J. KORNAS.

CUTTING MACHINE.

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1,291,931. Patented Jan. 21, 1919.

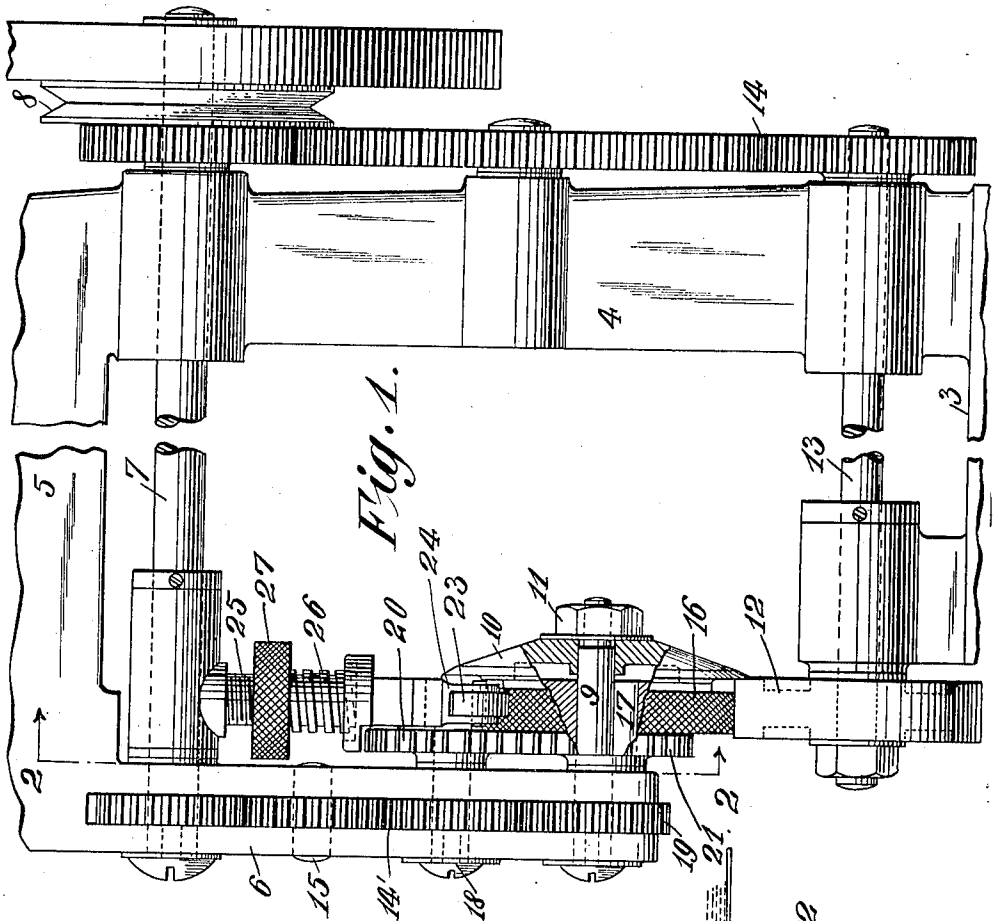


Fig. 1.

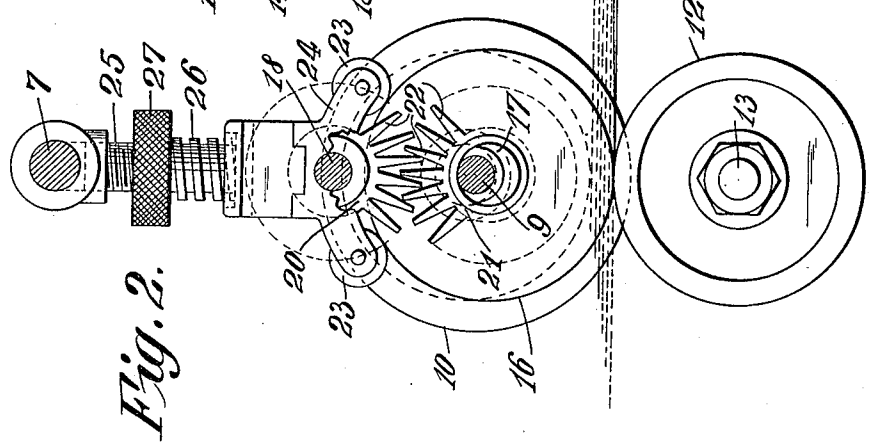


Fig. 2.

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CUTTING-MACHINE.

1,291,931. Specification of Letters Patent. Patented Jan. 21, 1919.

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To all whom it may concern:

Be it known that I, JOSEPH KORNAS, a citizen of the United States, and resident of Linden, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Cutting-Machines, of which the following is a specification.

My invention relates in general to a cutting machine of the type in which a circular knife operates upon the material to be cut, which material is fed to the cutting edge of the knife between a pair of automatically adjustable material feed and presser rollers. The invention specifically relates to the presser roller of such a machine particularly designed for trimming the edge of felt hats and the like.

In devices of this character it is usual to have one of the rollers, usually the upper, mounted so that it may move away from its coacting roller to accommodate varying thicknesses of material fed to the cutting device between the rollers. These shiftable rollers must of course be connected to some driving part of the machine, but as heretofore designed the flexible driving connections have been such as to jag the material during the cutting operation.

Accordingly, one of the objects of my invention is to provide a construction of the class described arranged to accommodate the different thicknesses of material between the rollers, and at the same time to provide a positive driving engagement for the shiftable roller, designed so that lost motion between the driving mechanism and the shiftable roller is reduced to a minimum during the period the rollers are accommodating themselves to the different thicknesses of material fed between the rollers.

Another object of the invention is to provide a simple form of adjusting means for varying the resistance of the shiftable roller in its movement away from its coacting roller, and at the same time to provide a type of adjustment which will insure the proper setting of the shiftable roller with reference to its coacting roller irrespective of the position to which the shiftable roller has been forced by the material.

Another object of the invention is to provide a construction of the class described, in which there will be a minimum number of movable parts, and in this way insure the designing of a simple form of machine with the least possible number of parts liable to be subjected to wear.

Various other objects and advantages of the invention will be in part obvious from an inspection of the accompanying drawings and in part will be more fully set forth in the following particular description of one form of mechanism embodying my invention, and the invention also consists in certain new and novel features of construction and combination of parts hereinafter set forth and claimed.

In the accompanying drawings:

Figure 1 is a side elevation of a preferred embodiment of my invention with parts broken away to save space and to disclose internal construction;

Fig. 2 is in general a view in side elevation of the roller mechanism and coacting parts, taken in section on the line 2—2 of Fig. 1.

In the following description and in the claims, parts will be identified by specific names for convenience of expression, but they are intended to be as generic in their application to similar parts as the art will permit.

The cutting machine illustrated is of the general character of such machines used in trimming hats and the like, and includes a bed 3, at one side of which is positioned a standard 4, carrying the arch arm 5, the forward end of which terminates in a depending head 6. A horizontally disposed driving and fly-wheel shaft 7 is journaled in the standard 4 and in the head 6 just below the arm 5 and is connected to some suitable driving mechanism by means of the pulley wheel 8. A cutter carrying shaft 9 is loosely mounted in the head 6, adjacent its lower end, and projects inwardly therefrom. Demountably positioned upon the projecting portion of this shaft is a conventional form of circular cutter 10 held in place by the lock nut 11. The outer face of the cutter bears against the adjacent side of a feed wheel 12, mounted upon a feed wheel shaft 13. This feed wheel shaft parallels the shaft 7, and is driven therefrom through a gear train 14 carried by the standard 4. The cutter shaft 9 is likewise geared to the main shaft 7 so as to be driven thereby, and as herein disclosed, the connection is provided by a gear train 14′ contained within the head 6. The

gear train consists of four spur-gears meshing in order vertically, and mounted upon shafts 15 extending transversely through the head. A presser wheel or roller 16 is mounted to bear upon the periphery of the feed wheel 12, so as to constitute a pair of rollers to accommodate the material therebetween as it is fed to the cutter. The presser roller is positioned loose on the shaft 9 and for this purpose is provided with a central opening 17 having a diameter greater than the diameter of the shaft 9, so as to permit a shifting movement of the presser roller when in position on the shaft, as shown more particularly in Fig. 2.

A positive driving connection is provided between one of the shafts 15, such for instance, as the shaft 18 carrying the gear meshing with the last or cutter shaft gear 19, and for this purpose the shaft 18 has a spur-gear 20 fixed thereto and constantly meshing with a similar gear 21 integral with or otherwise fixed to one side of the presser wheel 16. The meshed gearing 20 and 21 contain relatively long teeth 22, as shown more particularly in Fig. 2. This form of tooth to the gears tends to maintain a positive and constant driving connection between the shaft 18 and the presser wheel while permitting a vertical shifting movement of this presser wheel.

The presser wheel is maintained in resilient engagement with the feed wheel, or with the material carried between the wheels, by means of a pair of spaced apart bearing rollers 23 engaging the upper side of the periphery of the presser wheel on opposite sides of a vertical line passing through the axis of the cutter shaft 9. The rollers 23 are carried in a bracket 24, slidably mounted upon a rod 25, constituting a fixed part of the frame and paralleling the length of the head 6. A spring 26 has one end bearing upon the bracket 24 in order to force the rollers into resilient engagement with the presser wheel, and the other end of this spring bears upon an adjustable nut 27 threaded on the rod 25.

In operation, it is to be understood that with the machine in active operation, the material is fed between the feed wheel and presser roller, which action forces the presser roller upwardly away from the feed wheel. This movement causes a closer meshing of the gear teeth 22, and these teeth are so designed that the most perfect meshing is attained when the feed wheel and presser wheel are in their normal spaced apart position. It is understood that the spring 26 acts through bearing rollers 23 to act on the material with a tension depending upon the present position of the spring, and that the spaced apart position of the rollers has the effect of steadying the presser wheel, minimizing any tendency toward a rocking motion, and insuring a perfect cutting of the material, especially where the material is of unusual thickness. As the cutter works about a fixed axis of rotation, the usual steady action of this member is maintained. The constantly meshed position of the gears 22 eliminates any loose connection at this point, and the constantly acting movement of the presser wheel on the material is insured so that there is eliminated the heretofore objectionable jag in the cutting line usually caused by the delayed meshing or back latching of interengaging parts.

While I have shown and described, and have pointed out in the annexed claims, certain novel features of my invention, it will be understood that various omissions, substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention.

Having described my invention, I claim:

1. In a cutting machine, the combination with a cutter, of a feed wheel engaging the side of the cutter and coacting therewith to form a shearing mechanism, a gear train for driving the feed wheel, a presser wheel bearing on the feed wheel, means for driving the cutter, said means including a gear train, and means for positively driving the presser wheel, said last named means including a gear train operatively connected with the first named gear train to be driven thereby.

2. In a cutting machine, the combination with a cutter, mechanism for rotating the cutter, and a feed wheel disposed adjacent the cutter, of a presser wheel engaging the feed wheel, and means for positively driving the presser wheel from the cutter rotating mechanism, said means including loosely meshed gearing designed to permit a movement of the presser wheel relatively to the feed wheel while maintaining the positive driving connection with the cutter rotating mechanism.

3. In a cutting machine, a support, a cutter shaft journaled in said support for movement about a fixed axis of rotation, a cutter fixed to said shaft to rotate therewith, means for driving said shaft, a presser wheel loose on said shaft, a gear fixed to said presser wheel to rotate the same, and a driving gear meshing with said presser wheel gear in all positions of the presser wheel and operatively connected with said shaft driving means.

4. In a cutting machine, the combination of a feed wheel, a cutter shaft, a cutter fixed to the shaft and operatively mounted adjacent the feed wheel, a presser wheel loose on the cutter shaft and bearing on the feed wheel, a driving shaft, a continuous driving connection between the driving shaft and the cutter shaft, and a loose driving connec-

tion between the driving shaft and the presser wheel, said loose connection permitting a relative movement between the presser wheel and feed wheel while maintaining a continuous driving connection with the presser wheel.

5. In a cutting machine, the combination of a feed wheel, a cutter shaft, a cutter fixed to the shaft and operatively mounted adjacent the feed wheel, a presser wheel loose on the cutter shaft and bearing on the feed wheel, a driving shaft, a continuous driving connection between the driving shaft and the cutter shaft, a loose driving connection between the driving shaft and the presser wheel, said loose connection permitting a relative movement between the presser wheel and feed wheel while maintaining a continuous driving connection with the presser wheel, and means acting on the presser wheel tending to move the same into pressing engagement with the feed wheel.

6. In a cutting machine, the combination with a cutter, and a feed wheel operatively associated therewith to form a cutting mechanism, of a presser wheel designed to press the goods to the feed wheel and mounted for movement relative to the cutter, and means for driving the cutter, said means being constantly in driving engagement with the feed wheel.

7. In a cutting machine, the combination of a feed wheel, a shiftable presser wheel bearing on the periphery of said feed wheel, a spring-pressed bracket disposed above the presser wheel, and spaced apart bearing rollers carried by the bracket and engaging the presser wheel on opposite sides of a vertical line passing through the axis of rotation of the presser wheel, said bracket acting through the bearing rollers to steady the same while engaging the material to be cut.

8. In a cutting machine, the combination of a feed wheel, a shiftable presser wheel bearing on the periphery of said feed wheel, a bracket provided with means for engaging the periphery of said presser wheel, and a spring acting on said bracket for pressing the same into engagement with the presser wheel.

Signed at New York city in the county of New York and State of New York this twelfth day of July, A. D. 1916.

JOSEPH KORNAS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."