

M. R. Fletcher. Planing-Machine.

N^o 74333

Patented Feb. 11, 1868.

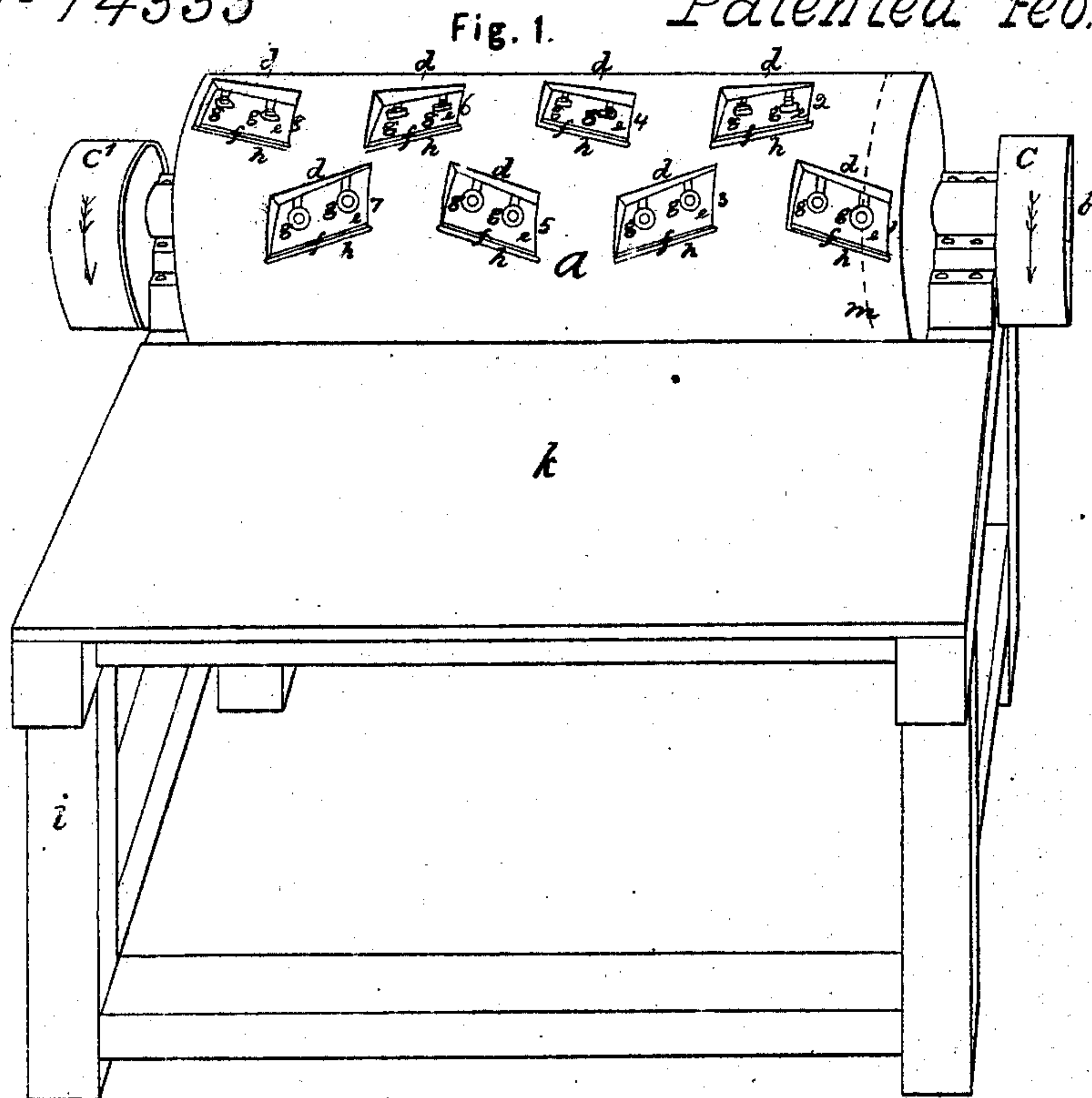


Fig. 2.

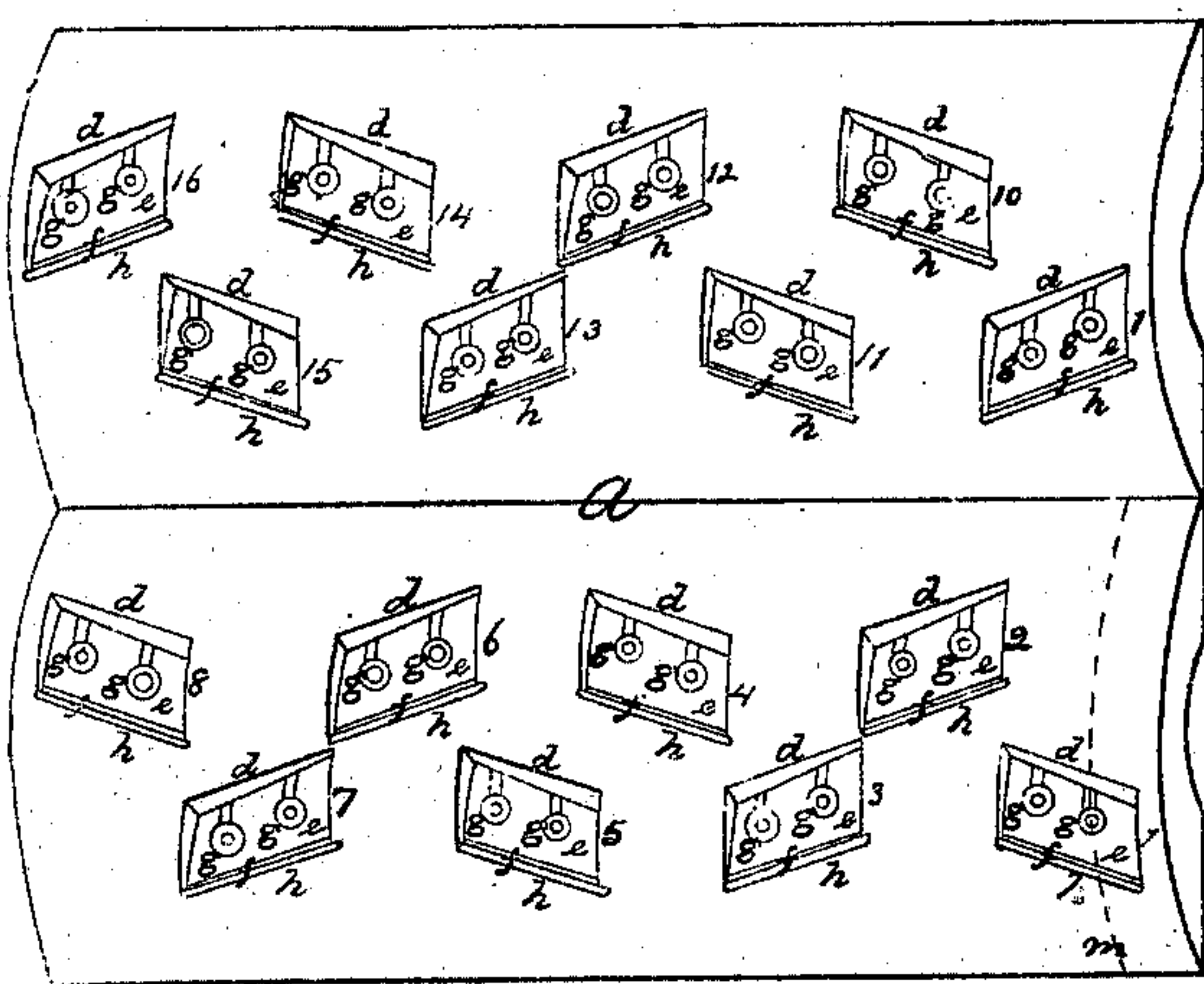


Fig. 3.

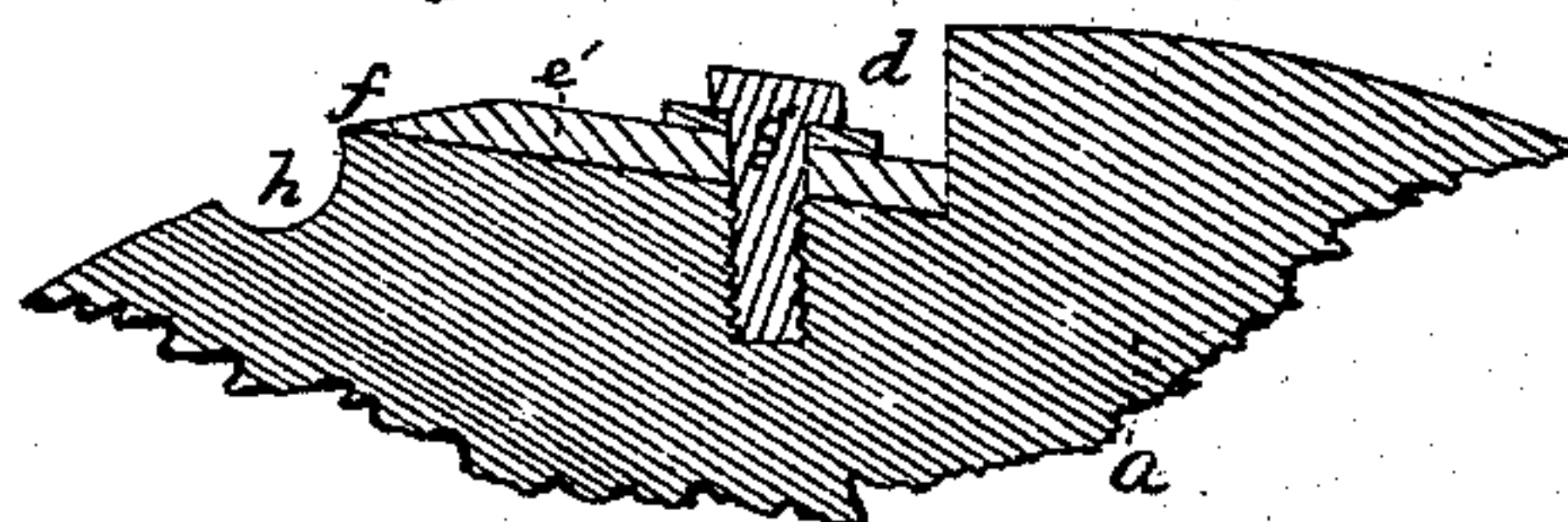
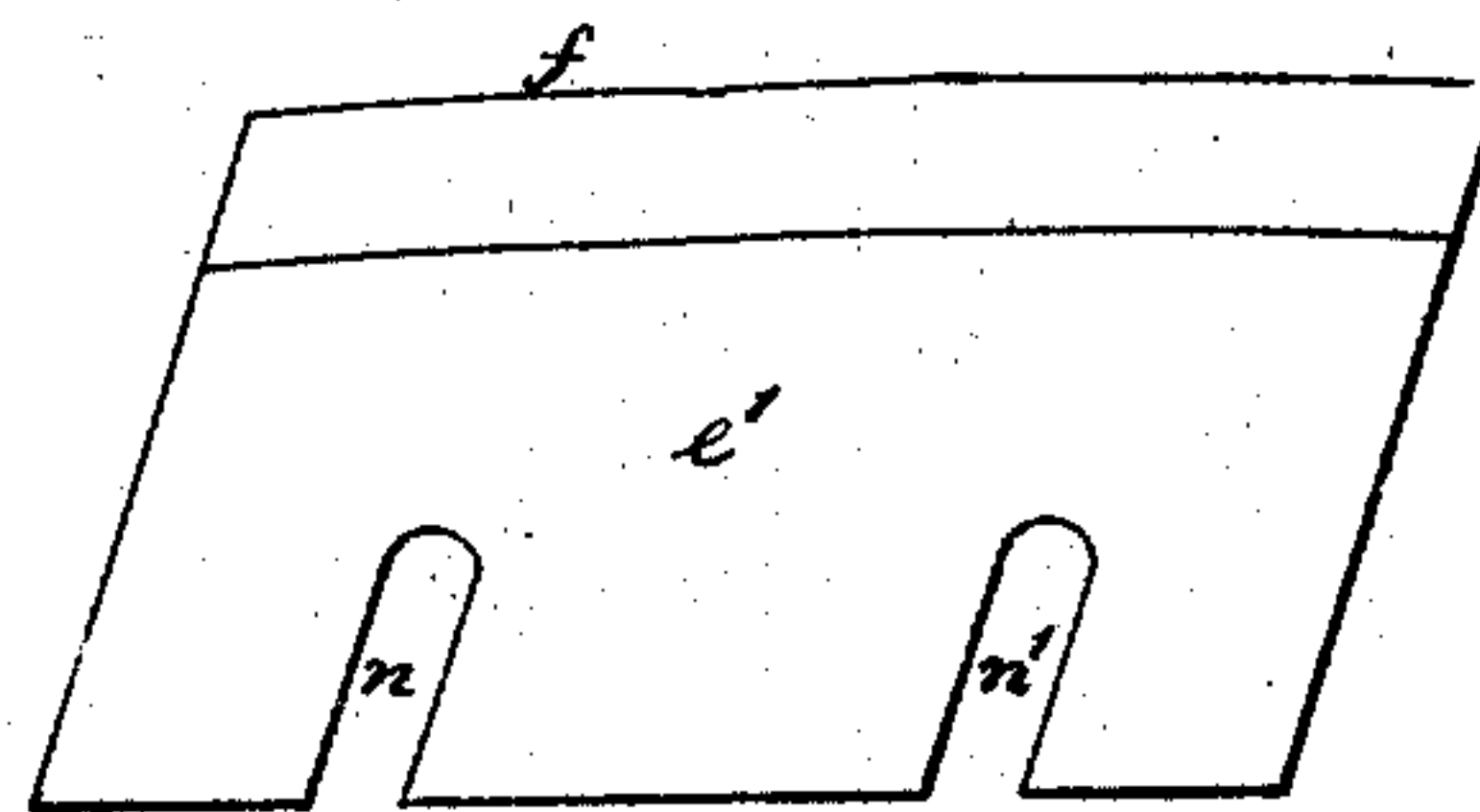


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

MOORE R. FLETCHER, OF CAMBRIDGE, MASSACHUSETTS.

IMPROVEMENT IN PLANING-MACHINES.

Specification forming part of Letters Patent No. 74,333, dated February 11, 1868.

To all whom it may concern:

Be it known that I, MOORE R. FLETCHER, of Cambridge, in the county of Middlesex, in the State of Massachusetts, have invented a new and Improved Mode of Cutting Shavings from Wood, for the purpose of making said shavings into pulp for making paper; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, with the letters of reference marked thereon, making a part of this specification, in which—

Figure 1 is a drawing taken from the front, top, and right side of a machine for cutting shavings from wood. Fig. 2 is a drawing of the cylinder removed from its arbor and cut in halves, so as to show the positions of the cutters on the opposite sides of said cylinder. Fig. 3 is a drawing of an end view, on an enlarged scale, of a fragment of a segment of said cylinder, cut in a line perpendicular to the axis of said cylinder at the point indicated by the dotted line *m* in Figs. 1 and 2, so as to show the angle at which the cutters are fastened to said cylinder; and Fig. 4 is a top view of one of the cutters, drawn on an enlarged scale, showing the slots *n n'*, through which the screws pass to fasten said cutters to said cylinder.

The same letters refer to similar parts in all the drawings.

The nature of my invention consists, first, in cutting shavings from wood, so that each of said shavings shall be cut at an angle obliquely across a line parallel with the longitudinal line of the fiber or grain of said wood, and in such a manner that each successive shaving shall be cut in a direction or at an angle opposite or obliquely opposite from its predecessor, for the purpose of rendering said shavings more easily and cheaply reducible by subsequent treatment to the condition of pulp for making paper than if cut by any of the methods heretofore known or used; second, in affixing on a revolving cylinder, and on an un-deviating line around the surface of said cylinder, two or more cutters, so that the cutting-edges of said cutters, which will, as said cylinder revolves, pass through the same space, shall stand alternately in opposite directions from each other, but each of them at the same

angle from a line parallel with the axis of said cylinder, for the purpose of cutting shavings at an angle obliquely across a line parallel with the longitudinal line of the fiber or grain of the wood, and also for the purpose of cutting each successive shaving in a direction or at an angle opposite or obliquely opposite from its predecessor.

Having stated the nature of my invention, I will now proceed to describe the manner in which I have carried it out.

Letter *a*, Fig. 1, is a cylinder, made of iron, and provided with an arbor, *b*, Fig. 1, and driving-pulleys *c c'*, Fig. 1, on said arbor. Letters *d*, Figs. 1, 2, 3, denote recesses in the cylinder *a* to receive the cutters. Letters *e¹ e² e³ e⁴ e⁵ e⁶ e⁷ e⁸* denote the cutters on the front side of the cylinder *a*, as shown in the drawing in Fig. 1 and Fig. 2. Letters *e⁹ e¹⁰ e¹¹ e¹² e¹³ e¹⁴ e¹⁵ e¹⁶* denote the cutters on the rear side of the cylinder *a*, as seen in the drawing in Fig. 2. Letters *f*, Figs. 1, 2, 3, 4, denote the cutting-edges of the cutters, said cutting-edges being ground so as to correspond with the curved surface of the cylinder *a*. Letters *g*, Figs. 1, 2, 3, denote screws provided with washers for holding the cutters in position. Letters *h*, Figs. 1, 2, 3, denote shallow recesses in the cylinder *a* in front of the cutters. Letter *i*, Fig. 1, is a frame, on which the cylinder *a* is mounted. Letter *k*, Fig. 1, is a bed-piece attached to the frame *i*.

The cutters are fastened to the cylinder, so that their cutting-edges (letters *f*, Figs. 1, 2, 3, 4) will stand at an angle of twenty degrees from a line parallel with the axis of the cylinder, one half of the whole number of the cutting-edges of said cutters being placed in opposite directions from the other half, as shown in the drawing in Fig. 2.

The above-named angle of twenty degrees is not indispensable. Many other angles will answer well.

The cutters are fastened to the cylinder so that they will stand at an angle of ten degrees from the longitudinal line of the cylinder, as shown in the drawing in Fig. 3.

The above-named angle of ten degrees is not indispensable. Several other angles will answer; but it is obvious that the more nearly said cutters are made to stand at an angle of

ninety degrees from the longitudinal line of the cylinder the more they will act on the wood as scrapers and the less as cutters.

The thickness of the shavings is regulated by the distance which the cutting-edges of the cutters project beyond the surface of the cylinder. The cylinder may be of any convenient diameter and length. I have found a cylinder ten inches in diameter and twenty-five inches long to answer well. The wood to be cut into shavings I prefer should be unseasoned timber, from trees recently felled; but dry or seasoned wood will answer. I saw the timber in the usual way into plank about three inches in thickness, and then saw said plank into lengths of about twenty-four inches. The cutting-edges of the cutters may be of any desired length; but at present I prefer making them about three and a quarter inches long. The plank to be cut into shavings may be pressed up against the cylinder by hand, or by any convenient mechanical device.

Supposing the machine shown in Fig. 1 to be properly made and adjusted, I now place a piece of plank on the bed-piece *k* in such a manner that the longitudinal line of the fiber or grain of said plank will be parallel with or nearly parallel with the axis of the cylinder *a*, and I then press the edge of said plank firmly against the said cylinder. Motion being given to the driving-pulleys *c c'*, Fig. 1, in the direction of the arrows on said pulleys, the cylinder *a*, Fig. 1, will commence turning, and the cutting-edge of the cutter *e*¹, Figs. 1 and 2, will come in contact with said plank in such a manner that the cutting-edge of said cutter will cut a shaving from right to left at an angle obliquely across a line parallel with the longitudinal line of the fiber or grain of said plank; and as said cylinder continues to turn the cutting-edge of the cutter *e*⁹, Fig. 2, passing through the same space as the cutting-edge of the cutter *e*¹, will also come in contact

with said plank, and will cut a shaving from left to right obliquely across a line parallel with the longitudinal line of the fiber or grain of said plank, and at an angle opposite or obliquely opposite to the cut made by the cutting-edge of the cutter *e*¹. The shavings, as they are cut from the plank, will enter the shallow recesses *h*, Figs. 1, 2, 3, from which recesses they will be thrown out by the rotary motion of the cylinder *a*.

That which is true, as above described, in regard to the operations of the cutting-edge of the cutter *e*¹ and *e*⁹, is also true of the cutting-edge of the cutter *e*⁴ and *e*¹², *e*⁵ and *e*¹³, *e*⁸ and *e*¹⁶, and true substantially—and strictly true so far as the effects produced are involved—in regard to the operations of the cutting-edge of the cutter *e*² and *e*¹⁰, *e*³ and *e*¹¹, *e*⁶ and *e*¹⁴, *e*⁷ and *e*¹⁵; and the effects produced by the operations described will continue to be repeated by each revolution of the said cylinder so long as said cylinder revolves and plank is supplied to it.

The wood to be cut into shavings I prefer should be pine, bass, spruce, poplar, or white-wood; but many other kinds will answer.

What I claim as my invention, and desire to secure by Letters Patent, is—

Arranging on a revolving cylinder, and on an undeviating line around the surface of said cylinder, one or more series of inclined cutters, so that the cutting-edges of said cutters in each series will, as said cylinder revolves, pass through the same space and stand alternately in opposite directions from each other, but each of them at the same angle from a line parallel with the axis of said cylinder, in the manner substantially as described, for the purpose herein specified.

MOORE R. FLETCHER.

Witnesses:

J. C. CROSSMAN,
ALFRED ORDWAY.