

(No Model.)

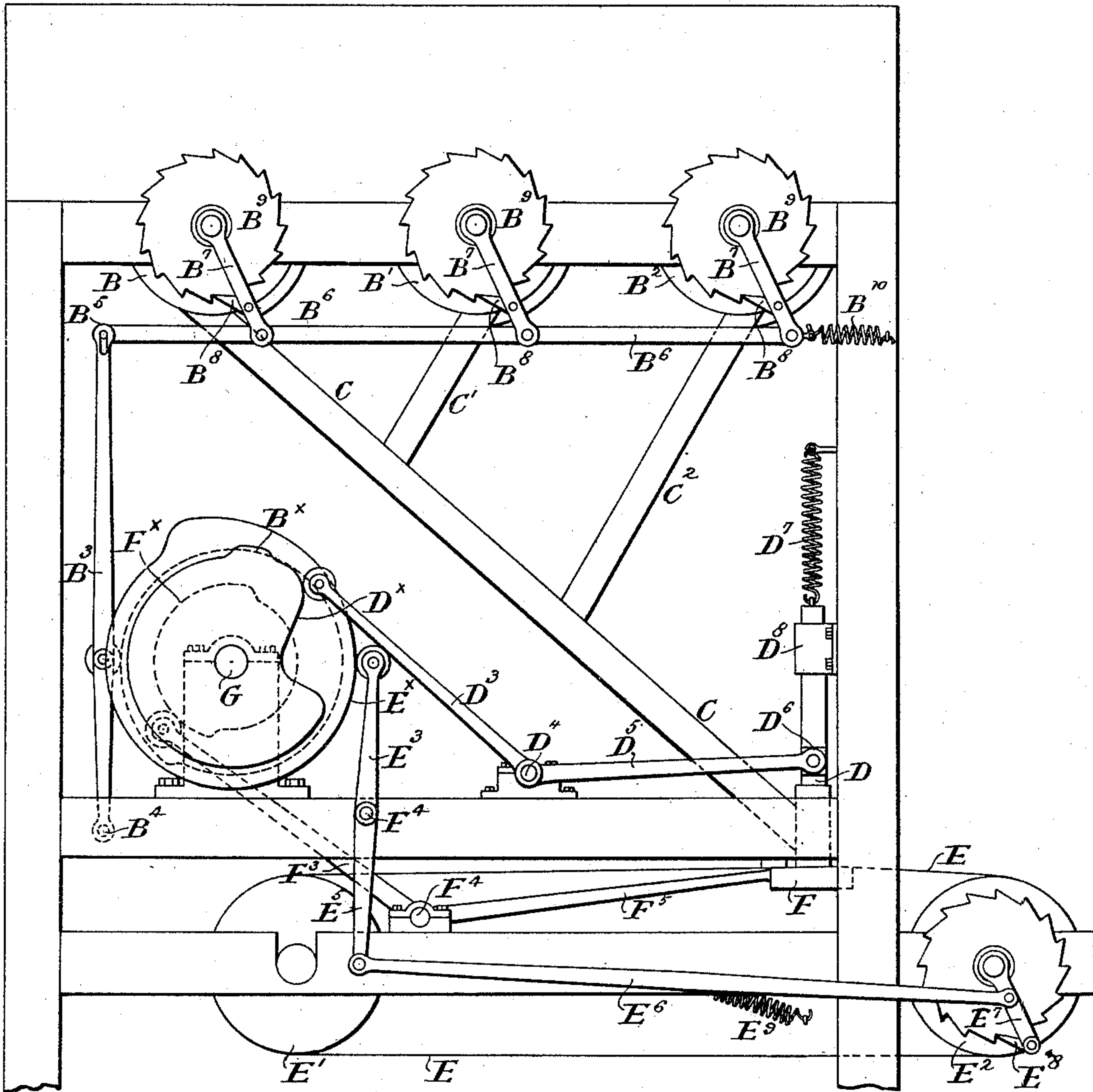
5 Sheets—Sheet 1.

A. S. OETZMANN & S. J. NARRACOTT.  
APPARATUS FOR THE MANUFACTURE OF COVERINGS FOR FLOORS AND  
OTHER SURFACES.

No. 473,519.

Patented Apr. 26, 1892.

*Fig. 1.*



Witnesses  
*B. Washington Miller*  
*Chas. F. Senner*

Inventors  
*Arthur S. Oetzmann*  
and  
*Samuel J. Narracott*  
By their Attorneys,  
*Baldwin, Davidson & Wright*

(No Model.)

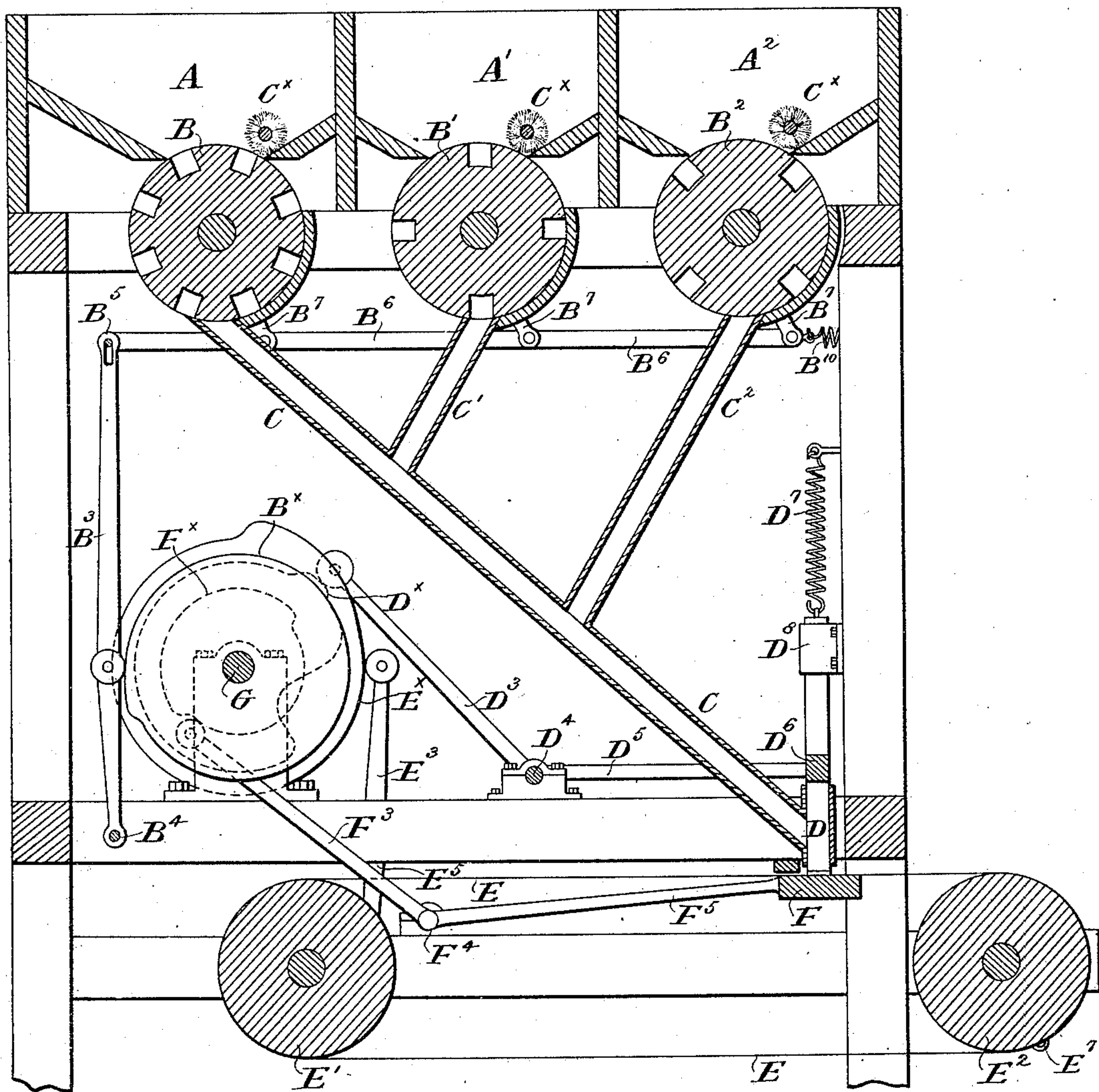
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*Fig. 2.*



Witnesses

*W. Washington Miller,*  
*Chas. F. Sensner.*

Inventors

*Arthur S. Oetzmann,*  
*and*  
*Samuel J. Narracott,*  
*By their Attorneys*  
*Baldwin, Dandson & Wright.*



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Fig. 3.

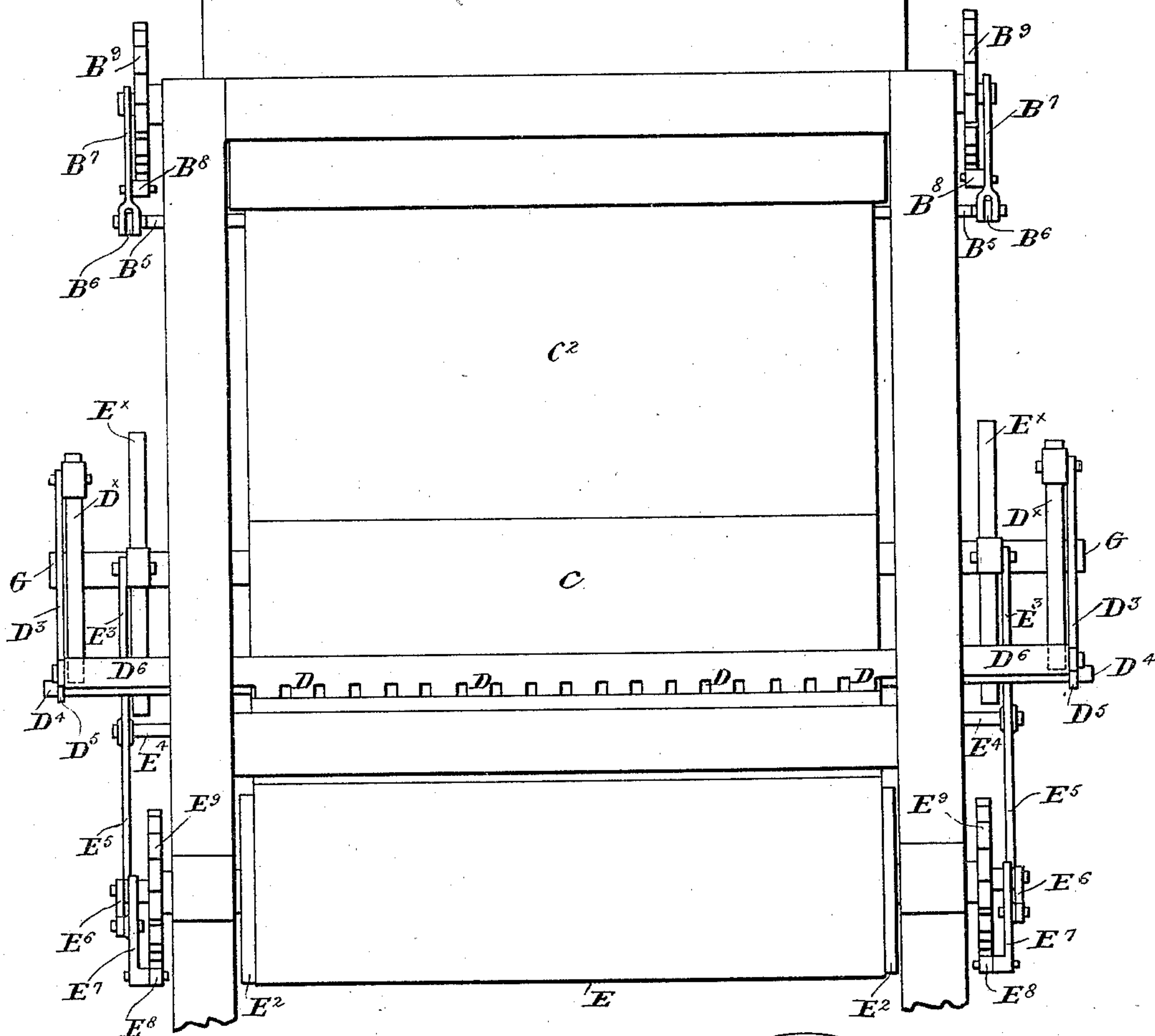


Fig. 4.

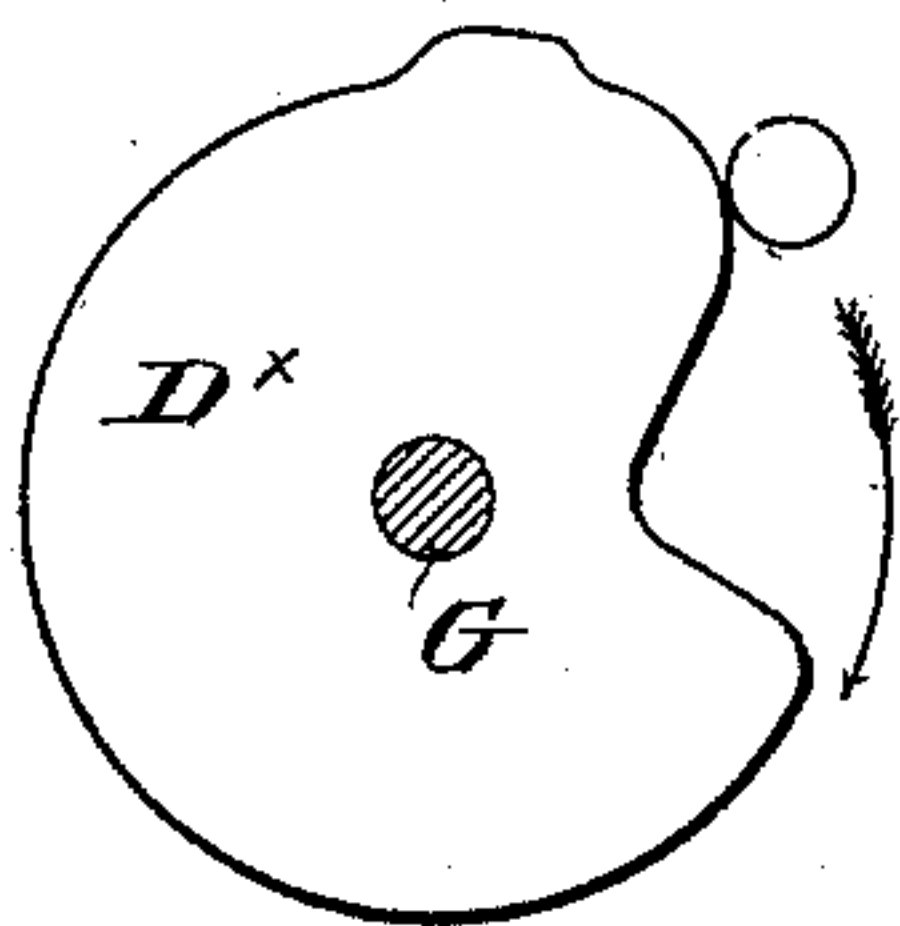


Fig. 5.

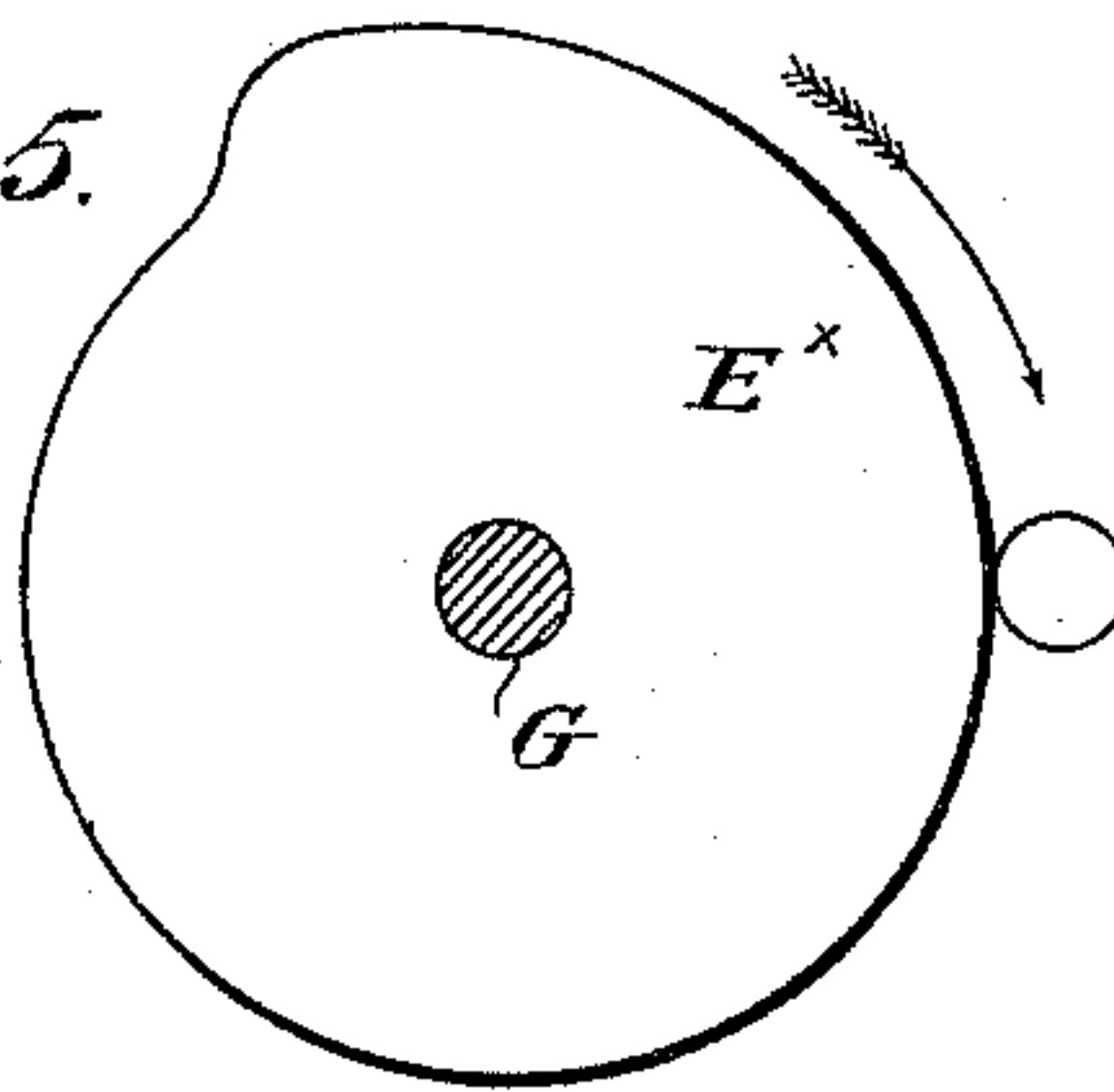
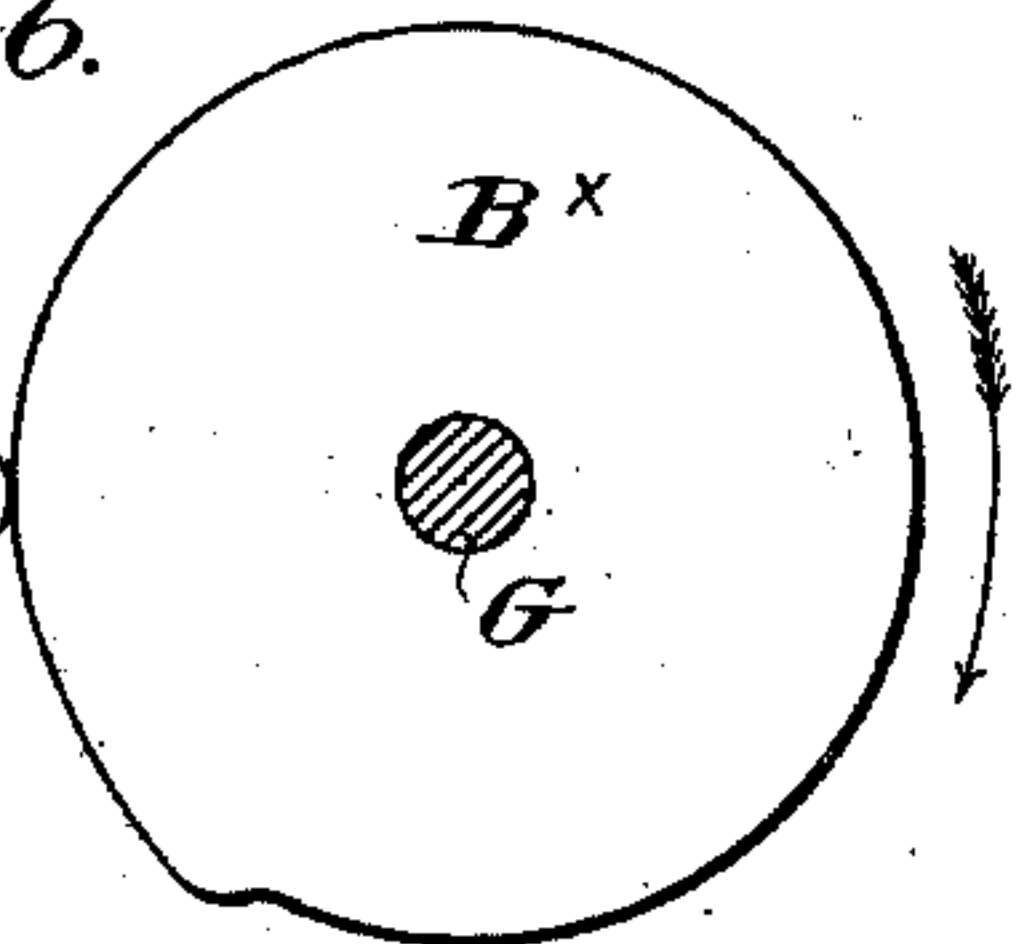
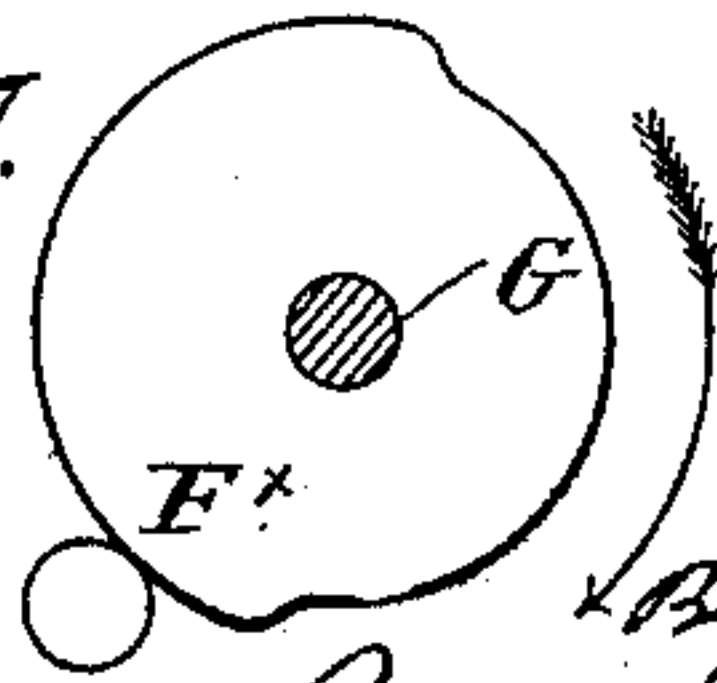


Fig. 6.



Witnesses:  
B. W. Miller,  
C. F. Soumerai.

Fig. 7.



Inventors

Arthur S. Oetzmann  
and  
Samuel J. Narracott,  
By their Attorneys,  
Baldwin, Danderson & Wright.

(No Model.)

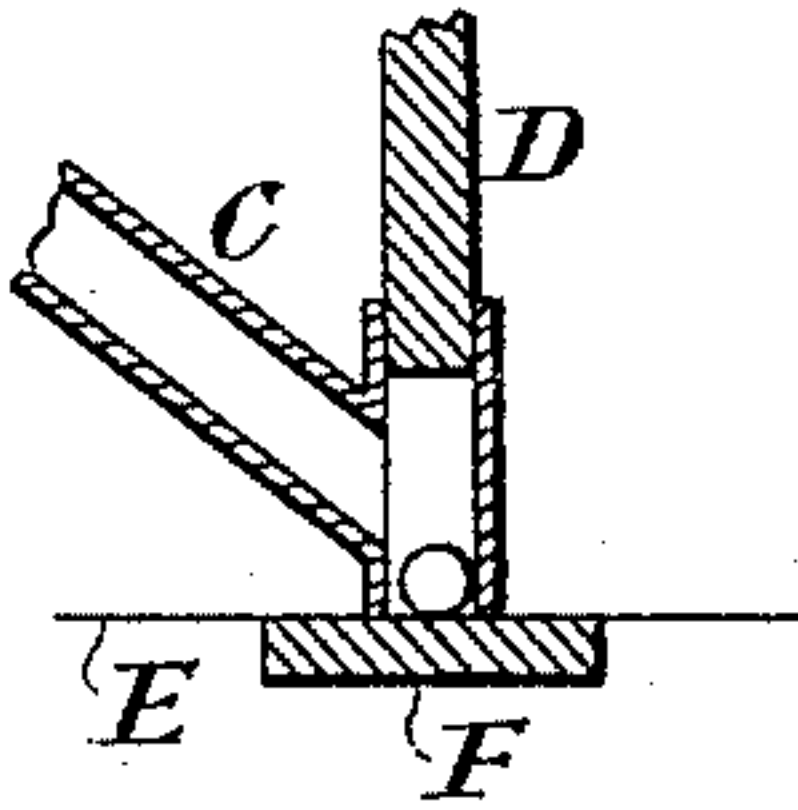
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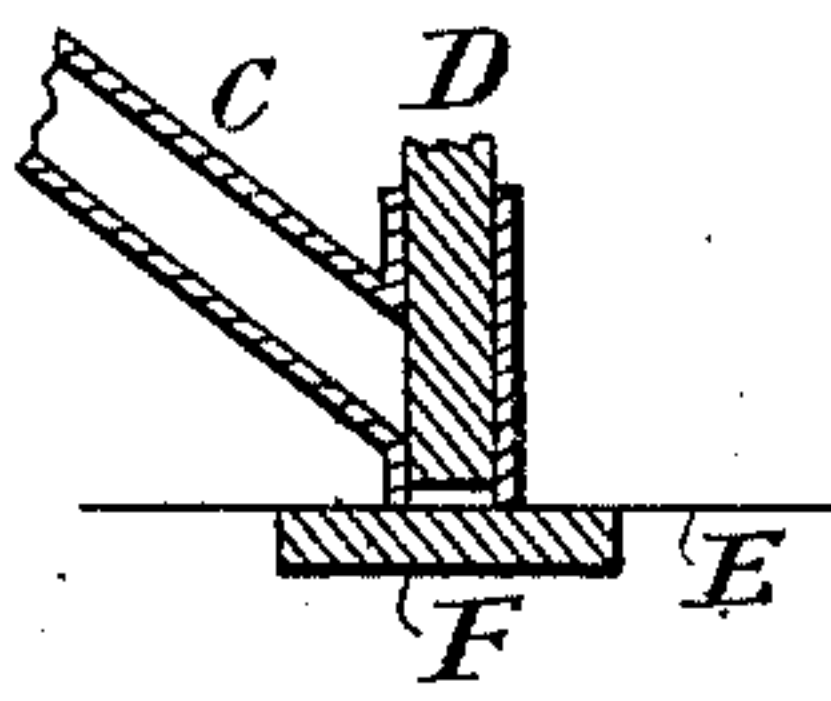
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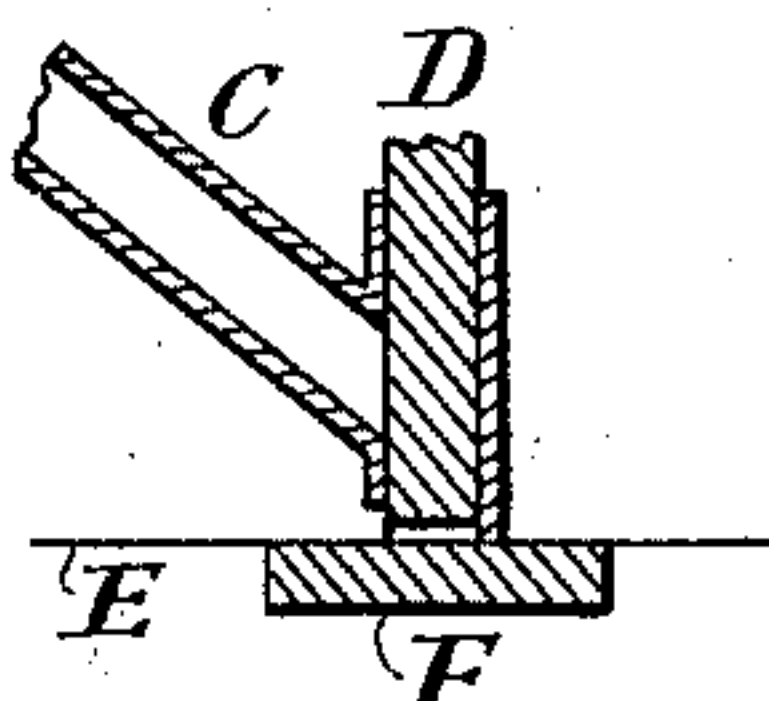
*Fig. 8.*



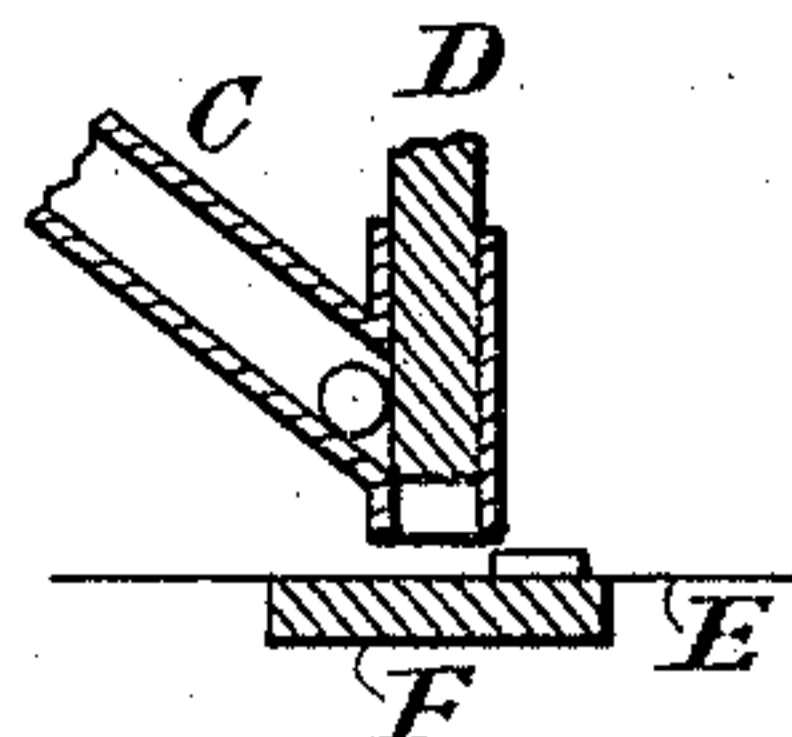
*Fig. 9.*



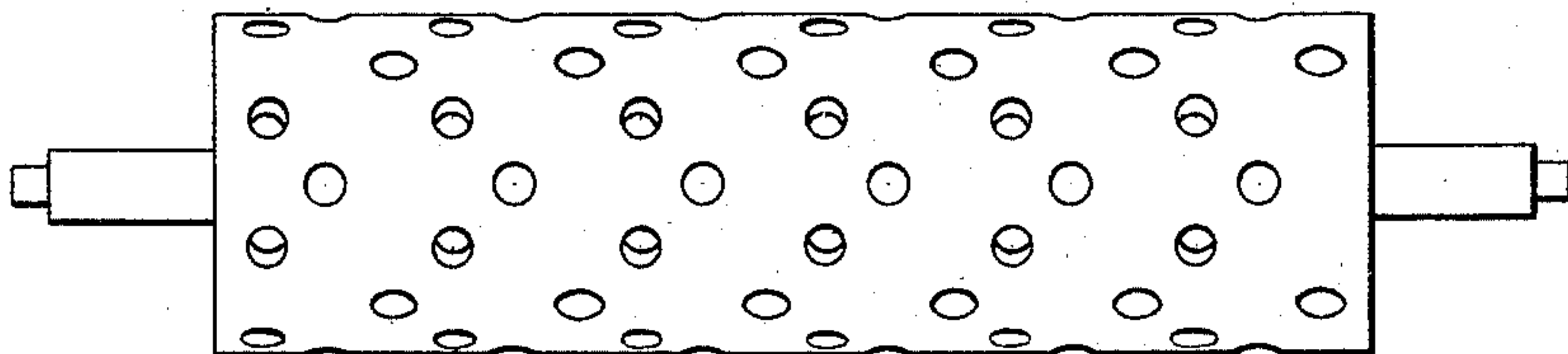
*Fig. 10.*



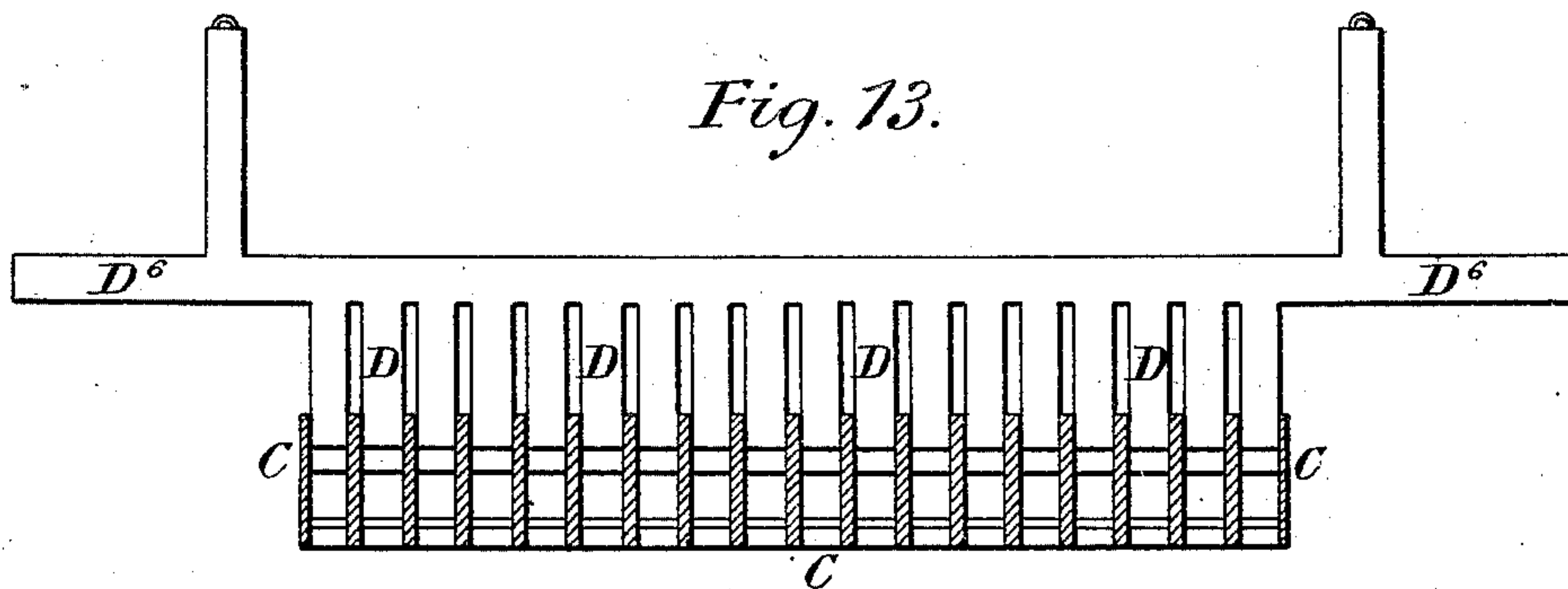
*Fig. 11.*



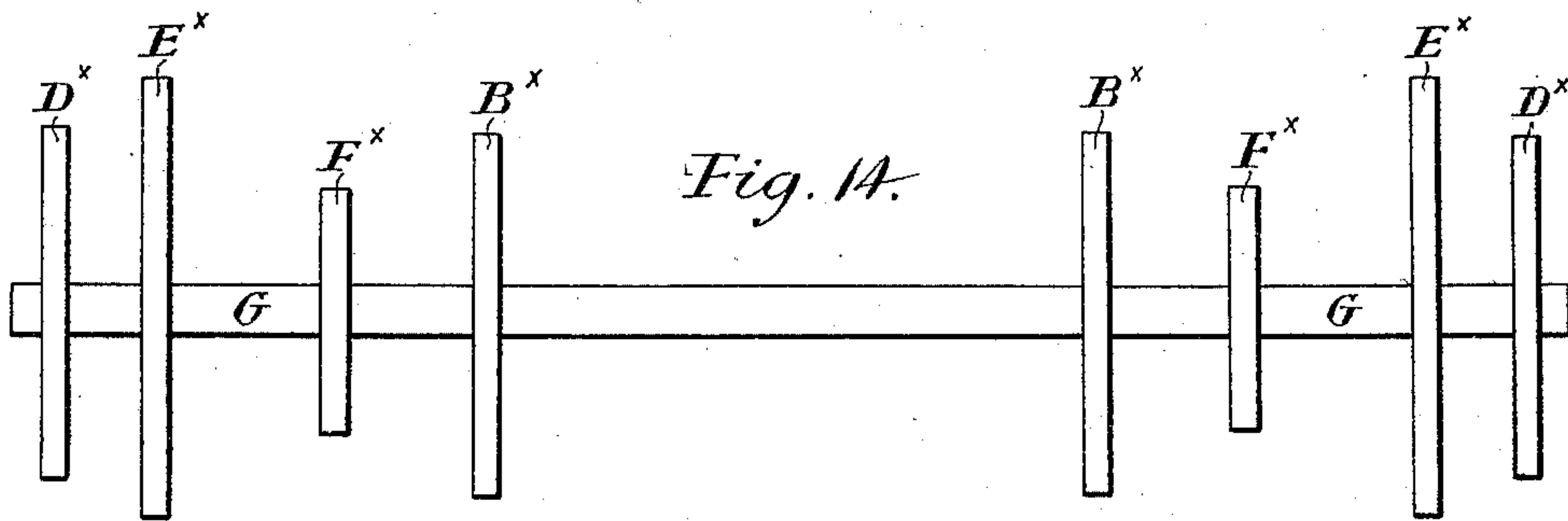
*Fig. 12.*



*Fig. 13.*



*Fig. 14.*



Witnesses  
B. Washington Miller,  
Chas. F. Sensner.

Inventors  
Arthur S. Oetzmann,  
and  
Samuel J. Narracott,  
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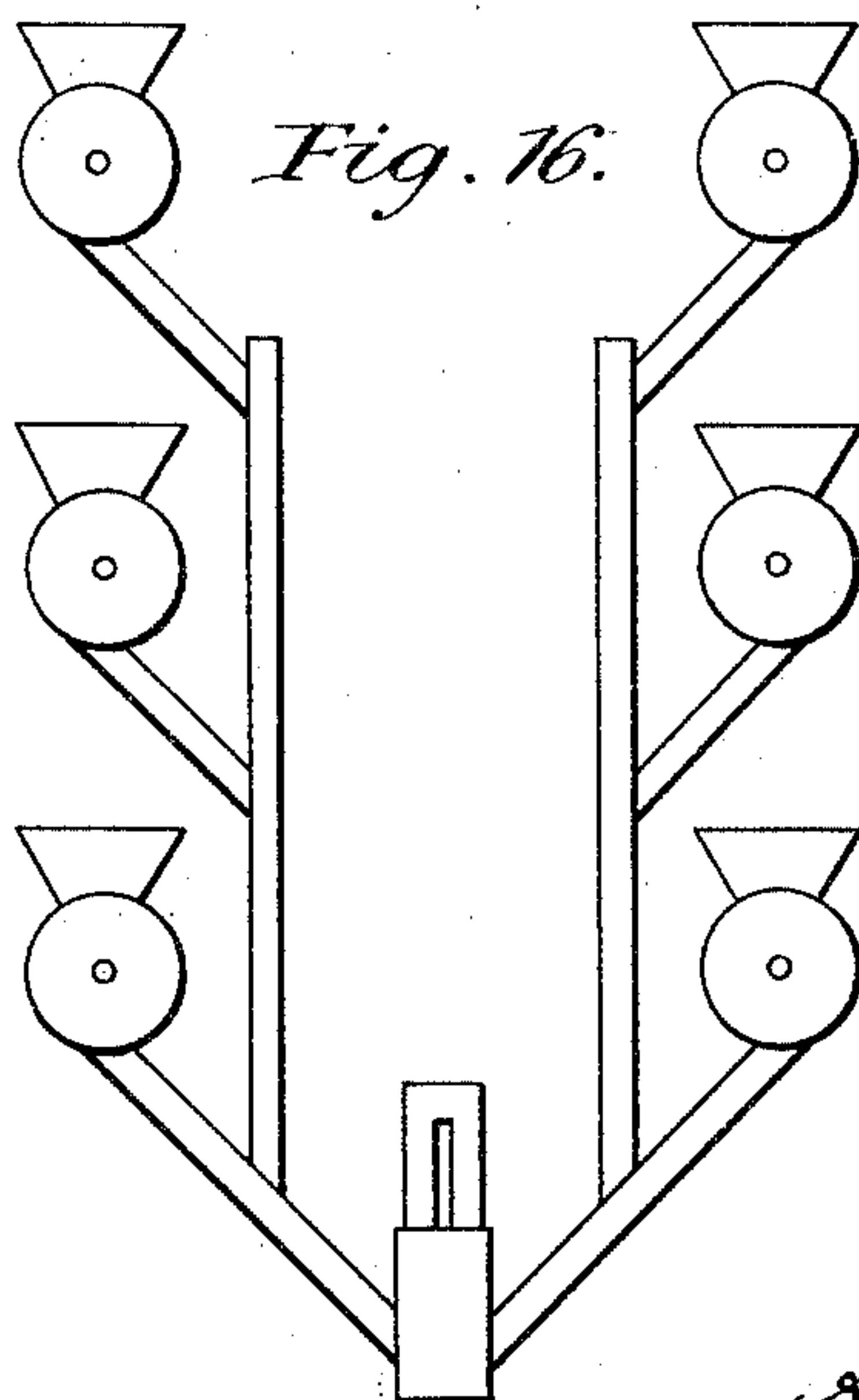
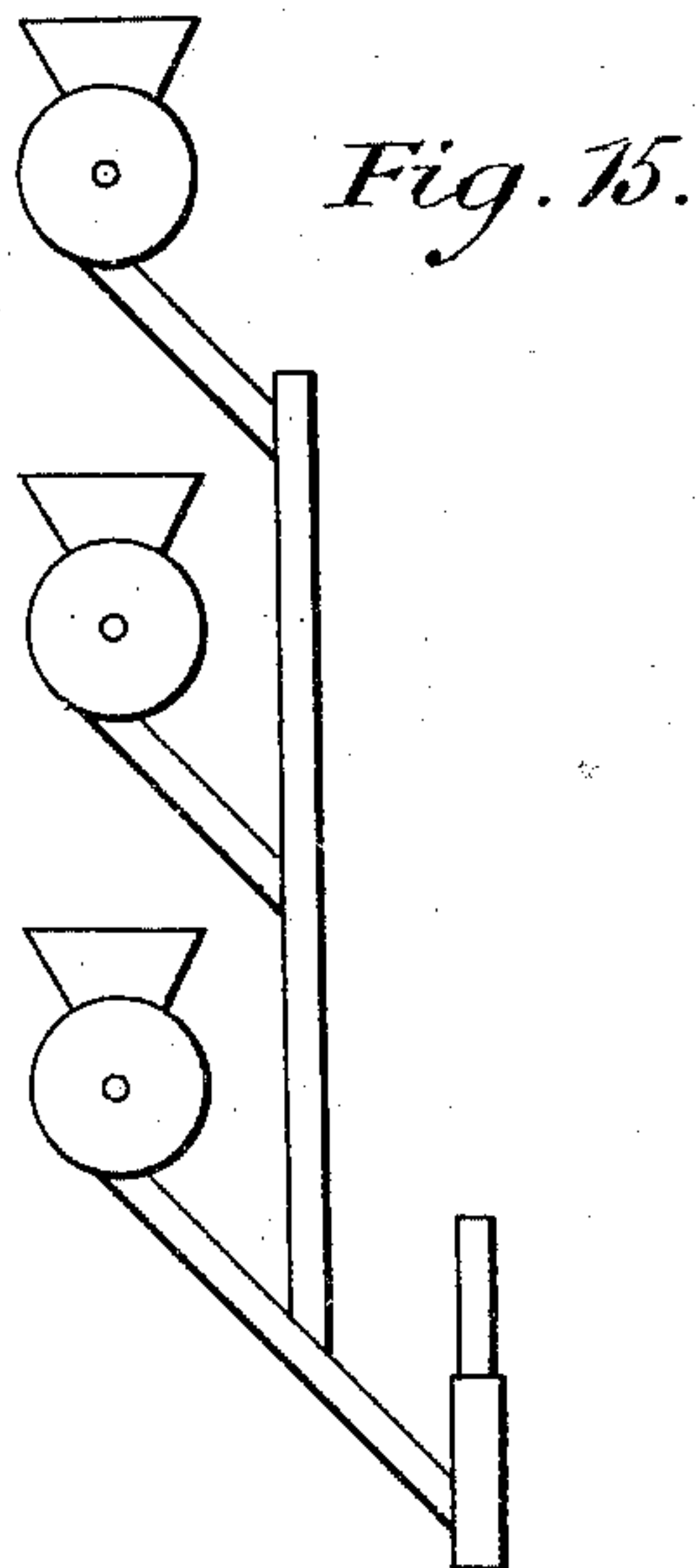
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*By their Attorneys,*  
*Baldwin, Davidson & Wright.*



# UNITED STATES PATENT OFFICE.

ARTHUR SIDNEY OETZMANN AND SAMUEL JOHN NARRACOTT, OF LONDON,  
COUNTY OF MIDDLESEX, ENGLAND.

APPARATUS FOR THE MANUFACTURE OF COVERINGS FOR FLOORS AND OTHER SURFACES.

SPECIFICATION forming part of Letters Patent No. 473,519, dated April 26, 1892.

Application filed October 2, 1891, Serial No. 407,510. (No model.)

*To all whom it may concern:*

Be it known that we, ARTHUR SIDNEY OETZMANN, manufacturer, of 67 to 79 Hampstead Road, in the county of Middlesex, England, and SAMUEL JOHN NARRACOTT, manager, of 2 Pyrmont Villas, Castle Hill, Ealing, in the said county of Middlesex, England, subjects of the Queen of Great Britain, have invented certain new and useful Improvements in Apparatus for the Manufacture of Coverings for Floors and other Surfaces, of which the following is a specification.

The object of our invention is more especially to improve the manufacture of that class of floor-cloth or coverings in which the pattern extends practically from front to back of the fabric, the pattern being the same throughout the whole thickness of the fabric, or nearly so.

In the manufacture of fabrics of this class we form the pattern from pellets of the composition of which the upper surface of the fabric is to be composed. We cause a cloth upon which the pattern is to be built up to travel with a step-by-step movement below the ends of a number of tubes or channels ranged side by side in a row across the cloth. Each tube or channel is made of such a size that a single pellet can pass down it. When a pellet has been dropped down each tube or channel and a line of pellets has so been formed across the cloth, the cloth is moved onward a distance equal to the width of the pellets and a fresh row of pellets is delivered onto the cloth, and so on. Subsequently the cloth so covered with pellets passes between hot flat plates or rollers, by which the pellets are flattened and made to adhere to one another, as well as to the cloth. The pattern produced depends upon the color of the pellets, which are delivered in succession down each of the tubes or passages. Pellets of two, three, four, or more different colors are provided and are contained in separate hoppers. The tubes or channels down which pellets are to be made to descend onto the cloth are inclined upward, and each tube or channel has branching into it one, two, three, or more other inclined tubes or channels, one from each of the hoppers, so that a pellet of any of

the colors may be delivered to each main tube through one or other of these branch tubes. In order to control the delivery of the pellets from the hoppers to the branch tubes, the bottom of each hopper is closed by a horizontal cylinder and the cylinders have a step-by-step revolving motion given to them simultaneously, all the cylinders being made to turn one step just after each forward movement of the cloth. As each cylinder is turned a predetermined distance, a longitudinal line of holes in its circumference is brought below the bottom of the hopper, so that a pellet may drop into and fill each hole. At the next movement of the cylinder a fresh row of holes is brought below the hopper, and so on. As each row of holes passes away from the bottom of the hopper, the pellets are retained in the holes by a guard-plate which extends around the circumference of the cylinder until the holes come to the position where the pellets are to be discharged from them. When the pellets drop from the holes, they pass down the branch inclined tubes to the main inclined tubes, and so on to the cloth. In this way at each movement of the cylinders each main inclined tube can be made to receive one pellet and this may be of any color. If there is a hole in the cylinder below one of the hoppers to supply a pellet of the color contained in that hopper, then there is no corresponding hole in the cylinders below the other hoppers. Thus the pattern will be governed by the position of the holes in the several cylinders, and by changing one set of cylinders for others the machine may be set to produce any desired variation of pattern. To insure that the pellets as they are delivered onto the cloth shall be in a perfectly straight row, we bring the ends of the tubes or channels which deliver them onto the cloth close down thereto. In order that the pellets may adhere to the cloth when they descend onto it, we either compress them thereon or coat the cloth with adhesive material just before it passes below the ends of the row of tubes, or if the cloth has been coated with material which becomes sticky when heated we cause the cloth to pass over a heated surface just before it passes below the tubes or passages. The pellets may



be of composition such as ordinarily used in the manufacture of linoleum, floor-cloth, or of other composition or material.

The drawings hereunto annexed show a machine constructed to act in the manner above described.

Figure 1 is a side elevation, Fig. 2 a vertical section, and Fig. 3 an end view, of the machine. Fig. 4, 5, 6, and 7 show the cams used for giving motion to the various parts. The cams in these views are shown in the positions they have in Figs. 1 and 2. Figs. 8, 9, 10, and 11 are sectional diagram views illustrating the manner in which the pellets are placed onto the backing-cloth. Fig. 12 is a plan view of one of the cylinders by which the pellets are delivered from the hoppers. Fig. 13 is a vertical section through the vertical ends of the pellet-delivery channels. Fig. 14 shows the cam-shaft with the cams upon it. Fig. 15 is a diagram view of a modified form of the machine. In this modification the hoppers containing the pellets are arranged one above the other in place of in a horizontal row. Fig. 16 is a diagram view showing how this form of the machine may be duplicated and arranged to deliver two rows of pellets onto the cloth at each movement instead of a single row.

The machine shown at Figs. 1 and 2 might similarly be duplicated.

A A' A<sup>2</sup> are three hoppers, each containing a supply of pellets.

B B' B<sup>2</sup> are cylinders closing the bottom outlets from these hoppers.

C C' C<sup>2</sup> are channels terminating close to the under side of the cylinders. The channels C are continued downward to just above the fabric or surface onto which the pellets are to be delivered. The channels C' C<sup>2</sup> lead into the channels C. The cylinders have holes formed in them, into which pellets drop from the hoppers. Each hole is preferably made of such a depth that one pellet only can be received within it; but, if desired, the holes might each be of a depth to receive two or more pellets.

C<sup>x</sup> is a revolving brush placed along the bottom of each hopper. It brushes away all superfluous pellets from the cylinder and insures that a single pellet only shall be carried away in each of the holes of the cylinder. The holes are arranged in circles around the circumference of the cylinders, and there is a separate channel C C' or C<sup>2</sup> corresponding with each circle of holes. The holes also are in straight rows along each cylinder, as shown at Fig. 12. The lower ends of the channels C are made vertical, and a plunger D is worked up and down in each of them.

E is an endless band, upon which the cloth-backing which is to be covered with floor-cloth material is conveyed past the ends of the channels C.

E' E<sup>2</sup> are cylinders, between which the endless band E is stretched.

F is a horizontal plate below the ends of

the channels C. The endless band passes between the ends of the channels and this plate. The plate can be raised or lowered. When raised, it holds the endless band up to the ends of the channels; but when lowered the band descends with it.

G is a cam-shaft, upon which are cams for giving movement to the several parts. The cams B<sup>x</sup> are for giving a step-by-step revolving movement to the cylinders B. The cams D<sup>x</sup> are for giving an up-and-down movement to the plungers D. The cams E<sup>x</sup> are for giving a step-by-step revolving movement to the endless band E, and the cams F<sup>x</sup> for giving an up-and-down movement to the plate F. The cams B<sup>x</sup> act upon lever-arms B<sup>3</sup>, which stand up from a shaft B<sup>4</sup>. At the top these arms are attached to a bar B<sup>5</sup>, which is itself connected to two other bars B<sup>6</sup>, one at each side of the machine. These bars are coupled to arms B<sup>7</sup>, which can turn around the ends of the cylinders B B' B<sup>2</sup>, and which carry pawls B<sup>8</sup>, that engage with ratchet-wheels B<sup>9</sup>, which are fast with the cylinders. B<sup>10</sup> are springs which draw the bars B<sup>6</sup> endwise and keep the arms B<sup>3</sup> resting against the cams B<sup>x</sup>. The cams D<sup>x</sup> act upon lever-arms D<sup>3</sup>, which stand out from a shaft D<sup>4</sup>, and other arms D<sup>5</sup> on this shaft are coupled to a bar D<sup>6</sup>, which operates the plungers. D<sup>7</sup> are springs by which vertical projections on the bar are drawn upward through guides D<sup>8</sup>. The cams E<sup>x</sup> act upon arms E<sup>3</sup>, which stand up from a shaft E<sup>4</sup>, and other arms E<sup>5</sup> on this shaft are coupled to rods E<sup>6</sup>, which in turn are coupled to arms E<sup>7</sup>, which can turn around the ends of the cylinder E<sup>2</sup> and carry pawls E<sup>8</sup>, which engage with ratchet-wheels which are fast with this cylinder. E<sup>9</sup> are springs which draw the rods E<sup>6</sup> endwise and keep the arms E<sup>3</sup> against the cams E<sup>x</sup>. The cams F<sup>x</sup> act upon lever-arms F<sup>3</sup> on a shaft F<sup>4</sup>, and other arms F<sup>5</sup>, which project from this axis, carry the plate F. The weight of this plate is sufficient to keep the arms F<sup>3</sup> bearing upon the cams.

The action of the machine is as follows: In Fig. 8 the plungers D are shown to have been just raised and pellets which previously were at the bottom of the inclined portion of the channel C and resting against the sides of the plungers D have rolled down onto the backing-cloth carried by the endless band E, the cloth being at this time held up against the bottom of the channels C by the plate F. Afterward the plunger D descends and squeezes the pellet into a flat rectangular cake of the form of the lower end of the channel C. The parts are shown in this position in Diagram 9. About this time or somewhat earlier the cylinders B B' B<sup>2</sup> commence to rotate to deliver a fresh set of pellets into the channels C C' C<sup>2</sup>. When the pellets have been flattened into rectangular cakes onto the backing-cloth, the plate F descends and the plungers have a slight farther downward movement given to them, which discharges the flattened cakes from the ends of the chan-



nels C. The parts are shown in this position in Diagram 10. The plunger then immediately rises into the position shown in Diagram 11 and remains there during the time  
 5 that the backing-cloth is moved forward a distance by the endless band E and until a fresh set of pellets have arrived at the bottom of the channels C. The parts are shown in this position in Diagram 11. The cloth  
 10 after it passes from the machine is led between heated plates or rollers and is pressed, so as still further to flatten out the pellets which are upon the surface of the cloth, and so cause all the interstices between them to  
 15 be filled up, so producing a perfect coating of uniform thickness over the whole surface of the backing.

As shown by the diagram view, Fig. 15, the hoppers A A' A<sup>2</sup>, in place of being ranged in  
 20 a horizontal row, might be placed one above the other.

The machine also may be duplicated, so as to deposit two rows of pellets onto the cloth at each movement in place of a single row only.

25 What we claim is—

1. In apparatus for the manufacture of coverings for floors and other surfaces, the combination of a surface against which one side  
 30 of the backing rests, tubes or channels which are normally empty on the other side of the backing, means for delivering into each tube or channel one or more pellets containing a sufficient quantity of plastic material to form a portion of the face of the material equal in  
 35 area to that occupied by the tube, and means for flattening said pellets onto the backing.

2. In apparatus for the manufacture of coverings for floors and other surfaces, the combination of tubes or channels, means for delivering pellets of plastic material into the  
 40 tubes, means for depositing the pellets separately on the surface of a backing, and means for afterward flattening said pellets onto the backing.

45 3. In apparatus for the manufacture of coverings for floors and other surfaces, the combination

of a surface against which one side of the backing rests, tubes or channels on the other side of the backing, plungers working in them, and branch tubes for delivering pellets into them. 50

4. In apparatus for the manufacture of coverings for floors and other surfaces, the combination of a surface against which one side  
 55 of the backing rests, tubes or channels on the other side of the backing, means for delivering pellets of plastic material into them, plungers working in them, and means for causing the surface to approach and recede from their mouths. 60

5. In apparatus for the manufacture of coverings for floors and other surfaces, the combination of a number of hoppers containing pellets of plastic material, cylinders at the  
 65 mouths of the hoppers, recesses in the cylinders, means for giving a step-by-step motion to the cylinders, means for conveying the pellets from the cylinders onto a backing, and means for consolidating the pellets onto the backing. 70

6. In apparatus for the manufacture of coverings for floors and other surfaces, the combination of a number of hoppers containing pellets of plastic material, cylinders at the  
 75 mouths of the hoppers, recesses in the cylinders, means for giving a step-by-step motion to the cylinders, tubes or channels to convey the pellets from the cylinders onto one side of a backing, plungers working in the tubes or  
 80 channels, a surface on the other side of the backing, means for giving a step-by-step motion to the backing, and means for causing the surface to approach and recede from the mouths of the tubes or channels.

ARTHUR SIDNEY OETZMANN.

SAMUEL JOHN NARRACOTT.

Witnesses:

G. F. WARREN,  
*Notary Public, 17 Gracechurch Street, London.*

JOSEPH LAKE,  
*17 Gracechurch Street, London, E. C.*