JAMES ARKELL.

Paper Cutting Machine.

No. 118,327. Patented Aug. 22, 1871.

Fig. 1.

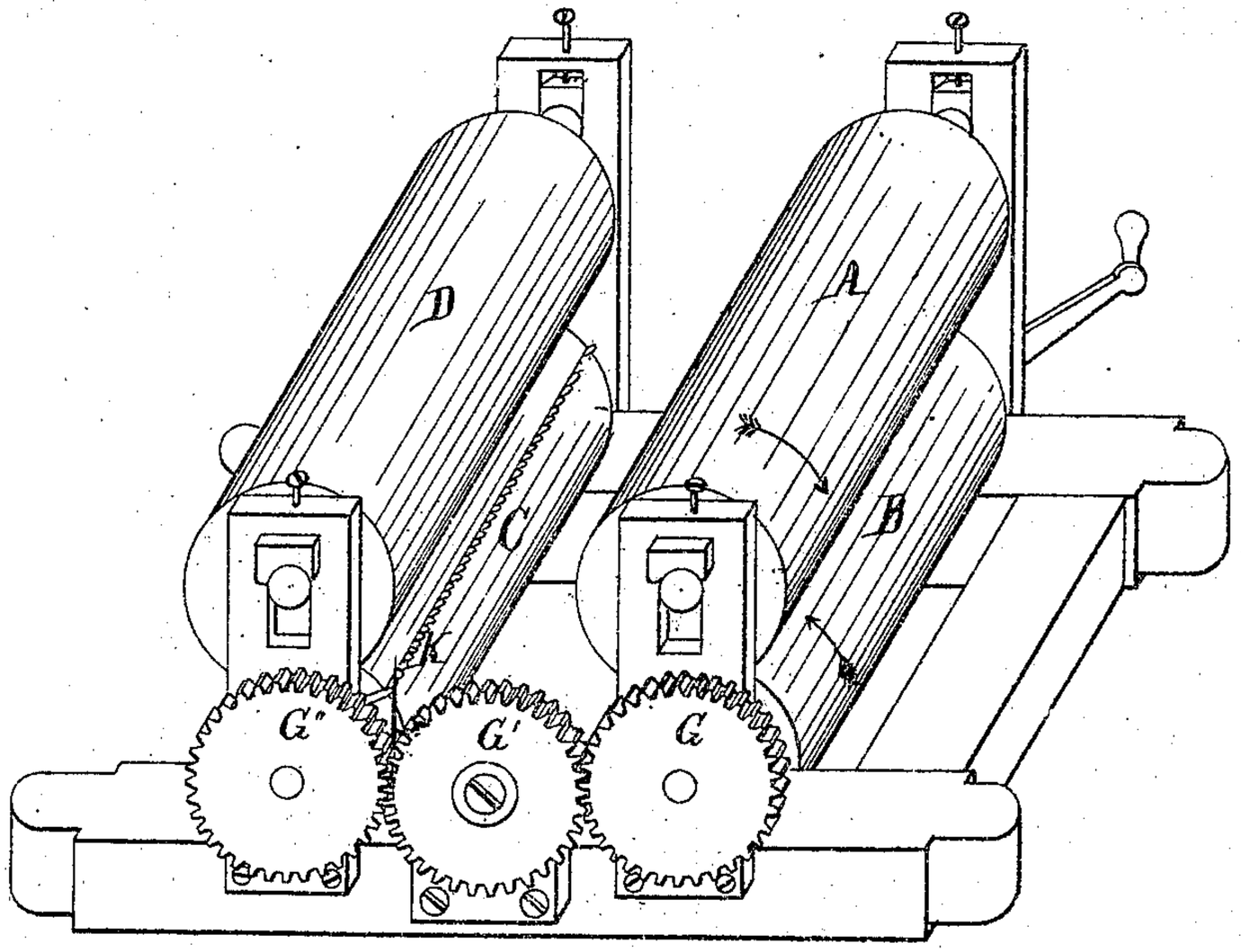
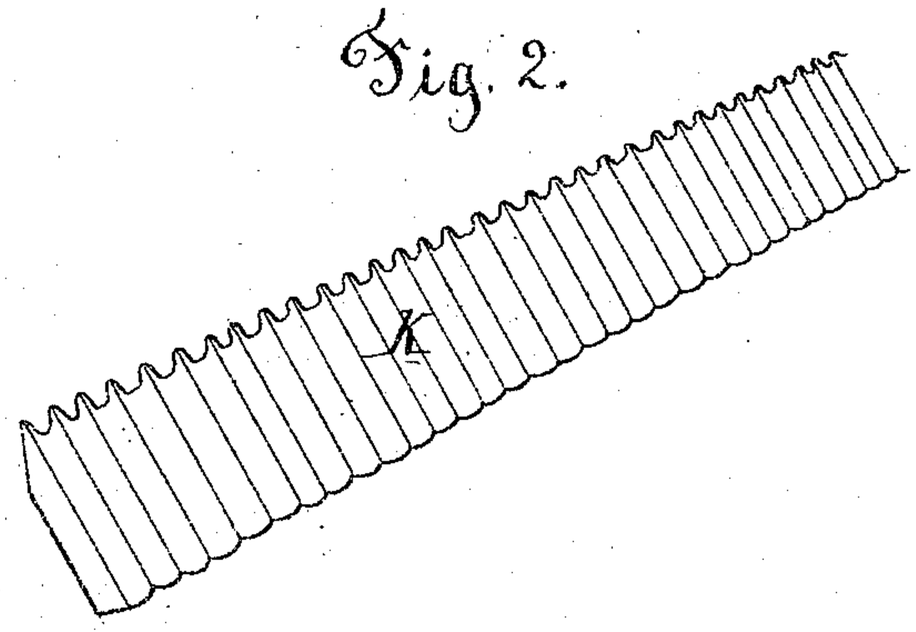


Fig. 2.



Witnesses.

P. O. Van Lindee.

F. B. Wheeler

Inventor.

James Arkell.

118,327

UNITED STATES PATENT OFFICE.

JAMES ARKELL, OF CANAJOHARIE, NEW YORK, ASSIGNOR TO HIMSELF, BENJAMIN SMITH, AND ADAM SMITH, OF SAME PLACE.

IMPROVEMENT IN PAPER-CUTTING MACHINES.

Specification forming part of Letters Patent No. 118,327, dated August 22, 1871.

To all whom it may concern:

Be it known that I, JAMES ARKELL, of Canajoharie, in the county of Montgomery and State of New York, have invented a new and useful Machine for Cutting Paper; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making part of this specification, in which—

Figure 1 is a perspective view of the machine, and Fig. 2 represents a portion of the knife having a serrated edge.

My invention consists in the use, in connection with the continuously-feeding mechanism, of a pressure-knife and suitable moving resisting surface when the knife is caused to move faster than the material being fed to it, whereby a draw-cut is produced, although the knife-edge strikes the paper at right angles to its line of feed-motion, and the severance of the paper effected with certainty at any rate of speed of the machine. And although my invention is particularly adapted for cutting off the blanks or tubes for paper-sacks, in which operation the cut has to be made on heavy paper doubled as it comes from the former, and was designed to and has successfully overcome in practice the difficulties encountered in the use of other methods of cutting paper, it may be used with great advantage in other manufactures and in any connection where it is necessary to cut up into pieces a continuously-fed sheet of paper.

To enable those skilled in the art to construct and use my invention, I will describe more particularly the mechanism and the mode in which I have successfully practiced it, referring by letters to the accompanying drawings, in which—

A and B are a couple of feed-rolls, to one of which, B, is imparted any desired velocity, power being applied at the end where the crank O is located in the usual manner, the other A acting simply as a pressure-roll. C is a roll or cylinder, having mounted in and projecting from its face, in a line parallel with the axis of the roll, a serrated knife or cutter, *k;* and D is a presser-roll, against the surface of which the knife K works. The rolls A, B, C, and D are all mounted in suitable bearing-boxes in the frame of the machine, as illustrated, and the feed-roll B and knife-cylinder *c* are geared together by pinions G and G″ on their respective shafts, and an intermediate pinion, G′, mounted on a stud in the frame and meshing into G and G″, so that the feed-roll B and knife-roll C revolve in the same direction and make the same number of revolutions in a given time; but the circumference of roll C, (or the distance of the knife-edge K from the axis,) I make somewhat greater than that of the feed-roll B, so that the knife moves somewhat faster than the paper let off from the feed-roll. The surface of the pressure-roll D should be made of rubber or some other suitably-elastic or yielding material for the knife to work against, and should be so arranged as to act merely as a guide to the paper as it passes between it and the cylinder C, but so that when the knife K strikes the paper said roll D will act as a pad and backer for the paper to rest against as the knife penetrates it.

As I have practiced my invention the knife-cylinder is larger in diameter than the feed-roll, and the two are geared together, as described; but it is obvious that the accelerated motion of the knife-cylinder may be equally as small as, or of less diameter than, the feed-roll, and may be driven faster by a change of gearing; and it will be understood that though I use one knife, mounted as shown, two or more may be employed with advantage in some instances, and the knife or knives may be differently mounted from that shown and described.

I have shown and have used a serrated knife, and believe it will work best on heavy work; but for some purposes a straight or plain-edged knife may be employed in the manner described without departing from the spirit of my invention, and it is not imperative in practicing my invention to use the feed-rolls I have shown, as any other feeding mechanism for controlling the continuous movement of the material in combination with a pressure-knife moving faster than the feed will carry out my invention.

The paper as it passes from the feed is struck periodically by the knife K, and is cut off and discharged in pieces of equal length.

Having explained my invention fully, so that

one skilled can make and use it, I do not claim what is shown and described in the Letters Patent granted to Joseph Wells, April 12, 1864, for paper-bag machine; but

What I claim is—

In combination with a feed mechanism, a knife or cutter which moves at a greater velocity than the material fed to it, and a suitable presser-roll, the whole operating in substantially the manner and for the purpose set forth.

JAMES ARKELL.

Witnesses:

P. D. VAN OLINDER,

J. W. WHEELER.