July 26, 1960 A. F. PITYO 2,946,586

WEB FEEDING MECHANISM

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FIG. 1.

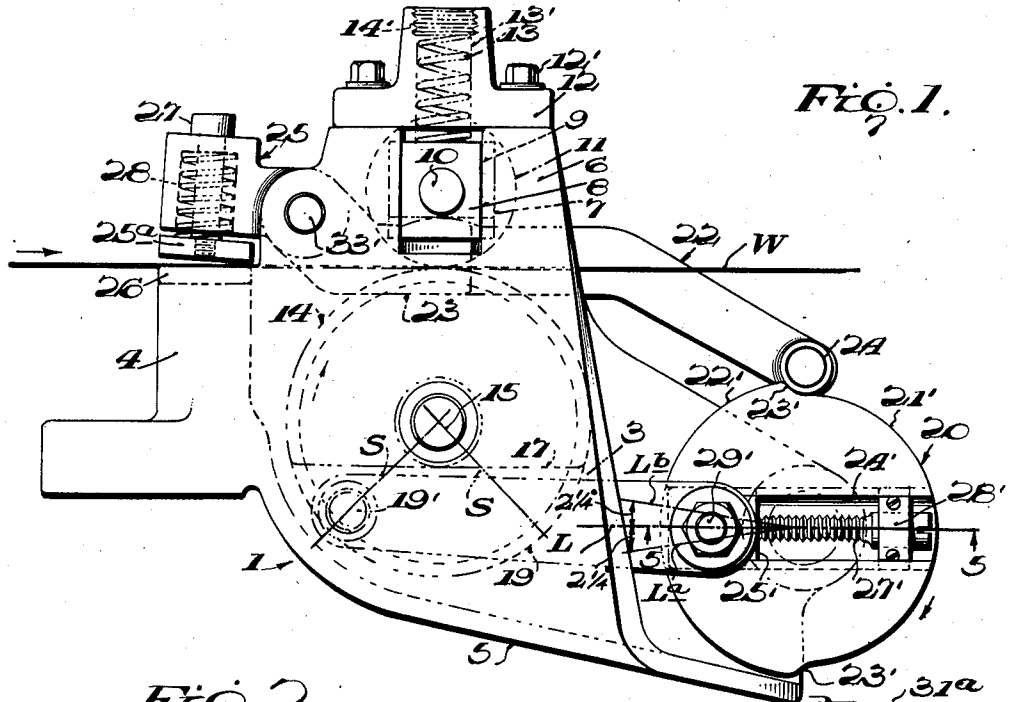
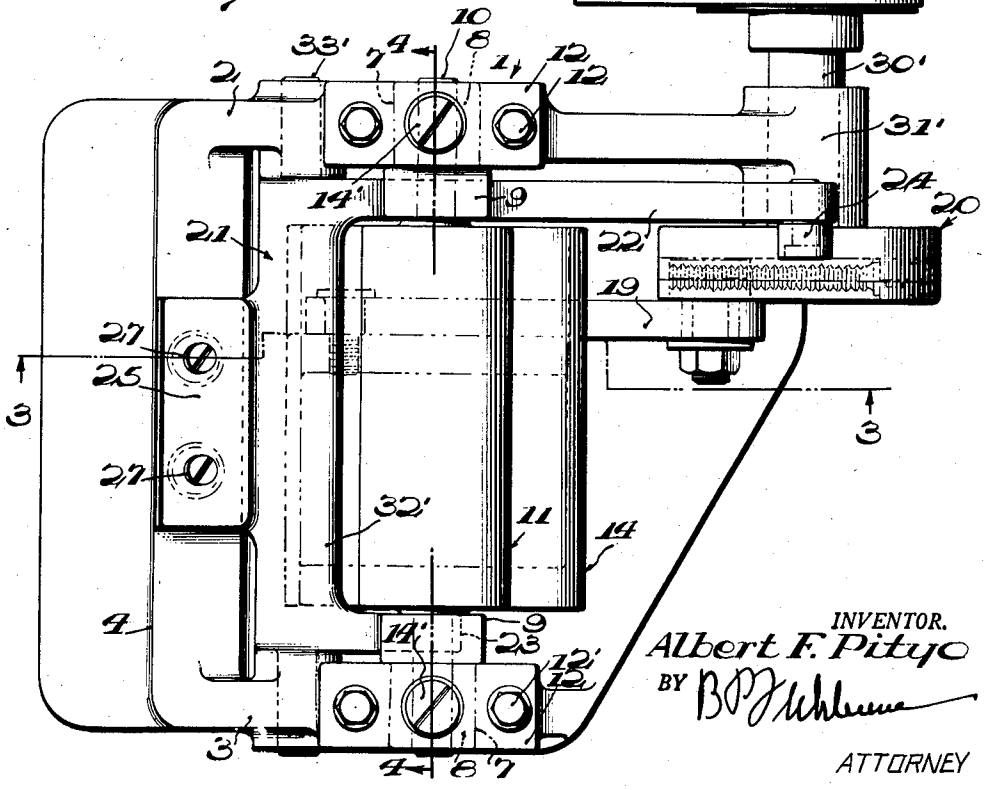


FIG. 2.



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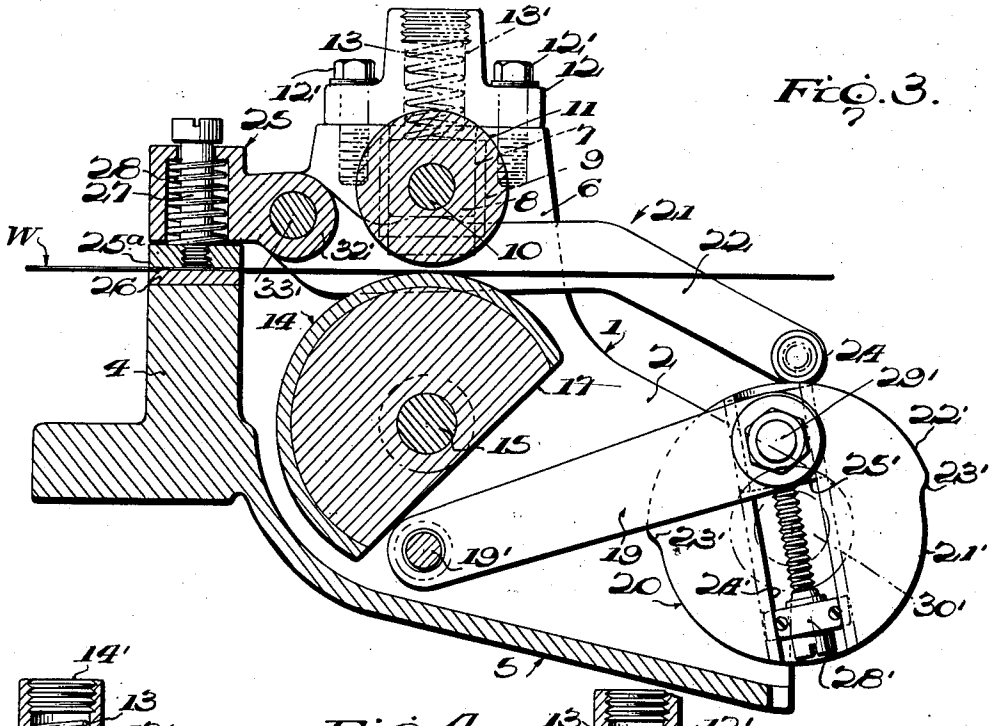


Fig. 3.

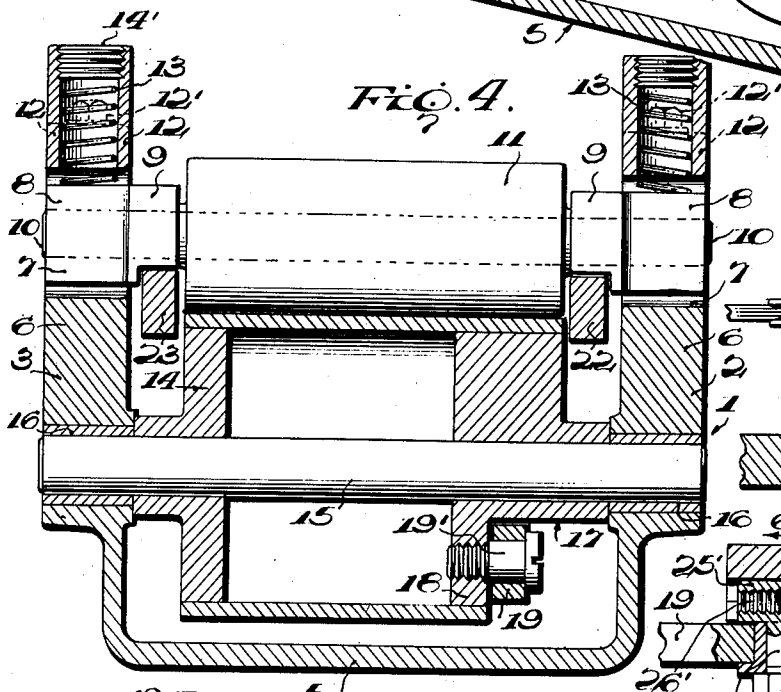


Fig. 4.

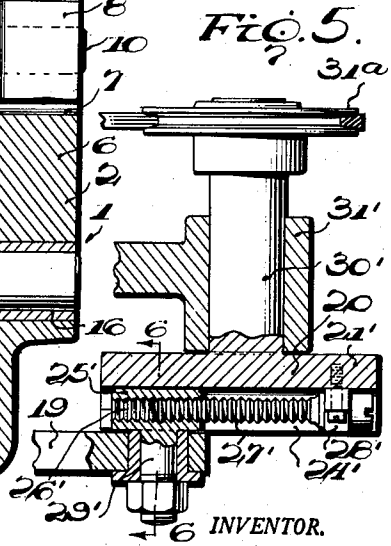


Fig. 5.

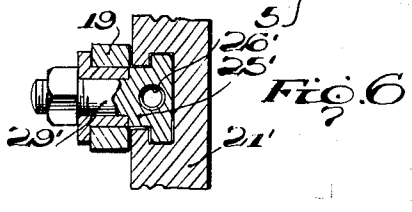


Fig. 6

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United States Patent Office 2,946,586
Patented July 26, 1960

2,946,586

WEB FEEDING MECHANISM

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Filed Sept. 17, 1953, Ser. No. 380,685

3 Claims. (Cl. 271—2.4)

My invention relates to web feeding mechanism.

An important object of the invention is to provide mechanism for intermittently feeding the web, in an accurate manner, regardless of variations in speed of or lost motion in the drive means.

A further object of the invention is to provide a dwell in the operation of the feed roll, while the companion roll is shifted from the feed roll and the clamping means rendered active.

A further object of the invention is to provide mechanism of the above mentioned character, all parts of which are driven from a continuously rotating element.

A further object of the invention is to provide mechanism of the above mentioned character which is adjustable to vary the length of each intermittent feed of the web.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings forming a part of this application and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a side elevation of web feeding machanism embodying my invention,

Figure 2 is a plan view of the same.

Figure 3 is a vertical section taken on line 3—3 of Figure 2,

Figure 4 is a vertical section taken on line 4—4 of Figure 2,

Figure 5 is a horizontal section taken on line 5—5 of Figure 1,

Figure 6 is a detailed section taken on line 6—6 of Figure 5.

In the drawings, where for the purpose of illustration is shown a preferred embodiment of my invention, the numeral 1 designates a stationary frame which is supported by any suitable means. This frame includes sides 2 and 3, which are rigidly connected by an end 4 and bottom 5. The sides 2 and 3 have upstanding guides 6, having vertical openings 7 formed therein, receiving the reduced ends 8 of bearings 9. These bearings rotatably receive a horizontal upper rotatable transverse shaft 10, having an upper roll 11, rigidly secured thereto. Rigidly secured to the vertical guides 6 by bolts 12' are caps 12. These caps have openings 13' formed therein, receiving compressible coil springs 13, which bear against the extensions 8 of the bearings 9. The openings 13' are closed at their tops by screw-threaded plugs 14', engaging therein.

Arranged within the frame 1 beneath the upper roll 11 is a lower fixed roll 14, which extends longitudinally of the upper roll and is parallel therewith. This lower roll is carried by a horizontal shaft 15, rotatable in fixed bearings 16, the roll 14 being rigidly mounted upon the shaft 15. This roll 14 has a cut-away portion 17, forming an end 18, having a link 19 pivoted thereto at 19'. This link is adjustably pivotally connected with a cam-wheel 20. The cam-wheel 20 is provided upon its periphery with a lower cam face 21' and an upper cam face

22', connected by inclined shoulders 23'. The cam-wheel 20 has a diametrically extending recess 24', formed in its end. A block 25', is radially adjustably mounted within the recess and has a screw-threaded opening 26', for receiving an adjusting screw 27', which is swivelled upon a crosshead 28', rigidly mounted upon the cam-wheel 21'. The block 25' carries a pivot element 29', connected with the link 19. By turning the screw 27' the block 25' can be radially adjusted and the throw of the link 19 adjusted. The cam-wheel 20 is rigidly mounted upon a horizontal shaft 30', journaled in a fixed bearing 31' and driven by a pulley 31a.

The upper roll 11 is spring pressed toward the lower roll 14 by the springs 13 and is moved from the lower roll 14 by a yoke 21, including a long arm 22 and a short arm 23, rigidly connected by the end 32' of the yoke. This yoke is pivotally mounted upon a fixed pin 33', mounted upon the sides 2 and 3, as shown. The arms 22 and 23 operate beneath the bearings 9, and serve to raise these bearings. The long arm 22 carries a roller 24, rotatably mounted thereon, and arranged to engage the periphery of the cam-wheel 20, including cam faces 21' and 22'.

The yoke has an outwardly projecting extension 25, rigidly secured thereto, and beneath this extension is arranged a presser plate 25a, having beneath it a stationary presser plate 26, rigidly mounted upon the frame end 4. The presser plate 25a is carried by slidable bolts 27, mounted in suitable openings in the extension 25, and the presser plate is moved downwardly by coil springs 28, as shown.

The operation of the mechanim is as follows:

The web W is fed forwardly to the right, Figures 1 and 3. The cam-wheel 20 is rotated continuously clockwise, Figure 1. The feed roll 14 is intermittently turned in opposite directions. The link 19 reciprocates the roll 14 within the limits of the stroke of the roll 14, as indicated by the lines S. As shown in Figure 1, the roller 24 is upon the low cam face 21', and the cam-wheel 20 has turned for one-half of a revolution in the direction of its arrow and the feed roll 14 has turned clockwise, Figure 1 for the end of its feeding stroke. The upper roll 11 is now pressing the web W against the lower roll 14, so that the lower roll has fed the web to the right. The presser plate 25a is now raised. The roll 24 now engages the leading shoulder 23', and further turning movement of the cam-wheel 20 causes the roller to pass upon the high cam face 22'. This movement of the roller 24 swings the yoke 21 upwardly, causing roll 11 to move from roll 14, relieving the pressure upon the web W, between the rolls 11 and 14. Simultaneously with this action, presser plate 25a is moved downwardly and clamps the web W against the lower presser plate 26. The web is now held against longitudinal movement in either direction. During this operation, the roll 14 is turning counter-clockwise, Figure 3, and will slide upon the web W. When the right hand line S is reached by the pivot 19', the pivot 29' is about to start upon its travel beneath the shaft 30'. When the pivot 19' is travelling from the line S to the right to the line S to the left, the roll 14 is travelling clockwise, and will feed the web W to the right. At about the time that the pivot 29' reaches the horizontal position to the right, Figure 3, the roller 24 will pass from the high cam face 22' to the low cam face 21', and roll 11 will again be lowered to press the web W against the lower roll and the presser plate 25a raised to free the web W.

The plate 25a starts to grip the web at about the end of the feeding stroke of the roll 14, and starts to grip the web shortly before the web is released from the roll 14 by the upward movement of the roll 11, and con-

tinues to grip the web during the entire back stroke or counter-clockwise movement of the roll **14**. The link **19** cannot perceptibly turn roll **14** when the pivot **29'** has its center passing between lines L^a and L and between line L and line L^b. This is two distances of 2¼°. At this time the roller **24** is travelling from one cam face **21'** to the other cam face **22'** and hence there is no perceptible feed of the web while the roller is passing over the shoulders **23'**.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the shape, size, and arrangement of parts may be resorted to without departing from the spirit of my invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. Web feeding mechanism comprising a support, a feed roll journaled upon the support to oscillate with relation thereto, a rotary element mounted upon the support and having high and low cam faces which are oppositely arranged circumferentially of the rotary element and shoulders connecting the high and low cam faces on opposite sides of the axis of rotation of the rotary element and spaced substantially equidistantly from such axis of rotation, means to continuously rotate said element during the operation of the mechanism, a link, a pivot element mounted upon the rotary element and connected with the link and arranged substantially midway between said shoulders and spaced from the axis of rotation of the rotary element, a pivot element mounted upon the feed roll and pivotally connected with the link, the arrangement being such that the link produces a dwell of the feed roll when the pivot element of the rotary element is substantially at dead center with respect to the link and the axis of rotation of the rotary element, a presser roll arranged near and opposite said feed roll, movable means for shifting the presser roll toward and from the feed roll including an arm having a part arranged to contact the high and low cam faces and to engage the shoulders when the first-named pivot element is substantially at dead center, and a web clamping device connected with the movable means and operated by the same, the arrangement being such that the movable means operates to shift the presser roll from or toward the feed roll during the dwell of the feed roll and when said part engages said shoulders.

2. Web feeding mechanism comprising a support, a reciprocatory web feeding element mounted upon the support, a rotary element mounted upon the support and having high and low cam faces which are oppositely arranged circumferentially of the rotary element and shoulders connecting said cam faces on opposite sides of the axis of rotation of the rotary element and spaced substantially equidistantly therefrom, means to continuously rotate the rotary element, a link, a pivot element carried by the rotary element and connected with the link and spaced from the axis of rotation of the rotary element and substantially equidistantly spaced from said shoulders, a pivot element carried by the reciprocatory web feeding element and pivotally connected with the link, whereby the web feeding element is caused to dwell when the first-named pivot element is substantially at dead center with respect to said link and the axis of rotation of the rotary element, a presser roll arranged near and opposite the web feeding element, movable means for shifting the presser roll toward and from the web feeding element and including a pivoted part arranged to contact said high and low cam faces and to engage said shoulders when the first-named pivot element is substantially at dead center with respect to the link and axis of rotation of the rotary element, and a web clamping device connected with said movable means and operated thereby to clamp and release the web when said pivoted part of the movable means engages the shoulders, the movable means then serving to shift the presser roll from or toward the web feeding element during the dwell of the web feeding element.

3. Web feeding mechanism comprising a support, a reciprocatory web feeding element mounted upon the support, a rotary element mounted upon the support in spaced relation to the web feeding element and having high and low cam faces which are oppositely disposed circumferentially of the rotary element and shoulders connecting said cam faces and arranged upon opposite sides of and substantially equidistantly spaced from the axis of rotation of the rotary element, means to rotate the rotary element, a presser roll arranged near and opposite the reciprocatory web feeding element, movable means to shift the presser roll toward and from the web feeding element and including a part contacting the high and low cam faces and adapted to ride over said shoulders, a web clamping device connected with the movable means and operated thereby, and driving connecting means between said rotary element and reciprocatory web feeding element and producing a dwell in the latter when the driving connecting means is substantially on dead center with respect to the axis of rotation of the rotary element and said part of the movable means is engaging one of said shoulders, whereby the movable means is caused to shift the presser roll from or toward the web feeding element during the dwell of the web feeding element.

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