

No. 764,585.

PATENTED JULY 12, 1904.

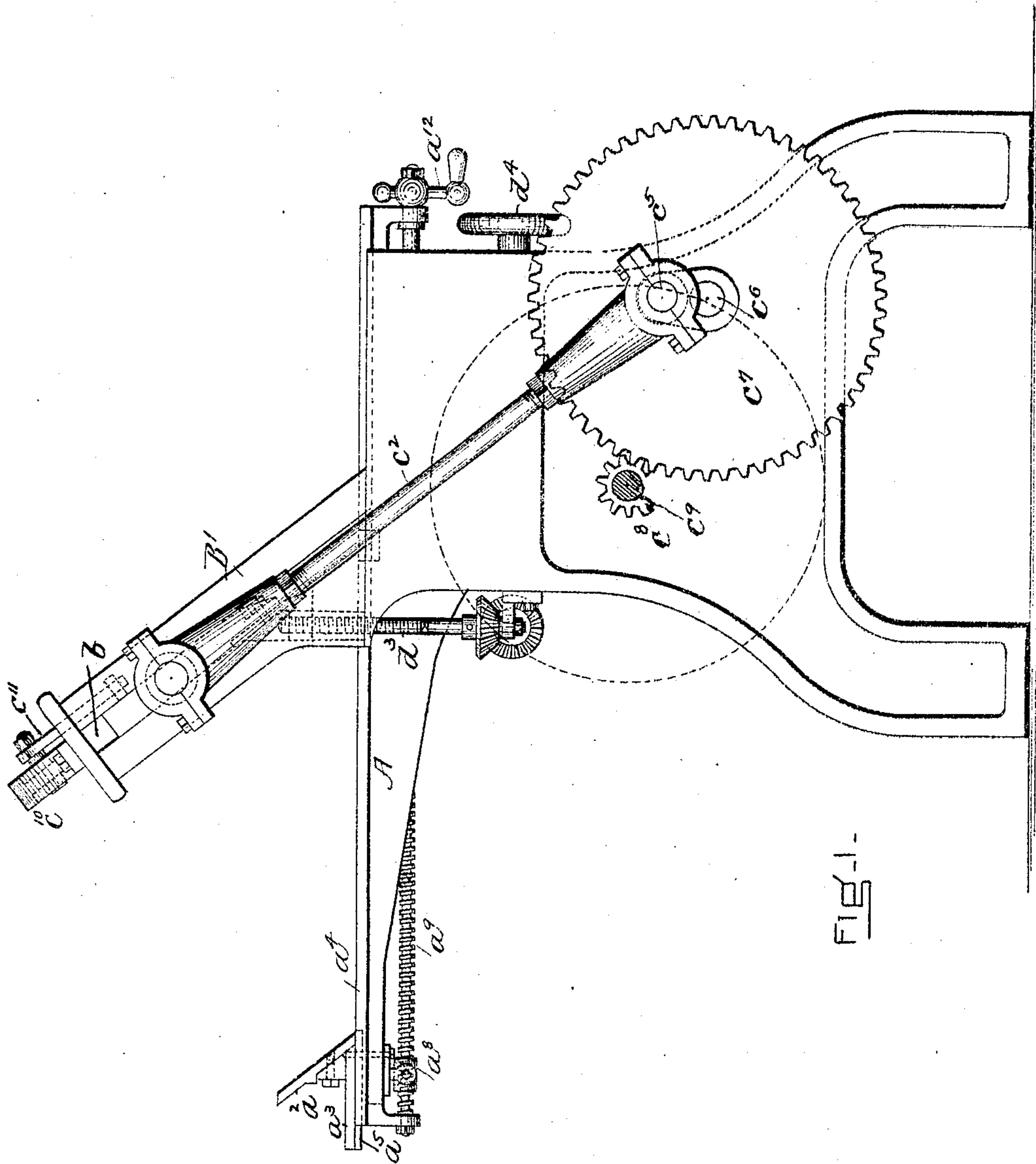
H. F. HEALEY.

MEANS FOR CUTTING FLAT SHEETS OF CARDBOARD, PAPER, OR OTHER
MATERIAL INTO CARDS HAVING BEVELED EDGES.

APPLICATION FILED MAY 14, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES:
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J. J. Dolan

INVENTOR=

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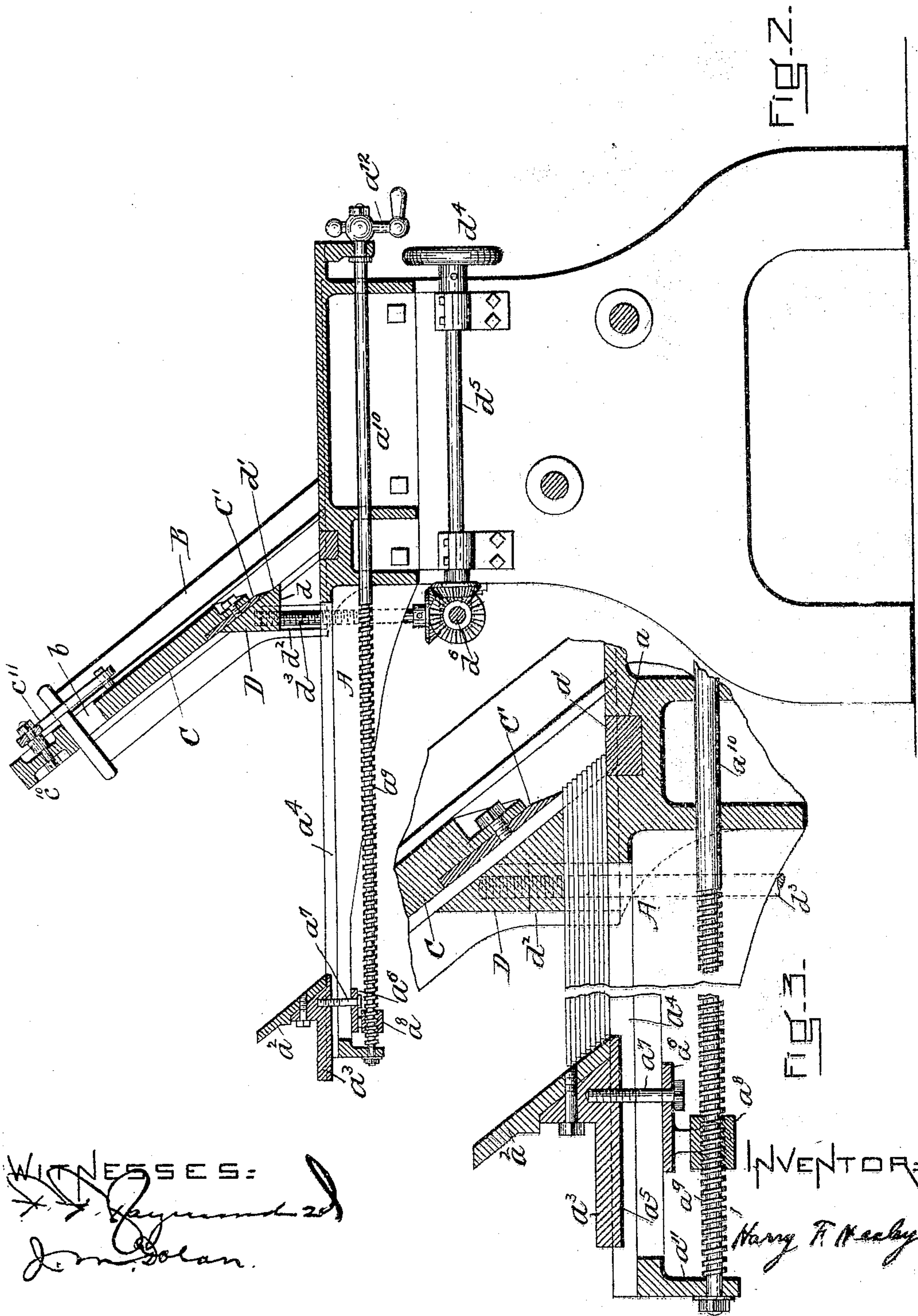
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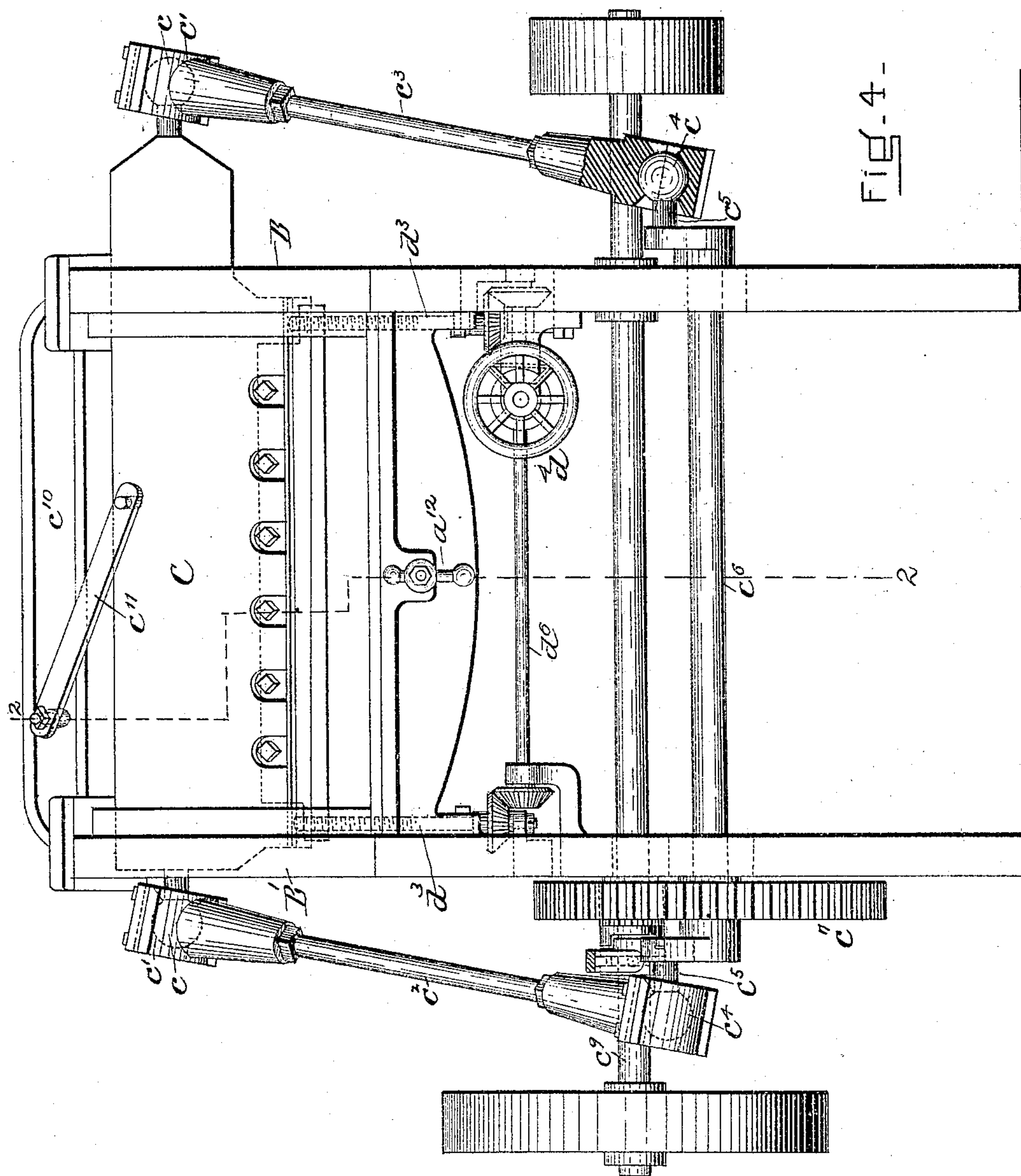
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NO MODEL.

3 SHEETS—SHEET 3.



WITNESSES:

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 [Signature]
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UNITED STATES PATENT OFFICE.

HARRY F. HEALEY, OF CHELSEA, MASSACHUSETTS, ASSIGNOR TO CARTER, RICE & COMPANY, CORPORATION, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

MEANS FOR CUTTING FLAT SHEETS OF CARDBOARD, PAPER, OR OTHER MATERIAL INTO CARDS HAVING BEVELED EDGES.

SPECIFICATION forming part of Letters Patent No. 764,585, dated July 12, 1904.

Application filed May 14, 1903. Serial No. 157,082. (No model.)

To all whom it may concern:

Be it known that I, HARRY F. HEALEY, a citizen of the United States, and a resident of Chelsea, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Means for Cutting Flat Sheets of Cardboard, Paper, or other Material into Cards Having Beveled Edges, 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 a method of and means for cutting flat sheets of cardboard, paper, or other material into cards having a beveled edge.

Heretofore to form from flat sheets individual cards which shall have a beveled edge it has been customary to first cut from the flat sheets cards having straight edges and subsequently by a separate manipulation to change the straight edge of the cards to a beveled or inclined one. My invention accomplishes both the cutting of the card from the sheet and the beveling of its edge as one operation.

In practicing my invention I employ a cutting mechanism which is adapted to receive and hold any desired number of sheets of cardboard, paper, or other material, preferably in a somewhat staggered relation to each other or so that the side of the stack of sheets presented to the cutter shall be inclined, and a cutting-blade which has an inclined shearing movement with respect to such stack and whereby there is formed an inclined or beveled edge to each sheet of the stack. Usually sheets of cardboard or other material of a size to form a number of cards are used, and in order to provide each edge of each card with an inclined or beveled finish it is necessary to turn the stack of sheets and to subdivide them according to the size of the cards which it is desired to obtain. Of course for the formation of cards having each edge beveled it will be necessary that the stack from which

said cards are produced shall be presented four times to the cutting-knife, once for each face, and it will also be necessary to arrange the cards of such stack in the inclined or staggered relation to which I have above referred.

While I have referred to the making of cards having beveled edges, I would not, of course, be understood as limiting the invention to the manufacture of cards only, but may employ it in producing such edges on cardboard, paper, or any material that may be cut by the knife and for any purpose or use desired.

I will now describe the invention in detail in conjunction with the drawings, wherein—

Figure 1 is a view in end elevation of my improved cutting-machine. Fig. 2 is a view in vertical section thereof upon the dotted line 2 2 of Fig. 4. Fig. 3 is a detail view enlarged to illustrate the operation of the machine. Fig. 4 is a view in front elevation of the complete machine.

In the drawings, A represents the bed of the machine, upon which the sheets are held while their edges are being cut to a beveled form. The bed is of any desired extent, is flat, has the cross-recess a for holding the cutting-stick a' , an inclined gage a'' , against which the back edges of the stack of sheets is caused to bear and by which the inclination of the front edge of the stack is determined. This gage is adjustable upon the bed with respect to the cutting-stick in order that it may be set to the width or length which it is desired that the finished cards shall have. It is in the form of a metal plate having a smooth front surface and is mounted upon the carriage a''' , to which it is secured by screws or in any other desired way. The carriage is arranged to slide in the guideway a^4 in the bed, having a tongue a^5 to enter the guideway. The carriage is held in the guideway by a plate a^6 , which slides upon the under surface thereof and which is fastened to the carriage by screws or bolts a^7 . This plate bears a nut a^8 , with which the worm

a^9 of the worm-shaft a^{10} engages. This worm-shaft is supported by a hanger a^{11} and by the frame of the machine, and it is turned by the handle a^{12} at the front of the machine. The turning of the shaft causes the guide to be moved back or forth on the table, according as may be desired. Upon each side of the bed, extending upward and backward from the sides of the frame, are the frame extensions B B'. In each of them is the guideway b , which is inclined to the bed, and these guideways serve to guide the movement of the head C, which has attached to it near its lower edge the knife-bar C'. This head extends through the guideways, is considerably longer than the distance between the two guideways, and has at each end a trunnion c in the shape of a sphere, which is held in a cup or socket bearing c' at the upper end of the connecting-rods $c^2 c^3$, respectively. These connecting-rods are by similar sockets attached at their lower ends to the balls or spheres c^4 on the ends of crank-pins c^5 on the crank-shaft c^6 . The balls upon the head and upon the crank-shaft are so located as to permit universal movements of the connecting-rods. The crank-shaft is turned by means of the gear c^7 on the crank-shaft and the pinion c^8 on the pulley-shaft c^9 , which meshes with the gear c^7 . The head C is attached to the stationary cross-bar c^{10} of the frame by a link c^{11} , which is pivoted to the cross-bar and to the head and which causes the head to be moved laterally as it is being moved downwardly and so as to give it a drawing cut. It will be seen that because of the inclination of the guides and because of the link the head, and consequently the knife, is given an inclined forward movement toward the cutting-stick and also a lateral movement at the same time, and that the connecting-rods and their operating devices are arranged to operate in an inclined direction corresponding with the inclination of the head and guides, and that the connecting-rods are also attached to the head to be swung laterally with it while they are moving in their inclined paths.

I prefer that the crank-pins c^5 be so set that one shall be slightly in advance of the other and so that the head and the knife-bar shall vary as to their inclination from end to end, thereby causing the cutting edge of the knife to have an additional shearing action to that caused by its lateral movement and due to the fact that the cutting edge of the knife is not quite parallel with the surface of the cards or work, and so that the stress or force of the plate is not taken entirely by one card, but is distributed over two or more. While this is not an essential element of the invention, it is of advantage in lightening the work upon the knife and in getting a somewhat cleaner cut and also in reducing any liability of forcing or pressing down a portion of the cards im-

mediately adjacent to the inner surface of the knife.

To hold the assembled cards upon the bed in their gaged position, I employ a presser-bar D, having the flat pressing-surface d and the inclined surface d' . This bar has ends which are mounted in the vertical guideways d^2 in the frame extensions B, and it is moved vertically in said guideways toward and from the bed by means of the screws d^3 , one at each end, which screw into a threaded hole therein and which screws are turned by the hand-wheel d^4 , shaft d^5 , and shaft d^6 , the shaft d^5 being connected with the shaft d^6 by bevel-gearing and the shaft d^6 with the screws d^3 by bevel-gearing. (See Figs. 2 and 4.)

The knife-plate is attached to its head to be removable in any desired way.

In operation the gage a^2 is adjusted upon the bed to any desired position. The cards or sheets are arranged upon the bed with their back edges against the gage and their front edges occupying an inclined relation to each other and extending backward and upward from the cutting-stick and beneath the cutting edge of the knife. The presser-bar is then moved downward upon them to clamp them to the bed with any desired pressure and the knife-block and knife caused to make a full reciprocation, which causes the knife to be moved with a shearing cut upon an inclined plane substantially parallel with the front edge of the cards and severing from the cards pieces which are practically triangular in shape and which leaves each card of the stack with a continuous inclined or beveled edge upon one of its sides. The knife when used in cutting the larger sheets into smaller cards works substantially in the same way, with this exception, that when it is cutting a stack of cards in two it provides beveled or inclined edges at the same time for both divisions of the stack—those that are inside the knife and held by the presser-bar and those which are upon the bed upon the front side of the knife. It will be understood that for beveling all the edges of the cards the stack of cards is rearranged against the gage for each successive cut.

While I have described my machine as having a horizontal table and guideways at an angle thereto, I wish it understood that I consider that my invention would be embodied in a machine in which the guideways for the knife were vertical and the table was at an angle thereto.

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

1. The means for providing beveled edges to cards or other articles comprising a bed for the support of the cards, an inclined gage on the bed against which the back edge of the cards bears, a presser adapted to be moved

upon the cards to clamp them to the bed and with portions of the cards in front of the presser but below a cutting-knife, a cutting-knife and means for reciprocating it upon an inclined path toward and from the bed.

2. The means for providing beveled edges to cards and the like comprising a bed, an inclined gage on the bed, means for adjusting said gage upon the bed and for holding it in its adjusted position, a presser in front of the gage, means for moving it toward and from the bed and holding it in its adjusted position, extensions of the frame upon each side of the bed having inclined guideways, a head extending across the bed through said guideways and beyond them, a knife-blade mounted on the lower edge of the head, and means for reciprocating said head and also for providing it with a lateral movement while it is being reciprocated, as and for the purposes set forth.

3. In a machine of the character specified, the bed, extensions of the frame on each side of the bed having inclined guideways, a head having sections extending through said guideways, a trunnion or pivot at each end of the head, a crank-shaft below said inclined guideways and in line with them, having a crank at each end, one crank-pin being slightly in advance of the other to cause the ends of said head to move with unequal velocities, connecting-rods connecting the crank-pins with the trunnions or pivots of the head, and a knife-bar carried by said head.

4. In a machine of the character specified, a bed, extensions of the frame on each side of the bed, inclined guideways in said extensions, a head mounted in said guideways, a knife-bar carried by the head, and means for reciprocating said head toward and from the bed in said inclined guideways, in combination with a gage located on said bed and having an inclined face.

5. The means for providing beveled edges to cards and the like comprising a bed, an inclined gage on the bed, means for adjusting said gage upon the bed and for holding it in its adjusted position, a presser in front of the gage, means for moving it toward and from the bed and holding it in its adjusted position, extensions of the frame upon each side of the bed having inclined guideways, a head extending across the bed through said guideways and beyond them, a knife-blade mounted on the lower edge of the head, and means for reciprocating said head and also for providing it with a lateral movement while it is being reciprocated and also with a movement of variable rapidity, as and for the purposes set forth.

6. In a machine of the character specified, a bed, a gage thereon for holding assembled sheets in stack, a presser to bear upon the assembled sheets and press them against the bed, and a reciprocating cutter and means whereby said cutter is given a lateral movement and its ends are moved at differing velocities during its reciprocation, said bed and cutter having such angular relation to each other that the cutter is caused to bevel the edges of the sheets as it cuts through them.

7. A machine of the character specified, a bed, extensions of the frame on each side of the bed, inclined guideways on the extensions, a head mounted in said guideways, a knife-bar carried by the head, means for reciprocating said head toward and from the bed, and said inclined guideways, and a gage adjustable horizontally on said bed and having an inclined face.

HARRY F. HEALEY.

Witnesses:

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