J. K. PROCTOR.

Mechanism for Operating Doffer-Combs of Carding-Machines.

No. 140,304. Patented June 24, 1873.

Fig 1

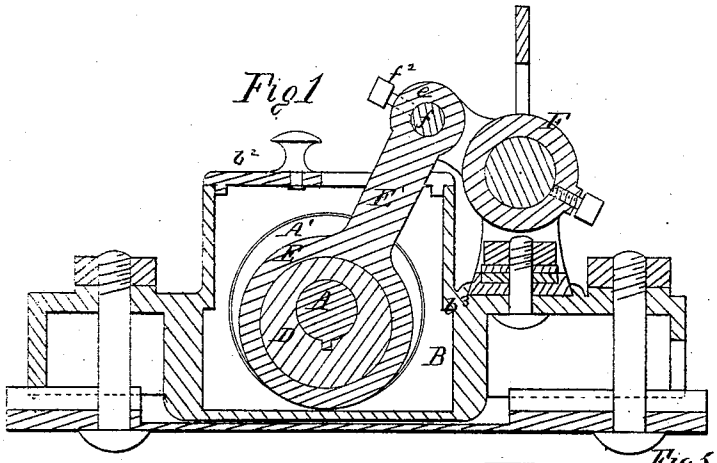


Fig 5

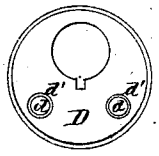


Fig 2

Fig 4

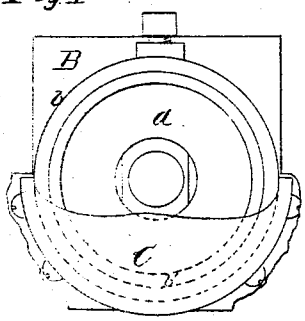
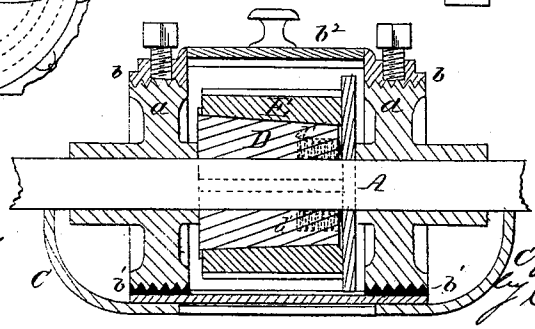


Fig 3



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UNITED STATES PATENT OFFICE.

JOSIAH K. PROCTOR, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN MECHANISMS FOR OPERATING THE DOFFER-COMBS OF CARDING-MACHINES.

Specification forming part of Letters Patent No. **140,304**, dated June 24, 1873; application filed March 7, 1873.

To all whom it may concern:

Be it known that I, JOSIAH K. PROCTOR, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Working Doffer-Combs; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

In the drawings, Figure 1 is a vertical longitudinal section of my invention. Fig. 2 is a plan view; Fig. 3, a vertical transverse section; and Figs. 4 and 5, details.

My invention has reference to the machinery used for communicating a reciprocating or vibratory motion to a doffer-comb for carding-engines. The object of my invention is to construct the machinery for running said comb so as to avoid the usual wear and tear, and to accomplish this by placing the running-parts in a suitable tank filled with oil; also, to make the bearing for the comb-shafts separate from the oil-tank, so that when said bearings become worn they may be removed and new ones substituted for them; also, to keep the oil in the tank from being thrown upon the shaft so as to prevent its working out and dripping upon the floor, as hereinafter set forth.

The center shaft, or shaft to which the power for running the comb is first communicated, is provided with an eccentric sliding cone connected by means of a knuckle-joint with the comb-shaft, whereby a vibratory or reciprocating motion is imparted to the comb. The oil-tank through which the main shaft passes has threaded openings in its sides, in which fit nuts to afford bearings for said shaft. Within the tank the shaft is provided with a sliding eccentric cone, fastened, so as not to turn except with the shaft, by a key or equivalent device. The smaller end of this cone is provided with one or more springs, which bear against a fixed collar on the shaft, the other end of the cone resting against one of the nuts in the side of the tank, by turning which the cone is slided along the shaft in the direction of the collar for the purpose of taking up lost motion or wear in the sleeve which surrounds it or in the cone itself. The object of the spring is to avoid pressing the cone too tightly into the sleeve which surrounds it, said sleeve having the same taper as the cone.

In order to avoid undue wear on the center shaft and bearings, together with the eccentric and its surrounding sleeve, the tank is made to hold a supply of oil for lubricating the parts, and this oil is fed to the tank by means of cups screwed to the sides thereof, said cups and tank communicating with each other by means of slots or channels in the threaded bosses of the nut-bearings. By means of these cups the amount of oil in the tank will be indicated, preventing danger of overflow and enabling the filling operation to be effected without opening the tank. They will also serve to collect the oil working through the shaft-bearings, which are provided with grooves for that purpose, and return the same to the tank. In order to prevent the oil from being forced through the opening in the cover of the tank by the movement of the eccentric, the ends of said tank are formed with projections or ledges for breaking the throw of the oil in its upward passage. The sleeve which incases the eccentric cone is provided with a stem, which connects, by a knuckle-joint, with another stem projecting from a collar fitted on and made fast to the comb-shaft by means of a set-screw or equivalent device. The stem of the eccentric sleeve has a head formed with a conical opening, this head fitting between the branches of the stem of the collar on the comb-shaft, these branches having each an opening for the passage of a pin. These openings are of different sizes and adapted to fit the ends of the pin just mentioned, the central portion of which is made of the same taper as the conical opening in the head through which it passes. The ends of this pin are fastened by set-screws which pass through suitable openings in the branches above-mentioned, or they may be fastened by lock-nuts on each side of said branches. The driving-end of the comb-shaft is sustained by arched bearings, (between which fits the stemmed collar before mentioned,) which are secured to, but independent of, and removable from, the bed-plate of the tank, said bed-plate itself being secured to and adjustable upon the

frame of the carding engine. The end of the comb-shaft is formed with a flaring opening to receive a center-pin, which passes through a suitable opening in the end of one of the bearings just mentioned.

Referring to the drawings, A is the center shaft or shaft to which the power is communicated, which passes through the oil-tank B, adjustably secured to a bed-plate fastened to the frame of the carding-engine. The tank B has threaded bosses *b b* in its sides, in which fit nuts *a a* which afford bearings for the shaft A. The bosses *b b* have each a slot or channel, *b'*, which afford communication between the tank B and the oil-cups C C secured to its sides, the ends of the tank being formed with ledges or shoulders b^3 to break the throw of the oil. The shaft A has a fixed collar, A', which rests against one of the nuts *a*, and is also provided with a key or equivalent device for preventing the eccentric sliding cone D from turning except with the shaft A. The cone D has openings or recesses *d d* in its smaller end for the reception of the springs *d' d'*, which bear against the collar A', the other end of said cone bearing against the adjacent nut *a*, by which said cone is adjusted in position. The nuts *a* are formed with channels *a' a'* to allow the oil to pass to the shaft A. E represents a sleeve encircling the cone D, and provided with a stem, E', which passes through a slot in the removable lid b^2. The stem E' has a head, *e*, provided with a tapering opening for the reception of the pin *f*, which passes also through the branches F' F' of the sleeve F on the comb-shaft G. The ends of the pin *f* are straight, as shown, and of different sizes, fitting snugly in the openings in the branches F, and held in place by set-screws f^2 f^2, the central portion of said pin being conical or tapering. The sleeve F is fastened by a set-screw, *g*, to the comb-shaft G, which moves in bearings H H attached to, but independent of, and removable from, the projecting end of the tank. The shaft G has a conical opening, g^1, in its working end, in which fits an adjustable center-pin, g^2. Instead of providing the tank with two oil-cups, as shown and described, only one may be used—the outside one. In this case the inner nut bearing would be closed on its outer side by suitable means, so as to prevent the oil from working out, and the oil-channel in the threaded boss on the same side would be dispensed with. Instead also of making the collar on the comb-shaft with two branches, a single stem may be employed. The conical joint-pin would then require only one straight end—the smaller one. The bearing of this pin would then probably require to be made broader than if two bearings were employed, as shown, and in addition to the set-screw, or in lieu of it, a lock-nut should be employed on the small end of the pin. The cone may be used with a single spring, but I prefer two, as shown.

The advantages of the construction herein described are, briefly, as follows: The center shaft and its cone and sleeve being run in oil, the wear on these parts is very slight. The construction of the tank avoids all waste, as splashing through the top is avoided by means of the ledges or shoulders on the ends. The oil which works through the nuts on the center shaft drips into the cups and is again returned to the tank. The cups also indicate the depth of oil in the tank, preventing overflow in filling, and permitting the supply to be replenished while the machinery is in motion. Should either of the nut-bearings become worn it may be easily replaced. If the bearing were part of or cast with the tank, the latter would have to be thrown away when the former became worn.

The sliding cone admits of "take up" when it or the sleeve or both become worn, and the springs in its end prevent binding between the cone and sleeve. The coupling-pin in the joint which connects the two shafts being made conical, when worn it can be slid along or turned around as occasion may require. The bearings of the comb-shaft, being cast separately from the tank, may be removed when worn and new ones substituted. Were they cast in the same piece with the tank, it would have to be discarded when they became worn.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the removable nut-bearings with the center-shaft, provided with a sliding conical eccentric and sleeve, for the purpose specified.

2. The combination of the center-shaft and sliding eccentric cone with the eccentric sleeve, as set forth.

3. In combination with the eccentric cone and the shaft collar and sleeve, the springs in the former, substantially as specified.

4. The oil-tank and drip cup or cups in combination with the center-shaft, said cup or cups being arranged to receive the drip from the shaft-bearing at a point outside the wall of the tank, as specified.

5. In combination with the oil-tank, drip cup or cups, and center-shaft, the nut-bearings and bosses, having oil-channels, as specified.

In testimony that I claim the foregoing, I have hereunto set my hand this 27th day of February, 1873.

JOSIAH K. PROCTOR.

Witnesses:
M. DAN'L CONNOLLY,
ALEX. HILLARY.