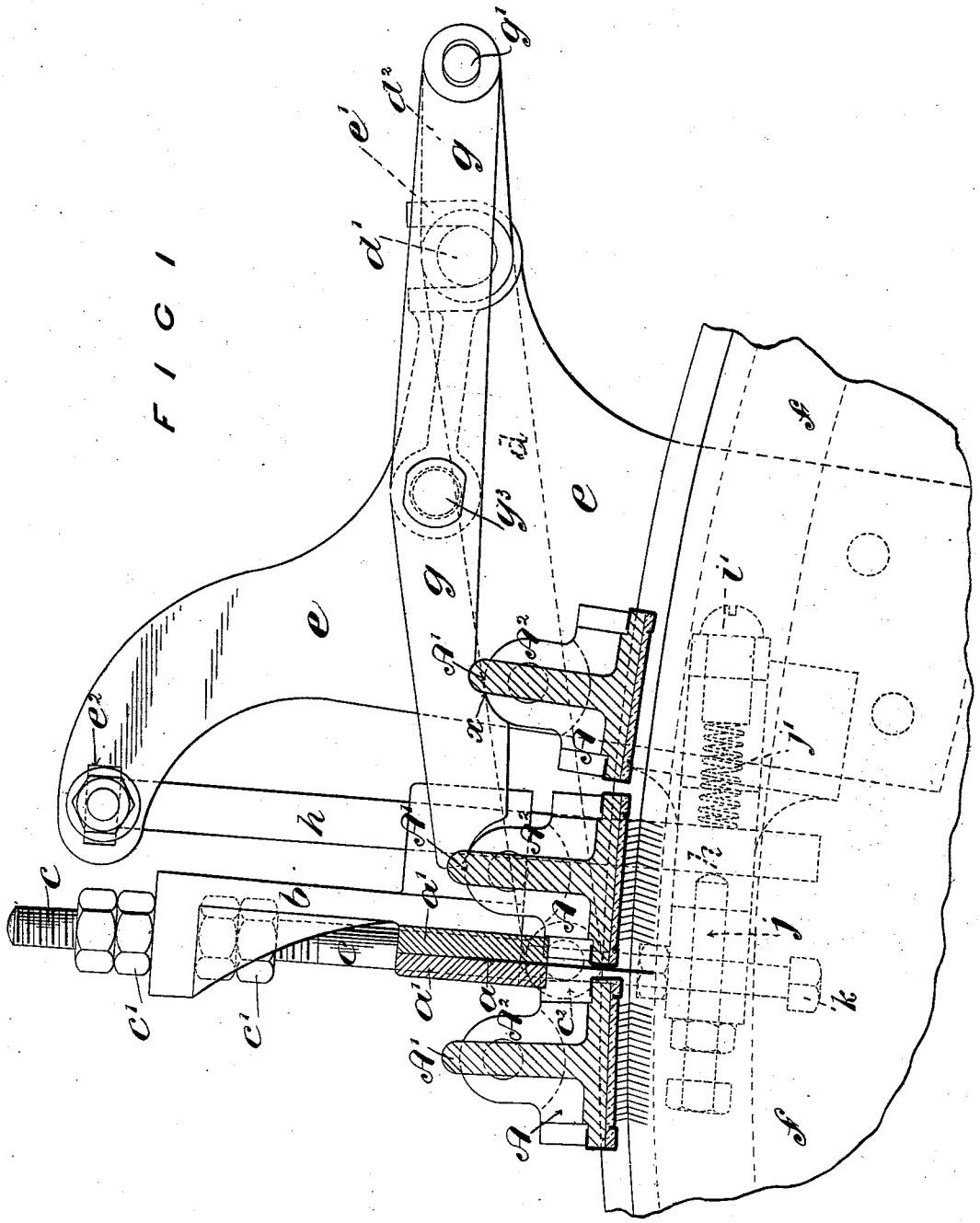
(No Model.) 4 Sheets—Sheet 1.

E. ASHWORTH.

CARDING ENGINE.

No. 537,138. Patented Apr. 9, 1895.

FIG 1



Witnesses
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By his Attys Pierce & Co

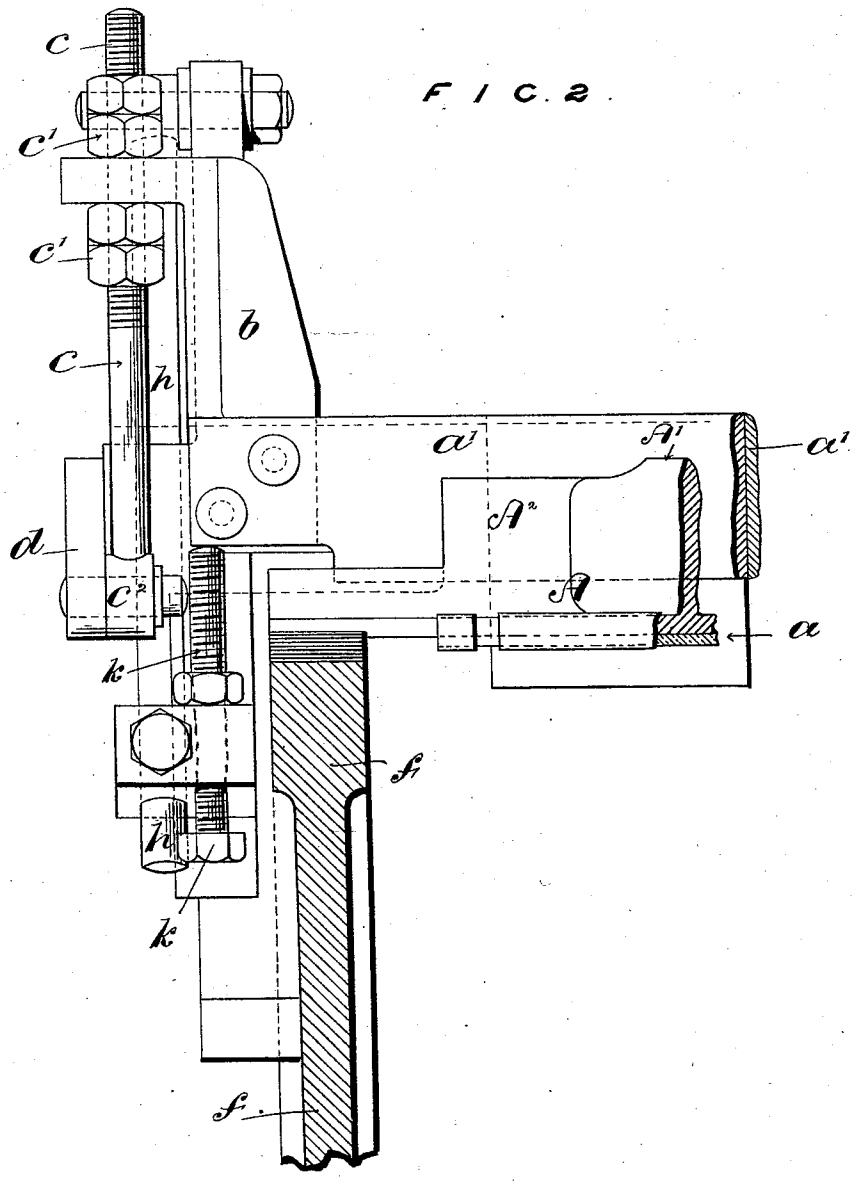
(No Model.) 4 Sheets—Sheet 2.

E. ASHWORTH.

CARDING ENGINE.

No. 537,138. Patented Apr. 9, 1895.

FIG. 2.



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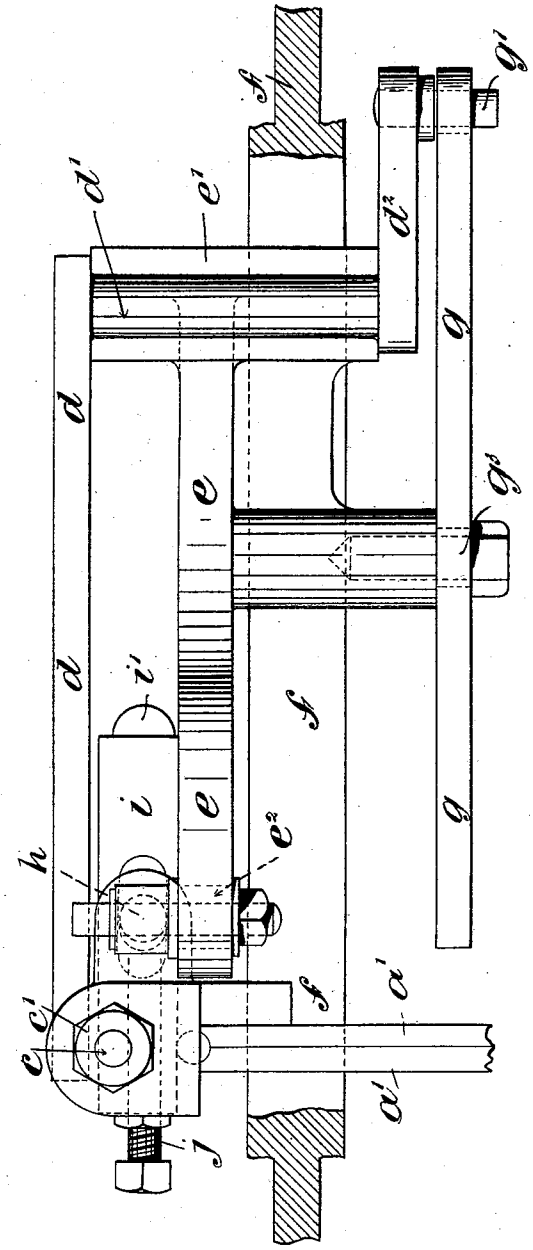
(No Model.) 4 Sheets—Sheet 3.

E. ASHWORTH.

CARDING ENGINE.

No. 537,138. Patented Apr. 9, 1895.

FIG 3.



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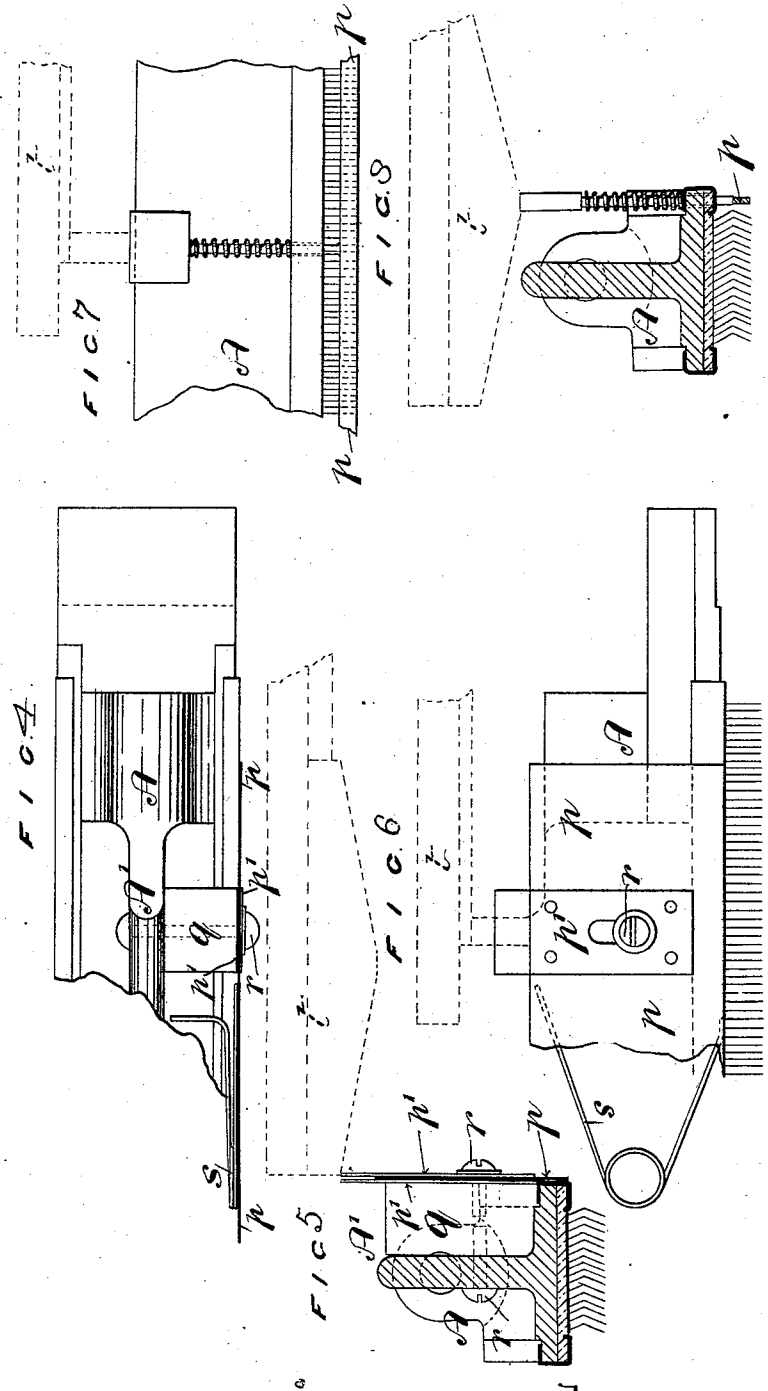
(No Model.)

4 Sheets—Sheet 4.

E. ASHWORTH.

CARDING ENGINE.

No. 537,138. Patented Apr. 9, 1895.



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UNITED STATES PATENT OFFICE.

ELIJAH ASHWORTH, OF MANCHESTER, ENGLAND.

CARDING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 537,138, dated April 9, 1895.

Application filed August 2, 1894. Serial No. 519,313. (No model.) Patented in England July 7, 1893, No. 13,237.

To all whom it may concern:

Be it known that I, ELIJAH ASHWORTH, a subject of the Queen of Great Britain, and a resident of Manchester, Lancaster county, England, have invented certain new and useful Improvements in Carding-Engines, of which the following is a specification.

A patent has been granted in England, No. 13,237, dated July 7, 1893.

My invention relates to the carding engines used in the preparation of textile materials and has for its objects to lessen the waste of material and to increase the efficiency of the apparatus. During the ordinary working of the carding engine fibers accumulate upon the flats and have to be stripped off or removed at intervals. A proportion of the waste so removed is comparatively long in the staple and therefore suitable to be worked into the sliver. This is especially the case with fibers which project backward from the heel of the flat, and when accumulated in sufficient quantity extend over the space between two contiguous flats.

The object of my invention is to prevent the accumulation of, or in the alternative to return these longer fibers to the cylinder, so as to lessen the waste of material. To this end I employ means to detach the fringe of fibers before the flat fully leaves the cylinder and before the flat is stripped in the ordinary manner. For this purpose I employ a thin blade to pass between two contiguous flats, so as to detach the fringe and pass it to the cylinder. The blade might receive its motion from the chain of flats in the case of a traveling flat engine or be actuated by a special motion driven from a part of the engine. The lugs or ends of the flats act upon levers carrying the blade. As each flat passes forward, the blade is lowered between two flats until its lower or inner edge just clears the main cylinder, the blade being then raised out of the way to permit the next flat to pass forward.

To render my said invention more clearly understood I will now proceed to describe the same particularly and in detail.

Figure 1 is a sectional elevation of the means used for operating the rising and falling blade by which the aforesaid fibrous tailings are detached from the heels of the flats. Fig. 2 is a view at right angles to Fig. 1. Fig. 3 is a plan view of the levers and parts. Figs. 4 to 8 show a movable blade carried by each flat.

The blade which rises and falls between the flats is marked *a* in the drawings. It is made of very thin sheet steel and is clamped between the side plates *a' a'*, the projecting portion of the blade being deep enough to enter between the flats A. In order to leave a little more space between the flats for the insertion of the blade *a*, I cause the center of the chains which connect the flats at the ends to be pitched a little wider apart than usual. At the proper intervals, that is to say, when the space between the flats is opposite to the blade, the blade is caused to descend to such a suitable depth as will push off the tailings of fiber which extend from flat to flat thus subjecting them afresh to the carding action of the cylinder. The blade rises immediately and is taken high enough to clear the top of the rib A' on the back of the flat. In the drawings Fig. 1, the blade is shown at the bottom of its stroke. This timed rising and falling of the blade *a* is effected by a convenient arrangement of mechanism which I will now describe. At the ends of the clamping plates *a' a'* which hold the blade, I attach brackets *b* and each bracket carries a stud *c* attached by jam nuts *c'* and having an eye c^2 at the foot. From the eye c^2 there extends a side lever *d*, formed at the other end with a cross pivot *d'* and shorter tail lever d^2. The pivot *d'* rests in a bearing in a bracket *e* bolted to the side frame or bend *f* of the carding engine. At another point g^3 on the bracket *e* I pivot a double lever *g* one end being connected by a pivot stud *g'*, to the tail lever d^2 while the other and free end rests upon the lugs A^2 of the flats. This free end of the lever *g* is formed with two inclined or curved faces which appear plainly in Fig. 1. As the flats advance from the position of the parts shown in the drawings, it is plain that the advance of the lug A^2, will raise that end of the lever *g* thus raising the blade *a*. The levers are so proportioned that the comparatively small lift of the free end of the lever *g* is sufficient to raise the blade *a* high enough to clear the rib A' of the flat. As the flat advances it slides upon the straight part of the lever *g* until it reaches the depression marked *x* when the lever is again allowed to

drop, and just at this time the space between the next two flats has been brought opposite to the blade *a* so that the blade enters this space and removes the tailings from the heel of this flat and so on.

To guide the blade more accurately I provide a guide rod *h* suspended from an arm of the bracket *e*, and passing through a boss on the bracket *b* so that as the brackets *b* with the clamps and blade rise and fall, they slide on these guide rods *h*. To set the blade in the accurate path, I render the upper end of the guide rod adjustable in a slot e^2 in the bracket *e;* also to prevent the blade *a* from being jammed between the advancing flats the lower end of the guide rod *h* is not held firmly in the bracket *i* through which it passes but enters a slot therein, and is confined between the end of an adjusting screw *j* and a spring abutment *j'* so that the blade might be carried forward a little by the advancing flats against the yielding spring *j'* which however replaces the blade in its true and normal path as soon as it is disengaged from the flats.

The exact distance which the blade shall be allowed to descend is fixed by adjusting the screw *k* which also passes through the bracket *i*. The spring *j'* is introduced through a hole in the back of the bracket *i*, the hole being afterward plugged by a screw *i'*, as shown in Fig. 1.

One, two or more blades of the indicated nature may be mounted at different points on the carding engine bend.

In Figs. 4, 5 and 6 I show an arrangement wherein the blade *p* is movable, and carried by the flat. I apply chocks *q* to the side of the web A' of the flat A so as to provide flat surfaces at intervals for the blade *p* to slide on. Thickness patches *p'* are applied where a screw or bolt *r* passes through the blade into the chocks. A slot is formed to receive the screw *r* and a spring *s* is applied to keep the sliding blade constantly up. A bracket *t* is provided and bolted to the side frame of the engine and this bracket (of which there may be several on the bend) has a double inclined face beneath which the thickness patches *p'* slide as the flat advances so as to lower the blade *p* to the proper extent. The bracket *t* appears in Figs. 5 and 6 of the drawings.

The blade *p* can be adjusted to descend to the required depth. A modified form of this sliding blade is shown in Figs. 7 and 8. In this form the blade is forced down by the cam bracket *t* and is raised by the spring encircling its stem.

I declare that what I claim is—

1. In combination with the flats in a carding engine, the blade movable in relation to the flats and operating between them and means for operating the blade, substantially as described.

2. In combination with the flats in a carding engine, the blade supported independently of said flats and means for moving the said blade between the flats, substantially as described.

3. In combination in a carding engine the flats, means for operating the flats the blade movable in relation to the same and means arranged to operate the blade upon the passage of the flat, substantially as described.

4. In combination in a carding engine, the flats, the blade movable between the same, means for operating the blade and the yielding carrier for the blade adapted to permit it to move slightly in the direction of movement of the flat substantially as described.

5. In combination in a carding engine, the flats, the blade movable between the flats, the carrier for the said blade, operating means therefor, said blade being adjustable toward or from the heel of the flat, substantially as described.

6. In combination in a carding engine, the flats, means for operating the flats the blade, a lever arranged to be operated by the passage of the flats and the connection from the said lever to the movable blade substantially as described.

7. In combination the flat, the movable blade, the carrier therefor, the guide *h* adjustably supported, the stop and the yielding spring bearing on the guide and means for operating the carrier, substantially as described.

In witness whereof Ihave hereunto set my hand in presence of two witnesses.

ELIJAH ASHWORTH.

Witnesses:

JOSHUA ENTWISLE,

RICHARD IBBERSON.