July 2, 1957 B. A. ROUSE 2,797,534

HAIR CLIPPER PLATE GRINDER

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Fig. 1

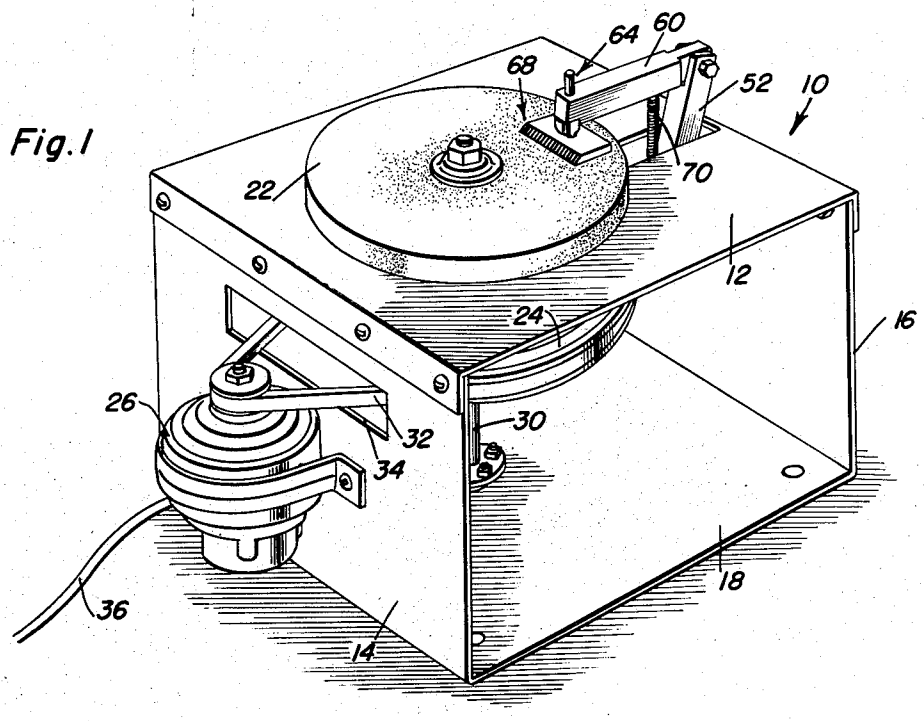


Fig. 4

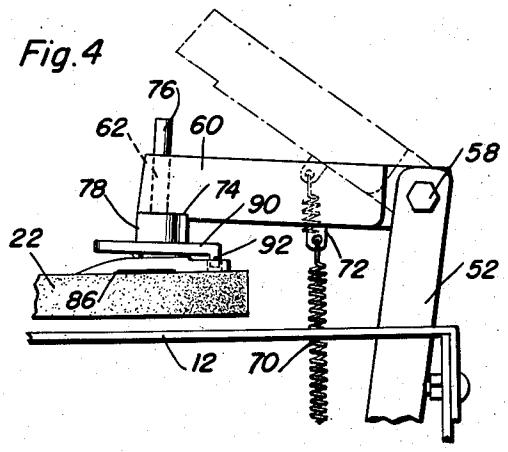
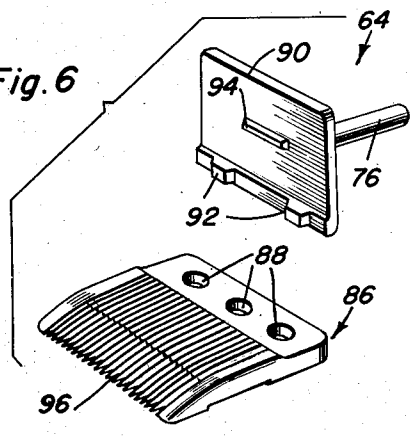


Fig. 6



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Fig. 2

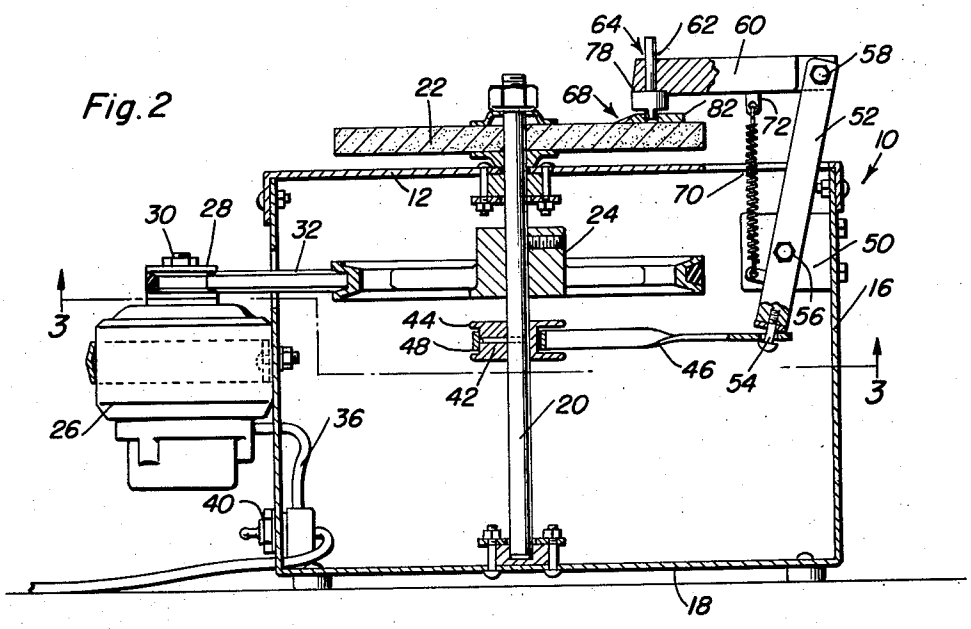


Fig. 3

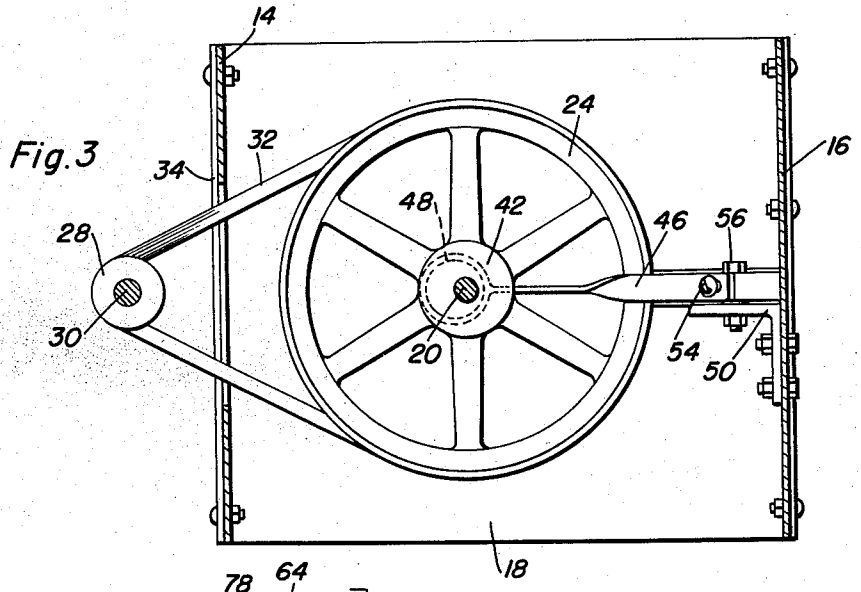
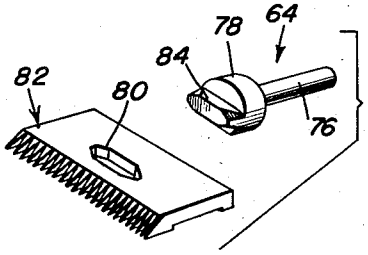


Fig. 5



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HAIR CLIPPER PLATE GRINDER

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1 Claim. (Cl. 51—122)

The present invention relates to grinding machines for grinding metal work pieces, and more particularly relates to a device specifically adapted for the grinding of the clipper plates of barber's clippers and the like.

The primary object of the invention is in the provision of a grinding machine for grinding the clipper plates from hair clippers in such a manner that these plates are provided with smooth edges with no burrs being formed on the teeth thereof.

Generally, the invention comprises a flat surfaced grinding disk driven by a center shaft and having a reciprocatory arm carrying a work holder in overlying relationship thereto with a linkage interconnecting the shaft and the reciprocatory arm whereby the work holder is reciprocated across the face of the grinding disk as the grinding disk is rotated, thereby grinding the surface of the clipper plate held by the work holder. In order to maintain an even tension on the work holder so that a clipper plate may be held between the work holder and the grinding plate without slippage, resilient means is provided yieldingly urging the reciprocatory arm toward the face of the grinding disk.

A highly important object of the invention is in the provision of a novel work holding element and supporting arm which forms the reciprocatory arm of the device whereby the work holders may be easily interchanged to fit clipper plates of various manufacture.

These, together with other objects and advantages which will become subsequently apparent, reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a perspective view of the grinding machine of the present invention;

Figure 2 is a vertical cross-sectional view through the machine;

Figure 3 is a horizontal cross-sectional view taken substantially along the plane of section line 3—3 of Figure 2;

Figure 4 is an enlarged detail view of the work holder and its supporting arm disclosing the operation thereof constituting a part of the invention;

Figure 5 is an exploded view of a work holder and a clipper plate; and

Figure 6 is an exploded view of a second type clipper plate and work holder.

Referring now to the drawings in detail, the grinding machine constituting the invention is designated in its entirety by the numeral 10 and is seen to comprise a substantially rectangular housing having a top 12, sides 14 and 16 and a bottom 18.

Vertically journaled within the housing is a center shaft 20 having its upper end projecting through the top 12 thereof. Fixedly attached to the exteriorly projecting upper end of the center shaft 20 is a flat surfaced grinding disk 22, the center shaft 20 constituting a driving shaft for this disk. Mounted on the center shaft 20 within the housing is an enlarged pulley wheel 24.

Mounted preferably on the side 14 of the housing is a suitable electric motor or the like 26 having a small pulley wheel 28 fixedly attached to the projecting portion of the drive shaft 30 thereof. Endless belt 32 is entrained over the pulleys 24 and 28 through a suitable slot 34 in the side wall 14 of the housing so that upon operation of the motor 26, the center shaft, and consequently, the grinding disk 22 will be rotated.

A suitable electric cord 36 leads from the motor 26 to a source of current, a switch 40 being interposed between the attachment of the cord 36 to the motor 26 and the source of electrical current. Conveniently, this switch is mounted on the side wall 14 of the housing beneath the motor 26 in order that the motor may be turned on and off at the housing.

Mounted on the center shaft 20 in fixed relation thereto below the pulley 24 is an eccentric 42 being formed with an annular channel 44 around the periphery thereof. A pitman 46 has an eye 48 formed at one end thereof loosely received within the annular channel 44 of the eccentric 42.

Mounted on a suitable bracket 50 attached to the side wall 16 of the housing and projecting within the housing is a rocker arm 52.

A suitable fastener 54 extending loosely through the free end of the pitman 46 and the lower end of the rocker arm 52 operatively connects these two members to one another. Intermediate its ends, the rocker arm 52 is attached pivotally to the bracket 50 by means of a suitable pivot 56.

The upper end portion of the rocker arm 52 projects through the top 12 of the housing.

To the upper end of the rocker arm 52 is pivotally secured by means of the pivot 58 the outer end of a supporting or reciprocatory arm 60.

The inner end of the arm 60 overlies the face of the grinding disk 22 and is provided with a vertical bore or aperture 62 therethrough. A rotatable work holder 64 is guidingly retained in the passage 62 with the head 66 of the holder guidingly retaining the work piece 68 in contact with the face of the grinding disk 22.

In order to maintain an even pressure on the work holder 64, a suitable resilient spring 70 is detachably secured at its upper end to a downwardly projecting lug 72 depending from an intermediate portion of the reciprocatory arm 60. The lower end of the spring 70 is connected to the bracket 50 whereby the work holder 64 is constantly urged toward the face of the grinding disk 22.

Although the clipper plates of all hair clippers are substantially identical, the manner in which they are mounted on the clipper heads varies somewhat and consequently, the supporting arm construction 60 and the work holder construction 64 are constructed in order to be generally usable with all type clipper plates.

To this end, the spring 70 may be simply detached from the lug 72, as noted in Figure 4, and the supporting arm 60 pivoted upwardly about its pivot 58.

Also, adjacent its outer end, the supporting or reciprocatory arm 60 is provided with an undercut notch 74 into which the lower end of the bore 62 opens.

In all forms of the invention, the work holder 64 comprises an elongated stem or shank 76 which is guidingly retained within the bore 62 and a head 78 which seats within the notch 74 to prevent rotation of the stem of the holder within the bore 62.

In general, there are two types of mounting for the clipper plates of hair clippers, the clipper plates themselves being suitably apertured or slotted in order to adapt them to mounting on their heads.

Two types of such clipper plates are set forth in Figures 5 and 6 along with work holders having heads

modified to take advantage of the mounting apertures of the plates. In Figure 5, the clipper plate is shown as having an enlarged polygonal slot **80** in the head behind the teeth thereof, the clipper plate itself being designated by the numeral **82**.

In order to accommodate the machine to the grinding of such plate, the head **78** of the work holder **64** is provided with a projecting boss **84** at the lower end thereof which conforms to the shape of the slot **80** in the head of the clipper plate **82** whereby, as will be noted in Figure 2, the clipper plate may be held firmly and reciprocably on the face of the grinding plate **22**.

In Figure 6, the clipper plate is designated by the numeral **86** and has three spaced apertures **88** in the head thereof.

The work holder **64** has welded or otherwise suitably secured to the bottom surface of the head **78** thereof (note particularly Figure 4) a substantially flat plate **90**.

Projecting from the undersurface of this plate at longitudinally spaced points therealong adjacent the rear edge thereof are a pair of lugs or bosses **92** so spaced to fit in the endmost apertures **88** of the head **86**. Intermediate the front and rear edges of the flat plate **90** and projecting from the undersurface thereof is a protuberance in the shape of an elongated bar **94** which engages a portion of the clipper plate **86** between the apertures **88** thereof and the ends of the teeth **96** thereof so that when the work holder is mounted to hold the clipper plate **86** in place, as shown in Figure 4, the teeth **96** of the plate are maintained in the proper engagement with the face of the grinding disk **22**.

In the operation of the device, upon rotation of the center shaft **20**, the pitman **46** is oscillated, rocking the rocker arm **52** and consequently, reciprocating the reciprocatory arm **60** and moving the work holder **64** across the face of the grinding disk **22**.

To change from one type work holder **64** to a second type work holder, it is only necessary to detach the spring **70**, as shown in Figure 4, lift the reciprocatory arm **60** and change holders.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly, all suitable modifications and changes may be resorted to, falling within the scope of the appended claim.

What is claimed as new is as follows:

A device for grinding the clipper plates from barber's clippers and the like comprising a housing, a center shaft journaled in said housing and having one end thereof projecting through the top of said housing, a grinding disk fixed to said one end of said shaft, means for rotating said shaft operatively connected therewith and including an eccentric secured to said shaft, a pitman mounted on and actuated by said eccentric, a bracket secured to said housing, a rocker arm pivotally secured intermediate its ends within said housing and to said bracket, the lower end of said rocker arm being attached to said pitman, the upper end of said rocker arm projecting through the top of said housing, a reciprocatory arm having one end thereof attached to the upper end of said rocker arm, the other end of said reciprocatory arm overlying said disk and having a vertical passage therethrough, a work holder guidingly retained in said passage, a spring secured to said reciprocatory arm and to said bracket normally urging said arm with said work holder toward said disk while a work piece is reciprocated by said arm over the face of the disk upon rotation of said shaft, said housing having side walls to one of which said bracket is secured, another of said side walls having a slot, a motor mounted on said another of said side walls, a driving connection between said motor and said shaft, and control means for the motor operatively connected therewith.

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