A. H. ADAMS.

TYPEWRITER.

APPLICATION FILED JAN. 26, 1921.

1,426,804.

Patented Aug. 22, 1922.

2 SHEETS—SHEET 1.

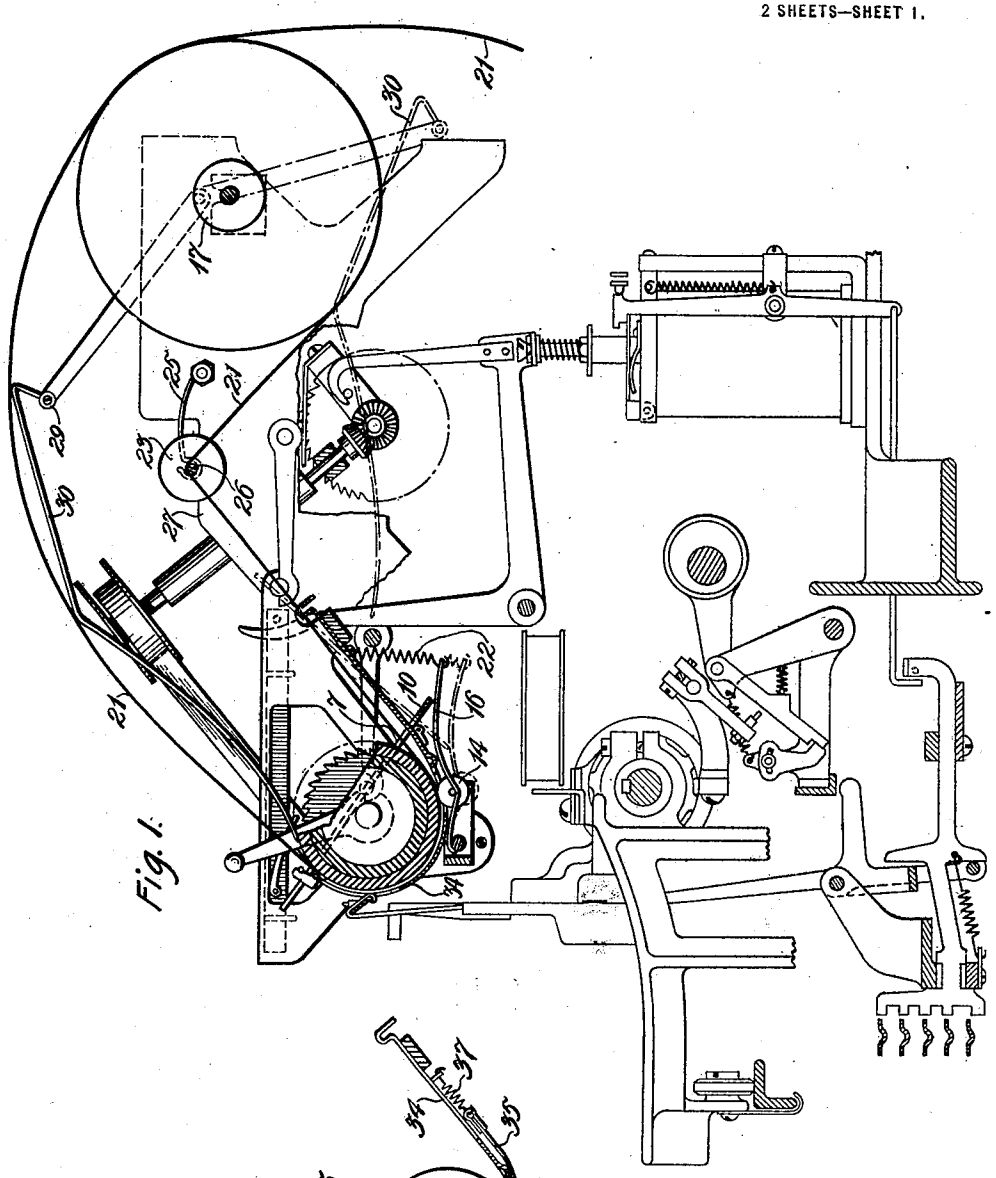


Fig. 1.

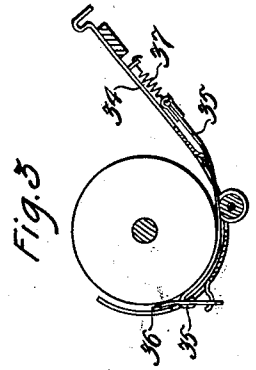


Fig. 3

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2 SHEETS—SHEET 2.

Fig. 2

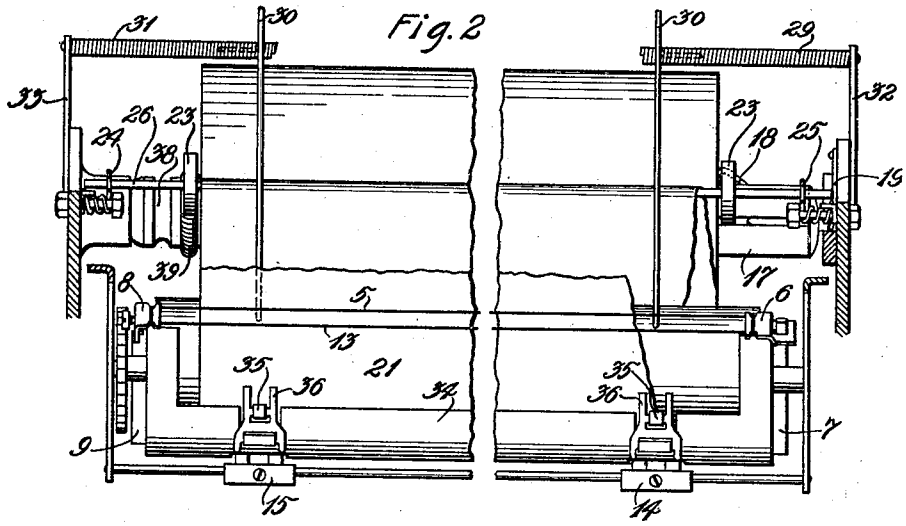


Fig. 4

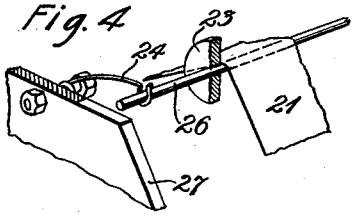


Fig. 5

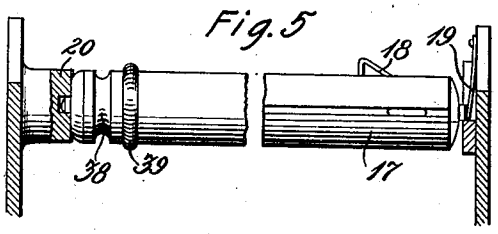
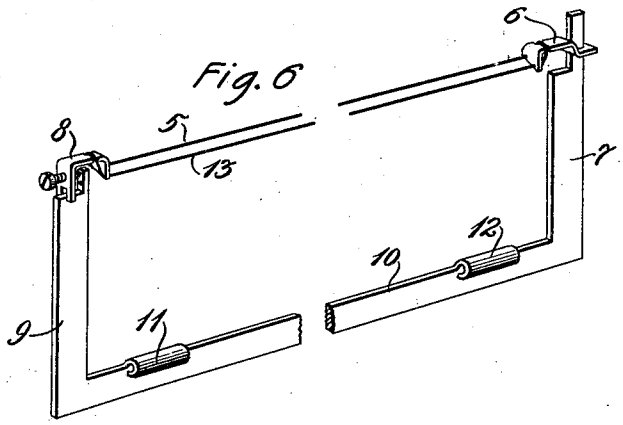


Fig. 6



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UNITED STATES PATENT OFFICE.

ARTHUR H. ADAMS, OF GALION, OHIO, ASSIGNOR TO WESTERN ELECTRIC COMPANY, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

TYPEWRITER.

1,426,804. Specification of Letters Patent. Patented Aug. 22, 1922.

Original application filed October 29, 1918, Serial No. 260,111. Divided and this application filed January 26, 1921. Serial No. 439,965.

To all whom it may concern:

Be it known that I, ARTHUR H. ADAMS, a citizen of the United States of America, residing at Galion, in the county of Crawford and State of Ohio, have invented certain new and useful Improvements in Typewriters, of which the following is a full, clear, concise, and exact description.

This invention relates to typewriters and similar machines, and is a division of my copending application, Serial No. 260,111, filed October 29, 1918.

An object of the invention is the provision of means for automatically correcting the direction of travel of the paper from the roll to the platen.

Another object is the provision of a paper tearing element combined with means for controlling the position of a set of guide rollers with respect to the platen.

Other objects will appear hereinafter.

The invention is disclosed in the accompanying drawings as applied to a telegraph receiving printer, although it is obviously not limited to such a combination. Inasmuch as the printer structure has been described in detail in my copending application, Serial No. 260,111, filed October 29, 1918, and especially since it does not form a part of the present invention a detailed description is believed unnecessary here. The invention is illustrated in the accompanying drawings, wherein Fig. 1 is a vertical sectional view of the receiving printer disclosed in my above referred to copending application; Fig. 2 is a front elevation of the paper platen, paper guiding mechanism and paper holder disclosed in Fig. 1; Fig. 3 is a view showing a flexible metallic spring for causing the printing medium to conform to the periphery of the platen; Fig. 4 is a detailed view of the automatic paper travel correcting mechanism; Fig. 5 is a detailed view showing the method of supporting the dowel or spindle, while Fig. 6 is a view of the adjustable paper tearing element.

Figs. 1, 2 and 6, show an adjustable paper tearing edge, which in addition to serving as a reliable and efficient tearing device, in no way interferes with the visibility of the printed message. The paper tearing edge consists of a flexible cord or wire 5 stretched tightly across and near the paper platen. In Fig. 6 the cord 5 is shown connected to one end of a stationary member 6 on an upright 7, while the opposite end of the cord 5 is shown connected to an adjustable member 8 carried by an upright 9, which is rigidly connected to the corresponding upright 7 by the connecting portion 10. The holder consisting of the arms 7 and 9, and the base portion 10 is arranged to be pivotally connected to any suitable part of the frame mechanism by means of hinges 11 and 12. In addition to the paper tearing edge 5 there is provided a similar cord or wire 13, which extends parallel with the cord 5 and is connected to the members 6 and 8. In the same manner as cord 5. The cord 13 is arranged to rest closely against the paper or printing medium, while the tearing edge is held a slight distance away from the paper. The cord 13 serves to retain the paper in engagement with the platen when the strip or sheet is torn off along the cord 5, thereby making it unnecessary to start the end of the paper under the tearing edge by hand. It is often desirable that the tearing edge be of small diameter and of material having high tensile strength. In this connection fine piano wire has been found to be very satisfactory.

The paper tearing edge is useful only when employing roll paper or paper of continuous length, and is non-essential when the printer is used for manifolding or when employing sheets of uniform length. Therefore, when manifolding, the tearing edge and holder therefor may be rotated around its pivotal bearings 11 and 12 and turned into the position shown by the dotted lines in Fig. 1. Combined with the paper tearing edge is a set of pressure rollers 15 and 14, which rollers are adapted to be held in close proximity with the paper platen when single strips of paper are employed. There is one pressure roller provided near each end of the paper platen, and each roller extends through an opening in a paper shield 34, and is normally held in position by means of supporting members 16, which are held in position by spring members 22 as shown in full line in Fig. 1. These rollers aid in guiding the paper around the periphery of the platen, and are useful only when feeding single strips of paper. Therefore, it is desirable that the rollers be removed from the platen when manifolding or when

feeding a plurality of sheets simultaneously. When the paper tearing edge is thrown back into the dotted line position, Fig. 1, the portion 10 connecting uprights 7 and 9 is moved into the dotted line position, thereby forcing the members 16 and the pressure rollers carried thereby down into a position shown in dotted lines. Thus, it will be seen that the members 7, 9 and 10 not only serve as a support to the paper tearing edge, but also serve to remove the pressure rollers from the paper platen when they are not required. Another advantageous feature of this invention is that when a new roll of paper is placed in the machine, and it is desired to start the paper around the periphery of the platen, the paper tearing edge may be moved to a position intermediate of the two positions shown in Fig. 1, and in so doing, the pressure rollers will be lowered, thereby making it easy to start the paper around the platen.

The paper or printing medium on which the characters are recorded is commonly used in roll form which may be mounted on a dowel or spindle 17, as is clearly shown in Fig. 2. The dowel 17 is provided with spring members 24 and 25 for holding the paper roll in position. The dowel 17 is also provided with a metal pin extending through the center thereof, which pin is supported at each end by the frame of the machine. To prevent the roll from turning too freely, there is provided a spring member 19 which engages the end of the supporting pin and forces the dowel 17 against the support 20. The friction set up between the spring 19 and the metal pin, and between the dowel and the support 20 is sufficient to prevent the roll from overrunning. The dowel or spindle 17 has cut in one end thereof a series of grooves 38 and in these grooves there is positioned a circular spring member 39. These grooves are arranged so that the spindle will conveniently accommodate paper of various widths, and by the use of the member 39 the paper will be guided properly. The paper or printing medium 21 is drawn from the underside of the roll over a spring supported idler or guide rod 26. Thence, under, around and over the platen, thence over the paper supporting fingers 30 to a suitable spool or take-up device. The guide rod 26 consists of a cylindrical surface with rubber spool heads or washers 23 at each end thereof, and frictionally held to the rod or center piece 23. The idler or guide roller 26 is supported at each end by flexible springs 24 and 25, one end of each spring being rigidly connected to a suitable portion of the frame, and the other end arranged to loosely engage the rod 26 carrying the spool heads 23. So long as the paper is fed straight forward step by step by means of either an electrical means as described in my previously referred to copending application, or by suitable manually operated means, the roller 26 and spring supporting members will oscillate freely up and down, and gradually withdraw the paper from the paper roller as described. However, it frequently happens that the paper, instead of being fed forward horizontally in a straight path, will travel faster along one edge, than the other, and will cause the characters to be printed in lines diagonal of the paper, and may even eventually prevent or interrupt the feeding of the paper. To avoid such a condition, this invention contemplates the provision of means for automatically correcting the feeding of the paper. This feature is clearly illustrated in Figs. 2 and 4. In case the paper, due to unevenness, different pressures being applied to the pressure rollers, or for any reason whatsoever, travels faster on one side than on the other, and consequently travels over to the right or left of the center, the paper in passing over the guide roller 26 will force the roller and washers 23 sidewise so that the end of the rod 26 is held rigidly by its engagement with the stationary part of the machine. Only one end of the guide roller will be free to oscillate, and will therefore automatically correct the travel of the paper by causing a greater pull on the edge of the paper which has been gradually falling behind, and as soon as the travel of the paper is corrected, the rod 26 together with the washers 23 will be moved to their former position so that they will again be free to oscillate until the paper forces them in one direction or another a sufficient distance to again cause the supporting rod 26 to engage the stationary portion of the machine.

The paper guide fingers 30 are carried by flexible spiral springs 29 and 31, which springs are mounted on arms 32 and 33 respectively, and which arms are pivotally connected in any suitable manner to the frame of the machine. It will be noted that the guide fingers are so supported that the center of the paper is open or exposed, thereby making it easy to change the paper rolls and to start new strips of paper around the platen. These supporting fingers 30 are also arranged so that when manifolding, or when feeding a plurality of sheets of paper, the fingers may be moved back out of the way, as shown in dotted lines, Fig. 1. This position is of positive utility in handling books of flimsy, keeping them out of the cam shaft.

In Fig. 3 is a detailed view showing a paper shield or guide 34, and a flexible metallic band 35 for causing the printing medium to conform to the periphery of the platen. One end of each metallic spring is connected to a set of flexible fingers 36, best shown in Fig. 1, which fingers are also for

the purpose of holding the paper close to the platen. The other end of the metallic band 35 is connected by a spring 37 to the paper shield 129, or any suitable stationary part of the frame.

Although the invention has been illustrated in connection with a telegraph receiving printer, it may of course be applied to other types of machines without departing from the spirit and scope of the invention.

What is claimed is:

1. In combination, a paper holder, means for drawing paper from said holder in a longitudinal direction, and a take-up device over which said paper travels, said device being free to oscillate when the paper travels in a uniform longitudinal direction and a portion thereof being restrained from movement when the paper travels in a transverse direction whereby the direction of travel of the paper is automatically corrected.

2. In combination, a paper holder, means for drawing paper from said holder in a longitudinal direction, a paper take-up device over which said paper travels, said device being free to oscillate when the paper travels in a uniform longitudinal direction, and means associated with said device for preventing free oscillation of a portion thereof when the paper is shifted in a transverse direction.

3. In combination, a paper platen, a support, a roll of paper carried by said support, means for drawing the paper from said roll and around said platen, a take-up device comprising an oscillating roller over which said paper travels, and means associated with said roller for arresting one end thereof when the paper travels in a transverse direction.

4. In a paper feeding mechanism, a paper holder, means for drawing paper from said holder in a longitudinal direction, a depressible guide roller over which said paper travels, means associated with said roller and adapted to be engaged thereby when the paper moves in a transverse direction for automatically correcting the direction of travel of the paper.

5. In a paper feeding mechanism, a support, a roll of paper, paper carried by said support, means for drawing paper from said roll in a longitudinal direction an idler over which said paper travels, said idler normally maintaining a horizontal position and being responsive to transverse movement of the paper in either direction, and means cooperating with the idler when moved in one direction to throw it at an angle with respect to the horizontal plane to thereby cause the paper to return to its normal direction of travel.

6. In a paper feeding mechanism, a support, a roll of paper carried by said support, means for drawing paper from said roll in a longitudinal direction, an idler over which said paper travels, flexible supports for said idler, being free to oscillate with said supports and to be moved transversely thereof, means cooperating with the idler when moved in a transverse direction for holding said idler at an angle with respect to a horizontal plane thereby automatically correcting the direction of travel of the paper.

7. In a paper feeding mechanism, a paper tearing element comprising a flexible cord, a holder therefor, and means for adjusting the tension of said cord.

8. In a paper feeding mechanism, a plurality of flexible cords, and supports for said cords, one of said cords serving as a paper guide and another of said cords serving as a paper tearing element.

9. In a paper feeding mechanism a spindle, paper carried by said spindle, a feed roller around which said paper is adapted to travel, means for guiding the paper around said roller, a paper tearing device, means for moving said paper tearing device into and out of operative relation with respect to said paper, and means controlled by said last-mentioned means for controlling the position of said paper guiding means.

10. In a paper feeding mechanism a feed roller around which paper is adapted to travel, means for guiding the paper around said roller, a paper tearing device, a movable holder for said paper tearing device, and means operated upon the movement of said holder for changing the position of said paper guiding means with respect to said feed roller.

11. In a paper feeding mechanism a feed roller around which paper is adapted to travel, means for guiding the paper around said roller, a pivoted supporting means for said guiding means, a paper tearing device and a holder therefor arranged to engage said supporting means to move said guiding means into and out of operative relation with respect to said feed roller.

12. In a paper feeding mechanism, a paper holder having a plurality of grooves in one end thereof, means for drawing the paper in a horizontal direction, and means arranged to fit in such grooves for permitting the accommodation of paper of different widths on said holder.

13. In combination, a roll of paper, a support for said paper having a plurality of grooves in one end thereof, and a spiral spring arranged to fit in such grooves for permitting the use of paper of different widths.

In witness whereof, I hereunto subscribe my name this 21 day of January A. D., 1921.

ARTHUR H. ADAMS.