C. E. POPE.

FOURDRINIER MACHINE.

APPLICATION FILED MAY 29, 1915.

1,174,611.

Patented Mar. 7, 1916.

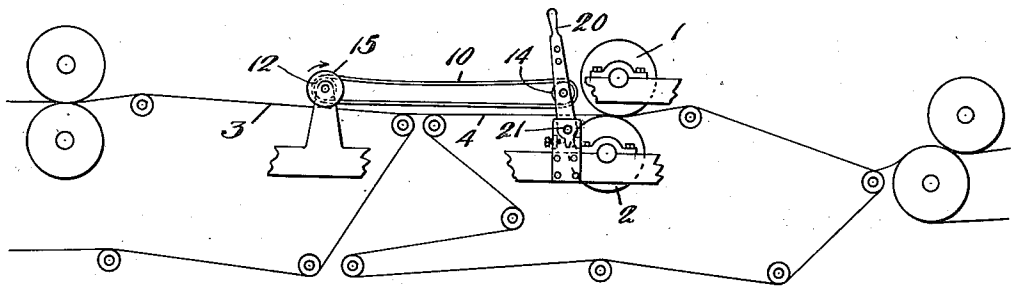


Fig. 1.

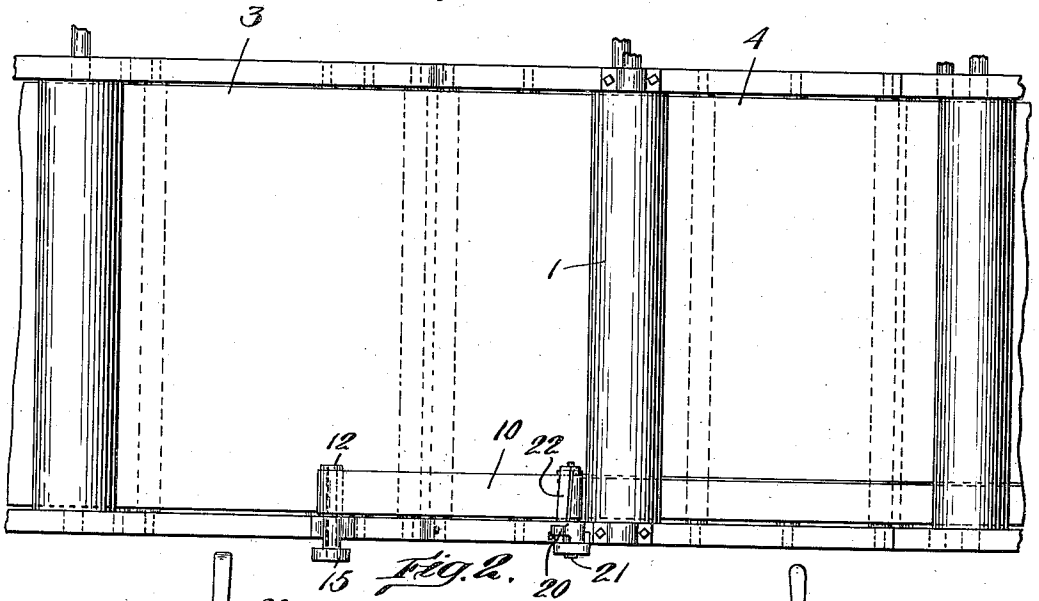


Fig. 2.

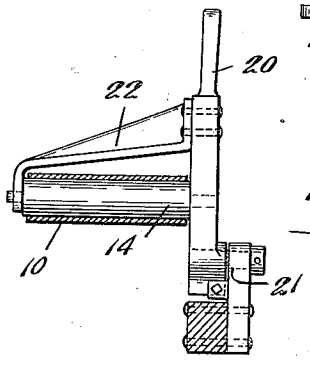


Fig. 4.

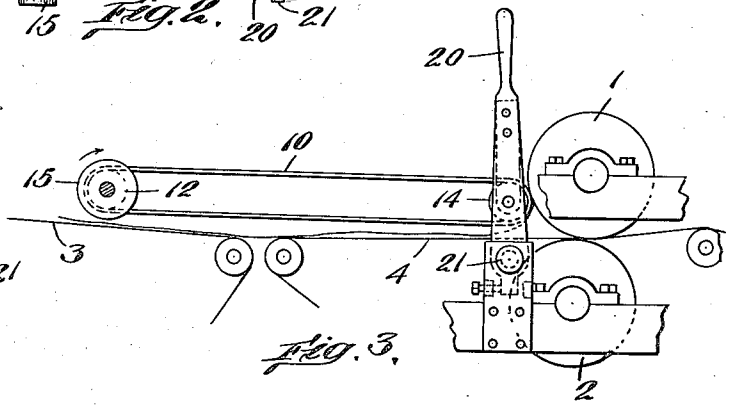


Fig. 3.

Witness:
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UNITED STATES PATENT OFFICE.

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FOURDRINIER MACHINE.

1,174,611. Specification of Letters Patent. Patented Mar. 7, 1916.

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To all whom it may concern:

Be it known that I, CHARLES E. POPE, a citizen of the United States, residing at Holyoke, in the county of Hampden and State of Massachusetts, have invented an Improvement in Fourdrinier Machines, of which the following is a specification.

My invention relates to paper-making, being particularly applicable to paper-making upon Fourdrinier machines run at high speed.

It consists of a new device applicable to the press-roll or drying portion of paper-making machines and adapted for taking off the web from an upper press-roll and causing it to follow the felts. This device comprises a narrow endless traveling band, arranged above the felt, and supported upon end-rollers, which drive the belt at a speed preferably somewhat in excess of the speed of the felts. This device is arranged for movement into and out of contact with the upper press-roll from which it is desired to take off the web; it being movable into engagement with said roll at the beginning of the paper-making operation, or after a break, whereupon the band, which is traveling at the point of contact with the upper press-roll in the opposite direction therefrom, will necessarily remove the web therefrom and redirect it, and cause it to fall by gravity upon the felt, although it may be assisted more or less by its momentum. The traveling band, after contact with the press-roll and the removal of the web therefrom is carried substantially parallel with the felt, in the same direction and preferably at a higher speed than the felt. In this way it acts to assist in guiding the web along with the felt, and to insure its substantial engagement therewith. The material of which the band is made is felt or some similar material, to which the web will not adhere strongly, and the speed of the band is such as to counteract any tendency to adhere, because being greater than the speed of the web, any adhesion formed between the wet web and the band is at once broken. In this way I have not only produced an effective take-off device, but a guide which can be carried as far along with the wet web as may be desired, to assist in keeping the web in place on the felt. I may carry the endless band across the space between the first and second felt, if desired, and by so doing some advantage is secured in the way of guiding the web, but it is not necessary that the traveling band be so long.

In practice, I prefer that the endless band shall not be over two feet wide, as the practice is to carry over only a narrow strip of the web at first, and after such strip is running properly then to increase the width of the web to the full width. Thereupon, I prefer to relax the traveling-band, or otherwise move it out of contact with the press-roll, thus saving wear upon the band and the press-roll.

Figure 1 is a conventional view of a portion of a Fourdrinier machine illustrating my invention. Fig. 2 is a plan view of the same. Fig. 3 is an enlarged side elevation of the take-off device and associated parts. Fig. 4 is an enlarged detail of the actuating-means for moving the take-off device into and out of engagement with the press-roll.

1 and 2 represent, respectively, the upper and lower press-rolls, and 3 and 4, the felts which are associated therewith in any usual or suitable manner, said elements, in so far as here shown, being common in the drying or press-roll portion of a Fourdrinier machine. My novel take-off device is here shown as arranged for co-action with one, which may be any one of the upper press-rolls, but it is more important in connection with the first upper press-roll than with the other, as the paper is harder to take off from that roll.

In the construction of my take-off device 10 represents a traveling endless belt of some material to which the web will not strongly adhere, felt being well suited to the purpose. This endless band is arranged and supported by a pair of end-rolls 12, 14, one of which, as 12, may be positively driven, it being here shown as having a driving-pulley 15 arranged upon, or associated with its shaft, which may be driven by any suitable driving-means, or from any suitable source, and preferably at a speed slightly greater than the speed of the moving felts. The other end-roll 14 has the bearings of its supporting-shaft arranged in a movable frame-structure, to admit of said end-roll being moved bodily. Said end-roll 14, is disposed adjacent an upper press-roll, and its bodily movement is sufficient to enable the band passing over it to move into and out of engagement with said upper press-

roll. As a frame-structure for supporting and bodily moving said end-roll, I have here shown a lever 20, pivoted at 21, having a bearing for one end of the shaft-carrying said end-roll, and having connected with it an outstanding arm 22, which has a bearing for the other end of said shaft, so that upon swinging said lever, said end-roll will be moved bodily, and the felt-band passing over it will be moved into and out of engagement with the press-roll.

When starting the machine, or in case of a break in the web, the narrow strip of web which is formed on the wire is carried forward by the press-rolls, and has a tendency to adhere to an upper press-roll. To prevent it from winding thereon the movable end-roll of my take-off is moved to bring the felt band into engagement with said upper press-roll, and as the band is traveling at the point of contact in a direction opposite to that of the contacting-portion of the press-roll the web is removed from the press-roll and caused to fall by gravity upon the felt below, being assisted more or less by its momentum. Said narrow strip is then carried along by the felt and is held in place thereon by the lower horizontal portion of the traveling-band which is at such time arranged in parallel relation therewith, but which is preferably moving at a slightly greater speed. As soon as the narrow strip is found to be running properly, the web is gradually increased to its full width on the wire, and then the movable end-roll of the take-off device may be returned to its normal position, carrying the felt-band out of engagement with the press-roll. Such movement of the end-roll slackens the traveling-band somewhat, but not sufficient to be harmful. There may be one or more take-off devices of this description associated with the machine as may be desired, and they may be associated with any of the press-rolls. I prefer to arrange my take-off device so that it shall extend over the adjacent ends of two felts, thus crossing the space between them, as represented in Fig. 1.

I claim:—

1. In a Fourdrinier machine having in combination with the press-rolls and felts, a take-off device comprising a traveling-band, end-rolls supporting said band, one of said end-rolls being bodily movable, and means to move said movable end-roll bodily to carry the band into and out of engagement with one of the press-rolls, the portion of said band which contacts with said press-roll having a movement in a direction opposite to that portion of the press-roll which it engages.

2. In a Fourdrinier machine having in combination with the press-rolls and felts, a take-off device comprising a traveling-band arranged in substantially parallel relation with the felt, end-rolls supporting said band, one of said end-rolls being bodily movable, and means to move said movable end-roll bodily to carry the band into and out of engagement with one of the press-rolls, the portion of said band which contacts with said press-roll having a movement in a direction opposite to that portion of the press-roll which it engages.

3. In a Fourdrinier machine having in combination with the press-rolls and felts, a take-off device comprising a traveling-band arranged above and in substantially parallel relation with the felts and extended over the space between them, end-rolls supporting said band, one of said end-rolls being bodily movable, and means to move said movable end-roll bodily to carry the band into and out of engagement with one of the press-rolls, the portion of said band which contacts with said press-roll having a traveling movement in a direction opposite to that portion of the press-roll which it engages.

4. In a Fourdrinier machine having in combination with the press-rolls and felts, a take-off device comprising a traveling-band, end-rolls supporting said band, one of said end-rolls being bodily movable, and means to move said movable end-roll bodily to carry the band into and out of engagement with one of the press-rolls, the portion of said band which contacts with said press-roll having a traveling movement in a direction opposite to that portion of the press-roll which it engages, and manual means connected with the movable end-roll for moving it.

5. In a Fourdrinier machine having in combination with the press-rolls and felts, a take-off device comprising a traveling-band, end-rolls supporting said band, one of said end-rolls being bodily movable, and means to move said movable end-roll bodily to carry the band into and out of engagement with one of the press-rolls, the portion of said band which contacts with said press-roll having a traveling movement in a direction opposite to that portion of the press-roll which it engages, and a pivoted lever connected with the movable end-roll for moving it.

6. In a Fourdrinier machine having in combination with the press-rolls and felts, a take-off device comprising a traveling felt-band arranged adjacent to one of the press-rolls and adapted for contact therewith, its contacting portion traveling in a direction opposite to that portion of the press-roll which it engages.

7. In a Fourdrinier machine having in combination with the press-rolls and felts, a take-off device comprising a traveling felt-band arranged adjacent to one of the press-

rolls and adapted for contact therewith, its contacting portion traveling in a direction opposite to the portion of the press-roll which it engages, said band being arranged in substantially parallel relation with the felt.

8. In a Fourdrinier machine having in combination with the press-rolls and felts, a take-off device comprising a traveling felt-band arranged adjacent to one of the press-rolls and adapted for contact therewith, its contacting-portion traveling in a direction opposite to the portion of the press-roll which it engages, said band being arranged above and in substantially parallel relation with the felts and extended over the space between two felts.

9. In a Fourdrinier machine having in combination with the press-rolls and felts, a take-off device comprising a traveling felt-band arranged adjacent to one of the press-rolls and adapted for contact therewith, its contacting-portion traveling in a direction opposite to the portion of the press-roll which it engages, and supporting and traveling-means for said band.

10. In a Fourdrinier machine having in combination with the press-rolls and felts, a take-off device comprising a traveling felt-band arranged adjacent to one of the press-rolls and adapted for contact therewith, its contacting-portion traveling in a direction opposite to that portion of the press-roll which it engages, and traveling-means for said band, and means to move said band into and out of engagement with the press-roll.

11. In a Fourdrinier machine in combination with the press-rolls and felts, a narrow felt-strip arranged on a rotatable cylindrical member adjacent one of the press-rolls and adapted for contact therewith, its contacting-portion traveling in a direction opposite to that portion of the press-roll which it engages.

12. In a Fourdrinier machine in combination with the press-rolls and felts, a narrow felt-strip arranged on a rotatable cylindrical member adjacent one of the press-rolls and adapted for contact therewith, its contacting-portion being movable in a direction opposite to that portion of the press-roll which it engages and means to move said member bodily to move the felt into and out of engagement with the press-roll.

13. In a Fourdrinier machine having in combination with the press-rolls and felt, a take-off device comprising a traveling-band arranged over the felt and adjacent one of the press-rolls, its traveling movement being at a greater speed than the speed of the moving felt, an end-portion of said band being movable into and out of engagement with one of the press-rolls, and its contact portion traveling in a direction opposite to that portion of the roll which it engages.

14. In a Fourdrinier machine having in combination with the press-rolls and felts, a take-off device comprising a traveling-band arranged over the adjacent portions of two felts and adjacent the upper press-roll, its traveling motion being at a greater speed than the speed of the felts, and its end-portion being movable into and out of engagement with said press-roll, and its contact portion traveling in a direction opposite to the portion of the press-roll which it engages.

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

CHARLES ELMER POPE.

Witnesses:
JAS. C. WEIR, Jr.,
W. C. JENKINS, Jr.