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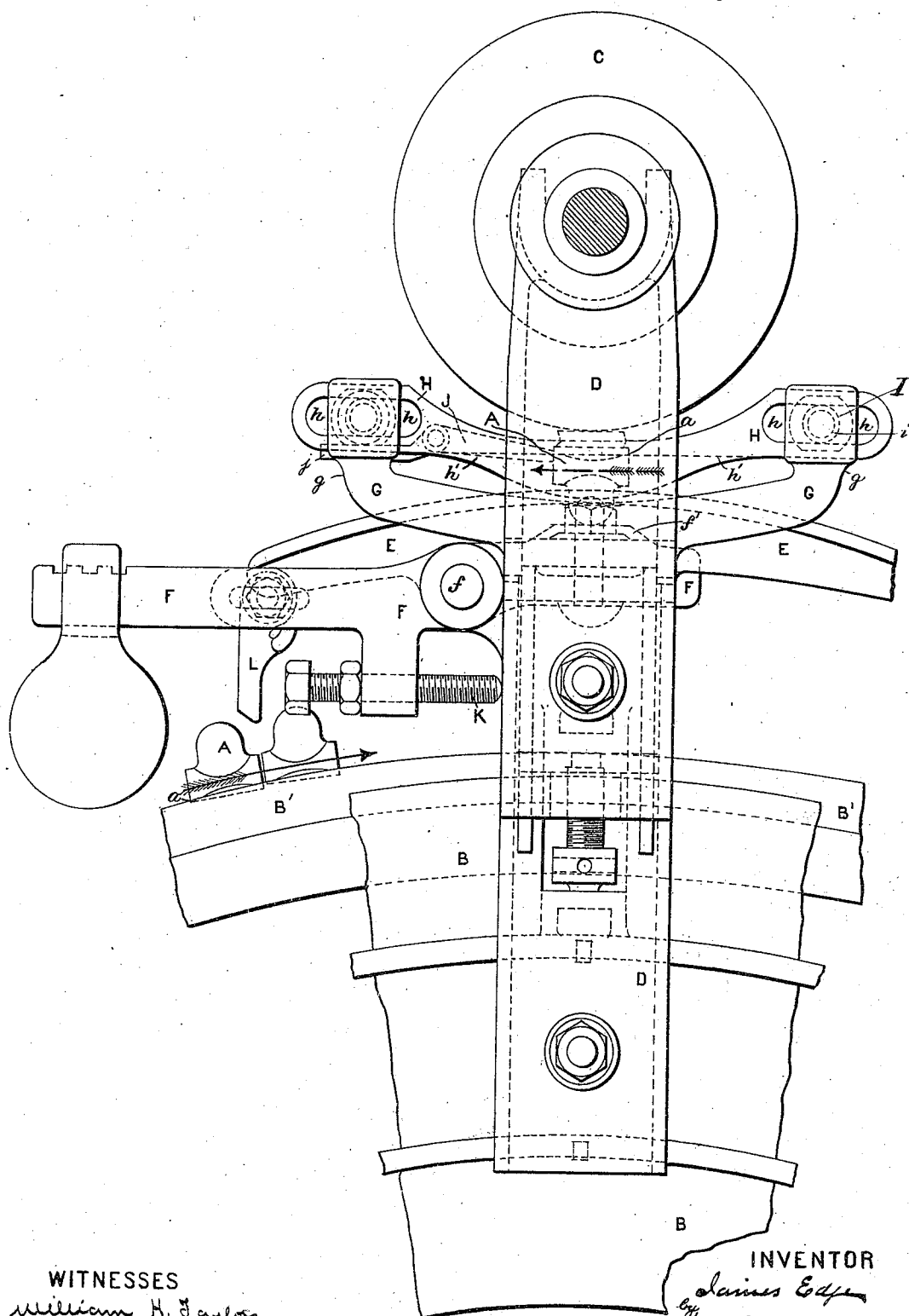
9 Sheets—Sheet 1.

J. EDGE.

APPARATUS FOR GRINDING REVOLVING FLATS OF CARDING ENGINES.

No. 501,995.

Patented July 25, 1893.



WITNESSES
William H. Taylor
Joseph Benton

FIG. 1.

INVENTOR
James Edge
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Attys

(No Model.)

9 Sheets—Sheet 2.

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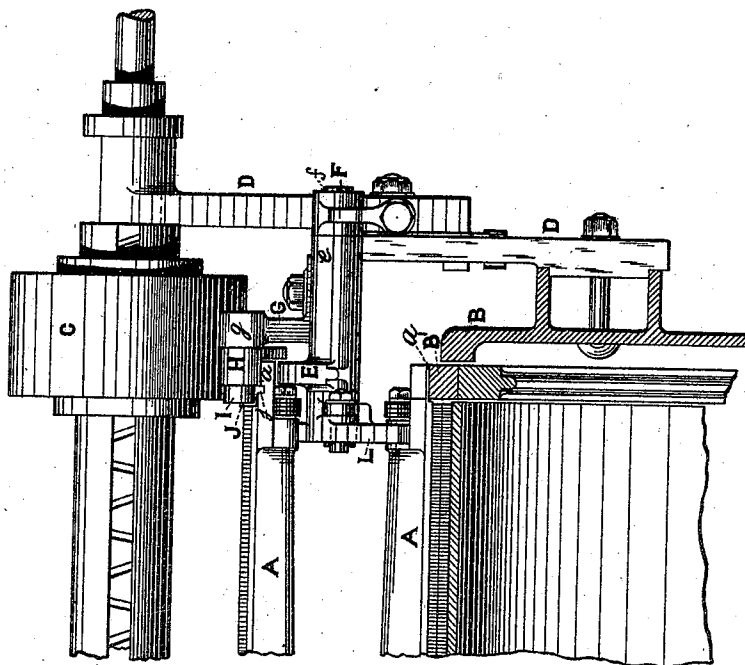
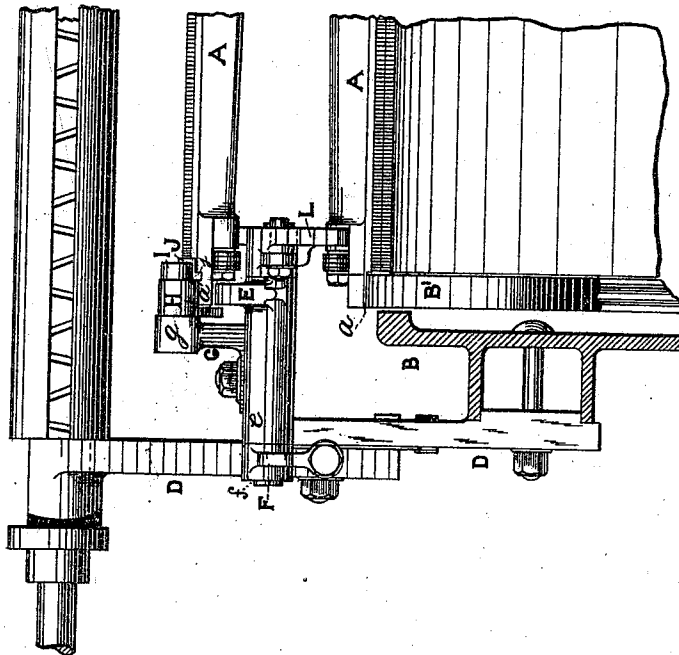


FIG. 1a.



WITNESSES,

William H. Bayless
Chas. Orendale

INVENTOR

James Edge
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(No Model.)

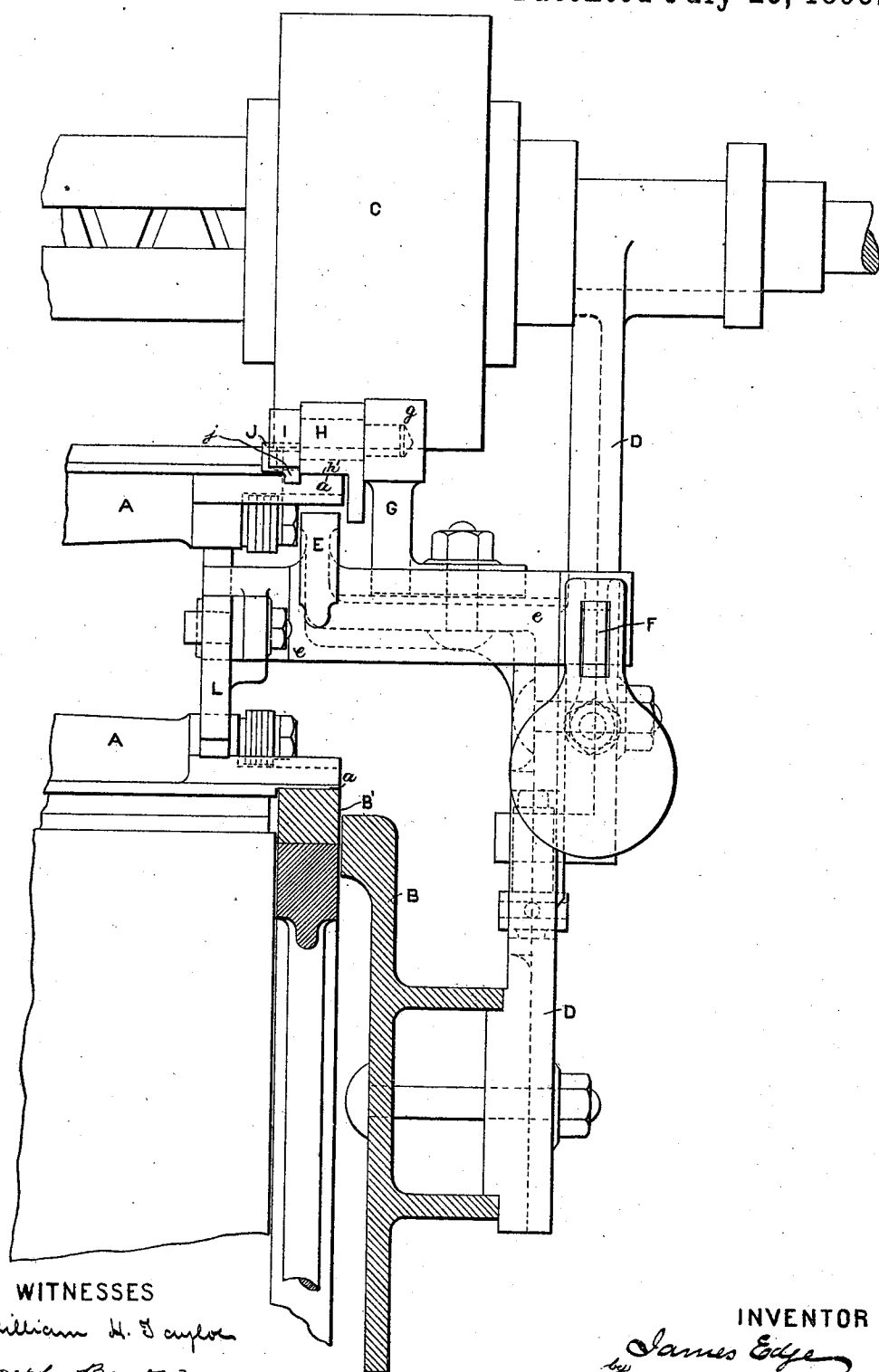
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WITNESSES

William H. Taylor
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FIG. 2.

INVENTOR

James Edge
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(No Model.)

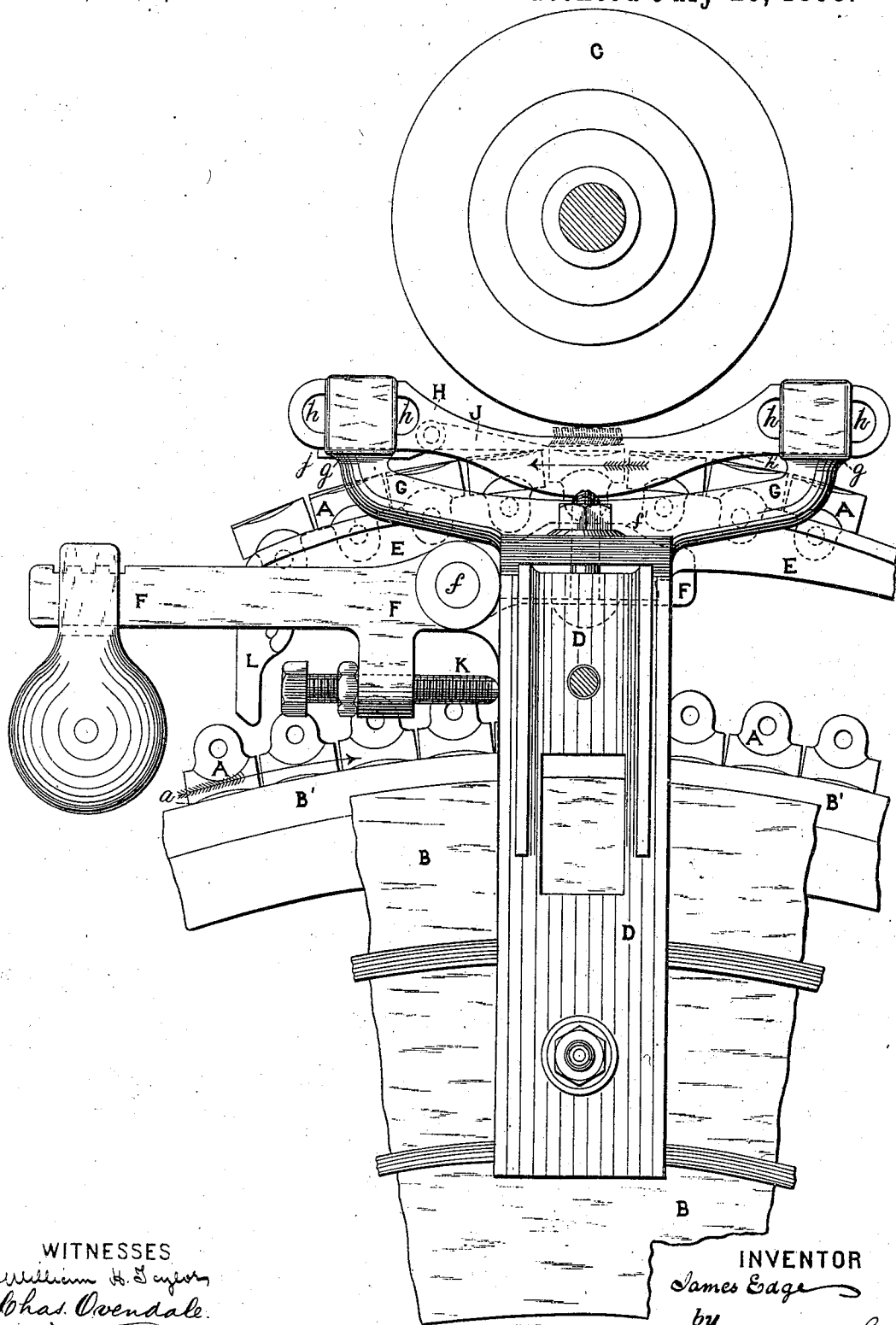
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J. EDGE.

APPARATUS FOR GRINDING REVOLVING FLATS OF CARDING ENGINES.

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Patented July 25, 1893.



WITNESSES
William H. Saylor
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FIG. 2a.

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(No Model.)

9 Sheets—Sheet 5.

J. EDGE.

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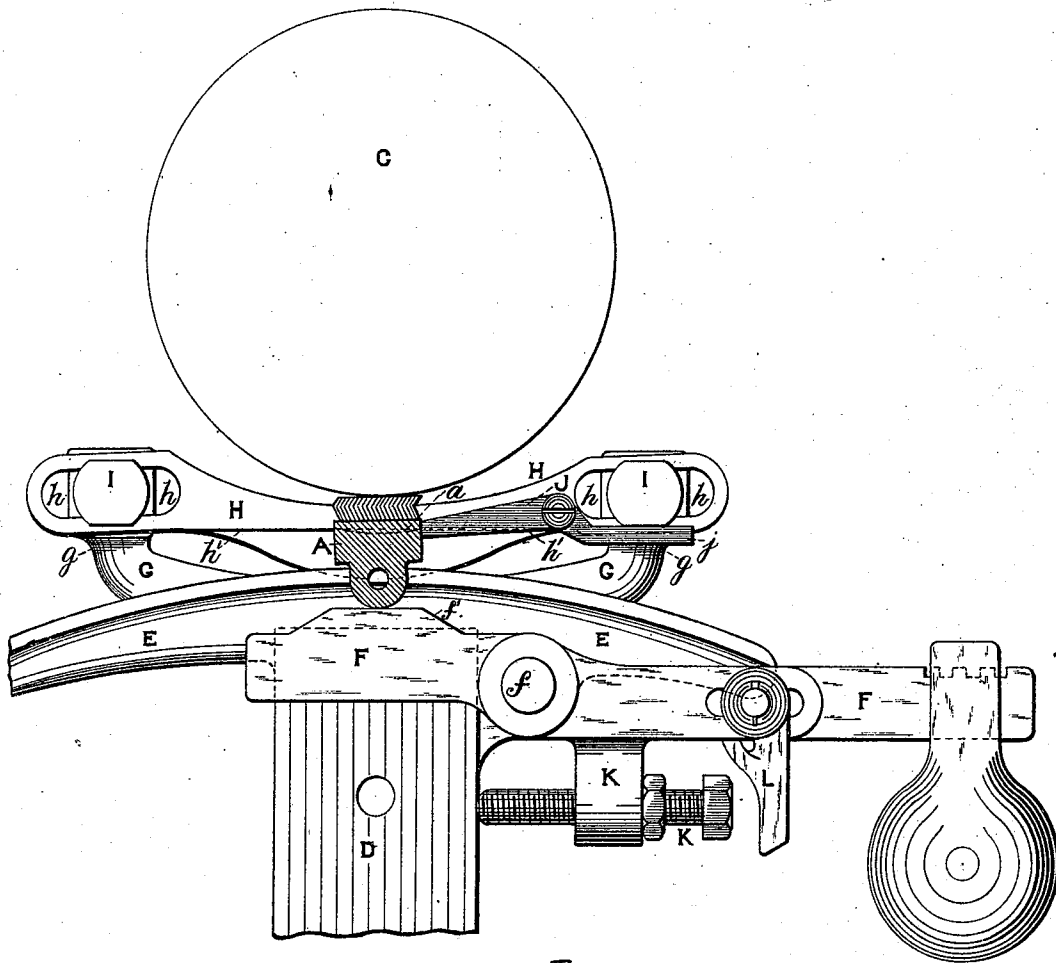


FIG: 2^B

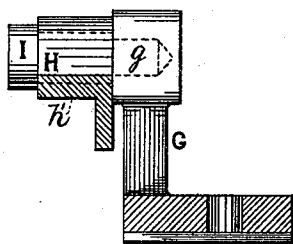


FIG: 13.

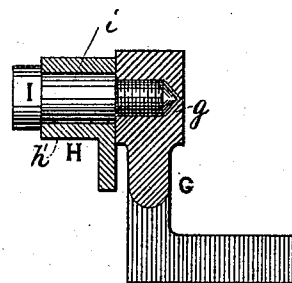


FIG:14. INVENTOR

WITNESSES

William H. Sargant
Chas. Wendell.

James Edge

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Attys.

(No Model.)

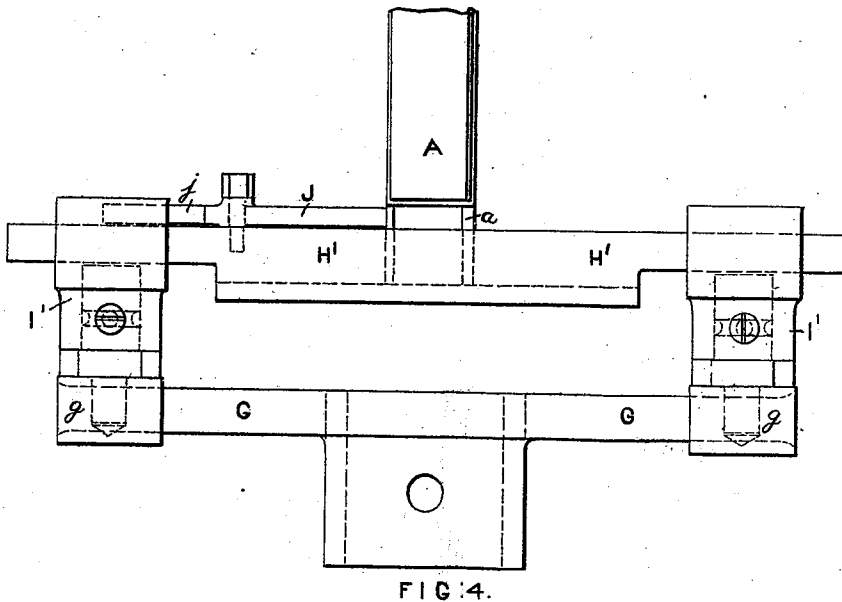
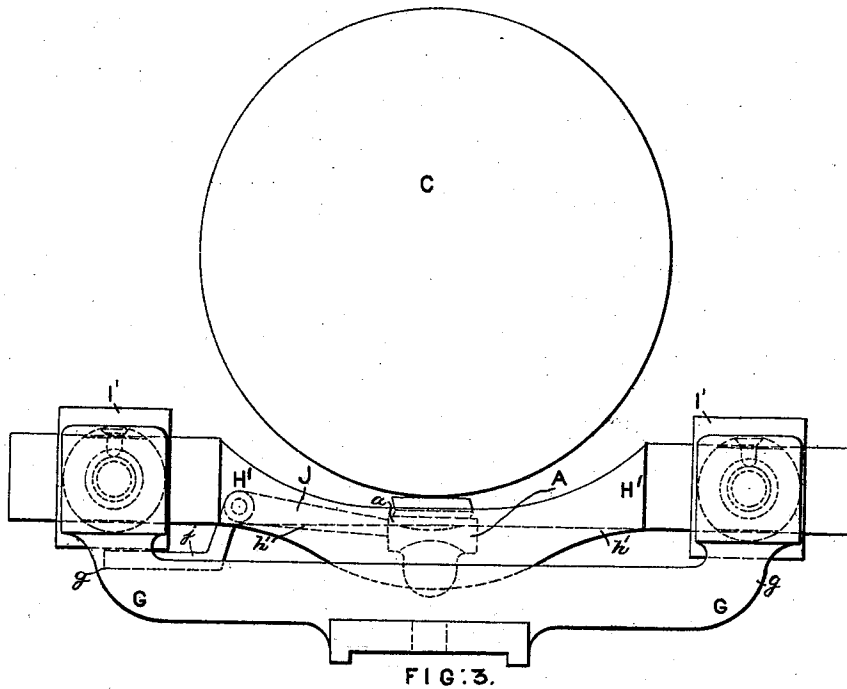
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APPARATUS FOR GRINDING REVOLVING FLATS OF CARDING ENGINES.

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WITNESSES

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INVENTOR

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(No Model.)

9 Sheets—Sheet 7.

J. EDGE.

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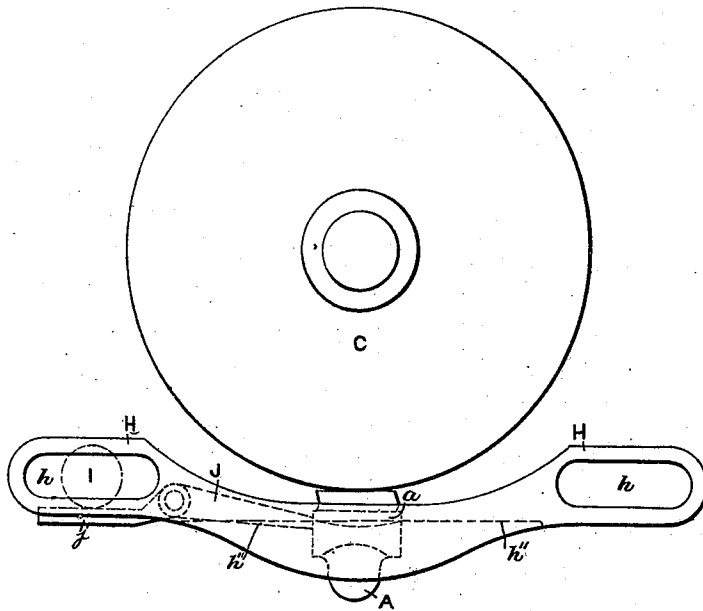


FIG. 5.

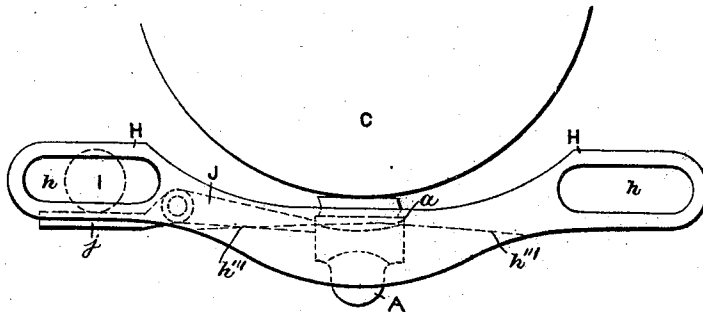


FIG. 6.

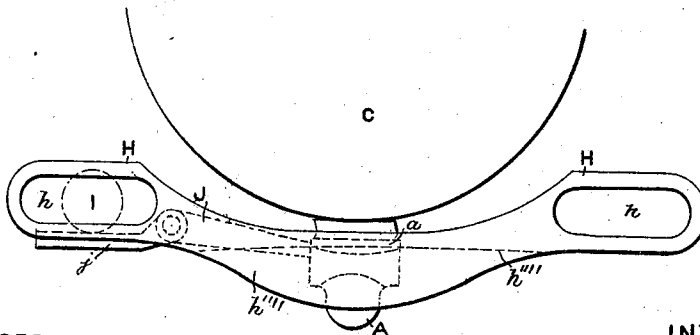


FIG. 7.

WITNESSES

William H. Taylor
Joseph Benton

INVENTOR

by *James Edge*
Wm. H. Thompson
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(No Model.)

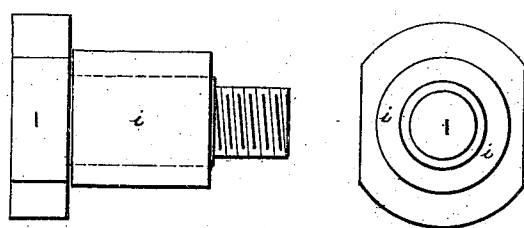
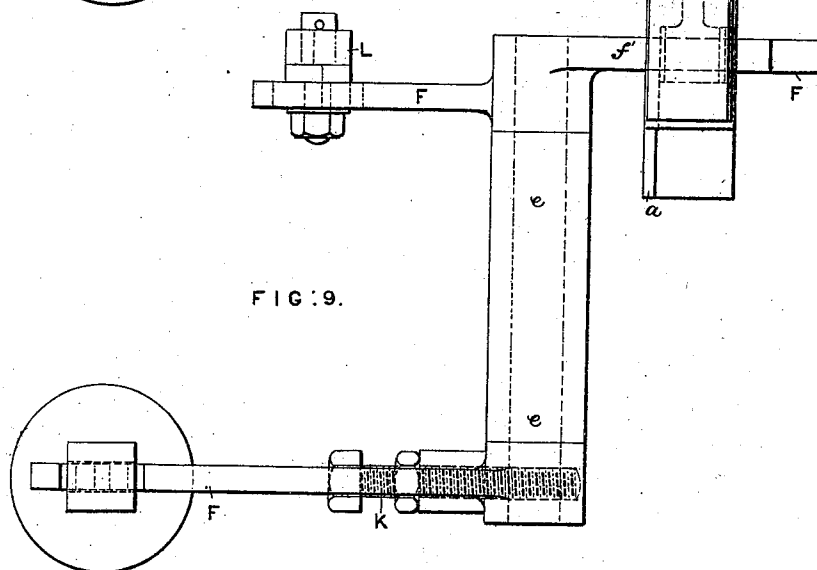
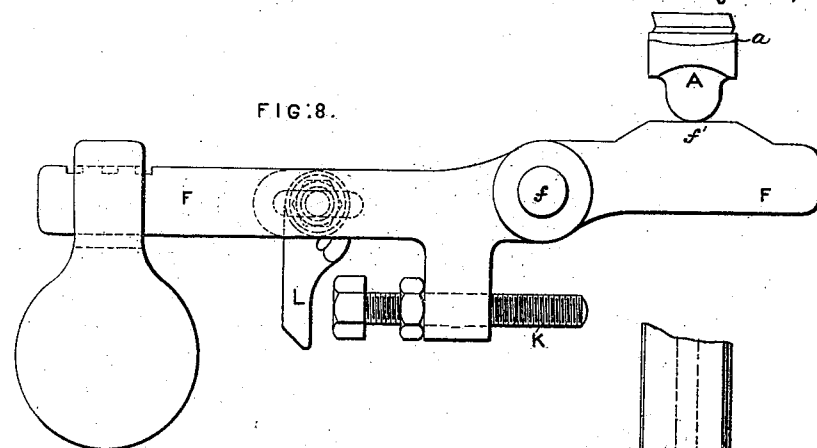
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WITNESSES

William H. Taylor
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INVENTOR

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(No Model.)

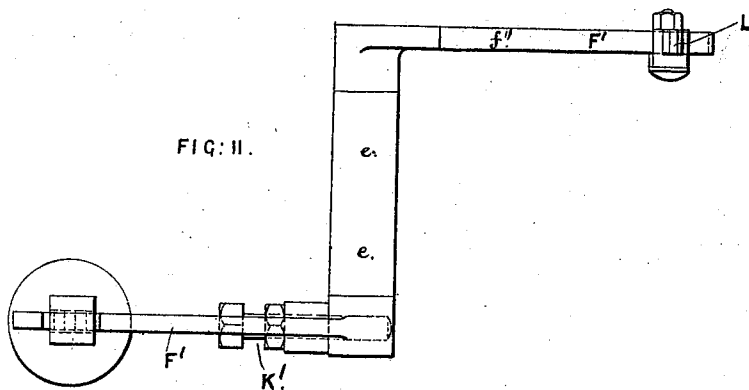
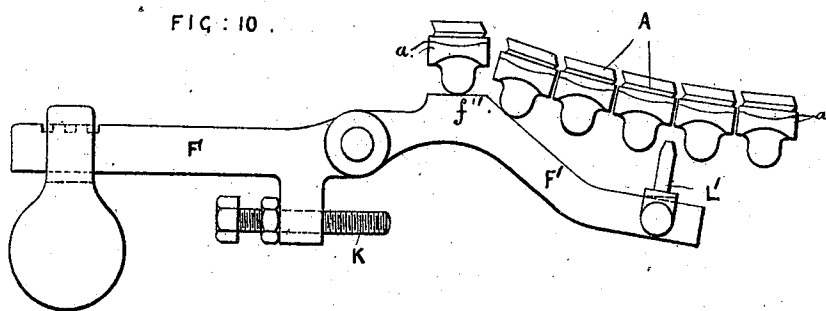
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J. EDGE.

APPARATUS FOR GRINDING REVOLVING FLATS OF CARDING ENGINES.

No. 501,995.

Patented July 25, 1893.



WITNESSES

William H. Taylor
Joseph Barton.

INVENTOR

James Edge
by Wm. P. Thompson & Co.

Attys.

UNITED STATES PATENT OFFICE.

JAMES EDGE, OF GORTON, ENGLAND, ASSIGNOR OF ONE-HALF TO SAMUEL HERBERT BROOKS, OF SAME PLACE.

APPARATUS FOR GRINDING REVOLVING FLATS OF CARDING-ENGINES.

SPECIFICATION forming part of Letters Patent No. 501,995, dated July 25, 1893.

Application filed October 13, 1890. Serial No. 367,970. (No model.)

To all whom it may concern:

Be it known that I, JAMES EDGE, a subject of the Queen of England, residing at Gorton, in the county of Lancaster, England, have invented certain new and useful Improvements in Apparatus for Grinding Revolving Flats of Carding-Engines, of which the following is a specification.

This invention relates to that class of carding-engines for carding fibrous materials preparatory to spinning, in which revolving flats are employed and is designed with the object of grinding the wire of the flats from their working surfaces without removing them from their position on the carding-engine.

The invention refers more especially to such grinding mechanism as have the working surfaces of the flats brought into contact with a horizontally moving bracket or slide which moves with them as they successively pass beneath the grinding roller while the grinding roller journals remain stationary.

It consists essentially of a sliding or moving block which moves along a slightly inclined path, by reason of being fitted with inclined slots—one at each end—mounted upon studs in a fixed or stationary bracket (or their equivalent) or which carries the flat in an inclined position as it moves along a true or specially formed surface against which the working surface of each flat successively bears and a small tumbler catch or pawl pivoted thereto which engages with the front edge of each flat and causes the slide or block to be carried forward therewith.

It will be fully described with reference to the annexed drawings wherein sufficient of a carding-engine is illustrated to show the working of the invention.

Figure 1. is a side elevation of part of the bend of a carding-engine and grinding bracket and roller with my invention in position affixed thereto; Fig. 1^a a front elevation of grinding apparatus with the lower part of the card cylinder in section; Fig. 2. a front elevation of same with the bend in section; Fig. 2^a a side elevation with roller bracket removed; Fig. 2^b a side elevation from reverse side of bracket with the flat in section; Fig. 3. a side elevation of the invention showing modified form of the sliding and stationary brackets; Fig. 4. a plan

of Fig. 3; Figs. 5, 6, 7, side elevations of modified forms of sliding bracket; Fig. 8. a side elevation of pivoted lever which raises and holds the flats against the sliding bracket; Fig. 9. a plan of pivoted lever shown in Figs. 1, 2, and 8; Fig. 10, a side elevation of modified form of pivoted lever; Fig. 11. a plan of pivoted lever as shown in Fig. 10; Fig. 12. an enlarged elevation of stud for the sliding bracket; Fig. 13. a transverse sectional elevation of bracket G and sliding bracket H on line $x-x$, and Fig. 14, a transverse sectional elevation of same on line $y-y$.

The invention will be described with reference to one side only of the carding-engine and to a single flat. It must however be understood that a similar appliance is attached to the other side of the carding-engine the two acting in unison and that the operation of grinding each flat in succession as they travel forward is the same.

The flats A, the bend B, the flexible bend or disk B', the grinding roller C, the grinding bracket D, the horned bracket E, over which the flats travel and the pivoted and weighted lever F which successively lifts up each flat while being ground may be of any ordinary or general construction.

To the grinding bracket D or to any other suitable fixing is bolted or otherwise affixed a stationary bracket G preferably of the shape shown with two projecting horns g . A slide or moving grinding block or bracket H is mounted to slide to and fro on the horns g of the stationary bracket G preferably in a path slightly inclined to the horizontal the distance of travel to and fro being somewhat in excess of the width of a flat.

The slides H may be provided with slots h at either end and be carried on studs I screwed to the bracket G as shown in Figs. 1, 2, 2^a, 2^b, 5, 6 and 7 or the ends of the slide H may be supported in slots formed in the ends g of the stationary bracket G as shown in Figs. 3 and 4.

I prefer the arrangement whereby the slide H is connected to the fixed bracket G by the two studs or pins I with anti-friction runners or bowls i which pass through the slots h at either end. The studs or pins I are screwed into the ends g of the stationary

bracket G. They are of the form shown in detail in Fig. 12 with cheese-heads between which and the stationary bracket the grinding block H slides. The slots *h* in either end of the grinding block H are sufficiently long to admit of the desired length of travel and are inclined to a degree equivalent to or in proportion to the amount of "heel" required upon the flats, so as the block moves forward it has a slightly inclined upward movement. A planed or other true surface is provided at *h'* on the under side of the grinding block H against which the working surface *a* of the flat A is brought to bear as it is raised by the pivoted lever F. On one side of the grinding block H is pivoted a tumbler or catch J against the end of which the edge of the flat comes in contact as it moves forward. When the flat has been lifted up against the grinding block H and it has advanced until the side comes in contact with the tumbler J the two then move forward together under the grinding roller C. The other end *j* of the tumbler J projects beneath the fixed stud I and being provided with an inclined surface when the grinding block has moved a given distance the end *j* is depressed and the tumbler J released from or moved out of contact with the flat A. When the flat A is released by the withdrawing of the tumbler J and has been withdrawn from contact with the grinding block H, the block H falls back to its first position to receive the next approaching flat by its own gravity on account of the slots in the ends.

The upper surface of the grinding block H is as shown curved to admit of the movement of an intermittent grinding roller when such is used until the surface is below the level of the bend or knee in the wire on the flat and the block H is further provided with a flange or feather extending downward to give it the necessary strength.

In the modification shown in Figs. 3, 4, the grinding block H' is provided with solid ends which slide to and fro in the pivoted or swivel sockets I' which are slotted as shown to receive the ends. In this case the ends of the block H' are inclined to give the required inclination of movement to the grinding block H'.

In the modifications shown in Figs. 5, 6, 7 instead of an inclined movement being given to the whole grinding block H it is caused to move in a plane tangential to the grinding roller C and on the under side the surface at *h''* against which the working surface *a* of the flat A bears is formed of a single incline, (as shown in Fig. 5,) a double incline *h'''*, (as shown in Fig. 6,) a curve or other suitable contour *h''''* (as shown in Fig. 7) to give the required amount of heel or inclination to the wires of the flat as they pass beneath and are ground by the grinding roller C.

The pivoted lever F which raises and holds the flat up against the grinding block H while being ground is pivoted on a stud or short

spindle *f* passing through a sleeve or bracket *e* attached to or forming part of the horned bracket E over which the flats slide. On its upper side is formed a face *f'* upon which the flat rests and swivels when lifted up off the bracket E. The lever F may be either of the forms shown in Fig. 8 or 9. It is provided with an adjustable stop to K relieve the grinding block H from any unnecessary weight and has also attached to it a finger or lug L with which the backs of the flats come in contact one by one as they travel to lift the weighted end of the lever and depress the face *f'* as each successive flat is about to mount upon it.

In the modification shown in Figs. 10 and 11 a pivoted lever F' is employed for the same purpose with a top face or surface *f'*, an adjustable stop K' and a finger L'.

In operation the flats will after being stripped ascend along the curved top of the ordinary horned bracket E until they reach the end of the pivoted weighted lever F by which they are successively lifted and the working surface *a* pressed against the prepared surface *h'* or *h''* of the sliding grinding block H. The tumbler J engages with the front edge of the flat causing the two to travel forward together beneath the grinding roller C and as they travel forward the inclination of the slots or ends of the grinding block H gradually raises it so that it travels in a path inclined to the radius of the grinding roller C and thereby the grinding is carried out to give the required "heel" or inclination to the wire clothing of the flat; or, as in the modification shown in Figs. 5, 6, 7, the flat itself is inclined by bearing against a surface *h''* *h'''* or *h''''* of proper contour on the under side of the sliding grinding block H. When the required distance has been traveled and the flat is clear of the grinding roller and the grinding completed the tumbler J is raised releasing the flat from contact with the grinding block H while at the same time it drops off the surface *f'* of the pivoted lever F.

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

1. In apparatus for grinding the revolving flats of carding-engines a sliding grinding block or bracket against which the working surface of the flat bears mounted on studs or slides at each end and which moves along and carries the flat along a path inclined to the radius of the grinding roller at the point of contact therewith substantially as described.

2. In apparatus for grinding the revolving flats of carding-engines a sliding grinding block or bracket against which the working surface of the flat bears formed with inclined bearing surfaces at each end which as it is carried forward with the flat give the required inclination thereto substantially as described.

3. In apparatus for grinding the revolving

flats of carding-engines the combination with a grinding roller C grinding bracket D, horned bracket E and pivoted lever F of the fixed stationary bracket G and sliding grinding block or bracket H substantially as described.

4. In apparatus for grinding the revolving flats of carding-engines the combination with the fixed bracket G provided with horns *g* of the sliding block or bracket H against which the working surfaces of the flats bear and the pivoted catch or tumbler J with tail piece *j* substantially as described.

5. In apparatus for grinding the revolving flats of carding-engines the combination with the fixed bracket G provided with horns *g* of the studs I the sliding block or bracket H provided with slots *h* at each end and the bearing surface *h'* against which the working surfaces of the flats rest substantially as described.

6. In apparatus for grinding the revolving flats of carding-engines the combination with the pivoted lever F which lifts the flats against the bearing surface of the sliding bracket H

of the adjustable screw stop K and the finger L substantially as described.

7. In apparatus for grinding the revolving flats of carding-engines the combination with the grinding roller C of the sliding block or bracket H with inclined slots *h* at either end and bearing surfaces *h'* and the pivoted tumbler or catch J with tail piece *j* substantially as described.

8. In apparatus for grinding the revolving flats of carding-engines the combination with the flats A roller bracket D and grinding roller C of the stationary brackets E and G the sliding block H the tumbler J the pivoted lever F and finger L substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 3d day of October, 1890.

JAMES EDGE.

Witnesses:

J. OWDEN O'BRIEN,
CHAS. OVERDALE.