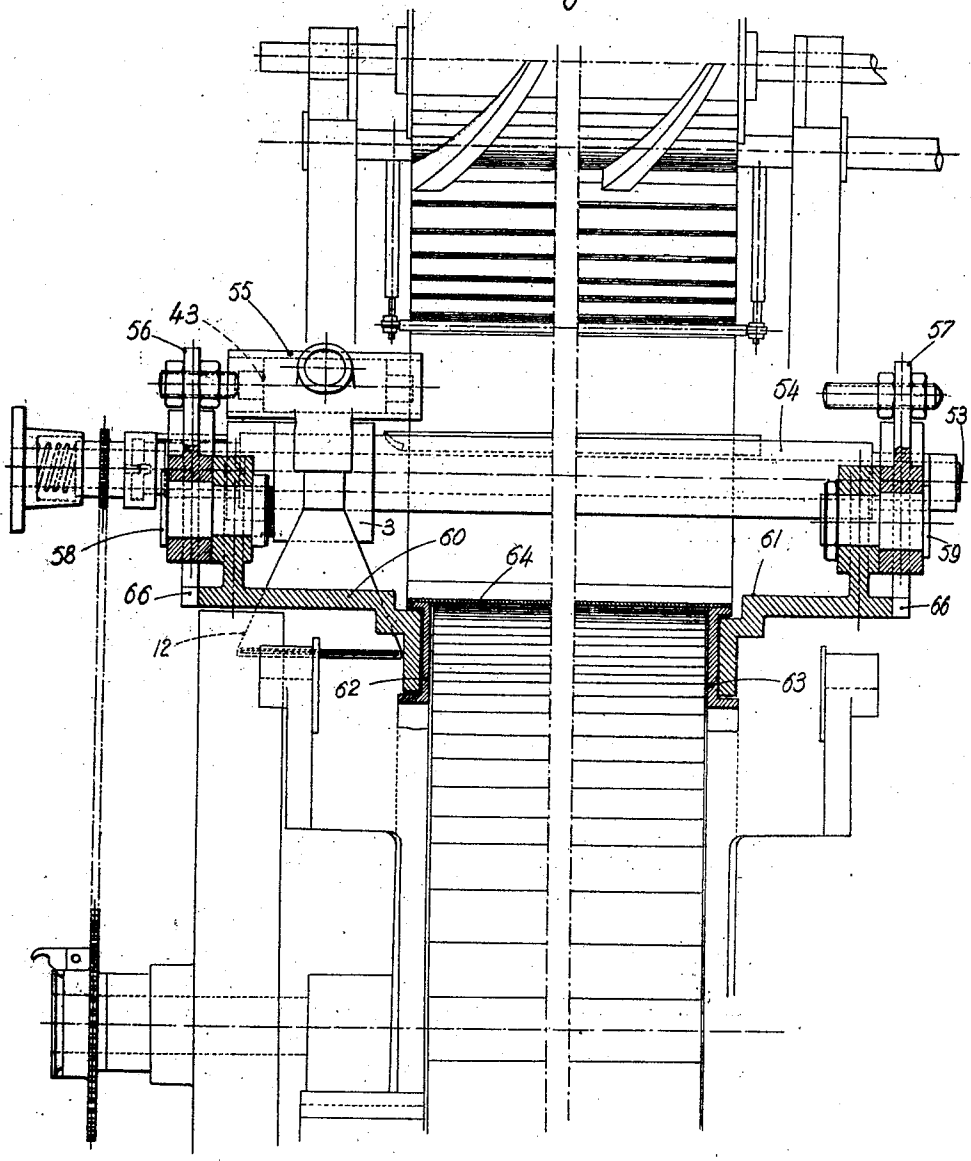
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P. KESTNER

VACUUM APPARATUS FOR STRIPPING CARDS

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Fig. 9



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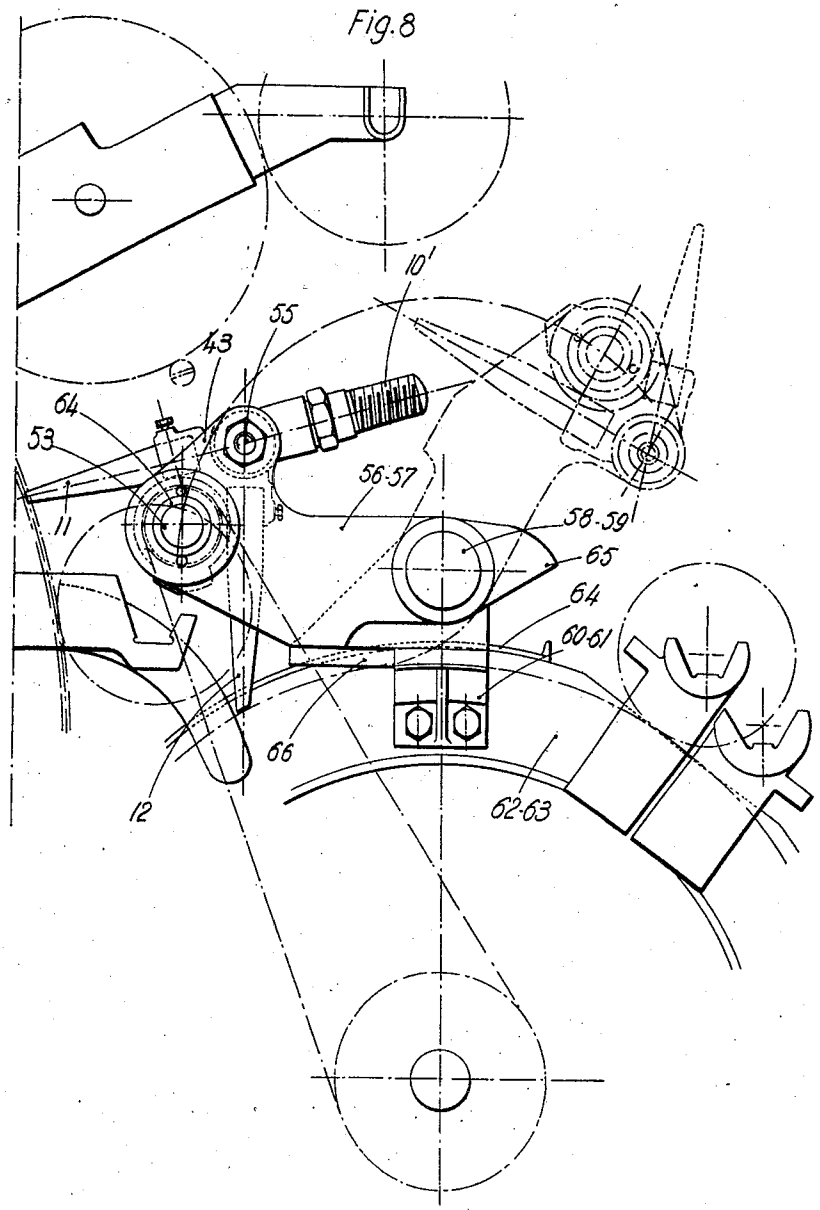
June 26, 1923. **1,459,832**

P. KESTNER

VACUUM APPARATUS FOR STRIPPING CARDS

Filed Dec. 10, 1920 3 Sheets-Sheet 2

Fig. 8



Inventor.
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Patented June 26, 1923. 1,459,832

UNITED STATES PATENT OFFICE.

PAUL KESTNER, OF BOULOGNE-SUR-SEINE, FRANCE, ASSIGNOR TO ETABLISSEMENTS DE VENTILATION KESTNER & NEU, OF CENTELEU-LILLE, NORD, FRANCE, A FRENCH CORPORATION.

VACUUM APPARATUS FOR STRIPPING CARDS.

Application filed December 10, 1920. Serial No. 429,741.

(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

To all whom it may concern:

Be it known that I, PAUL KESTNER, engineer, citizen of the French Republic, residing at Boulogne-sur-Seine, Department of the Seine, in France, and having P. O. address 113 Boulevard de Strasbourg, in the said city, have invented certain new and useful Improvements in Vacuum Apparatus for Stripping Cards (for which I have filed applications in France, 21st November, 1919, and 3d March, 1920; Belgium, 14th July, 1920; Germany, 24th July, 1920; Netherlands, 27th September, 1920; Switzerland, 27th September, 1920; Great Britain, 10th November, 1920); and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of the invention is to improve vacuum apparatus for stripping cards, such as described, for instance, in the French Patent No. 442285 of 6th April, 1912, and in its addition of 12th June, 1913.

Primarily, the invention has for its object the provision of a stripping apparatus in which a support, coextensive with the axial length of the carding elements, is hinged to the frame of the machine and on which support travels the carriage of the suction nozzles to traverse the carding surfaces. This support, together with carriage and other parts mounted thereon, can be turned to and from operative positions relative to the carding elements, and after the first installation of the device no further adjustment of parts is required to insure proper registration of the nozzles with the carding surfaces. The invention also has other objects which are pointed out hereinafter.

The various improvements constituting the subject matter of the invention are shown in the accompanying drawings:

Figure 1 is a side view of the apparatus showing in dotted lines the position of the apparatus during the sharpening of the teeth of the main cylinder.

Figure 2 is a vertical section showing the suction box, the suction nozzles and their series of throughways.

Figures 3 and 4 show a front view of the arrangement of the apparatus on a carding machine, the set of fingers or studs and the means for turning back the apparatus to allow of removing the sheet-metal plate of the cylinder.

Figures 5 and 6 illustrate the clutching and disconnecting of the carriage.

Figure 7 shows the finger fixed on the chain as well as the runner or slide which ensures the translation of the carriage.

Figure 8 shows a side view in full lines of the apparatus in working position, and in dotted lines of the apparatus after being swung aside, during the sharpening of the teeth of the main cylinder for instance, and shows also the method of fixing it on the carding machine.

Figure 9 is a view from above of the apparatus showing the arrangement of the supports.

The apparatus comprises a longitudinal support or frame 1 having at each side a longitudinal groove 2, preferably triangular in shape, and a carriage 3 having grooves 4 of the same shape as those of the frame and in which are fixed adjustable balls or rollers 5 to permit the carriage to roll on the frame 1.

The suction box 6 is attached at 7 to the carriage 3 on which it is adjustable by means of a bolt and groove arrangement common in lathe constructions.

This suction box carries a hollow shaft 8 which establishes communication between the nozzle carriers 9 and the suction pipe 10.

The nozzle carriers 9 can be displaced around the hollow shaft 8 but remain in constant communication with the suction pipe 10 by means of the apertures 15 and 16 formed in the hollow shaft 8, and this allows of the suction nozzles being set in any direction at will.

The suction nozzles 11 and 12 are mounted in the nozzle carriers 9 in which they can slide to allow of their being adjusted.

The nozzles carriers 9 are provided with plugs 13 and 14 adjustable so as to put into communication successively or simultaneously the suction orifices of the nozzles 11 and 12 with the pipe 10, or to cut off this

communication by displacing in one direction or the other apertures 17 formed in these plugs.

The supports 18 and 19 carry the frame 1, to which they are fixed by means of feet bolted or screwed to each end of the frame.

These members 18 and 19 themselves carry two slotted arcuate brackets 20 and 21 Fig. 1 in which studs 22, 23, 24 and 25 are slidable, said studs being adapted to engage the plugs 13 and 14 and put the suction nozzles 11 and 12 into communication with the suction pipe 10.

The supports 18 and 19 have bosses in which shafts 19′ and 18′ are adjusted and fixed. These shafts receive supports 26 and 27 respectively (Figure 4) on which the frame 1 is fixed and permit of turning back the apparatus into the position indicated in dotted lines without disarranging it (Fig. 1). The supports 18 and 19 are fixed on the counter supports 28 and 29 which are themselves fixed either directly upon the cover plate of the doffing cylinder 30 or on the cheeks 31 and 32, Fig. 3, of the frame of the doffer near the axis of the latter.

The frame 33, Figs. 5 and 6, encloses two pinions 34 and 35 actuated by another pinion 36 which is itself driven by means of a chain 37 and a pinion 38 keyed on the shaft of the doffer. This train of pinions gives the movement of translation to the carriage through the intermediary of the chain 39 which is driven by a pinion 40 keyed on the shaft of the pinion 34. Another pinion 41 (Figure 3) mounted at the side opposite to the driving gear is furnished with an adjustable bearing 53 to maintain the chain in its horizontal and taut position.

The driving and stopping mechanism of the carriage 3 is constituted as follows:

The pinion 35 is keyed on a shaft 42. The pinion 34 is loose on a spindle 43 and can only be actuated by the latter when the clutch member 44 is pushed by the spring 45 and engages its spurs 46 in the recesses 47 of the pinion 34. This driving device starts the carriage and automatically stops it when the stripping operation is finished.

The carriage 3 is set in motion by the chain 39 which draws it along by means of the stud 48 fixed on one of the links of the chain and the slide 49 fixed under the carriage 3. The uncoupling fork 50 is also fixed on the carriage.

The whole apparatus is inclosed in a casing 52 without interfering, however, with the transverse movements of the suction nozzles. This arrangement protects all the mechanism from dust or fluff which might clog it and put it out of order.

The apparatus acts in the following manner:

The apparatus as shown in Fig. 3 is assumed to be at rest. The uncoupling fork 50 (Fig. 5) having acted on the side of the clutch member 44 has displaced the spurs 46 from their recesses 47, and the pinion 34 driven by the pinion 35 turns loose on its shaft (Fig. 6). This fork 50 comprises horizontally disposed rearwardly curved springed prongs 50′ whereby a gradual engagement of the fork 50 with the clutch member 44 is obtained.

To start the apparatus, it suffices to turn the hand wheel 51 which is keyed on the shaft 43 and sets in motion the chain 39 by means of the pinion 40 (Fig. 6). At this moment the stud engages the carriage through the slide 49 and draws it along, the fork 50 following the movement of the carriage, disengages itself and permits the clutch member 44 to engage its spurs 46 in the recesses 47 under the pressure of the spring 45.

The pinion 35 is rotated continuously through the pinions 36 and 38 and drives the carriage from one end of the main cylinder to the other.

In turning the hand wheel 51 to clutch the apparatus as has just been explained, the carriage advances a little, and this causes one of the plugs 13 or 14 to be pushed by one of the fixed studs 24 or 25 and thus establishes communication between one of the suction nozzles 11 or 12 and the suction pipe.

The operation of stripping is then carried out by one or other of the suction nozzles on one of the cylinders.

When the carriage is near the end of its stroke, one of the fixed studs 22 or 23 pushes the plug which puts the suction pipe into communication with the suction nozzle that strips the other cylinder in the return stroke.

The carriage then comes back toward its starting point, the slide 49 being devised so that the fingers or studs 48 fixed on the chain imparts a to-and-fro movement to the carriage while the chain 39 turns always in the same direction until it reaches the end of the stroke. When the carriage arrives near the end of the stroke (Fig. 3) one of the fixed fingers or studs 24 or 25 pushes the plug which cuts off completely all communication between the suction nozzles and the suction pipe. The carriage 3 is then stopped automatically (Fig. 5) by the uncoupling fork 50 engaging a projection on the clutch member 44 thus disengaging the spurs 46 from their recesses 47. The carriage is stopped and the apparatus is ready for a fresh operation.

The apparatus shown in Figs. 8 and 9 is constituted by a screw 53 preferably having two threads, a tube 54 surrounding the screw, a carriage 43, with a valve member 55 which slides on the tube. The carriage is constructed so that it receives the suction nozzles 12 and 11 and the shutter 55. The suction nozzles and the valve member are put

into communication with the vacuum pump by means of a flexible tube 10'.

The complete apparatus is mounted on two supports 56 and 57 which carry bosses, in which are adjusted and fixed shafts 58—59 permitting the apparatus to be turned back.

The supports 56 and 57 are mounted on counter-supports 60 and 61 which are themselves fixed either on the cheeks 62 and 63 of the carding machine, or directly upon the sheet-metal cover plate 64 of the doffer.

The supports 56 and 57 carry also a tail-piece 65, the object of which is to prevent the apparatus falling backwards when it is swung back. This tail-piece abuts against a plate 66 of the counter-support, and thus holds the apparatus in the position shown in dotted lines in the drawing.

Improvements in vacuum apparatus for stripping cards consisting in:

1. In a vacuum stripping apparatus for carding machines, the combination with a carding cylinder and doffer, of a support including a guideway coextensive with the axial length of the carding elements, a carriage movable along the guideway, suction nozzles mounted on the carriage to traverse the carding elements, and means for hinging the support to the machine frame so that said support, together with the carriage and nozzles, can be turned to and from the carding elements.

2. In a vacuum stripping apparatus for carding machines, the combination with a carding cylinder and doffer, of a support including a guideway coextensive with the axial length of the carding elements, a carriage movable along the guideway, suction nozzles mounted on the carriage to traverse the carding elements, and arms angularly disposed on the support and pivoted at their extremities to the machine frame so that said support, together with the carriage and nozzles, can be turned to and from the carding elements.

3. In a vacuum stripping apparatus for carding machines, the combination with a carding cylinder and doffer, of a support including a guideway coextensive with the axial length of the carding elements, a carriage movable along the guideway, suction nozzles mounted on the carriage to traverse the carding elements, means for hinging the support to the machine frame so that said support, together with the carriage and nozzles, can be turned to and from the carding elements, means on the support for propelling the carriage, and means for maintaining a driving connection between the carriage propelling means and the axle of the carding cylinder.

4. In a vacuum stripping apparatus for carding machines, the combination with a carding cylinder and doffer, of a support including a guideway coextensive with the axial length of the carding elements, a carriage movable along along the guideway, suction nozzles mounted on the carriage to traverse the carding elements, means for hinging the support to the machine frame so that said support, together with the carriage and nozzle, can be turned to and from the carding elements, a shaft journaled in a casing secured to said support having a sprocket engaging an endless chain carried by said support and connected with said carriage, means including a clutch for transmitting motion from the axle of the carding cylinder to said shaft to propel the carriage, and an element on said carriage operative at the end of a traverse to separate the members of said clutch to stop the travel of the carriage.

In testimony whereof I affix my signature.

PAUL KESTNER.