

(No Model.)

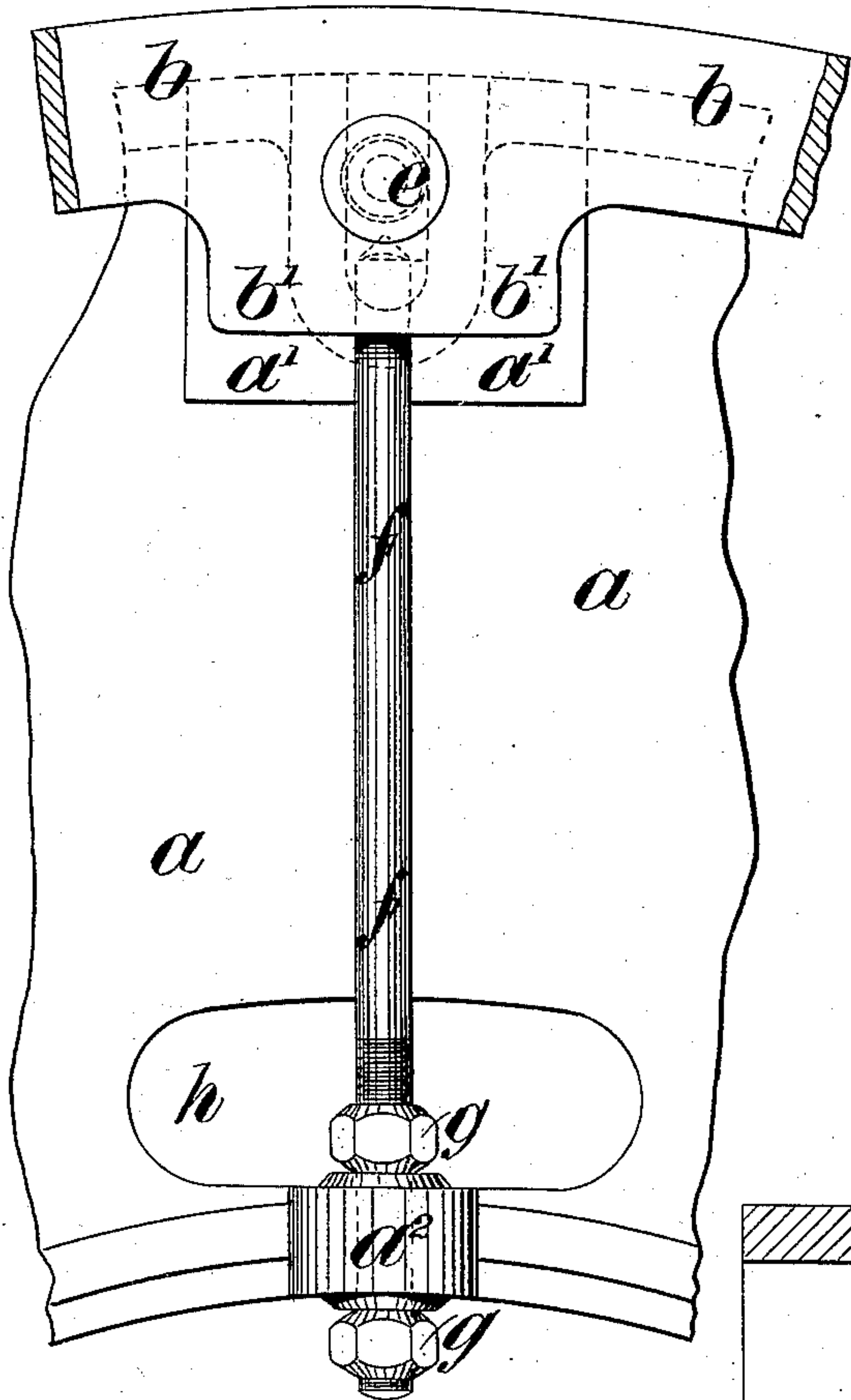
J. M. HETHERINGTON.

CARDING ENGINE.

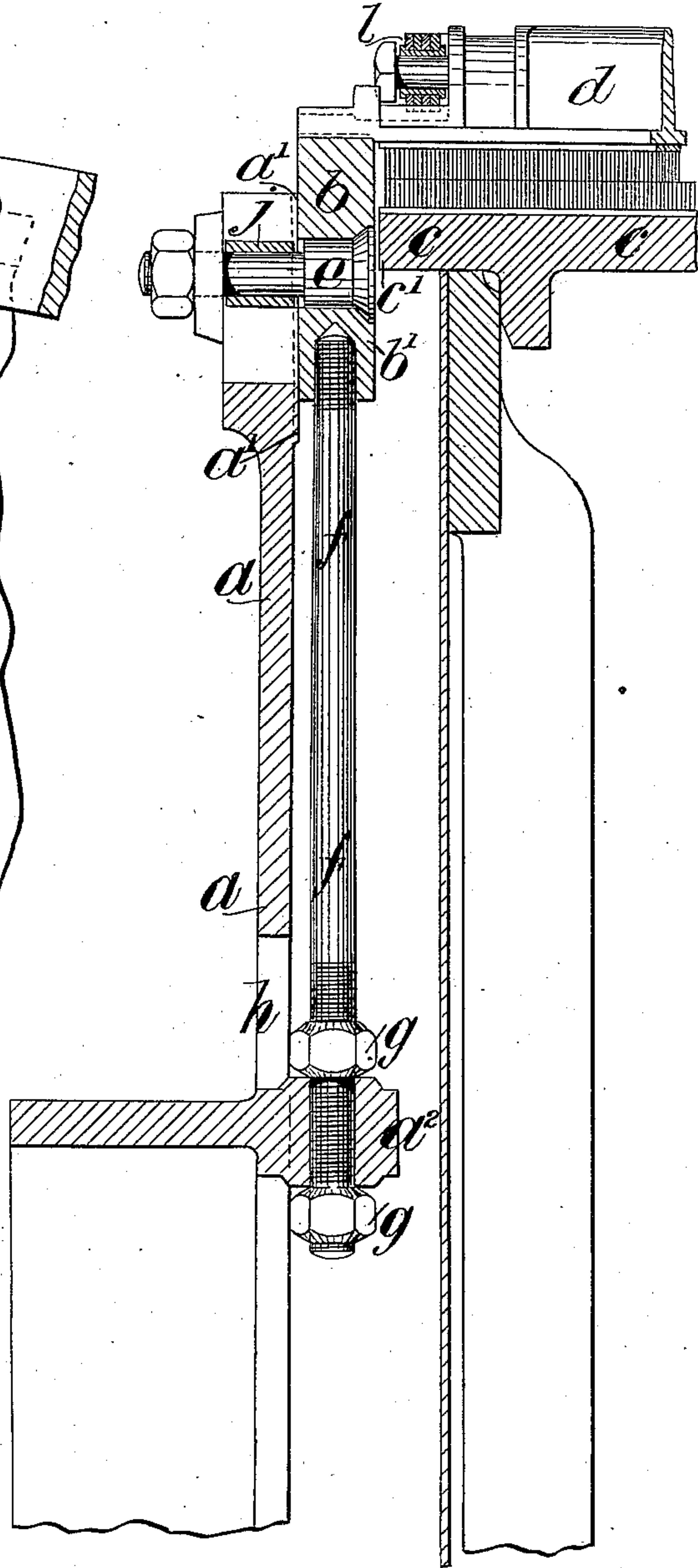
No. 381,781.

Patented Apr. 24, 1888.

F I G. 1.



F I G. 2.



INVENTOR.

J. M. Hetherington.

By his Attorneys

Howson and Howson

Witnesses.

Wm. Chester Wells

Charles C. Abbe



# UNITED STATES PATENT OFFICE.

JOHN M. HETHERINGTON, OF MANCHESTER, COUNTY OF LANCASTER,  
ENGLAND.

## CARDING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 381,781, dated April 24, 1888.

Application filed November 22, 1887. Serial No. 255,888. (No model.) Patented in England July 24, 1886, No. 9,579.

*To all whom it may concern:*

Be it known that I, JOHN MUIR HETHERINGTON, a subject of the Queen of Great Britain and Ireland, residing at Manchester, county of Lancaster, England, machine-maker, have invented certain Improvements in Carding-Engines, (for which I obtained a patent in Great Britain, No. 9,579, dated July 24, 1886,) of which the following is a specification.

My invention relates to the carding-engines which are provided in each case with an endless chain of traveling flats, as is well understood. As ordinarily constructed, the main cylinder of such a carding-engine revolves between fixed bends or cheeks, and to prevent the escape of the fibrous material through the spaces between the ends of the cylinder and the inner sides of these bends it has been customary to apply curved making-up pieces to the inner sides of the said bends, these appliances projecting a little over the periphery of the cylinder. Upon the outer sides of the same bends have been fixed the curved rails known as "flexible bends," upon which the flats travel, and which determine the working relations of the flats and the card-clothing on the main cylinder. In order to improve the general working of the engine and to shorten the length of the flats and to lessen the length of bearing of the flats, I dispense with the said making-up pieces, and I apply flexible bends inside the fixed bends.

My invention will be most clearly understood when described with reference to the accompanying sheet of drawings.

Figure 1 represents a side view of so much of a carding-engine as is necessary to the proper illustration of my invention. Fig. 2 represents a vertical cross-section of the same parts, parts of the traveling flats and cylinder being also shown.

In the said figures, *a* is a part of one of the aforesaid fixed bends or cheeks. *b* is a portion of one of the said flexible bends. *c* is a portion of the cylindrical shell of a carding-engine main cylinder, and *d* is one end of a flat.

The fixed bend *a* is formed with a face at *a'*, which face is turned, planed, or faced to a plane surface, which is arranged to be square with—that is to say, at right angles to—the axis

of motion of the said cylinder. The flexible bend is planed, turned, or faced on both sides, the inner vertical face, *b'*, which is opposed to the turned edge *c'* of the main cylinder, being parallel with the face *a'*, and being, as a consequence, parallel with the said turned edge of the cylinder, so that the latter can be revolved with the said edge almost touching the said face. The said flexible bend is secured to the fixed bend *a* by means of bolts, one of these bolts being represented by *e*. Each bolt passes through a slot in the fixed bend, these slots radiating outwardly from the direction of the cylinder-axes, or thereabout. The flexible bend is secured by the usual number of bolts, or by such a number as is considered to be suitable or necessary. In the example a bowl, *j*, is mounted upon the bolt, which is turned to receive such bowl, and the slot is made wide enough to receive the said bowl, the intention being that the said bowl shall roll in the said slot and revolve upon the bolt when the flexible bend is adjusted, friction and the tendency of the bolt to bind in the slot being thereby reduced. If not considered to be necessary, the said bowl may be dispensed with, in which case I should prefer to make the part of the bolt which passes through the slot square or rectangular in section.

The means for securing the flexible bend and for adjusting the same may be varied. In the example the adjustment is effected by means of screwed rods. One of these rods is indicated by *f*. One end of the said rod is screwed fast into a tapped hole in the flexible bend. The other end of the rod is also screwed and passes through a flange, *a''*, upon the fixed bend, nuts *g g* furnishing means for adjusting the flexible bend, and for locking fast the rod when the adjustment has been effected, as will be readily understood.

Access to the upper or outer nut is obtained through an opening, *h*, which is formed in the fixed bend *a*. The chain which connects together the chain of flats is represented in section at *l*. As the said inner vertical faces of the flexible bends *b* prevent the escape of the fibers past the cylinder ends more effectually than the ordinary making-up pieces, the carding-surface of the cylinder may be utilized for its full width, or nearly so, whereby the length of



the cylinder may be reduced, as compared with the width of the lap from which the cylinder is fed with fibrous material. The bearing-surfaces for the flats being inside, instead of outside of the fixed bends, the length of bearing is reduced, in addition to the reduction resulting from the shortening of the main cylinder, so that the length of the flats is greatly reduced, whereby there is a saving in weight and an increase in stiffness. Another advantage arises from the fact that the contact of the flat ends with the flexible bends, which are brought close to the edges of the card-clothing, incloses the cards more effectually than in the case of the ordinary engine.

Having now fully described my invention, I declare that what I claim is—

1. A carding-engine having fixed bends and a main cylinder, in combination with flexible bends or curved guide rails for the flats secured to the inner faces of the fixed bends and just clearing the edges of the cylinder, all substantially as and for the purpose set forth.

2. A carding-engine provided with a main cylinder and fixed bends, each having a trued inner face  $a'$ , in combination with a flexible bend secured to each said face and having itself a trued inner face  $b'$ , closely parallel to the edge of the cylinder, all substantially as described.

3. The combination of the fixed bend of a carding-engine slotted and having a trued inner face with a flexible bend fitted to the said inner face of the fixed bend, and bolts passing through the flexible bends and through the slots in the fixed bends and having bowls within the said slots, all substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN M. HETHERINGTON.

Witnesses:

DAVID FULTON,

D. TEMPERLEY.