(No Model.) 3 Sheets—Sheet 1.

J. E. LEE.

MACHINE FOR WINDING FABRICS, &c., INTO ROLLS.

No. 533,304. Patented Jan. 29, 1895.

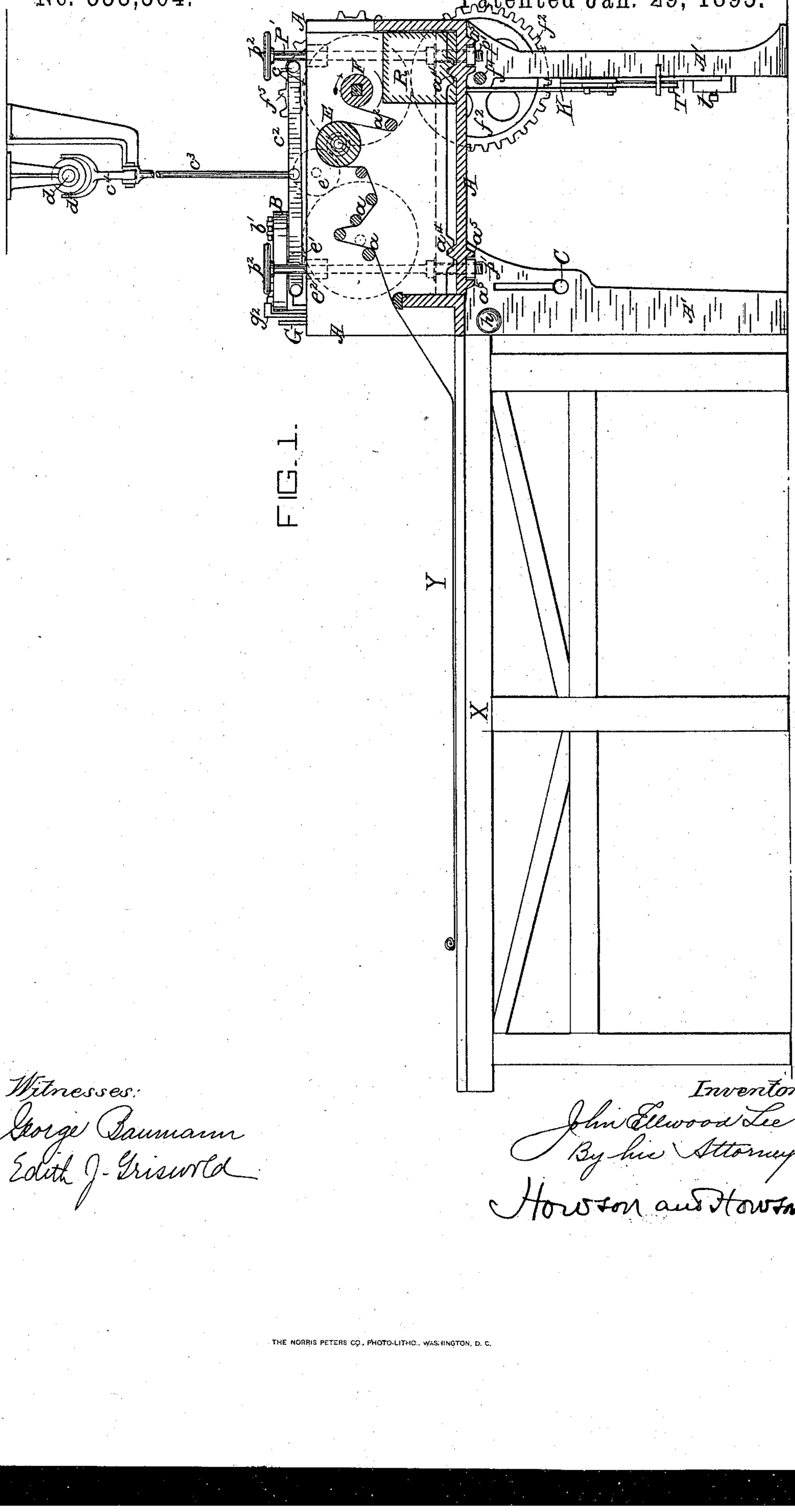

FIG. 1.

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(No Model.) 3 Sheets—Sheet 2.

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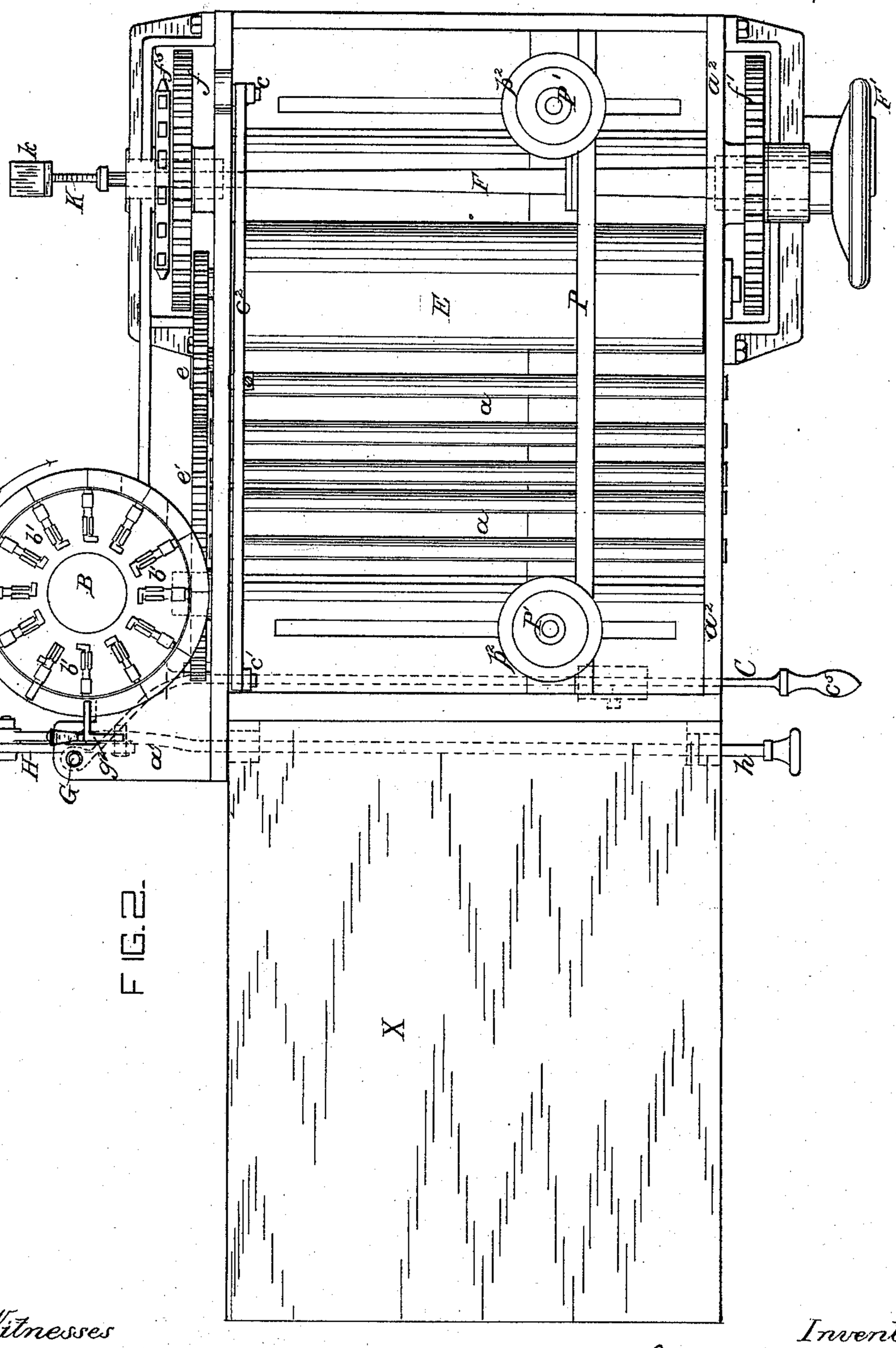

FIG. 2.

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(No Model.) 3 Sheets—Sheet 3.

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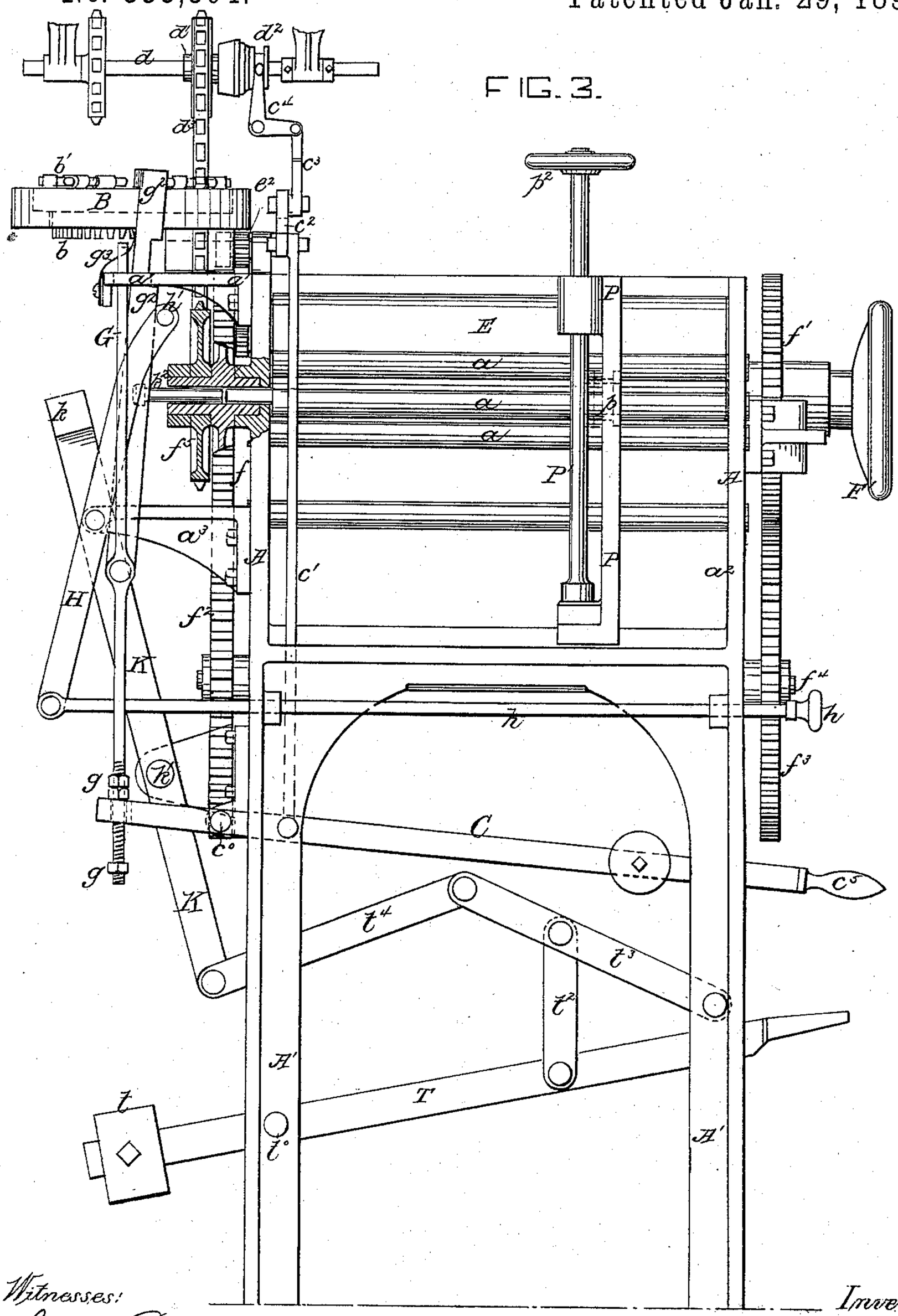
FIG. 3.



Witnesses:
George Baumann
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UNITED STATES PATENT OFFICE.

JOHN ELLWOOD LEE, OF CONSHOHOCKEN, PENNSYLVANIA.

MACHINE FOR WINDING FABRICS, &c., INTO ROLLS.

SPECIFICATION forming part of Letters Patent No. 533,304, dated January 29, 1895.

Application filed June 28, 1894. Serial No. 515,961. (No model.)

To all whom it may concern:

Be it known that I, JOHN ELLWOOD LEE, a citizen of the United States, residing in Conshohocken, Pennsylvania, have invented certain Improvements in Machines for Winding Fabrics and other Materials into Rolls, of which the following is a specification.

My invention consists of an improved machine for winding fabrics and other materials into rolls of measured lengths, and is more especially designed for the winding up of gauze or similar material into rolls of varying sizes for surgical use.

In the accompanying drawings, Figure 1 is a vertical section of a winding machine in conjunction with a side elevation of a feed table for the winding machine. Fig. 2 is a plan view; and Fig. 3 is a front elevation partly in section with the feed table removed.

Although I have shown the feed table X in conjunction with my winding machine it will be understood that this feed table is not an essential feature, as the gauze or other fabric to be wound up into measured lengths may be fed directly into the machine from the roll, instead of passing over the feed table.

The frame of the winding machine consists of a box part A mounted upon suitable legs A′ the box part being left more or less open at the side where the fabric enters the box. The fabric upon entering the box passes around a suitable number of tension rollers a and around a measuring roller E to another tension roller a^2, and thence it is wound up on the winding spindle F which is preferably made of square or other polygonal section and tapering, (Figs. 1 and 2). This winding spindle F is provided at its inner end with a handle F′ and has its squared part adapted to a corresponding opening in the hub of a wheel f', while at its outer or smaller end it is adapted to a corresponding opening in the hub of a wheel f. These two driving wheels f and f' are geared together, as through the medium of wheels f^2, f^3 at the opposite ends of a suitable shaft f^4. Motion is imparted to either of these wheels f, f' through any suitable means and thus the necessary motion for turning the spindle F for winding up the fabric is applied to both ends of the spindle. In the present instance I have shown this driving means as consisting of a wheel f^5 suitably secured to the wheel f and driven by a belt d^3 from a wheel d' on a driving or counter shaft d, Figs. 1 and 3. This wheel d' is loose on the shaft d but can be thrown into gear therewith by means of a suitable clutch d^2. Whenever this wheel d' is clutched up to the shaft, the winding spindle will be rotated in the direction of the arrow, Fig. 1, and if the end of the fabric has been partially turned around the spindle F by the hand of the operator, the fabric will be wound up into a roll upon this spindle, until the machine is stopped or the supply of fabric gives out.

In order to secure the winding up of the fabric into rolls of measured lengths, I combine with the drum E an automatic measuring device, and in combination with that an automatic stop motion to cause the stoppage of the machine when any determined length of fabric has been wound up into a roll. In this case I have shown a horizontal measuring indicating disk B, which is geared up to the measuring roll E through the medium of any suitable system of gear wheels. By way of example, I have shown the connection as through gear wheels e, e', e^2, this last meshing with a gear b on the under side of the disk B. The diameter of the measuring drum E may be any convenient unit of measurement, as for instance the foot and the drum will be so geared up to the indicating disk B as to give the proper relation to the divisions for the disk. For the sake of example each division for the measuring disk may represent a yard, so that the disk B will be revolved with the measuring drum to the extent of one division of the disk for every three revolutions of the measuring drum. I make use of this disk B as the means for automatically stopping the winding when the desired length of fabric has been wound up. For this purpose I provide the disk with a series of radially adjustable stopping pins b' to co-operate with the hereinbefore mentioned clutch or other stop motion through suitable intermediate connections to stop the machine whenever that stopping pin b' which has been moved out on the disk B shall have reached a given point in the rotation of the disk. In this instance I have shown the clutch d^2 as controlled by a weighted lever C through the medium of a connecting rod c', lever c^2, pivoted at c to the

frame, connecting rod c^3 and bell crank lever c^4. This weighted lever C is pivoted at c^0 to the frame and is so arranged as to tend to throw the clutch d^2 out of engagement with the wheel d' and stop the winding. This lever C may be provided with a handle c^5 by which the operator may control the clutch by hand. Through a slot in the back end of this lever C passes the lower end of a vertically movable latch rod G which is guided at its upper end in a slot in a bracket a' of the frame of the machine. The lower end of this rod G is provided with adjustable stop nuts g g above and below where it passes through the lever C to leave such play or lost motion at this point of connection as may be found desirable. This rod G is provided with a latch g^2, which may conveniently be a separate piece from the rod but pivoted thereto. This latch is adapted to engage with the under side of the bracket a' but has its upper end passing up through a slot in the bracket and (when engaged with the latter) projecting into the path of such of the stopping pins upon the measuring disk B as may have been moved out radially.

As shown in the drawings, the latch g^2 is engaged with the bracket, holding the rod G in its downward position and the weighted end of the lever C elevated and the clutch d^2 clutching the wheel d' to the shaft d, so that the winding is then proceeding. As the winding proceeds and the measuring disk B revolves in the direction of its arrow, Fig. 2, that stop pin b' which has been projected radially from the disk B will, when a certain number of yards have been wound up, come into contact with the latch g^2 and push it out of engagement with the fixed bracket a'. The weighted end of the lever C will then immediately fall and throw the clutch d^2 to disengage the wheel d' from the shaft d and stop the winding. The operator at the same time cuts the fabric from the piece, removes the roll thus wound up, as hereinafter described, and starts the rolling up of another length by raising the lever C to throw the clutch d^2 over and applying the end of the fabric to the spindle F. A spring g^3 on the bracket a' acting on the latch g^2 throws the latter into engagement with the under side of the bracket a', to hold the lever C in position, when raised, until a stopping pin b' comes around to throw it out at the desired point.

In order that the operator may conveniently stop the winding independently of the automatic stop motion, there may be provided a lever H pivoted to a bracket a^3 on the frame and having at its upper end a pin h' to act upon the inner side of the latch g^2, while the lower end of the lever H has a connecting rod h extending through to the operator's side of the machine, where it is provided with a suitable handle. By pulling on this handle at any time, the operator can disengage the latch rod G from the bracket and stop the winding as already described.

In order that the fabric may be wound up into rolls with true ends and with different widths of fabric, I provide in the box A an adjustable partition P, between which and the front wall a^2 of the box A the fabric may be guided in being wound up into the roll. This partition is provided with openings for the free passage of the tension rods or rollers and the measuring roll E and is provided with a revolving bushing p with a squared opening for the reception of the squared spindle F. As shown in Figs. 1 and 3, this partition is guided upon transverse V-guides a^4 in the bottom of the box A and has vertical bolts P′ adapted to turn in bearings with lower threaded ends passing through slots in the bottom of the box A. On the under side of the bottom of the box are guide ribs a^5 for the reception and guidance of nuts p' upon the threaded ends of the bolts P′. Owing to these guide ribs the nuts cannot turn, so that by turning the bolts P′ as by handles p^2 at their upper ends, the partition may be clamped to the bottom of the box A in any position to which it may be adjusted. In connection with the winding spindle, removable blocks of various sizes may be provided to be placed in the bottom of the box A, as indicated at R in Fig. 1, to act as surfaces against which each roll as it is about being completed may bear, to make the final winding tight and compact.

To facilitate the removal of the wound-up roll from the machine, I make the winding spindle F removable, as already explained, and combine therewith what I term a "knock-out" device. This may assume various forms but that illustrated in the drawings and which I will now describe I have found to answer satisfactorily.

K is the knock-out lever which in this instance is pivoted at k' to a bracket on the frame and has at its outer end a hammer head k. This lever is under the control of the operator. In this case I have shown it as adapted to be operated by the foot acting upon a treadle lever T pivoted at t^0 to the frame and counter-weighted at t. This treadle is connected to the knock-out lever through a link t^2 and toggle levers t^3, t^4, connected at one end to the frame and at the other to the lower end of the knock-out lever K. Instead of arranging this lever to strike the end of the spindle F itself, I provide an intermediate plunger k^2 passing through the hub of wheel f and resting against the outer end of the spindle F. When the winding of a roll is complete, the operator by putting his foot upon the treadle T throws the knock-out lever K to strike the plunger k^2 and through it knock the spindle free from the roll and its bearings in the box, so that the operator can then easily withdraw the spindle and remove the roll from the box. The spindle can then readily be replaced for a new winding operation.

I claim as my invention—

1. A machine for rolling bandage or other

material, having a winding spindle, driving wheels through which said spindle passes and into which it is detachably fitted and means for knocking the spindle free of said wheels and of the wound-up roll of fabric in the machine, substantially as described.

2. A machine for rolling bandage or other material, having a winding spindle of polygonal section, driving wheels through which said spindle passes and into which it is detachably fitted and a knock-out lever for knocking the spindle free of said wheels and of the wound-up roll of fabric in the machine, substantially as described.

3. A machine for rolling bandage or other material, having a winding spindle, driving wheels therefor, a plunger detachably fitted into one of said wheels to bear against the outer end of the spindle and a knock-out lever to strike the plunger to free the spindle from said wheels and from the roll, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN ELLWOOD LEE.

Witnesses:
CONRAD B. LEE,
C. D. WYNKOOP.