O. R. RUST.

EDGE TRIMMING MACHINE.

APPLICATION FILED JUNE 6, 1908.

908,332.

Patented Dec. 29, 1908.

3 SHEETS—SHEET 1.

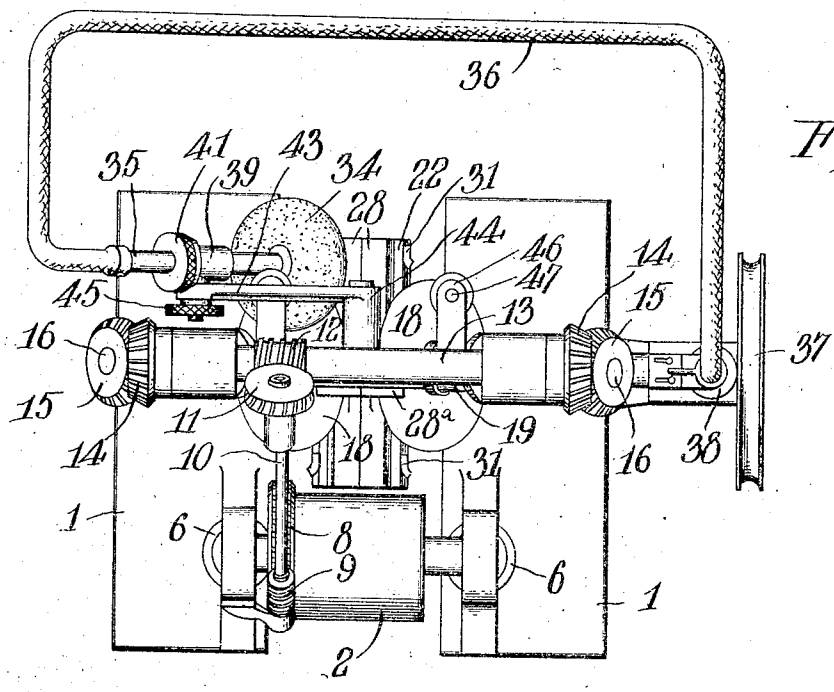


Fig. 1.

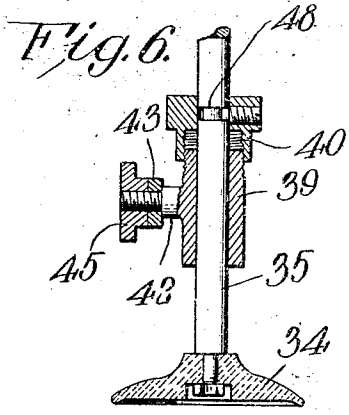


Fig. 6.

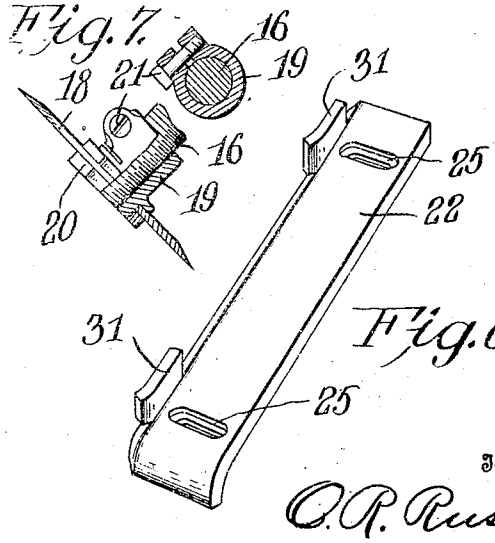


Fig. 7.

Fig. 8.

Fig. 9.

Witnesses

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3 SHEETS—SHEET 2.

Fig. 2.

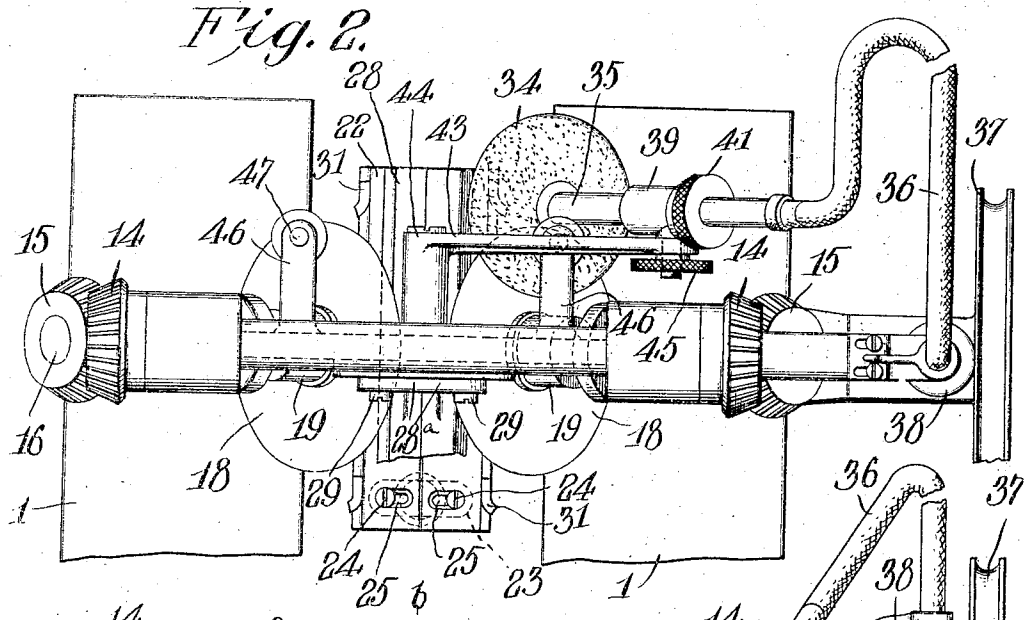
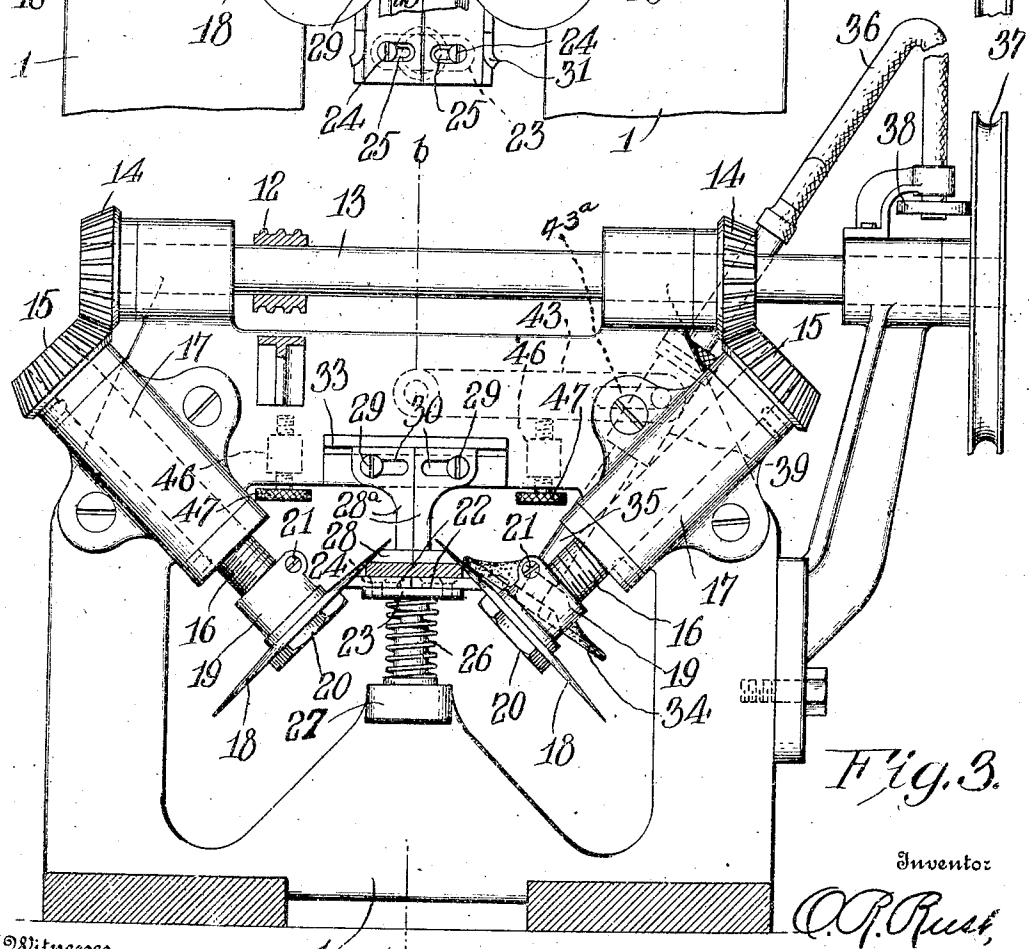


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4.

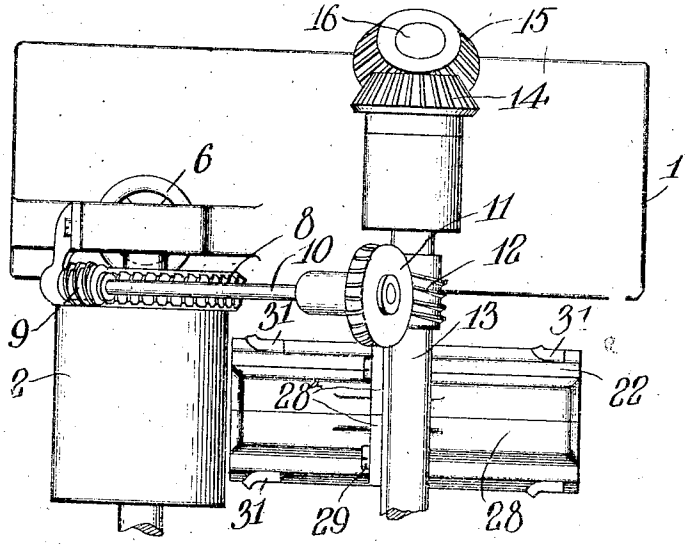
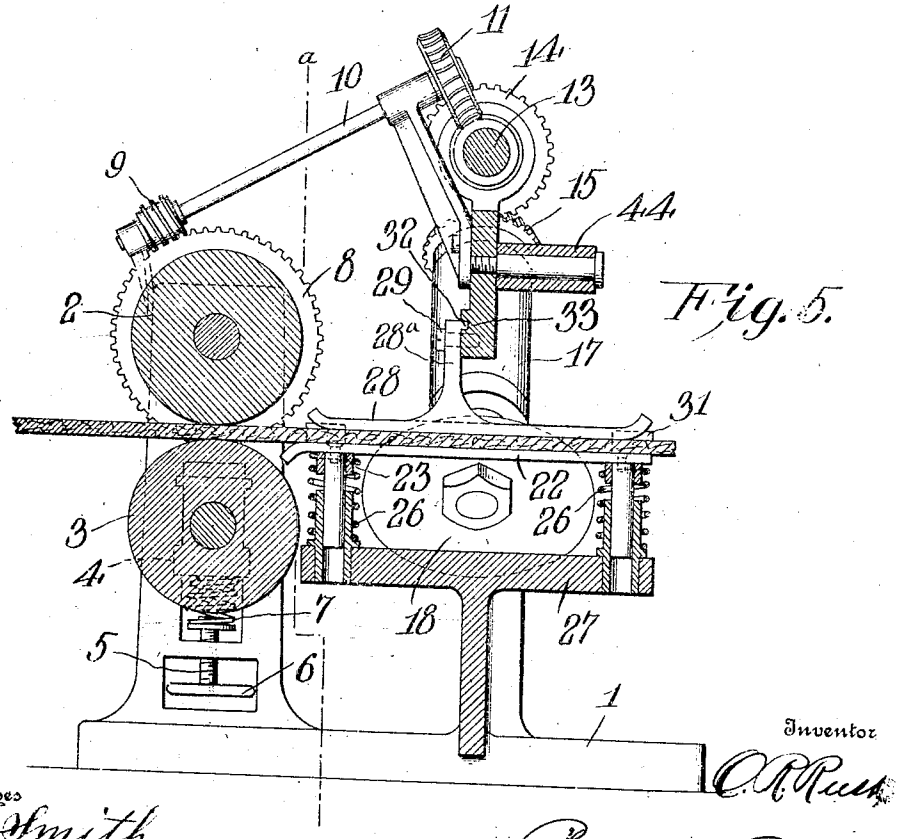


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

OTIS R. RUST, OF SPRINGFIELD, OHIO.

EDGE-TRIMMING MACHINE.

No. 908,332. Specification of Letters Patent. Patented Dec. 29, 1908.

Application filed June 6, 1908. Serial No. 437,177.

To all whom it may concern:

Be it known that I, OTIS R. RUST, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Edge-Trimming Machines, of which the following is a specification.

In the art of manufacturing leather belts for apparel purposes, as well as in finishing strap parts for harness, or the like, it is customary to trim the edge portions of the belts or straps in order to produce a finished article. This operation is ordinarily performed by hand and it is evident that the operation consumes considerable time and necessitates a large amount of labor.

The present invention comprises a machine which is designed especially for the purpose of trimming the edges of strap parts such as above described to facilitate the operation, and further more, to finish the article mechanically and much more nicely than can be accomplished by hand.

For a full understanding of the invention, reference is to be had to the following detail description and to the accompanying drawings, in which—

Figure 1 is a top plan view of a machine embodying the essential features of the present invention; Fig. 2 is a plan view bringing out more clearly the arrangement of the interchangeably mounted sharpening mechanism for the cutters; Fig. 3 is a sectional view showing the arrangement of the cutters, the sharpening mechanism therefor, and the general operating mechanism; Fig. 4 is a plan view showing the arrangement of the feed rolls and means for driving the same; Fig. 5 is a sectional view taken about on the line *b*—*b* of Fig. 3; Fig. 6 is a detail view of the emery wheel shaft and parts in which it is mounted; Fig. 7 embodies detail sectional views combined showing more clearly the means for mounting each cutter upon its shaft; Fig. 8 is a detail perspective view of one of the sections of the presser plate, and Fig. 9 is a sectional view of a strip of leather showing the formation of the edges thereof after having been run through the machine comprising this invention.

Throughout the following detail description and on the several figures of the drawings, similar parts are referred to by like reference characters.

The machine comprising the present invention, with reference to its specific construction more particularly, embodies a suitable base 1, upon which are mounted feed rolls 2 and 3 between which the material to be operated upon is fed to the cutting mechanism. The lower feed roll 3 is mounted in vertically adjustable bearings 4, each adapted to be readily adjusted by means of a screw 5 having a handle 6. The feed roll 3 is spring supported, springs 7 being interposed between the upper ends of the screws or stems 5 and the lower ends of the bearings in which the feed roll 3 is journaled. By reason of the yielding mounting of the feed roll 3 it will be apparent that the said roll will automatically adjust itself to accommodate for passage of material of different thicknesses between the rolls 2 and 3. The feed roll 2 has a gear 8 attached to one end thereof and this gear meshes with a worm 9 upon an inclined shaft 10. On the upper end of the shaft 10 is fixed a worm gear 11 in mesh with a worm 12 mounted upon a horizontal drive shaft 13, said shaft 13 being supported in suitable bearings in the frame work of the machine.

Mounted upon one end of the drive shaft 13 is a bevel gear 14, and a similar bevel gear 14 is mounted on the said shaft intermediate of its ends. The gears 14 mesh with bevel gears 15 carried by cutter shafts 16. The cutter shafts 16 are arranged at an angle to one another and are supported in suitable brackets 17 detachably secured to the frame work of the machine. Cutters 18 are carried by the lower ends of the shaft 16, said cutters being directly attached to split collars 19 by means of nuts 20. The lower end portions of the shafts 16 are provided with fine threads and the collars 19 are internally threaded so that by loosening screws 21 of said collars the same may be adjusted slightly to correspondingly adjust the cutters 18, after which the screws 21 will be tightened to hold the cutters at a desired adjustment. The peculiar construction of the collars carrying the cutters 18 is shown most clearly in Fig. 7 of the drawings.

As shown most clearly in Fig. 3 of the

drawings, the cutters 18 are arranged substantially at a right angle to one another and in spaced relation. Said cutters are disposed upon opposite sides of a spring supported presser plate 22 which bears against the under side of the strip of material, the edges of which are trimmed in the operation of this machine, as said material is fed from the feed rolls 2 and 3 to the cutting mechanism. The presser plate 22 is made in sections which are attached to short transverse plates 23 by means of screws 24 which pass through transverse slots 25 in the sections of the presser plate. Springs 26 are interposed between the transverse plates 23 and a supporting head 27 comprising an integral extension of the base or bed 1 of the machine, and these springs 26 normally tend to hold the opposite edges of the presser plate 22 in contact with the lower sides of the cutters 18. By reason of the sectional construction of the presser plate 22 it will be apparent that the parts of said plate may be adjusted laterally in order to accommodate for different widths of strips of material, or strap parts, to be trimmed at the edges in the operation of the invention. Mounted above the presser plate 22, and also arranged between the cutters 18, is a fixed cutter 28 formed at its opposite edges with beveled cutting edges coöperating with the rotary cutters 18. The lower sides of the rotary cutters 18 are in close contact with the beveled edges of the cutter 28 and the cutters 18 thus have a shearing cutting action which is especially advantageous in that it permits of trimming the edges of a strap part by removal of a finer strip of material than can be done by hand. The trimming of the edges of the strap part by the cutters 18, as the material is fed through the cutting mechanism, is performed accurately, and the strap part is thus given a more finished appearance than can possibly be obtained when the same is trimmed by hand. The fixed cutter 28, in a manner somewhat similar to the presser plate 22, is composed of sections, each section having an upwardly projecting extension 28^a attached to the upper portion of the frame work of the machine by means of screws or fastenings 29. The fastenings 29 pass through slots 30 in the extensions 28^a and permit of adjustment of the sections of the fixed cutter laterally, to accommodate for different widths of material. It will be seen that when the sections of the presser plate 22, and the sections of the fixed cutter 28, are adjusted laterally with reference to one another, the cutters 18 will of course be suitably adjusted upon the cutter shaft 16 for effective coöperation with the parts 22 and 28, in a manner which will be obvious.

As shown more clearly in Fig. 8 of the drawings each section of the presser plate 22 is provided at its outer edge with vertical lugs 31 which form guide members preventing the strip of material being operated upon by the cutters from traveling sidewise, which might interfere with the efficiency of the invention in accurately trimming the edges of the material. As the strap part is fed through the machine it will be apparent that the opposite edges of the same will be trimmed simultaneously at points adjacent to the upper side of the said strap part. If it is desired that both the upper and lower edges of the material be trimmed, it is only necessary to invert the strap part and pass it through the machine a second time whereupon not only the upper but the lower opposite edges will be trimmed, beveled, or rounded, in the desired manner.

To position the sections of the cutter 28 so that they will remain perfectly horizontal, it is contemplated that the upper ends of the extensions 28^a shall be formed with lateral flanges 32 entering a horizontal groove 33 in the upper portion of the machine. When the sections of the cutter 28 are adjusted laterally the engagement of the flanges 32 in the grooves 33 will form a guide to maintain the parts of the cutter in horizontal alinement.

An important feature of the present invention resides in the provision, in connection with the feeding and cutting mechanism hereinbefore described, of special mechanism for automatically sharpening the cutters 18 during the operation of the machine. The sharpening mechanism embodies a grinding wheel, preferably an emery wheel 34, carried by a rigid shaft section 35 one end of which is connected with flexible shafting 36. The drive shaft 13 is operated by means of suitable belt connections with a pulley wheel 37 mounted on an end of the shaft 13, and engaging a side of said pulley wheel 37 is a friction wheel 38. The friction wheel 38 is connected with the flexible shafting 36 and said friction wheel is designed to operate the emery wheel 34 constantly while the machine is in operation. The emery wheel shaft 35 is supported by means of a sleeve bearing 39 having an adjustable or threaded connection 40 with a knurled head 41, and the bearing 39 is formed with a lateral trunnion 42 the outer portion of which is reduced so as to pass through a pivoted supporting arm 43. The supporting arm 43 is pivoted at 44 to the central portion of the frame work of the machine and the trunnion 42 of the sleeve bearing 39 is secured to the arm 43 by means of a thumb nut 45. Projecting from the frame work of the machine and arranged upon opposite sides of the axis of the arm 43 are two rests 46, and on the outer end of said rests

are carried adjusting screws 47. The pivoted arm 43 is formed at its free or outer end with an elongated opening or slot 43ª through which the trunnion 42 passes, and it will be apparent that the sleeve bearing 39 for the shaft 35 carrying the emery wheel 34 is adjustably connected with the arm 43.

The arrangement of the pivoted supporting arm, which carries the sharpening mechanism, is such that when this arm is supported above one of the cutters 18, the emery wheel 34 may be readily adjusted so as to automatically sharpen such cutter 18 during the operation of the machine, as shown most clearly in Fig. 3 of the drawings. When so arranged the supporting arm 43 is supported by the adjacent rest 46 and is capable of being adjusted by means of the adjusting screw 47 of said rest. The emery wheel is also susceptible of other adjustment by reason of the adjustable connection between the arm 43 and the trunnion 42 of the sleeve bearing 39, and because of the adjustable connection between the sleeve bearing 39 and the head 41 thereof, the latter being attached to the shaft section 35 by means of an interlocking pin and groove connection 48 which permits of free rotation of the shaft section 35 in the head 41, but prevents longitudinal movement of said head 41 along the said shaft section. Referring to Fig. 3 it will be obvious that the emery wheel 34 may be readily adjusted to properly sharpen the cutter 18 with which it coöperates, and whenever necessary or desirable the arm 43 may be swung over to the opposite side of the machine above the other cutter 18 and the emery wheel 34 so adjusted as to sharpen the cutter above which it is thus disposed. The flexible shaft 36 permits of readily swinging the sharpening mechanism from one side of the machine to the other, and operation of the sharpening mechanism when in either position.

It will be understood that the detail construction of my invention may be modified in accordance with the broad spirit of the invention and the scope of the appended claims.

Having thus described the invention, what is claimed as new, is:

1. In an edge trimming machine, the combination of cutter shafts, spaced rotary cutters thereon, means for adjusting said cutters longitudinally of the shafts, mechanism for feeding material to said cutters, a fixed cutter arranged between said cutters for coöperation therewith, means for holding the material against the fixed cutter as it is being operated upon by the rotary cutters, and means for adjusting the fixed cutter to accommodate for different widths of material and adjustment of the rotary cutters.

2. In an edge trimming machine, the combination of spaced rotary cutters, means for adjusting said cutters, mechanism for feeding material to the cutters, a fixed cutter coöperating with the rotary cutters, a presser plate for holding the material against the fixed cutter as it is operated upon by the rotary cutters, the fixed cutter and the presser plate comprising sections, and means for adjusting the sections of the fixed cutter and the presser plate to accommodate for different widths of material.

3. In an edge trimming machine, the combination of angularly arranged cutter shafts, rotary cutters mounted thereon and arranged at an angle to one another, a fixed cutter arranged between said rotary cutters and of sectional construction, a presser plate disposed below said fixed cutter and also of sectional construction, means for adjusting the rotary cutters longitudinally of the cutter shafts, and means for adjusting the sections of the fixed cutter and the sections of the presser plate to accommodate for different widths of material fed to said cutters.

4. In an edge trimming machine, the combination of spaced rotary cutters, means for feeding material to said cutters, a presser plate arranged between the cutters so as to bear against a side of the material operated upon thereby, and a rigid element opposing the presser plate and adapted to bear against the opposite side of the material operated upon by the cutters.

5. In an edge trimming machine, the combination of spaced rotary cutters, means for feeding material to said cutters, a presser plate arranged between the cutters so as to bear against a side of the material operated upon thereby, a rigid element opposing the presser plate and adapted to bear against the opposite side of the material operated upon by the cutters, the presser plate comprising sections, means for adjusting said sections to accommodate for different widths of material, means for adjusting the rotary cutters, and springs adapted to hold the presser plate in contact with the material fed to the cutters.

6. In an edge trimming machine, the combination of a plurality of rotary cutters, operating mechanism therefor, means for feeding material to said cutters, a pivoted supporting arm, sharpening mechanism adjustably mounted on said supporting arm and including an emery wheel for interchangeable coöperation with the cutters, rests for supporting the pivoted arm in adjusted positions, and driving means for the sharpening mechanism operated by the cutter operating mechanism.

7. In an edge trimming machine, the combination of a drive shaft, a drive wheel con-

nected therewith, cutter shafts geared to the drive shaft and arranged at an angle to each other, cutters mounted on said cutter shafts, mechanism for feeding material to said cutters, a pivoted arm, a rigid shaft section adjustably mounted upon the free end of said arm, an emery wheel carried by said shaft section for interchangeable coöperation with the cutters, rests for supporting the pivoted arm in positions in which it will coöperate with a selected one of the cutters, means for adjusting the position of the arm with respect to said rests, a friction wheel operated by the drive wheel aforesaid, and flexible shafting connecting the rigid shaft section above mentioned with the friction wheel and permitting of adjustment of the sharpening mechanism with reference to the cutters.

In testimony whereof I affix my signature in presence of two witnesses.

OTIS R. RUST.

Witnesses:
J. W. ALLEN,
ARTHUR J. TODD.