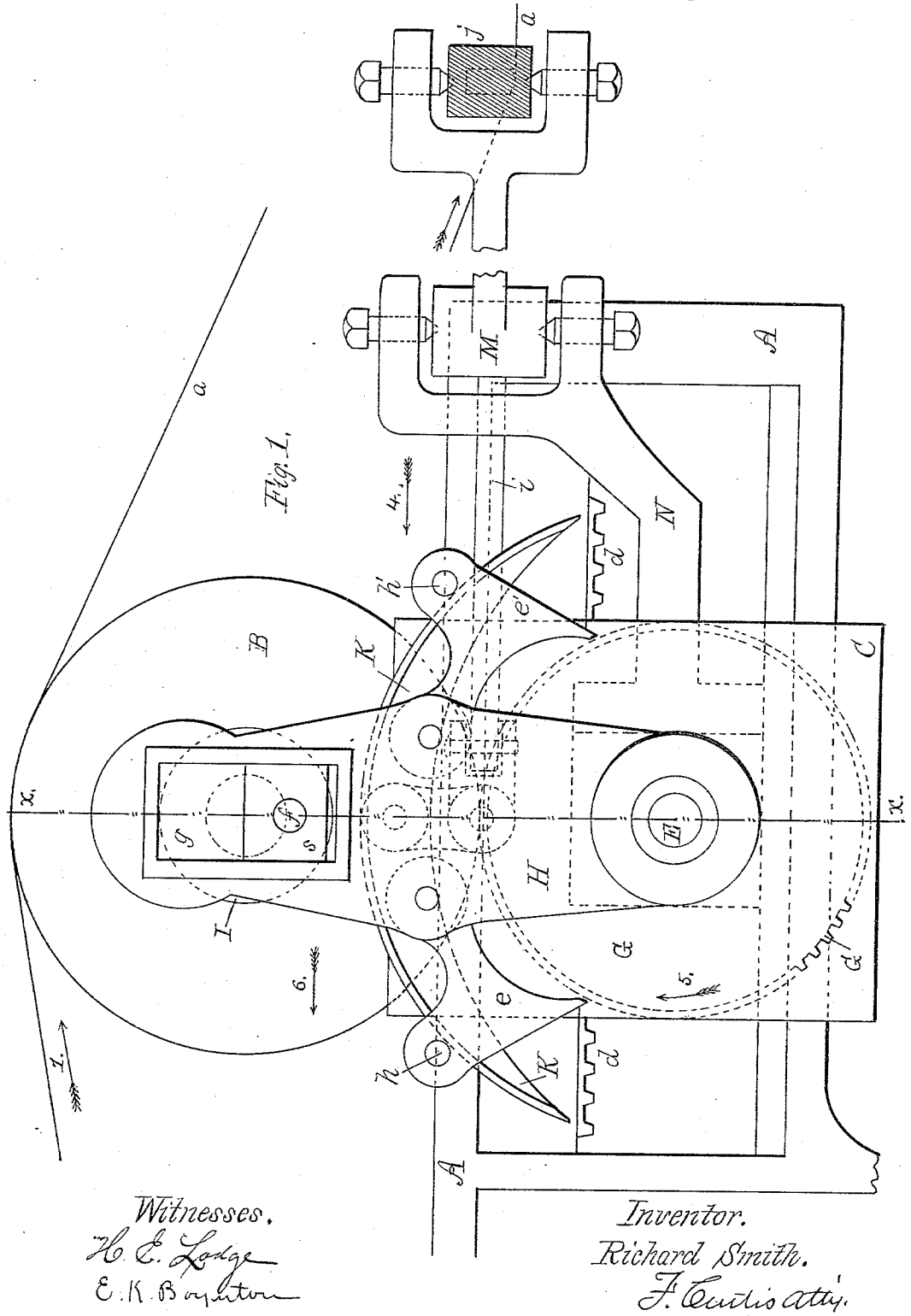
(No Model.) 2 Sheets—Sheet 1.

R. SMITH.

AUTOMATIC GUIDE ROLL ATTACHMENT FOR PAPER MACHINES.

No. 339,703. Patented Apr. 13, 1886.



Witnesses.
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E. K. Boynton

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

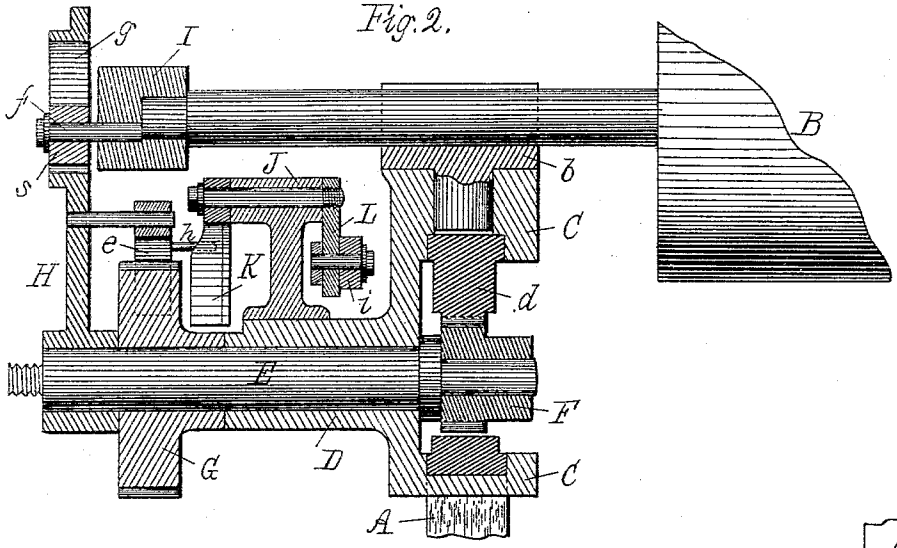
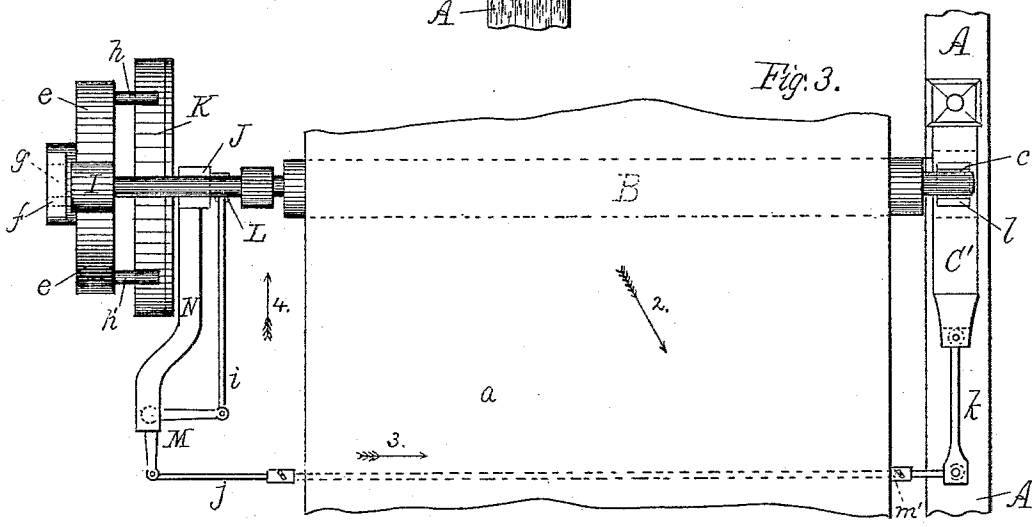


Fig. 3.



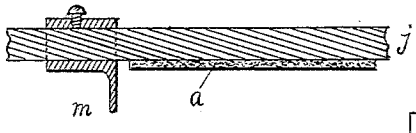


Fig. 4.

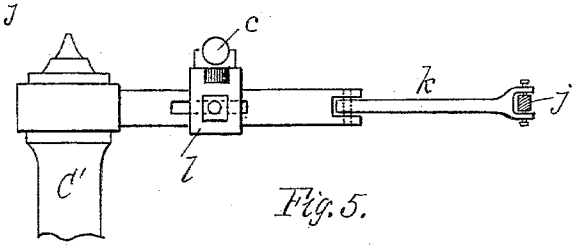


Fig. 5.

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UNITED STATES PATENT OFFICE.

RICHARD SMITH, OF SHERBROOKE, QUEBEC, CANADA, ASSIGNOR OF ONE-HALF TO THE FALL MOUNTAIN PAPER COMPANY, OF BELLOWS FALLS, VERMONT.

AUTOMATIC GUIDE-ROLL ATTACHMENT FOR PAPER-MACHINES.

SPECIFICATION forming part of Letters Patent No. 339,703, dated April 13, 1886.

Application filed November 21, 1885. Serial No. 183,582. (No model.)

To all whom it may concern:

Be it known that I, RICHARD SMITH, a citizen of Dominion of Canada, residing at Sherbrooke, in the county of Sherbrooke and Province of Quebec, Canada, have invented certain new and useful Improvements in Automatic Guide-Roll Attachments for Paper-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to mechanism for automatically guiding any continuously-traveling endless belt, apron, felt, or wire-cloth, which may pass between a pair or around a series of rolls, the apron being the actuating agent by which to axially shift the guide-rolls, and so disposed with respect to other connecting and operative parts of the device that any undue lateral deviation of said apron from its proper path of travel shall cause a shift of the rolls between or over which it passes. Thus axial change in the position of the rolls with respect to the normal path of the traveling apron or felt causes the latter to be shifted and so retained in the proper place on the face of the rolls.

My present invention is very nearly allied in some of its most prominent features to United States Patent No. 324,601, issued to myself on the 18th day of August, 1885, wherein is shown a rocking shield upon which rest two oppositely-disposed pawls adapted to engage with a toothed wheel, the position of the shield determining whether one pawl shall be active or both remain inactive, as circumstances require for the proper working of the device to which it may be attached.

The prominent features in my present invention are, first, the sliding adjustable standard which supports the guide-roll, whereby the axis of the latter may be shifted or changed obliquely with respect to the path of travel of the apron or belt; secondly, in making the belt an actuating agent to adjust itself by means of a vibrating lever, across which the belt is to pass, and thus any divergence of said belt from its proper path of travel will cause the lever to tilt a rocker-shield carrying two pawls. This movement of the shield will cause one of said pawls to engage with a toothed wheel; but since the pawls are pivoted to a rocker-plate a sliding movement of the standard carrying the rolls is effected by the rotation of the toothed wheel with respect to a fixed rack bolted to the frame; hence the axis of the guide-roll may be changed more or less obliquely in either direction with respect to the path of travel of the belt or apron according to the lateral divergence of the latter.

In the drawings herewith shown, Figure 1 is a side elevation of an automatic guide-roll attachment secured to a fixed housing. Fig. 2 represents a transverse vertical section on line *x x*, while Fig. 3 is a plan of the same. Fig. 4 is a longitudinal section of the actuating-rod; and Fig. 5 is a side elevation in detail of the guide-roll and actuating-rod supports.

In such drawings I have represented a stationary standard, A, which is adapted to contain a series of rolls, upon or around which travels an endless felt or apron, *a*, moving in the direction shown by arrow 1 over the guide-roll B. This roll is mounted in pivotal journals *b c*, the latter one being adjustably disposed upon, but firmly fastened to, an upright support, C. On the other hand, the front one, *b*, is secured upon a sliding or reciprocating standard, C, provided with a circular hollow boss or stud, D, within which is journaled a short shaft, E. Upon the rear extremity of the latter is affixed a pinion, F, which is adapted to engage and co-operates with a fixed rack, *d*, cast upon or bolted to the frame A, while on the front end is placed a toothed wheel, G. This wheel is arranged to be actively advanced upon the rack by two oppositely-disposed pawls, *e e'*, pivotally hung upon the rear side of a rocker-plate, H, the lower end of which is in its turn mounted loosely upon the end of the shaft E, before mentioned. Continuous rocking or active movement of this plate H is produced by means of a crank-pin, *f*, secured to a face-plate, I, the said pin being furnished with a loose roller or plate, *s*, which rotates upon the

inner face of the slot *g*, cut in the top or head portion of the rocker-plate; hence rotation of the guide-roll B will produce constant oscillating motion of the plate to advance, by aid of the pawls, the toothed wheel G in either direction, dependent upon the pawl which may be actively employed at the time.

Upon the boss D, and to the rear of or behind the toothed wheel, I have attached a stationary bracket or post, J, upon which is centrally hung a curved rocker-shield, K. This shield is adapted to support the pawls by means of pins *h h'*, fastened thereto, and which rest upon the exterior periphery of the shield. Thus the pawls are maintained disengaged from the peripheral teeth of the wheel G, when the endless apron is pursuing its proper path of travel.

To actively dispose either one of the pawls *e e'*, it becomes necessary to tilt or depress that end of the shield upon which the pawl to be used rests. To effect this tilting movement of the shield K, I have disposed a short crank-arm, L, to the pivotal support of the shield. Now, to this crank-arm is secured a rod, *i*, connecting with a bell-lever, M, which is pivoted to a bracket or arm, N. The latter supports the bell-lever and also the transverse rod *j*, across which the traveling belt passes, and by means of which the entire operative mechanism is actuated to axially shift the roll B.

The rear end of the rod *j* is attached to a link, *k*, pivotally secured to the standard C', while the latter is slotted and provided with an adjustable post, *l*, in which is mounted the journal *c*. Thus in case the guide-roll cannot be axially shifted upon the front side by the operation of the toothed wheel G and its operative mechanism sufficiently to produce proper guidance of the apron, then the rear journal of the guide-roll may be easily adjusted to accomplish the purpose.

The operation of my guide-roll attachment is as follows, supposing that the endless apron or felt is traveling in the direction of arrow 1 (see Fig. 1) over the guide-roll B, and thence beneath the rod *j*, which is provided with adjustable guide-feathers *m m'*: referring to Fig. 3, I have assumed that the felt is diverging laterally in the direction of arrow 2, or toward the back side of the machine, and thus it presses against the feather *m'*, pushing the rod *j* in the direction of arrow 3, and, by aid of the bell-lever M, thrusts the connecting-rod *i* in the direction as shown by arrow 4. (See Figs. 1 and 2.) This movement of the rod *i* actuates the crank-arm L, which tilts or depresses that end of the rocker-shield K upon which the pawl *e'* rests, and allows the latter to approach and engage the teeth of the wheel G, which is rotated by means of the feed-motion of said pawl, caused by the rocker-plate H. The latter is actuated by the face-plate I and pin *f*, carried by the guide-roll B. Rotary movement of the toothed wheel G and shaft E in direction of arrow 5 (see Fig. 1) likewise and similarly actuates the pinion F, which co-operates with the toothed rack *d*; but, since the latter is stationary and affixed to the frame A, the standard C is forcibly advanced in direction of arrow 6, and carries the front journal of the guide-roll B with it. This change in the axial position of the roll will tend to give the belt opposite lateral divergence, whereby it may be shifted and maintained in its proper path of travel. Conversely, if the belt has opposite lateral tendency to that represented by arrow 2, then the opposite end of the rocker-shield is depressed, and the pawl *e* then becomes active, while the roll B is shifted toward the right of Fig. 1.

I claim—

1. The combination, with a continuous traveling endless felt, of co-operating mechanism, substantially as herein described, whereby the lateral divergence of said felt shall cause automatic shifting of a guide-roll to compensate for such divergence.

2. A guide-roll attachment operated automatically by the lateral pressure of a continuously traveling endless apron against a transversely-reciprocating rod, whereby a rocking pawl-carrying shield imparts rotary movement to a toothed wheel to change the axial position of the guide-roll, substantially as set forth.

3. The combination, with the fixed frame, of the endless apron with a guide-roll provided with one fixed and one movable journal, the latter being mounted in a standard which slides upon the frame and is automatically actuated by lateral divergence of the endless apron.

4. In combination, with a guide-roll, B, adjustably mounted at one end in the standard C, of the toothed gear G and its operating-pawls *e e'*, to which feed motion is imparted by a rocker-plate, H, actuated by the guide-roll, substantially as and for purposes set forth.

5. In combination, the endless felt *a*, transverse rod *j*, rocker-shield K, actuated thereby, the pawls *e e'*, loosely pivoted to the rocker-plate H, toothed wheel G, pinion F, and fixed rack *d*, whereby the removable standard C is shifted to change the axial position of the guide-roll B, substantially as herein described.

6. A guide-roll operated automatically by the traveling endless apron, in combination with a toothed wheel, its actuating-pawls and their rocker-shield, and a stationary rack, for the purposes herein set forth.

7. The combination, with the rocker-plate H, carrying the pawls *e e'*, of the reciprocating rod *j*, bell-crank lever M, rod *i*, and rocker-shield K, whereby the latter maintains both pawls inactive while the apron remains in its normal path of travel, substantially as stated.

8. The combination, with the rocker-plate H, carrying the pawls *e e'*, of the reciprocating rod *j*, bell-crank lever M, rod *i*, and rocker-

shield K, whereby either end of the shield is depressed to actively engage the pawl pivoted thereat, and with the toothed wheel to rotate the latter and axially shift the roll B, substantially for the purposes described.

9. In combination, the reciprocating transverse rod *j*, connecting-rod *i*, and bell-lever M, pivoted to and carried by the sliding standard C, to operate said parts, as and for the purposes stated.

In testimony whereof I affix my signature in presence of two witnesses.

RICHARD SMITH.

Witnesses:
H. E. LODGE,
F. CURTIS.