

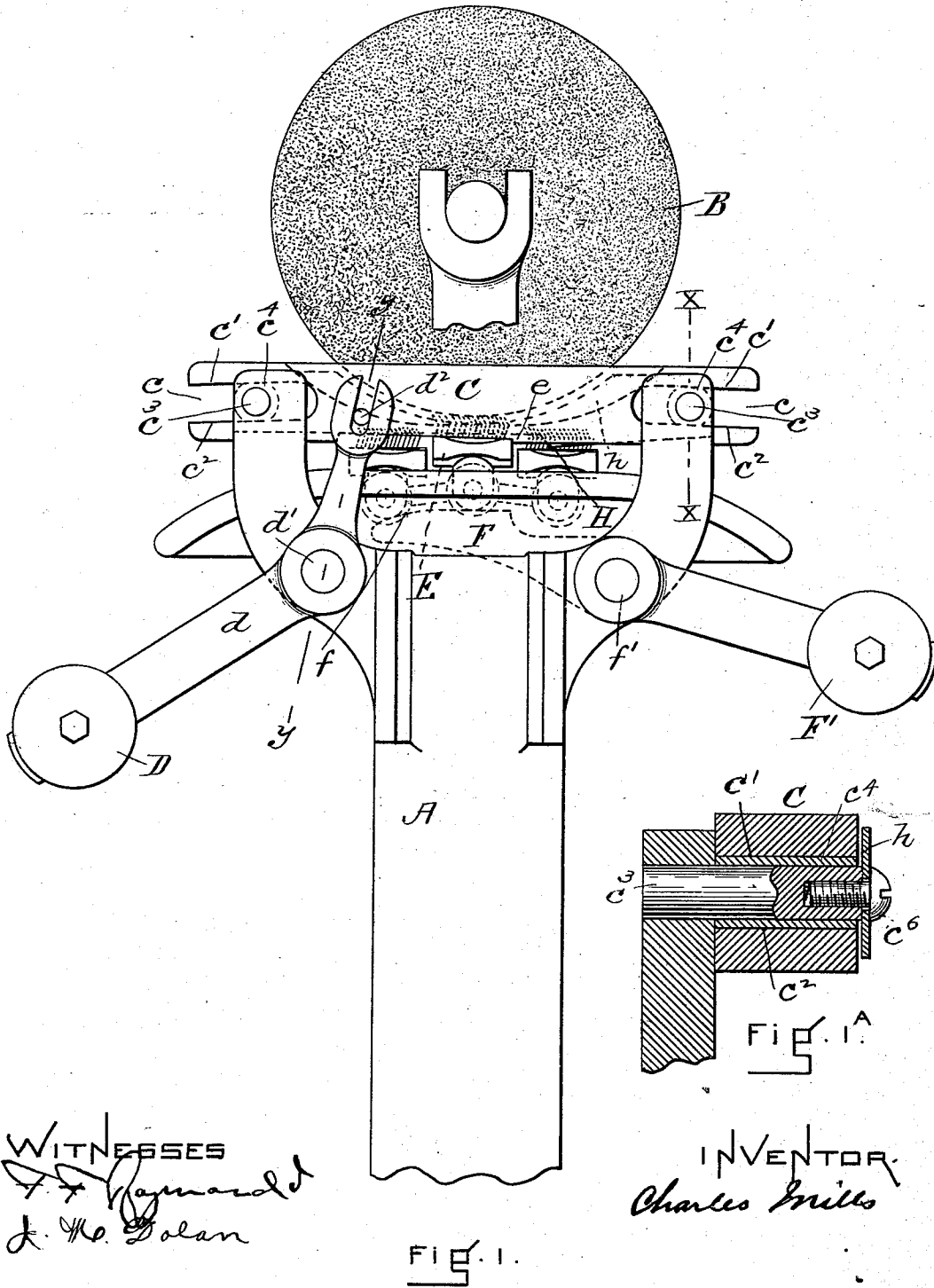
(No Model.)

3 Sheets—Sheet 1.

C. MILLS.
MACHINE FOR GRINDING CARDS.

No. 532,331.

Patented Jan. 8, 1895.



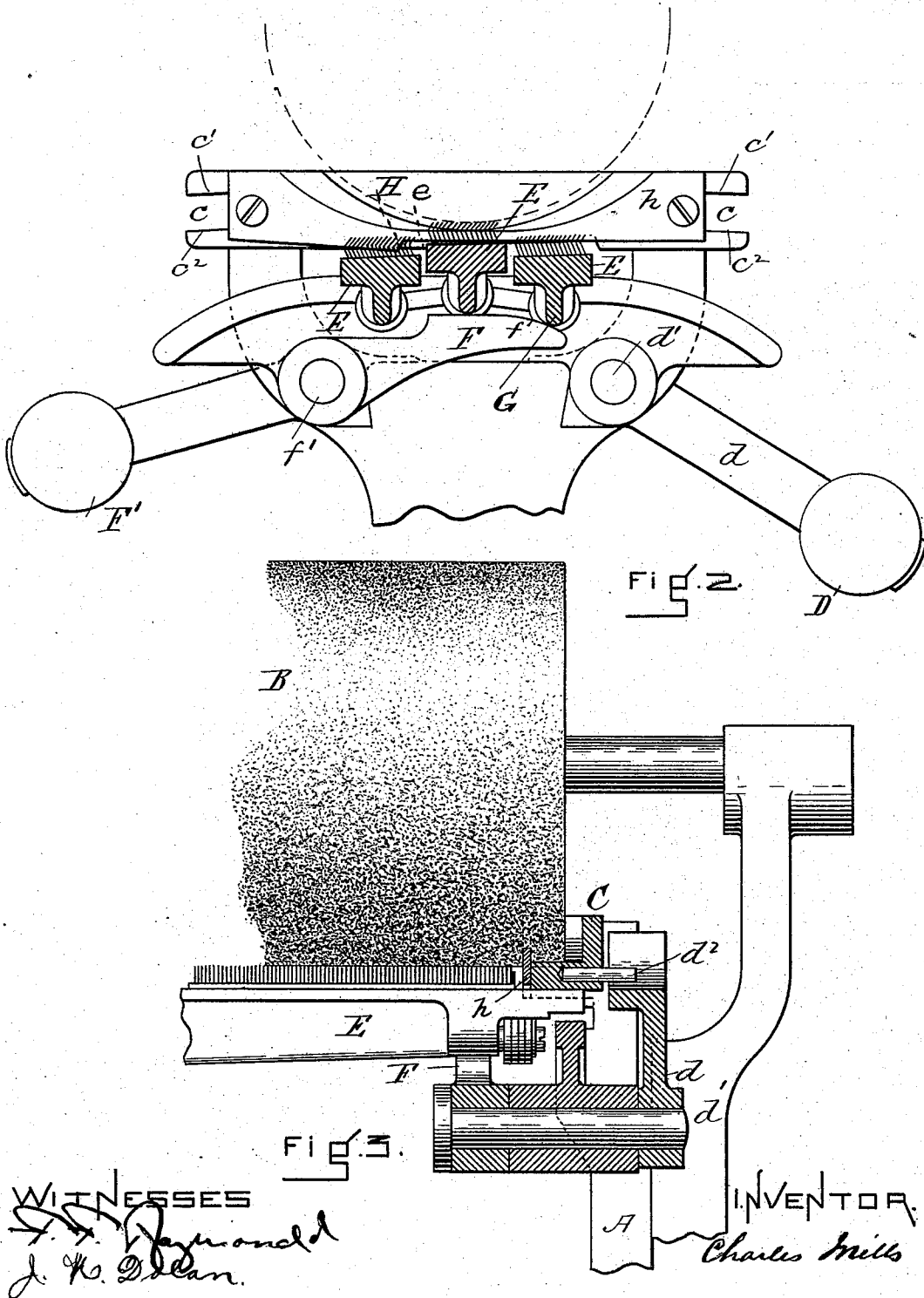
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WITNESSES
J. H. Raymond
J. H. Deane

INVENTOR
Charles Mills

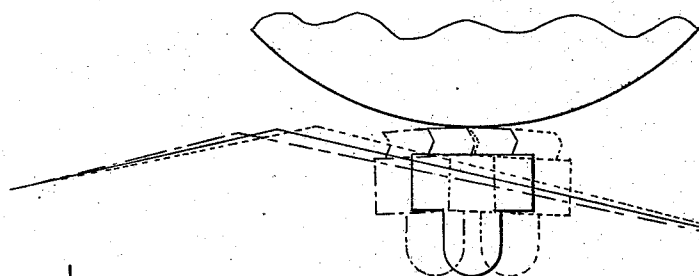
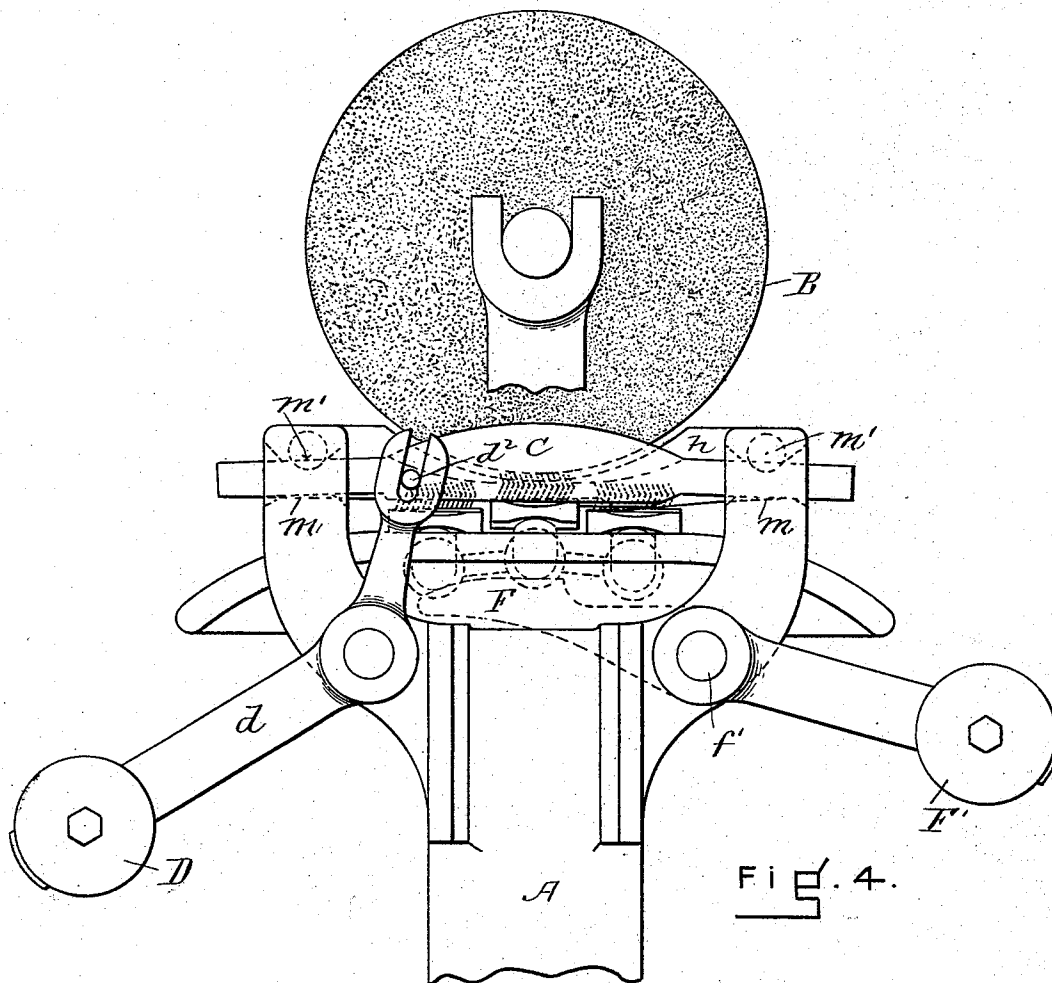
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WITNESSES

J. H. Raymond
J. M. Dolan

FIG. 5.

INVENTOR
Charles Mills

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. 532,331, dated January 8, 1895.

Application filed May 26, 1894. Serial No. 512,576. (No model.)

To all whom it may concern:

Be it known that I, CHARLES MILLS, a subject of Victoria, Queen of Great Britain, &c., residing at Newton, 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.

The invention is represented as applied to the type of carding machine using what are known as revolving flats. It is necessary to grind the flats, or more properly speaking, the teeth or wires thereof, from time to time, and this is an operation of considerable delicacy, as it is desirable that the relation which they bear to the bearing or working surface of the flat to which they are fastened or secured shall not be changed during this treatment. My invention for accomplishing this purpose comprises a sliding guide having a peculiar motion imparted to it by each flat as they are brought successively into contact and moved therewith, the said sliding guide acting to guide each flat in successive order and returning to its original position after the guiding of one to guide the next. The movement of the guide is such as to cause the flat to describe or take a curved path in relation to the grinding roll and while being subjected to its action, and this result is obtained by means of the governing surfaces or cams at each end of the guide which are so shaped that they act in connection with the pins or rolls which engage them to cause the center of the slide to describe during its forward movement an arc of a large circle or ellipse.

The invention will now be described in connection with the drawings, in which—

Figure 1 is a view principally in end elevation of the bracket which supports the grinding roll, sliding guide, and other parts of the device, said bracket being secured to the frame of the carding engine. Fig. 1^A is a sectional view upon the dotted line $x-x$ of Fig. 1. Fig. 2 is a view in elevation of the back side of the bracket and parts carried thereby. Fig. 3 is a view in section upon the dotted line $y-y$ of Fig. 1. Fig. 4 illustrates a slight modification in the form of flat guide to which reference is hereinafter made. Fig. 5 is a view showing the action of the guide

upon the flat and showing three positions which it occupies in relation to the grinding roll.

A is one of the two brackets, which are sometimes called T stands and which are bolted to each side of the frame of the carding engine and which support between them the grinding roll B and the sliding guides and mechanism for operating the same and for holding the flats in contact therewith. It will be understood, of course, that there is a necessity for a sliding guide at each end of the flat, or upon both sides of the machine.

Each of the sliding guides C has in each end a long recess c , and one or both of the edges c' c^2 of the recesses is or are shaped to provide in connection with the pin, stud or roll c^3 upon which the guide plate slides a movement to the center of the guide plate which shall approximate that of an arc, and these guiding edges c' c^2 are opposed in inclination or shape to each other, and in the drawings, I have represented them as slightly inclined or curved downwardly from their inner ends. I prefer that the guides have a swiveling connection with the pins c^3 by means of the flattened sleeves c^4 which surround them and upon the flattened surfaces of which the guiding or cam edges c' c^2 bear and slide. These pins c^3 are stationary and extend inward from the short extensions of the bracket (see Fig. 1^A) and the guide plate is held thereon by the plate h and screws c^5 which pass into the ends of the pins.

The sliding guide plate is moved in one direction by the revolving flats and in a reverse direction by the over-balancing weight D. In order that the revolving flats E may move the sliding guide, its under surface is provided with a shoulder e against which the forward corner of each flat comes into contact and the lower surface of the slide back from this shoulder forms a bed against which the bearing surface of the flat is held during its contact with the sliding guide and during the grinding operation, by a lever F and over-balancing weight F', the lever having the rounded surface f which is held in the path of movement of the flats and upon which each one in successive order rides, each flat having a downward extending foot G (see Fig. 2) in

line with the said lever. The lever is pivoted at f' to the bracket. The flats are rotated in the usual way and riding upon the upper surface of the lever, they are lifted sufficiently to bring their forward corners into contact with the sliding guide, when it is in its backward position and it is then moved forward with the flat, the lever F maintaining the flat in contact with the under surface of the guide and the center of the guide having the curved path which I have above indicated permits the same movement to be communicated to the flat as it is moved past the grinding roll and after it had been so moved and presented, it is automatically disengaged from the sliding guide by means of the disengaging shoulder H upon the plate h which is in line with the path of the flat (see Fig. 1) and which extends somewhat below the lower surface of the sliding guide so that when the forward end of the flat is moved into contact therewith, it is caused to be disengaged from the shoulder e of the sliding guide and the sliding guide is then returned to its original position by the weight D which acts through the lever d , the said lever being pivoted to the bracket at d' and engaging by means of the pin d^2 the sliding guide. This return movement of the guide is rapid and the shoulder is brought into position to receive the next flat in order, when the movement of the second flat to the grinding roll proceeds as before.

In Fig. 4 I have shown a slight modification in the shape of the ends of the sliding guide and the way in which they are mounted upon the bracket arms, the guiding effect being obtained by the joint action of the rounded surfaces m , upon which the guide plates ends rest, the shape of the upper and lower surfaces of the ends, and the studs m' .

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

1. In a flat grinding machine, the combina-

tion with a grinding roll, of flat guides mounted in working relation to said grinding roll, and means for giving said guides movements past the grinding roll so as that their centers will describe an arc, substantially as described.

2. In a flat grinding machine, the combination with a grinding roll, of flat guides mounted on pins in working relation to said roll, said guides having reversely inclined elongated slots which engage said pins, and means for moving said guides forward, whereby the flat being acted on by the grinding roll is given a movement on the arc of a circle, substantially as described.

3. In a flat grinding machine, the combination with a grinding roll, of flat guides having reversely inclined open slots at each end, and a stand having supporting pins which enter said slots and support the guides.

4. In a flat grinding machine, the combination with a grinding roll, of guide supports having supporting pins, flat guides mounted thereon and having reversely inclined open slots at their ends by means of which the centers of the guides are given movements in the arc of a circle as the guides are carried forward, means for engaging the flats with said guides and means for automatically releasing said flats at a predetermined point and returning the guides to their original positions, substantially as described.

5. In a flat grinding machine, the combination with the grinding roll B , of the guide stands A having the supporting studs c^1 , the guides C provided with the reversely inclined open slots c which are engaged by said studs, the catches e to engage the flats, the plates h secured to the stands and having the projection H which releases the flats from the guides, C , substantially as described.

CHARLES MILLS.

Witnesses:

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