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PAPER SUPPLY AND FEED MECHANISM FOR PRINTING BUSINESS MACHINES

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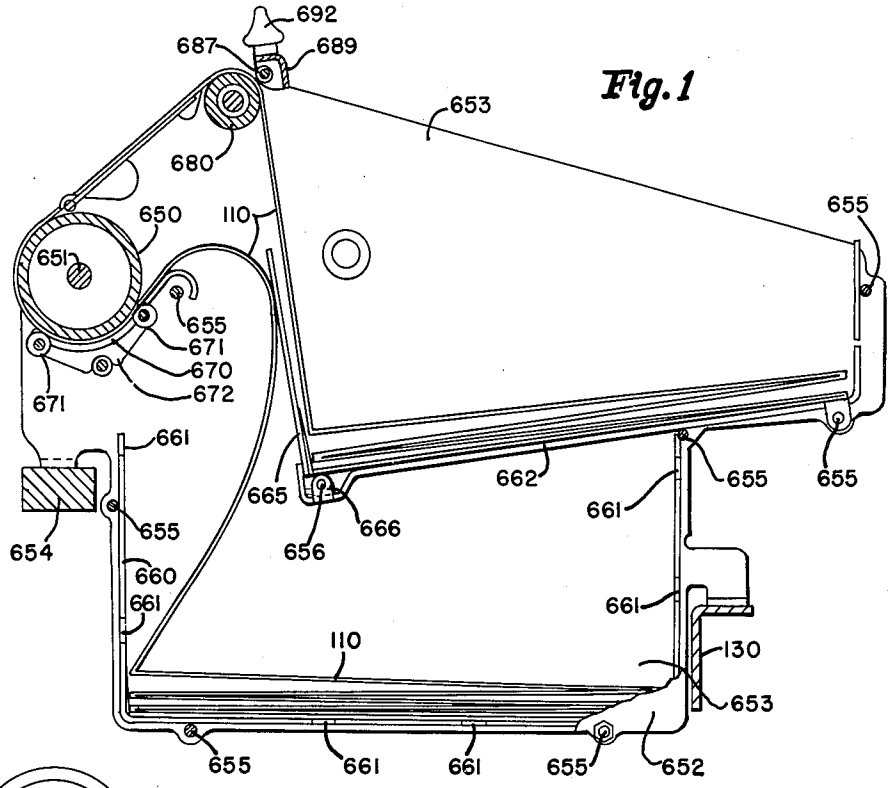


Fig. 1

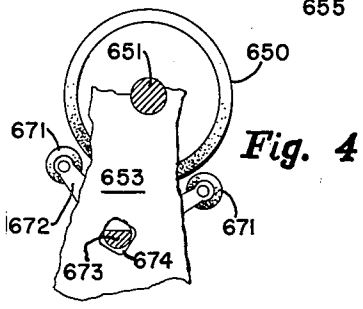


Fig. 4

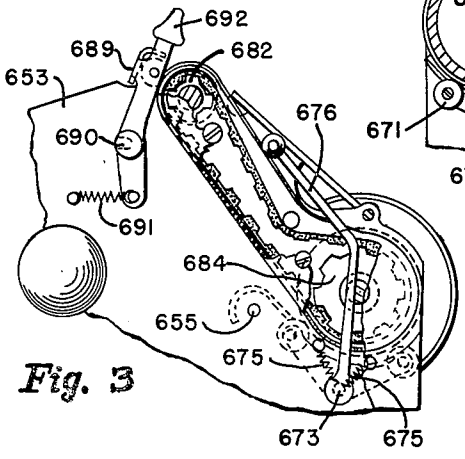


Fig. 3

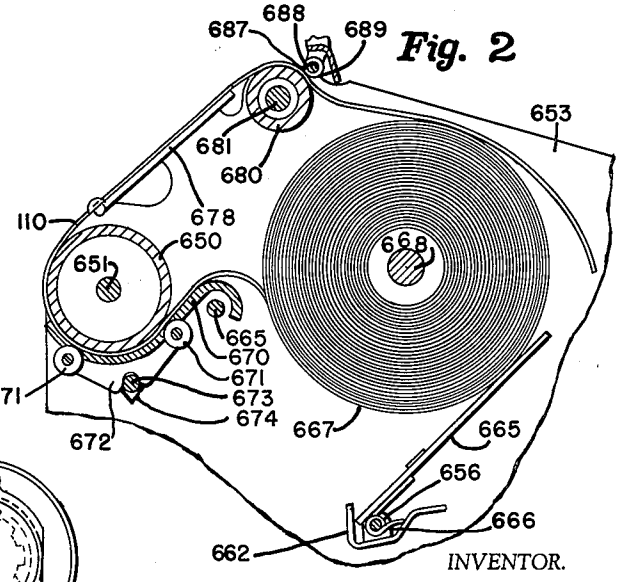


Fig. 2

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PAPER SUPPLY AND FEED MECHANISM FOR PRINTING BUSINESS MACHINES

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Original application Dec. 26, 1957, Ser. No. 705,443. Divided and this application Nov. 9, 1959, Ser. No. 851,624

4 Claims. (Cl. 197—133)

The present invention relates to paper supply and feed mechanisms for use with business machines and the like, and it more particularly relates to such mechanisms as are adapted to feed paper to a printing station either from a supply of roll paper or from a supply of fan-fold paper. This application is a division of a copending application, Serial No. 705,443, filed December 26, 1957, by Arthur Fettig et al. and assigned to the same assignee as the present invention.

Paper supply and feed mechanisms embodying the present invention find particular utility in connection with business machines of, for example, the type disclosed in the above-identified Fettig et al. application, and the manner in which such mechanisms may be incorporated with such machines is fully described in the Fettig et al. application.

In the operation of business machines, it has been found that roll paper is best suited for certain operations while fan-folded paper is best suited for other operations. It is thus advantageous to provide the machine with means which enables the use of either type of paper, and since auxiliary equipment and attachments are necessarily cumbersome and slow down the operation of the machine, it would be desirable to provide a paper supply and feed mechanism which can be used with either roll-type or fan-fold type paper without replacing any parts of the machine and without making any complicated adjustments.

Therefore, it is a principal object of the present invention to provide a new and improved paper supply and feed mechanism for use with business machines and the like.

Another object of the present invention is to provide a new and improved paper supply mechanism which will accommodate either roll type or fan-fold type paper.

Another object of the present invention is to provide a new and improved paper supply and feed mechanism which is particularly suited for use with business machines and which will accommodate either roll type or fan-fold type paper and which can be converted for use from one type of paper to the other without replacing any parts of the machine.

Briefly, the above and further objects are realized in accordance with the present invention by providing a paper supply and feed mechanism which includes a supply section in which roll type or fan-fold type paper is adapted to be supported and a paper receiving section in which paper is collected after passing through the printing station. The rotatable platen roller of the machine is operatively interconnected between the two sections, and one wall of the paper receiving section is spring biased in such a manner that when roll type paper is used this wall is urged against the supply roll to provide a friction type brake which prevents excessive unrolling of the paper from the roll. In addition, the paper supply and feed mechanism embodying the present invention includes a printed paper drive mechanism for feeding paper from the platen roller to the paper receiving section and for

maintaining the paper under a predetermined tension as it passes through an autographing station interposed between the platen roller and the printed paper feed assembly.

Further objects and advantages of the present invention and a better understanding thereof may be had by reference to the following detailed description taken in connection with the accompanying drawings in which:

Fig. 1 is a side elevational view of a paper supply and feed mechanism embodying the present invention, certain portions thereof being broken away, which view shows the use of fan-fold paper;

Fig. 2 is a fragmentary view similar to that of Fig. 1 showing the use of roll paper;

Fig. 3 is a fragmentary elevational view showing the drive connection between the platen and the printed paper feed mechanism; and

Fig. 4 is an enlarged, fragmentary view of a portion of the device of Fig. 1.

In order to facilitate an understanding of the manner in which the paper supply and feed mechanism of the present invention may be used in connection with the business machined disclosed in the above-identified Fettig et al. application, in which application the mechanism embodying the present invention is described, like parts in the two applications are identified by the same reference numbers.

Referring now to the drawing and particularly to Fig. 1 thereof, a machine embodying the present invention comprises a platen roller **650** which is carried on a shaft **651** journaled in a pair of right and left side plates **652** and **653** suitably supported on two cross frame members of the machine which are respectively identified in the drawings as **130** and **654**. The paper **110** on which the information to be recorded is printed passes clockwise over the platen roller **650** and a suitable printing mechanism not shown imprints the information to be recorded on the paper **110** as it passes over the upper left-hand side of the platen roller **650** as viewed in Fig. 1.

The vertical plates **652** and **653** are secured in laterally spaced relation by a plurality of cross rods **655** and **656**. A transverse trough-like sheet metal member **660** is formed with a plurality of lugs **661** on its front, bottom and rear wall portions which enter into slots in the plates **652** and **653**. The member **660** thus forms, in cooperation with the plates **652** and **653**, a lower paper supply bin which is adapted to hold a supply of fan-fold paper strip. Another sheet metal member **662**, which forms the bottom and rear walls of a printed paper receiving bin or section, is formed near the front and rear edges of its bottom wall portion with a plurality of vertically bent ears which rest on the cross rods **655** and **656** and thus support the member **662** in place.

A third sheet metal member **665** cooperates with the member **662** and the side plates **652** and **653** to form an upper printed paper receiving bin or section and in addition, provides a friction brake when the mechanism is used in connection with rolled paper as described hereinafter in connection with Fig. 2.

As shown in Figs. 1 and 2, the sheet metal member **665** is formed at the lower ends of its side edges with rearwardly bent ears which are rockably supported on the cross rod **656**. A torsion spring **666** is wound about the cross rod **656**, as best shown in Fig. 2, and urges the member **665** in a counterclockwise direction so that in the absence of a roll of paper in the supply section, the member **665** occupies the position shown in Fig. 1 wherein it abuts against the upstanding forward edge of the sheet metal member **662**. In this position it serves as a front wall for the printed tape receiving bin so that fan-fold paper supplied from the lower supply bin to the platen roller **650** may be collected in the upper paper receiving

bin in the manner shown in Fig. 1. On the other hand, and referring to Fig. 2, when a roll of paper 667 is carried on a spool supported on a rod 668 removably securable in the side plates 652 and 643, the member 665 serves as a paper supply roll brake by bearing resiliently against the periphery of the supply roll 667.

The paper strip 110 which is supplied from either the roll 667 or from a supply of fan-folded paper supported in the lower bin passes between the bottom of the platen roller 650 and a fixed paper shield 670 formed of sheet metal and provided on its end edges with a plurality of lugs which enter into suitable slots in the plates 652 and 653 to support the shield in place. As best shown in Fig. 2, the shield 670 is apertured to accommodate two lines of pressure rollers 671 which are rotatably mounted on suitable rods supported in front and rear arms of a pair of levers 672. The levers 672 are rockably supported on a shaft 673 which, as best shown in Fig. 4, is provided with half-round ends mounted in respective square openings 674 in the side plates 652 and 653. Accordingly, when the flat portions of the shaft ends are parallel to the upper sides of the square openings 674, the shaft is elevated sufficiently by a pair of tension springs 675, shown in Fig. 3, to press the rollers 671 against the paper strip 110 passing under the platen roller 650. The springs 675 are connected to the shaft 673 and to suitable studs in the side plates 652 and 653.

In order to provide manual release of the paper passing across the platen roller, there is provided a finger lever 676 which is secured to the left-hand end of the shaft 673 so that by moving the lever 676 rearward of the machine, counterclockwise, as viewed in Fig. 3, the shaft 673 is forced downwardly by the camming action of its flat ends in the square openings in the side plates 652 and 653, thereby to retract the two lines of rollers 671 from the platen roller 650.

From the platen roller 650 the paper strip 110 passes upwardly and rearwardly over a flat metal plate 678 which is supported at its side edges on the upper edges of the side plates 652 and 653. The plate 678 thus serves as an autographic table. Rearwardly of the table 678 the paper 110 passes over and downwardly behind a printed paper feed roller 680 which maintains the portion of the paper overlying the table 678 taut so that the paper may be written on as it passes avross the autographic table. The shaft 681 is journaled near its ends in the side plates 652 and 653 and extends outwardly of the side plate 653. It has secured thereto a small toothed belt pulley 682 (Fig. 3) which is drivingly connected to the platen roller 650 so that the rollers 650 and 680 rotate in synchronism. Accordingly, a toothed pulley 684 is secured on the leftward end of the platen roller shaft 651 and a toothed belt of the kind commonly known as a timing belt interconnects the two pulleys 682 and 684. The relative diameters and numbers of teeth on the pulleys 682 and 684 are so selected with respect to the diameters of the rollers 650 and 680 as to maintain the paper strip 110 always taut on the face of the table 678 without, however, applying excessive tension.

The paper strip 110 is maintained in feeding frictional engagement with the feed roller 680 by means of a line of pressure rollers 687 carried on a rod 688 supported at its ends in the side arms of a bail member 689, said side arms being pivotally mounted on a pair of studs 690 respectively secured to the side plates 652 and 653. A pair of tension springs 691 are respectively connected between suitable studs on the side plates 652 and 653 and the bottoms of the arms on the bail member 689 to urge the bail 689 clockwise, as viewed in Fig. 4, thereby to yieldingly press the rollers 687 against the paper strip as it passes across the printed paper feed roller 680.

Manual release of the printed paper feed mechanism is provided by means of a finger piece 692 which is attached to the bail 689 such that the forward movement of the finger piece 692 causes counterclockwise rotation of the bail 689 as shown in Fig. 4, thus retracting the rollers 687 from the feed roller 680.

While the present invention has been described in connection with a particular embodiment thereof, it will be understood that those skilled in the art may make many changes and modifications therein and therefore it is intended to cover all such changes and modifications as fall within the true spirit and scope of the present invention.

We claim:

1. A printing business machine having a paper carriage comprising a rotatable platen roller, a paper supply and receiving container having side members carrying means to support a supply roll of paper and transverse members providing between said side members a supply compartment to hold a supply of fan-fold paper and a receiving compartment to receive the paper returning from said platen after passing about said platen from either supply, feed means to feed said returning paper from said platen into said receiving compartment, and means driven by said platen upon rotation thereof to drive said feed means.

2. A printing business machine having a paper carriage comprising a rotatable platen roller, a paper supply and receiving container having side members carrying means to support a supply roll of paper and transverse members providing between said side members a supply compartment to hold a supply of fan-fold paper and a receiving compartment to receive the paper returning from said platen after passing about said platen from either supply, feed means to feed said returning paper from said platen into said receiving compartment, means driven by said platen upon rotation thereof to drive said feed means, one of said transverse members being swingably mounted in said side members, and means yieldingly urging said swingably mounted member toward a compartment defining position such that when a supply roll of paper is supported by said supporting means, said member will yieldingly bear against said supply roll to brake it against overrotation as paper is pulled therefrom around said platen roller.

3. In a paper carriage for a printing business machine, the combination of a rotatable platen roller, means for supporting a supply of fan-fold paper for feeding to said platen, means for rotatably supporting a roll of paper for feeding to said platen, a paper receiving container into which paper is fed after passing over said platen, said receiving container comprising a movably mounted side member, and spring means for pressing said side member against a roll of paper supported in said carriage thereby to prevent excessive unrolling of said roll.

4. The combination set forth in claim 3 wherein said side member is pivotally mounted.

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