

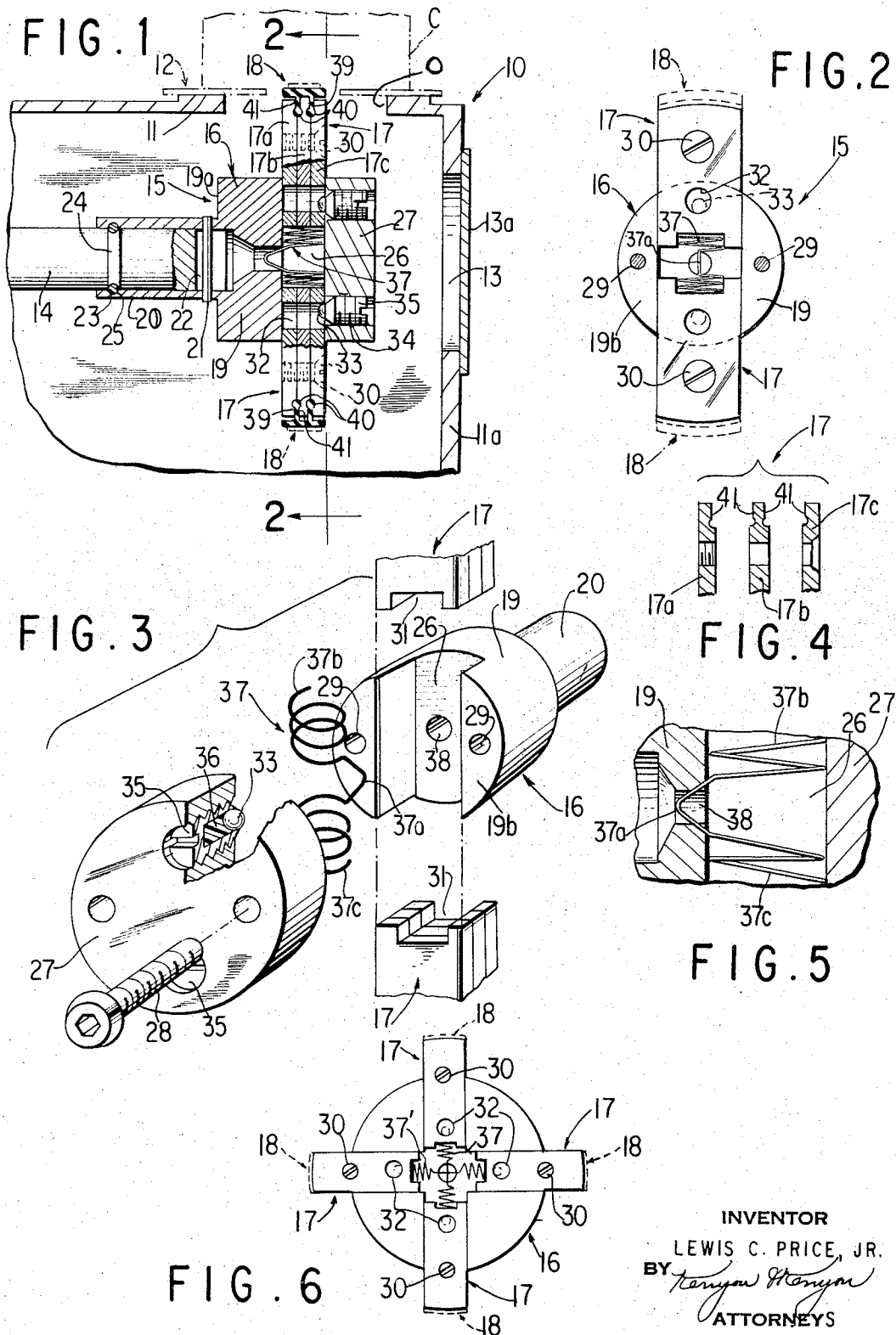
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L. C. PRICE, JR

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MARKING HEAD ASSEMBLY FOR CODE MARKING MACHINES

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INVENTOR
LEWIS C. PRICE, JR.
BY *Kernan Kernan*
ATTORNEYS

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MARKING HEAD ASSEMBLY FOR CODE MARKING MACHINES

Lewis C. Price, Jr., Yonkers, N.Y., assignor to Control Print Corporation, North Arlington, N.J., a corporation of New Jersey

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ABSTRACT OF THE DISCLOSURE

A readily removable marking head assembly for mounting on a shaft of a code marking machine wherein a hub member has a recess in which individual marking heads are removably and resiliently mountable, being biased radially outwardly by resilient spring members, and a cover for the recess secured to the hub member and having detents therein to engage the marking heads to retain them removably in the recess.

This invention relates to marking machines intended to apply a code marking or other insignia to containers by imprinting or other application thereof to a face of each container as it is moved through the machine.

In machines of this type, it is conventional to move containers on a conveyor past a mark-applying station at which a code mark or other insignia is applied, for example, to the bottom face of each successive container as it moves past said station on the conveyor. Generally in such machines, a mark-applying head is mounted on a drive shaft located at the mark-applying station and the shaft is periodically activated to bring the mark-applying portion of the mark-applying head into contact with the bottom surface of each successive container arriving at said station on the conveyor.

It is necessary, of course, to make the mark-applying head and its carrier readily removable from the drive shaft, so that the character of the mark applied may be readily changed as desired. Frequently, however, the drive shaft for the mark-applying head is located within the frame of the machine so that access to the shaft is difficult, and a very limited access opening in the machine frame only is available to reach this shaft. In fact, such opening usually is of such limited size as to prevent mounting and dismounting on the drive shaft of a completely assembled marking head and carrier therefor.

Objects and features of this invention are the provision of a novel marking head and carrier assembly in which the marking head or heads are readily separable from their carrier prior to its mounting on the shaft and remountable on the carrier after the latter has been applied to the shaft without need for tools of any kind, so that the carrier may be readily applied to or removed from the drive shaft through the limited size opening and the marking heads quickly mounted on the carrier subsequently, for example, from above the conveyor.

The marking heads themselves must be yieldably supported in their carrier to permit resilient radial displacability thereof during application of a mark to a container face to insure proper application of the mark thereto and, also, to allow for surface irregularities in said face.

Other objects and features of the invention, therefore, are the provision of means in the carrier to provide for such resilient radial displacability of the marking heads in their carrier.

Additional objects and features of the invention are to provide means for readily mounting and keying the carrier to the drive shaft without requiring the use of tools.

Yet other objects and features of the invention are to provide separable structure for the individual marking

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heads so that their mark-applying elements may be readily replaced when worn, thus avoiding any necessity for discarding the marking heads themselves at such times.

Other objects and features of the invention will become apparent from the following description and accompanying drawings, wherein:

FIG. 1 is an axial section of assembled marking heads and a carrier shown in position of use on a drive shaft of a marking machine at the marking station thereof;

FIG. 2 is a side elevational view taken along line 2—2 of FIG. 1 of assembled marking heads and a carrier;

FIG. 3 is an exploded perspective view of marking heads and their carrier to illustrate structural details;

FIG. 4 is a fragmentary exploded sectional view of details of a marking head;

FIG. 5 is an enlarged sectional view of carrier parts illustrating a detail of construction; and

FIG. 6 illustrates a modified construction of a plurality of marking heads and carrier embodying the invention.

Referring to the drawings: 10 denotes generally the frame of a marking machine over the upper surface 11 of which a conveyor 12 is adapted to be moved to carrying containers C whose bottom surfaces are intended to have a marking applied thereto at a marking station of the machine. The frame 10 has side skirt portions 11a (only one of which is shown) provided with a limited access opening 13 covered by a removable cover plate 13a. The limited access opening 13 is located in proximity to the marking station of the machine and lies opposite the horizontally disposed marking head drive shaft 14 of the machine which is driven intermittently in conventional manner (not shown) to cause marks of desired kind such as code imprints or embossments or the like to be applied to the bottom face of each successive container C delivered to the said marking station. The drive shaft 14 is intended to have a marking-head-carrier assembly 15 removably mounted thereon as will now be described.

The marking-head-carrier assembly 15 comprises a carrier 16 bearing one or more resiliently supported radially disposed marking heads 17, each of which at its outermost end bears a mark-applying element 18 having type legends or other code markings which it is desired to apply to the bottom faces of successive containers C.

The carrier 16 comprises a circular hub part 19 having a tubular, axially-extending portion 20 extending from one face 19a and admeasured to fit slidably onto the drive shaft 14. This tubular portion 20 has a diametrically extending pin 21 near face 19a which is adapted to be engaged in a diametrical slot 22 provided in the outer end of drive shaft 14 to key said carrier 16 for rotation with said shaft. The latter has a split ring coupler 23 mounted in an annular groove 24 of said shaft which is engageable in an annular groove 25 provided on the inner wall of the tubular portion 20. Thus, said tubular portion 20 is removably mountable on shaft 14 by engagement of split ring coupler 23 in said groove 25 and is keyed for rotation with said shaft when pin 21 engages in slot 22 of said shaft.

Circular part 19 has a diametrically extending slot of recess 26 in its face 19b and is provided with a circular cover member 27 which is removably secured to circular part 19 as by the threaded bolts 28 which engage correspondingly located threaded holes 29 in said circular part 19. With said cover member 27 in place, a diametrically extending substantially rectangularly sectioned hole is provided by slot 26 which is intended to receive the oppositely directed, radially extending marking heads 17.

These marking heads 17 each comprise several similarly dimensioned separate plies 17a, 17b, 17c of generally rectangular shape having circular arcuate outer ends. Said plies in assembly are removably secured together as by

threaded bolts 30. The inner ends of the respective plies are recessed to define slots 31. The plies of each head are provided with aligned transverse holes defining a continuous transverse detent opening 32.

Ball detents 33 are removably mounted in appropriate axially extending holes 34 in circular cover member 27 as by bolts 35 so as to project into said slot 26 at like radial distances from the central axis of said member 27. The ball detents 33 are resiliently carried in said bolts 35 being biased outwardly of their inner ends as by resilient bodies 36 of rubber or springs or other resilient material. The ball detents 33 are engageable in the respective detent openings 32 in respective marking heads 17 when the latter are inserted into slot 26, but are of somewhat smaller diameters than said openings 32 to permit radial displacement of said heads even when so engaged. During insertion of said heads 17 into said slot 26, the ball detents 33 are displaced into their respective bolts 35 against the biasing action of resilient bodies 36 and snap into engagement with respective detent holes 32 of said heads 17 when the latter become aligned with said ball detents.

Biasing means in the form of a double coil spring 37 is retained within the slot 26 as by its lateral projection 37a which engages in a notch or opening 38 in circular part 19. The opposite portions 37b and 37c of coil spring 37 are positioned to have their outer ends engage in end slots 31 in respective heads 17 so as to slidably bias the latter radially and oppositely outwardly of the hole 26 in part 19 to the limits permitted by ball detents 33 which engage in the larger detent holes 32. During applications of marks by the respective marking heads 17 to bottom faces of the containers C, these marking heads 17 thus may be shifted radially inwardly in slot 26 in opposition to the biasing action of the portions 37b or 37c of the coil spring 37 which engage their inner ends in slots 31. This yieldable mounting of heads 17 insures application of proper mark-applying pressure by the respective heads and accommodates the latter to any surface irregularities of the faces of the containers C being marked.

When the mark is to be applied as an imprinted one, the mark-applying elements 18 may be of rubber or other resilient material bearing desired print type. These elements 18 are secured at the outer ends of the respective heads 17. In the embodiment shown, these elements 18 on their lower faces bear projecting feet 39 with enlarged heads 40 which are positioned in complementary shaped recesses 41 defined in the faces of adjacent plies 17a, 17b, 17c of said head and are held securely therein by the clamping bolts 30. To replace a worn mark-applying element 18 or substitute one with different type face, it is simply necessary to pull the particular printing head 17 out of slot 26 against the action of a ball detent 33 and loosen clamping bolt 30 of the removed head to free the feet 39 of the particular element 18. A substitute element 18 is then assembled with the plies 17a, 17b and 17c which are again clamped together by bolt 30 and the re-assembled head 17 is then reinserted into slot 26 and again held in place by the associated ball detent 33.

In the embodiment shown in FIGS. 1-5, the carrier 15 only accommodates two marking heads 17 in its slot 26. If more than two marking heads are required, a second diametrical slot 26 disposed at right angles to the first, also containing ball detents and a spring 37' like spring 36 may be provided. This is illustrated in FIG. 6, wherein the carrier 16 carries four resiliently mounted marking heads 17 spaced 90° apart circumferentially. It is apparent that any desirable number of marking heads 17 may be supported by the carrier in the manner described at any selected angular relationship, requiring merely the provision of a slot like slot 26 and ball detents like ball detents 33 and biasing springs like spring 37.

In mounting an arrangement like that described to a limited access drive shaft 14 of a marking machine, the marking heads 17 are removed from the carrier 16. The latter then is mounted on said shaft 14 by sliding its tubular

portion 20 onto shaft 14 to engage pin 21 in shaft slot 22 and split ring 23 in groove 25, thus effectively coupling carrier 16 to said shaft 14. It is self-evident that the shaft slot 22 must be so positioned on drive shaft 14 that when the latter is idle, the engagement of cross pin 21 therein normally disposes the marking heads 17 below the surface of conveyor 12. When shaft 14 is rotated for effecting a marking, it thus likewise rotates the marking head carrier assembly 15 to project a particular head 17 upwardly of the surface of conveyor 12 to make an imprint from its mark-applying element 18 to the bottom face of a container C.

Then the separate marking heads 17 are mounted on the carrier 16 by insertion into slot 26 of said carrier 16 through a readily accessible top opening O of the machine at the marking station. For dismounting of individual heads 17 they are simply withdrawn from the carrier slot 26 through the same opening O. They may be subsequently replaced by substitutes which are then similarly mounted. With all heads 17 removed via opening O, the carrier 16 may be withdrawn readily from shaft 14 via the limited access frame opening 13 and replaced by other suitable carriers.

The marking heads 17 described are equipped with printing elements 18 bearing type print which are inked in conventional ways prior to rotation with shaft 14 into printing engagement with the bottom faces of containers C. Such printing elements 18 may be replaced in such heads by embossing elements or by burning elements designed respectively to press or burn a mark into the container faces if desired without requiring any material modification of the carrier or marking heads described. The marking heads may be of solid instead of ply construction described.

The carrier and marking head assembly may also be mounted on vertical or otherwise disposed drive shafts for application of a desired mark to any selected face and location on a container.

While specific embodiments of the invention have been described and shown, variations within the scope of the appended claims are possible and are contemplated. There is no intention of limitation to the exact abstract or disclosure herein presented.

What is claimed is:

1. A rotatable marking head assembly for container-marking machinery comprising a hub member having an end provided with a diametrical recess, marking heads removably mounted in said recess, resilient means biasing said marking heads in outward radial direction in said recess, said marking heads each having a detent opening therein, a cover member removably secured to said hub member, and resilient axially extending detent means in said cover member of smaller dimensions than said respective detent openings that snap into the latter for removably retaining each of said marking heads in said diametrical recess while permitting their radial movement in the latter.

2. A marking head assembly according to claim 1 wherein said hub member has an axially extending tubular mounting member for removably mounting said assembly on a shaft.

3. A marking head assembly according to claim 1 wherein said head comprises a plurality of independent plies having recesses at their outer radial ends, mark-applying elements carried in said last-named recesses and means for removably securing said plies together.

4. A marking head assembly according to claim 1 including radial biasing means for said heads comprising a coil spring removably mounted within said first-named recess to provide a yieldable outward radial bias to each said marking head relative to said hub member.

5. A marking head assembly according to claim 1 wherein said first-named end has a plurality of radially extending recesses and includes separately removable marking heads mounted in each of said last-named recesses.

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6. In a marking machine including a driven shaft positioned at a relatively difficult access location in said machine, the improvement comprising a removable and rotatable marking head assembly for ready mounting on said difficult access located shaft and including, a hub member, means thereon for removably mounting it on and coupling it to said shaft, said hub member having an end face with a diametrically extending recess, marking means removably mountable in said recess after said hub member has been mounted on and coupled to said shaft, resilient means located in said recess for biasing said marking means in outward radial direction in said recess, said marking means each having a detent opening therein, a cover member for said end and recess removably secured to said hub member, and resilient axially extending detent

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means of smaller dimensions than said respective detent openings that snap into the latter for removably retaining each of said marking means in said diametrically extending recess while permitting its radial movement therein.

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ROBERT E. PULFREY, *Primary Examiner*.

H. DINITZ, *Assistant Examiner*.