

(No Model.)

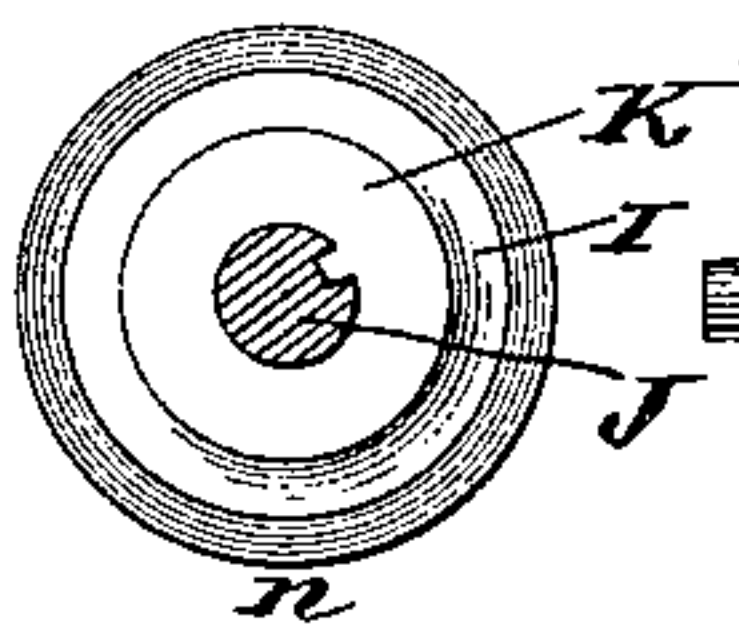
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MACHINE FOR CUTTING AND TRIMMING PAPER.

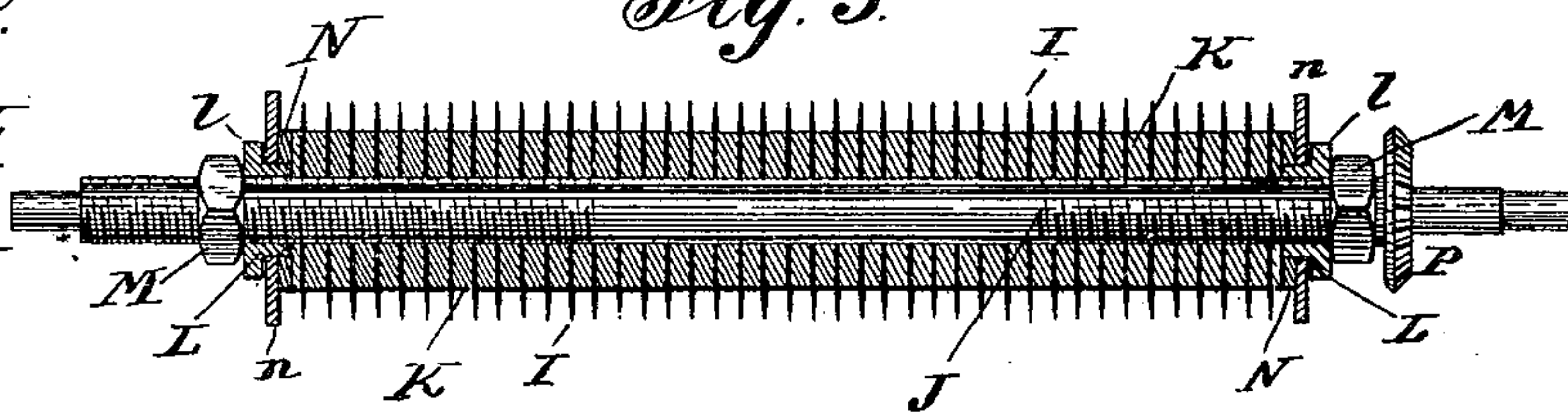
No. 480,111.

Patented Aug. 2, 1892.

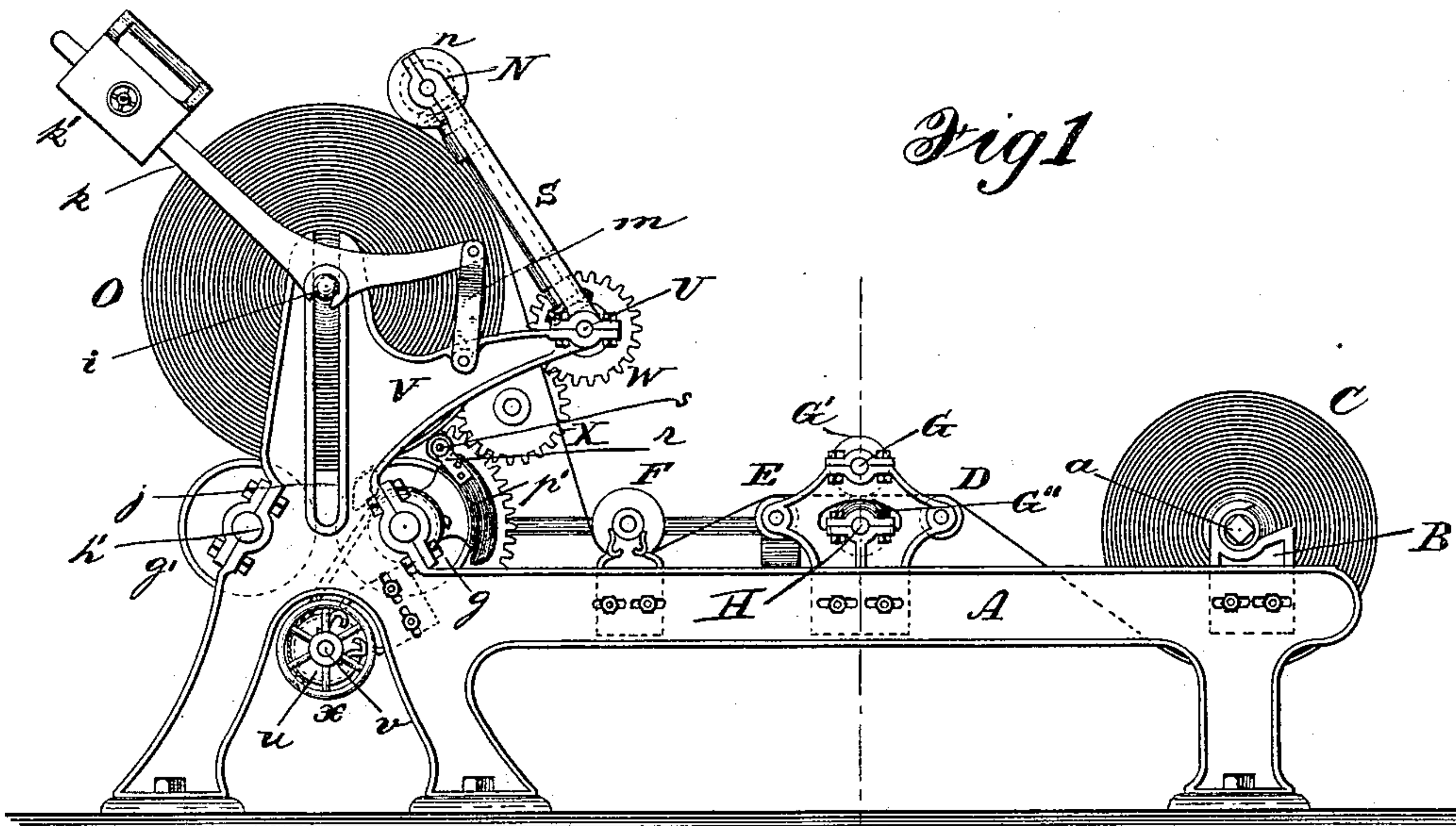
*Fig. 4.*



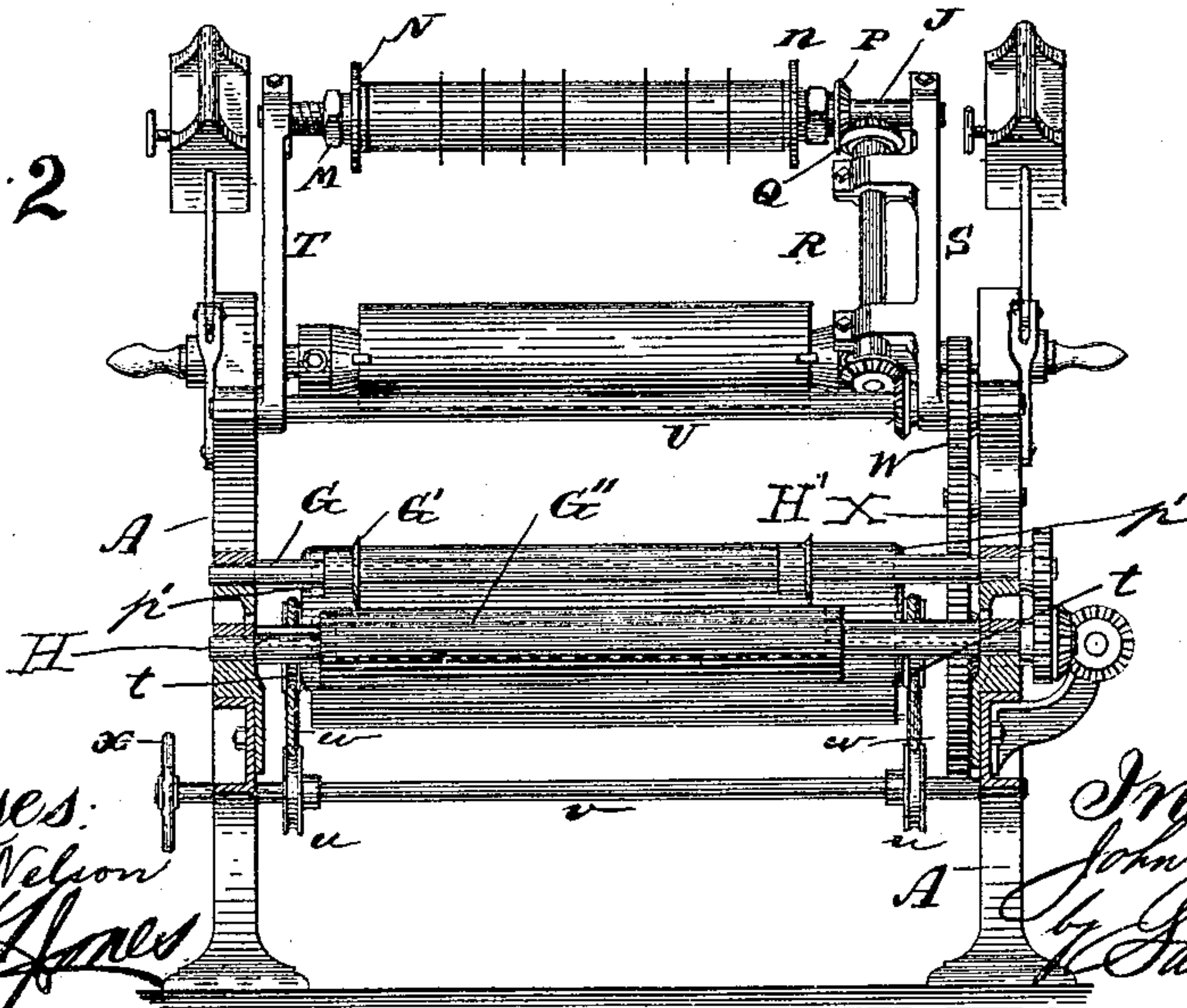
*Fig. 3.*



*Fig. 1.*



*Fig. 2.*



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## MACHINE FOR CUTTING AND TRIMMING PAPER.

SPECIFICATION forming part of Letters Patent No. 480,111, dated August 2, 1892.

Application filed July 22, 1891. Serial No. 400,355. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN J. MANNING, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Machines for Cutting and Trimming Paper; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side elevation of a machine constructed in accordance with my invention. Fig. 2 is an end view of the same. Fig. 3 is a longitudinal sectional view of the revolving cutter-cylinder. Fig. 4 is a transverse sectional view of the same.

Like letters of reference denote corresponding parts in all the figures.

This invention relates to appliances for winding, unwinding, trimming, and cutting paper into strips of any desired width and length for printing and other purposes—for example, narrow strips suitable for printing telegraphic instruments, labels, and many other uses, or cutting card-board into strips of suitable width for railway and other tickets; and my invention consists in the novel construction and combination of parts hereinafter fully described and claimed.

Referring to the accompanying two sheets of drawings, the letter A designates the frame of the machine, in one end of which are the adjustable boxes B for the shaft and spool on which the roll of paper C to be trimmed and cut into strips is wound.

In place of unwinding the paper from a roll, as shown and described, it may be passed direct from the reel on the paper-making machine to the cutting-machine. The continuous web of paper, as it is unwound from roll C, passes over and between parallel guide-rolls D and E, the function of which is to guide the web of paper and hold it level during the process of trimming off the rough edges, a tension-roll F being employed to hold the web of paper steady and prevent it from vibrating while passing between the circular knives or cutters on the trimming-shafts G and H. These circular knives (shown at G'

and H') are fastened upon their respective shafts a suitable distance apart to trim off the rough edges of the web of paper as it passes between them; but in case the paper has been already trimmed on the paper-making machine then of course these trimming-knives may be dispensed with. The web of paper, as it leaves the trimmers and the guide-rolls E, passes, as we have already seen, under the tension-roll F and then up to the device for dividing the trimmed web of paper longitudinally into strips of any desired width, and winding these strips into rolls of suitable size for their respective uses.

The dividing or cutting of the web of paper longitudinally into continuous parallel strips of any desired width is performed by a series of circular revolving knives or cutters I, placed concentrically and parallel to one another upon a threaded shaft J, as illustrated more clearly in the enlarged detail view Fig. 3, the distance between the cutters being spaced or regulated by means of washers of suitable thickness K, which are interposed between them. The width or number of these spacing-washers will determine the width of the strips as these are being cut by the revolving circular knives, and in order to permit of their ready removal, as well as the removal of the circular knives I, when required for sharpening or renewal, the shaft J is provided at opposite ends with flanged collars L, adapted to be placed upon the shaft so as to bear or bind with their inner ends against the outermost washers K at each end. These collars L have flanges l, against which the holding-nuts M may be screwed up tight on the threaded ends of the shaft, one on each side, so as to force the collars L with considerable pressure in the direction of the middle of the shaft, and thereby clamp or bind the intervening series of knives and their interposed washers firmly together, and thus cause the knives to revolve with the shaft.

Upon the end collars L revolve loosely the flanged idlers or guide-wheels N, the outside circular flanges n of which project down on opposite edges of the paper as this, during the process of being cut into strips, is wound into the roll O, the paper being wound up to form this roll during the process of cutting—i. e., the edges of the circular knives I are



brought into cutting contact with the web of paper during the process of winding it into the roll O as the roll gradually rises in its bearing, as hereinafter described.

5 A rapidly-revolving motion is imparted to the cutter-shaft J by means of a bevel-pinion P at one end, which gears with another bevel-pinion Q at the upper end of the drive-shaft R, as will more clearly appear on reference to  
10 Figs. 1 and 2. Shaft R is boxed in a movable arm or bearing S, the upper end of which also forms a box for one end of the revolving cutter-shaft J, the other end of which is boxed in a movable arm T on the opposite side of the  
15 machine. The arm T and its opposite corresponding bearing S are both hung loosely at their lower ends upon a shaft U, which is journaled in boxes in the outer ends of brackets V, forming parts of the side pieces of the frame.  
20 From this it will be seen that the cutter-shaft J, with its revolving circular cutters, is enabled to swing or move in the arc of a circle having shaft U for its center, so as to bear with the sharp edges or peripheries of the circular knives against the periphery of the web of paper as it is being wound up to form the roll O. Shaft U is revolved by the combination of gears clearly shown on the drawings or by some equivalent arrangement of inter-  
25 meshing gear-wheels or friction-pulleys, and revolves the adjustable drive-shaft R, through the intervention of the intermeshing pinions W and X. The roll of paper O as it is being formed is supported and rotated upon and by  
30 means of a pair of parallel horizontal cylinders *g* and *g'*, journaled in boxes *h* and *h'* in the frame of the machine. The winding-shaft *i* rests with its ends in a vertical slotted bearing *j*, (one on each side of the machine,) to  
35 enable it to rise vertically as the roll of paper O gradually increases in diameter.

Against the journals of the winding-shaft *i* bears at opposite ends a weighted lever *k*, the weight *k'* of which can be adjusted to regulate the downward pressure of the lever upon the journals of shaft *i*. The opposite or inner end of lever *k* is articulated by an arm *m* to the bracket V to give it a free motion and permit it to rise with the winding-shaft *i* in  
40 the vertical slotted bearing *j*.

In order to prevent the sharp edges of the circular cutters I from becoming dulled by contact with the empty spools on which the strips of paper are wound up, in cases where  
45 iron or steel spools are used, cylinder *g* is provided with an overlapping hood or segment *p'*, as illustrated in Figs. 5 and 6, the ends of which, overlapping the ends of the cylinder, are journaled loosely upon the cylinder-shaft,  
50 so that the segment *p'* has a free swinging motion on the same. The end pieces of this segment are provided with brackets *r*, the outer ends of which form bearings for a roll *s*, covered with lead or other suitable soft material that will not dull the edges of the circular knives when these come in contact with  
55 it. The segment *p'*, which carries this roll, is

provided on each side with a grooved pulley *t*, around which and a corresponding grooved pulley *u* on a shaft *v* an endless band or rope  
60 *w* passes, there being one of these pulleys *u* at each end of shaft *v*, as clearly shown on Fig. 2. On the projecting outer end of shaft *v* is a hand-wheel *x* for turning it.

From the foregoing description, taken in  
65 connection with the drawings, the operation of this machine will readily be understood. As the web of paper is gradually unwound from roll C it is first trimmed by passing between the revolving trimming-knives *G'* and  
70 *H'* and is then, after passing under the tension-roll F, carried to the spool or shell on the winding-shaft *i*. This shaft, in starting the machine, is at the lower end of the slotted bearing *j*, resting upon and between the pe-  
75 ripheries of the revolving supporting-cylinders *g* and *g'*, by frictional contact with which it is revolved and in the same direction. As the paper is wound around this spool the roll gradually increases in bulk or diameter by  
80 the accumulation of paper around it, causing the ends of the roller-shaft to rise gradually in the vertical slotted bearings on each side, frictional contact between the roll of paper and the revolving-cylinders *g* and *g'*, by which  
85 it is revolved, being maintained and regulated by means of the levers *k* and their adjustable weights *k'*. At the same time that the paper is being wound around the spool it is subjected to the action of the revolving  
90 cutters I, the shaft of which revolves at considerable velocity, so as to cut the paper into parallel longitudinal strips as roll O is being formed. The revolving cutters I are caused  
95 to run perfectly true by the guide-flanges *n* of the idlers N, which slightly overlap the roll on both sides, and as the roll increases in bulk and shaft *i* rises in its slotted bearings the revolving cutter-shaft will rise with  
100 it, so as to always maintain cutting contact with the periphery of the roll until all the paper on roll C has been unwound, trimmed, cut into strips, and these strips wound upon  
105 spools or shells on the winding-shaft *i*.

The object of the adjustable lead-covered  
110 roll *s* is to support or bed against the revolving cutters when the machine is first started, if spools of iron or steel are used on the winding-shaft instead of spools of wood or other  
115 soft material. In that case by turning the hand-wheel *x* the segment *p'* is drawn over cylinder *g* so as to bring its roll *s* underneath the revolving knives when the machine is  
120 started.

The horizontal supporting and revolving  
125 rolls or cylinders on which the roll O rests and by which it is revolved may be made of and covered with any suitable material, so as to maintain proper frictional contact with the roll of paper and cause the same to re-  
130 volve.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—



1. The combination of the pair of supporting-cylinders, the winding spool-shaft for the roll of paper to be wound upon, the movable segment overlapping one of the supporting-  
5 cylinders and provided with a roll of soft metal, and mechanism, substantially as described, for moving the segment and roll back and forth.

2. The combination, with the revolving cut-  
10 ter-shaft, of the circular cutters, the washers or fillings between the same, the end collars,

clamping-nuts, and flanged guide-wheels or idlers running loosely on the end collars, substantially as described.

In testimony that I claim the foregoing as 15  
my own I have hereunto affixed my signature  
in presence of two witnesses.

JOHN J. MANNING.

Witnesses:

AUGUST PETERSON,  
BENNETT S. JONES.