

No. 698,428.

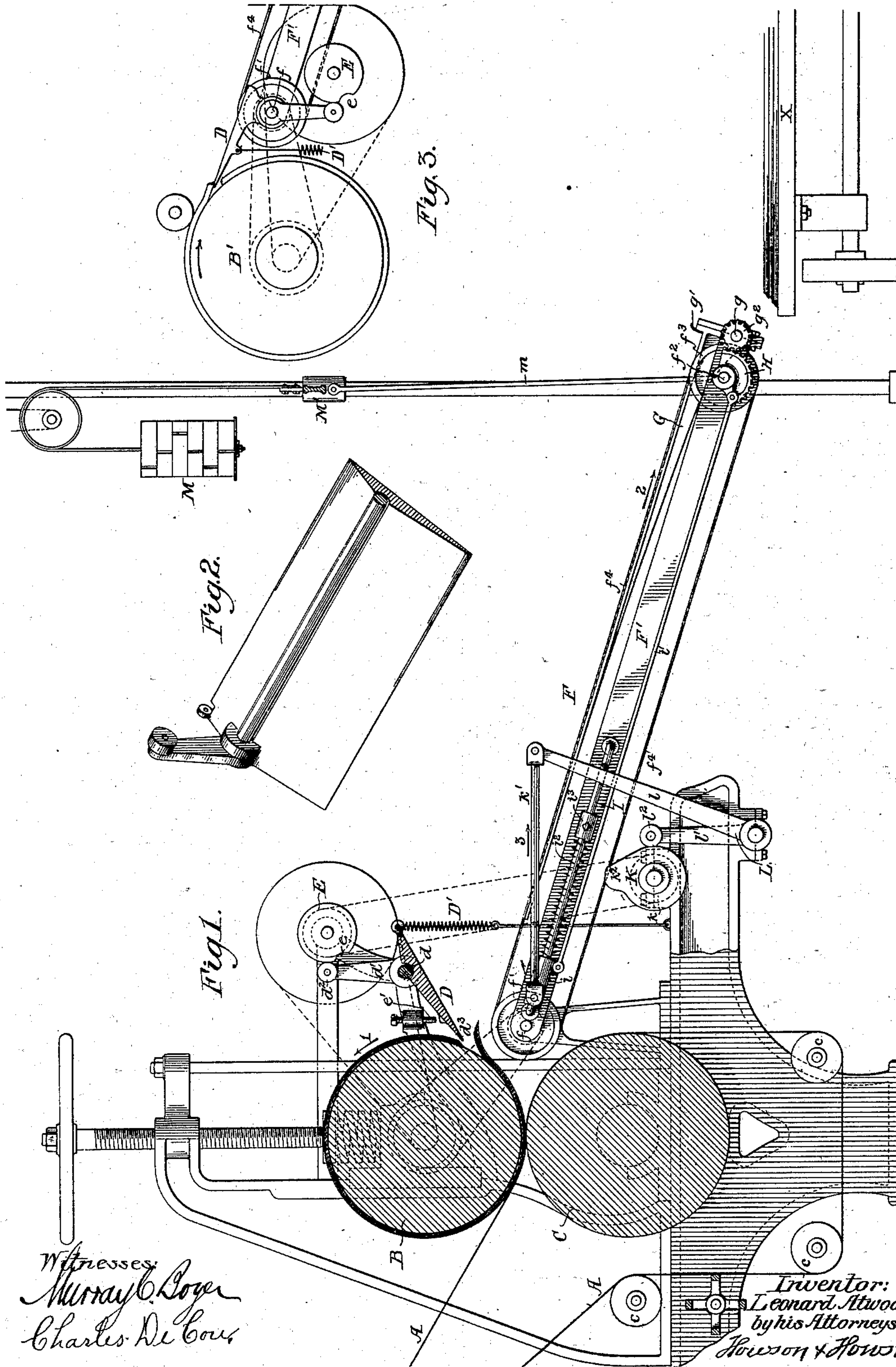
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L. ATWOOD.

PAPER OR PULP BOARD MAKING MACHINE.

(Application filed Nov. 27, 1899.)

(No Model.)



Witnesses:
Murray C. Boyer
Charles De Cour

Inventor:
Leonard Atwood
by his Attorneys,
Howson & Howson

UNITED STATES PATENT OFFICE.

LEONARD ATWOOD, OF PHILADELPHIA, PENNSYLVANIA.

PAPER OR PULP-BOARD MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 698,428, dated April 29, 1902.

Application filed November 27, 1899. Serial No. 738,401. (No model.)

To all whom it may concern:

Be it known that I, LEONARD ATWOOD, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain
5 Improvements in Paper or Pulp-Board Making Machines, of which the following is a specification.

The object of my invention is to provide automatic means for removing sheets of paper-stock from the forming-roll of a paper-making machine. This object I attain in the
10 following manner, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional view of sufficient of
15 a paper-making machine to illustrate my invention, showing in elevation the improved mechanism for removing and delivering the paper-stock from the forming-roll. Fig. 2 is a perspective view, partly in section, of the
20 cutter-blade forming a part of my invention; and Fig. 3 is a view of a modification of a part of my invention.

Heretofore it has been the practice in forming sheets of paper-stock, such as wood-pulp,
25 to form the sheet by wrapping the pulp around a forming-roll a number of times in order to form a tube and cutting the tube thus formed while still in a wet condition by running a stick or knife across the same, the operator
30 then taking the sheet as it comes from the roll and placing it on a pile. This is a very tedious and slow operation, each machine requiring the constant attention of an operator. By my invention I provide means where-
35 by the tube is automatically cut, removed from the roll or drum, and placed upon a pile, either on the floor or on a truck for delivery, without any handling by the operator.

Referring to the drawings, A is the felt for
40 carrying the pulp from the usual vat to the press-rolls B and C. B is the upper press-roll on which the pulp is wound, and C is the lower press-roll, around which the felt passes as it returns to the vat over the guide-rolls c.
45 This is one form of paper-making machine; but it will be understood that the preliminary steps prior to the forming of the sheet upon the press-roll can be modified without departing from my invention.

50 In operating the machine the paper-pulp is collected by the mold-cylinder and transferred to the felt. It then passes around the

couch-roll with the felt and is introduced between the press-rolls B and C. The press-roll B being of wood or metal, the pulp will adhere to said roll and will be wrapped around
55 the same as it is driven, so that the pulp cylinder or tube can be formed of as many layers of pulp as desired. In order to cut this pulp-tube and remove it from the cylinder
60 without interfering with the continuous operation of the machine, I provide a cutter-plate D, in the present instance pivoted at d and having an arm d'.

E is a cam having an abrupt depression or
65 recess e, into which the roller d² on the end of the arm d' is forced by a spring D' when the recess e is presented to the roll. The spring D' turns the cutter-plate D on its pivot and forces the edge d³ of the same against
70 the layers of paper-pulp on the roll, and as the roll turns in the direction of the arrow 1 it will drag the plate D toward itself until said plate comes in contact with a stop e', arranged adjacent to the plate D and serving
75 to limit the movement of the same. The stop e' is so set that the cutter-plate will sever the pulp, but will not come in contact with the roll. This arrangement is desirable, as the roll is usually made of wood. When the roll
80 is made of metal, however, the plate D may contact with the same when cutting the pulp. The stop e' in the present instance is simply an adjustable screw; but it may be a fixed stop, if desired. The recess e in the cam E
85 is abrupt, so that the cutter-plate is forced toward the roll, cuts the pulp, and is drawn back quickly, so as to engage the edge of the sheet to be removed and cause it to leave the roll, and as the roll rotates the sheet will be
90 guided by the cutter-plate onto the feed-table F. The feed-table F, consisting of the side frames F', (only one of which is shown,) is pivotally mounted on a shaft f, journaled in suitable bearings mounted on the frame of
95 the paper-machine. The shaft f carries the rope or tape wheels f', and the shaft f² at the opposite end of the frame carries the rope or tape wheels f³. The tapes or ropes f⁴, which
100 pass around the tape-wheels f' and f³, are driven in the direction of the arrow 2 by a belt from a pulley on the shaft of the upper press-roll B.

Mounted in suitable bearings carried at the

end of the frame F is a shaft g , which carries a series of lay-boy arms G, adapted to receive the sheets of pulp as they are delivered from the roll B, and these arms are provided with stops g' , with which the sheets come in contact when they are traversed on the tapes in the direction of the arrow 2. The lay-boy arms are provided for the purpose of transferring the pulp sheets from the table F onto a suitable platform or onto a truck, as X, by means of which they may be carried away from the machine. The lay-boy arms are operated in the following manner: Gearing with a pinion g^2 , mounted on the shaft g , is a segment H, and when this segment is moved the lay-boy arms will be turned so as to remove the sheets of paper-pulp from the feed-table F and deposit them in a pile. Mounted on the frame F' of the feed-table is a slide-bar I, and carried on this bar is a slide i , which latter is connected, by means of a rod i' , with the segment H, a spring i^2 , also on the slide-bar I, serving to keep the parts in the normal position. To move the rod i' in order to actuate the lay-boy arms, I provide a cam K, suitably journaled in bearings k on the frame of the machine, and this cam serves to move a lever L, pivotally mounted below the frame of the machine and connected to the slide i on the slide-bar I. The arm l of the lever L is connected to the slide i by means of a link k' , and the other arm l' of the lever L has a roller l^2 , which is always in contact with the cam K. The cam K has an abrupt projection k^2 , and when this projection comes in contact with the roller on the arm l' of the lever L it moves the same to one side, and the arm l of the lever moving with it the rod i' is pushed in the direction of the arrow 3, rocking the segment H, so as to rotate the pinion g^2 and turn the lay-boy arms G. The spring i^2 on the slide-bar I, acting against the adjustable stop i^3 , serves to retract the slide as soon as the projection on the cam K moves out of engagement with the arm l' of the lever L and the parts are returned to their normal position and the lay-boys are ready to receive another sheet of paper-pulp.

Referring again to the mechanism for operating the cutter-plate D, its cam is driven from the press-roll B by means of a belt or gearing, and the gearing may be varied according to the number of layers of paper-pulp desired to be formed upon the roll. By making the gearing five to one, as in the present instance, five sheets or layers of pulp will be laid on the forming-roll before the cutter-plate will act to cut the tube thus formed. It will be readily understood that the variation in speed will vary the number of coatings of pulp laid on the forming-roll.

In Fig. 3 I have shown a slight modification of the machine, in which the direction of the press or forming roll B' is reversed and having the cutter-plate arranged directly in front of the receiving-table. In this instance a small weighted roll is mounted directly

above the press-roll and in advance of the cutter-plate, so as to properly feed the paper over the cutter-plate and onto the table after the cutter-plate severs the tube on the roll. Both actuating-cams in this instance are mounted on the same shaft; but it will be understood that the details can be modified without departing from the main feature of my invention.

The feed-table F is suspended at its free end by means of links m from a vertically-movable frame M', and said frame is counterbalanced by a weight M, hung from a suitable band or cord passing over a pulley, the opposite end of which band or cord is attached to the frame M'. As the lay-boys deliver a sheet of paper or pulp-board to the truck X their operating mechanism tends to swing them beyond the center, and they straighten out in a horizontal plane from their pivotal connection to the feed-table F by the contact with the sheet just laid on the truck. This contact acts as a fulcrum for the lay-boys, and the free end of said feed-table is thereby caused to be raised the thickness of the paper-pulp board. As each successive sheet or board is laid upon the truck the lay-boys assume a horizontal position in the manner just described, and as said lay-boys are raised a distance equal to the thickness of the pulp or paper board at each operation the free end of the feed-table will be raised the same distance and such movement of the feed-table will be held by the counterbalance-weight M. By the means just described the feed-table is maintained in proper position for the lay-boys to deposit the sheets of paper or pulp-board successively on the truck.

It will thus be seen that I can roll the pulp on a cylinder or drum, and after a certain number of layers of pulp have been placed on the roll the tube thus formed may be severed automatically, removed from the roll, and deposited in piles either on a truck or on the floor at the side of the machine. The sheets of paper-pulp are cut uniformly, and the edges are comparatively clean.

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

1. The combination in a pulp-board or paper making machine, a roll upon which the paper or paper-pulp is laid, a pivoted cutter-blade, means for actuating the said cutter-blade to throw it toward and from said roll, means for feeding the cut paper or pulp away from the cutter-blade, comprising a pivoted frame, a counterbalance for said frame, and a lay-boy pivoted to said frame for transferring the sheets from the same, said lay-boy being so pivoted with the frame that its contact with the deposited sheets will tend to lift the frame and permit a partial raising of the same by the weight of the counterbalance.

2. The combination in a paper or pulp-board making machine, of a roll upon which the pulp is laid, a pivoted cutter-blade extend-

ing the length of said roll and adapted to sever
the pulp laid thereon, an arm carried by said
cutter-blade a spring connected to said cut-
ter-blade and tending to force it against the
5 roll, a cam contacting with the arm of the
cutter-blade whereby the latter is held away
from the roll, said cam having a depression
for the reception of the end of the cutter-
blade arm thereby permitting movement of
10 said cutter-blade at regular intervals, means
for feeding the sheet of pulp away from the

roll to a frame or feed-table, and a series of
lay-boys pivoted to said frame for transfer-
ring the sheet therefrom, substantially as de-
scribed.

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

LEONARD ATWOOD.

Witnesses:

MURRAY C. BOYER,
JOS. H. KLEIN.