W. DRAPER.

DEVICE FOR CLEANING THE FLATS IN CARDING ENGINES.

APPLICATION FILED FEB. 25, 1919.

1,363,094.

Patented Dec. 21, 1920.

3 SHEETS—SHEET 1.

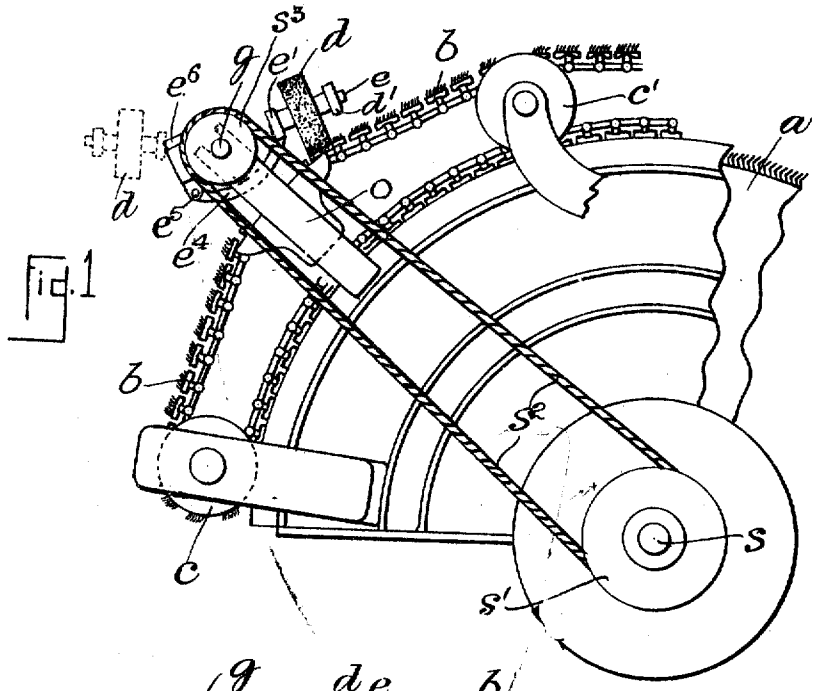


Fig. 1

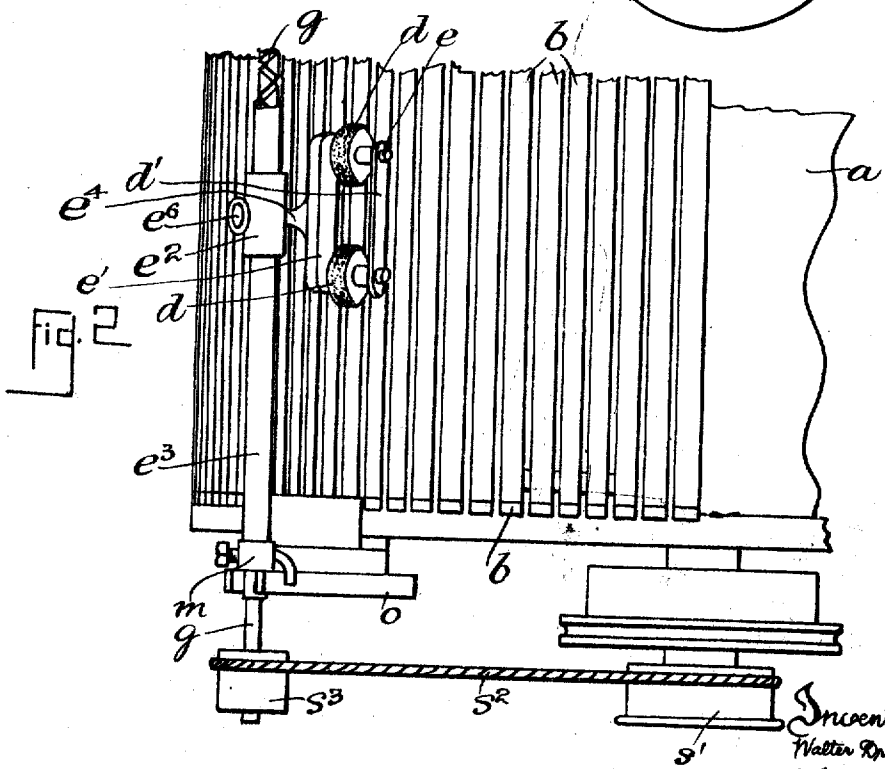


Fig. 2

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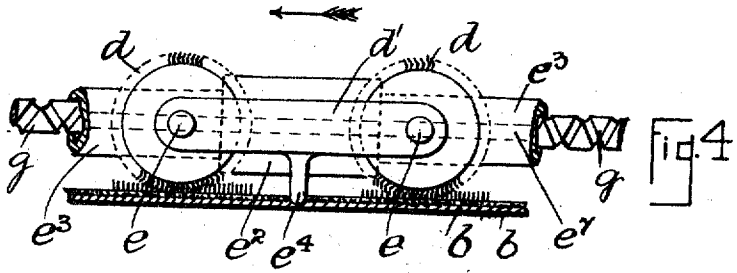


Fig. 4

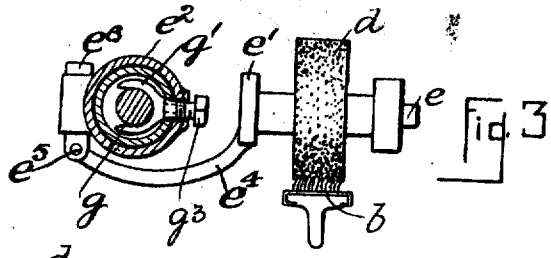


Fig. 3

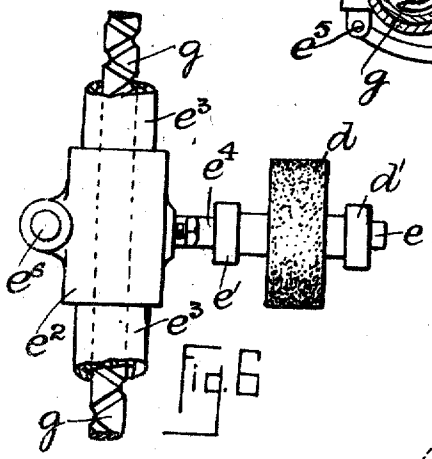


Fig. 6

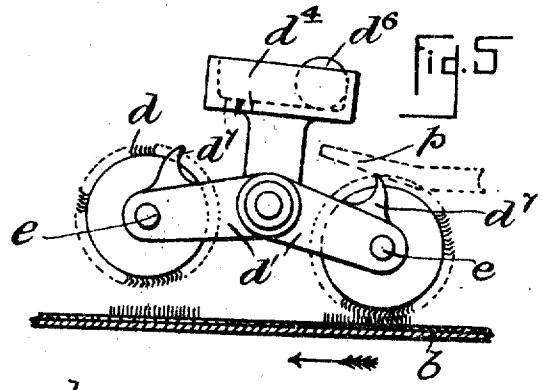


Fig. 5

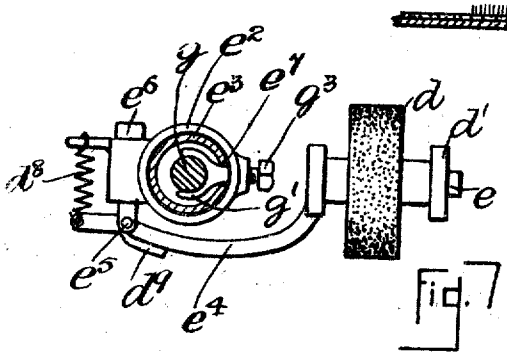


Fig. 7

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3 SHEETS—SHEET 3.

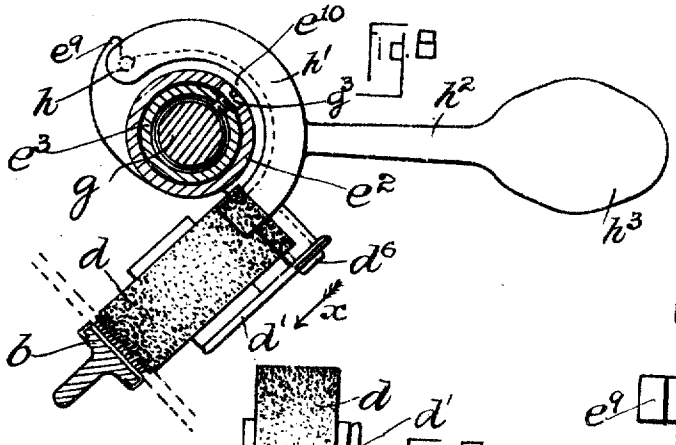


Fig. 8

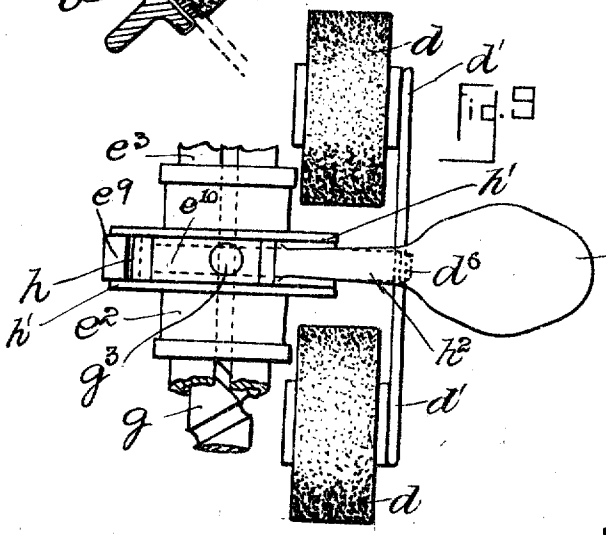


Fig. 9

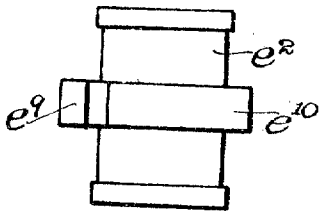


Fig. 10

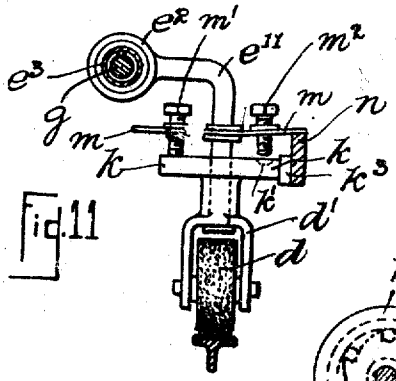


Fig. 11

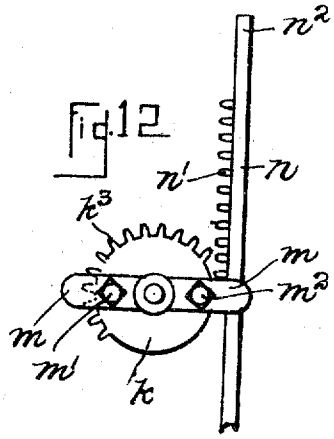


Fig. 12

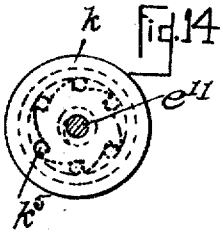


Fig. 14

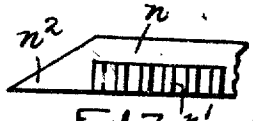


Fig. 13

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UNITED STATES PATENT OFFICE.

WALTER DRAPER, OF CHORLEY, ENGLAND.

DEVICE FOR CLEANING THE FLATS IN CARDING-ENGINES.

1,363,094. Specification of Letters Patent. Patented Dec. 21, 1920.

Application filed February 25, 1919. Serial No. 279,162.

To all whom it may concern:

Be it known that I, WALTER DRAPER, a subject of the King of Great Britain, and resident of Chorley, in the county of Lancaster, England, have invented a certain new and useful Improvement in Devices for Cleaning the Flats in Carding-Engines, of which the following description, having reference to the accompanying sheets of drawings, is a specification.

My invention relates to devices for use in removing the fibers, dirt and other waste or objectionable matter which accumulate between the pins, teeth or wires of the clothing fixed upon the flats in carding engines. Usually these cleaning operations are performed by rotary brushes, combs or other devices covered with suitable material, such brushes or the like moving or operating in the same direction or in alinement with the path of motion of said flats, and it is found that the waste or objectionable matter is not thereby entirely removed, but is to some extent pressed firmly upon the clothing between the pins so that the lower portions of the latter or those parts thereof in proximity to the foundation in which they are placed become covered or surrounded with substances held firmly in position. My present invention consists in the use or employment of means, consisting of rotary brushes, which are traversed across the machine or lengthwise the flats instead of as hereinbefore described, this traversing of said cleaning brushes being performed automatically, and with the brushes having their axes in alinement with the path of motion of the flats, or at an appropriate angle thereto other than a right angle.

In order that my said invention may be readily understood, I have hereunto appended sheets of drawings illustrative thereof, to which, by figures and letters, reference is made in the following description.

Figure 1 is a side elevation of sufficient of a carding engine to illustrate the application thereto of my improvements.

Fig. 2 is a plan thereof.

Fig. 3 is a sectional end elevation of my said device drawn to an enlarged scale.

Fig. 4 is a rear elevation thereof.

Fig. 5 is a rear elevation showing a modified form of my improvements.

Fig. 6 is a plan showing the use of a single brush.

Fig. 7 is a similar view to Fig. 3, but shows a modification hereinafter described.

Fig. 8 is a sectional end elevation, drawn to an enlarged scale, showing a modified form of my improvements with an appropriate handle attached thereto, this handle also acting as a weight in the manner hereinafter described.

Fig. 9 is a view of parts shown by Fig. 8, as seen in the direction indicated by the arrow x.

Fig. 10 is a drawing in detail of a part hereinafter referred to.

Fig. 11 is an end elevation of another modified form of my improvements wherein a reversible brush is made use of, this being drawn to a smaller scale.

Fig. 12 is a plan thereof.

Fig. 13 is a detail drawing of a rack hereinafter described.

Fig. 14 is a drawing in detail showing the use of a clutch part for the purpose herein referred to.

Similar letters and figures of reference indicate like parts throughout the several views.

In the accompanying sheets of drawings, a indicates the main cylinder of the carding engine, and b a portion of the revolving flats from the clothing of which it is desired to remove refuse. As will be well understood, the flats b pass over the rollers c, c^1 and other guiding parts into proximity to or contact with the main cylinder a, and it is during the passage of the flats over the cylinder a that they become charged with dirt or waste.

In carrying my invention into effect, I make use of a brush or brushes d which is or are carried by a plate or bearings d^1, such bearings fitting over projecting parts or pins e extending from a plate e^1 fixed or connected to the sleeve e^2, as by the extensions e^4, fulcrum pin e^5, and pin or bolt e^6. This sleeve e^2 is mounted to slide upon a tube e^3 within which rotates a compound or double acting screw g of well known form having a fork g^1 fitting thereover, the connection between the fork g^1 and the sleeve e^2 being such that said sleeve and the tube e^3 may be turned around the screw g from the

position indicated by full lines Fig. 1 into that indicated by dotted lines in the same figure. The fork g^1 or the nut g^1 fixing same in position projects through the slot e^7 extending lengthwise the sleeve e^3 from one side of the machine to the other. It will be seen that by rotation of the double acting screw g the fork taking thereover and the sleeve e^2 will be automatically traversed backward and forward across the faces of the flats upon which the two wheels or brushes d rotate as said flats over or through the machine. The brushes d may rest upon the flats by gravity or may be supported so that they do not press firmly upon said flats but the clothing thereof merely passes through the clothing of the flats b so that they are rotated thereby. To support said brushes and the parts carrying them, I mount upon the tube e an adjustable collar m provided with a projecting part n which comes into contact with a part of the bearing o for the screw g, thus this projecting part n supports the weight of the extension e^4 and parts carried thereby. When moving the brushes d into the position shown in broken lines by Fig. 1 either the collar m may be adjusted for the part n to again come into contact with another part of the bearing o or I may make use of a separate stop piece for this purpose.

The screw g is rotated in any suitable manner as by the pulley s^3 operated from the pulley s^1 on the main shaft s by the cord or band s^2.

The rollers or brushes d are covered with card clothing or similar material and the leading wheel in each direction of traverse across the flats b has the wire portions of such clothing extending in such direction as not to act as a cleaner for the flats b but the clothing on the other or following roller d is arranged of the opposite hand or in the opposite direction so that it lifts the waste and other refuse from the interstices intervening between the wire of the card clothing. The plate d^1 is readily removable from the projecting parts e, said plate d^1 carrying the brushes or rollers d, and by the axes of said rollers d not descending below the horizontal plane or below their position in alinement with the axis of the screw g, these parts may merely rest in position without the addition of extra nuts or fixing parts.

The brushes d may simply travel backward and forward across the machine or lengthwise the flats, both of them rotating in contact with said flats, or I may make use of means whereby the roller or brush which is not performing its functions as a cleaner is raised out of contact with the flats. This may be effected in any suitable manner, as by the employment of a rolling weight d^6 mounted on or in the plate or trough d^1, a projecting part p as that shown in dotted lines in Fig. 5 being mounted on each side of the machine with which a projection d^7 of the plate d^1 comes into contact, thus at or near the end of the traverse of the brushes d in one direction the contact of these parts will oscillate the bearing d^3 and press the roller or brush d which will during the next traverse be the cleaning brush, into contact with the clothing on the flats, while when this next traverse of the brushes is completed the other projecting part p on the other side of the machine depresses said bearing d^3 so that the other brush is then pressed into contact with the flat clothing to perform the cleaning operations during the succeeding traverse.

To enable the brushes d to rise and pass over any obstruction they may encounter, I may provide the bearings or supports d^3 with a spring d^8 which allows same to swivel on the pin, said support being manually held in position by the fixed slip d^4, or other suitable means may be used for this purpose.

I have hereinbefore described the employment of two brushes which perform the cleaning operations alternately, but I may employ one single brush as shown by Fig. 6, such brush effecting the cleaning of the flats in one direction but rotating idly in the opposite direction.

I prefer to have the cleaning device traversed in a direction approximately at right angles to the travel of the flats with the axis of the brush in alinement with said path of travel of the flats; however I may if desired arrange same to travel thereover obliquely or at any suitable angle to this direction.

In Figs. 8 and 9 I have shown a weighting device used in connection with my invention. The sleeve e^2 fits over the sleeve e^3 somewhat in the manner hereinbefore described, but said sleeve is provided with projecting parts e^9 which form a support or bearings for a cross pin h mounted on a curved part h^1 which spans a centrally disposed rib e^{10}. This curved part h^1 is provided with an extending handle h^2 the outer end h^3 of which is preferably larger than the other portions and is weighted with lead or the like in order to perform the dual office of a handle and weight. The brushes d are carried by bearings d^3 swiveling on a pin d^5 attached to the curved part h. When desired for any purpose the operator may readily raise said brushes d out of contact with the flats b by simply turning the curved part h^1 on the fulcrum pin h. The weighted handle h^2 when the parts are in their normal position, presses the brushes b with sufficient force into the card clothing on said flats b.

Instead of employing the brush or brushes acting as a clearer or clearers in one direction only, I may employ a single brush which at each side of the carding engine is reversed in direction so that it is capable of acting as

a cleaner in both directions. To effect this object, I mount the brush d in a support d^1 connected to a disk k capable of swiveling around an extension e^{11} from the sleeve e^2. Fixed on said extension e^{11} are spring arms m which have fitting upon or through them adjusting screws m^1, m^2. In the surface of the disk k is a cup k^1 with which one or other of the screws m^1, m^2 engages to hold said disk against rotation. The disk k is provided with teeth k^3 engaging with teeth n^1 in a rack n one of the latter being mounted at each side of the machine. As the disk k and brush d approach the side of the machine and are clear of the flats b one of the arms m is raised by coming into contact with the inclined end n^2 of the rack n, this raising the screw m^1 out of the cup k^1, the other screw m^2 at this time resting upon the surface of said disk k. The latter is then free to rotate as it is traversed along the rack n, the teeth k^3 then passing clear of the rack teeth n^1, at which moment the cup k^1 will have been brought beneath the screw m^2 the latter then engaging with it the brush d being thus rotated through a semi-circle. The screw g then causes the reversal in the direction of motion of all the parts carried by the arm e^{11} to carry them across the machine, and as the brush d has been reversed it will also act as a cleaner for the flats in this direction.

On arriving at the opposite side of the machine the teeth k^3 mesh with another rack n on the opposite side of its center; thus the brush d is again reversed in position so as to act as a cleaner during the succeeding traverse across the machine.

Instead of the spring arms m and screws m^1, m^2, I may connect the disk or wheel k to its sleeve by means of a clutch k^5 as shown in broken lines Fig. 14; thus the disk k may be rotated in both directions by the rack teeth n^1, but will only rotate its sleeve and reverse the brush d in one direction. The rack on the opposite side of the machine from that shown by Fig. 10 will be mounted on the opsite side of the pivot e^{11}.

Stationary or movable combs or equivalent devices of any appropriate construction may be mounted in connection with the brushes d to remove the refuse as it is gathered by them.

Although I have herein only shown my improved cleaning device as rotating by contact of the clothing on the cleaning brush with the flats, I wish it to be understood that I may drive these cleaning brushes positively during their traverse, and if desired at a different rate of speed from that which they have transmitted to them by mere contact by gravity with said flats.

Instead of card clothing, I may make use of other suitable material with which to cover said rollers or brushes.

I further wish it to be understood that without departing from the nature of my invention, I may make other alterations in the construction and arrangement of the several parts forming said invention, the essential feature thereof being the traversing of a cleaning brush crosswise the machine or lengthwise the flats, with its axis at right angles to the flats or in alinement with their path of motion.

Such being the nature and object of my said invention, what I claim is:—

1. In devices for cleaning the flats in carding engines, a rotary brush, card clothing or equivalent material mounted thereon, means for traversing said brush lengthwise the flats, and means for holding said brush with its axis approximately in alinement with the path of the traverse of the flats.

2. In devices for cleaning the flats in carding engines, a rotary brush, means for holding said brush with its axis approximately in alinement with the path of the traverse of the flats, means for traversing said brush across the flats, and means for reversing such brush at each end of its traverse.

3. In devices for cleaning the flats in carding engines, rotary brushes, means for traversing same across the flats, and means for moving said brushes bodily away from and into contact with the flats to cause said brushes to be put into and out of operation.

4. In a device for cleaning the flats in carding engines, two rotary brushes, means for traversing same across the flats, and means for causing one brush to rest on the flats during the traverse in one direction and the other brush to rest upon the flats during the traverse in the opposite direction.

5. In devices for cleaning the flats in carding engines, rotary brushes, means for traversing same across the machine, a weighting device for said brushes and hinged bearings carrying said weighting device, the latter also acting as a handle.

6. In devices for cleaning the flats in carding engines, rotary brushes, means for traversing same across the machine, and a spring device holding same in contact with the flats and allowing same to move when meeting an obstruction.

7. In devices for cleaning the flats in carding engines, a rotary brush, means for traversing same across the machine, racks mounted at the sides of the machine to cause the rotation of the bearing for the brush, and clutch devices operating in connection with said brushes.

8. In devices for cleaning the flats in carding engines, rotary brushes, means for traversing same approximately lengthwise the flats, and means for reversing the direction of motion of the brushes.

9. In devices for cleaning the flats in carding engines, rotary brushes, lever arms car-

rying bearings for said brushes, and means for automatically traversing said lever arms and bearings from one side of the machine to the other and automatically traversing said bearings in the opposite direction.

10. In cleaning devices for the flats in carding engines, a rotary brush and bearings for said brush, said bearings being arranged so that the axis of said brush is in alinement with the path of motion of the flats or at right angles to the length of said flats.

11. In cleaning devices for the flats in carding engines, a brush, bearings for said brush, said bearings being so arranged that the axis of said brush is in alinement with the path of motion of the flats or at right angles to the length of the flats, and means for positively rotating said brush.

12. In cleaning devices for the flats in carding engines, rotary brushes, bearings for said brushes, means for holding said brushes with their axes in alinement with the path of travel of the flats, a pivotal mounting for said bearings, a double acting screw, a member engaging with said screw and a part intervening between said member and said bearings for the brushes.

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