No. 614,155. Patented Nov. 15, 1898.

J. WILLIAMS & P. H. ALLSOPP.

CARDING ENGINE.

(Application filed Dec. 28, 1897.)

(No Model.) 3 Sheets—Sheet 1.

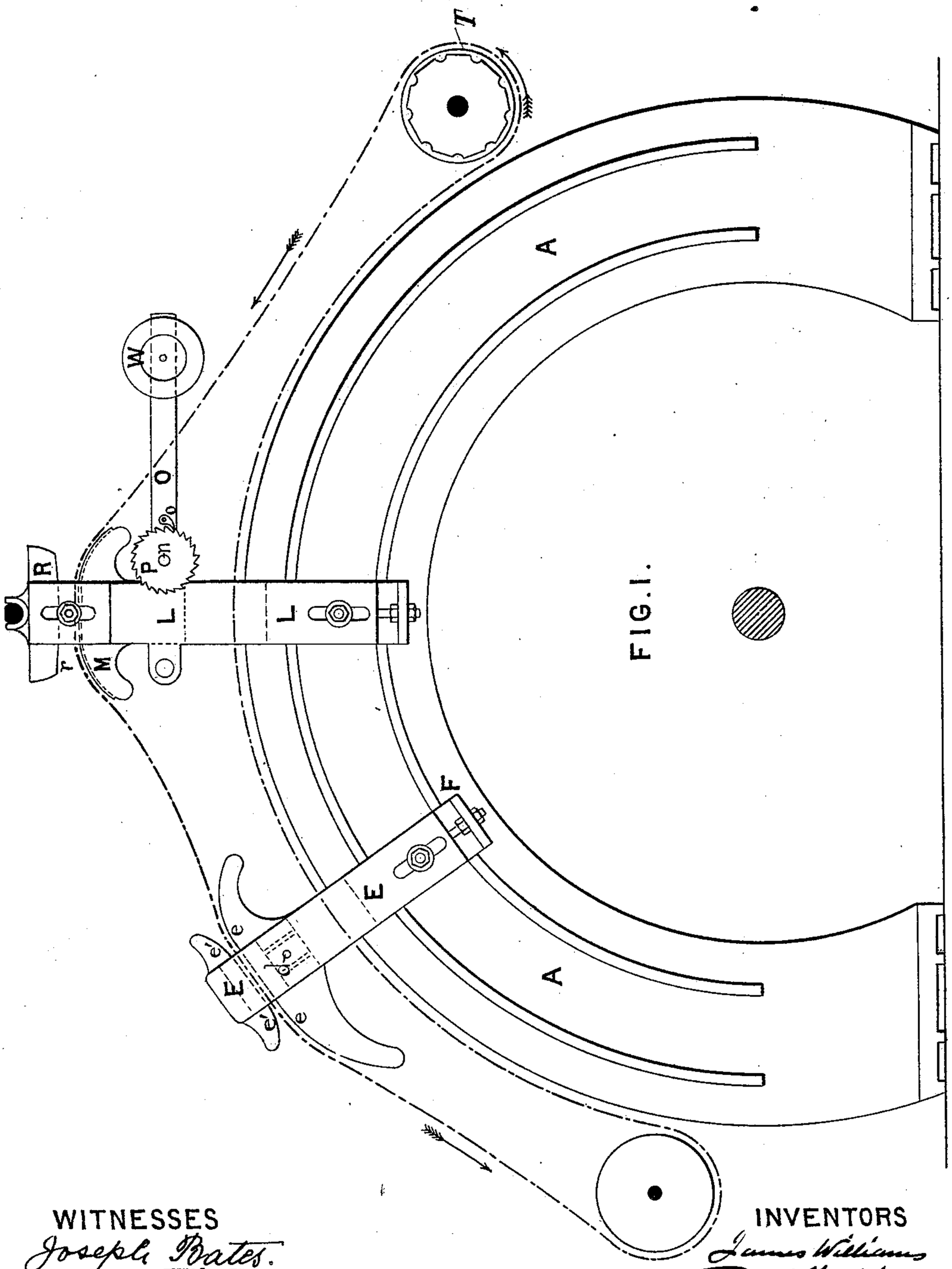

FIG. I.

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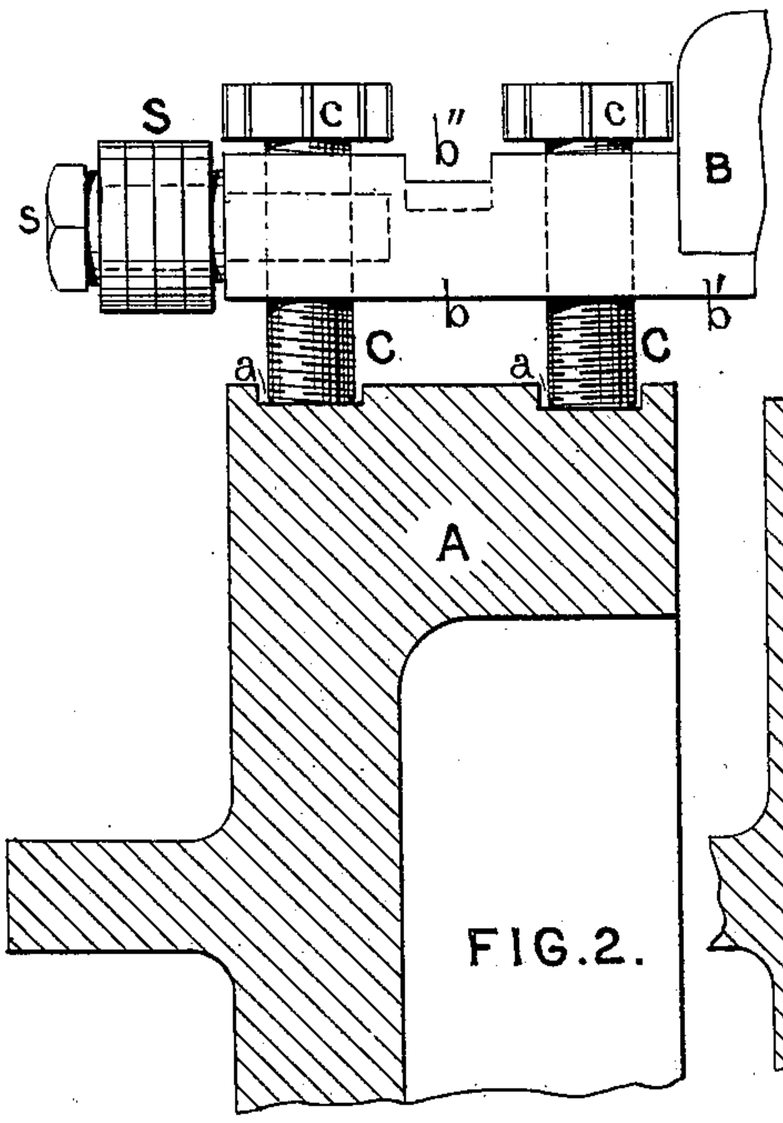
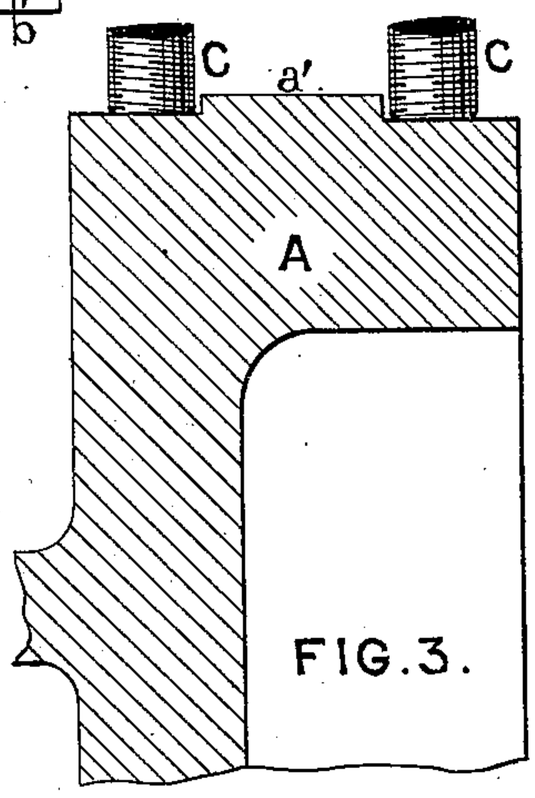


FIG. 2.



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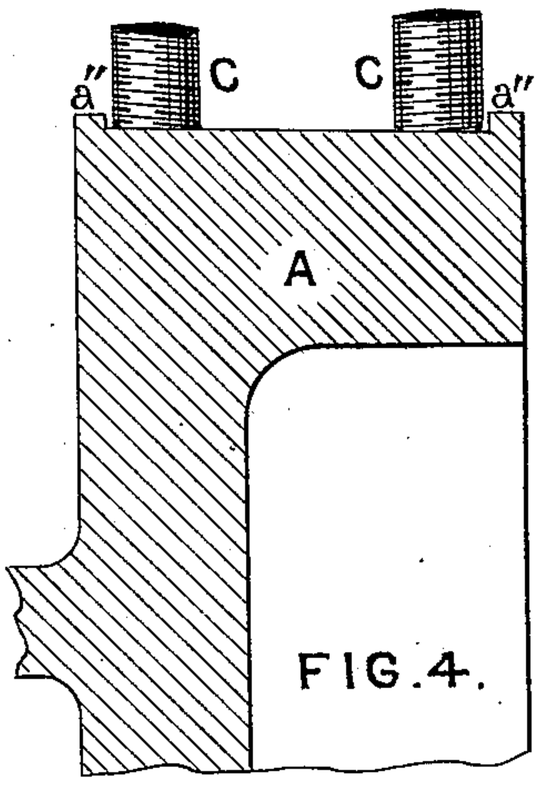


FIG. 4.

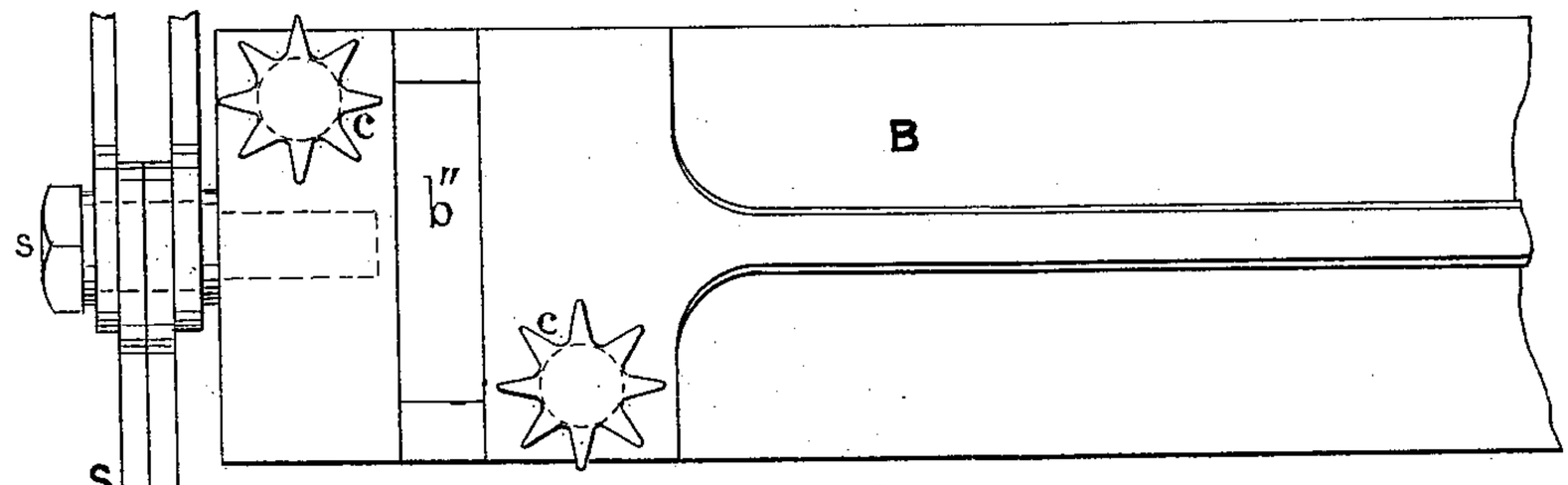
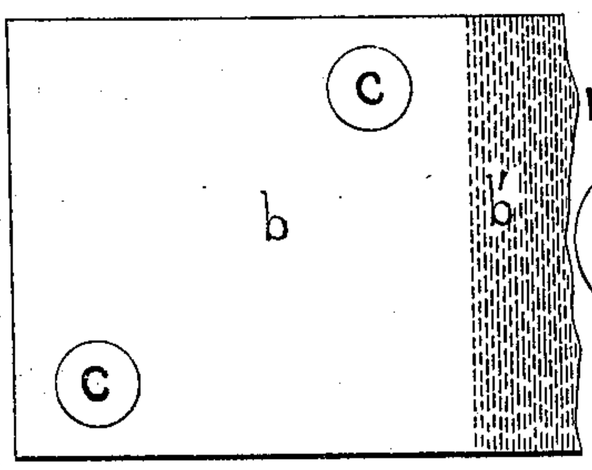


FIG. 5.



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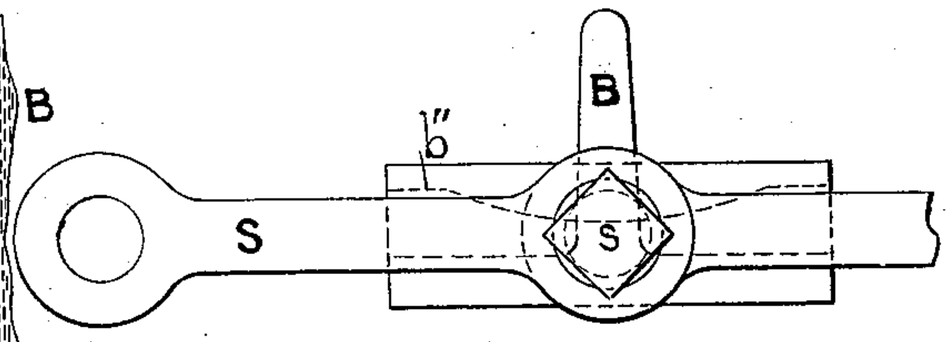

FIG. 7.

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No. 614,155. Patented Nov. 15, 1898.

J. WILLIAMS & P. H. ALLSOPP.

CARDING ENGINE.

(Application filed Dec. 28, 1897.)

(No Model.) 3 Sheets—Sheet 3.

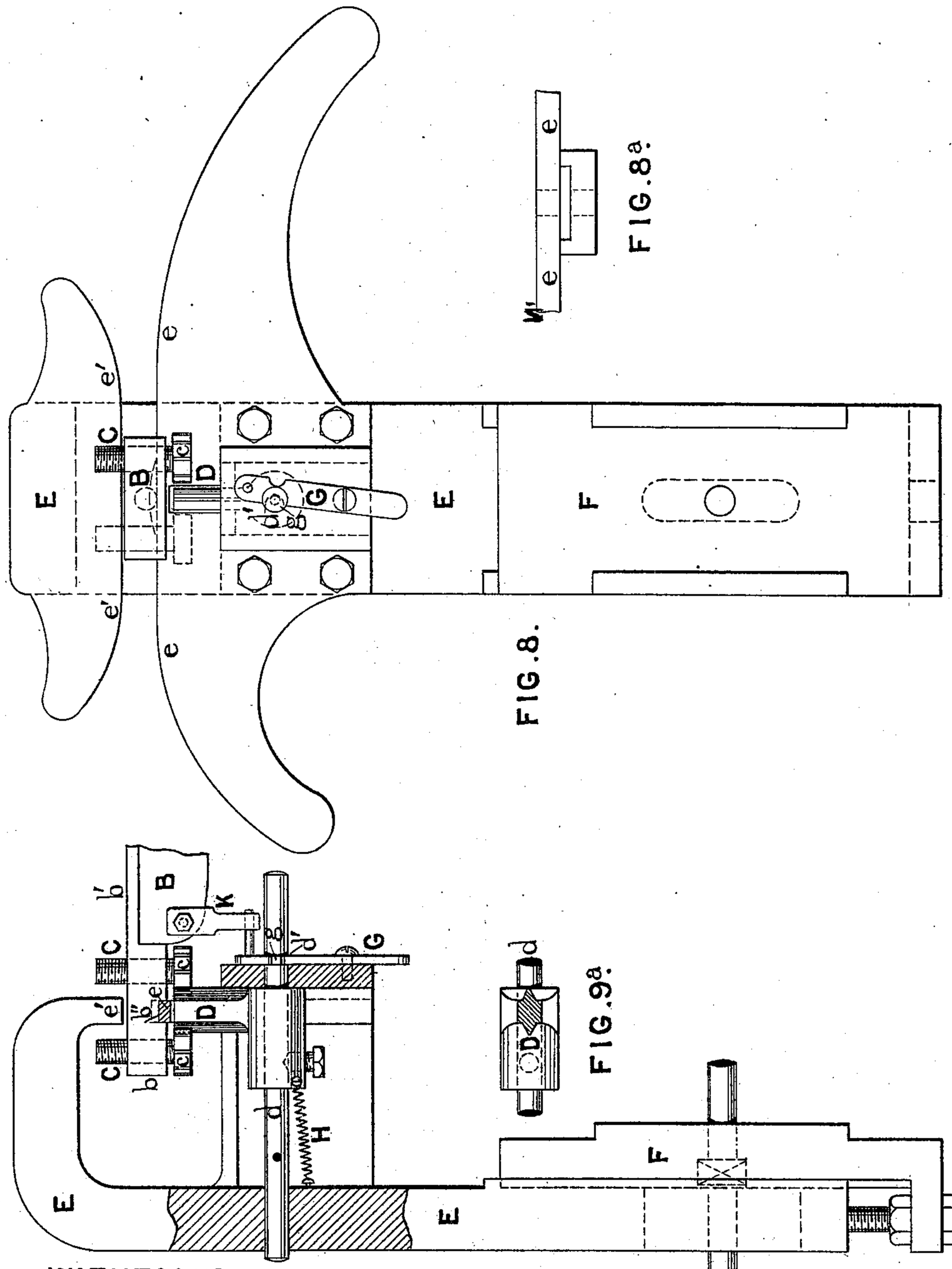

FIG. 8.

FIG. 8a.

FIG. 9.

FIG. 9a.

WITNESSES

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UNITED STATES PATENT OFFICE.

JAMES WILLIAMS, OF SALFORD, AND PERCY H. ALLSOPP, OF HEATON NORRIS, ENGLAND.

CARDING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 614,155, dated November 15, 1898.

Application filed December 28, 1897. Serial No. 664,054. (No model.)

To all whom it may concern:

Be it known that we, JAMES WILLIAMS, a resident of Salford, and PERCY HADFIELD ALLSOPP, a resident of Heaton Norris, in the county of Lancaster, England, subjects of the Queen of Great Britain, have invented certain new and useful Improvements in Carding-Engines, of which the following is a specification.

This invention relates to carding-engines constructed with revolving flats, and is designed to provide improved means for adjusting and grinding the flats.

Hitherto it has been generally customary to adjust the postion of the flats in relation to the cylinder by means of what have been termed "flexible bends," which have been fastened to the fixed or rigid bends.

By this improvement we dispense with the flexible bends and adjust the flats by means of screws inserted in their ends and employ a wide make of flat, say, two inches or wider, so that a greater surface of the cylinder would be covered by them by reason of there being a less number of spaces between the flats.

The invention will be fully described with reference to the accompanying drawings, in which sufficient of a carding-engine is shown to illustrate the invention.

Figure 1 is a side elevation of bend, showing the position of the flats and the grinding and setting brackets; Fig. 2, a transverse section of bend with side elevation of flat end; Fig. 3, a transverse section of bend, showing modification; Fig. 4, a transverse section showing another modification; Fig. 5, a plan of back of flat; Fig. 6, a plan of face of flat; Fig. 7, an end elevation of flat; Fig. 8, a side elevation of setting-bracket; Fig. 8ª, a plan of part of arm *e;* Fig. 9, a front elevation of same, partly in section; and Fig. 9ª, a plan of bracket D.

Upon or around the periphery of the fixed or rigid bend A we preferably form two grooves *a*, Fig. 2; or instead of the grooves we form a central shoulder *a'*, Fig. 3, or two shoulders *a''*, Fig. 4, forming a single central groove. The grooves or shoulders thus formed serve as guides for screws C, inserted in the ends of the flats B, and the surface of the periphery of the bend may be case-hardened to render it more durable.

The flats B are formed with a flat surface *b* at each end, preferably parallel with the face *b'*. In each end we insert two screws C from the back, the ends of which project through the flat surface *b'* on the front side, and when in working position in the bend A engage with or rest upon the periphery of the bend, being guided thereon by the grooves *a* or by the shoulder or shoulders *a' a''*.

The ends of the screws C form the surface of the flats, which work upon or travel over the periphery of the bends, and can be adjusted to set the flat to the required inclination or bevel and also to bring the body of the flat nearer to the cylinder as the wires are ground or worn shorter.

The screws C are formed with a fine pitch-thread and are fitted tightly into their holes in the flat end, or may be otherwise prevented from turning easily or becoming loose, such as by cutting a slit in the flat end and applying a clamping-screw or other mechanical means.

The heads of the adjusting-screws C are made of pinion shape or with a number of projections or teeth *c*, which are caused to engage successively with a finger D as the flats revolve or travel when it is desired to set or adjust all the flats B relatively to the surface of the cylinder of the card. The finger D is placed, when in operation, midway between the path of the two screws in each flat end, the screw-heads engaging with the finger D on different sides. The screws are made with right and left hand threads. Thus after or during grinding the screws C can all be turned back any desired distance, say one five-hundredth of an inch, more or less.

The finger D, which engages with the screws C, is preferably fitted to an adjustable bracket E, though, if desired, it may be fitted to the grinding-bracket. The flats travel over an arm or horn *e*, a groove *b''* being cut in the back of each flat B for this purpose.

The adjustable supporting-bracket E for the setting-finger D is affixed to the bend A by a fixed bracket F, bolted thereto. It is provided with an arm or horn *e*, upon which the flats B rest, and a second arm or horn *e'* to prevent the flats B being lifted out of position as they travel forward during the setting of the screws. The finger D is fitted on a spindle *d*, capable of being moved in a longitudinal direction to bring the finger D into

the position shown in Fig. 9 to engage with the screws C or into a position clear of the flats and screws. The finger D is held in position by a catch G with a notch *g*, which engages with a groove *d'* in the spindle *d*, and when the catch G is released it is drawn back by the spring H. The catch G is constructed to engage with either side of the spindle *d*, according to the direction in which the flats are moving, so that a movement to either side, as desired, will release the spindle *d* and finger D.

Upon any of the flats B is fitted a loose adjustable finger K to engage with the catch G to disengage it from the spindle *d*. This finger K is fitted into the last flat to be set, so that when it is set by the finger D it throws over the catch, disengaging the spindle *d*, and allows the finger D to be drawn back by the spring H out of position until it is necessary again to reset the flats.

The adjustable grinding-bracket L supports the flats while being ground.

The chain S, affixed to the end of the flat by the screw *s*, rests upon and slides over the arm or horn M, and thus the weight or grinding pressure is transferred to the screw *s*, by which the flat is sustained in position during the operation of grinding. Further, while the flats are passing the grinding-bracket the weight of the other flats suspended by the chain approaching to and traveling away from the grinding-bracket is sustained or supported by the chain without putting any strain or weight upon those flats that are passing over the bracket.

The arm or horn M, which raises the flats B while being ground, is fitted to the bracket L to slide up and down thereon and is supported by the lever O and weight W.

On the bracket L, above the sliding arm M, is fitted a second arm R, over the surface of which the ends of the screws C travel as the flats are being ground. When it is desired to grind the face of the flats flat, the face of the arm R is also flat. In using wide flats, however, we find that they will not answer well if ground flat, as one edge is too far away from the wires of the cylinder when in operation, and to obviate this we grind the surface of the flat of a concavity corresponding to the curve of the periphery of the wire surface of the cylinder. For this purpose we make the under surface *r* of the arm R with a curved surface corresponding with that of the periphery of the cylinder. This grinding arrangement puts no "heel" into the wires of the flat, and we put the necessary heel into the flats by making one of the grooves *a* on either side in the periphery of the bend A deeper than the other or by setting one of the screws C in either side of the flat farther out than the other.

The links S of the chain, which connect the flats B together, are preferably connected to the extreme ends of the flats by the screws *s;* but, if desired, the chain may be connected in the usual way to snugs formed on the back of the flats. The chain S engages with the notched wheel T, by which the flats are driven without putting any strain upon the flats.

What we claim as our invention, and desire to protect by Letters Patent, is—

1. In a carding-engine the combination with a flat of two bearing-screws inserted through each end upon the ends of which screws the flat travels substantially as described.

2. In a carding-engine a bend constructed with grooves around the periphery to guide the flats as they revolve in combination with flats provided with screws in their ends adapted to travel in the said grooves substantially as described.

3. In a carding-engine the combination with the rigid bend of the flats B and the bearing-screws C inserted in the flats upon which the flats travel resting upon the periphery of the rigid bend substantially as described.

4. In a carding-engine a rigid bend A constructed with guiding-grooves around the periphery, flats constructed with bearing-screws C which rest upon the grooves in the periphery of the bend and bearing-screws C in the ends of the flats by which the flats are set and upon the points of which they travel substantially as described.

5. In a carding-engine the combination with the rigid bend A and flats B provided with bearing-screws C in the end and the screws C provided with toothed heads of the movable finger D by which the screws can be turned as the flats travel past substantially as described.

6. In a carding-engine the combination with the rigid bend A the flats B and bearing-screws C with toothed heads of the finger D to engage with the screws, the adjustable bracket E by which the finger D is supported the spindle *d* upon which the finger D is fitted, the catch G for holding it in position and the spring H for drawing it back when released substantially as described.

7. The combination with the bearing-screws S provided with toothed heads the finger D which rotates the screws and the spring for drawing back the finger D from contact with the screw-heads of the loose adjustable finger K for releasing the finger D substantially as described.

8. In a carding-engine the combination with the flats B of the chain S and screws *s* inserted in the ends of the flats and a wheel T with which the chain engages and by which the flats are driven without putting any strain upon the flats substantially as described.

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

JAMES WILLIAMS.
P. H. ALLSOPP.

Witnesses:
I. OWDEN O'BRIEN,
R. OVENDALE.