

J. J. Fairbanks,

Making Skirt Springs.

N^o 57,305.

Patented Aug. 21, 1866.

Fig. 2.

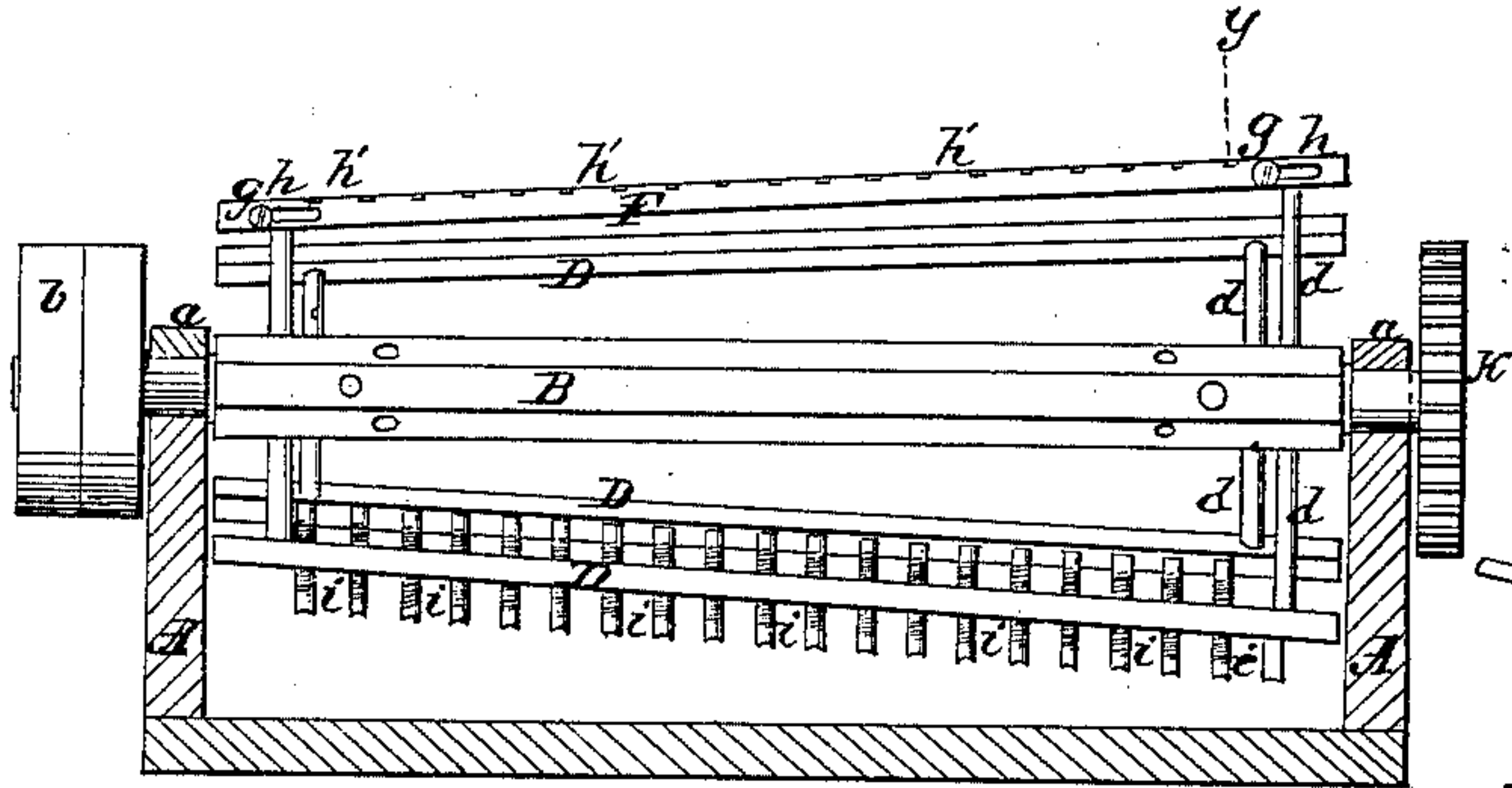


Fig. 3.

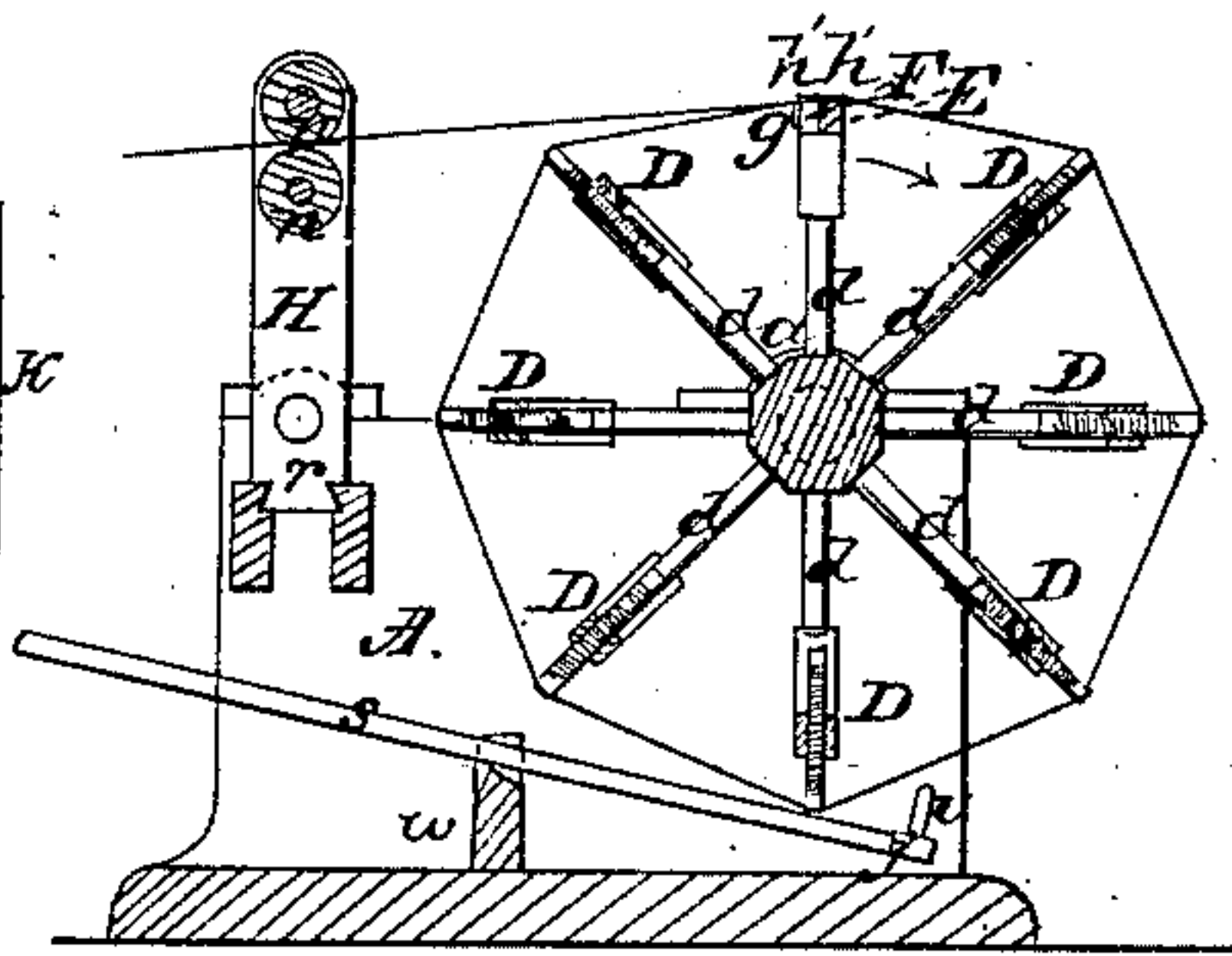


Fig. 1.

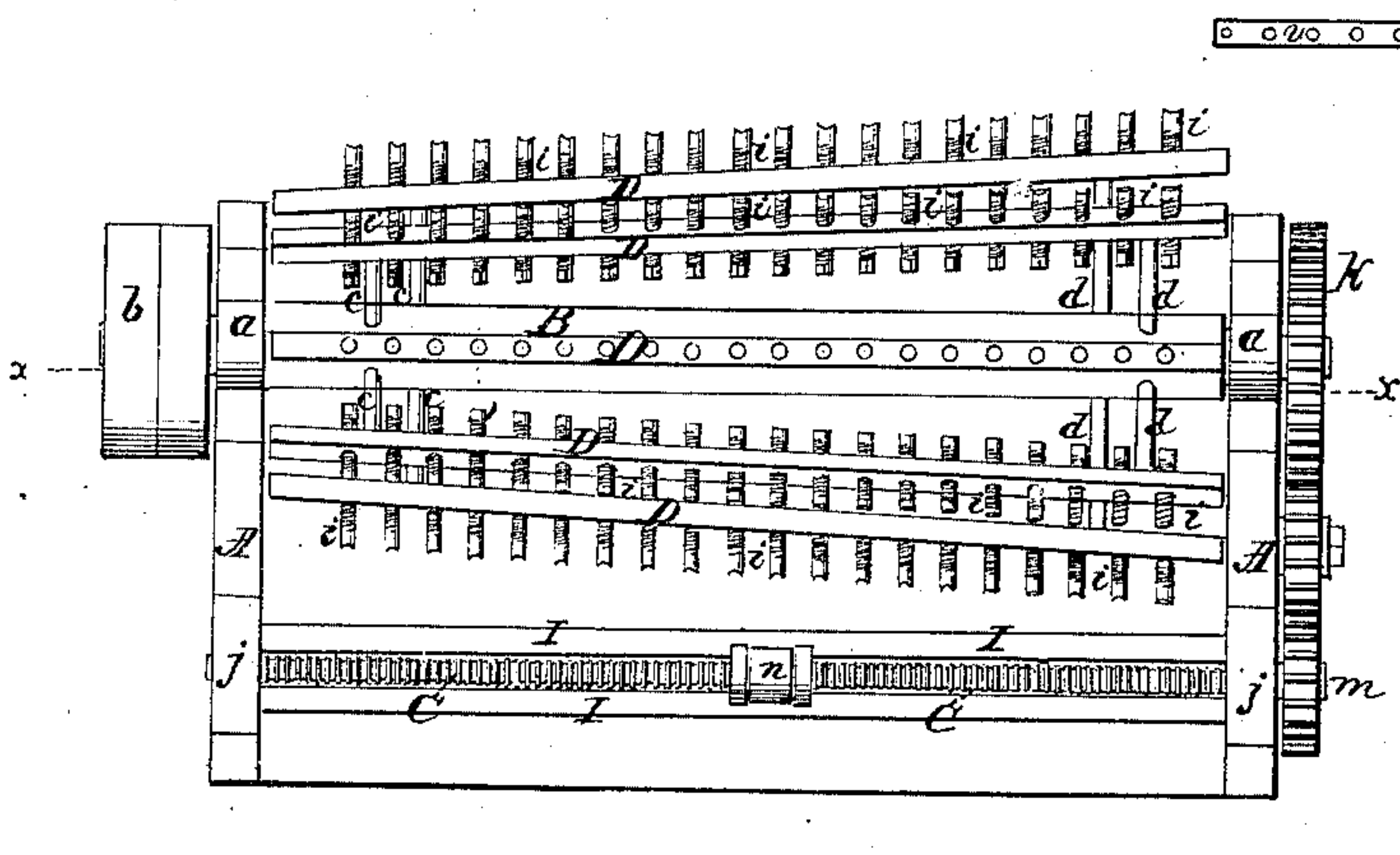
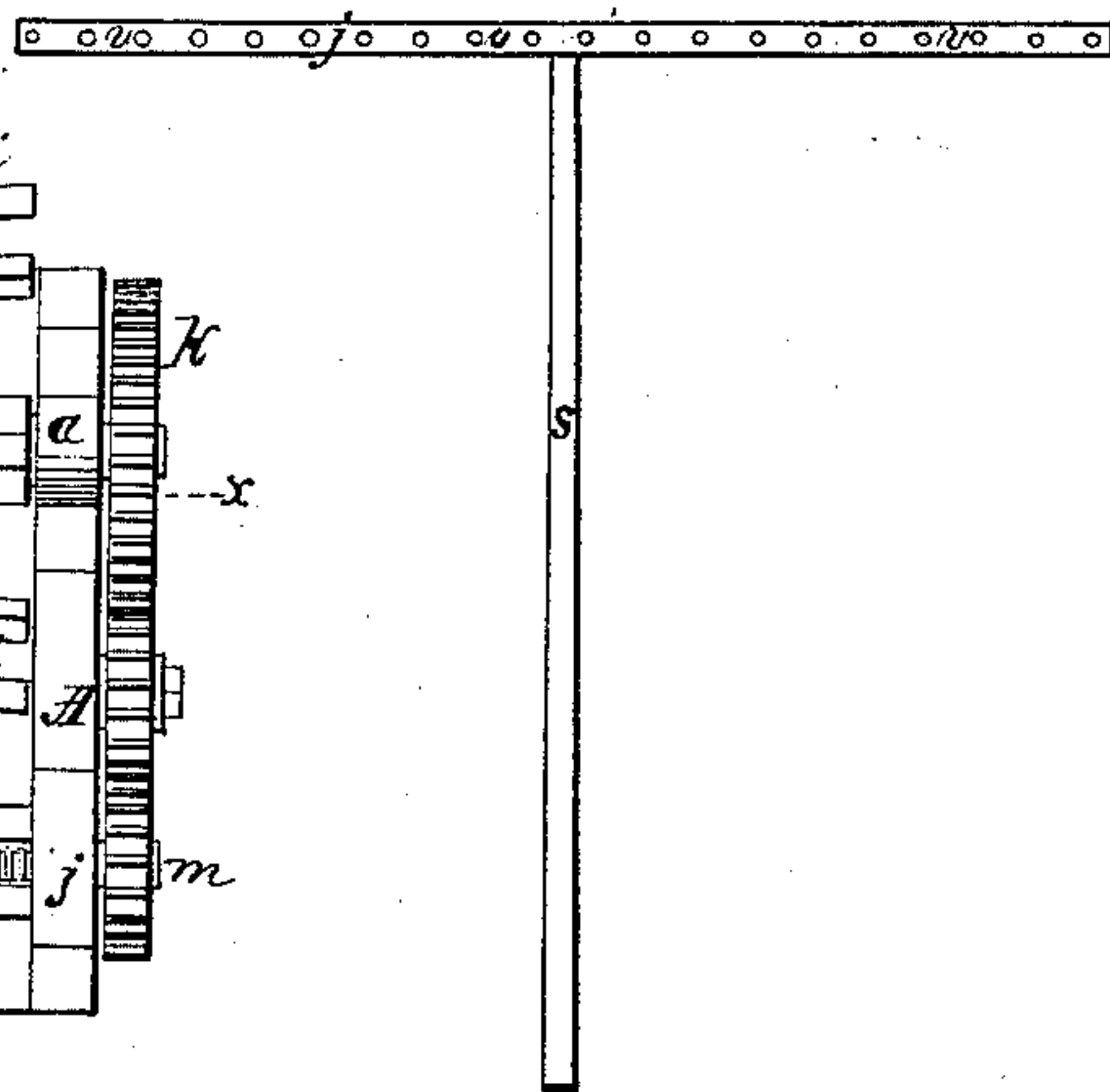


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

J. J. FAIRBANKS, OF NEW YORK, N. Y.

IMPROVED MACHINE FOR FORMING AND CUTTING SKIRT-SPRINGS.

Specification forming part of Letters Patent No. 57,305, dated August 21, 1866.

To all whom it may concern:

Be it known that I, JOHN J. FAIRBANKS, of the city, county, and State of New York, have invented a new and Improved Machine for Measuring and Cutting Wire into lengths of various sizes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a plan or top view. Fig. 2 is a vertical longitudinal section, taken in the line *x x* of Fig. 1. Fig. 3 is a transverse vertical section, taken in the line *y y* of Fig. 2. Fig. 4 is a detached plan of a portion of my invention.

Similar letters of reference indicate corresponding parts in all the figures.

This invention is designed more especially for making the hoops or springs of hoop-skirts, and is designed to dispense with the frame upon which the said hoops or springs have hitherto been formed and cut.

It consists in a machine composed of a reel, the longitudinal profile of which corresponds with that of the skirt for which the springs are intended, a set of cutters for cutting the wire after it is wound upon the reel, and a traversing guide for guiding the wire so that it is wound spirally upon the said reel.

The invention further consists in a novel means of adjusting the diameter and longitudinal profile of the reel to form springs of different sizes, and also in a novel means of preventing the springs from being intermingled as they are removed from the machine.

To enable others to understand the construction and operation of my invention, I will proceed to describe it with reference to the drawings.

A is a supporting frame-work, upon which are situated the working parts of the machine. B is a longitudinal shaft, which may be made polygonal in its cross-section, and the ends of which work in suitable bearings *a* on the frame-work A. This shaft receives a rotary motion by means of a belt acting upon the pulley *b* fixed upon one end thereof. Fixed in each of the different sides of the shaft B are two radial arms, *c d*, which are placed in transverse holes in the said shaft, and secured therein by

set-screws, or other suitable means, in such manner that they may be removed in or out when desired to adjust their length with reference to the shaft B, as will be presently explained. Secured upon the outer end of one pair of these arms *c d* is an inclined longitudinal bar, E, and in like manner upon each other pair of the said arms is fixed a similar bar, D, these bars being thus ranged around the shaft B, as clearly shown in Fig. 3, and constituting, in connection with the said shaft, the reel upon which the steel wire is wound previous to being cut into lengths suitable for springs. Inasmuch as the arms *c* are shorter than the arms *d*, the bars D and the bar E are inclined, as shown in Figs. 1 and 2, so that the reel is somewhat conical in form, the inclination of the bars with reference to the central shaft, B, being in proportion to the difference between the diameters of the top and bottom of the skirt, for which the springs are designed. By moving the arms *c d* farther in or out from the shaft B, the bars may be placed at any desired distance from the said shaft in order to enlarge or diminish the reel for making springs for skirts of different sizes. The angle of the bars with regard to the shaft may be changed to suit the requirements of skirts of different patterns.

F is a sliding cutting-bar attached to one side of the fixed cutting-bar E by means of broad-headed pins or screws *g*, working in slots *h*, formed longitudinally in the said sliding bar F. Upon the outer edges of these bars E F is a series of transverse grooves or notches, *h'*, the grooves upon one set of the said bars being in line with those of the other when the wire is wound around the reel B D, and the wire being passed through them when wound around the said reel in such manner that by sliding the bar F the edges of the grooves or notches *h'* will cut or shear through the wire and thus cut it into the lengths which constitute the springs, as will be hereinafter more fully set forth.

Placed longitudinally upon each of the bars D is a row of pins or screws, *i*, which are placed in suitable holes in the said bars, and are perpendicular to the central shaft, B, and arranged in a spiral line around the reel B D in as many concentric series as there are screws

i upon each bar D. These pins or screws *i* are made adjustable in the direction of their length, so that their outer ends may be adjusted to describe any desired curve longitudinally with the bars D, upon which they are placed, the said curves being proportioned to the curvature of the sides of the skirt for which the springs are intended. When the wire is wound around the reel B D it is placed upon the outer ends of these pins or screws *i*.

Situated in front of the reel B D, and working in suitable bearings *j* in the ends of the frame A, is a longitudinal screw, G, which receives a rotary motion from the rotation of the shaft B by means of spur-wheels *k l m*. Fitted upon this screw G is a carriage, H, which is formed with an internal screw, which is acted upon by the revolutions of the screw G, to move or slide the said carriage as required in the operation of the machine. The lower end, *r*, of this carriage H projects downward below the screw G, and is placed between two longitudinal bars, I, which act as guides to keep it in an upright position upon the said screw. In the upper end of this carriage H are two horizontal guide-rollers, *n*, one above the other, as shown in Fig. 3.

The wire from which the springs are made is first coiled upon a reel of ordinary construction placed in front of the machine. One end of the said wire is then passed between the guide-rollers *n* of the carriage H (which is placed opposite the large end of the reel) and secured to the outer extremity of one of the pins or screws *i* at the largest end of the reel B D, and a rotary motion in the direction of the arrow shown in Fig. 3 is communicated to the said reel by a belt on the pulley *b*. This rotation of the reel B D draws the wire through and between the guide-rollers *n* and winds it around the said frame upon the ends of the pins or screws *i*, as shown in red lines in Fig. 3, the said ends of the pins or screws *i* being notched, as shown in Figs. 1 and 2, to prevent the wire from slipping sidewise from them. The screw G, being rotated at the same time, moves the carriage H along, so that the wire is successively deposited upon each concentric row or series of screws *i*, from the largest to the smallest end of the reel B D, the wire being thus wound spirally around the said reel, and each coil of the wire, as it is placed upon the pins *i*, passing through or lying in the

grooves or notches *h'* in the outer side of the bars E F. The wire being thus wound around the reel B D, as just set forth, the rotary motion of the said reel is stopped and the bar F is then pushed or forced forward longitudinally upon the bar E, so that the edges of the grooves or notches *h'* in the said bars shear or cut through each coil of the wire upon the reel, thus cutting it into springs varying in length from the shortest, formed upon the smallest end of the frame B D, to the longest, formed upon the largest end thereof, the length of the intermediate springs being determined by the distance from the central shaft, B, of the outer ends of the intermediate pins or screws *i*.

In Fig. 4 is shown a bar, J, which is fixed transversely upon the end of a handle, S, and is provided with teeth or spurs *u*, which are the same distance apart as the pins or screws *i* upon the bars D of the reel B D. Just before cutting the springs, as just set forth, this bar J is pushed underneath the reel B D, as shown in Fig. 3, with its handle S resting on a short supporting-block, *w*, and with its spurs *u* in line with the concentric series of pins or screws *i*, so that when the springs are cut one spring will fall into each space between the spurs *u*, so that the springs of different sizes or lengths may be drawn out from the machine and deposited upon a suitable table without becoming intermingled with each other. This being done the screw G is rotated in a direction opposite to that just set forth, so that the carriage H is brought back to its first position.

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

1 A machine for measuring and cutting off wire into various lengths from a continuous piece, consisting of a rotating reel with attached cutters and a traversing guide, combined substantially as herein set forth, for the purpose specified.

2. The adjustable pins or screws *i*, in combination with the reel B D, substantially as herein set forth, for the purpose specified.

3. The bar J, furnished with spurs *u* and fixed upon a handle, S, and used in connection with the reel B D, substantially as herein set forth, for the purpose specified.

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Witnesses:

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S. P. NEWELL.