

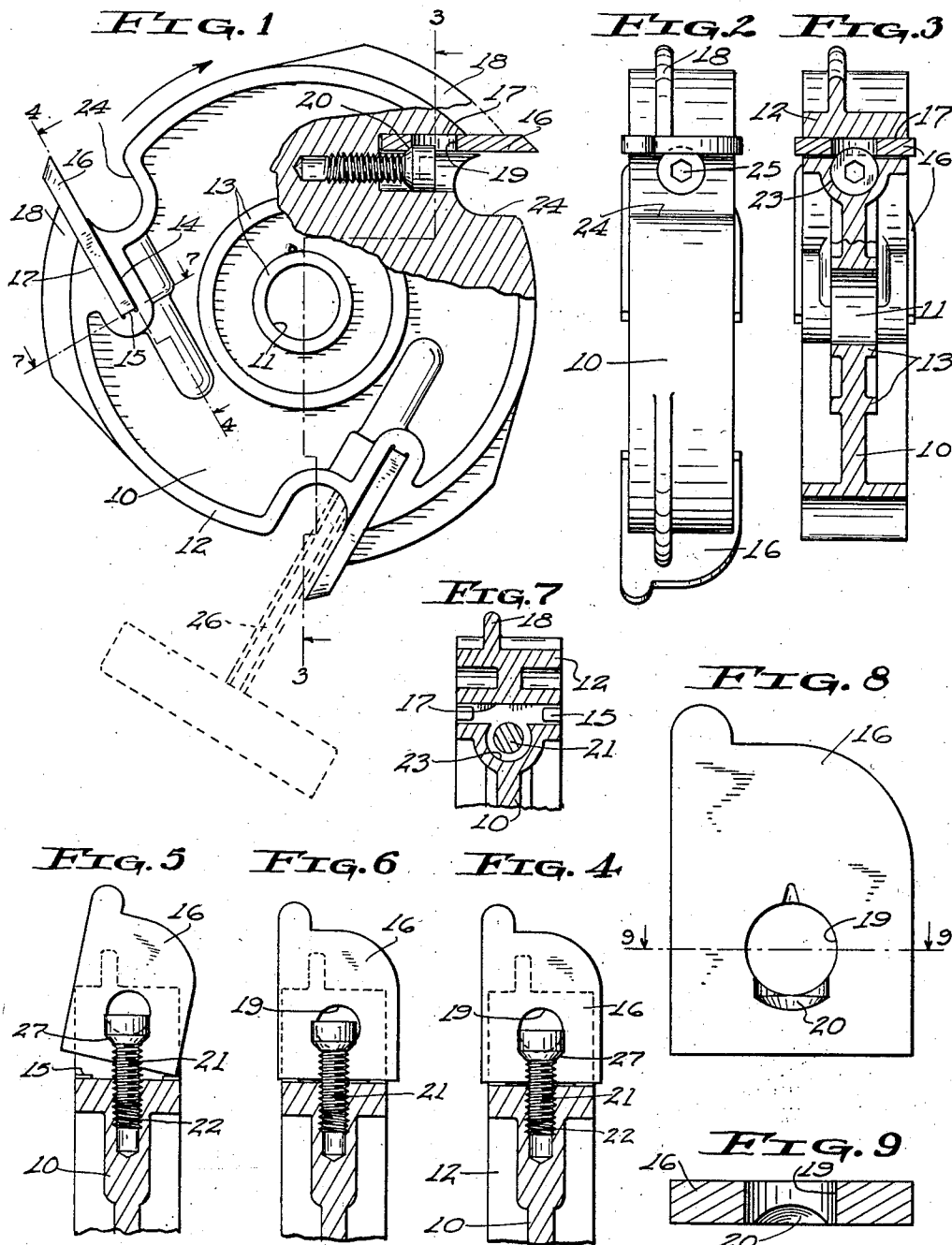
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CUTTER HEAD

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WITNESSES

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CUTTER HEAD

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The invention relates to cutter-heads for stickers.

The knives of a cutter-head used in a sticker are required to be accurately positioned and clamped in order to insure an equal division of work between the several knives and to prevent chattering. A high degree of skill has been required to properly install the knives on cutter-heads of usual construction, and, for this reason, such cutter-heads are unsuitable and too expensive for use in home workshop outfits, which are operated by amateurs who are unfamiliar with the technicalities involved.

In order to obviate these difficulties, it is an object of the present invention to provide a simple and inexpensive cutter-head in which the knives can be properly positioned and clamped by unskilled persons, thereby facilitating the changing of knives and rendering the device appropriate for use in home workshops.

Another object of the invention is to provide a die-cast cutter-head for insuring accuracy of construction and proper fit of parts, the cutter-head being adapted for the reception of interchangeable sets of knives which are so inexpensive that they can be discarded after they become dulled.

A further object of the invention is to provide a cutter-head, of this character in which each knife is held in position by a screw which performs several functions: namely, drawing the knife into end abutment with a seat to position the cutting edge of the knife at a predetermined distance from the axis of the cutter-head, squaring the knife with respect to such axis, centering the knife with respect to a plane of rotation, and forcing the knife rearwardly into firm engagement with a supporting wall.

The invention further consists in the several features hereinafter set forth and more particularly defined by the annexed claims.

In the accompanying drawings, Fig. 1 is a side elevation of a cutter-head embodying the invention, parts being broken away and parts being shown in section;

Fig. 2 is another elevation of the cutter-head;

Fig. 3 is a sectional view of the cutter-head taken along the line 3—3 of Fig. 1;

Fig. 4 is a detail sectional view of the knife mounting taken along the line 4—4 of Fig. 1;

Fig. 5 is a view similar to Fig. 4, but showing the knife before it is fully seated in position;

Fig. 6 is another similar view showing the knife in a different partially seated position;

Fig. 7 is a detail sectional view taken along the line 7—7 of Fig. 1;

Fig. 8 is a detail view of one of the knives, and

Fig. 9 is a sectional view of the knife taken along the line 9—9 of Fig. 8.

In these drawings, the numeral 10 designates a rotor which is provided with a central opening 11 for the reception of a suitably driven arbor, not shown. The rotor includes a disk-like web portion having integrally formed thereon a rim flange 12 and annular hub flanges 13. A plurality of knife-receiving slots 14 are formed in the periphery of the rotor between reentrant portions of the rim flange and extend transversely between opposite sides of the rotor. The slots 14 are spaced equally about the periphery of the rotor and are arranged tangentially with respect to a circle concentric with the axis of the rotor. The bottom wall of each slot is provided with a pair of nubs or small embossments 15 arranged near the opposite side faces of the rotor to receive thereagainst the bottom edge of a flat cutting blade or knife 16.

Each knife 16 is wider than the rotor 10 in order to project beyond the opposite side faces of the rotor and thereby permit deep cutting, and the exposed edge portions of the knife are sharpened to a pre-determined configuration. The flat back face of each knife bears against a back wall 17 of the slot 14, and to further support the outer portions of the knife, a radially-extending flange 18 is formed integrally on the rotor adjacent each slot. Each flange 18 is preferably offset from a central radial plane of the rotor toward the side of the knife having the greater radial projection.

Each knife is provided with an immediately disposed opening 19 therethrough at the lower edge of which a segmental conical seat 20 is formed in the front face of the knife. A socket-head screw 21 is threaded into an opening 22 formed in the rotor in front of each knife, the axis of the opening 22 being parallel to the knife. The cylindrical head of the screw fits closely within a bore 23 which communicates at its outer end with a transversely-extending curved recess 24 formed in the periphery of the rotor, the curved rearward wall of each recess forming a chip-breaker. The screw is provided with a polygonal socket 25 in its head portion adapted to receive the end of a suitable wrench or key 26. The head of the screw is provided with a conical shoulder 27 which is engageable with the conical seat 20 formed to clamp the knife firmly in position on the rotor. The several threaded openings 22 in the rotor are disposed in a common radial plane which extends substantially midway between the spaced embossments 15.

When installing a knife in place, the knife may assume an angular position, such as is shown in Fig. 5, but the act of turning the screw 21 into its threaded opening 22 urges the lower edge of the knife into the slot by rocking it on one nub until it seats on both nubs, thus positioning the cutting edge of the knife at a predetermined distance from the axis of the rotor, and also squaring the knife with respect to the axis of the rotor.

The knife may also assume the passing position seen in Fig. 6 in which the bottom edge of the knife rests against the nubs 15, but one side edge of the knife projects farther than it should from the side face of the rotor. However, the further turning of the screw will shift the knife laterally by reason of the cam action of the conical shoulder of the screw-head with the conical seat 20 on the knife, thereby centering the knife in its proper plane of rotation. Since the cylindrical screw-head fits closely within the bore 23, the centering of the knife is accurately effected. The engagement of the conical shoulder of the screw-head with the conical seat 20 on the knife also forces the knife rearwardly into firm engagement with the re-enforced rear wall 17 of the slot 14, thus anchoring the knife firmly in place to prevent chattering.

The knives in each set of three are identical with respect to their essential dimensions, so that when they are installed on the rotor in the manner above described, they will be accurately located in order that the work of cutting a molding will be equally divided among them. The rotor 10 is preferably a die-casting in order that its important dimensions will be accurately duplicated in other rotors, thereby rendering it possible to use any set of knives on any rotor with an assurance of effi-

cient operation. The knives can be honed from time to time to keep them in condition, but after they have become unserviceable, they can be discarded and be inexpensively replaced by another set of knives, thereby relieving the operator from the necessity of accurately resharpener the knives, which is beyond the capability of the average operator, especially an amateur operating a homework-shop.

The openings 19 formed in the knives facilitate the formation of the segmental conical seats 20, and also enable a matched set of knives to be wired or otherwise detachably retained together during heat-treating and sharpening operations. When a screw 21 is backed out of its threaded opening the head of the screw engaged the outer portions of the opening 19 in the corresponding knife, thus urging the knife outwardly and loosening the knife if it is jammed in the slot.

What I claim as new and desire to secure by Letters Patent is:

1. In a cutter-head, the combination of a rotor having a plurality of knife-receiving slots formed therein at its periphery and each presenting a bottom wall and a back wall, there being a pair of spaced embossments formed on said bottom wall adjacent the opposite side faces of the rotor, a plurality of knives respectively seated in said slots in engagement with the back walls and bottom wall embossments thereof and each knife having a conical seat formed thereon at an intermediate portion, and a plurality of screws threaded into said rotor, and each screw having a conical surface engaging the conical seat of the corresponding knife at a point between the embossments for retaining said knife in its slot against said bottom wall embossments and said back wall and for aligning the knife with respect to a pre-determined plane of rotation.

2. In a cutter-head, a rotor, there being a plurality of slots formed in its rim portion to receive knives therein projecting from said rim portion, and radially extending flanges integrally formed upon the periphery of said rim portion, each flange terminating at one end at one of said knife-receiving slots and in alignment with a back wall of said slot to form an abutment supportingly engageable with a face of a knife seated in said slot.

3. In a cutter-head, the combination of a rotor including a web disk and an integrally formed rim flange, said rim flange having a plurality of reentrant portions extending into said disk to form knife-receiving slots, knives seated in said slots, screws engaging said knives, and embossments formed integrally on said web disk adjacent the reentrant portions of said rim flange and having threaded bores therein receiving said screws.

In testimony whereof, I affix my signature.

HERBERT E. TAUTZ.