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J. HORHOROUNY

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AUTO FELT WASHER CUTTING MACHINE

Filed Nov. 25, 1930

Fig. 1.

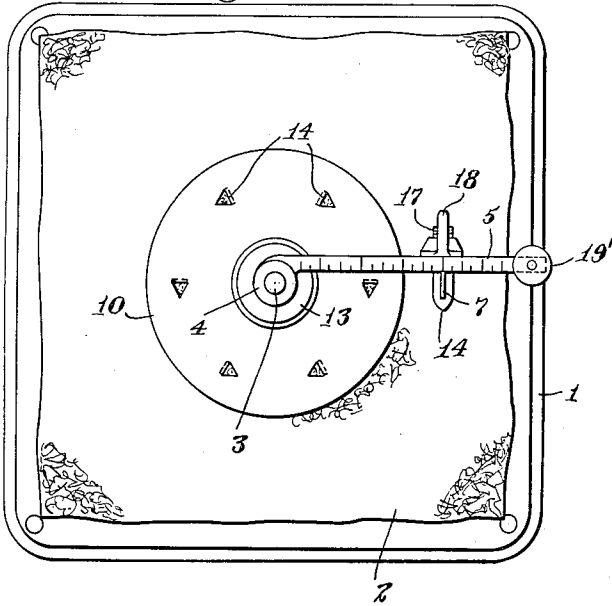


Fig. 4.

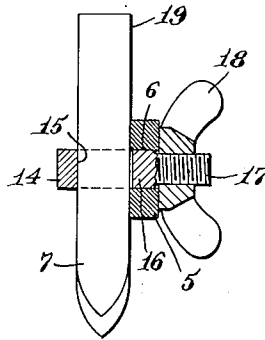


Fig. 5.

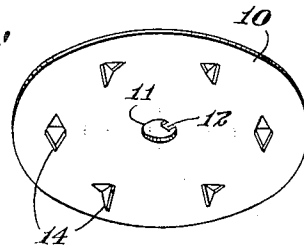


Fig. 2.

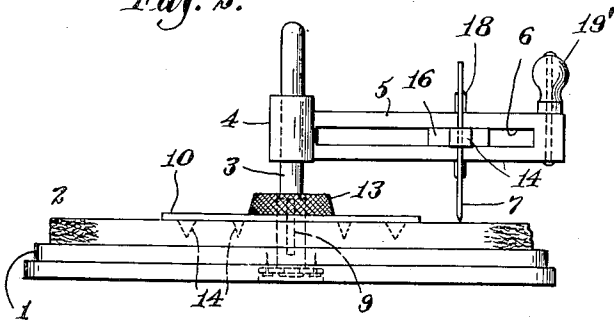


Fig. 3.

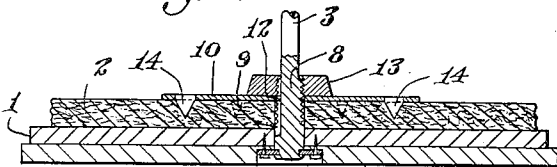
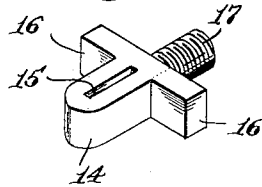


Fig. 6.



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UNITED STATES PATENT OFFICE

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AUTO FELT WASHER CUTTING MACHINE

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3 Claims. (Cl. 164—72)

This invention relates to machines for cutting washers, gaskets, and the like from felt or other suitable material.

My machine is especially intended for use in garages and repair shops where washers and gaskets of widely varying sizes and different thicknesses are always in demand and where it is not practicable to carry any large stock on hand.

Consequently, my invention has for its general object to provide a simple and extremely inexpensive machine for quickly and easily cutting any desired size and thickness of washer or gasket. My machine may be sold at a price which will permit it to be owned by every garage and repair shop, no matter how small, so that the machine may be used only when needed, thus making it unnecessary for the garage or repair shop to carry in stock the widely varying sizes and thicknesses of washers or gaskets which it would otherwise need to have.

My machine is characterized by a simplicity of design and inexpensiveness of construction which well recommends it for its intended field of use, and the actual work of cutting a washer or the like of the desired size and thickness is at once easy and rapid.

In such cutting operation, the material from which the washer or other article to be cut is centered and clamped against movement on a stationary bed or base and is cut by rotating a cutter of special design and special mounting thereover and therethrough. Such cutter is a simple knife blade disposed at right angles to a horizontally extending cutter carrying arm. The knife arm rotates over the work in an orbit having for its center a stationary stud rising from the base. The knife blade is offset laterally relative to said arm and is disposed directly opposite said stud and parallel thereto. The arm is loosely sleeved about said stud so that it may be forced downwardly therealong to cause the knife blade to work through the material in the cutting operation. By adjusting the blade longitudinally along said arm towards or away from the stud the diameter of the opening cut in the material may be varied as desired.

In the accompanying drawing I have illustrated a form of my machine which I have found highly satisfactory under actual service conditions. In such drawing:—

Fig. 1 is a plan view of my machine and showing a piece of material positioned thereon in readiness to be cut.

Fig. 2 is a side elevation of my machine.

Fig. 3 is a fragmentary detail section particu-

larly showing the clamping plate for holding the material against movement while the cutter is at work.

Fig. 4 is a detail section illustrating the mounting of the cutter.

Fig. 5 is a perspective view of the clamping plate shown in Fig. 3 removed, and

Fig. 6 is a detail view of the cutter holding unit removed.

I have indicated generally at 1 a base. Supported on said base is a piece of material 2 from which the washer, gasket or other article is to be cut.

The base may consist of a bottom plate of metal and a superposed plate of wood or other material which will not dull the cutter blade when it cuts through the material 2 resting thereon.

Fixed centrally of the base 1 in any suitable manner is a stud 3. Said stud extends above the base as a vertical bearing or axis for the hub 4 of a horizontally extending rotatable cutter carrying arm 5.

The arm 5 is longitudinally slotted as at 6 to permit in and out adjustment of the cutter 7 carried thereby horizontally towards and from the stud 3, thus to vary the diameter of the opening cut in the material 2.

The arm 4 may be graduated as shown in Fig. 1 to permit accurate setting of the cutter 7 according to the diameter of the opening which is to be cut in the material.

As here shown, the stud 3 just above the upper surface of the base is threaded as at 8. Beyond said threaded portion 8 the stud 3 extends as a smooth portion of reduced diameter over which the hub 4 of the cutter arm 5 is loosely sleeved. The threaded portion 8 is cut away vertically at one side, as indicated at 9, to provide in effect a keyway by means of which a work clamping plate 10 may be assembled thereon from above, said plate having a central opening 11 therethrough adapted to fit the threaded portion 8 of the stud and having projecting into said opening a key 12 adapted to be entered within the keyway 9 of the threaded portion 8. This construction enables the plate 10 to be run down over the threads 8 from above, the key and keyway preventing rotation of said plate on said stud.

The plate 10 is adapted to be clamped against the work 2 by means of any suitable nut 13 engaging the threaded portion 8 above the plate. To insure proper grip of the material, the plate itself is provided on its under face with a plu-

5 rality of downwardly extending barbs 14 which may be conveniently struck therefrom, as best shown in Fig. 5, for the purpose of penetratively engaging the material 2 and holding it against rotation relative to the base during the cutting operation.

10 It will be understood that a set of clamping plates of varying sizes is provided and that a plate of the proper size is used according to the size of the washer being cut.

15 The cutter arm 5 is slightly offset with relation to the axis of rotation of said arm as determined by the stud 3, and the cutter 7 is mounted vertically on said arm and occupies a plane parallel to and opposite the plane of the stud 3 but spaced therefrom varying distances according to the adjustment of said cutter in the slot 6 of said arm.

20 The cutter itself is a simple blade disposed at right angles to the plane of the arm 5 and offset laterally relative thereto. It has a sharpened cutting edge at its lower end and is assembled upon the arm 5 in the relation shown by means of the holder detailed in Fig. 6.

25 Such holder comprises a blade receiving portion 14 which is vertically slotted from top to bottom as at 15 to accommodate the blade 7. Beyond the slotted portion 14 the holder extends as a pair of symmetrically disposed wings 16 constituting oppositely extending bearing portions of a shape and size to fit slidably within the slot 6 of the arm 5, as best shown in Figs. 2 and 4. Beyond the bearing portions 16 the holder extends as a threaded portion 17 alined with the slotted portion 14 and on which a wing nut 18 or the like is adapted to be run for the purpose of holding the adjustment of the blade holder in the slot 6 of the arm 5.

40 By means of this construction the adjacent straight edge 19 of the blade 7 is positioned in line contact with the adjacent face of the slotted arm 6 perpendicularly thereto with the blade itself disposed transversely to the major axis of said arm and at one side of the arm. The fit of the hub 4 on the stud 3 is sufficiently loose to allow the knife blade to work down through the material under the pressure of the hand in rotating the blade over the material.

45 In use, a blank of the proper thickness is centered upon the stud 3 from above. Where the material is of felt, for example, the stud simply punches a small hole therethrough as the material is forced downwardly thereover, and the material rests flatly on the base.

50 A clamping plate 10 of the proper size is next placed upon the stud 3 from above, penetrated into the material, and clamped by means of the nut 13.

60 The cutter blade 7 is then adjusted laterally in the slot of the arm 5 according to the size of the washer to be cut and its sharpened lower end rotated through the material 2 by grasping the arm by means of its handle or knob 19' and rotating said arm about said stud 3 as an axis, the arm being progressively forced down along the stud as the blade cuts through the material.

70 In such cutting action, the blade is backed by its line contact at 19 with the arm 5 against buckling or bending while cutting. As a result, the article cut on my machine is a washer or the like the central opening of which is cut cleanly throughout its entire circumference without deviation from either the horizontal or the vertical.

Various modifications in structure and assembly may obviously be resorted to within the spirit and scope of my invention, as defined by the appended claims.

I claim:—

80 1. A cutter of the class described comprising a base presenting a flat upper surface on which a sheet of the material to be cut is adapted to be positioned, a fixed stud rising vertically from said base, a horizontally disposed cutter arm 85 rotatable about said stud as an axis and having a longitudinally extending slot, a blade holder comprising a vertically slotted portion at one side of said arm, lateral bearing portions extending from said slotted portion at either side thereof 90 and adapted for sliding engagement in the slot of said arm, and a threaded portion in the opposite side of said arm and spaced from said slotted portion by said lateral bearing portions, means for clamping the blade holder at any selected 95 position of adjustment along said slot, and a blade extending vertically from said blade holder and having a sharpened lower end adapted when the arm is rotated about the stud as an axis to cut from the material supported upon said base 100 a circle having the stud as its center.

2. A device for cutting washers, comprising a base presenting a flat horizontal supporting surface on which a sheet of the material to be cut 105 is adapted to be flatly positioned, a fixed stud extending vertically from said base approximately centrally thereof, a cutter arm terminating at its inner end in a bearing sleeve adapted to be sleeved over said stud from above, said arm extending horizontally of said base above and 110 parallel to the plane of the same and having at its outer end an operating handle whereby the arm may be rotated over said base about said stud as an axis and having a longitudinally extending slot between said sleeve portion and said 115 handle, a blade holder having a bearing portion formed to frictionally engage the opposite internal edges of said slot and slidable longitudinally therealong, means for clamping said blade holder at any selected position of adjustment along said 120 slot, a straight flat knife blade rigidly mounted on and extending vertically from said blade holder and having a sharpened lower end adapted when the arm is rotated about the stud as an axis to cut from the sheet of material supported 125 on said base, a circle having the stud as its center, and a plurality of prongs disposed about the stud as a center and adapted for penetration into the sheet of material supported on said base whereby to restrain the sheet against movement 130 during the cutting action.

3. A cutter comprising a material supporting base, a fixed stud rising vertically from said base, a horizontally disposed cutter arm rotatable 135 about said stud as an axis and having a longitudinally extending slot intermediate of its top and bottom surfaces, a blade holder disposed at right angles to said arm and having a bearing portion slidable within said slot, means for clamping said blade holder at any selected position of adjustment along said slot, a straight flat 140 knife blade rigidly mounted on said blade holder vertically thereof, said blade being disposed edge-wise to the adjacent side wall of the arm and terminating in a sharpened lower end adapted 145 when the arm is rotated about the stud as an axis to cut from the material supported upon said base a circle having the stud as its center.

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