C. F. SMITH.

CUTTING MECHANISM.

APPLICATION FILED JULY 5, 1918.

1,383,868. Patented July 5, 1921.

Fig. 1.

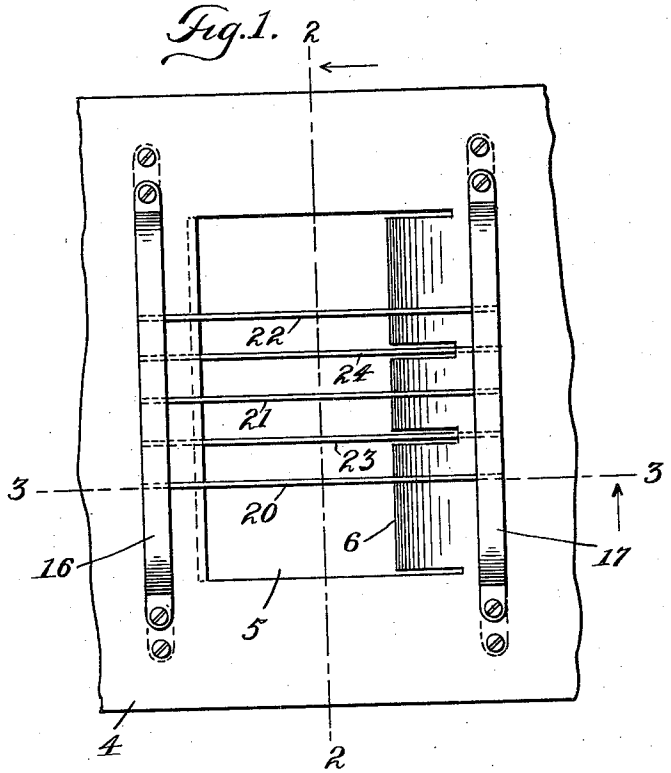


Fig. 2.

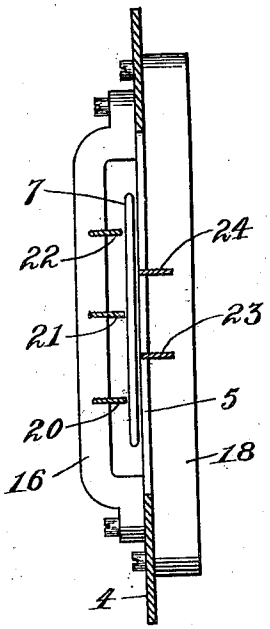


Fig. 3.

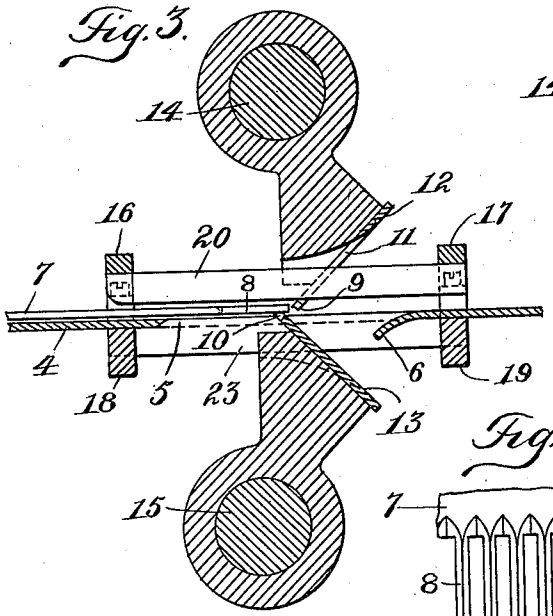


Fig. 4.

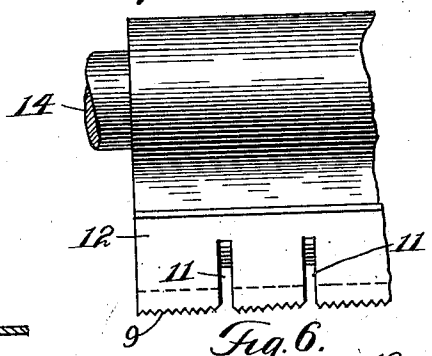


Fig. 6.

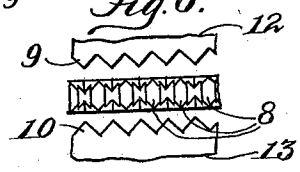
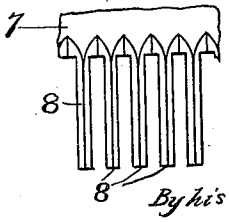


Fig. 5.



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UNITED STATES PATENT OFFICE.

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CUTTING MECHANISM.

1,383,868. Specification of Letters Patent. Patented July 5, 1921.

Application filed July 5, 1918. Serial No. 243,287.

To all whom it may concern:

Be it known that I, CHARLES F. SMITH, a citizen of the United States, and a resident of Watertown, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Cutting-Mechanisms, of which the following is a specification.

This invention relates to cutting mechanisms for sheet material and has for its object to provide a mechanism of the class specified in which means are provided for holding the sheet material against deflection from its normal path of travel due to the operation of the cutting mechanism.

With these ends in view my improvements comprise features illustrated in their preferred embodiment in the drawing accompanying this specification, wherein:—

Figure 1 is a plan view of a portion of a cutting mechanism embodying my improvements. Fig. 2 is a section on line 2—2 of Fig. 1. Fig. 3 is a section on line 3—3 of Fig. 1, and further showing opposite rotary cutters and the float with which they coact. Fig. 4 is a fragmentary front elevation of one of the rotary cutters. Fig. 5 is a fragmentary plan view of the forward end of the float showing the cutting means thereon. Fig. 6 is an end view of what is shown in Fig. 5 and including fragments of the rotary cutter blades which coact with the cutting means on the forward end of the float. Figs. 1 to 4 inclusive are to one scale; Figs. 5 and 6 are to an enlarged scale.

My improved device is particularly applicable to and useful in connection with cutting mechanisms which are employed for severing a continuous run of paper tubing into suitable lengths for forming paper bags, and the embodiment of my invention herein illustrated is shown as adapted to one form of such paper bag tube cutting mechanisms. Therein, plate 4 is a portion of the table of that part of a paper bag machine over which the paper tube is advanced from the mechanism, not shown, by which that tube is formed, to the mechanism, not shown, by which the bag bottom is formed on a severed portion of the paper tube. Said plate 4 has an opening 5 therethrough, that portion 6 of said plate forming the forward edge of said opening being deflected downwardly so that the leading end of the paper tube may be easily threaded through the device.

The usual float 7 terminates at its forward end in cutting means comprising a comb-like structure having teeth 8 for coaction with the serrated edges 9 and 10 of opposite cutters 12 and 13, respectively. This toothed float constitutes a fixed cutting member for coaction with a movable cutting member, as 12, or with both movable cutting members 12 and 13. Said cutters are illustrated as carried by shafts 14 and 15, which may rotate about fixed axes, or may move as shown in U. S. Patent 1,071,473 granted on my invention August 26, 1913, in which case cutters 12 and 13 will move in a peculiar orbit, but the term "rotate" as used herein is intended to include any path of travel of said cutters 12 and 13 in their coaction with the forward end of float 7.

Mounted on the upper face of plate 4 are bridges 16 and 17, located at opposite ends respectively of opening 5, bridge 16, spanning float 7, and both bridges spanning the path of travel of the sheet material. Mounted on the underside of said plate 4 are similar bridges 18 and 19, opposite bridges 16 and 17, respectively. Stretching from bridge 16 to bridge 17 and supported thereby are one or more guide rails, of which three are shown, 20, 21 and 22. These rails are preferably narrow strips of sheet steel set on edge, in Fig. 1, and projecting downwardly in parallelism with each other and with the face of float 7. Between the bottom edges of rails 20, 21 and 22 and float 7 space is provided for the travel of the sheet material, Figs. 2 and 3.

Below said float 7 and similarly located relatively thereto as are guide rails 20, 21 and 22, are other guide rails 23 and 24 carried by bridges 18 and 19. Preferably these lower rails are staggered relatively to the upper rails, see Fig. 2.

As said rails 20, 21 and 22 extend upwardly into the path of cutter 12, said cutter is notched as at 11 to clear said rails. Lower cutter 13 is similarly notched to clear rails 23 and 24.

Previous to the use of my improvements, cutters 12 and 13, from time to time, picked up and mutilated the rearward end of the severed portion of the paper tube and deflected that rearward end from its normal

path of travel. By the use of my improvements this objectionable feature of operation is entirely obviated and the severed portions of paper tube are maintained in their proper path of travel without being injured or distorted by the cutters.

From the foregoing description of the construction of my improved device the operation thereof will be apparent without further explanation.

I claim:

1. In a cutting mechanism for moving sheet material the combination of a fixed cutting member and a movable cutting member, and a guide rail extending in the direction of travel of the sheet material and having a portion of said rail lying within the field of coaction of said cutters.

2. In a cutting mechanism for moving sheet material the combination of a fixed cutting member and a movable cutting member, and a plurality of guide rails extending in the direction of movement of the movable cutter adjacent the fixed member, each of said rails having a portion thereof lying within the field of coaction of said cutters.

3. In a cutting mechanism for moving sheet material the combination of a flat fixed cutting member over which the sheet is moved to the cutting portion of said flat fixed cutting member, a movable cutter for coaction with said cutting portion, and a plurality of guide rails extending in the direction of movement of the movable cutter, each of said guide rails having a portion thereof lying within the field of coaction of said cutters.

4. In a cutting mechanism for moving sheet material the combination of opposite movable cutters, means for guiding the sheet material therebetween, a fixed cutter between said movable cutters for coaction therewith, opposite sets of guide rails on opposite sides of said fixed cutter, said guide rails extending in the direction of movement of the movable cutters, and each of said guide rails having a portion thereof lying within the field of coaction of said cutters.

5. In a cutting mechanism for sheet material the combination of a fixed cutter and a rotary cutter in coaction, and guide rails lying in the path of the rotary cutter for holding the sheet material against deflection from its normal path of travel by said rotary cutter, said rotary cutter being notched to prevent interference with said guide rails.

6. In a cutting mechanism for sheet material in the form of a flat tube, the combination of a float over which the tubular sheet material is advanced, said float being provided with cutting means on its forward end, opposite cutters movable into and out of cutting relation with opposite faces respectively of the forward end of said float, and opposite sets of guide rails for confining the travel of said tubular sheet material within prescribed limits during and after the operation of the cutters thereon, said movable cutters being notched to prevent interference with said guide rails.

7. In a cutting mechanism for sheet material the combination of a fixed cutter and a rotary cutter in coaction, guide rails supported without the path of said rotary cutter, said guide rails having their operative portions lying within the path of the rotary cutter for holding the sheet material against being lifted from its normal path of travel by the receding cutter, said cutter being notched to prevent interference with said guide rails.

8. In a cutting mechanism for sheet material in the form of a flat tube the combination of a float having cutting means on its forward end and a rotary cutter for coaction with the cutting means of the float, the combination of a table under said float over which said tubular material is moved, a bridge on said table spanning the path of said tubular material, guide rails supported by said bridge and extending in the direction of travel of said tubular material, said guide rails having their operative portions lying within the path of said rotary cutter, for holding said tubular material against being lifted from its normal path of travel by said cutter, said cutter being notched to prevent interference with said ralis.

9. In a cutting mechanism for sheet material in the form of a flat tube the combination of a float over which said tubular sheet material is advanced, said float being provided with cutting means on its forward end, opposite cutters movable into and out of cutting relations with opposite faces respectively of the forward end of said float, opposite sets of guide rails for confining the travel of said tubular sheet material within prescribed limits during and after the operation of the cutters thereon, a table having an opening therethrough over which the forward end of said float extends, said cutters coacting with said float through said table opening, bridges on either face of said table and spanning the path of travel of said tubular sheet material, said bridges being located beyond the paths of travel of said movable cutters, respectively, said guide rails being supported by said bridges, and said movable cutters being notched to prevent interference with said rails.

In witness whereof, I hereby affix my signature this 1st day of July, 1918.

CHARLES F. SMITH.