No. 631,783. Patented Aug. 29, 1899.

F. M. FOSTER.

ATTACHMENT FOR CALENDERING MACHINES.

(Application filed Apr. 18, 1899.)

(No Model.)

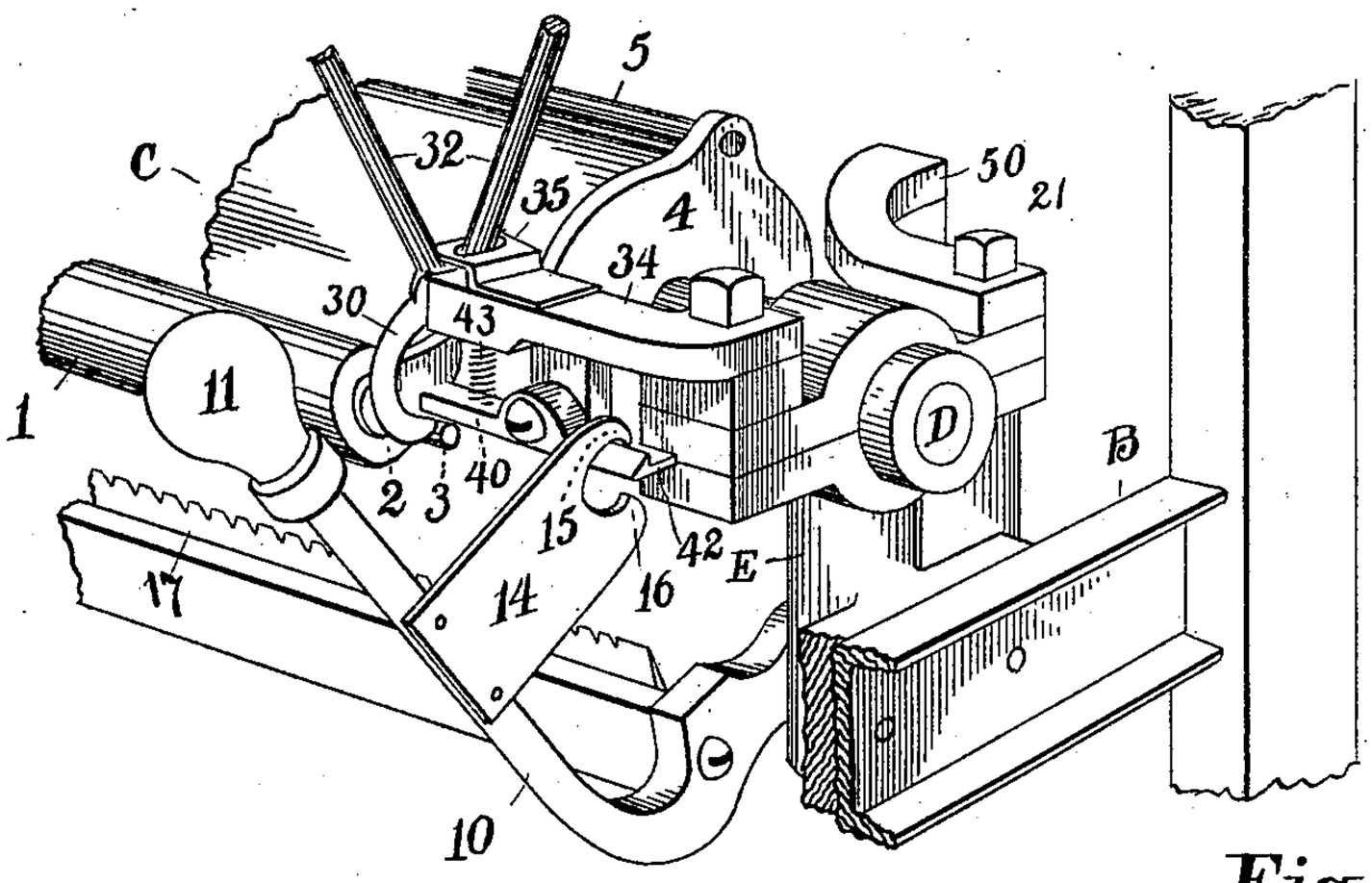

Fig. 1

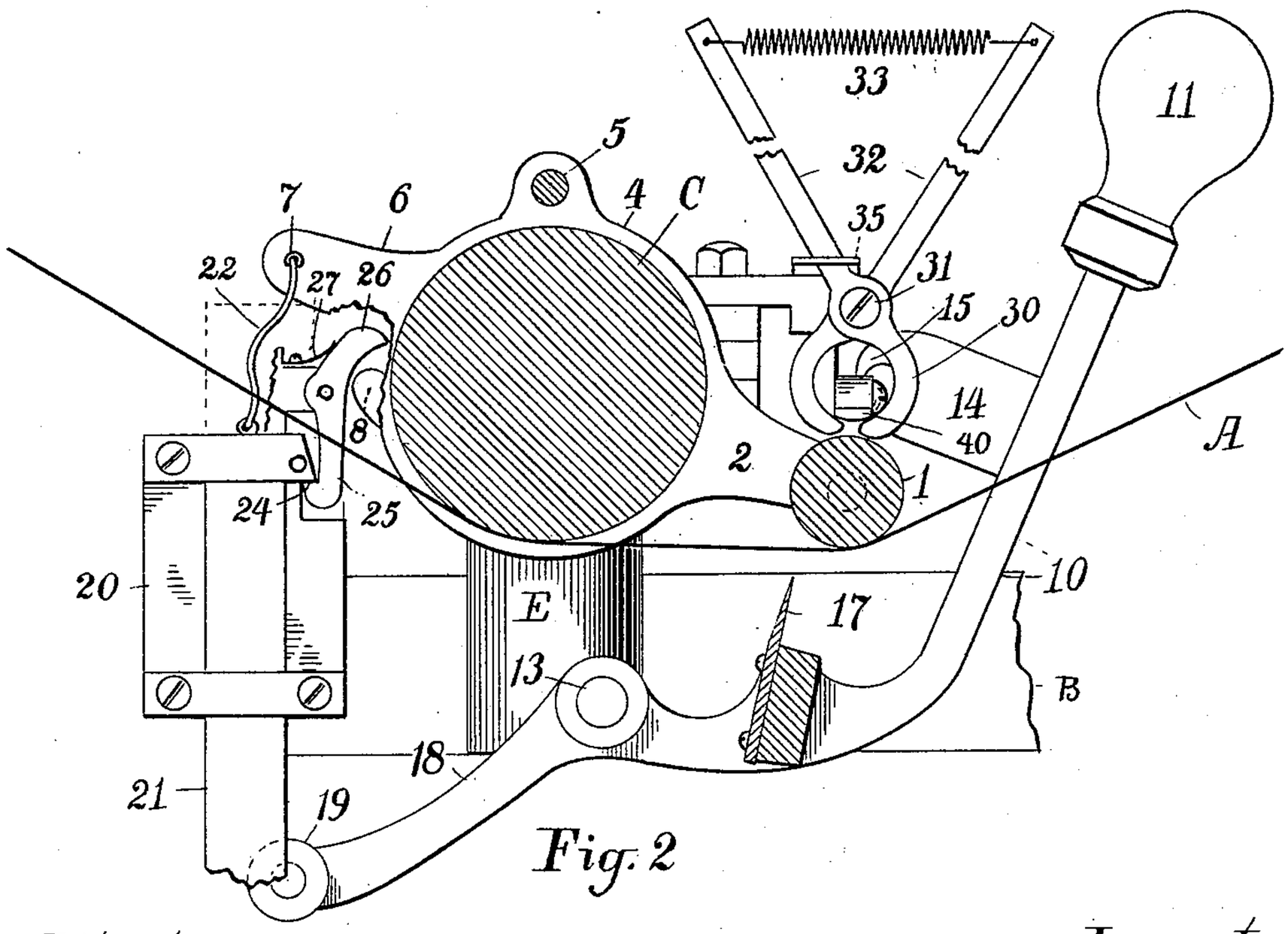

Fig. 2

Attest

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ATTACHMENT FOR CALENDERING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 631,783, dated August 29, 1899.

Application filed April 18, 1899. Serial No. 713,462. (No model.)

To all whom it may concern:

Be it known that I, FRANK M. FOSTER, a citizen of the United States, residing at Cambridge, in the county of Middlesex and State of Massachusetts, have invented a new and useful Attachment for Calendering-Machines, of which the following is a full, clear, and exact description.

In calendering paper it is customary to have one of the calendering-rolls faced with compressed cotton fiber, and as it is necessary to have the surface of the same absolutely true and even any slight splinter, fold, or other enlargement passing with the paper between the rolls will so indent and injure such cotton roll as to require immediate repair thereof. This repair causes considerable trouble and delay and the consequent non-use of the calendering-machine while the same is going on. These splinters and folds of the paper are almost always at the tail end of the same, the splinters coming from the spool upon which the paper is wound and the folds either from some slight tear, a part of the edge of which may be folded back, or from the entire tail edge being folded over, as is often done in order to more easily wind the paper upon the spool. Hence if this latter extremity of each spool of paper can be cut away from the remainder and so prevented from passing through the calendering-machine the danger of injury to the rolls, as above set forth, will be practically eliminated.

My invention has for its purpose this automatic severing of the tail end of each spool of paper immediately before it would otherwise enter the calendering-machine, and it is accomplished by means of the devices illustrated in the drawings forming part of this specification, in which—

Figure 1 is a perspective view of the major part of the attachment, and Fig. 2 is a transverse vertical section of the same.

Referring to Fig. 2, A indicates the web of paper, passing from right to left from its containing-spool to the calendering-machine, said spool and machine not being shown. It of course travels under a considerable degree of tension, going beneath the roll C in the usual manner. Mounted loosely on the shaft D of said roll are the arms 2, carrying at their ends the roller 1, said arms being enlarged to equal or exceed the diameter of the roll C, and a bar 5, connected rigidly with each arm to give them unison in their oscillations upon the shaft D. This roller 1 is normally supported by the web of paper passing beneath; but the instant the tension on this web is slackened, as by the total unwinding thereof from its spool, the roller 1 falls and carries the paper into contact with the knife-edge 17. The knife is thus caused to immediately sever the tail end of the paper from the remainder, which passes on through the calendering-machine, while said tail end drops to the floor and is removed by the attendant.

So far the operation is very simple, but in order to start a new web of paper through the calendering-machine it is necessary to raise the roller 1 and drop the knife 17, and thereby provide ample and unimpeded room for the operator's hands to be inserted between such roller and knife for the introduction of the new end of a fresh spool of paper. This I accomplish automatically in the following manner:

Referring to Fig. 2, 30 are jaws pivotally held by a screw 31 or other pivot-pin projecting from the frame-piece 34. These jaws are kept normally closed, or nearly so, by the tension-spring 33, stretching from tail to tail 32, formed as parts of said jaws. The arm 2 is provided with a pin 3, adapted to come beneath the said jaws. Preferably said pin may be the extended spindle or arbor of the roller 1. Now when the arms 2 and the roller 1 are raised said spindle is forced between said jaws 30 and by them supported in the desired elevated position. To automatically elevate the roller 1 into this position I provide the weight 20, slidable upon the vertical rod 21 and connected by the flexible link or strap 22 with the rearward extension 6 of the arm 2. A detent 25, engaging a catch 24 on said weight, supports the latter in the raised position shown in Fig. 2, a leaf-spring 27 serving to insure such engagement. The arm 2 being provided with a projection 8, adapted to contact with the tail 26 of said detent whenever the roller 1 falls and carries the paper A into the teeth of the knife 17, said projection causes the detent to release the weight, and the latter at once through its connection with the extension 6 raises the roller up into the grasp of the jaws 30. This arrangement makes the fall of the roller, the severance of

the paper, and the elevation of the roller back again entirely automatic and practically instantaneous.

The next feature is that of the means whereby the weight 20 is returned to its elevated position and the roller 1 released from the jaws 30 and permitted to rest upon the paper web A. This I accomplish by having the end of the pivoted tongue 40 pressed by the coiled spring 43 down against the inner surfaces of the jaws 30. Hence when the spindle 3 has been forced up into engagement with said jaws it rests beneath said tongue.

The knife 17 being held by the arms or levers 10, pivoted at 13 to portions of the machine-frame or other parts, as E, when the handle 11 is thrown downward said knife is lowered a sufficient distance to put it out of the way of the operator engaged in inserting the new roll of paper. The new roll being now applied, the handle 11 is depressed far enough to cause the lever-section 18 to bring its end 19 against the under side of the weight 20 and to raise the latter into its normal elevated position, where the detent 25 engages and sustains it. The handle 11 is now brought strongly up until the nose 16 of the plate 14 impinges against the under side of the tail of the tongue 40, and thereby forces the tongue proper downward and expels the spindle 3 from between the jaws 30. At the same instant the hook 15 of said plate 14 engages the rib 42, which latter is elastically pressed against the same by the spring 43. This retains the lever 10 in its required normal position, and the roller 1 being now supported upon the paper A the attachment is again ready to act upon and sever the paper end which next arrives.

It will be observed that the handle 11 is made sufficiently heavy to nearly counterweight the weight 20, and thereby to lessen the energy needed for raising said weight.

Although I refer to the part 17 as a "knife-edge" I do not restrict myself to an unbroken edge, for the reason that, as shown in Fig. 1, I often employ a serrated edge. In fact, I find such broken or serrated edge to be much the best means for severing the paper.

What I claim as my invention, and for which I desire Letters Patent, is as follows, to wit:

1. The combination with the traveling web of paper, of the knife-edge supported transversely beneath the same, and the member loosely held and resting upon said web of paper, whereby when the tension on said paper is released said member carries it into contact with said knife-edge and causes it to be severed, substantially as set forth.

2. The combination with the traveling web of paper, of the knife-edge supported transversely beneath the same, and the roller resting upon said web and adapted when the tension on said paper is released, to carry the latter into contact with said knife-edge, substantially as and for the purpose set forth.

3. The combination with the traveling web of paper, of the knife-edge supported transversely beneath the same, the roller resting upon said web, the pivoted arms carrying said roller, means for elevating said roller after it has fallen, and a detent for rendering said means of elevation normally inactive and adapted to release said means when said roller falls, substantially as set forth.

4. The combination with a traveling web of paper, of the knife-edge supported transversely beneath the same, the roller, resting on said web, the pivoted arm controlling the said roller, the weight, the detent holding said weight in an elevated position, a flexible connection between said weight and an extension of said arm, and a projection adapted to disengage said detent from said weight when said roller falls, whereby said weight is adapted to raise said roller immediately after its fall, substantially as set forth.

5. The combination with a traveling web of paper, of the knife-edge supported transversely beneath the same, the roller resting upon said web, a projection or spindle connected with said roller, jaws located above said projection or spindle and adapted to receive and retain the same when said roller is elevated, and a pivoted tongue reaching between said jaws and adapted when forcibly tilted to expel said projection or spindle and permit the roller to drop upon the web of paper, substantially as set forth.

6. The combination with the traveling web of paper, of the pivoted lever, the knife-edge carried thereby beneath said web, the roller resting upon said web, the suspended weight adapted when permitted to drop to elevate said roller, a device, for holding said roller when elevated, adapted to release the same when said lever is raised to its normal position, and an extension of said lever reaching beneath said weight and arranged to raise the same when the said lever is depressed, whereby the two movements of said lever are adapted to return the parts of the mechanism to their normal positions, substantially as set forth.

7. In an automatic paper-severing device, the combination with the traveling web of paper, the roller resting thereon and having the spindle, the jaws located above said spindle and adapted to receive the same, the pivoted tongue reaching between said jaws, and having the ribbed tail, the lever having the hook adapted to engage said ribbed tail and the projection for striking beneath it, and the knife-edge connected with said lever and held transversely beneath said web, substantially as and for the purpose set forth.

In testimony that I claim the foregoing invention I have hereunto set my hand this 17th day of April, 1899.

FRANK M. FOSTER.

Witnesses;
A. B. UPHAM,
ROBERT BUTTERWORTH.