

No. 620,353.

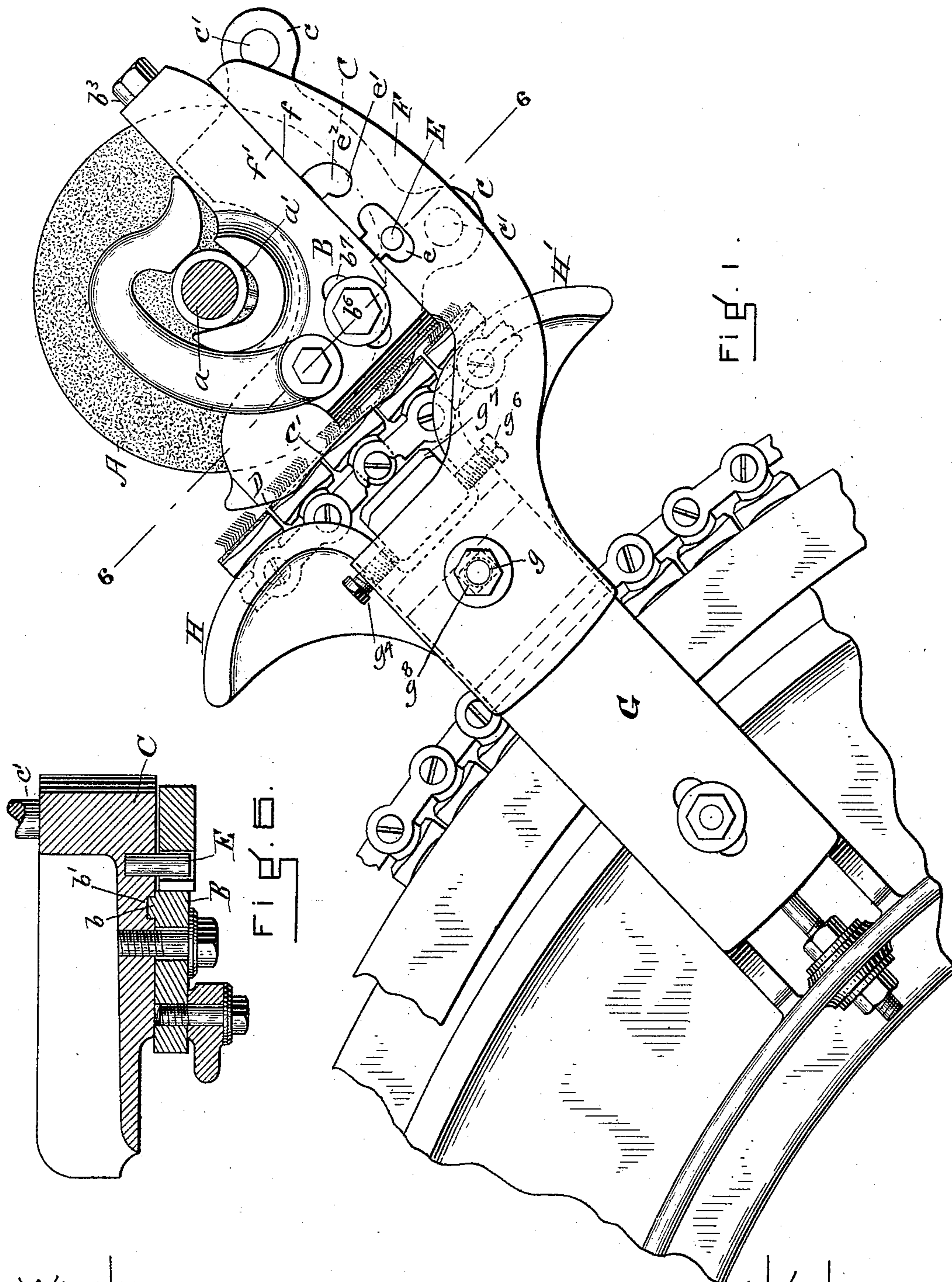
Patented Feb. 28, 1899.

L. W. PENNEY.  
APPARATUS FOR GRINDING CARDS.

(Application filed Sept. 29, 1897.)

(No Model.)

6 Sheets—Sheet 1.



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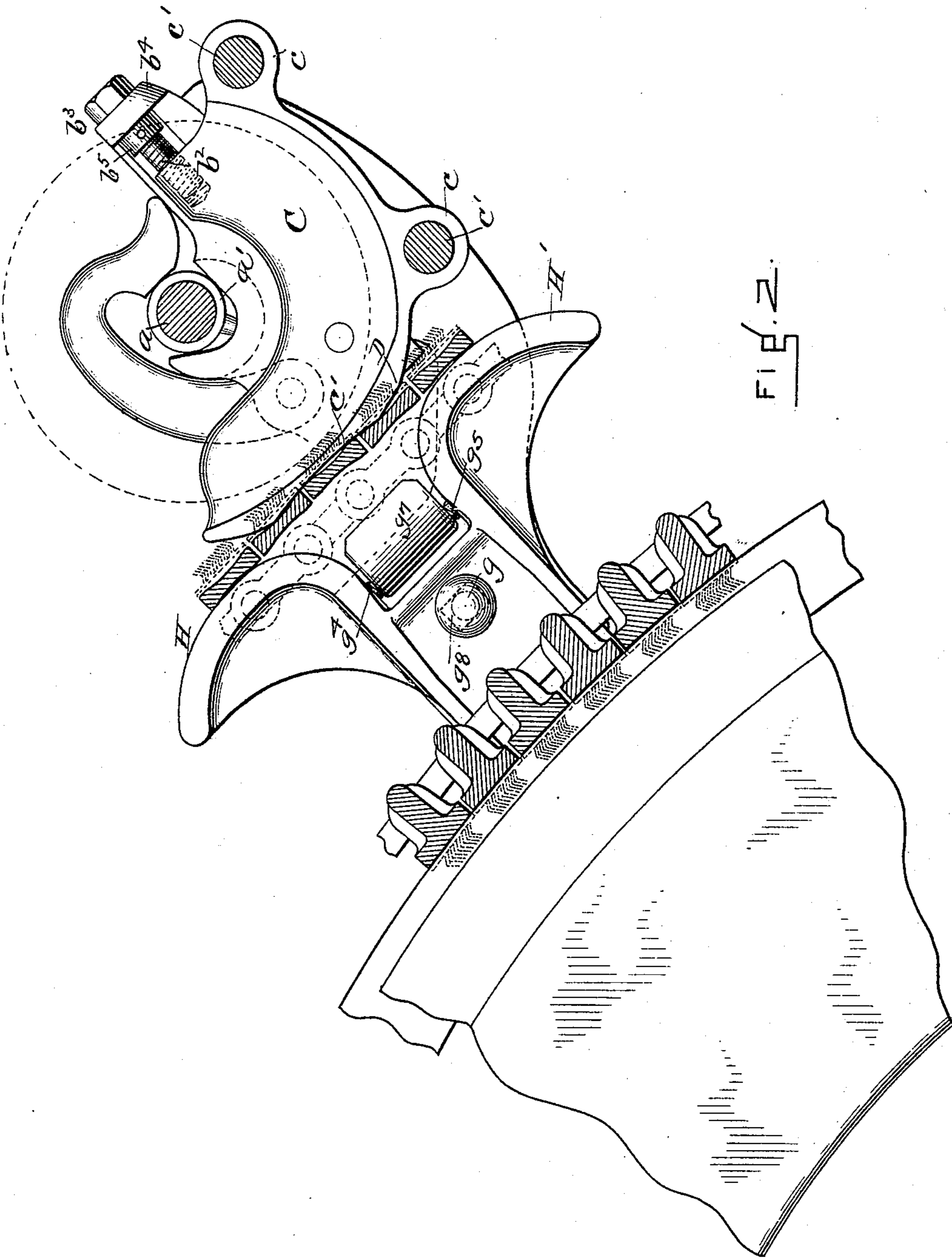
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(Application filed Sept. 29, 1897.)

(No Model.)

**6 Sheets—Sheet 2.**



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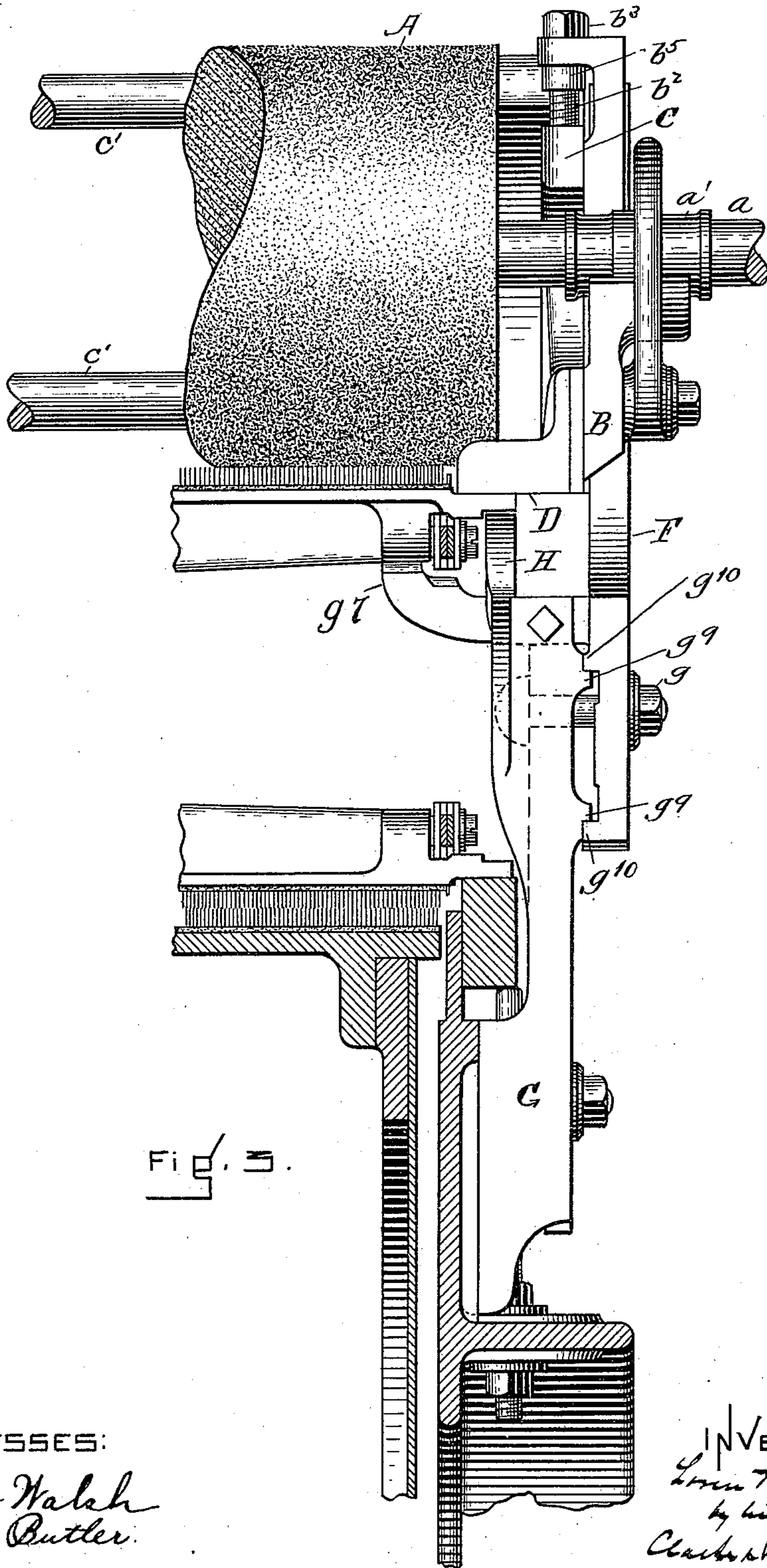
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## APPARATUS FOR GRINDING CARDS.

(Application filed Sept. 29, 1897.)

(No Model.)

**6 Sheets—Sheet 3.**



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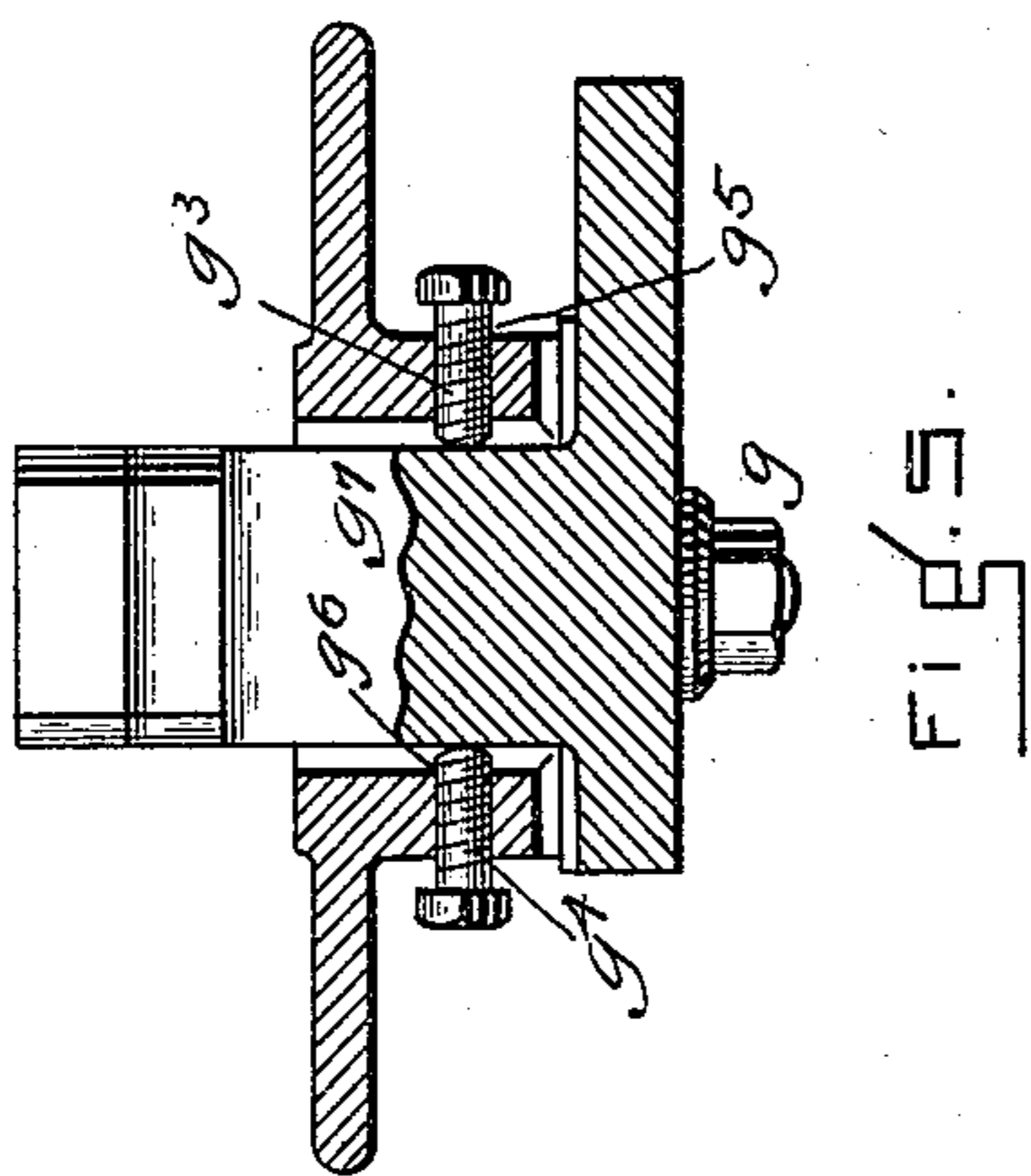
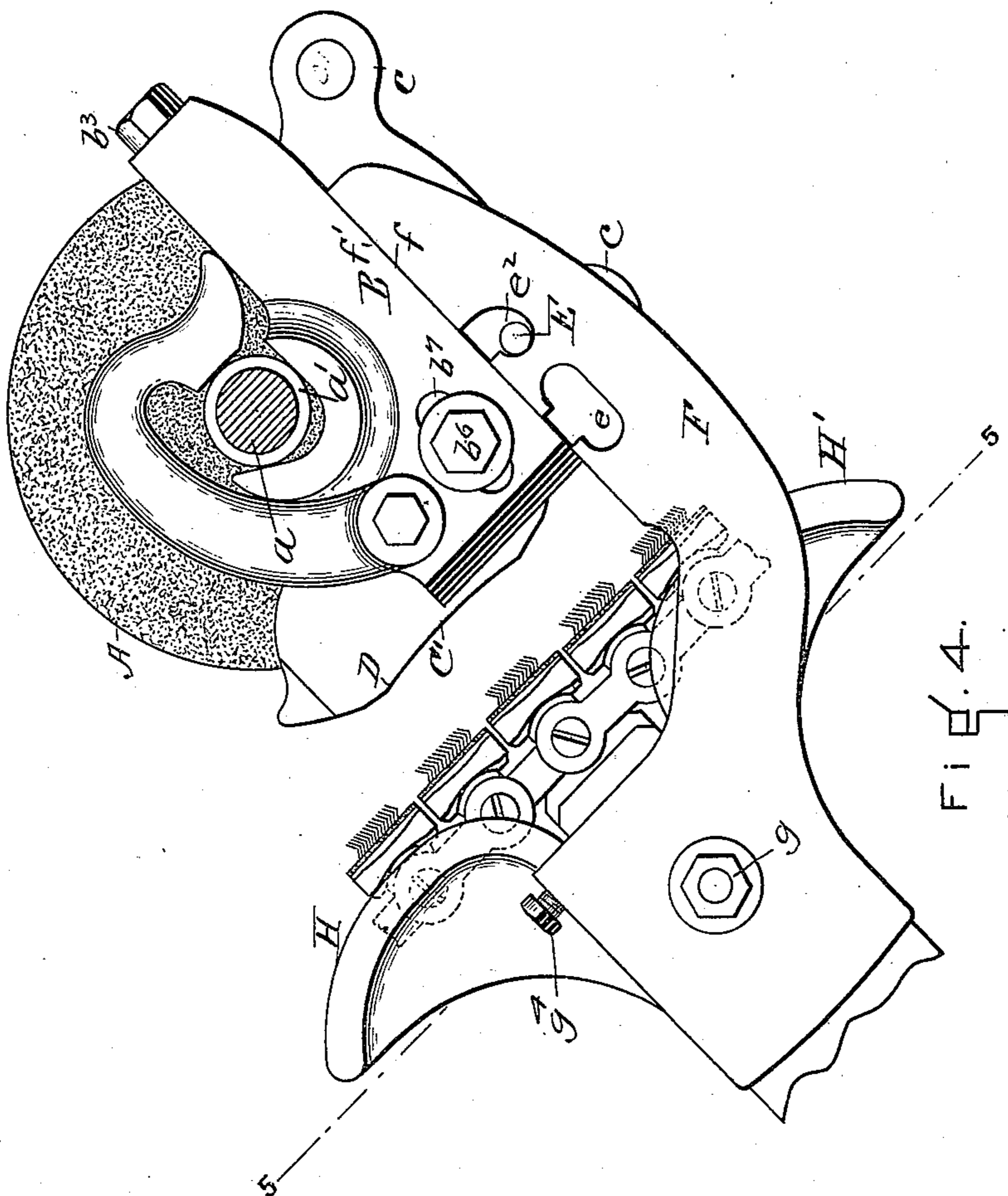
Patented Feb. 28, 1899.

L. W. PENNEY.  
APPARATUS FOR GRINDING CARDS.

(Application filed Sept. 29, 1897.)

(No Model.)

6 Sheets—Sheet 4.



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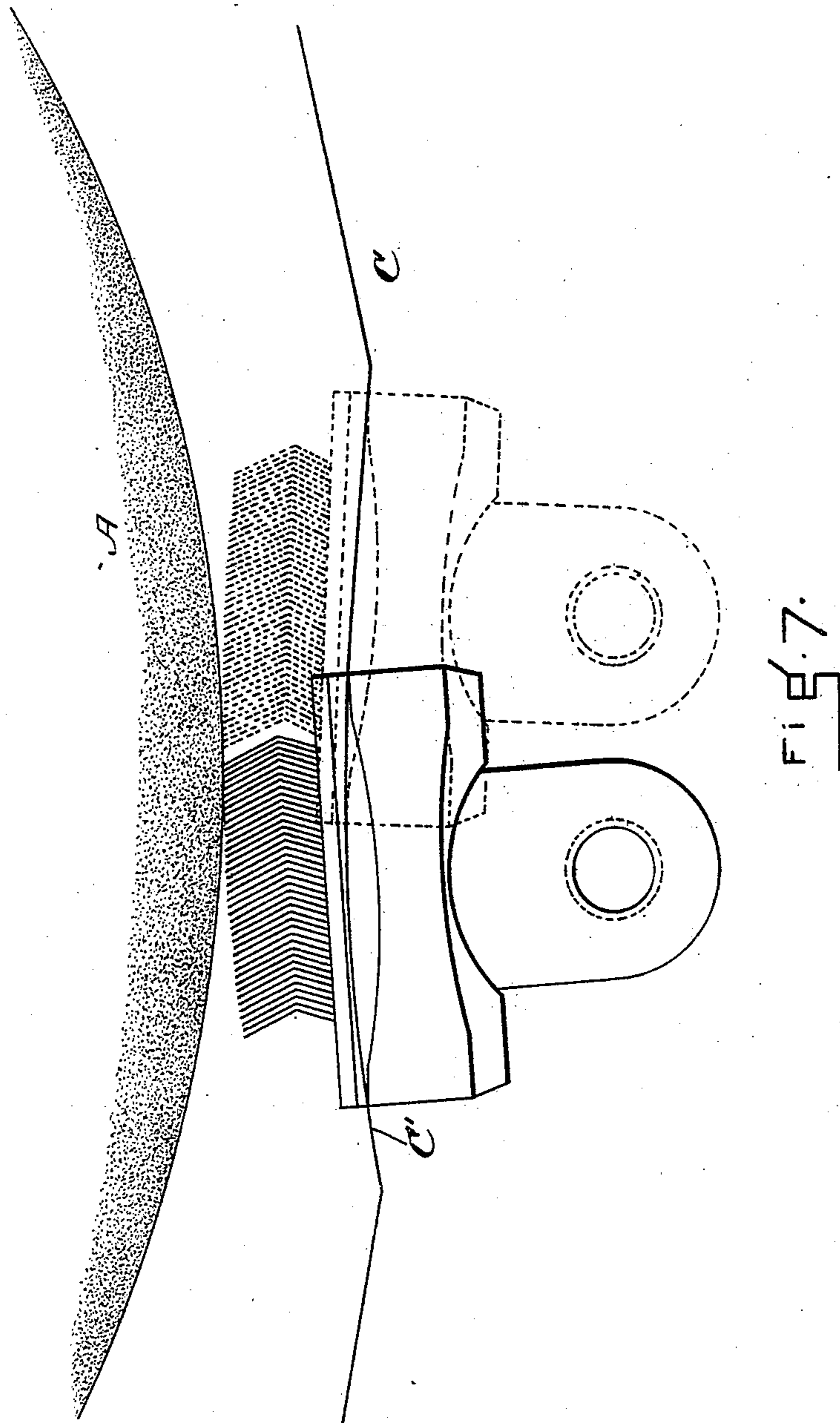
Patented Feb. 28, 1899.

L. W. PENNEY.  
APPARATUS FOR GRINDING CARDS.

(Application filed Sept. 29, 1897.)

(No Model.)

6 Sheets—Sheet 5.



WITNESSES  
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No. 620,353.

Patented Feb. 28, 1899.

L. W. PENNEY.  
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(Application filed Sept. 29, 1897.)

(No Model.)

6 Sheets—Sheet 6.

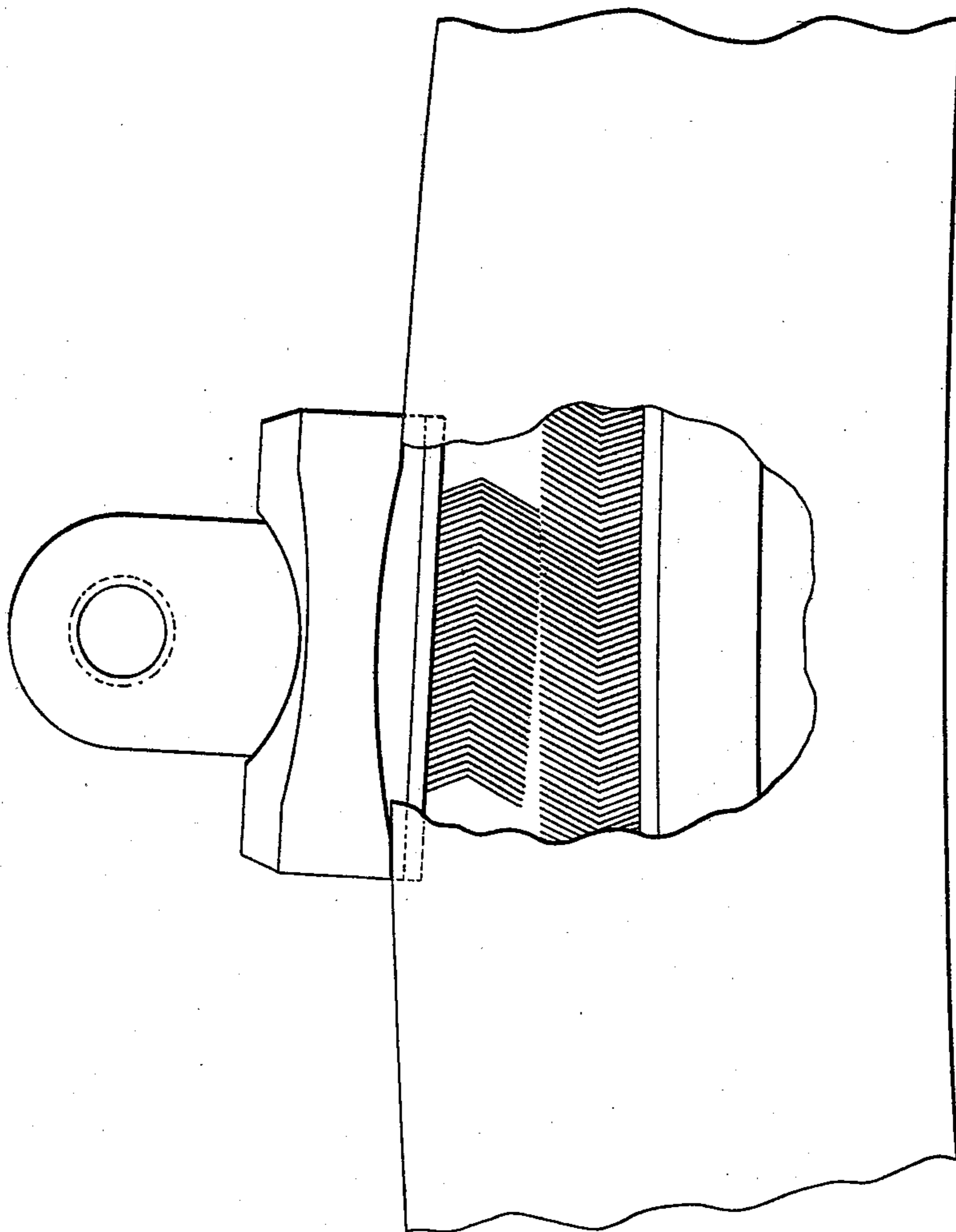


Fig. 6.

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# UNITED STATES PATENT OFFICE.

LOREN W. PENNEY, OF NEWTON, MASSACHUSETTS, ASSIGNOR TO THE  
PETTEE MACHINE WORKS, OF SAME PLACE.

## APPARATUS FOR GRINDING CARDS.

SPECIFICATION forming part of Letters Patent No. 620,353, dated February 28, 1899.

Application filed September 29, 1897. Serial No. 653,475. (No model.)

*To all whom it may concern:*

Be it known that I, LOREN W. PENNEY, a citizen of the United States, residing at Newton, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Apparatus for Grinding Cards, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention is an improvement upon that described in my Patent No. 544,441, dated August 13, 1895; and it consists in means whereby the suspended grinding-roll is more readily adjusted, the construction of the cradle simplified, and the cradle adapted to be removed, with the grinding-roll, from an operative position to an inoperative position and without being wholly detached from the machine.

Figure 1 is a view in side elevation of a portion of one arch of a carding-machine and one end of my improved device. Fig. 2 is a view in vertical section through the cradle and flats, also representing in elevation parts beyond the same and in dotted outline the grinding-roll, the wire clothing, and the chain. Fig. 3 is a view, partly in front elevation and partly in vertical cross-section, of my improved device and parts of the frame of the carding-engine adjacent thereto and to which it is attached. Fig. 4 is a view illustrating the cradle and roll removed from operative or grinding relation with the flats to the position in which they are held when they are inoperative. Fig. 5 is a view in section upon the dotted line 5 5 of Fig. 4. Fig. 6 is a view in cross-section upon the dotted line 6 6 of Fig. 1. Fig. 7 is a view of a flat enlarged to show the convex form of working surface provided it by the concave guides. Fig. 8 is a view enlarged to represent the relation between the convex working surface of each flat with the surface of the carding-cylinder when in working position.

The patent above referred to describes a device for grinding cards adapted to be located over the flats and comprising a part called a "cradle" or "housing," which supports by its adjustable ends the grinding-roll and is

mounted upon stands or brackets in a manner to permit the grinding-roll to bear against the surface of the wire clothing of the flats as they are moved in successive order under the same, the position of said wire surfaces in relation to the grinding-roll being governed by a guiding-surface at each end of the cradle, which bears upon the upper surface of the outer ends of the flats. This cradle had at each end compound slides, whereby the position of the grinding-roll could be adjusted both vertically and laterally in relation to the brackets or arms supporting the cradle and also in relation to the said guiding-surfaces. The cradle is also represented as made of a long casting, upon the ends of which the said compound slides were mounted. In the present invention the cradle is differently constructed in that its ends are in the form of plates which are connected together by horizontal rods and in that the ends are constructed to provide the roll with vertical or substantially vertical adjustment only. The horizontal or lateral adjustment of the roll and cradle is obtained by providing the cradle and roll as a whole with lateral movements by means of the staying brackets or arms, upon the sides of which they are mounted, which instead of being stationary, so far as lateral movement is concerned, as described in my said patent, are provided with means whereby they may be moved laterally.

The invention further relates to means whereby the cradle and roll may be removed from operative position on the side of said arms or brackets to an inoperative position farther up on said sides and there held.

Referring to the drawings, A represents the grinding-roll, *a* its shaft, and *a'* bearings for the shaft. The roll in use is rotated in any desired way. The bearings are carried by the adjustable end plates B of the cradle, which are longitudinally adjustable upon the cradle end plates C. These plates C have ears *c*, (see Fig. 2,) connected by cross-rods *c'*. The plates B are mounted upon the end plates C to be adjustable up and down thereon in any desired way, and I have represented a familiar way, comprising a tongue *b*, extended from the inner surface of the end plate B, and a

groove or recess  $b'$  in the outer surface of an end plate C, and an adjusting-screw  $b^2$ , (see Fig. 2,) the end of which screws into a threaded hole in the plate C and which is turned by its head  $b^3$  in a hole in the laterally-extending ear  $b^4$  of the plate B, the ear extending over the top of the plate C. The collar  $b^5$ , attached to the screw-holder with the head  $b^3$ , secures the bolt to the ear.

The turning of the adjusting-screws, there being one at each end of the cradle, will lift or lower the plates B and the roll.

The plates B C are locked together after adjustment by a locking-screw  $b^6$ , which passes through a slot  $b^7$  in the plate B and screws into a threaded hole in the plate C. The lower edge D of each of the side plates C forms a guiding-surface  $C'$ , which is preferably of a curved or concave shape, as represented in Figs. 1 and 2, and which rests upon the upper surfaces of the end of the flats and forms the means which govern the direction of the movement of the surface of each flat in relation to the grinding-roll as it passes beneath it. These guiding-surfaces  $C'$  may be upon a part detachably secured to the end plates C, if desired. From the side of each end plate C there extends a pin E, each of which is adapted to enter a recess  $e$  in the bracket or arm F which is adjacent to it when the cradle and grinding-roll are in operative position and serves to hold the cradle and roll to the brackets, but not to restrict their vertical movement. When it is desired to remove them from operative position, the pins are adapted to be disengaged from the said recess by moving the cradle and roll away from the arms or brackets, and they may then be lifted and the pins engaged with the arms or brackets at a higher level at  $e'$  by being entered into the recesses  $e^2$ , and the pins will there support the cradle and roll by bearing against the lower ends thereof. When so placed, the cradle and grinding-roll are removed from operative relation with the flats, but not removed from the machine.

It will be understood that the brackets or arms F have surfaces  $f$ , upon which the surfaces  $f'$  of the plates B bear, and that when in operative position the cradle simply rests upon these surfaces  $f$  and is free to move upward or downward thereon, and that the weight of the cradle and roll is substantially supported by the flats. Each arm or bracket F is attached to a stand G on each side of the card side, and each of said arms or brackets F is arranged to be moved or adjusted laterally upon its stand and to be locked thereto after it has been so adjusted. I have represented as a convenient means for accomplishing this lateral adjustment of the arms or brackets, which of course laterally adjusts the cradle and grinding-roll and guides, the adjusting-screws  $g^3$   $g^4$ , which screw in the threaded holes  $g^5$   $g^6$  in extensions of the stand G and against an inward projection  $g^7$  of the bracket or arm. (See Fig. 5.) The bracket

or arm has a slot  $g^8$ , through which a bolt or screw-stud fast to the stand G extends and which receives at its outer end a clamping-nut. This slot extends crosswise the bracket or arm, and upon loosening the nut the arm is adapted to be moved or adjusted laterally upon the stand by the adjusting-screw and to be fixed by the adjusting-screws in any desired position, and the clamping-nut is then tightened upon the screw or stud  $g$  to lock the bracket or arm firmly to the stand. The stand may be provided with lateral guiding-surfaces to receive lateral ledges extending from the inner surface of the arm or bracket, if desired. This construction is represented in Fig. 3, where  $g^9$  and  $g^{10}$  represent these parts. This lateral movement of the brackets laterally adjusts the cradle, grinding-roll, and guiding-surfaces.

It will be seen that to vary the perpendicular relation between the guiding-surfaces of the cradle and the surfaces of the grinding-roll which bear upon the wired portions of the flats it is only necessary to move perpendicularly these portions of the end plates of the cradle upon which said guiding-surfaces are formed or to which they are attached upon the end plates of the cradle which carry the roll-bearings, and it will also be seen that the said guiding-surfaces and the said roll are simultaneously laterally adjustable by the provision made for the lateral movement of the brackets or arms which bear the cradle and roll. It will be understood that the ends of the flats bear upon the upper surface of the projection  $g^7$  as they pass under the grinding-roll.

I prefer to use for guiding the flats the curved guides shown, as they cause the flats to take a course which grinds the wire surface of each flat the crowning or convex form, the surface being thus rounded up from the heel for a considerable width and then rounded down to the toe, the highest part of the crown being nearer the heel. By this form of grinding the working part of the flat at the heel is much widened, and consequently made more effective than in the flat which is ground straight back from the heel and which therefore has a much narrower working surface at the heel.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In an apparatus for grinding flats, the combination of a cradle having the independent end plates C provided with the guiding-surfaces  $C'$  connected together by rods or similar connections, the plates B carried by the said end plates and vertically adjustable thereon, the grinding-roll carried by said end plates B and brackets F for partially supporting said cradle and roll.

2. In an apparatus for grinding cards, an overhead cradle having two independent ends connected with each other, each of said ends being composed of two plates, one of which has

bearings for supporting the grinding-roll, and the other of which carries a guiding-surface, the two plates at each end being adjustable in relation to each other perpendicularly only to vary the perpendicular relation between the guiding-surfaces and the grinding-surface of the roll, and the two ends being also connected with each other by rods or other suitable connections, the said cradle ends also being shaped to bear upon the inclined sides of staying brackets or arms, as and for the purposes set forth.

3. The combination in an apparatus for grinding cards of an overhead cradle, guiding-surfaces thereon which rest upon the ends of the passing flats, a grinding-roll carried by said cradle and which is perpendicularly adjustable thereon in relation to said guiding-surfaces, brackets for partially supporting and guiding said cradle and means for laterally moving said brackets to laterally adjust the said guiding-surfaces and grinding-roll.

4. The combination in an apparatus for grinding flats of an overhead cradle and grinding-roll, brackets for partially supporting and guiding the same in operative position, and devices for supporting said cradle and roll upon said brackets in an inoperative

position and removed from the flats, as and for the purposes described.

5. The combination in an apparatus for grinding flats of the vertically-movable cradle and grinding-roll having pins or projections E, the brackets F and rests upon the brackets for receiving said pins or projections, whereby the cradle and roll are caused to be held from the flats.

6. The combination in an apparatus for grinding flats of an overhead cradle and grinding-roll, supports upon which the said cradle and roll are movable toward the flats, and means for holding said cradle and roll upon said supports but removed from the flats.

7. The combination in an apparatus for grinding flats of an overhead cradle having side plates C, a grinding-roll carried by the cradle, brackets upon which the overhead cradle is vertically movable, bearing-surfaces for holding the flats while they are passing the grinding-roll, the side plates having concave guiding-surfaces C' which rest upon the flats, all as and for the purposes set forth.

LOREN W. PENNEY.

In presence of—

F. F. RAYMOND, 2d,  
LEO A. WALSH.