F. METZENBACHER.

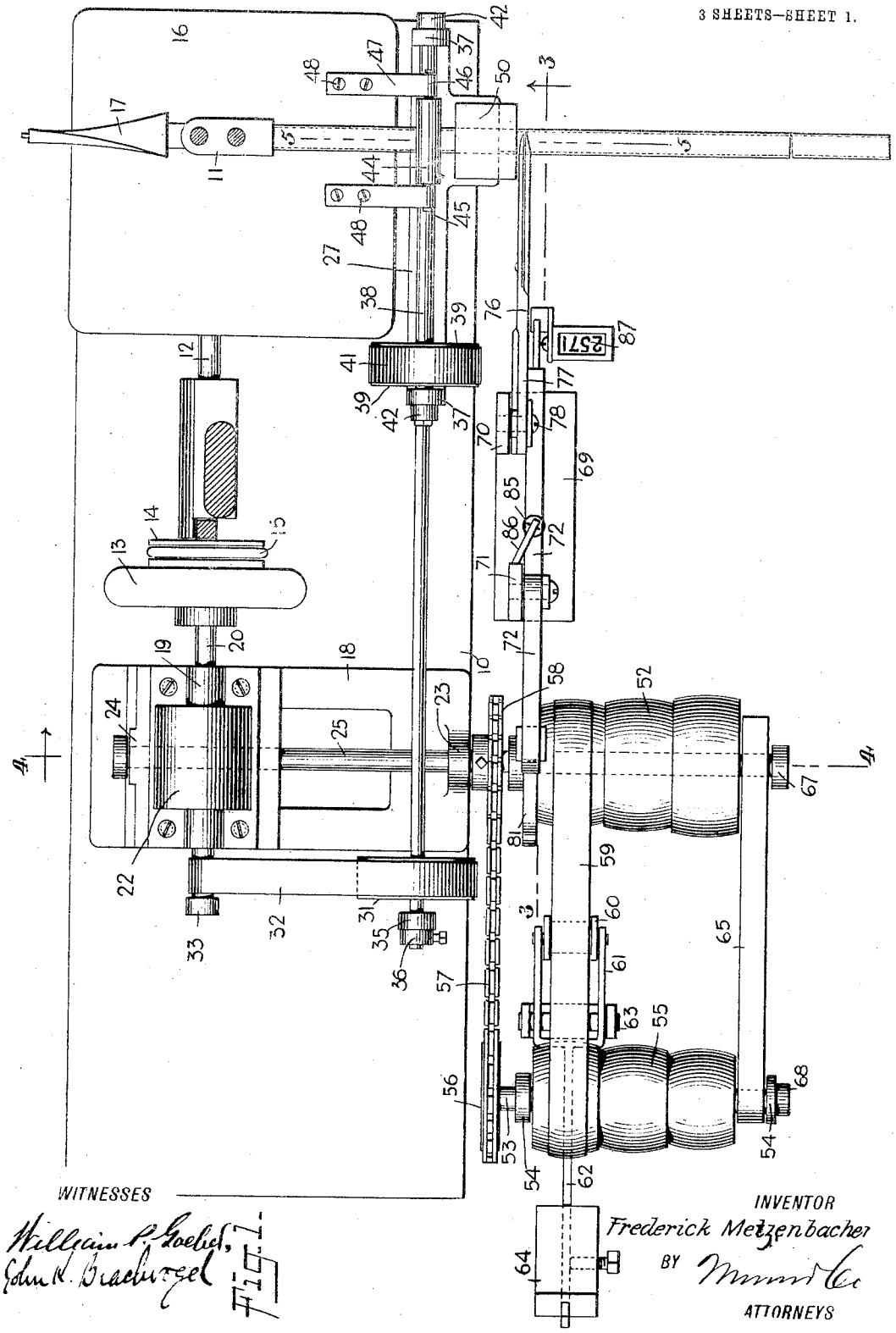
STRAP AND TAB FORMING MACHINE.

APPLICATION FILED MAR. 15, 1913.

1,087,804.

Patented Feb. 17, 1914.

3 SHEETS—SHEET 1.



WITNESSES

William A. Goebel,
John K. Bachmeyer

INVENTOR

Frederick Metzenbacher

BY Munn & Co

ATTORNEYS

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3 SHEETS—SHEET 2.

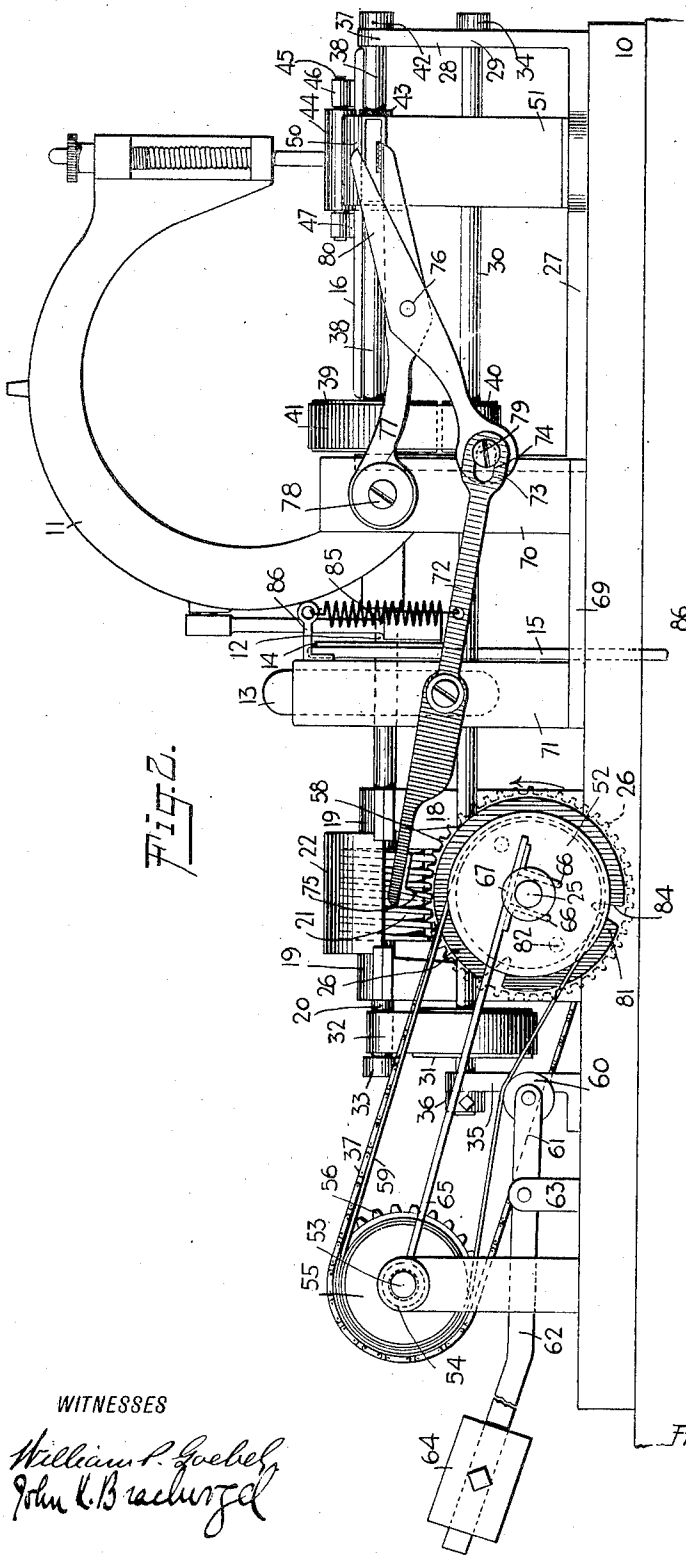


Fig. 2.

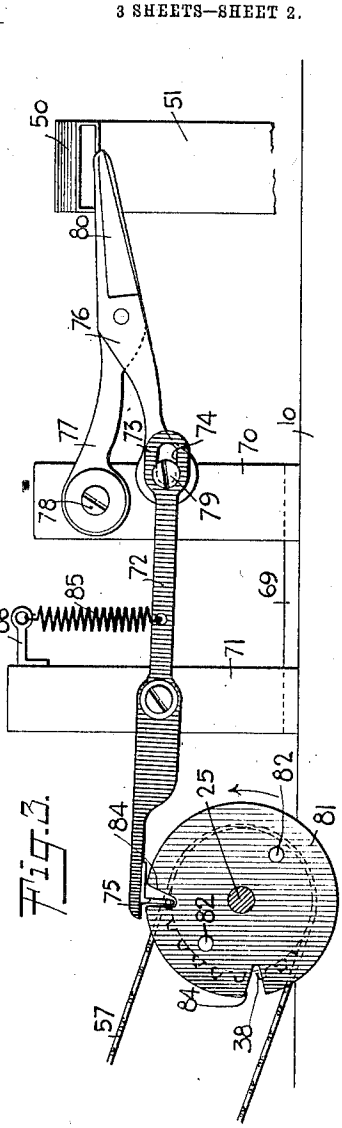


Fig. 3.

WITNESSES

William P. Goebel

John K. Buchwald

INVENTOR

Frederick Metzenbacher

BY Munn & Co

ATTORNEYS

F. METZENBACHER.

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3 SHEETS—SHEET 3.

Fig. 4.

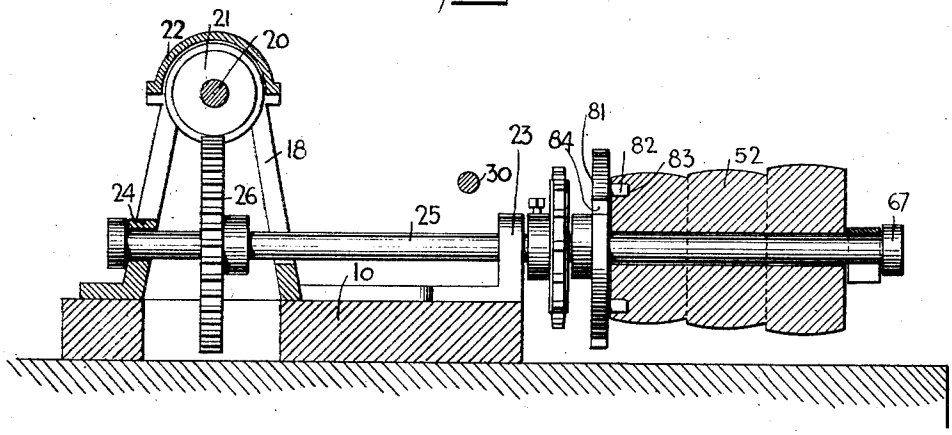


Fig. 5.

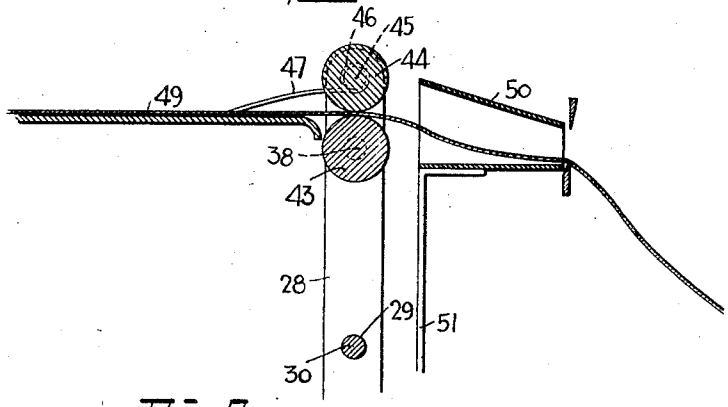
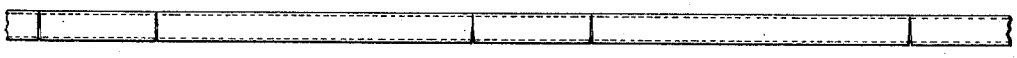


Fig. 6.



WITNESSES

William P. Goebel.

John K. Shachtzel

INVENTOR

Frederick Metzenbacher

BY Munn & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

FREDERICK METZENBACHER, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO WILLIAM H. RICH & SON, OF BROOKLYN, NEW YORK.

STRAP AND TAB FORMING MACHINE.

1,087,804. Specification of Letters Patent. Patented Feb. 17, 1914.

Application filed March 15, 1913. Serial No. 754,497.

To all whom it may concern:

Be it known that I, FREDERICK METZENBACHER, a citizen of the United States, and a resident of Elizabeth, in the county of Union and State of New Jersey, have invented a new and Improved Strap and Tab Forming Machine, of which the following is a full, clear, and exact description.

This invention relates to strap and tab forming machines for use in the manufacture of umbrellas and for other like purposes, and has reference more particularly to a machine of this class which comprises strip forming mechanism, a cutter for severing the formed strip into lengths to produce straps or tabs, and means for simultaneously operating the strip forming mechanism and the cutter.

The invention also relates to the provision of a cutter arranged to sever a strip transversely into a plurality of lengths, the severance being incomplete so that the severed lengths of the strip remain attached to each other but are capable of ready separation.

The invention also relates to a cutting device which comprises a pair of shears having one leg fixed, and means for intermittently operating the other leg to open and close the shears at predetermined intervals.

An object of the invention is to provide a simple and efficient machine for forming fabric into strips and severing the strips into short lengths to produce straps and tabs used upon umbrellas to fasten the umbrella when it is rolled up, which is automatic in operation, which can be readily adjusted to permit the straps and tabs to be given any desired predetermined lengths, which is capable of a fairly wide range of adjustment, which can be very readily controlled, and requires practically no attention when in operation and which is simple and compact in construction and inexpensive to manufacture.

A further object of the invention is to provide a machine of the class described which may include any desired form of hemming and sewing mechanism to produce the strip to be severed into short lengths, in which the cutter is so arranged that the strip is severed into lengths which remain attached to each other by a slight thickness of material, so that they can be readily separated when they are to be used, and in which the straps and tabs formed by the machine have fixed relative lengths regardless of their actual lengths.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the clams.

Figure 1 is a plan view of a mechine constituting an embodiment of my invention, certain of the parts being shown in horizontal section; Fig. 2 is a front elevation of the device; Fig. 3 is a longitudinal section on the line 3—3 of Fig. 1, and shows the cutting mechanism *per se*. Fig. 4 is a transverse section on the line 4—4 of Fig. 1; Fig. 5 is a similar section on the line 5—5 of Fig. 1; and Fig. 6 is a plan view of a part of the strip formed by the machine showing the same severed into short lengths constituting straps and tabs.

Before proceeding to a more detailed explanation of my invention, it should be fully understood that while this machine is particularly useful in the manufacture of umbrellas to produce the straps and tabs which are used with buttons and rings or other fastenings to secure the umbrellas when folded and which together constitute a band encompassing the folded umbrella, it can also be used for other purposes where it is necessary or desirable to form fabric or like material into a hemmed, sewed strip, and to sever the same into predetermined lengths. Furthermore, the strip to be severed need not be formed in the machine itself, but can be produced independently of the same and can be merely severed into its shorter length by means of the cutter. Any desired form of hemming and sewing or other strip forming devices can be of course employed in connection with my special severing device.

Referring more particularly to the drawings, I provide a base 10, upon which is mounted a suitable sewing machine 11, preferably of the double-needle type, having associated therewith a driving shaft 12 having a fly-wheel 13 and a pulley 14. The latter serves to connect the machine with a suitable source of motive power, for example, by means of a belt 15. Mounted upon the table 16 of the sewing machine is a folder or hemmer 17, through which the fabric passes to have the edges turned over and creased before these are sewed.

Upon the base 10, rearwardly of the sew-

ing mechanism, is mounted a frame 18 upon which are positioned double bearings 19, in which an extension 20 of the shaft 12 is journaled. Between the bearings 19, the shaft 20 carries a worm-gear 21 covered by a suitable guard-hood 22. The frame 18 has at the ends bearings 23 and 24 in which is journaled a transverse shaft 25 located under the shaft extension 20. The shaft 25 has a gear 26 in mesh with the worm-gear 21, so that the shaft 25 is driven from the shaft extension 20.

In front of the sewing mechanism the base supports an inverted U-shaped member 27 having at the ends arms 28 provided with bearings 29, in which is journaled a shaft 30. This shaft extends from the sewing mechanism to and across the frame 18, and has at the end adjacent to the frame a pulley 31. This is operatively connected by means of a belt 32 with the extremity of the shaft extension 20, so that the latter serves to drive the shaft 30. The shaft extension 20 has at the extremity an enlarged head 33 to prevent the belt 32 from slipping from the end of the shaft. The shaft 30 likewise has at one end an enlarged head 34 and has the other end journaled in a bearing 35 and held in place by a lock collar 36. At the upper extremities of the arms 28 are provided bearings 37 in which is journaled a countershaft 38 having near one end a pulley 39 disposed above the pulley 40 mounted upon the shaft 30. These pulleys are connected by a belt 41. At the ends the countershaft 38 has enlarged heads or collars 42 to hold it against displacement in the direction of its length.

The countershaft 38 is provided with a roller 43 keyed or otherwise rigidly secured thereon. Positioned above this roller is a second, coöperating roller 44 having at the ends stub shafts 45 journaled in bearings 46 provided at the ends of spring arms 47. These are secured by means of screws 48 or in any other suitable manner, upon the table 16 of the sewing mechanism. It will be understood that the shaft 30 is driven by means of the belt and pulley connection from the shaft extension 20, and in turn through its operative connection with the countershaft 38 drives the latter to actuate the lower roller 43, which serves to advance the formed strip 49 from the sewing mechanism to or into a hollow, tapered guide 50 mounted upon a bracket 51 positioned in front of the rollers. The spring arms 47 serve to press the roller 44 resiliently toward the roller 43 to insure suitable operative engagement of the rollers with the strip.

The shaft 25 extends forwardly beyond the base of the machine and has loosely mounted thereon a series of pulleys 52, preferably three in number. Parallel to the shaft 25 is a short countershaft 53 journaled in bearings 54. Rigidly mounted upon the shaft 53 is a series of pulleys 55, preferably three in number, and corresponding to the pulleys 52. At the inner end the shaft 53 has a sprocket 56 operatively connected by means of a chain 57 with a sprocket 58 mounted upon the shaft 25. The pulleys 52 and 55 are operatively connected by means of a belt 59 which is maintained taut by means of an idler, 60, mounted between the sides of the forked end 61 of a lever 62. The latter is pivotally carried by a bracket 63 and has an adjustable counterweight 64 which maintains the idler in operative relation with the belt 59. The shaft 53 has at the outer end a pivotally mounted arm 65, the free end of which is provided with cheeks 66 receiving between them the end of the shaft 25 to prevent the same from bending when the machine is in operation, and to maintain the shafts 25 and 53 parallel. At the extremities, the shafts 25 and 53 have enlarged heads 67 and 68.

Mounted in front of the base 10 of the machine is an auxiliary base 69 having a pair of upwardly extending posts 70 and 71. Pivotally mounted upon the latter is a lever 72 having one end 73 provided with an elongated slot 74 and having at the other end a laterally disposed finger 75. A pair of shears 76 is positioned in front of the sewing mechanism and has one leg 77 pivotally secured by means of a screw 78 or in any other suitable manner upon the post 70. The other leg of the shears is provided with a screw stud 79 received in the slot 74 of the lever. The blades 80 of the shears are disposed in front of the guide 50, so that the strip passing through the guide is likewise passed between the blades of the shears when these are open. Consequently, when the shears are operated, the movable strip will be severed into shorter lengths.

Keyed or otherwise rigidly mounted upon the shaft 25 is a cam disk 81 having studs 82 received in openings 83 provided for the purpose in the end of the series of pulleys 52. The cam disk has two V-shaped cam notches 84 adapted to receive the finger 75 of the operating shear lever 72. The latter has secured to it the lower end of a helical spring 85 the upper end of which is attached to a bracket 86 carried by the post 71 near its upper end.

The operation of my machine is as follows: The shaft 12 is driven from any suitable source of motive power and operates the sewing mechanism in the usual manner. At the same time the shaft 25 is driven through the worm and gear connection with the shaft extension 20. The shaft 25 in turn drives the shaft 53 through the agency of the sprocket and chain connection. This actuates the pulleys 55, which in turn, through the belt 59, drive the pulleys 52.

These carry with them the cam disk. As the same revolves the finger 75 of the operating lever 72 passes into and out of the cam notches to rock the lever and open and close the shears which serve to cut the fabric strip in the usual manner. The tension of the string 85 acts to hold the shears normally closed, and the lever finger 75 pressed against the cam disk. If so desired, I may associate with the shears a counter 87 for automatically registering the number of straps and tabs formed by the machine. At the same time that these parts are operating the shaft 30 is actuated through the belt and pulley connection with the shaft extension 20. It in turn drives the countershaft 38 to actuate the feed rollers to advance the strip from the sewing mechanism to and through the guide 50 and the shear blades. The parts are so positioned that the blades do not extend entirely across the width of the strip, but sever the strip partly only, leaving a slight thickness of material to attach the lengths together, though permitting them to be easily separated by a slight pull, when ready for use.

It will be seen that the cam notches are positioned upon the cam disk so that the relative lengths of the straps and the tabs, which are of course formed in alternation, is a predetermined one. However, the actual lengths of these straps and tabs can be varied. For this purpose I provide the series of pulleys 52 and 55 with subdivisions of different diameters, in order that the relative speed of rotation of the series 52 to the series 55 can be altered. In a corresponding way, the speed of operation of the shears can be varied, while the rate of speed of the strip remains constant.

Having thus described my invention I claim as new, and desire to secure by Letters Patent:

1. A machine of the class described comprising,—means for advancing strips; a cutter; means for operating said cutter intermittently to sever the formed strips into alternate lengths of predetermined relative longitudinal dimensions; means for simultaneously operating said strip-advancing means and said cutter-operating means; and means for varying the speed of operation of said cutter only.

2. A machine of the class described comprising, a mechanism for advancing strips; a cutter; means for operating the cutter intermittently to form a strip into alternate lengths of predetermined alternate longitudinal dimensions; means for simultaneously operating said strip-advancing mechanism and said cutter-operating mechanism; and means for increasing and decreasing the speed of said cutter-operating means without correspondingly increasing or decreasing the speed of said strip-advancing mechanism.

3. A machine of the class described comprising,—a mechanism for advancing strips; a cutter for the advanced strips; a lever for operating said cutter; a cam controlling said lever; and adjustable means capable of speed variation for operably connecting said cam with said strip-advancing mechanism.

4. A machine of the class described comprising,—a mechanism for feeding strips; a cutter for severing the strips into sections of different lengths, the length of the alternately-cut sections being equal; and means for simultaneously operating said mechanism and said cutter.

5. A machine of the class described comprising a mechanism for advancing strips; a cutter for the advanced strips; a lever for operating said cutter; a disk having notches on the periphery thereof adapted to be engaged by said lever and whereby said cutter is operated when said disk is rotated; and adjustable means capable of speed variations for operably connecting said disk with said strip advancing mechanism.

6. A machine of the class described comprising a mechanism for advancing strips; a cutter for the advanced strips; a pivotally mounted lever for operating said cutter; a disk having notches on the periphery thereof adapted to be engaged by said lever; means for forcing said lever into said notches of the disk and whereby said cutter is operated; and adjustable means capable of speed variation for operably connecting said disk with said strip-advancing mechanism, said notches of said disk being so disposed relative to each other that said cutter will sever the strips into sections of different length, the length of the alternately cut sections being equal.

In witness whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FREDERICK METZENBACHER.

Witnesses:
JOHN K. BACHENGEL,
JOHN P. DAVIS.