# United States Patent

**Carboni et al.**

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## [54] CLUTCH FOR PRINTING DEVICE


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[73] Assignee: **Consolidated Foods Corporation,** Chicago, Ill.



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[52] **U.S. Cl.** .....**192/48.91,** 192/44, 192/72, 192/95, 74/372, 101/105, 101/111

[51] **Int. Cl.**.....**F16d 21/02,** B41j 27/02

[58] **Field of Search**.....101/105, 106, 110, 111; 192/48.8, 48.9, 48.91, 48.92, 44, 72, 95; 74/371, 372



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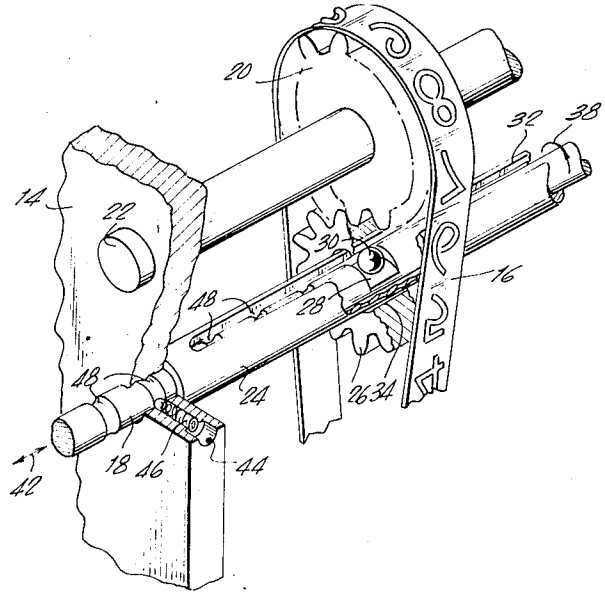
*Attorney*—Bierman & Bierman, Harry C. Bierman and Jordan B. Bierman



[57] **ABSTRACT**

Clutch means for controlling the repositioning of one or more repositionable printing devices such as indicia carrying bands is provided in which the printing device is carried on engageable means which are in turn mounted on the clutch means. The clutch means comprises a camming means and a contacting means, the camming means being adapted to move the contacting means into engagement with the engageable means to permit the repositioning of the printing device.


**9 Claims, 4 Drawing Figures**



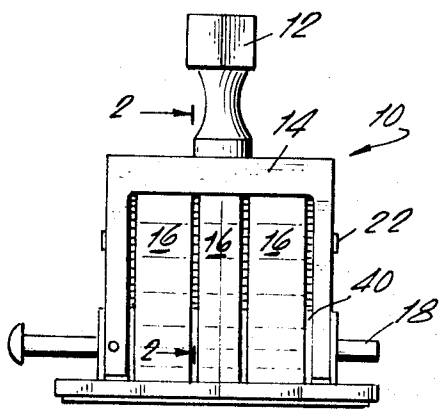
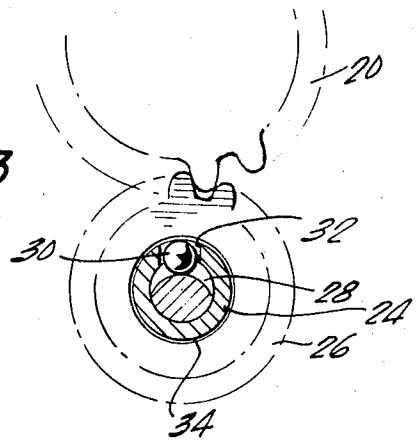



FIG. 1

FIG. 3



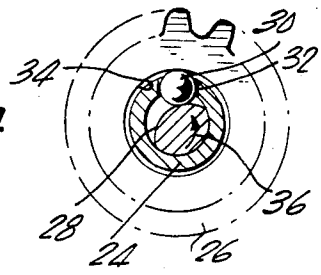




FIG. 4

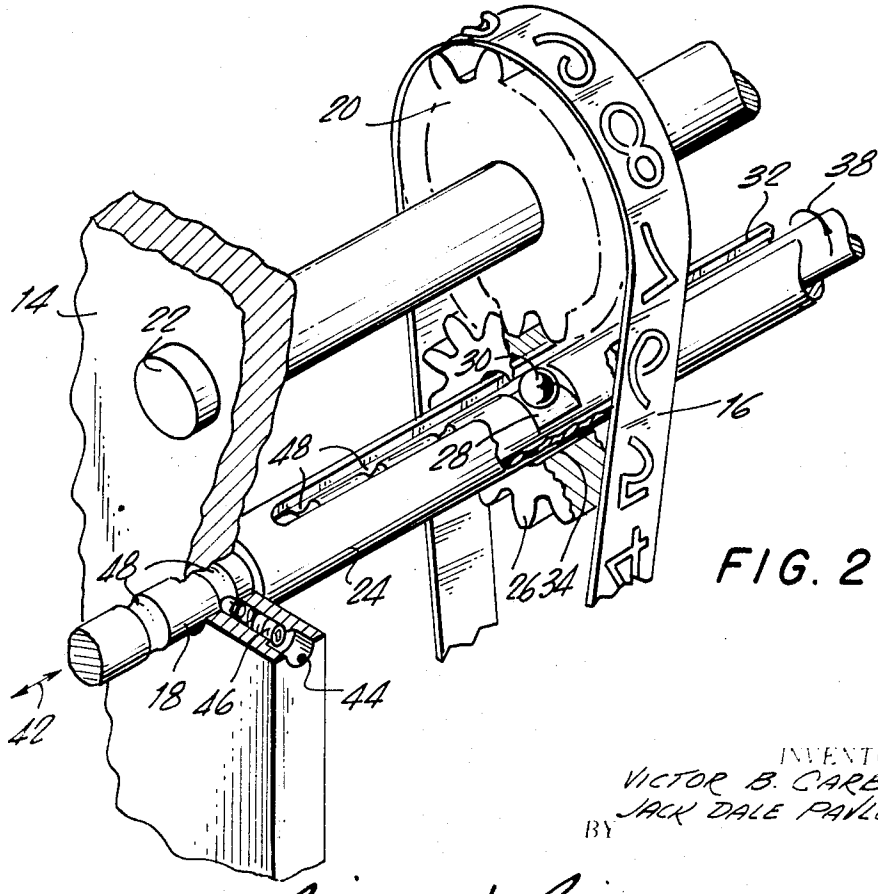



FIG. 2

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# CLUTCH FOR PRINTING DEVICE

This invention relates generally to clutch means for controlling the engagement and disengagement of a driven device and, more specifically, to controlling the engagement and disengagement of driving and driven gears in a printing apparatus.

In accordance with the present invention, a novel clutching means is provided which is adapted for selective engagement of one or more engageable means such as a gear: The gear is carried on a shaft which in turn movably carries the clutch means therein. The clutch means comprises caming means and a contacting means associated therewith. The contacting means are adapted to be pressed between the cam upon movement thereof and the engageable means to couple the hollow shaft to the engageable means so that, when the shaft is rotated, the engageable means is rotated conjointly therewith.

The clutch means of the present invention is particularly adapted for use in handprinting devices which utilize a number of separate indicia carrying members where individual movement of the indicia carrying members must be provided for. Examples of such printing devices are standard, readily available commercial printing devices, i.e., conventional changeable date stamps, pricing stamps and the like. Although the present invention is most particularly adapted for use in smaller printing devices, it may be used in any printing device requiring selective engagement of various indicia carrying members and it may further be used generally as a clutch in any type of apparatus requiring a clutch regardless of whether such apparatus in addition requires the clutch to have a selective engagement capability.

Referring now to the drawings in which like numerals refer to like parts:

FIG. **1** is a front plan view of a handprinting apparatus in which the clutch means of the present invention is particularly useful;

FIG. **2** is a perspective detailed view taken along Line **22** of FIG. **1** showing the clutch means of the present invention in position to engage a driving gear;

FIG. **3** is a detailed view of the clutch means shown in FIG. **2** in which the clutch means is shown in disengaged position;

FIG. **4** is a detailed view of the clutch means in FIG. **2** showing the clutch means in engaged position.

Referring now to FIG. **1**: FIG. **1** shows a hand stamp denoted generally by the numeral **10**. The hand stamp **10** is of generally conventional construction and comprises a handle **12** mounted on a frame **14**. Frame **14** has mounted thereon a plurality of indicia carrying bands **16**, each individually movable to bring different indicia into printing position by means later described. Control of the movement of the individual indicia carrying bands **16** is controlled by a shaft **18** which is adapted upon movement thereof to selectively engage one or more of the indicia carrying bands.

Referring now to FIG. **2**: The selective movement of the indicia carrying bands **16** can be more readily understood by referring to the enlarged view of FIG. **2**. As seen in FIG. **2**, the indicia carrying band **16** is mounted on a driven gear **20** which is in turn fixedly mounted on a rotatable shaft **22**. Rotatable shaft **22** is freely journaled in frame **14** to permit rotation of driven gear **20**. Mounted in frame **14** below rotatable shaft **22** is a shaft **18**. Shaft **18** is, in addition, carried in a hollow rotatable shaft **24** which in turn carries a driving gear **26**. Driving gear **26** is preferably loosely journaled in hollow rotatable shaft **24** for reasons described below.



Shaft **18** in the region of driving gear **26** is provided with a recessed surface **28** in which is carried a spherical ball **30**. Hollow rotatable shaft **24** is provided with a slot **32** which extends the greater part of the axial length of the hollow rotatable shaft **24**. The spherical ball **30** rides in this slot as shown in FIGS. **3** and **4** and in the position of shaft **18** shown in FIGS. **2** and **3** the spherical ball **30** is maintained out of contact with the inner surface **34** of driving gear **26**.

As stated above, shaft **18** is rotatable with respect to hollow rotatable shaft **24**. Upon rotation of shaft **18** in the direction of arrow **36** in FIG. **4**, the recessed surface **28** will be rotated and the spherical ball **30** will be moved upwardly in slot **32** into contact with inner surface **34** of gear **26**. As pressure is applied by continued rotation of shaft **18**, spherical ball **30** will positively engage driving gear **26** and hollow rotatable shaft **24** to cause both to rotate in the direction of the arrow **38** in FIG. **2**. Rotation of driving gear **26** will, of course, rotate driven gear **20** to move the indicia carrying band **16**. The rotation of shaft **18** may be continued until the proper indicia is brought to the desired location; for example, the bottom surface of the stamp shown in FIG. **1**. Of course, another gear such as **40** (FIG. **1**) is used to tension the indicia carrying band **16** so that rotation of the driven gear **20** will cause movement of the indicia carrying band **16**.

FIGS. **2**, **3** and **4** show the operation of the novel clutch means of the present invention with one set of driven and driving gears. The unique clutch means of the present invention is easily adapted to selectively engage one of a number of indicia carrying bands without disturbing the setting of the others. More specifically, this is achieved by providing an axial adjustment capability of the shaft **18** in the direction of the arrow **42** (FIG. **2**). To control the axial position of the shaft **18**, a bore **44** is provided in frame **14**. A spring loaded set screw **46** is mounted in the bore **44** and is adapted to engage a plurality of notches **48** placed on the circumference of the shaft **18**. The notches **48** correspond to different indicia carrying bands **16** and may be so marked. It can readily be appreciated that, when the shaft **18** is in the position in FIGS. **2** and **3**, it can be moved axially to engage any one of the three indicia carrying bands **16** shown in FIG. **1** to selectively and individually move each of the indicia carrying bands **16** without disturbing the position of any of the other indicia carrying bands.

Although only one embodiment of the clutch means of the instant invention has been depicted and described above, it will be apparent that many other forms of clutch means embodying the general principle of the instant invention may be used. For example, instead of a recessed cam surface as shown, the cam surface may constitute a raised projection on the shaft **18** such that, when the shaft is axially moved, the spherical ball **30** will be caused to move upwardly on the cam surface to engage driving gear **26**. In such case, it is not necessary to rotate shaft **18** to cause the spherical ball **30** to engage the driving gear. The same notches **48** may be utilized to locate the shaft **18** for each specific

indicia carrying band 16 but the notches 48 will have greater axial length to permit the axial movement necessary to cause the spherical ball 30 to engage the driving gear. If desired, a detent may be provided in each elongated notch 48 to releasably lock the shaft in its camming position to permit movement of the indicia carrying band. Although gears have been shown for moving indicia carrying bands, it is contemplated that other types of engageable means such as friction couplings may be utilized instead. Still further, it is not necessary to utilize indicia carrying bands and, in some cases, it may be desirable to place the indicia directly on the land area of the individual gear teeth.

It will be apparent that many modifications of the above-described embodiments will become apparent to those skilled in the art and it is intended to cover all such modifications which do not depart from the spirit and scope of the invention as defined in the appended claims.

What is claimed is:

1. In an apparatus of the type having one or more engageable means therein for controlling the positioning of one or more printing devices, the improvement comprising a clutch means for controlling engagement of said engageable means, said clutch means comprising camming means adapted for association with at least one of said engageable means, said camming means comprising a rotatable shaft having a cam recess in its surface, contacting means associated with said recess for contacting at least one said engageable means, said camming means being moveable between a first position in which said contacting means is in contact with said at least one engageable means to permit movement of the said printing device and a second position in which said contacting means is out of contact with said at least one engageable means.

2. The apparatus specified in claim 1 wherein said contacting means is carried on said cam surface.

3. The apparatus specified in claim 2 wherein said contacting means is a spherical ball.

4. The apparatus specified in claim 1 wherein said engageable means are gears.

5. The apparatus specified in claim 1 further comprising a rotatable hollow shaft, said camming means being carried in said rotatable hollow shaft and being adapted to move between said first and second positions independently of said hollow shaft, at least one of said engageable means being mounted on said hollow shaft and covering said contacting means, said camming means upon movement from said second to said first position being adapted to wedge said contacting means against said at least one engageable means to permit the movement of said printing device.

6. The apparatus specified in claim 5 wherein there are at least two said printing devices and separate engageable means for controlling the positioning of each said printing device, said hollow shaft having an elongated slot therein for carrying said contacting means, said camming means being carried inside said hollow shaft and being rotatable with respect to said hollow shaft, said camming means being axially movable in said hollow shaft and in said slot for selectively engaging the engageable means associated with each printing device whereby each printing device is repositionable individually.

7. The apparatus specified in claim 6 wherein said camming means comprises a rotatable shaft having a cam surface thereon, and wherein said camming means is a spherical ball carried on said rotatable shaft and within said slot.

8. The apparatus specified in claim 1 wherein there are more than one engageable means and wherein said camming means is selectively movable into operative association with anyone of said engageable means.

9. A printing apparatus comprising one or more printing devices and a rotatable shaft on which said printing devices are mounted, one engageable means for each said printing device, a second rotatable shaft, said engageable means being loosely mounted on said second shaft and in engagement with at least one printing device, clutch means, said clutch means comprising a camming means adapted for selective association with any one of said engageable means, said clutch means being mounted on said second shaft, contacting means associated with said camming means for selectively contacting one said engageable means, said camming means being moveable between a first position in which said contacting means is in contact with said at least one engageable means such that upon rotation of said second rotatable shaft said camming means is moved into engagement with a selected one of said engageable means to cause said engageable means and its associated printing device to move to a different position, said movement being limited only to the particular engageable means and its associated printing device, and a second position in which said contacting means is out of contact with any of said engageable means.

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