

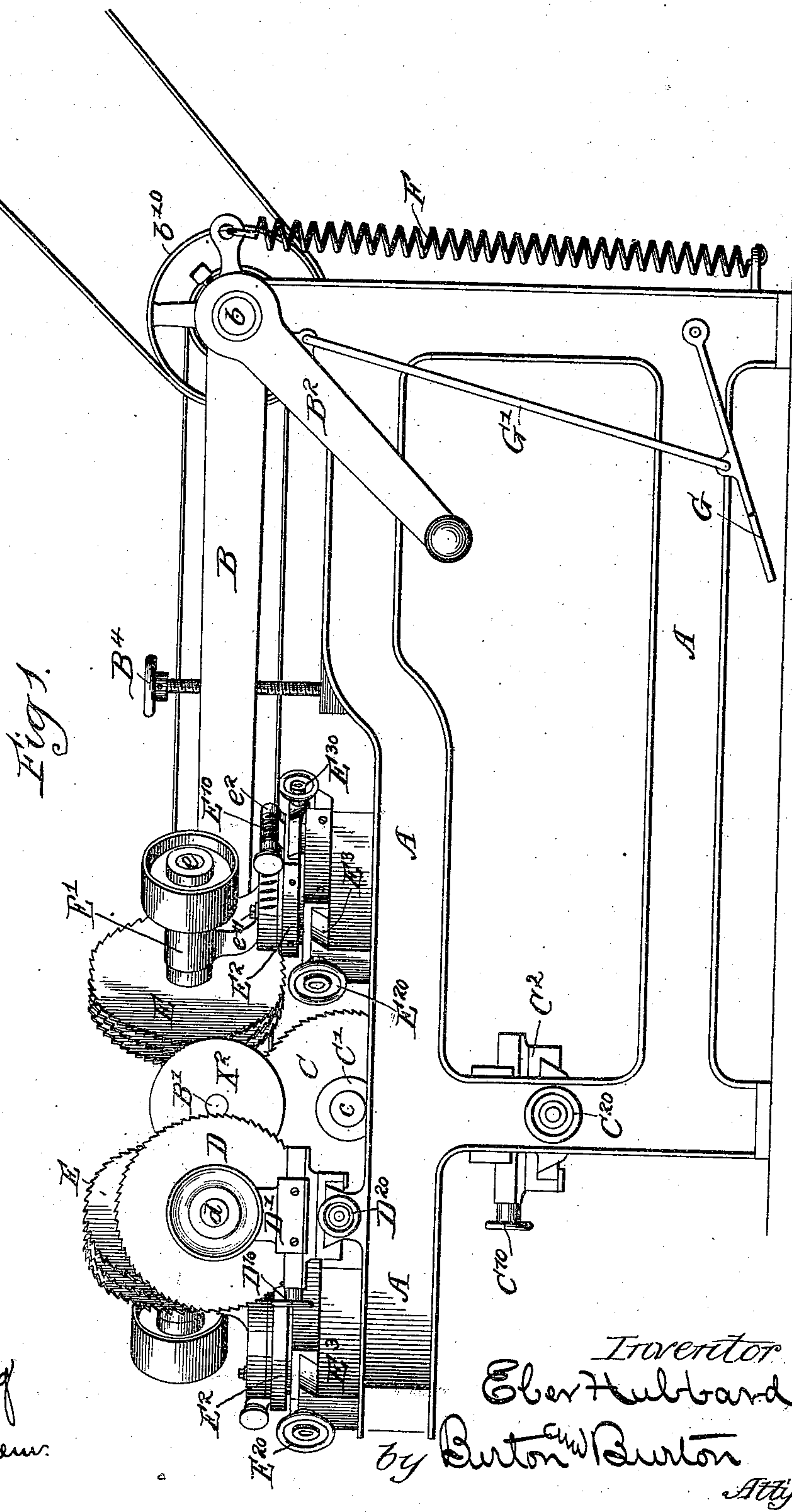
(No Model.)

3 Sheets—Sheet 1.

E. HUBBARD.
MACHINE FOR DRESSING SPOOLS.

No. 501,512.

Patented July 18, 1893.



Witnesses
Wm. J. Fleming
J. M. Rhein

Travertine
 Eber Hubbard
 Burton ^{and} Burton
Attys

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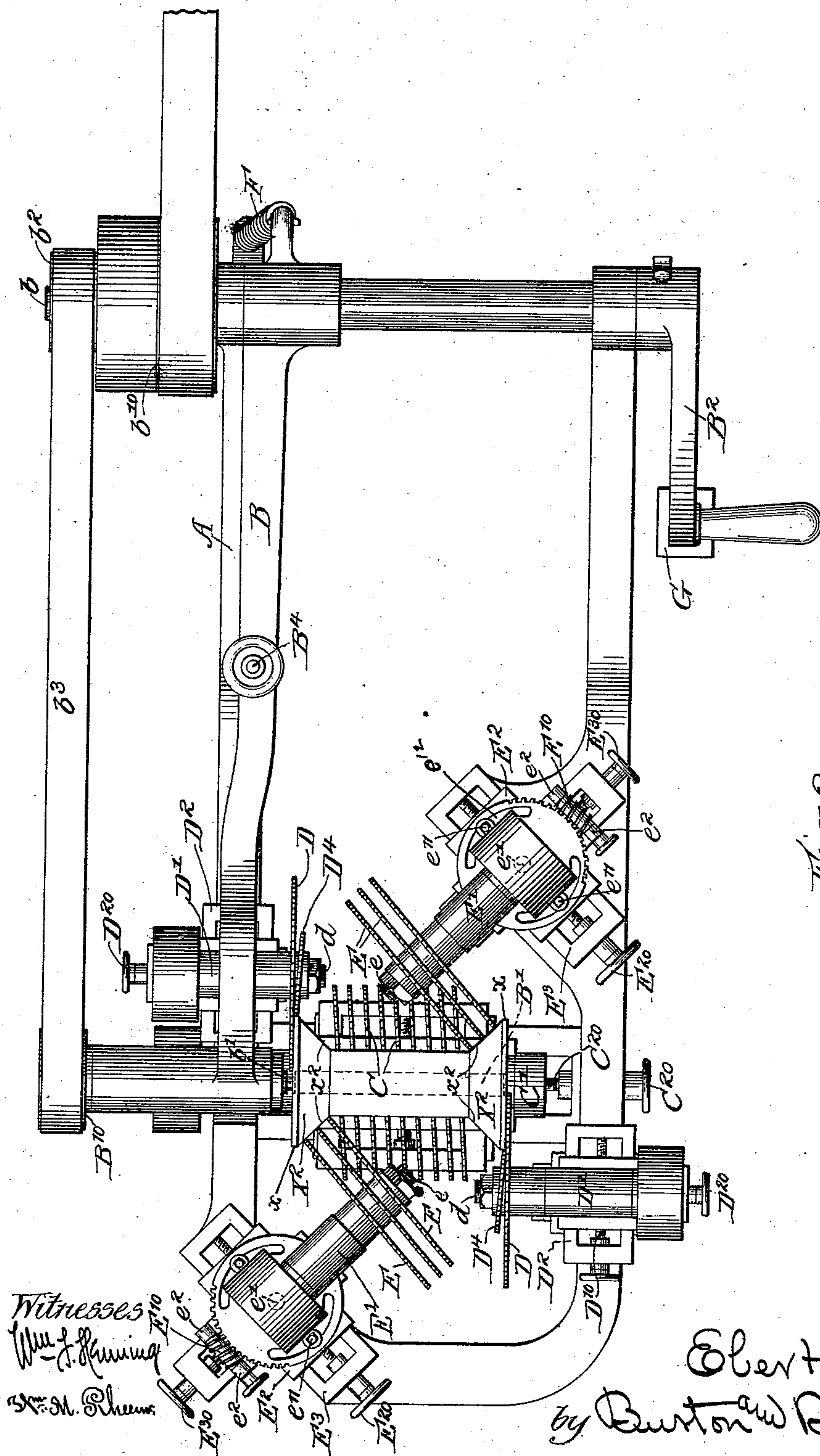


Fig. 2.

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Fig 4.

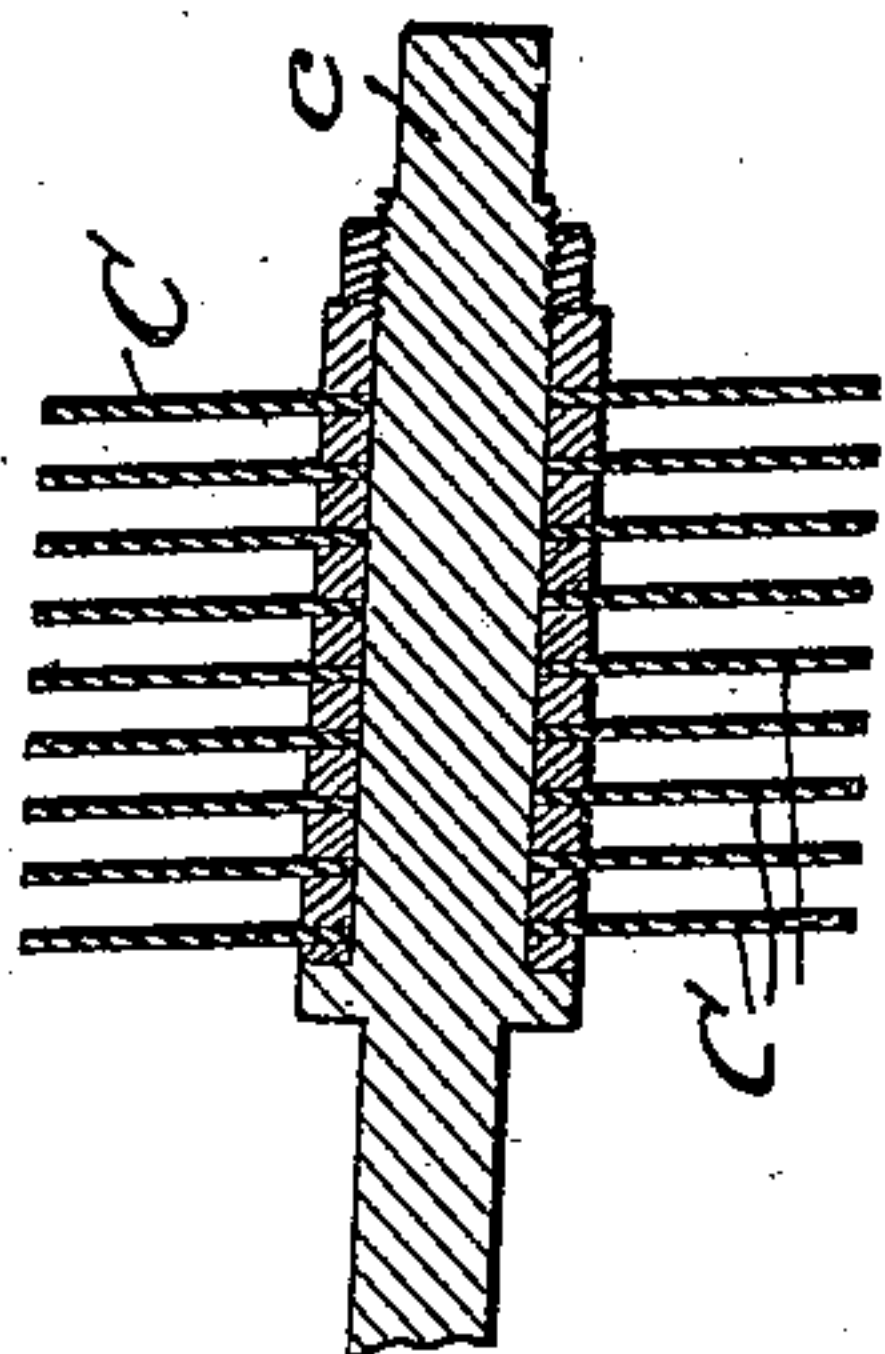
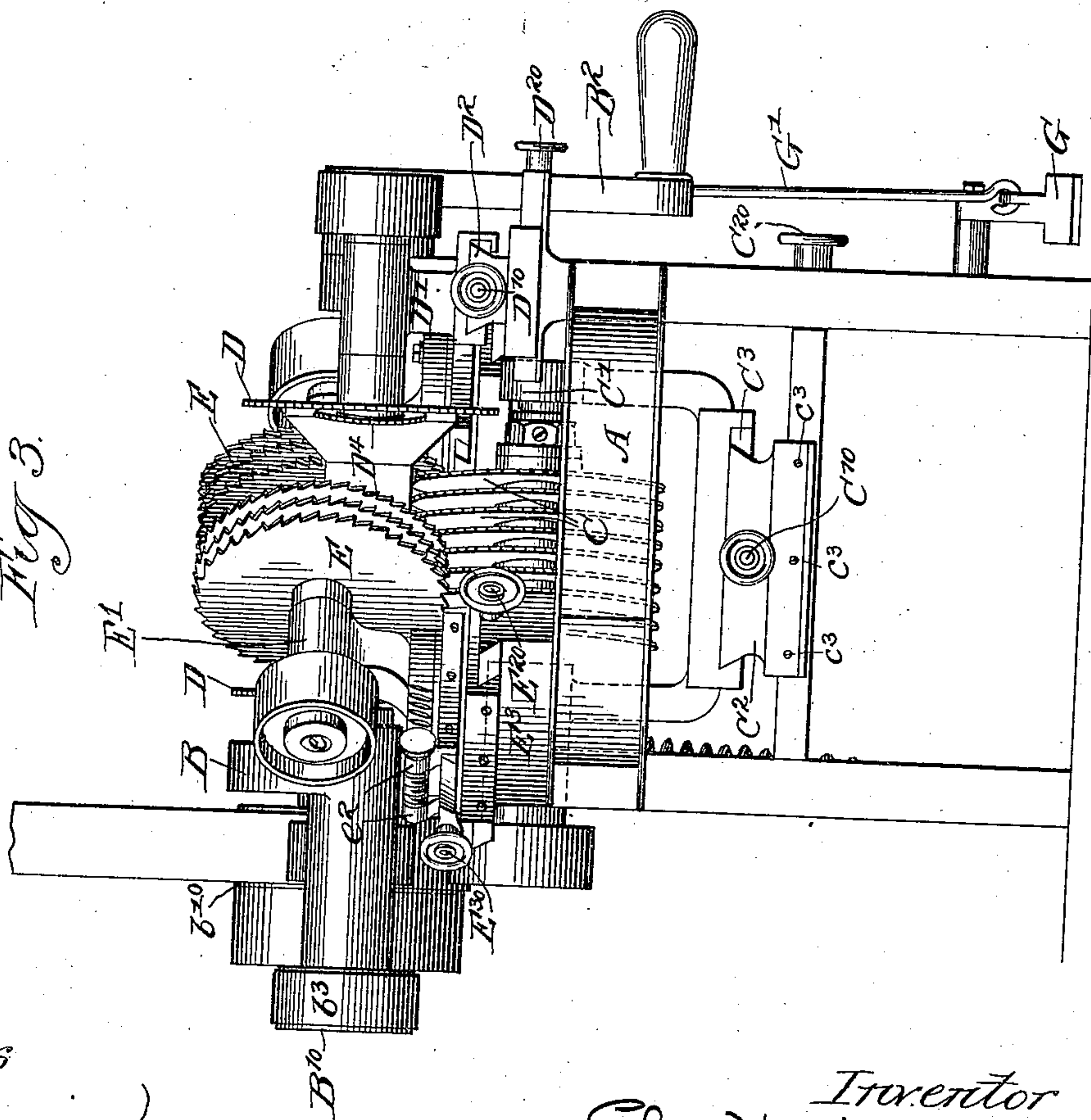


Fig 3.



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UNITED STATES PATENT OFFICE.

EBER HUBBARD, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WILLIMANTIC LINEN COMPANY, OF HARTFORD, CONNECTICUT.

MACHINE FOR DRESSING SPOOLS.

SPECIFICATION forming part of Letters Patent No. 501,512, dated July 18, 1893.

Application filed February 13, 1893. Serial No. 462,027. (No model.)

To all whom it may concern:

Be it known that I, EBER HUBBARD, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Machines for Dressing Spools, which are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

10 Figure 1 is a side elevation. Fig. 2 is a plan. Fig. 3 is an end elevation. Fig. 4 is an axial section of one of the shafts with the saws thereon.

15 The machine which constitutes this invention is designed to dress up rapidly the exterior of spools, particularly those of large size which may have been first roughened out by any process, the special purpose to which it is intended to apply it being to dress spools
20 made of fibrous pulp by molding or other process adapted to that sort of material, and which, in the drying and hardening process, if not even in the molding process, become inaccurate in outline or lack suitable smoothness of surface. The expedient employed
25 throughout the machine for truing up the surfaces is that which is commonly known as "wabbling saws,"—that is to say, saws fixed obliquely on their shafts, so that at each revolution the cutting periphery traverses the
30 surfaces operated upon in a direction parallel with the axis of the saw. The spool having two ends at right angles to the axis, to be dressed, and the shaft and peripheries of the heads cylindrical in form parallel to the axis,
35 and the inner sides of the heads conical,—that is, sloping toward each other to the surface of the shaft,—it is necessary to provide saws for each of these surfaces. Inasmuch
40 as the machine is designed to be applicable to more than one size of spool, it is necessary that the saws be so mounted that they may be adjusted to spools of various dimensions, and inasmuch as the slope of the heads is not
45 always the same, it is necessary also to be able to adjust the angle of the shafts which carry the saws, whose function is to dress these sloping surfaces according to the various forms of the spool treated. The several details of my invention relate to the adaptation

of this general expedient to these several specific purposes.

I prefer to cause the spool to travel to the position at which its several surfaces may be operated upon by the proper saws, the bearings of the saws having fixed position during the action. To the frame A of the machine, therefore, there is fulcrumed the arm B, adapted to swing to a horizontal position, and upward from that position such distance as is
55 necessary to clear the mechanism hereinafter described. At the vibrating end of this arm, there is journaled the spindle B', having its bearings parallel to the pivot bearings of the arm on the frame, and having a pulley B¹⁰
60 by which it may be driven. This spindle is adapted to receive on its protruding end the spool to be operated upon. The pivot of the arm to the frame is a shaft b, journaled in the frame and having a pulley b¹⁰, through
65 which rotary motion is communicated to it, and a pulley b², which, by means of the belt b³ passing over the pulley B¹⁰, drives the spindle B'. The arm B may thus swing about its fulcrum without interrupting the
70 rotation of the spindle. Approximately in the vertical plane of the spindle, when the latter is at its lowest position, is the shaft c, on which are fixed wabbling saws,—or saws oblique with respect to the axis,—C C, &c.,
75 occupying a position corresponding to the cylindrical surface of the spool. The bearings of the shaft c are obtained in the standard C', which has slide-bearings in a direction parallel to the spool axis upon the base
80 C², which, in turn, has slide bearings in a direction transverse with the spool axis on the standard A. These slide-bearings are of the usual form of tool-holding slide blocks in lathes and other like machinery, consisting
85 of a dovetailed tongue upon one member and a dovetailed groove upon the other member with gibs C³ for giving absolute accuracy of position to the sliding part. The screw C¹⁰ is provided to adjust the standard C' in its slide
90 bearings with respect to the base C², and the screw C²⁰ is provided to adjust the base C² with respect to the main frame A, and the set screws c³ c³, operating upon the gibs, serve to
95 fix the parts in the positions to which they 100

may be adjusted. The arrangement for adjustment of this shaft c in either direction need be but slight, the only necessity for adjustment being to cure inaccuracies and compensate for the reduction in diameter of the saws as they are ground away.

d d are horizontal shafts parallel to the spindle B' , each carrying saws D , D^4 , and journaled in the standards D' , D' which have slide-bearings upon the bases D^2 , D^2 adapting them to be adjusted toward and from the vertical plane of the spindle axis, and each provided with an adjusting screw D^{10} operating similarly to the adjusting screws C^{10} and C^{20} , above described. The bases D^2 have slide-bearings similar to those already described adapting them to be adjusted in a direction parallel to the spindle, and are provided with adjusting screws D^{20} D^{20} for that purpose. The saws D D are secured upon the shafts d d in planes at right angles thereto and in positions corresponding to the planes of the ends of the spool to be operated upon, and the several adjustments, for which facilities are provided as above described, will be so made that the spindle B' at its nearest position to the cutting edge of the inner saw D will receive said cutting edge in the annular grooves b' b' , which are located so that the spool on the spindle will at its inner end overhang said grooves. This will cause the saws D D to cut the entire ends of the spool, revolving as they will at their cutting edges slightly past the circumference of the central aperture through the spool, but, by reason of the grooves b' , being saved from striking the spindle B' , the saws D^4 , set oblique to their shafts, operate as wobbling saws to dress the edges x of the spool heads.

At a position above that of the shaft d , are located two horizontal shafts e e , both oblique to the vertical plane of the shaft c and to the plane of the path of the vibrating arm B , one projecting from one side of the path of the spindle toward that path, and the other projecting from the opposite side toward said path, said shaft being parallel respectively to the slopes x^2 of the ends of the heads X^2 X^2 of the spool at the nearest position of the spool to said shafts, respectively, in the path in which the spool is carried by the spindle on the vibrating arm B . Upon the shafts e e , are mounted obliquely to said shafts saws E E , &c., which are adapted to dress the sloping faces x^2 x^2 . The construction of the bearings and adjustments of the shafts e e are the same, and one only will be described. Each shaft obtains bearings in a standard E' , which may be called a turn-table or revolving turret, being adapted to make at least a partial revolution about a vertical axis at right angles to the shaft e . The turn-table is for this purpose mounted upon a base E^2 , at the center of which it is secured by the stem or spindle e' , the periphery of the turn-table being provided with worm-teeth, and a tangent screw E^{10} be-

ing mounted in suitable bearings e^2 e^2 on the base E^2 , and engaging the peripheral worm teeth of the turn-table to adjust the latter about its vertical axis, to set the shafts e at any desired angle to the spindle axis or to the plane of the path of the arm B . Clamp screws e^{11} set through slots e^{12} in the turn-table, serve to secure it fixedly as it may be adjusted with respect to the base E^2 . The base E^2 has slide-bearings upon the base E^3 , adapting it to be adjusted in a direction parallel to the spindle axis, and the base E^3 has slide-bearings upon the frame A , adapting it to be adjusted in a direction at right angles to the spindle axis, these slide-bearings, being similar to those already described and screws E^{20} and E^{30} being provided to effect the adjustments respectively, in the same manner already described. By means of these adjustments, it will be understood that the sloping shoulder of the heads of the spool may be dressed at any angle to the shaft, and that within the compass of the machine, spools of any length and any diameter may be so dressed.

A spring F is provided tending to uphold the arm B to a position where the spindle will be clear of all the saws, and while in this position, the operator will apply a spool to the spindle, and then, by means of the handle arm B^2 on the shaft b or, as preferred, by means of the pedal G , connected to the arm by a link G' , the arm will be depressed carrying the spool, which will be meanwhile revolved at considerable speed by the spindle, past the wobbling saws on the shafts e e , and thence on down past the saws D D , which cut the ends through, and thence on down to the saws C C on the shaft c , the arm being arrested by an adjustable stop B^4 provided on the same, which will be adjusted according to the other adjustments of the machine and the size of spool being operated upon, so that the spool will approach the saws C C closely enough only to have its cylindrical surfaces properly dressed thereby. The operator will then allow the arm to turn to its original position, and the spool will be removed from the spindle and another substituted and the process repeated.

I do not limit myself to the precise arrangement of the several shafts for carrying the saws to dress the several surfaces of the spool; but

I claim—

1. In a machine for dressing spools, a rotatable spindle to carry the spool, and suitable supports on which it may be carried sidewise in a definite path; a shaft parallel to the spindle axis, and obliquely mounted saws thereon occupying positions corresponding to the cylindrical portions of the spool; a pair of shafts which, when the spindle in its path is in the plane thereof, stand respectively at oblique angles to the spindle corresponding to the slope of the spool heads; obliquely mounted saws on said oblique shafts, and suitable

means for communicating rotary motion to the shafts and spindle: combined substantially as set forth.

2. In a machine for dressing spools, a rotatable spindle to carry the spool, and suitable supports on which it may be carried sidewise in a definite path; an oblique shaft *e* carrying obliquely mounted saws, the journal bearings for such shaft being adjustable in a path parallel both with the shaft and with the spindle axis, and also adjustable about an axis at right angles to such plane: substantially as set forth.

3. In combination with a spool-carrying spindle, the arm which carries it adapted to vibrate to carry the spool sidewise; oblique shafts *e e* having obliquely mounted saws; turn-tables on which said shafts, respectively, are journaled, adapted to be rotated, respectively, about axes at right angles to said shafts; slide-bearing bases for said turn-tables adapted to afford it adjustment parallel with and at right angles to the spindle axis: substantially as set forth.

4. In combination with a horizontal shaft *c*, and the saws mounted obliquely thereon, the spool-carrying spindle and devices for supporting it, adapted to move toward and away from said shaft; a stop to limit the approach of the spindle to the shaft; shafts oblique to the plane which contains the shaft *c* and the spindle axis at the nearest approach of the latter to said shaft, and obliquely mounted saws on said oblique shafts respectively: substantially as and for the purpose set forth.

5. In combination with a horizontal shaft *c*, and the saws mounted obliquely thereon, the spool-carrying spindle and devices for supporting it adapted to move toward and away from said shaft; a stop to limit the approach of the spindle to the shaft; shafts

oblique to the plane which contains the shaft *c*, and the spindle axis at the nearest approach of the latter to said shaft, and obliquely mounted saws on said oblique shafts respectively; and the horizontal shaft *d*, parallel to the shaft *c*, at the side thereof from which the spindle approaches said shaft *c*, and the saws on said shaft *d*: substantially as set forth.

6. In combination with a horizontal shaft *c* and the saws obliquely mounted thereon, the spool-carrying spindle and the devices for supporting it overhanging the shaft *c*, and adapted to move down toward and upward away from said shaft; a stop to limit its approach; horizontal shafts oblique to the vertical plane of the shaft *c* and higher than said shaft, and obliquely mounted saws on said oblique shafts respectively, and the horizontal shaft *d* parallel to the shaft *c*, higher than the latter and lower than the oblique shafts and having the saws *D D* mounted securely thereon: substantially as and for the purpose set forth.

7. In combination with the spool-carrying spindle and the vibrating arm which carries it sidewise, and means for rotating the spindle in its bearings on said arm; the shaft *d* and the saws *D D* thereon; the spindle having the groove *b'* into which the cutting edge of the inner saw *D* protrudes at the nearest approach of the spindle to the saw: substantially as set forth.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, at Chicago, Illinois, this 12th day of January, 1893.

EBER HUBBARD.

Witnesses.

CHAS. S. BURTON,
JEAN ELLIOTT.