

April 7, 1953

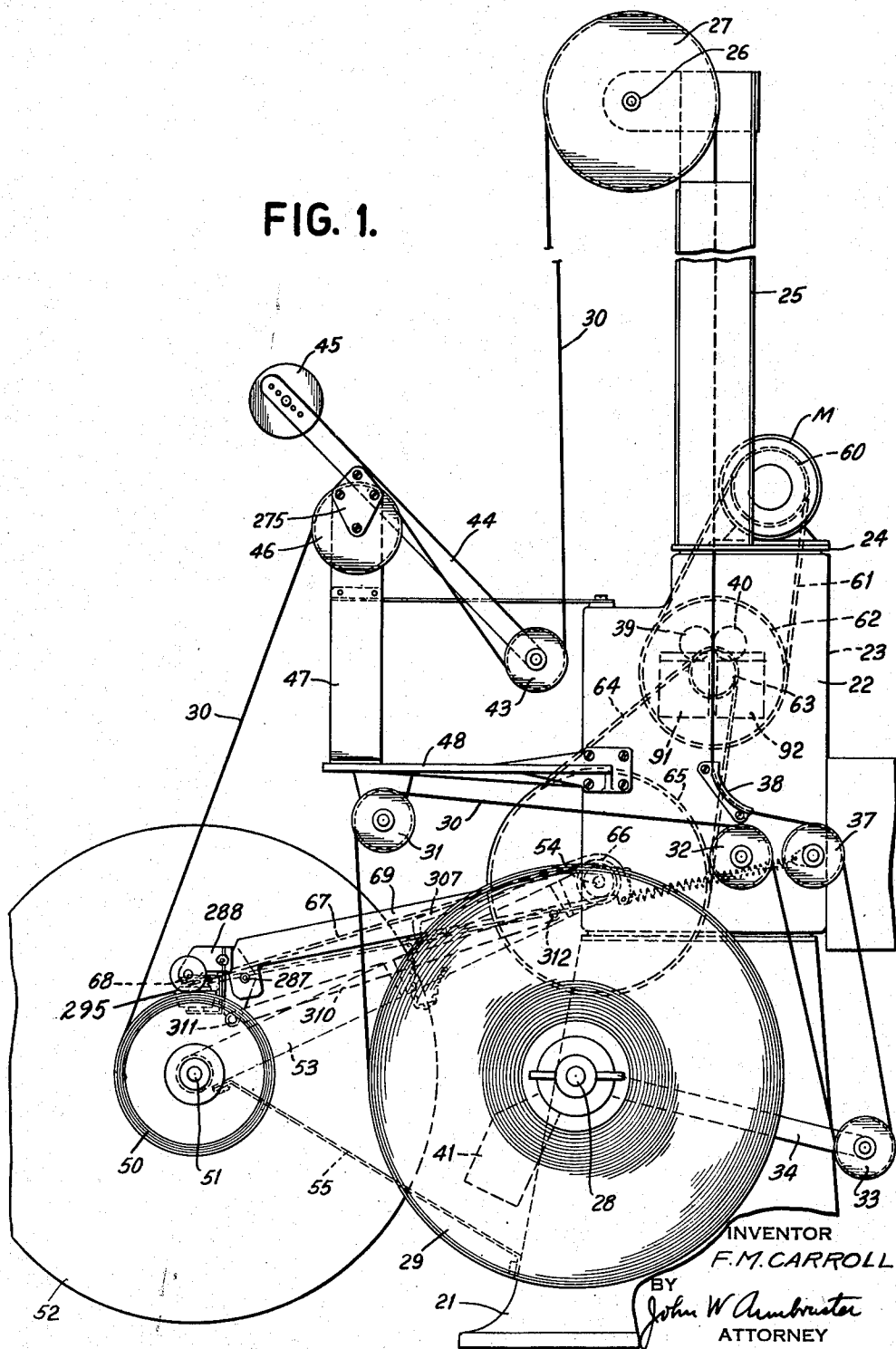
F. M. CARROLL
REWIND ROLL DRIVE

2,634,064

Original Filed Feb. 27, 1945

3 Sheets-Sheet 1

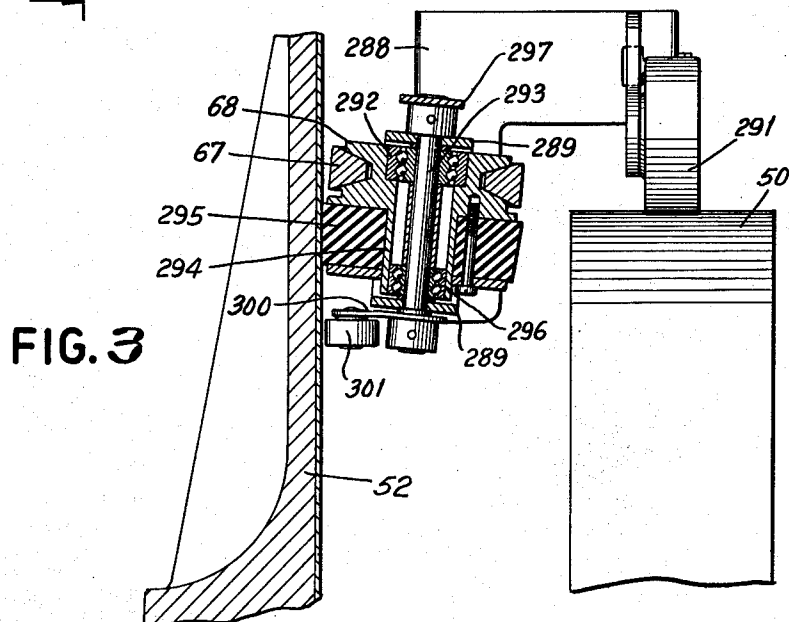
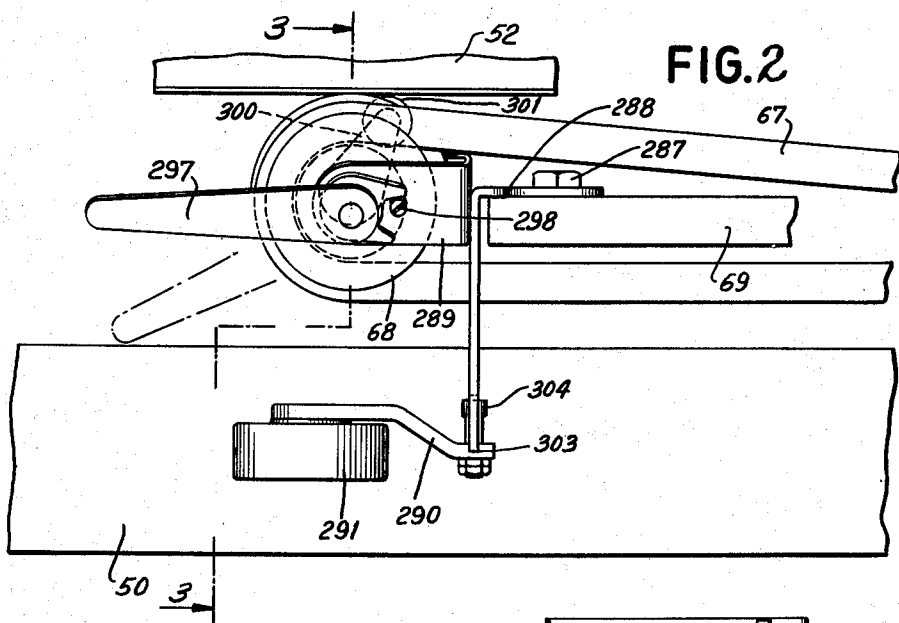
FIG. 1.



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FIG. 2



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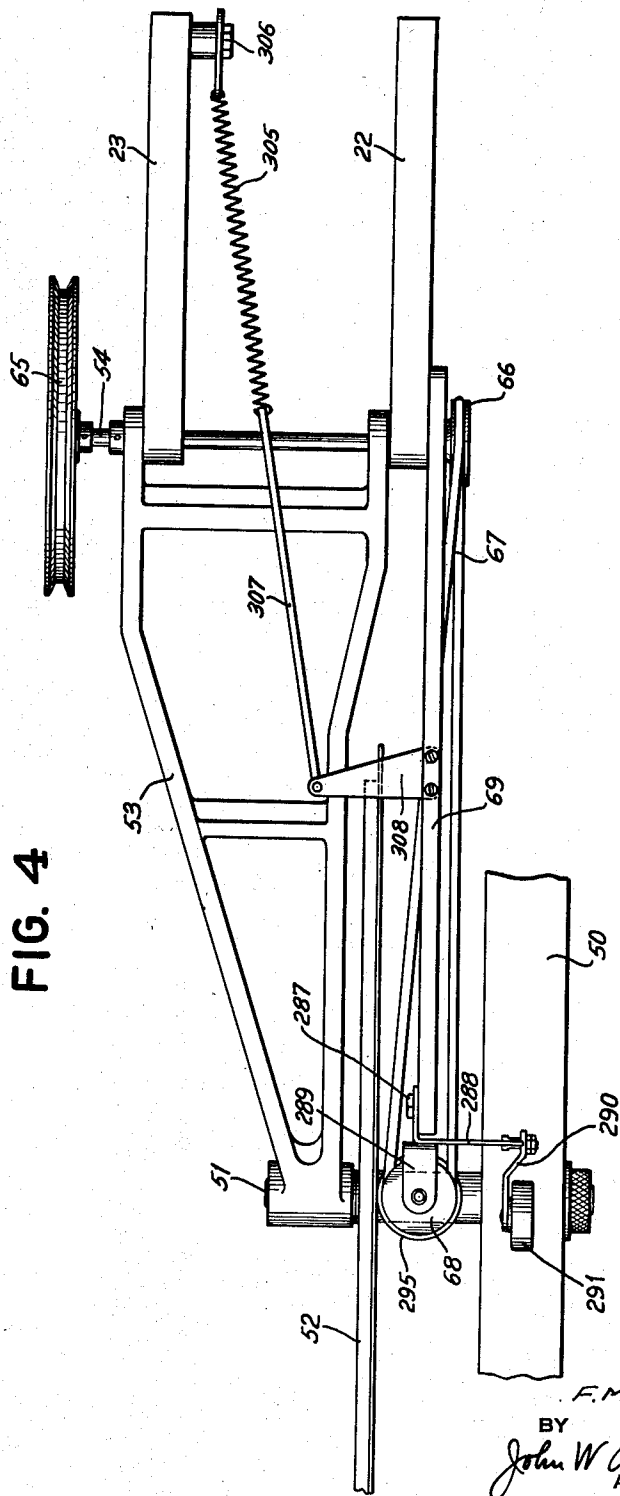
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UNITED STATES PATENT OFFICE

2,634,064

REWIND ROLL DRIVE

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Original application February 27, 1945, Serial No.
579,979, now Patent No. 2,500,275, dated March
4, 1950. Divided and this application April 17,
1947, Serial No. 742,113

3 Claims. (Cl. 242-55)

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This invention relates to improvements in paper feeding devices and more particularly to means for regulating the feeding and rewinding of record material.

An object of the invention is the provision of means for regulating the speed of the friction rewind action according to the diameter of the roll on the rewind drum. A pivoted lever carries a follower roller resting on the periphery of the roll of rewound stock and the same end of the lever carries a friction driving wheel cooperating with the side of a circular plate which is the driver for the rewind roll. Since the pivoted construction causes the frictional drive to move in other than a true radial path across the friction plate, a compensating arrangement is provided in the form of a linkage on which the friction driving wheel is fulcrumed. The linkage is effective to straighten out the arcuate path of the lever and to approximate a straight radial path for the friction driving wheel.

Other objects of the invention will be pointed out in the following description and claims and illustrated in the accompanying drawings, which disclose, by way of example, the principle of the invention and the best mode, which has been contemplated, of applying that principle.

This application is a division of my copending application Serial No. 579,979, filed February 27, 1945 and issued on March 14, 1950, as Patent No. 2,500,275.

In the drawings:

Fig. 1 is a diagrammatic side elevation view showing the entire machine and the path followed by the record strip.

Fig. 2 is a plan view of the rewind regulator and drive mechanism.

Fig. 3 is a sectional elevation view taken along line 3-3 in Fig. 2 and showing the friction driving wheel for operating the rewinding disk carrying the roll of printed record strip.

Fig. 4 is a plan view showing the supporting means and the operating connections for the rewinding device.

In Fig. 1 there is shown a diagrammatic view revealing the path followed by the record strip in passing from a supply roll through the printing rollers and over to the rewind roll. The machine is supported on a base frame 21 carrying a pair of side plates 22 and 23 between which most of the drive gearing is suspended. Placed on top of the side frames is a platform 24 carrying a drive motor M. Also supported on platform 24 is a tall enclosed box 25, the upper end of which is formed with extending bearing 26 which acts

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as a fulcrum for the elevated guide pulley 27. The freshly printed strip is drawn upward through the warm air in box 25 and thus partly dried.

Pivoted at 28 on the base frame 21 is the supply roll 29 containing the unprinted portion of the strip and it is from this roll that the record supply is drawn to be passed through the printing rollers to be tinted on both sides. As the strip 30 is drawn off the side of the roll 29, it is drawn upward over a guide roller 31 and then pulled horizontally across the machine to curve around guide roller 32. From this point it is drawn downward around a tension regulating roller 33 mounted on a swinging arm 34 also pivoted at 28, which is the mounting center for the supply roll 29. Arm 34 is connected to a nut having a braking action on the mounting for the supply roll so that, whenever the tension arm or lever 34 is raised or rocked counterclockwise, indicating that the tension is too great, the motion of the lever acts to loosen the braking nut and thereby free the supply roll for easier withdrawal of the record strip. This construction is described in greater detail in my Patent No. 2,181,935, issued December 5, 1939.

From tension roller 33, the strip is drawn upward and curved around another fixed guide roller 37 and then drawn a short distance horizontally before curving around a fixed guide 38 fastened to the side of frame 22. From the top of the guide 38, the strip is led in a vertical path between the pair of ink containers 91, 92 and the pair of printing rollers 39 and 40 where printing takes place. After the strip receives the ink impression for tinting, it is drawn upwardly through the long vertical warming box 25 into which a current of heated air is directed by a blower behind heating coils which are not shown.

At the top of the machine the guide pulley 27 supports the record strip and guides it to curve downwardly and pass around another tension regulating roller 43 mounted on one end of a lever 44, at the other end of which is an adjustable weight 45. This lever 44 swings up and down according to the tension of the record strip between the guide pulley 27 and the rewind roll 50. It operates a brake cooperating with the portion of the strip passing around the fixed circular guide 46 fastened on a standard 47 supported on a bracket 48 fastened to frame 22 of the machine. Application of the braking action on guide 46 serves to diminish the pull exerted by the rewind action against the top loop formed by the printed strip as it passes over the top guide pulley 27.

After leaving the circular guide 46, the strip is finally drawn down around the rewind roll 53 which is supported on a center 51 extending from a large flat disk 52, which is frictionally driven by mechanism, the speed of which is regulated according to the diameter of the rewind roll. This flat disk 52 is pivoted on a frame 53 which extends from the main frames of the machine and is supported on a shaft 54 centered in the two main side frames. A bracket 55 is braced between the outer end of frame 53 and the side of base 21 to act as a support for the rewind mechanism.

The main driving connections are established by means of belts and pulleys and their general location can be noted on Fig. 1. There it is seen that the shaft of motor M carries a pulley 60 which acts as a drive for a belt 61 which is wound around a larger pulley 62 connected directly to the main drive gearing of the printing mechanism. Also connected to pulley 62 is a small pulley 63 for operating a belt 64 cooperating with a large pulley 65 mounted on the shaft 54 already mentioned as the rewind driving shaft. This shaft carries a small pulley 66 for supporting a belt 67 which is twisted to cooperate with a small pulley 68 swung out on an arm 69 and mounted on a movable vertical center in connection with a friction driving wheel 295 for rotating the rewind disk 52.

Regarding the rewind operation, it is already explained with reference to Fig. 1 that the rewind roll 50 is located on the shaft 51 extending from a friction disk 52 which is driven by belt 67 from a driver pulley 66. Reference to Fig. 4 shows the parts in a plan view and there the supporting bracket 53 for disk 52 and shaft 51 is seen to be secured to a shaft 54, which runs through the main side frames 22 and 23 and on its two ends carries the pulleys 65 and 66. There it is also noted that the friction driving wheel 295 is carried on a swinging arm or lever 69 also pivoted on shaft 54.

On the end of rocking lever 69 there is pivoted at 287 a rocking frame 288 which carries a U-shaped bar 289 for supporting the friction driving wheel 295. Mounted as an L-shaped extension from rocking frame 288 is a supporting member 290 for carrying a freely turning follower roller 291 which rests on the periphery of the rewind roll 50 and serves to follow the enlargement of the diameter of this roller and thereby swing the operating point of the friction drive out toward the enlarged diameter of the friction disk 52, so the rewind action is constantly proportional to the size of the rewind roll.

In Figs. 2 and 3 the rewind driving parts are shown in greater detail and in the sectional view (Fig. 3) it is seen that a number of parts are confined between the extending ends of the U-shaped hanger 289. Near the top of the hanger is the driving pulley 68 containing a ball bearing 292 for permitting it to rotate freely on a vertical shaft 293 passing through openings in both ends of the arms on the hanger. The pulley 68 is seen to be formed with a cylindrical extension 294 upon which is fastened the friction driving wheel 295 as a conical ring of rubber or other frictional material shaped to cooperate with the side wall of the friction disk 52. Inside the lower end of cylinder 294 is another ball bearing 296 encircling the shaft 293 and insuring free rotation of the connected parts on this shaft.

Shaft 293 also carries a means for throwing

off the friction driving connections so that the rewind may be disabled at any time. These throw-off connections are pinned to opposite ends of shaft 293. At the upper end of the shaft is fastened an extending arm 297 (Fig. 2) cooperating with a stop pin 298 which extends from the top of hanger 289 for limiting the rocking movement of the lever. At the lower end of shaft 293 (Fig. 3) is fastened another arm 300 carrying a roller 301 normally out of contact with the face of disk 52. However, when arm 297 (Fig. 2) is rocked counterclockwise for the throwing-off operation, arm 300 is moved in the same direction and roller 301 presses against the side of the friction disk 52 and shaft 293 is shoved away from the disk so that the friction driving wheel 295 is moved out of cooperation with the disk. When the parts are so situated, the pulley 68 and friction driving wheel 295 are allowed to operate without communicating any driving action to the rewind roll.

A plan view of Fig. 2 shows the details of the connection between the swinging frame 288 and the holder 290 for the follower roller 291. The connection involves a hinged construction 303 where the end of frame 288 fits into a recess cut in the side of the member 290. There is a certain amount of play in the joint allowing the roller to move back and forth in following the periphery of the rewind roll. To hold the parts together the end of frame 288 is formed with a T-shaped recess in which fits the head 304 of a bolt which is tightened on the outside of member 290.

In order to uphold the swinging arm 69 and the rewind drive parts thereon (Fig. 4), a spring 305 is attached to a stud 306 extending from frame 23, and at its opposite end is connected to a rod 307 which is fixed to a bracket 308 extending horizontally from the carrying arm 69. Reference to Fig. 1 shows that the link 307 is shaped to encircle the operating shaft 54. The spring not only tends to swing the rewind parts against the side of friction disk 52, but it also tends to hold the end of the lever 69 down so that roller 291 is maintained in contact with the top of the rewind roll.

A compensating means is provided for swinging frame 288 so that it follows more closely to a radial line of movement across the surface of disk 52 rather than in arcuate path of travel, which would prevail if the holder 288 were fixed to the end of arm 69. Seeing that the parts are pivoted at 287, it is possible to rock the frame 288 toward the right (Fig. 1) as it is elevated and thus flatten out the arcuate path of travel. For this purpose a link 310 is articulated at 311 on the bottom end of frame 288 and the opposite end of the link is pivoted at 312 on the stationary supporting frame 53.

While there have been shown and described and pointed out the fundamental novel features of the invention as applied to a single modification, it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. It is the intention therefore to be limited only as indicated by the scope of the following claims.

What is claimed is:

1. In a machine for feeding record material, a main operating means, means for drawing said material off a supply roll, means for sup-

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porting a rewind roll, a friction disc associated with said supporting means for rewind connection, a pivoted arm, means on said arm for regulating the frictional rewind, the last mentioned means including a follower roller resting on said 5
rewind roll and a friction driving wheel mounted therewith and cooperating with said disc for rotating the rewind roll, means under control of said main operating means for rotating said 10
friction driving wheel, a pivoted frame on the end of said arm for holding said follower roller and said friction driving wheel, a link connected at one end to said pivoted frame for rocking it as said arm swings the frame as the rewind 15
roller increases in size, and a fixed pivot for the other end of said link, whereby the path of said friction driving wheel follows a line more radial than arcuate across the face of said disc.

2. A machine of the kind set forth in claim 1 wherein said means under control of the main 20
operating means for rotating the friction driving wheel includes a pulley attached to the friction driving wheel, and belting connections from said pulley to a drive pulley operated by the main operating means.

3. In a machine for feeding record material, a main operating means, means for drawing said material off a supply roll, means for supporting a 25
rewind roll, a friction disc associated with said supporting means for rewind connection, a pivoted arm, means on said arm for regulating the frictional rewind, the last mentioned means including a follower roller resting on said rewind 30

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roll and a friction driving wheel mounted therewith and cooperating with said disc for rotating the rewind roll, means under control of said main operating means for rotating said friction 5
driving wheel, a shaft through said friction driving wheel, a manipulative arm on one end of said shaft and a lever with a cam roller on the other end of said shaft for cooperating with the surface of the friction driving disc to 10
cam the friction driving wheel away from the disc when the lever is manipulated to rock the roller against the surface of the disc.

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