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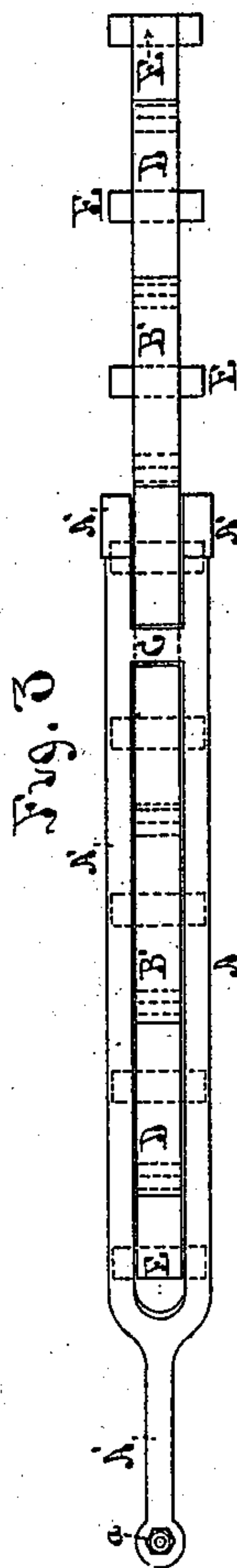
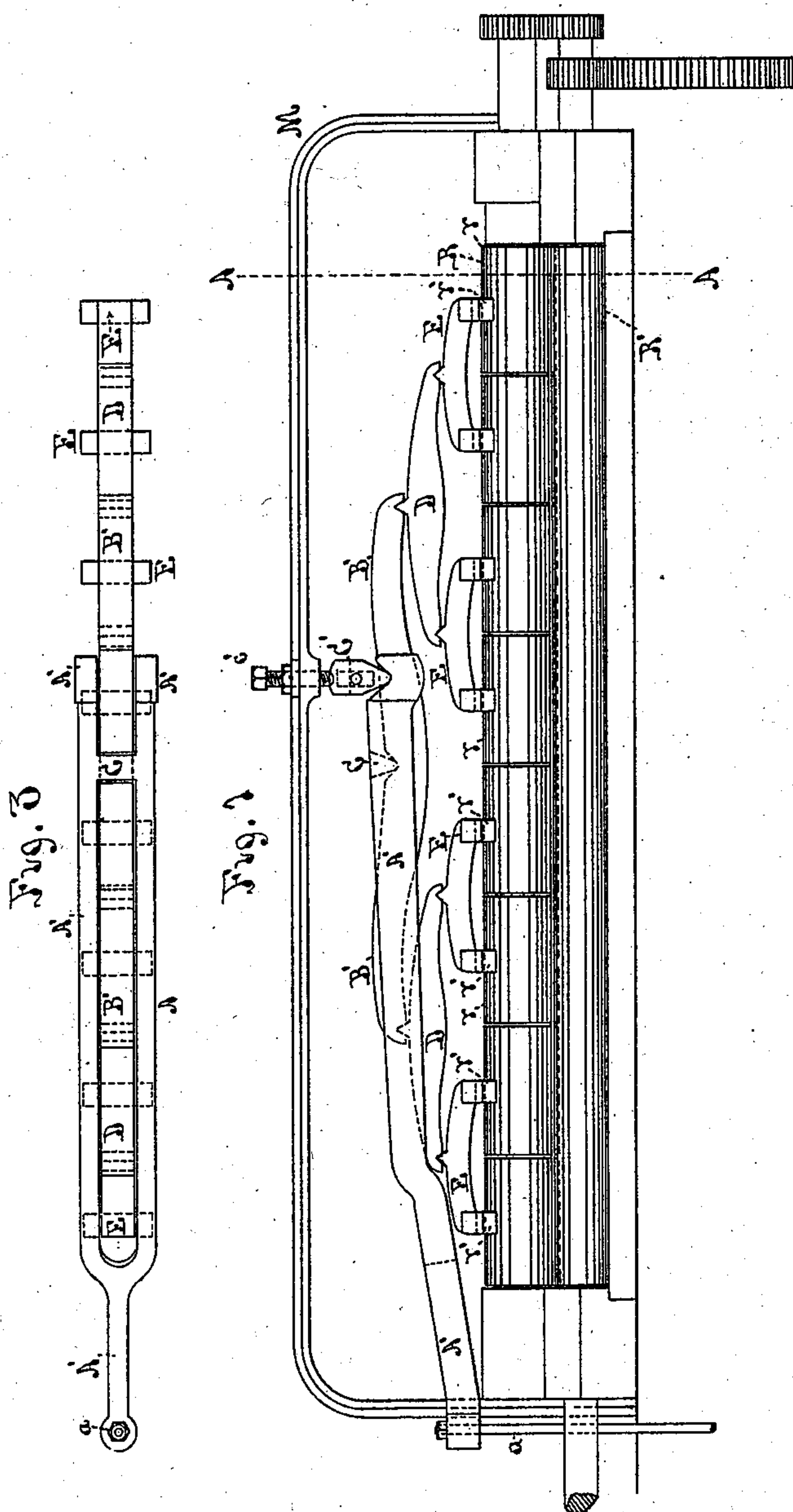
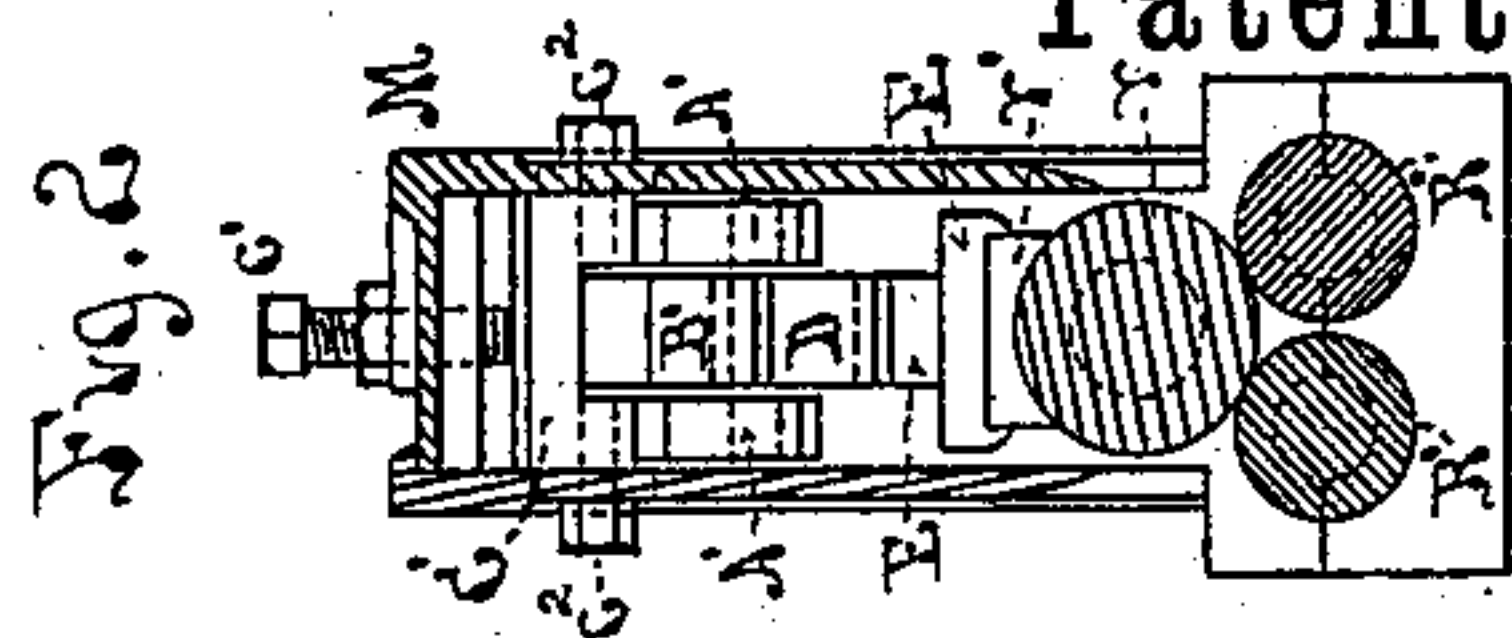
3 Sheets—Sheet 1.

A. CLARKE & H. C. PERHAM.

MACHINE FOR OPENING AND PREPARING FIBROUS SUBSTANCES.

No. 380,187.

Patented Mar. 27, 1888.



Witnesses.

Wm. D. Brown.

A. P. Dickinson

Inventor.

Alfred Clarke.  
Haven C. Perham.  
By David H. Rice  
Their Atty.

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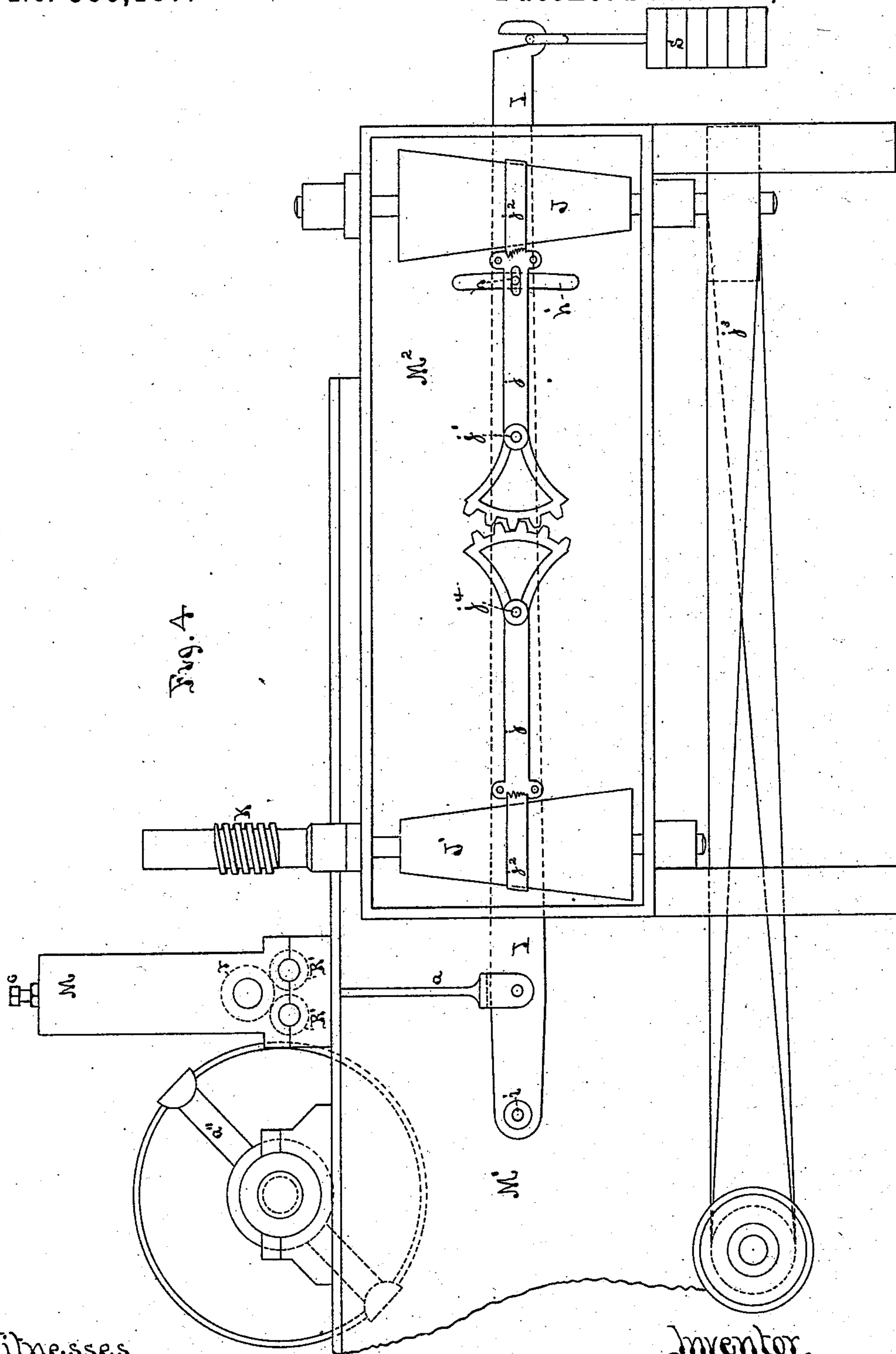


Fig. 4

Witnesses

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*Alfred Clarke*  
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(No Model.)

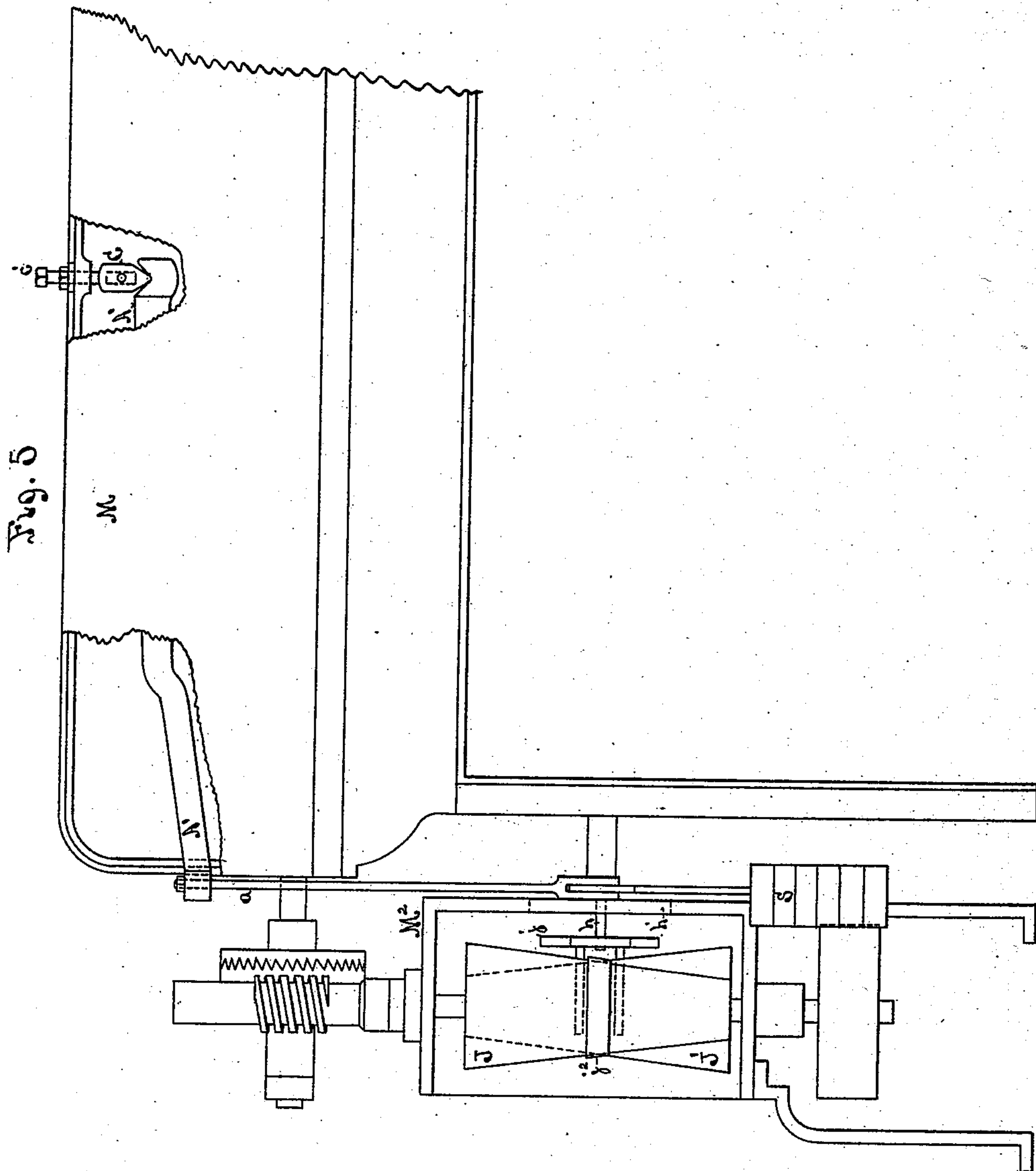
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A. P. Ockington.

Inventor,

Alfred Clarke,  
Haven C. Perham  
By David H. Beebe  
Their Atty



# UNITED STATES PATENT OFFICE.

ALFRED CLARKE AND HAVEN C. PERHAM, OF LOWELL, MASSACHUSETTS.

## MACHINE FOR OPENING AND PREPARING FIBROUS SUBSTANCES.

SPECIFICATION forming part of Letters Patent No. 380,187, dated March 27, 1888.

Application filed April 13, 1885. Serial No. 162,062. (No model.)

*To all whom it may concern:*

Be it known that we, ALFRED CLARKE and HAVEN C. PERHAM, both of Lowell, in the county of Middlesex and State of Massachusetts, have invented a certain new and useful Improvement in Machines for Opening and Preparing Fibrous Substances, of which the following is a specification.

Our invention relates to machines for opening and preparing fiber; and it consists in certain improvements in the machine patented to us by Letters Patent of the United States August 16, 1881, No. 245,609, substantially as hereinafter described and claimed.

In the drawings, Figure 1 is a front side elevation of a portion of the evenner mechanism of a cotton-opener provided with our improvement, and having the front side of the casing removed to show its construction more clearly. Fig. 2 is a section of Fig. 1 on the line A A. Fig. 3 is a top view of the compound levers detached from the other parts. Fig. 4 is a side view of a portion of a cotton-opener, showing means whereby the compound levers are connected with the belt of the cone driving-pulleys. Fig. 5 is an end view of a portion of Fig. 4, showing the same.

R is the upper sectional roller of a cotton-evenner feed mechanism.

R' R' are the bottom feed-rollers, between which and the upper roller the cotton is fed to the beater. The roller R is composed of a number of short sections, *r r*, each capable of moving freely up and down independently in proportion to the varying thickness of the sheet of cotton passing between them and the bottom feed-rolls, R' R'.

On top of each section of the roll R is placed a saddle, *r'*, which is held and retained in a socket in the end of one of the levers E, each lever E having the saddles of two adjacent sections, *r*, thus held in its ends, as shown. Each of the levers E has midway between its ends, upon its upper side, a wedge-shaped projection, edge uppermost, as shown. Resting upon these projections are the levers D D, each of the latter having notches cut in its lower side near each end to embrace the projections.

On top of the levers D D rests the lever B', the levers D D having similar central projec-

tions and the lever B' similar notches to receive them. All these parts are similar in construction and operation to like parts shown and described in our said former patent, and are well understood.

In place of the sector and chain mechanism shown in our said former patent, we now connect the lever B' with the lever A' by the bearing-point C of the latter being made to rest upon the center of lever B', and providing it with a fulcrum, C', supported against the top of the casing M, as shown. This lever A' and fulcrum C' are bifurcated and extend downward on each side past the levers B' D, as shown. This construction enables the entire lever mechanism to be condensed into a smaller compass without interfering with its freedom of operation, and the lever A', by means of it, serves to hold the levers B' D in position, as well as to receive and convey the motion of the divided roll R and system of levers to the belt and cone-pulley mechanism in the usual manner.

To the end of the lever A' which projects outside the casing M is attached a rod, *a*, which connects the lever A' to the lever actuating the belt-shifting forks, and shifts the belts on the cone-pulleys and regulates the speed of the rolls R R' R' by mechanism substantially the same as shown in our said former patent.

The lower end of rod *a* is pivoted to the lever I, which is attached to the casing M' of the opener by a pivot, *i*, and has suspended upon its free end the weight S. This lever extends through between the casing M' of the opener and the casing M<sup>2</sup> of the cone-pulleys. Toward its outer end a finger, *h*, extends through the slot *h'* in the casing M<sup>2</sup>, and engages with one of the levers *j* by passing through a slot in it. This lever *j* is pivoted to the casing M<sup>2</sup> at *j'* and carries on its short end the usual toothed sector, which meshes with the toothed sector upon the short end of the other lever *j*, which is pivoted at *j<sup>4</sup>*. The usual pins or fingers project outward from the longer ends of the levers *j j* upon each side of the belt *j<sup>2</sup>*, passing around the cone driving-pulleys J J'.

The fulcrum C' is made adjustable vertically by means of a set-screw, *c'*, and two set-screws, *c<sup>2</sup> c<sup>2</sup>*, passing through slots in the casing M, as shown in dotted lines in Fig. 1, into the oppo-



site sides of the fulcrum. By loosening the set-screws  $c^2$   $c^2$  and turning the set-screw  $c'$  the fulcrum-piece  $C'$  may be adjusted up and down as desired. This adjustable fulcrum  $C'$  is of great advantage in this mechanism, as well as the means of adjusting it by a screw with great delicacy, because it is an exceedingly efficient method of regulating the thickness and comparative weight of the lap produced. The latter, as is well known, depends upon the average speed at which the feed-rolls run, a greater speed feeding more cotton through the machine in a given time and producing a thicker and heavier lap. As the set-screw  $c'$  is turned backward or withdrawn, it allows the fulcrum  $C'$  to rise and lowers the opposite end of lever  $A'$ , carrying rod  $a$ , and allows lever  $I$  to drop downward, carrying with it levers  $j$   $j$  and belt  $j^2$ . The average position of this belt will therefore be lower upon the cone-pulleys  $J$   $J'$  than before, and it will drive the feed-rolls by pulley  $J'$  from pulley  $J$  slower. By turning the set-screw  $c'$  in the opposite direction the contrary effect will be produced, and a very slight adjustment of the movable fulcrum  $C'$  in this way is sufficient to produce an appreciable effect upon the speed of the feed-rolls.

It is of course obvious that the arrangement of the rod and lever connections between the outer end of lever  $A'$  and the belt  $j^2$  on the cone-pulleys may be varied somewhat without departing from the spirit of our invention of the movable fulcrum.

The bearing-piece  $C$  of the lever  $A'$ , which rests upon the lever  $B'$ , is made to cross the space between the two parts of the bifurcated end of the lever  $A'$ , to which it is joined at each end, thus strengthening that part of the lever.

It is of course understood that our invention may be applied to a roll,  $R$ , having a greater or less number of divisions  $r$   $r$ , in which case the number of levers between levers  $E$   $E$  and lever  $B'$  will vary accordingly; also, that the fulcrum  $C'$  may be placed entirely above the path of lever  $B'$ , in which case it need not be bifurcated.

What we claim as new and of our invention is—

1. In combination with the lower feed-rolls,  $R'$   $R'$ , and the feed-roll  $R$ , the series of levers  $E$   $D$   $B'$  and the bifurcated lever  $A'$ , pressing against its fulcrum at one end and having the fulcrum of lever  $B'$  in its bifurcation, and adapted to allow the levers  $B'$   $D$  to pass through such bifurcation, substantially as described.

2. In combination with the divided feed-roll  $R$ , the series of levers  $E$   $D$   $B'$ , the adjustable fulcrum  $C'$ , the lever  $A'$ , the cone-pulleys  $J$   $J'$  and their belt  $j^2$ , and a series of intermediate actuating rods and levers connecting said lever  $A'$  and said belt and pulleys, substantially as described.

3. In combination with the divided feed-roll  $R$ , the series of levers  $E$   $D$   $B'$ , the adjustable fulcrum  $C'$ , its adjusting-screw  $c'$ , the lever  $A'$ , and the cone-pulleys  $J$   $J'$  and their belt  $j^2$ , and a series of intermediate actuating rods and levers connecting said lever  $A'$  and said belt and pulleys, substantially as described.

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HAVEN C. PERHAM.

Witnesses:

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J. W. ANDERSON.