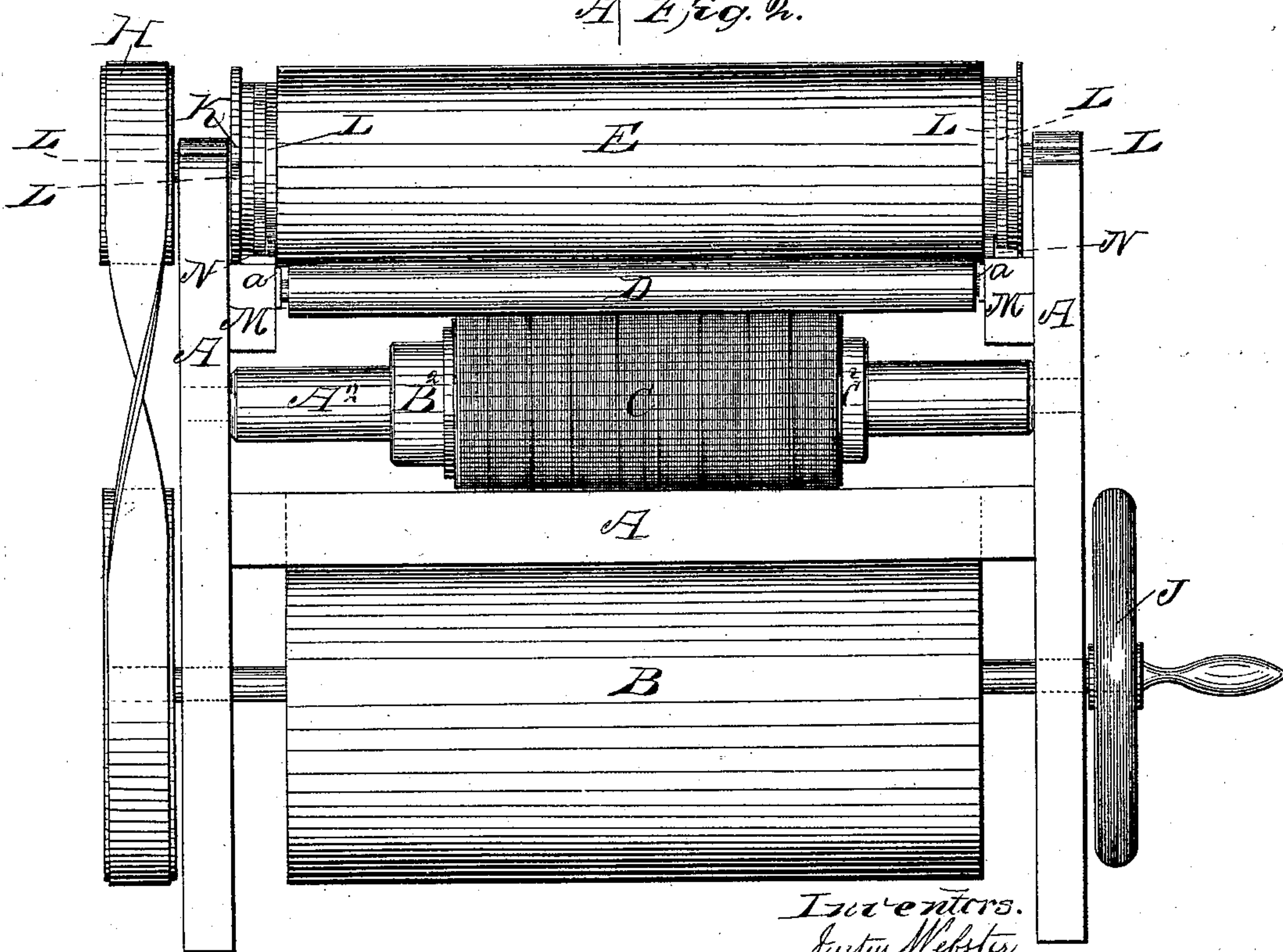
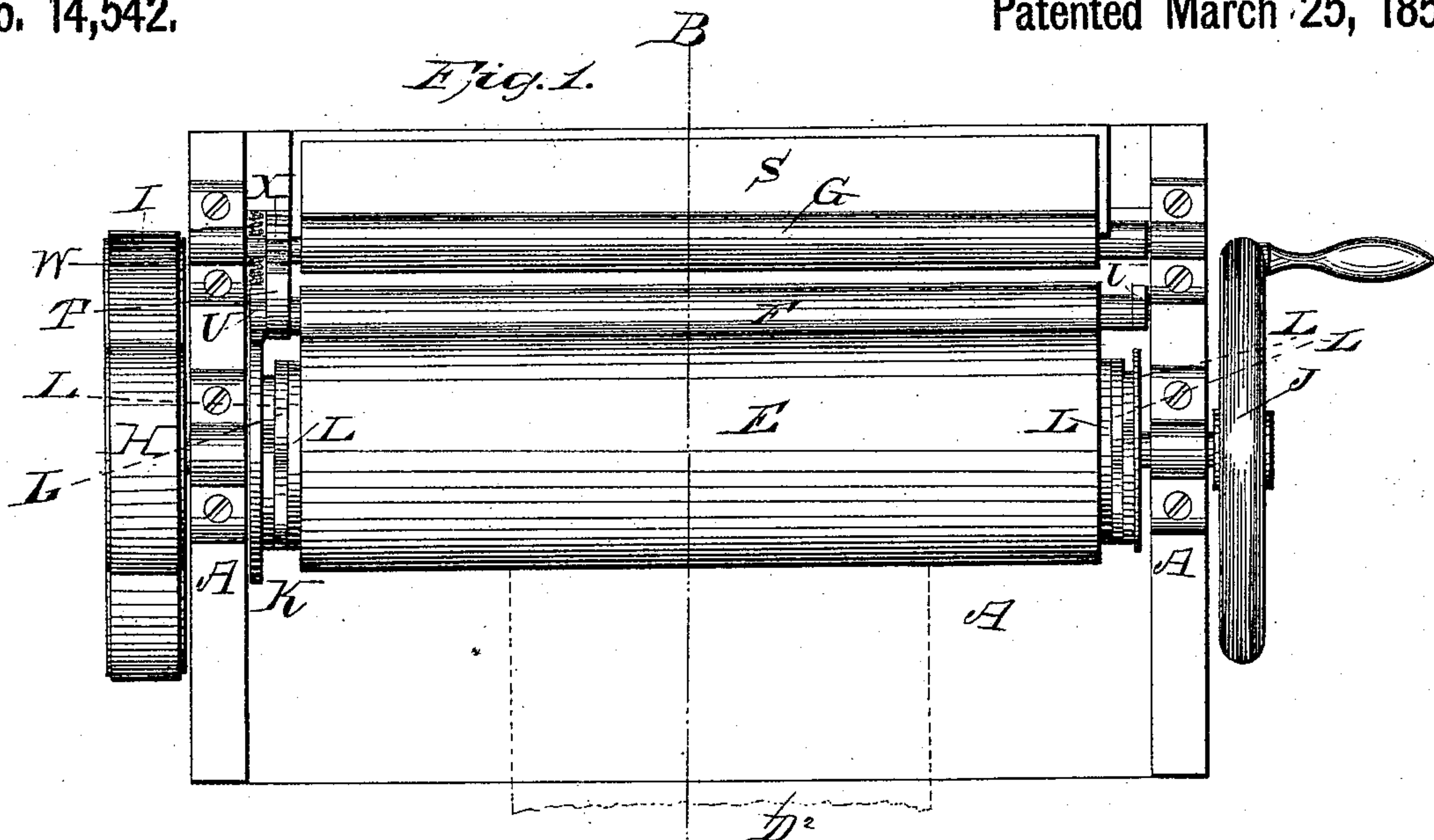


J. WEBSTER & S. H. FOLSOM.

Printing Engineers and Surveyors Paper.

No. 14,542.

Patented March 25, 1856.



*Inventors.*  
*Justus Webster*  
*Samuel H. Folsom*

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Fig. 6.

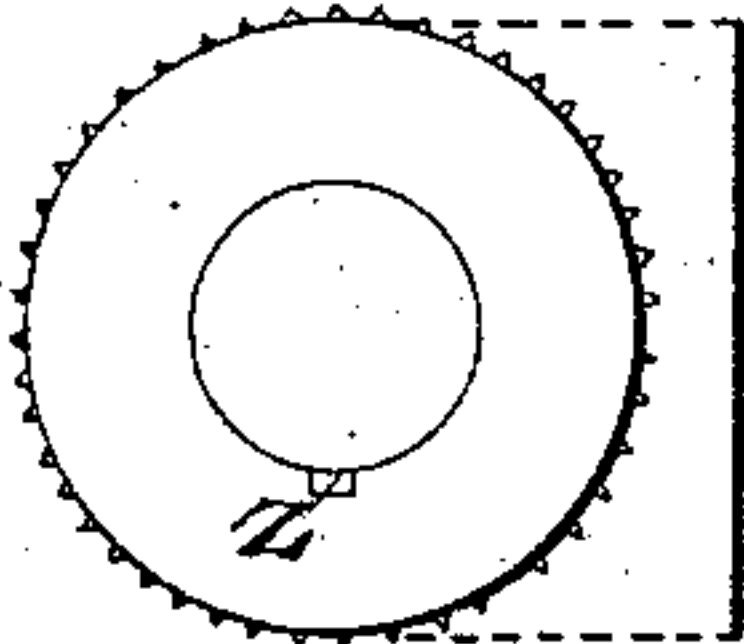


Fig. 7.

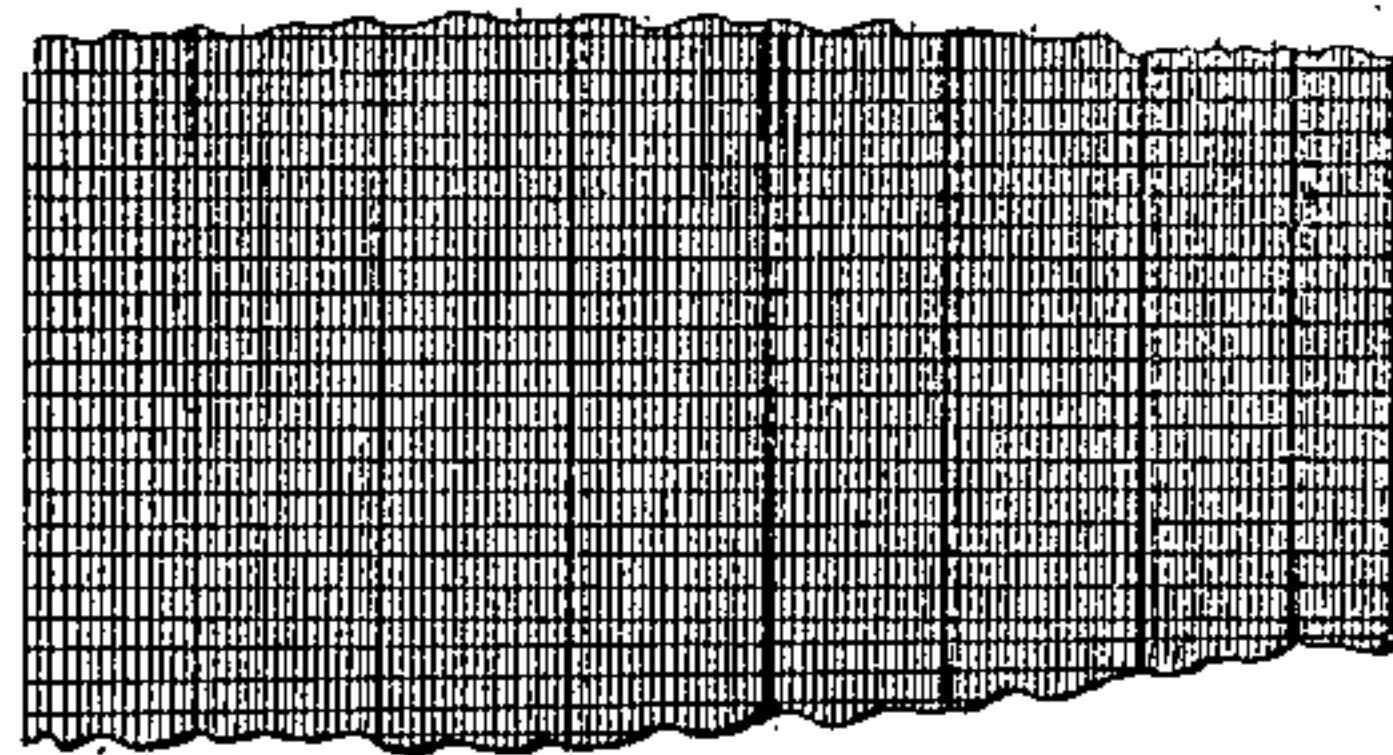


Fig. 5.

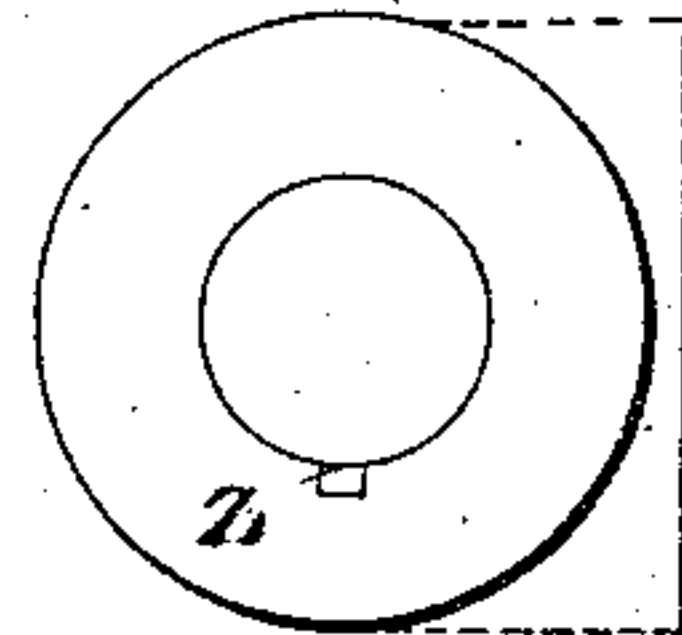


Fig. 3.

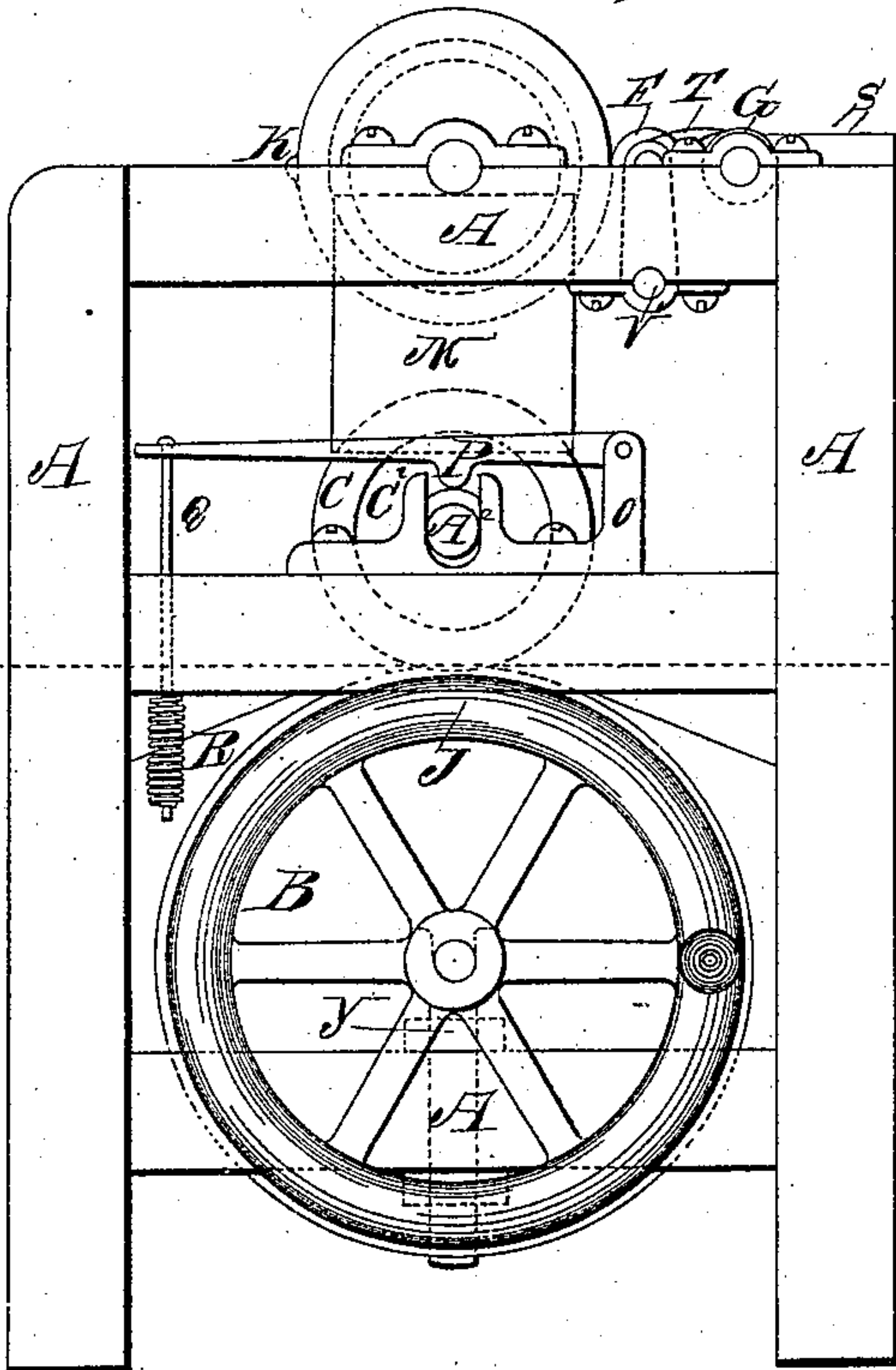
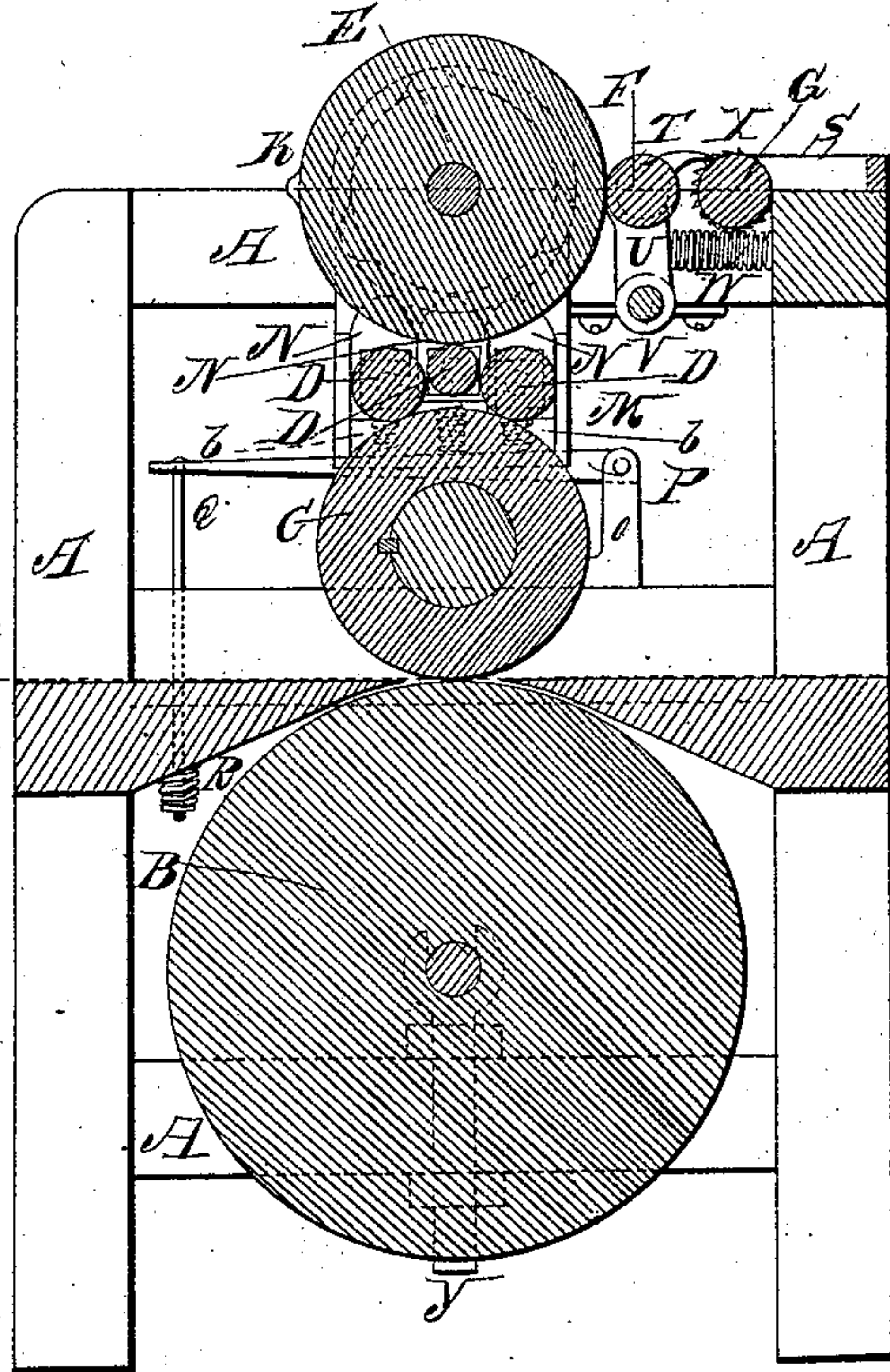


Fig. 4.



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# UNITED STATES PATENT OFFICE.

JUSTUS WEBSTER, OF BOSTON, AND SAML. H. FOLSOM, OF LOWELL, MASSACHUSETTS.

## PRINTING-CYLINDER.

Specification of Letters Patent No. 14,542, dated March 25, 1856.

*To all whom it may concern:*

Be it known that we, JUSTUS WEBSTER, of Boston, in the county of Suffolk, and SAMUEL H. FOLSOM, of Lowell, in the county of Middlesex, both in the commonwealth of Massachusetts, have invented a new and useful machine and manufacture of continuous printed paper or other substance for the use of engineers, surveyors, carpet and other designers, and for giving the profile views of railroads and other purposes; and we hereby declare, that the following specification and accompanying drawings and references thereon constitute a lucid, clear, and exact description of our said manufacture and of the machine and printing-cylinder therein by which the printing is effected.

In referring to the said drawings Figure 1, is a plan or top view; Fig. 2, a front side elevation; Fig. 3, an end elevation; Fig. 4, a transverse and vertical section, on line A, B, Fig. 1. Fig. 5, denotes one of the disks, of which the printing cylinder is made, which prints the continuous lines on the paper or other substance. Fig. 6 denotes a view of one of the disks or rings of which the printing cylinder is made for printing the transverse lines on the paper or other substance. Fig. 7 is a view of a piece of the printed paper after passing through our machine.

*Invention.*—In delineating the grades, profiles and curves of railways, it is necessary to have the paper and printing thereon of one continuous length, on which such delineation is to be made in order that the drawings may be sufficiently accurate for use. The same kind of paper is also necessary in drawings for various other purposes in the arts, such as the streets of cities, and other thoroughfares, and for the use of engineers and carpet designers, and other figured fabrics.

Therefore the nature of our invention consists in the printing of paper or other substance of any desired length in a series of horizontal and transverse lines and the peculiar construction of the printing cylinder and other parts of the machine, whereby such printing is done in the most perfect manner, for all the purposes set forth, or for other purposes desired.

*Construction.*—To enable persons skilled in the art to which our invention appertains, to construct and carry out the same,

we will describe it as follows: We construct a frame of wood or other substance seen at A, A, to the lower portion of it we suspend a propelling cylinder, seen at B, in adjustable bearings seen at Y. We then construct a printing cylinder seen at C, as follows: We form a number of disks of any required diameter, and composed of brass or other metal or alloy or compositions of metals, sufficient to make the required length of cylinder; these disks being of the proper thickness to form or print the longitudinal lines, of the required size, and separate them the required distance from each other on the paper. We then form a hole in each of their centers, all exactly alike, as to size, also a square recess or notch is formed in each of them leading from the central holes as seen at Z Figs. 5 and 6. We then form a strong steel shaft seen at A<sup>2</sup> on which we weld or otherwise firmly secure a collar seen at B<sup>2</sup>. We then groove the shaft the entire length or space designed to be occupied by the disks. To which groove we fit a steel spline which spline projects above the surface of the shaft A<sup>2</sup> sufficient to exactly fill the recesses in the disks seen at Z. We then place the required number of disks on the shaft A<sup>2</sup>, the spline of course fitting to the notches in them seen at Z, so as to always keep them in the same position on the shaft A<sup>2</sup>. We then firmly press the disks together by turning up the nut C<sup>2</sup> which is properly threaded to the shaft A<sup>2</sup>. Then place the shaft and cylinder in an engine lathe and turn over the periphery of the disks, all exactly the same size or diameter, after which the turned surface must be polished. We then remove such of them from the shaft A<sup>2</sup>, as are designed to print or impress the longitudinal lines upon paper, and firmly secure the remaining ones on said shaft. We then serrate or groove them leaving the required number, and size of teeth or surfaces thereon to print or impress upon paper or other substance the desired number and size of transverse lines intervening between the longitudinal ones. We then complete the cylinder by the intermediation of one or any required number of the serrated disks between the circular disks, and screwing or turning up the nut C<sup>2</sup> which in connection with the spline in the shaft C<sup>2</sup> hold them all properly and firmly in their place.

The simpleness and ease with which our



said cylinder can be constructed or repaired will readily suggest itself to any competent person.

It will be readily understood that the size and length of cylinder, of the disks thereon and the size of the desired lines or other figures, and the intervening space between them, can be varied to print any desired figure by properly constructing the disks. It will readily be seen that by revolving this cylinder when properly inked that an endless piece of paper or other substance can be printed thereon in the most perfect manner.

The printing cylinder C, rests upon and is driven by the driving cylinder B, the paper being printed as seen at the red line D<sup>2</sup>. We provide suitable stands seen at O, which guide the printing cylinder C, the lever P pressing it down with sufficient force by means of the rods Q, and springs R, and yet imparting sufficient elasticity so that the cylinders B, and C, will adjust their surfaces to each other, if there be irregularities in them.

At S, can be seen the ink trough, the roll which takes the ink therefrom being seen at G, which delivers it to the roll F, then in turn the roll F, delivers it to the roll E, and from thence it is taken alternately by the rolls D, and delivered to the printing cylinder C, by the movements of the various inkrolls the ink is well distributed and properly delivered to the printing cylinder; the large ink cylinder E is revolved by means of the belt from the pulley I to the pulley H.

The inkroll G is moved alternately by the racket X, and dog T. to receive the ink from the trough S, and deliver it to inkroll F, which turns and swings in the stands U, which roll also has an intermittent motion caused by resting or pressing against the surface of the roll E, which has a continuous motion the roll F, being moved to receive the ink from the roll G, by the cam K, attached to the cylinder E, coming in contact with the stands U, which stands swing on the stationary shaft V.

Under the large inkroll E, we place or suspend three, or more or less, inkrolls seen at D, D, D, these rolls being suspended in

boxes, seen at a, these boxes being in turn placed in, and guided by, the frames N, N, N, and these frames are guided by the stands M. Under each of these frames N, we place a spiral spring seen at b, for pressing up the rolls D, D, D, against the roll E. Each of the frames N, is pressed down in turn by the cams L, L, L, on the end of the cylinder or inkroll E, so that the inkrolls will first receive the ink from the roll E, and then descend and deliver it to the printing cylinder C, by means of the cam L pressing down the stands N which carry the inkrolls D, D, D. We intend that the inkrolls D, D, D, shall alternately pass up to the inkrolls E, by the operation of the cams L, L, L, one only at the same time, the others passing over and distributing ink upon the printing cylinders C.

At Fig. 7 can be seen a piece of the printed paper, after it is run through the machine. This can be printed in a continuous length which will be readily seen.

*Use.*—The use of our invention consists in putting the ink in the proper consistency, and the machine in running orders; then apply the power to the wheel J, and cylinder B, which drives the cylinder E and cams thereto attached, which drive and operate the various parts of the machine, the paper or other article to be printed being passed through between the printing cylinder C, and the cylinder B, as seen in red lines, all essentially in the manner and for the purposes set forth.

We claim—

The construction of the printing cylinder consisting of metallic rings or disks placed upon a shaft, side by side, the longitudinal marks, upon the paper that is printed by it, being produced by those disks having an unbroken perimeter, while the intermediate disk which produce the cross lines have a broken or toothed surface, the combined disks being secured to the shaft by a spline with suitable collars and nuts at the ends as herein described.

JUSTUS WEBSTER.  
SAMUEL H. FOLSOM.

Witnesses:

EZRA RIPLEY,  
E. D. HAYDEN.