Feb. 23, 1926. 1,573,813

S. F. DAMM

METHOD OF AND MEANS FOR CUTTING PAPER

Filed Jan. 14, 1925

Fig. 1.

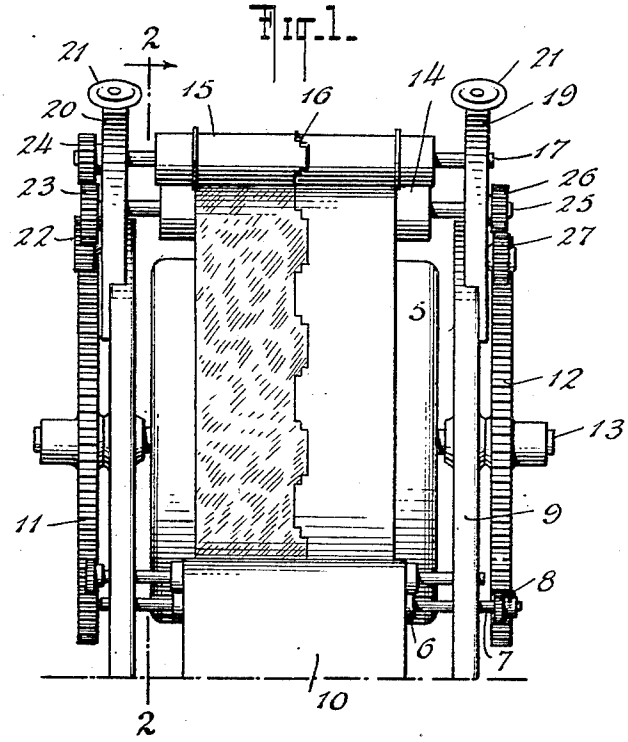


Fig. 2.

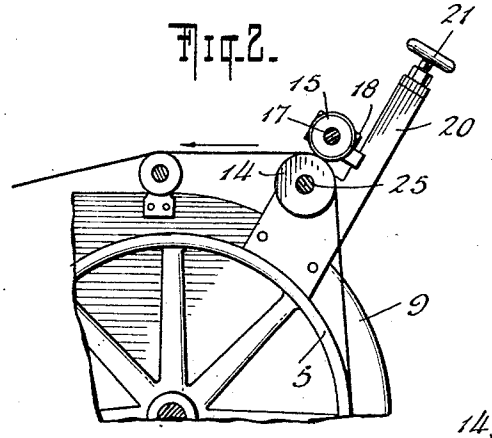


Fig. 3.

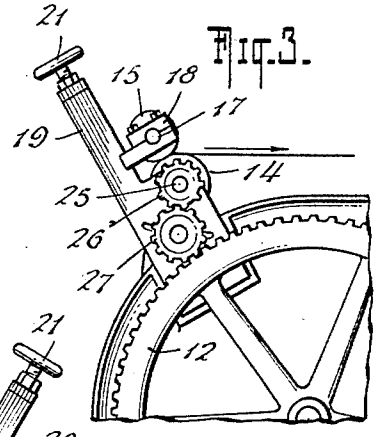
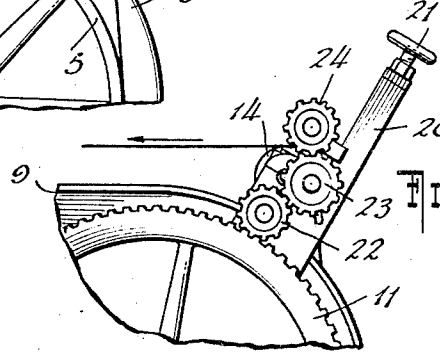


Fig. 4.



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UNITED STATES PATENT OFFICE.

SAMUEL F. DAMM, OF NIAGARA FALLS, NEW YORK, ASSIGNOR TO NIAGARA WALL PAPER COMPANY, OF NIAGARA FALLS, NEW YORK, A CORPORATION OF NEW YORK.

METHOD OF AND MEANS FOR CUTTING PAPER.

Application filed January 14, 1925. Serial No. 2,273.

To all whom it may concern:

Be it known that I, SAMUEL F. DAMM, a citizen of the United States of America, and a resident of the city of Niagara Falls, county of Niagara, and State of New York, have invented a certain new and useful Method of and Means for Cutting Paper, of which the following is a full, clear, and exact description.

My invention applies in general to cutting paper in continuous strips, and particularly to cutting wall-paper.

It is well known to those skilled in the art that wall-paper borders are now cut, or partially cut, along the edge bounding the pattern immediately after the printing operation is completed. Such cutting, however, is accomplished by pressure only, which necessitates great pressure with the resulting short life of the cutting edge and attending loss of time in changing and adjusting cutting rolls.

I have discovered that a much better product results if a sliding action is produced beneath the workpiece when the cutting knife is brought in contact therewith. Furthermore, the cutting edge remains in working condition much longer and there is no loss of time as a result of the frequent changing of cutting rollers as in the present method.

The above objects and advantages have been accomplished by the device shown in the accompanying drawings by which the process of this application may be carried out. In the drawings:

Fig. 1 is a front elevation of a wall-paper printing machine, showing one form of device for carrying out my process.

Fig. 2 is a fragmentary, sectional view thereof, taken on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary elevation, showing the driving mechanism for the platen roller.

Fig. 4 is a fragmentary elevation of the driving mechanism for the cutting roller.

Referring to Fig. 1 of the drawings, where I show a wall-paper printing machine, the impression cylinder is indicated at 5, and one of the printing rollers at 6. The printing roller is carried by a shaft 7 having the usual gear 8 at its outer end, and is journaled in the frame 9 of the machine. I also show in fragmentary manner the usual inking apron 10. Driving gears 11 and 12 are mounted on the outer ends of the shaft 13 of the cylinder, which is suitably journaled in the framework 9 of the machine.

Mounted above the cylinder are the parts of my device which comprise a platen roller 14, and a cutting roller 15. The cutting roller 15 is provided with a cutting surface 16 formed in contour to match the pattern of the paper being cut. This roller is mounted upon a shaft 17, which is rotatably supported in suitable bearing blocks 18 carried by bearing arms 19 and 20. These bearing arms are preferably secured to the framework 9 and the blocks 18 are slidably mounted in the arms 19 and 20, and their position is controlled by hand wheels 21. The gear drive for the cutting roller is shown in Fig. 4 and comprises an idler gear 22 which meshes with the drive gear 11 of the printing machine. Meshing with this gear is a second idler gear 23 which also meshes with a gear 24 mounted upon the cutting roller shaft 17. The number of teeth in the gear 24 is such that the peripheral speed of the cutting edge 16 of the cutting roller 15 is the same as the speed of travel of the paper or the peripheral speed of the impression cylinder 5. The provision of two idler gears 22 and 23 give to the cutting roller the same direction of rotation as that of the impression cylinder.

The platen roller 14 is mounted upon a suitable shaft 25 which is journaled in the bearing arms 19 and 20. At one end of the shaft 25 there is provided a gear 26 which is connected with the drive gear 12 by means of an idler gear 27. The number of teeth in the platen roller gear 26 is such as to cause the peripheral speed of the platen roller to travel faster than the speed of travel of the paper, thereby causing slippage of the surface of the platen roller on the under side of the paper.

It will be clear from the above description that in carrying out my process by the means above described, the cutting roller is brought in contact with the paper to be cut, which is resting upon the platen roller 14. As the machine is operating the cutting roller will, of course, be forced in contact with the platen roller, but the surface of the platen roller, traveling at a greater rate of speed, will be in slipping contact with the under

surface of the paper, and it is this action, I have discovered, that will more efficiently cut the paper.

It is obvious that no fixed difference between the peripheral speed of the platen roller and the paper is necessary for the accomplishment of my method. Furthermore, the peripheral speed of the platen roller may be greater or less than the travel of the paper, and the motion of the periphery of the platen roller may be either with, or opposite to, the direction of travel of the paper.

Obviously some modifications of the details herein shown and described may be made without departing from the spirit of my invention of the scope of the appended claims, and I do not, therefore, wish to be limited to the exact details herein given, the form and description being merely the preferred form and description thereof.

Having thus described my invention, what I claim is:

1. A method of cutting paper consisting of rolling a cutting surface over one side of a strip of moving paper at the same rate of peripheral speed as the travel of the paper and normally moving a cylindrical surface on the opposite side of the paper at a different rate of travel than that of the paper.

2. A method of cutting paper consisting of rolling a cutting surface over one side of a strip of moving paper at the same rate of peripheral speed as the travel of the paper and normally moving a cylindrical surface on the opposite side of the paper at a greater rate of travel than that of the paper.

3. A method of cutting paper consisting of rolling a cutting surface over one side of a strip of moving paper at the same rate of peripheral speed as the travel of the paper and normally moving a cylindrical surface on the opposite side of the paper at a different rate of travel than that of the paper, and pressing the cutting surface toward the cylindrical surface.

4. Means for cutting paper comprising means for rolling a cutting edge on the upper surface of the paper at a rate of travel equal to the rate of travel of the paper, and means for normally moving a paper carrying surface on the under surface of the paper at a rate of travel different than the travel of the paper.

5. Means for cutting paper comprising means for rolling a cutting edge on the upper surface of the paper at a rate of travel equal to the rate of travel of the paper, and means for normally moving a paper carrying surface on the under surface of the paper at a rate of travel greater than the travel of the paper.

6. Means for cutting paper comprising means for rolling a cutting edge on the upper surface of the paper at a rate of travel equal to the rate of travel of the paper, means for normally moving a paper carrying surface on the under surface of the paper at a rate of travel different than the travel of the paper, and means for pressing the paper toward the cutting edge and the platen roller.

7. Means for cutting paper comprising a cutting roller having a cutting edge which rolls on the upper surface of the paper, a platen roller in contact with the under surface of the paper, the normal peripheral speed of the platen roller being different than the speed of travel of the paper, and means for pressing the cutting roller and the platen toward each other.

8. Means for cutting paper comprising a cutting roller having a cutting edge which rolls on the upper surface of the paper, a platen roller in contact with the under surface of the paper, the normal peripheral speed of the platen roller being greater than the speed of travel of the paper, and means for pressing the cutting roller and the platen toward each other.

In testimony whereof, I have hereunto signed my name.

SAMUEL F. DAMM.