

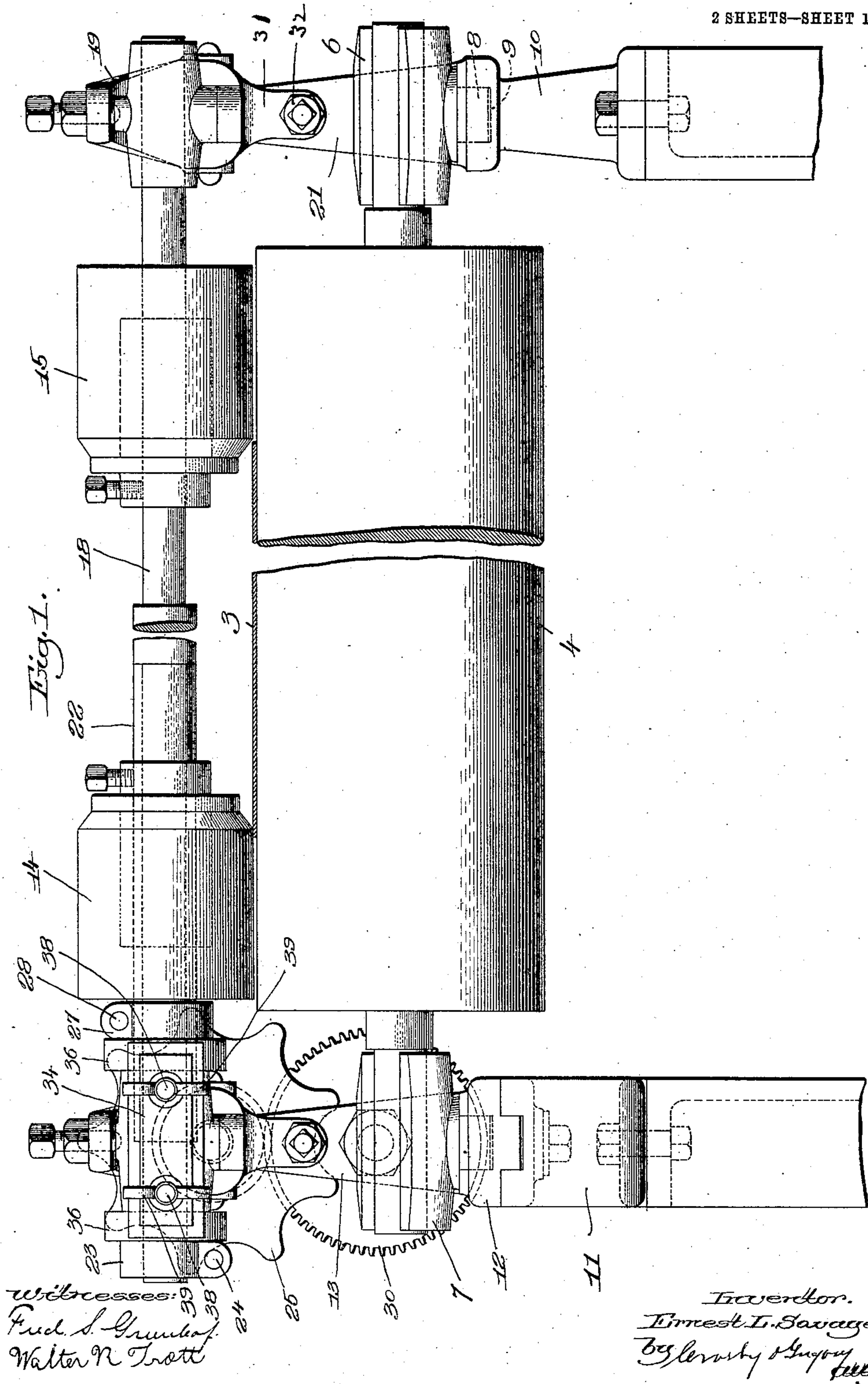
No. 855,482.

PATENTED JUNE 4, 1907.

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MEANS FOR GUIDING A MOVING WEB OR APRON.

APPLICATION FILED JAN. 8, 1906.

2 SHEETS—SHEET 1.

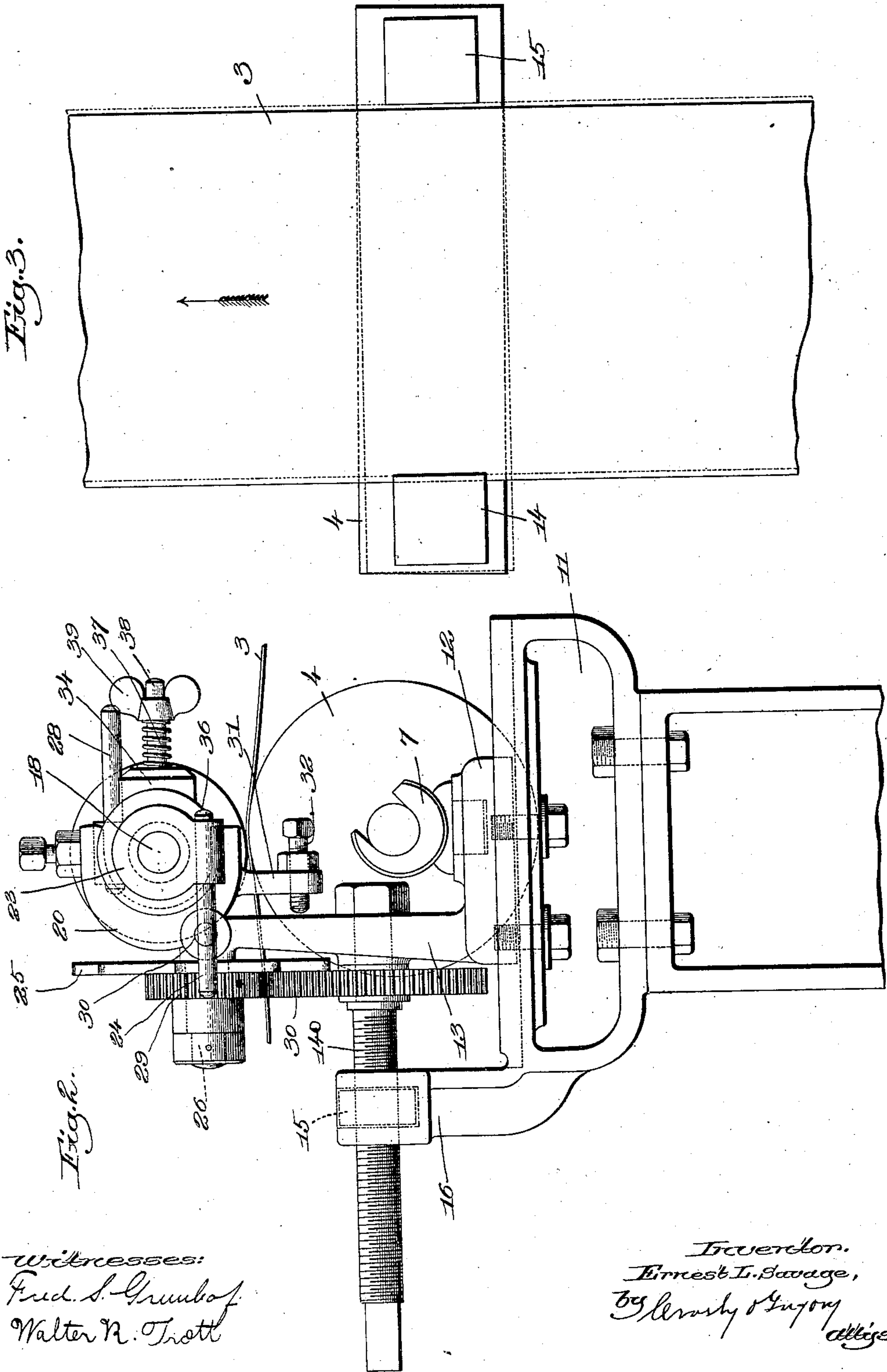


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# UNITED STATES PATENT OFFICE.

ERNEST L. SAVAGE, OF FAIRFIELD, MAINE.

## MEANS FOR GUIDING A MOVING WEB OR APRON.

No. 855,482.

Specification of Letters Patent.

Patented June 4, 1907.

Application filed January 8, 1906. Serial No. 294,992.

*To all whom it may concern:*

Be it known that I, ERNEST L. SAVAGE, a citizen of the United States, residing at Fairfield, in the county of Somerset and State of Maine, have invented an Improvement in Means for Guiding a Moving Web or Apron, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to a device for guiding and keeping in a right line a moving web or apron, and the object of the invention is to provide means for positively shifting the web laterally in order to bring it into its correct position whenever it becomes laterally displaced.

The invention is especially useful for guiding and keeping in the proper position either the felt or the wire of a paper making machine, although it may be employed in connection with any moving web or apron.

In some devices for this purpose the guiding of the web is accomplished by shifting the support or supporting roll over which the web moves angularly with relation to the direction of movement of the web, whereby as the web moves over this angularly-placed roll it is carried laterally to bring it back into its proper position. It is a guiding mechanism of this type to which my present invention relates, and said invention aims to provide a novel mechanism for shifting or swinging the guiding roll.

I will first describe one embodiment of my invention, and then point out the novel features thereof in the claims.

In the drawings, Figure 1 is a side view of a device embodying my invention; Fig. 2 is an end view of Fig. 1, and Fig. 3 is a diagrammatic view showing the principle on which my invention operates.

In the drawings, 3 designates the moving web or apron, the position of which is to be controlled by my improved apparatus. This web passes over a support 4, herein shown as a supporting roll although it might be any other suitable support without changing in any way the invention.

The supporting roll 4 is mounted in two bearings 6 and 7, and the bearing 6 is pivotally mounted in a stand or support 10, said bearing having for this purpose a projection 8 setting into a socket 9 in the stand or sup-

port. The bearing 7 is mounted for turning movement in a slide 12 which is supported on a stand 11 and is adapted to be moved on said stand in a direction parallel to the direction of movement of the web 3. The slide 12 has rising therefrom a stand 13 in which is rotatably mounted an adjusting screw 140, said screw passing through a stationary nut 150 carried by an arm 16 rising from the stand 11. By rotating the screw 140 the slide 12 and consequently the bearing 7 may be moved longitudinally of the stand 11, thereby to turn the supporting roll 4 angularly more or less with reference to the direction of movement of the web 3.

To illustrate the manner in which devices of this character operate, let us assume that the dotted line position in Fig. 3 indicates the correct position of the web, and the dotted line position of the roll 4 indicates its normal position. If the web should become displaced or shifted laterally into the full line position, it will be observed that by merely swinging the roll 4 angularly to its normal position or into the full line position Fig. 3, the rotation of the roll will carry the web laterally or to the right and into its correct position. Similarly a shifting of the roll 4 angularly in the other direction will result in causing the web 3 to be carried laterally to the left Fig. 3. The means I have herein shown for thus swinging the supporting roll angularly comprises two normally-inactive or idle detecting rolls 14, 15 which are sustained in close proximity to the supporting roll 4, but are out of contact therewith, the distance between the detecting rolls and the supporting roll 4 being less than the thickness of the web 3, and means whereby the rotation of one detecting roll causes the adjusting screw 140 to be rotated in one direction, and the rotation of the other detecting roll causes said adjusting screw to be turned in the other direction.

In the present embodiment of my invention, the detecting rolls are independently mounted and are situated on either side of the web in such a position that when the web is correctly positioned it travels between the detecting rolls 14, 15, but contacts with neither. If, however, said web becomes laterally displaced, it will crowd in between one or the other detecting roll and the supporting roll 3, and because the distance between said



detecting roll and the supporting roll is less than the thickness of the web, the friction of the web on the detecting roll when said web becomes laterally displaced will cause the  
 5 detecting roll to rotate. The detecting roll 15 is fast on a shaft 18 which is supported in suitable bearings 19 and 20, and the detecting roll 14 is fast on a sleeve 22 loosely mounted on said shaft. The bearing 20 for the  
 10 shaft 18 is carried by a suitable arm 13 and the bearing 19 is carried by a similar arm 21 extending upwardly from the stand 10. Fast to the shaft 18 is a collar 23 carrying a projection or pin 24 which is adapted to engage  
 15 the teeth of a star wheel 25, shown as suitably journaled on a stud 26 carried by the stand 13.

27 designates another collar similar to 23 but fast on the sleeve 22, said collar also having a laterally projecting arm or pin 28 adapted to engage the teeth of the star wheel 25.

The two collars 23 and 27 are arranged on opposite sides of the star wheel, as best seen  
 25 in Fig. 1, and, therefore, when one of the detecting rolls is rotating the star wheel will be rotated in one direction, and while the other detecting roll is rotating the said star wheel will rotate in the opposite direction.

30 Rigid with the star wheel is a pinion 29 which meshes with a gear 30 fast on the adjusting screw 14.

The operation of the device is as follows:—  
 So long as the web 3 travels in its correct position, it will move between the two detecting  
 35 rolls 14 and 15 and will contact with neither. If, however, it should be displaced laterally to the left, as shown in Fig. 1, the edge of it will crowd under the detecting roll  
 40 14, and by frictional engagement with said roll cause the latter to rotate. The rotation of the roll 14 gives rotation to the sleeve 22 and to the collar 27, and will, therefore, rotate the star wheel 25 clockwise, as seen in  
 45 Fig. 1. This rotation of the star wheel will turn the adjusting screw 14 in a direction to advance the carriage 12 to the left, Fig. 2, thus throwing the supporting roll 4 into the full line position, Fig. 3. As soon as the roll  
 50 4 is thus skewed the rotation of the roll will carry the web 3 to the right, Figs. 1 and 3, and thus out of engagement with the detecting roll 14. If the web 3 is carried too far to the right, Fig. 1, so as to contact with the detecting roll 15, said latter roll will be set in  
 55 operation and the star wheel 25 will be rotated in the opposite direction, thus moving the slide 12 to the right, Fig. 2, and skewing the roll 4 into the proper position to carry the  
 60 web 3 to the left, Figs. 1 and 3. It will thus be seen that by means of my device the web 3 is prevented from becoming displaced laterally to any appreciable extent.

I have provided means for adjusting the  
 65 shaft 18 so as to vary the distance between

the detecting rolls and the supporting roll 4 according to the thickness of the web 3. For this purpose I have pivoted the bearings 19 and 20 for the detecting rolls to the stands 13 and 21 respectively. 70

In Fig. 2, the pivotal connection between the bearing 19 and the stand 13 is illustrated at 30. Each bearing 19, 20, has an arm 31 depending therefrom through which an adjusting screw 32 is screw-threaded. These  
 75 adjusting screws by their engagement with the arms 13 and 21 limit the downward movement of the detecting rolls, and by means of them the minimum space between the detecting rolls and supporting roll 4 may be  
 80 controlled.

34 designates a brake block which is carried by the bearing 20 and is adapted to engage a brake surface 36 on each of the collars 23 and 27. This brake block is held against  
 85 the brake surfaces by means of suitable springs 37 which surround pins 38 extending from the bearing and having adjusting nuts 39 thereon. There are two such pins 38 shown. They both loosely project through  
 90 the brake block, and by adjusting the nuts 39, the tension of the springs 37 and consequently the braking friction applied to the collars 23 and 27 may be adjusted. This brake is for the purpose of bringing the de-  
 95 tecting rollers and operative mechanism to rest immediately that the web is carried out from underneath either roller.

My improved device does not merely guide the web 3, but operates to positively shift  
 100 said web laterally when it becomes displaced.

In the present embodiment of my invention the detecting rolls are mounted in close proximity to the web 3, but this arrangement is not essential, the only essential feature be-  
 105 ing that they are so disposed as to be rotated by the lateral displacement of the web, and that by their rotation they shift the position angularly of the support 4.

The device herein illustrated has been selected as the preferred embodiment of my  
 110 invention, but the invention is not limited to the construction shown.

Having described my invention what I claim as new and desire to secure by Letters  
 115 Patent is:—

1. In a device for guiding a traveling web or apron, the combination with a supporting roll for said web, of two detecting rolls supported in close proximity to the supporting  
 120 roll but out of contact therewith, and means operated by the rotation of either detecting roll to swing the supporting roll angularly with reference to the line of movement of the web. 125

2. In a device for guiding a traveling web, the combination with a supporting roll for said web, of a detecting roll situated in close proximity to but out of contact with said  
 130 supporting roll, and devices operated by the



rotation of said detecting roll to swing the supporting roll angularly with reference to the line of movement of the web.

3. In a device for guiding a traveling web, the combination with a supporting roll for said web, of a normally idle detecting roll separated from the supporting roll a distance less than the thickness of the web whereby when the web crowds in between said detecting roll and supporting roll the detecting roll is set in rotation, and means operated by said detecting roll to swing the supporting roll angularly with reference to the line of movement of the web.

4. In a device for guiding a traveling web, the combination with two normally idle detecting rolls each separated from the supporting roll a distance less than the thickness of the web, and means operated by the rotation of said detecting rolls to swing the supporting roll angularly with reference to the line of movement of the web in one direction or the other according as to which detecting roll is rotated.

5. In a device for guiding a traveling web, the combination with a supporting roll for said web, of roll swinging mechanism comprising a star wheel, two independently mounted detecting rolls adapted to be operated by the web when the latter becomes laterally displaced, and means to turn said star wheel in one direction by one detecting roll and in the other direction by the other detecting roll.

6. In a device for guiding a traveling web, the combination with a supporting roll for the web, of an adjusting screw for swinging said roll angularly with reference to the line of motion of the web, two normally idle detecting rolls in proximity to but out of contact with the supporting roll, a shaft on which one roll is mounted, a sleeve surrounding the shaft on which the other roll is mounted, a star wheel for operating the adjusting screw, and two arms one extending from said shaft and one extending from the sleeve for operating the star wheel.

7. In a device for guiding a traveling web, the combination with a supporting roll for the web, of an adjusting screw for swinging said roll angularly with reference to the line of motion of the web, two normally idle detecting rolls in proximity to but out of contact with the supporting roll, a shaft on which one roll is mounted, a sleeve surrounding the shaft on which the other roll is mounted, a star wheel for operating the adjusting screw, and two arms one extending from said shaft and one extending from the sleeve for

operating the star wheel, said arms being situated to engage the star wheel on opposite sides.

8. In a device for guiding a traveling web, the combination with a supporting roll for the web, of an adjusting screw for swinging the roll angularly, a star wheel for operating said adjusting screw, two detecting rolls to be actuated by the web when it becomes laterally displaced, and means operated by said rolls to actuate the star wheel.

9. In a device for guiding a traveling web, the combination with a supporting roll for the web, of an adjusting screw for swinging said adjusting screw, two detecting rolls to be actuated by the web when it becomes laterally displaced, means operated by said rolls to actuate the star wheel, and means operated by one roll to rotate the star wheel in one direction, and other means operated by the other roll to rotate the star wheel in the opposite direction.

10. In a device for guiding a traveling web, the combination with a support for said web, of means operated by the lateral displacement of said web to move the support angularly, and a brake device to bring said means to rest when the web has resumed its normal position.

11. In a device for guiding a traveling web or apron, the combination with a supporting roll for said web, of two detecting rolls supported in close proximity to the supporting roll but out of contact therewith, means operated by the rotation of either detecting roll to swing the supporting roll angularly with reference to the line of movement of the web, and a brake device to bring said means to rest when the web resumes its normal position.

12. In a device for guiding a traveling web or apron, the combination with a supporting roll for said web, of two detecting rolls supported in close proximity to the supporting roll but out of contact therewith, said detecting rolls being situated either side of said web but out of contact therewith when said web is in its normal position, and means operated by the rotation of either detecting roll to swing the supporting roll angularly with relation to the line of movement of the web.

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

ERNEST L. SAVAGE.

Witnesses:

ANGIER L. GOODWIN,  
B. M. BRADBURY.