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METHOD AND MACHINE FOR MAKING PAPER

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Fig. 1.

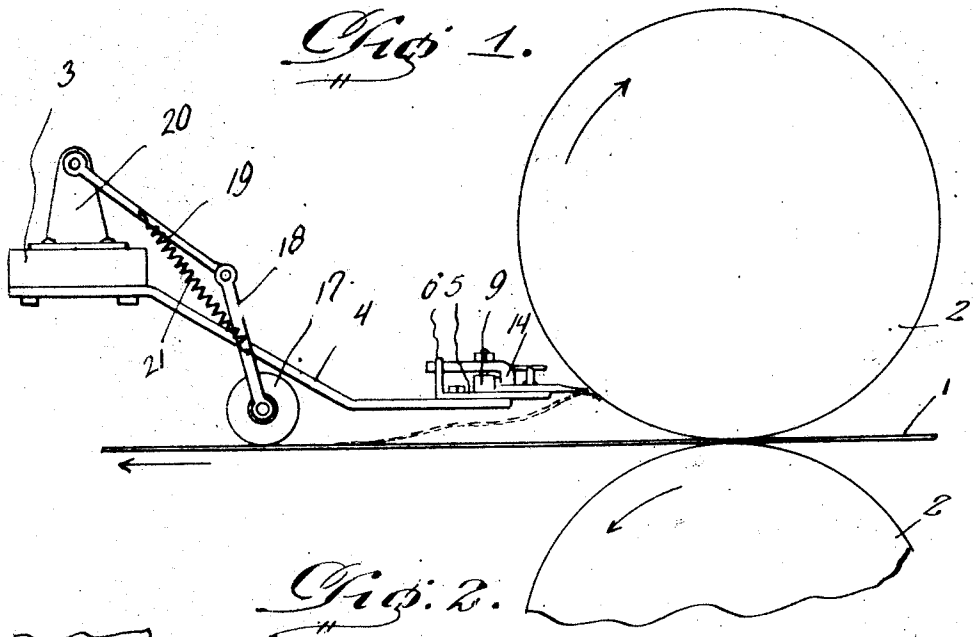

Fig. 2.

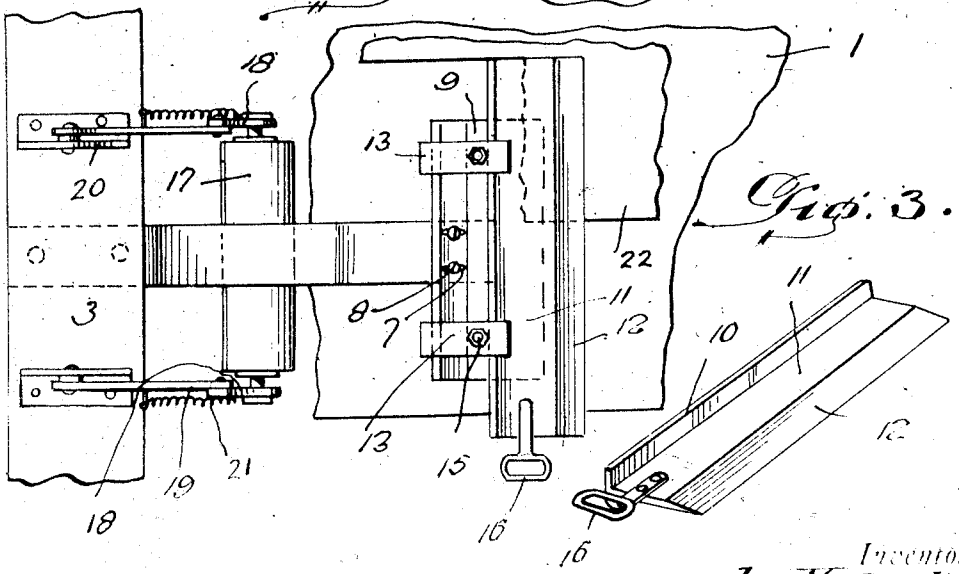

Fig. 3.

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UNITED STATES PATENT OFFICE.

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METHOD AND MACHINE FOR MAKING PAPER.

Application filed September 2, 1926. Serial No. 133,201.

This invention relates to a method and a machine for use in making paper, and particularly in treating of lead strips in a Fourdrinier paper machine.

This invention comprehends the method of taking off an end portion of a moving paper web from one part of a paper making machine to which it is adherent and deflecting it toward and carrying it to another part without breaking the fabric after it is separated from the press roll, and an apparatus for use in said method which is applicable to the press roll and all other phases of the machine where such removal is desired.

This invention further comprehends the process of forming a narrow end or lead strip of the moving paper web and tearing it with a sliding blade in the nature of a doctor held against the roll to which the strip adheres, which is shoved across and through the path of the web or strip laterally to its direction of motion in such a manner that as the strip progresses the blade tears it and deflects the end portions through the positioning of the blade toward the felt so that it will proceed on the felt to the next roller.

The invention further comprehends the provision of an apparatus including means attached to a suitable support and projecting in proximity to the roll from which the lead is to be stripped or cut with suitable adjustable means mounted on said projecting means which is adapted to slidably receive a cutting member or doctor adapted for engagement with the periphery of the roll and movement transversely to the direction of travel of the lead for cutting the lead from the surface of the roll and directing it toward the felt in such a manner that the doctor may be applied or removed when desired after the apparatus is once set and adjusted on the machine.

The invention comprehends numerous other objects residing in the particular manner of carrying out the method in constructing and operating the apparatus, all of which are more particularly pointed out in the following detailed description and claims directed to a preferred form of the invention, it being understood however that various changes in the size, shape, and arrangement of parts may be made without departing from the spirit and scope of the invention as herein set forth.

In the drawing forming part of this application:

Figure 1 is a side elevational view of the improved apparatus for carrying out the operation on the paper machine forming the subject matter of this invention which also illustrates the felt and the presser rolls with which the device is shown associated for convenience in illustration.

Figure 2 is a plan view of the apparatus shown in Figure 1, with the rolls omitted.

Figure 3 is a perspective of the knife member used in connection with this invention which is similar to a doctor.

The apparatus and process of this invention is designed more particularly for use in conjunction with the press rolls of a paper making machine of the Fourdrinier type, but it is to be understood that it may be associated with any roll of a paper making machine where it is desired to remove the strip.

The felt of the paper machine is indicated at 1, and the press rolls at 2, which are constructed in the usual and well known manner, while 3 indicates a suitable support forming part of the paper machine structure on which this invention is mounted.

A suitable arm member 4 is attached at one end to the support 3 and at its opposite end projects in offset relation as shown in Figure 1 toward the periphery of the upper press roll 2 in spaced relation above the felt 1. A supporting plate 5 is formed at its rear edge with an upstanding flange 6 as shown in Figure 1 and adjacent which said plate is formed with slotted portion 7 to receive suitable securing means 8 adapted to adjustably secure the plate member 5 on the free end of the arm 4 so that it may be moved toward or away from the periphery of the press roll 2. The plate member 5 is formed with a rib projecting upwardly from its central portion as indicated at 9 and adapted to form a guide way for the flanged edge 10 of the cutter blade 11 having the opposite free edge thereof formed with a sharpened beveled edge 12. A pair of bearing brackets 13 are formed with lateral extensions 14 having bearing engagement with the inner edge of the flange 10 and the upper face of the cutter blade 11 as shown in Figure 1,

while the central portions are formed with openings for removing the fitting on the studs 15 projecting upwardly from the rib 9 and which receives threadedly a suitable nut adapted to secure the bearing bracket in position to properly tension the cutter member and bearing contact between the ends 14 and the plate member 5. The opposite ends of the bearing brackets extend through notches in the upper edge of the flange 6 on the plate 5 in order that said brackets will be held in rigid parallel relation during the operation of the slidable cutter member 11. In this way adjustment of the bearing brackets can be made to compensate for wear and retain the parts in the proper substantially rigid associated relation and yet permitting sliding movement of the cutter plate 11. This cutter member 11 is slidable across the plate 5 in a direction transversely to the travel of the felt 1 in order to carry out the method of separating the lead strips from the paper web and directing it toward the felt 1 in a manner which will be presently described. A suitable handle 16 is secured to the end of the blade member 12 and projects outwardly beyond the ends as shown in Figure 3 in order to provide suitable means by which cutter members may be suitably and manually manipulated in carrying out the method of this invention.

In the rear of the stripping device in the direction of movement of the felt 1 is positioned a presser roller 17 which is journaled in the arms 18 at one end thereof and adapted for riding on the felt 1 for engagement with the strip separated from the press roll 2 by the cutter member back onto the felt so that the same will travel along in the usual way with this felt. The upper ends of the arms 18 are pivotally connected to the end of arms 19 which are in turn pivotally connected at their opposite ends to the supporting brackets 20 mounted on the support 3. These links 18 and 19 which are arranged at opposite ends of the rollers 17 as shown in Figure 2 form toggle connections for the roller with this support 3 in which the joint is normally broken as shown in Figure 1 and through the operation of the tensioned coil spring 21 normally serves to operate the arms 18 and 19 and force the roller 17 toward the felt 1. The operation of this presser roller 17 is to engage the strip as it leaves the press roll 2 through the operation of the cutter member 11 so that the roller will ride over the strip separated from the press roll and force it back into intimate contact with the felt 1.

This apparatus is applied to a paper machine as shown in Figures 1 and 2 and when the machine is started up for making the web of paper, the cutter member 11 is inserted between the rib 9 on plate 5 and across the face of the upper press roll 2, so as to engage the web of paper passing between the press rolls and adhering to the upper roll 2 and cut and separate a strip along one edge of the web therefrom on the face of the press roll 2 to form a lead strip and at the time of separating this lead strip from the web of paper to direct the same downwardly in the separating operation toward the felt 1 as indicated in dotted lines in Figure 2 at 22 so that the strip will return by its own weight and by gravity to the felt 1 of the paper machine and pass onwardly therewith. The width of the strip may be determined by the adjustment of the blade 11 through its insertion and movement across the face of the press roll 2 at right angles to the direction of travel of the strip and in this way separate and form the desired character of lead strip in the machine. As this cutter blade actually cuts the strip from the main web of paper on the press roll it separates the strip from the press roll by extending between the face of the roll and the inner face of the strip and directs the strip outwardly from the face of the press roll and downwardly through the cooperation of the action of gravity therewith until the strip returns to the felt 1. The presser roller 17 then engages the lead strip and presses the same in firm contact with the felt 1, and in so doing smooths out the wrinkles formed in the lead strip so that a substantially even and smooth lead strip is laid on said felt.

From the above description it will be readily understood that a new process has been provided by this statute for forming a lead strip in making paper and separating this lead strip from the web and the press roll or other roll with which the process and apparatus is employed so that the lead strip is returned to the felt and suitably pressed if desired through the operation of the roller 17.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:—

1. In combination with a paper making machine having a web and rolls engaging said web, a support, a supporting arm projecting from said support, a cutter blade slidably and adjustably mounted on said supporting arm for contact with the periphery of said roll in a predetermined manner, a presser roller, and means movably and rotatably supporting said presser roller on said support for engagement with said web to press a paper strip into firm engagement with said web.

2. That improvement in the art of making paper on a paper making machine, which consists in directing a blade commonly known as a doctor across the line of movement of a web of paper and an adjacent nar-

row strip, the blade extending between the strip and part to which it is adherent and separating said strip from said part and deflecting it with the aid of gravity and its own momentum toward the felt; and finally engaging and pressing the said strip into contact with the felt so that it will continue moving with the said felt.

3. An attachment for a paper making machine comprising a supporting arm, a plate mounted on the arm and adjustable lengthwise of said arm, a guide rib on said plate, a blade having a laterally extending flange formed on one edge mounted on the plate with the flange engaging said rib, said blade being slidable on the plate, and clamping means adjustably secured to the plate and engaging the blade and flange thereon adapted to retain the blade on the plate and provide a tension thereon.

4. An attachment for a paper making machine, comprising a supporting arm, a plate mounted on said arm for lengthwise adjustment, a blade slidably mounted on the plate, and means for retaining the blade assembled with the plate adjustable to apply a tension between the blade and plate for governing the sliding movement.

In testimony whereof I affix my signature.

CHARLES V. PROCTOR.