

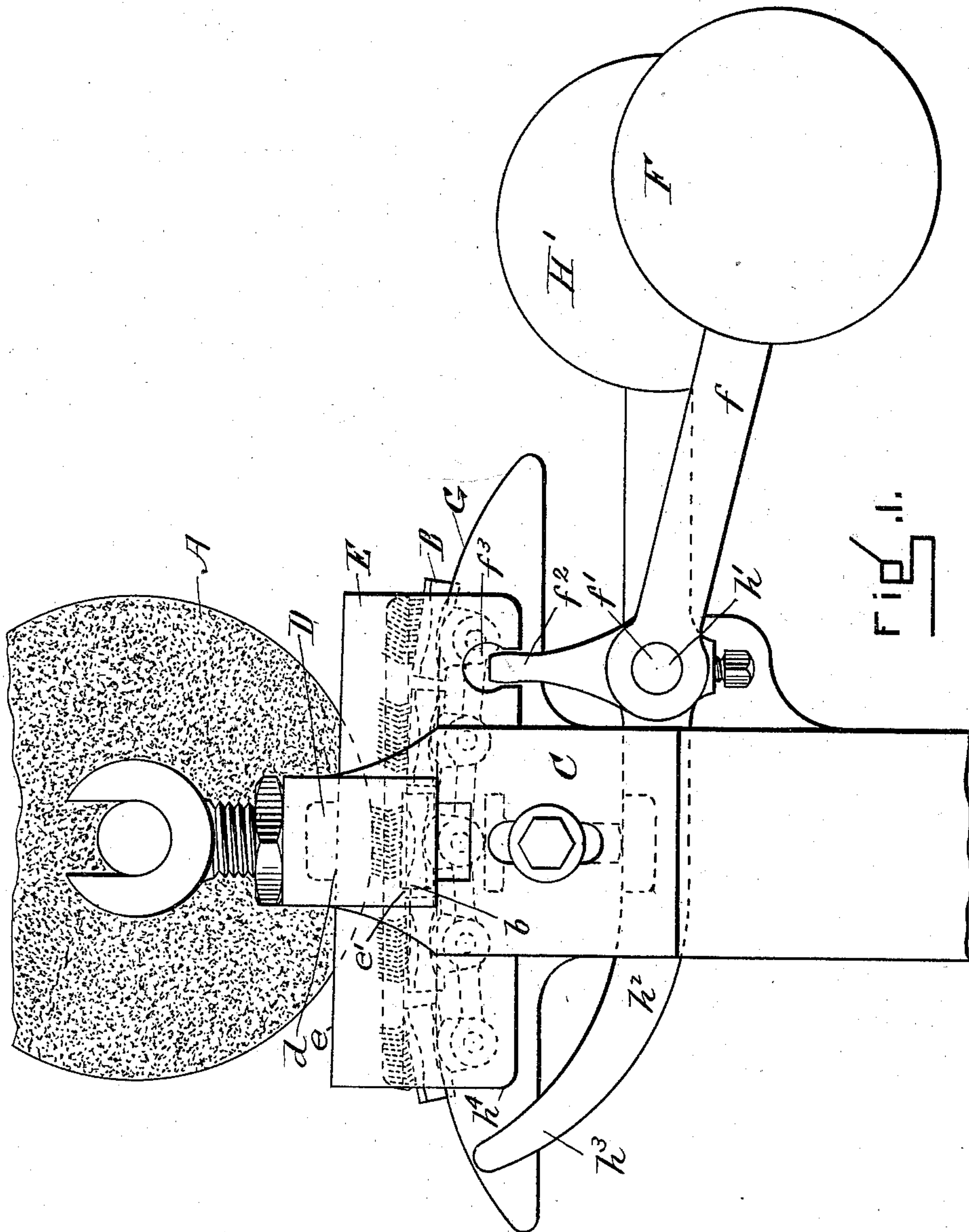
(No Model.)

3 Sheets—Sheet 1.

C. MILLS,
MACHINE FOR GRINDING CARDS.

No. 547,275.

Patented Oct. 1, 1895.



WITNESSES
J. H. Dolan
E. L. Sherman

INVENTOR
Charles Mills
by his Attys
Cramer & Raymond

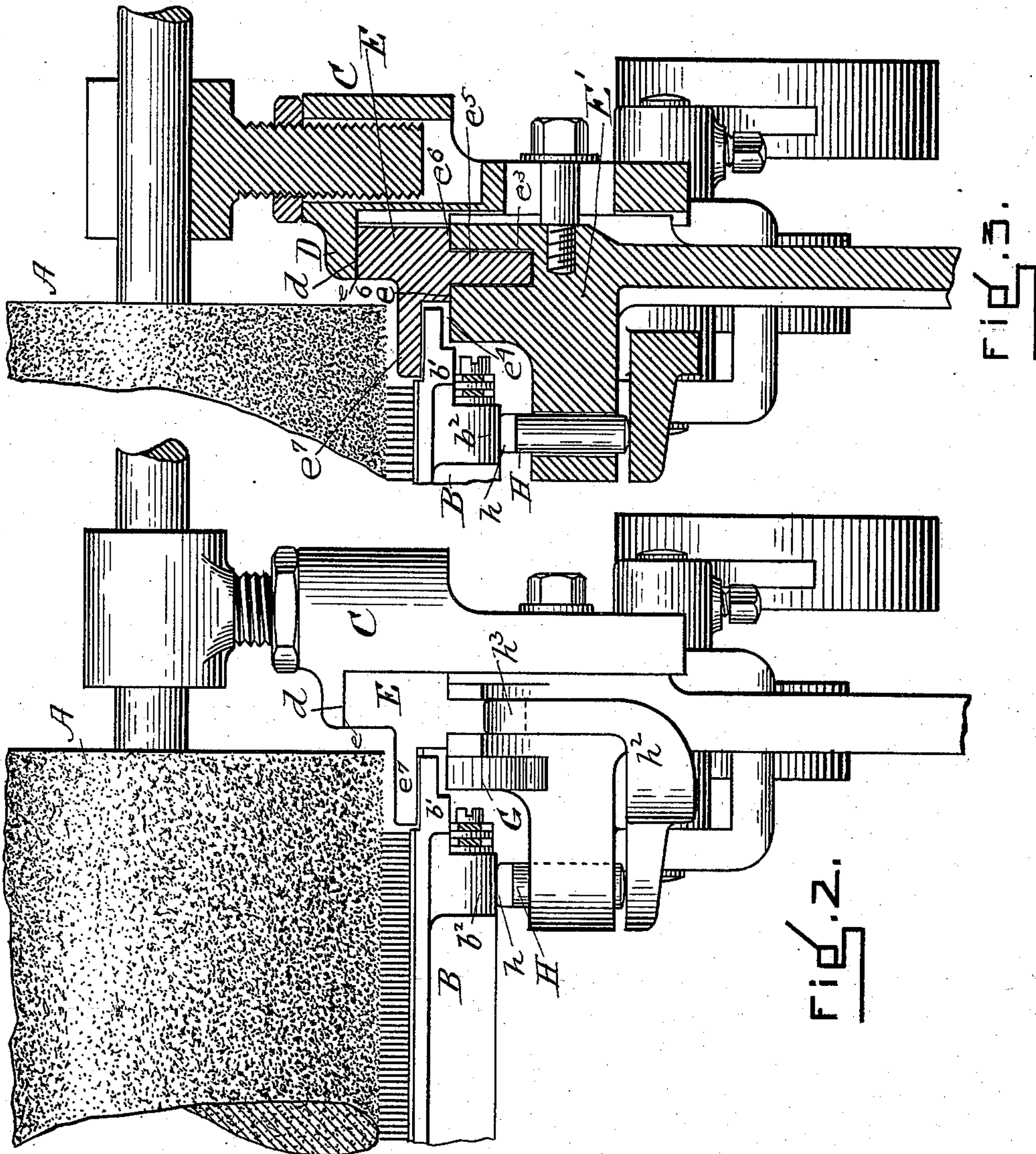
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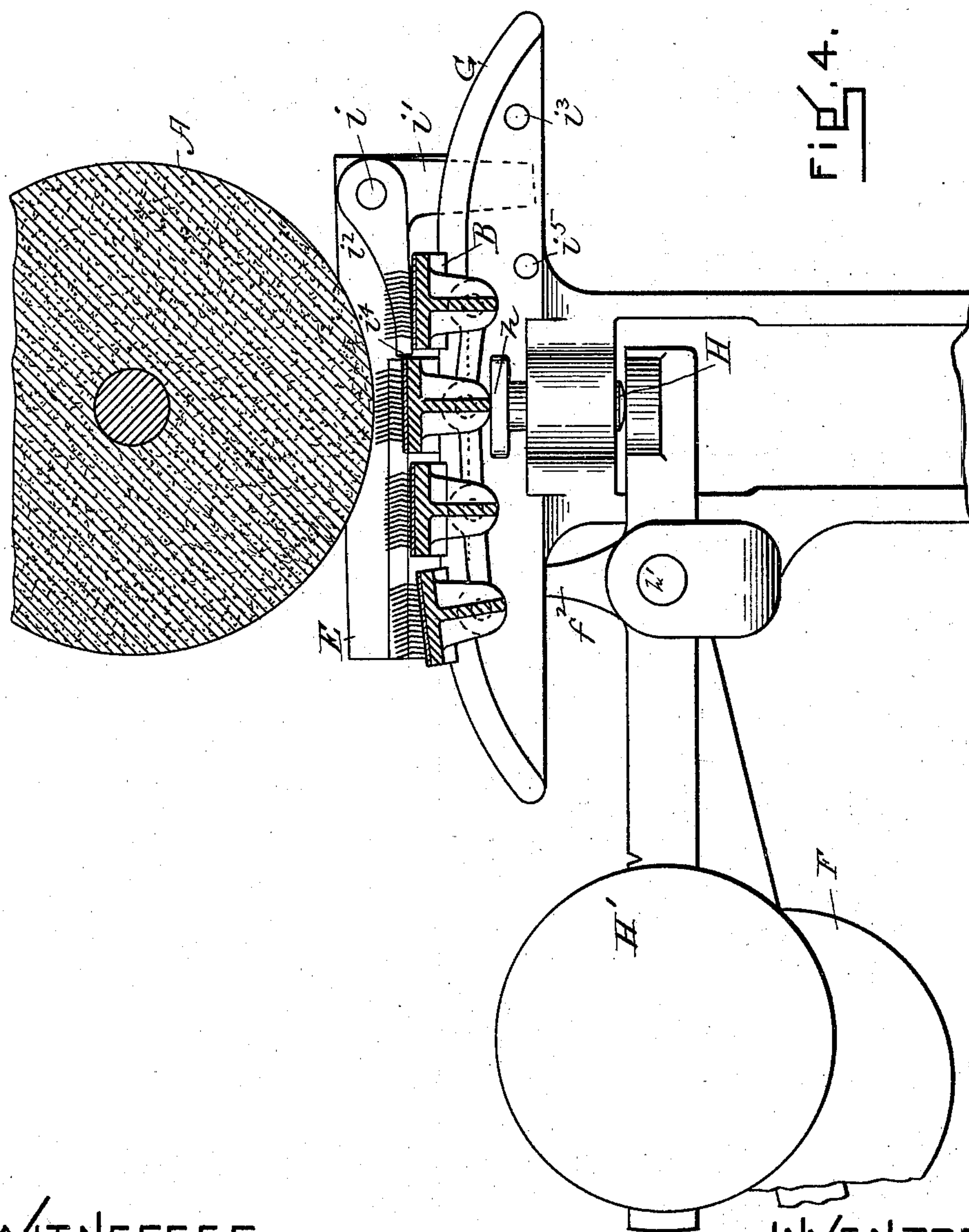
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by his Attorneys
Charles & Raymond

UNITED STATES PATENT OFFICE.

CHARLES MILLS, OF NEWTON, MASSACHUSETTS, ASSIGNOR TO THE PETTEE MACHINE WORKS, OF SAME PLACE.

MACHINE FOR GRINDING CARDS.

SPECIFICATION forming part of Letters Patent No. 547,275, dated October 1, 1895.

Application filed July 21, 1894. Serial No. 518,220. (No model.)

To all whom it may concern:

Be it known that I, CHARLES MILLS, a subject of Victoria, Queen of Great Britain, now residing in Newton Upper Falls, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Machines 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 relates to devices for grinding the flats of a rotary carding-engine, and it comprises a grinding-roll conveniently located in relation to the track in which the flats move, a stationary guide upon each side of the roll, and a traveling guide upon each side of the roll used in connection with the stationary guide, which guides are adapted to be held in the path of movement of the flats at each end thereof, and are adapted when each flat is brought into contact with them to be moved with the flat and guide the surface of the flat in relation to the grinding-roll to grind its wire clothing, as may be desired, according to the shape of the stationary guides and of the guiding-surfaces of the sliding guides.

It further relates to means for holding each flat in contact with the guides during the grinding operation; also, to means for removing each flat from the sliding guides at the end of the grinding operation, and also to means for automatically returning the sliding guides to their original position after the grinding of one flat, in order that they may perform a similar service for each succeeding flat as it is moved onward.

Referring to the drawings, Figure 1 is a view in side elevation of one side of the grinding apparatus representing a portion of the grinding-roll, its stand, some of the flats in dotted outline, the stationary guide of that side of the mechanism in dotted outline, the sliding guide, and the other operating devices. Fig. 2 is a view, principally in rear elevation, of the devices which constitute one side of the grinding apparatus. Fig. 3 is a view in vertical section of these devices. Fig. 4 is a view in elevation of these devices from within the machine looking outward.

A is the grinding-roll. It is rotated and reciprocated as is usual and is supported at each end over the line of travel of the flats B by stands C, bolted to the side frames of the carding-engine, one only of which is shown.

D is a stationary guide projecting inward from the stand C, (see Figs. 2 and 3,) and the under surface *d* of which forms the guiding-surface against or upon which the sliding guide E is moved. The shape of this guiding-surface *d* and the guiding-surface *e* of the sliding guide E determines the line of presentation of the surface of the flat to be ground to the grinding-roll.

It will be understood that there is a similar stationary guide and sliding guide upon the opposite side of the machine, and that each flat by its ends engages simultaneously the two sliding guides, and that the two sliding guides and the flat then move onward together.

It is the forward edge of each flat which first comes into contact with a downwardly-extending shoulder *e'* of each sliding guide E, and extending backward from the upper end of this shoulder is the bed or surface *e²*, against which the working surface *b* of the flat is brought into contact and held during the sliding movement of the guides and the grinding operation.

The guide E is supported by the bracket E', in which there is a recess *e³*, extending from its upper surface *e⁴* downward, into which a downwardly-extending tongue *e⁵* of the guide extends. The shoulders *e⁶* of the guide rest upon the upper surface of this bracket, and the inwardly-extending section *e⁷* projects over the end *b'* of the flat and has the shoulder *e'* and surface *e²*, above referred to. The guide is moved in one direction by the flat, and upon the release of the flat is returned to its normal or original position to be engaged by the next flat in order by means of the overbalancing-weight F, its lever *f*, pivoted at *f'* and having a short arm *f²*, which engages the slide E at *f³*. The flats are guided or directed in their movement toward the shoulder *e'* of the slide E when the slide is in its backward position by riding upon the guiding support or table G and by the surface *h* of the vertically-movable stud H, the said stud being

held in its highest position during the advancing and grinding movement of each flat, the downward or inward extending section b^2 of each flat riding upon it and resting upon it during the grinding operation; but at the end of the grinding operation the stud is released and permitted to drop vertically, thereby releasing the flat and permitting it to drop from contact with the sliding guide sufficiently to disengage its forward end b from the shoulder e' , when the sliding guide is free to be immediately returned by its overbalancing-weight to be again engaged at the end of its backward movement by the next flat in order. This stud is held in its elevated position either by an overbalancing-weight H' , pivoted at h' and having an arm h^2 , upon which the lower end of the stud rests and which extends sufficiently to be engaged at h^3 by the lower corner h^4 of the slide E , whereby the slide, when near or at the end of its forward movement, causes the lever to be depressed and the weight H' lifted sufficiently to permit the stud to drop, or the stud may be released, as represented in Fig. 4, by means of a rock-lever I , pivoted to the slide i , to be carried thereby and having an arm i' and an arm i^2 , the first of which is adapted to be brought by the movement of the slide into contact with the stop i^3 , thereby lifting the end i^4 of the lever i^2 . The backward movement of the slide brings the lever i' into contact with the stop i^5 and depresses the end i^4 of the lever i^2 . It will be understood that this end i^4 of the lever i^2 is the equivalent of the stop or shoulder e' of the slide E , and that when this slide is in its normal or backward position this shoulder is enabled to catch the edge b of the flat as it is moved forward, and this contact is maintained until the flat has been ground, when the shoulder is released by the contact of the arm i' of the lever with the stop i^3 , when the ground flat passes and the slide and lever are returned to be engaged by the next flat in order. The flat during the grinding operation is held against the slide by an overbalancing-weight H' , a vertically-movable stud H , and connecting-lever.

In operation each flat as it is rotated has its ends brought into contact with the shoulder e' and surface e^2 of the sliding guides E , and upon said contact begins to move the slides along the guides D , the slides being held in contact with the guides D by the upward stress of the push-studs H , which, acting through the flat, cause the flat to bear upward the guides. This onward movement of the guides E continues until the flat has been

entirely ground, when the flat is disengaged from the slides, rides off the push-stud H , and the guides are then returned automatically to be engaged by the next flat in order.

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

1. In a machine of the class described, the combination with supporting stands for the grinding roll having inwardly projecting stationary guides integral therewith, of sliding guides mounted in recesses formed in the supporting stands and vertically movable therein, the upper faces of which bear against said stationary guides, inwardly projecting sections integral with said sliding guides against the under faces of which the flats are successively held, engaging shoulders for the flats formed on the under faces of said sliding guides, a stationary table to lift the flats into proximity to the grinding roll, a vertically movable stud to lift the flats successively into contact with the grinding roll, a weighted lever to raise said stud, means for tripping said lever and allowing the stud and supported flat to fall when the grinding operation is completed, and means for returning said sliding guides to their normal positions when disengaged from the flats.

2. In a machine of the class described, the combination with a grinding roll and its supporting stands, of inwardly projecting guides formed integral with said stands, sliding guides mounted in recesses in said stands, so as to have vertical movement therein and bearing against the under faces of said inwardly projecting guides, guiding sections integral with said sliding guides and projecting inwardly beneath the ends of the grinding roll, a stationary table over which the flats travel to bring them into proximity to the grinding roll, a push stud mounted centrally below said grinding roll, to lift said flats successively into contact with said grinding roll, a lifting lever which normally holds said push stud elevated, a projecting arm on said lever which lies in the path of said sliding guide and is tripped thereby so as to release the push stud, means for temporarily locking together said sliding guides and the flat to be ground, and means for returning the sliding guides to their normal positions after the grinding of each flat.

CHARLES MILLS.

Witnesses:

F. F. RAYMOND, 2d,
J. M. DOLAN.