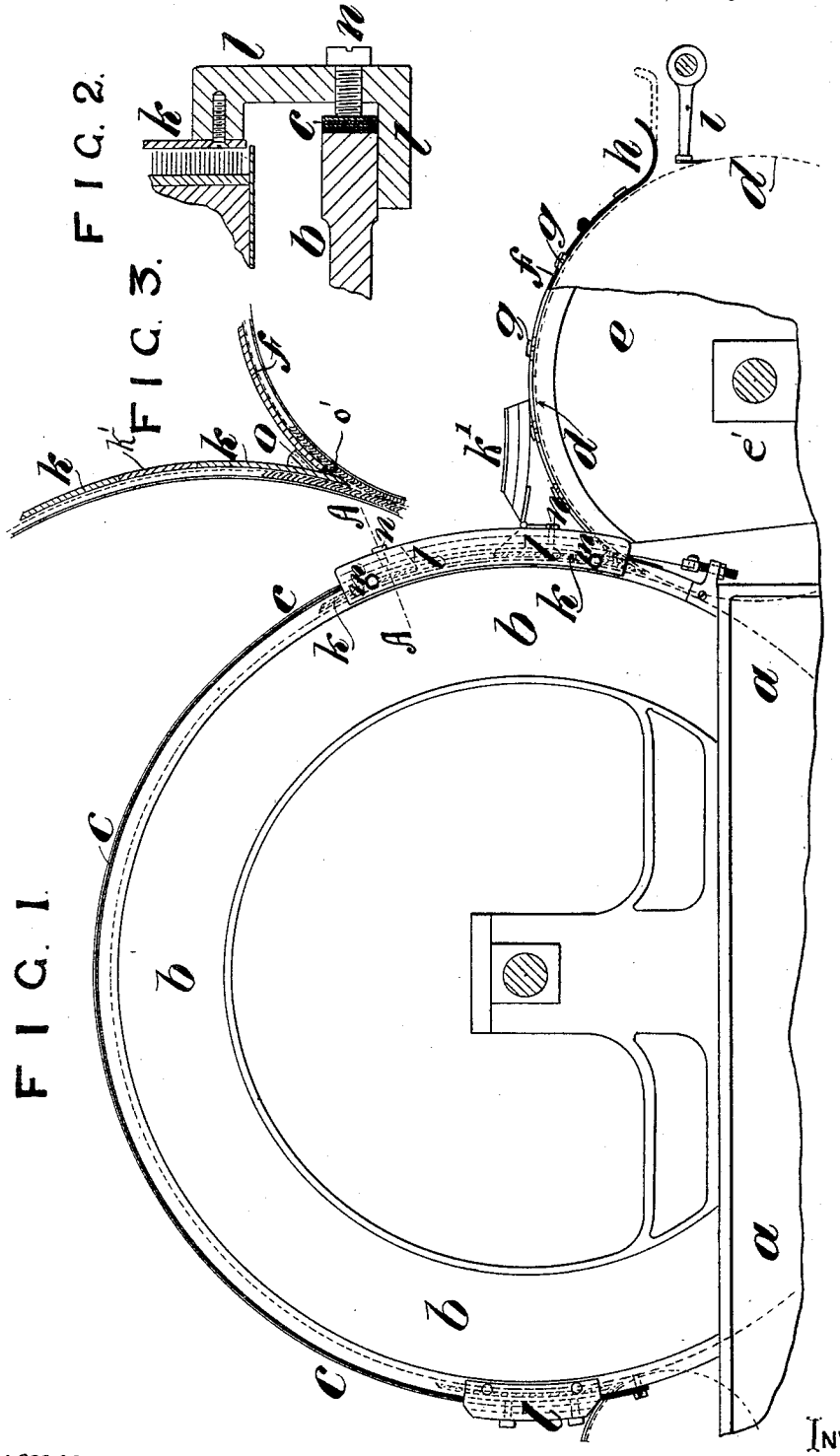
(No Model.)

G. & E. ASHWORTH.

CARDING ENGINE.

No. 406,985. Patented July 16, 1889.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE ASHWORTH AND ELIJAH ASHWORTH, OF MANCHESTER, COUNTY OF LANCASTER, ENGLAND.

CARDING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 406,985, dated July 16, 1889.

Application filed August 21, 1888. Serial No. 283,393. (No model.) Patented in England April 3, 1884, No. 5,857.

To all whom it may concern:

Be it known that we, GEORGE ASHWORTH and ELIJAH ASHWORTH, engineers, subjects of the Queen of Great Britain and Ireland, and residing at Manchester, county of Lancaster, England, have invented certain Improvements in Carding-Engines, (for which we obtained a patent in Great Britain, No. 5,857, dated April 3, 1884,) of which the following is a specification.

Our invention consists of further improvements upon a former invention for which Letters Patent of the United States, numbered 318,226, have been granted to us. In the said former invention, in order to obtain greater accuracy of action in the traveling cards, we applied bands of steel to turned rails on the side framing.

The object of our present invention is to obtain greater accuracy in the application and adjustment of the parts which inclose the main cylinder and doffer from the flats to the comb or thereabout. Instead of the ordinary hinged doffer-cover, we apply a sheet-steel covering-shell upon the turned end casings of the doffer. This shell is bent or molded to a truly cylindrical form and accurately fits the edges of the said end casings, which are turned to such a size that when the cover is in place it just clears the doffer, so that there is a minimum of space for the passage of air. The cover for the front of the carding-engine also consists of an accurately-molded plate, which is curved so that when in position it just clears the covering of the main cylinder. The two ends of the curved plate are screwed, riveted, or secured to two turned angle-pieces, which can be bolted or secured to the side frames, so as to hold the said plate in position, and as the said side frames are also turned true the covering-plate is brought into a true position without a tendency for the holding-screws or bolts to distort the plate. In order that the plate may be correctly in position when it is put in its place and the end angle-pieces are pressed against the end frames, we provide each angle-piece with two correctly-adjusted surfaces which bear upon the steel band which is applied upon the said frame. In the said plate we form an opening sufficient for the admission of the grinder to act upon the main cylinder. This opening we close by means of an accurately-fitted door made of a plate so shaped and applied that when secured in position the inner side of the door forms a continuation of the inner surface of the covering-plate to which the door is applied. Partly to prevent the accumulation of fluff upon the comb-shaft we in some cases extend the doffer-cover over the comb and shaft.

To render the description of our invention more clear, we will refer to the accompanying drawings.

Figure 1 represents a broken side elevation of a carding-engine framing constructed in accordance with our invention, the parts of the engine not necessary to the understanding of our invention not appearing. Fig. 2 illustrates the adjustment of the cover for the front of the engine. Fig. 3 shows the formation of the cover last named and of the doffer-cover at the point of convergence of the two covers.

In Fig. 1, *a* is a part of the ordinary under framing, and *b* is a bend which is turned on its periphery and provided with steel bands *c*, as set forth in the specification of our said former invention. The doffer is indicated by the dotted circle *d*. Upon each of the pedestals *e'*, in which the doffer-shaft revolves, we cast an end casing or plate *e*, which is turned upon the center of the bearing, so that when the doffer is mounted in working position the turned peripheries of the two end casings shall be truly concentric with the axis of the doffer and shall project slightly beyond the periphery of the same. Upon the two turned end casings we apply a cover *f*, made of sheet-steel bent, pressed, or molded to the form of a cylindrical arc of such proportions as will accurately fit the end casings and will just clear the card-surface of the doffer. This cover is or may be secured to the end casings by means of screws *g*, the holes in the cover being slotted, as shown at *g*, so that the cover can be adjusted. To the front edge of the cover we hinge a cover *h*, which extends over the doffer-comb *i*, and in some cases over its shaft, as indicated in dotted lines in Fig. 1.

In addition to the use hereinbefore mentioned, this extension of the doffer-cover tends to prevent the accidental drawing in of foreign substances between the doffer and the cover. The front of the engine is inclosed by a cover *k*, which is also made of sheet-steel molded to the form of a cylindrical arc, so that its concave side will just clear the card-surface of the main cylinder, as seen in Fig. 2, which is a section on the line A of Fig. 1 drawn to a large scale. Each end of this cover is secured to a curved angle-piece *l*, which is turned to the correct form, and the inner flat faces of the two parts are truly turned, so as to be parallel one with another and to fit against the flat turned faces of the bends *b*, to which the parts are secured by means of screws *m*. In each of the parts *l* two screws *n n* are fixed, and they are so regulated in length that when the cover is applied in position with the ends of these screws bearing upon the outer steel ribbons on each side the cover will be brought into its correct position without the necessity for further adjustment. We employ screws to bear upon the ribbons because of the facility these screws offer for obtaining the required adjustment, and also the screws may be made of steel and be hardened; but after the adjustment is once correctly obtained it is not our intention to vary it by turning these screws.

It will be seen that when the outer steel ribbon has been removed from each side of the carding-engine it is only necessary to secure the cover in position with the ends of the screws bearing upon the ribbons, which would then be the outer ribbons, no other adjustment being required. We do not remove this cover when the grinding of the cylinder is to be effected; but we form a portion of the cover to open as a hinged door *k'*, so that it can be opened to admit the grinding-roller, as hereinbefore mentioned. In Fig. 1 this part is shown as when so opened. The grinding can thus be effected without removing the doffer-cover. The lower edges of the two covers are represented on a larger scale in Fig. 3, wherein it will be seen that they are each beveled to a thin edge and extended downward as closely as possible toward the point of nearest approach of the cylinder and doffer. Between the nearly-meeting edges of the two covers we leave a narrow space *o'* sufficient for the introduction of the gage, and this space we close when the engine is at work by means of a removable strip *o* or of any suitable appliance. As hereinbefore mentioned, the cover *f* is adjustable upon the end doffer-casings *e*. After slackening the screws *g* this cover can be slid to some extent in either direction around the doffer, so as to regulate the width of the space at *o'* after the adjustment of the flats and other parts has been effected, or if preferred the said space might be closed by bringing the edge of the cover *f* close up to the other cover.

Having now described our invention, we declare that what we claim is—

1. The combination of the cylinder and side frames of a carding-engine and bands or arcs thereon with the arc-shaped cover *k*, angle-pieces which carry the said cover and are fitted to the frames, and accurately-adjusted stops which bear upon the bands or arcs to determine the distance of the cover from the cylinder, all substantially as set forth.

2. The combination of the doffer-cylinder and pedestals in which its shaft turns with the turned end casings *e*, each cast in one piece with the corresponding pedestal of the doffer, and the adjustable sheet-metal cover fitted to the said turned end casings, and means, substantially as described, for adjusting the cover thereon, substantially as set forth.

3. The combination of the cylinder, doffer, side frames, and turned end casings with the sheet-metal cover *k* on the frames and the adjustable sheet-metal cover *f* on the turned end casings, and means, substantially as described, for adjusting the cover thereon, the adjacent edges of the covers nearly meeting in the space between the cylinder and doffer, substantially as and for the purpose set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GEO. ASHWORTH.
ELIJAH ASHWORTH.

Witnesses:
DAVID FULTON,
FREDK. DILLON.