Jan. 3, 1928. 1,654,946

C. M. SINKS

AUTOMATIC PAPER STRAIGHTENING ATTACHMENT FOR ADDING MACHINES

Filed May 12, 1927 2 Sheets-Sheet 1

FIG. 1

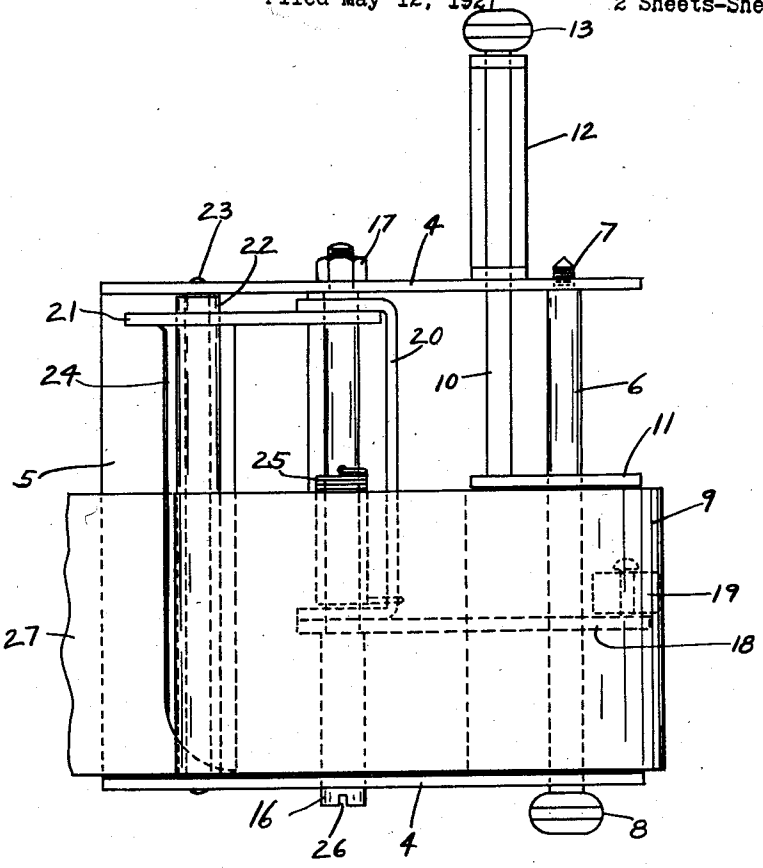
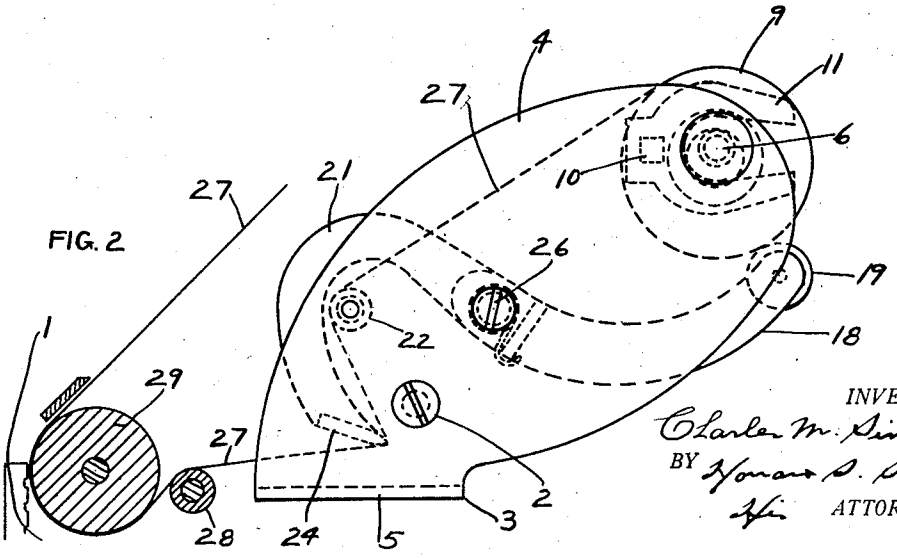


FIG. 2



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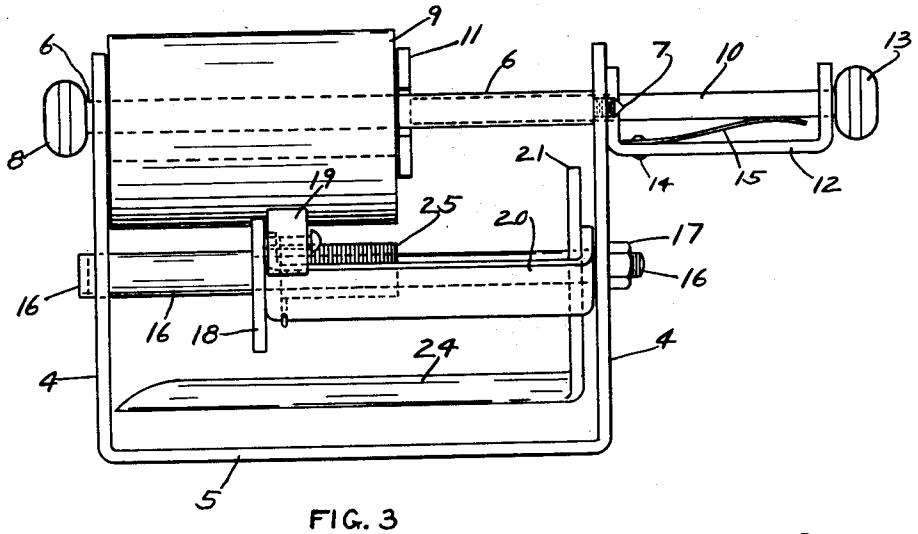


FIG. 3

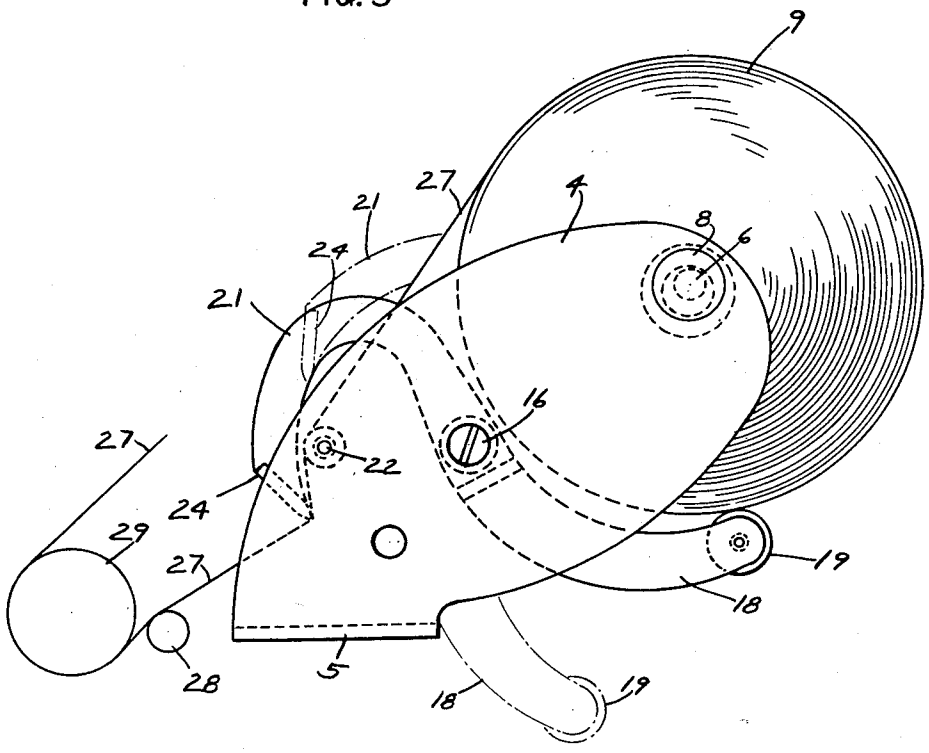


FIG. 4

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Patented Jan. 3, 1928. 1,654,946

UNITED STATES PATENT OFFICE.

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AUTOMATIC PAPER-STRAIGHTENING ATTACHMENT FOR ADDING MACHINES.

Application filed May 12, 1927. Serial No. 190,774.

This invention relates to new and useful improvements in automatic paper straightening attachments for adding machines.

It is the principal object of my invention to provide for convenient attachment to any adding machine a device for automatically straightening the paper strip that is used in said machines. At present, the paper strip which issues from said machines, especially when the roll becomes small, is so curled as to make it difficult to read or preserve, without straightening it upon a desk or other object. This straightening method often results in the paper strip being torn in two. My attachment for adding machines, which is simple in construction and easy to apply to them, automatically straightens the paper strip before it is printed upon, so that when it issues from the machine, it will be absolutely free from curls.

It is another object of my invention to prevent the accidental spinning of the paper from the roll out upon the floor.

In the accompanying drawings illustrating my invention, Figure 1 is a plan view of my automatic paper straightening attachment for adding machines. Figure 2 is a right-hand, side elevation of said attachment, showing a small roll of paper mounted therein. Figure 3 is a rear, elevational view of said attachment. And Figure 4 is a side, elevational view of said attachment, showing a new or large roll of paper mounted therein, the straightening bar being shown in dot and dash lines for its loading position.

Referring to the accompanying drawings for a detailed description of my invention, the numeral 1 designates an adding machine of a conventional type to which there is removably secured by screwes 2 a carrier frame 3. This frame preferably consists of two metal side portions 4, 4 which have the curved contour shown in Figurs 2 and 4, being joined at their lower front ends by an integral plate portion 5. Formed in the rear end of one side portion 4 is a hole adapted to receive one end of a paper roll shaft 6, the other end of which terminates in a reduced threaded portion 7 adapted to be screwed in a threaded hole in the rear end of the other side portion 4 of the frame. On its first named end there is secured to said shaft 6 a knob 8 by means of which it may be easily turned to screw it into and out of the threaded hole in the last mentioned side member 4. (See Figures 1 and 3). Mounted on the shaft 6 is a roll of paper 9 for use in the adding machine 1 to which the frame 3 is attached. This paper roll is held against the right side member 4 by a slide bar 10. This bar is preferably square in cross section, as shown in dotted lines in Figure 2 and is slidable laterally through a hole in that side member 4 which contains the threaded hole that receives the threaded end 7 of the shaft 6. Secured to the inner end of the bar 10 is a bifurcated retaining piece 11, which straddles the shaft 6 for engagement with the inner face of the paper roll 9. Secured to the outer part of said side 4 is a horizontally projecting U-shaped guide 12, through holes in whose upwardly projecting portions the bar 10 is movable. (See Figures 1 and 3). Secured to the outer end of the bar 10 beyond the guide 12 is a knob 13 by which said bar may be pressed inwardly against the paper roll or withdrawn therefrom. Secured to the bottom of the U-shaped guide 12 by a rivet 14 is a flat spring 15 whose free end yieldingly engages the bar 10 to hold it in an adjusted position near or against the paper roll 9.

Formed in the middle portion of the right side member 4 is a hole which receives one end of a shaft 16, the other end of which is of reduced diameter and threaded for entrance into a hole formed in the middle portion of the other side member 4. Applied to the threaded end of this shaft beyond the last mentioned side member, is a nut 17. Pivotally mounted upon the reduced part of the shaft 16 against the shoulder formed by the end of the enlarged portion of said shaft, is a curved arm 18 which projects rearwardly under the middle portion of the paper roll 9. Pivotally secured to the outer end of this arm 18 is a rubber roller 19 which engages the paper roll 9, as shown in Figures 2 and 4, to tension it.

Also pivotally secured upon the reduced portion of the shaft 16, between the arm 18 and the left side member 4, is a U-shaped member 20. The inner end of this U-shaped member 20 is secured to the inner end of the arm 18. To the outer end of this U-shaped member 20 there is secured one end of an arched member 21 which projects over a roller 22 mounted on a shaft 23 secured between the side members 4, 4 in front of, and parallel with, the shaft 16. The inner end of the arched member 21 is pivotally mounted on the reduced portion of the shaft

16 and terminates at its outer end in a horizontal scraper bar 24 that is below and parallel with the roller 22. (See Figures 1 and 3).

The arm 18 is held in contact with the paper by a spring 25 coiled around the reduced part of the shaft 16. One end of this spring is secured in a hole in said shaft, while its outer end is bent over the U-shaped member 20, whereby the pull exerted by said spring upon said U-shaped member will urge the arm, to which it is attached, toward the paper. The pull exerted by the spring upon the U-shaped member 20 will also hold the scraper against the paper which passes over the roller 22, to straighten it. The tension of the spring 25, is adjusted by turning the shaft 16, which, at its outer end, is formed with a diametric groove 26 to receive a screw-driver for this purpose.

In operation a paper roll is mounted upon the shaft 6, after which the bar 10 is moved inwardly to bring the bifurcated member 11 to a position to hold said roll against the right side member 4. The paper 27 is then drawn from the top of the roll over the roller 22 and under the scraper bar 24, as shown in Figure 4. It will be observed from Figure 4 how easy it is to slip the edge of the paper into position over the roller 22 during the loading operation, since the straightening bar 24 may be easily swung back and out of the way to its loading position shown in dot and dash lines in said figure. The paper strip 27 is then drawn over an idler roller 28 and around an impression roller 29 in the adding machine 1.

After the paper strip passes the roller 22, it is sharply engaged by the straightening bar 24 which removes any curl that may exist in it. As the roll 9 decreases in diameter, the curl becomes more pronounced; but this is automatically compensated for by the increasing acuteness of the angle at which the straightening bar 24 engages it. This increasing acute angle is due to the inward movement of the tension arm 18, which is permitted by the gradually decreasing diameter of the roll 9 when the paper is drawn from it.

It is thus seen that I have provided a simple and efficient automatic paper straightening attachment for adding machines.

I do not wish to be limited to the details of construction and arrangement herein shown and described, and any changes or modifications may be made therein within the scope of the subjoined claims.

Having described my invention, I claim:

1. A paper straightening attachment for adding machines, comprising a paper roll supporting frame, a tension member adapted to engage said roll, a transverse member over which a paper strip from said roll is adapted to pass, and a straightening means adapted to engage said paper strip from above after it has passed over said transverse member.

2. A paper straightening attachment for adding machines, comprising a paper roll supporting frame, a tension member adapted to engage said roll, a roller over which a paper strip from said roll is adapted to pass, a straightening member, and automatic means for simultaneously pressing the tension member against said roll and the straightening member upon the paper strip after it has passed over said roller.

3. A paper straightening attachment for adding machines, comprising a paper roll supporting frame, a transverse shaft in said frame in front of said roll, a tension arm mounted on said shaft for engagement with the under surface of said roll, a roller mounted in said frame in front of said shaft and over which a paper strip from said roll passes, a straightening member also mounted on said shaft and projecting over the roller, and spring means on said shaft for simultaneously holding the tension arm against the paper roll and the straightening member tightly upon the paper strip after it has passed over said roller, for the purpose specified.

4. A paper straightening attachment for adding machines, comprising a paper roll supporting frame, a transverse shaft in said frame in front of said roll, a tension arm mounted on said shaft for engagement with the under surface of said roll, a roller mounted in said frame in front of said shaft and over which a paper strip from said roll passes, a straightening member also mounted on said shaft and projecting over said roller for engagement with the paper strip, means pivotally secured on said shaft for connecting said tension arm and the straightening member, and a spring surrounding said shaft, one end of said spring being secured to the shaft and its other end to the connecting member for the purpose specified.

5. A paper straightening attachment for adding machines, comprising a paper roll supporting frame, a transverse shaft in said frame in front of said roll, a tension arm mounted on said shaft for engagement with the under surface of said roll, a roller mounted in said frame in front of said shaft and over which a paper strip from said roll passes, an arched member mounted at one end on said shaft and projecting over said roller, a transverse straightening bar on said arched member for engagement with the paper strip after it has passed over said roller, a U-shaped member mounted on said shaft and connected at one end to the tension arm and at its other end to the arched member, and a spring surrounding said shaft and connected at one end to the shaft

and at its other end to the U-shaped connecting member for the purpose specified.

6. A paper roll supporting frame comprising two side members and a transverse connecting member, a shaft mounted between said side members to support a paper roll, a retaining slide passing through one side member for engagement with one face of said roll, a U-shaped guide secured to said side member, and through whose right-angled ends the slide passes, and a flat spring secured at one end to the U-shaped guide and engaging with its free end the slide for the purpose specified.

In testimony whereof I have hereunto set my hand this 11th day of May, 1927.

CHARLES M. SINKS.