

[54] ANTI-REVERSE ODOMETER ONE-WAY DRIVE

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617,143	1/1899	Corser	192/46
2,077,666	4/1937	Bliss	235/95 X
3,458,127	7/1969	Hermann	235/95
3,486,597	12/1969	Carlton	192/46
3,506,191	4/1970	Allen	235/96

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 [58] Field of Search 235/95, 96, 91, 117 R; 192/46

[57] ABSTRACT

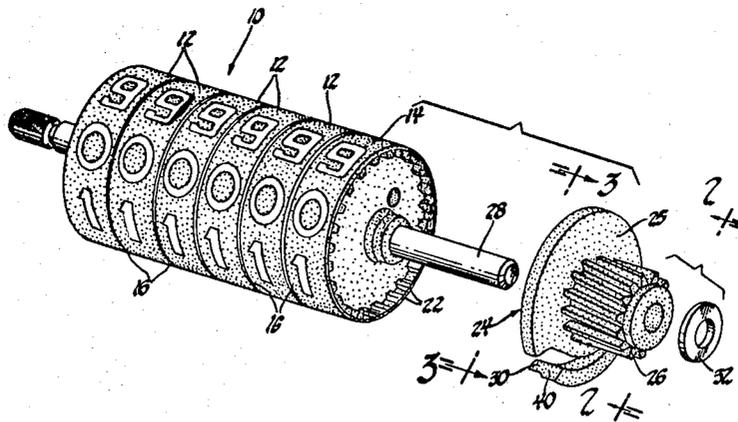
This invention relates to a drive mechanism adapted to drive a plurality of numbered or counting wheels such as those commonly found in use on odometers wherein the drive mechanism comprises a flexible finger which drives the counter in a forward or counting direction, but prevents driving the counter in the reverse direction.

[56] References Cited

UNITED STATES PATENTS

3,516,603	6/1970	Hachtel	235/95
3,200,918	8/1965	Horn	192/46

3 Claims, 3 Drawing Figures



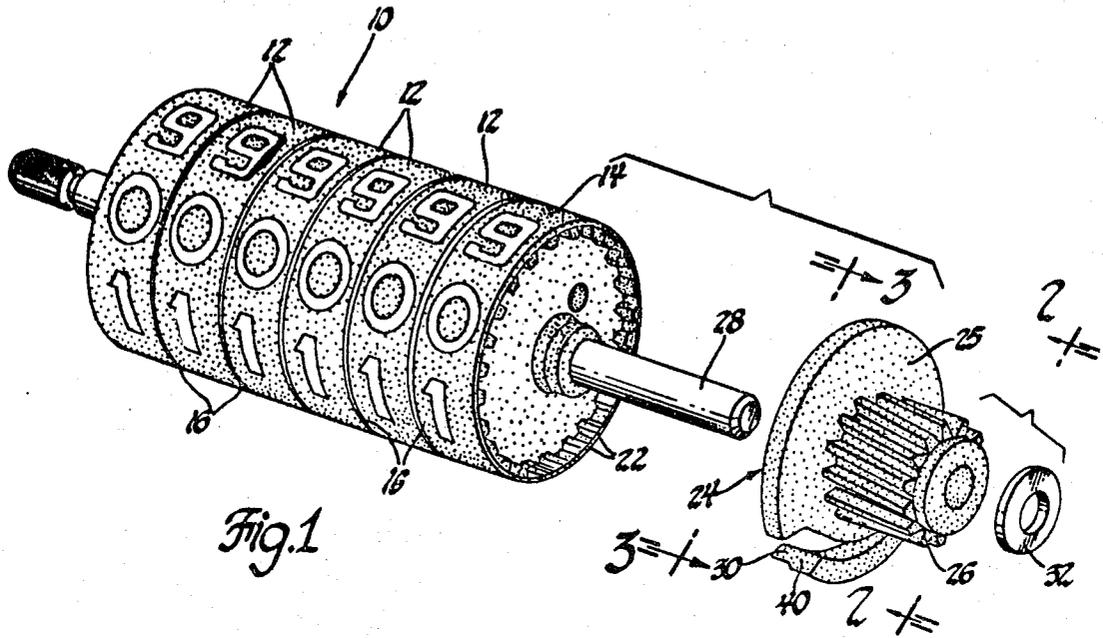


Fig. 1

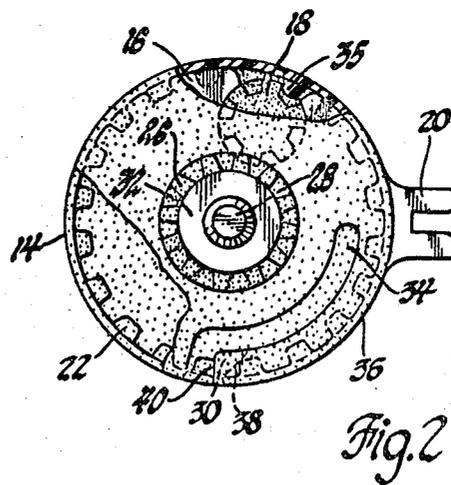


Fig. 2

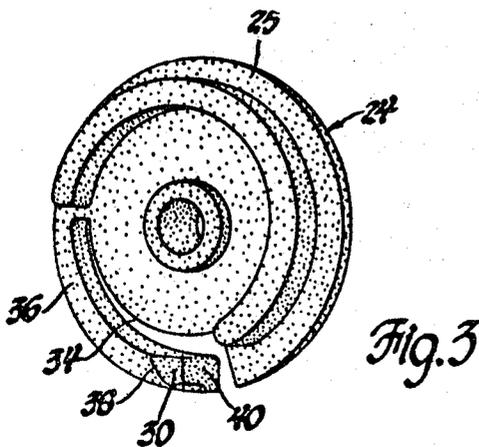


Fig. 3

ANTI-REVERSE ODOMETER ONE-WAY DRIVE

The invention relates to a drive mechanism for use on a counting device and, more specifically, for use on a counting device such as an odometer, wherein the drive mechanism includes an integrally formed flexible finger arrangement and the removal of the backward transfer tooth on the first numbered wheel that operate to prevent reversal of the counting device or odometer.

This invention is an improvement over the assignee's U.S. Pat. No. 3,516,603 in that the flexible finger can be integrally formed on the drive mechanism and the backward transfer tooth easily eliminated during molding, thereby requiring no additional parts as is required in U.S. Pat. No. 3,516,603 in the form of a slot and tab to achieve the same results. It can be readily used on counting devices or odometers of the type shown and described in U.S. Pat. No. 3,137,444 wherein the components shown in the patent are basically the same as those of this invention, with the exception of the modified drive mechanism of this invention which can easily be added as an improvement to similar counting devices to prevent the reversing or turning back of the numbered wheels on such devices to show a lesser reading than that actually counted.

An object of the invention is to provide a simple and inexpensive drive mechanism which includes an integrally formed finger as part of the drive plate that will disengage when operated in a different direction from that of its normal drive mode.

These and the other features of the invention will be readily apparent from the drawings wherein:

FIG. 1 is a perspective view showing the drive mechanism disassembled from the numbered wheels;

FIG. 2 is a view looking in the direction of arrows 2—2 of FIG. 1 showing parts broken away; and

FIG. 3 is a view looking in the direction of arrows 3—3 of FIG. 1 and showing the details of the drive mechanism and integrally formed disengageable finger.

FIG. 1 shows a counter device 10 having a number of counting wheels 12, 14 adjacent carrier or partition plates 16, wherein plates 16 separate the counting wheels and also serve as a carrier means for the pinion gears 18. Gear 18 operates to move the respective counting wheels. Notched tongue 20 formed on each plate 16 is used in conjunction with a fixed pin on the housing of the odometer (not shown) to assure a non-rotative position of the carrier plates 16. U.S. Pat. No. 3,137,444 adequately describes and sets forth the operation of the counting device and movement of the numbered wheels in the forward direction by the pinion gears operating in conjunction with the carrier plates and numbered wheels.

Number wheel 14, the decimal wheel normally the first wheel on an odometer that generally indicates a reading in tenths, has formed on the interior circumference thereof inwardly projecting gear teeth 22 to form a sun gear on the inward edge of the numbered wheels. Drive mechanism 24, comprising a drive plate 25 having an integrally formed gear 26 thereon, mates with shaft 28 to form one end plate and functions to drive the numbered wheels through integral driven gear 26 and drive tooth 30 and teeth 22. A retaining washer 32 or a similar retaining member holds the complete assembly in proper operational alignment. The assembly thus far described is conventional as shown in U.S. Pat. No. 3,137,444.

In accordance with my invention, drive plate 25 is slotted or undercut as at 34 as shown in FIGS. 2 and 3 to form a movable finger 36 as an integrated flexible part thereof. Tooth 30 is integrally formed on finger 36 and has a cam or angled surface 38 formed on one side and a blunt or straight surface 40 formed at opposite the side. The blunt or straight surface 40 fits between the inwardly projecting gear teeth 22 on the numbered wheel 14 and is constructed in such a manner that during the normal operation or forward drive operation of the

odometer, the drive tooth 30 abuts one of the gear teeth 22 to drive the odometer. When the drive mechanism 24 is reversed, gear 18, due to the removal of the backward transfer tooth, locks on forward transfer tooth 35 to stop rearward or reverse movement of numbered wheel 14 and finger 36 through operation of the cam or angular surface 38 and deflective movement of finger 36 into the space 34, disengages tooth 30 from driving, wherein tooth 30 slips over teeth 22 accomplishing a free wheeling operation of the drive mechanism while the numbered wheels remain stationary, thereby preventing the reversal of the numbered wheels on the odometer. While the angular surface, as best shown in FIG. 2, causes radial movement of the finger 36, the surface can be so formed on the tooth 30 so as to cause the finger to move axially out of the gear teeth 22.

The integral finger and cam surface can be formed very simply during the molding of the drive plate and the backward transfer tooth easily eliminated thereby requiring no additional parts in order to have an operative anti-reverse drive mechanism.

It can be seen from the foregoing I have provided a simple and inexpensive means of preventing reversal of a counting device or odometer by slip action of a flexible finger formed integrally on a commonly used drive mechanism.

I claim:

1. In a counting device, a plurality of number wheels mounted in side-by-side relation to indicate digitally the rotation of a drive mechanism in a predetermined direction, the number wheel representing the least significant digit defining an internally toothed surface telescoped over a drive mechanism, the invention comprising an improved drive mechanism adapted to be rotated about the axis of said device and defining a disc-like drive plate having a portion that defines a flexible finger formed within the perimeter thereof, said finger having a tooth thereon adapted to engage the teeth of the least significant numbered wheel and rotate said wheel when the drive mechanism is driven in one direction, and to slip over said teeth when driven in the opposite direction to allow said drive mechanism to free wheel and thereby prevent turn-back of the numbered wheels.

2. In a counting device, a plurality of number wheels mounted in side-by-side relation coaxial with a drive mechanism to indicate digitally the rotation of the drive mechanism in a predetermined direction, the number wheel representing the least significant digit defining an internally toothed surface telescoped over said drive mechanism, wherein the invention comprises an improved drive mechanism adapted to be rotated about an axis and defining a disc-like drive plate having a cut-away portion that defines a flexible finger formed within the perimeter of the drive plate, said finger having a tooth thereon adapted to engage the teeth of the least significant numbered wheel when the drive mechanism is driven in one direction, and to be moved into the cut-away portion to slip over the teeth of the least significant numbered wheel, when the drive member is driven in the opposite direction, to allow said drive mechanism to free wheel and thereby prevent reversal of the numbered wheels.

3. The invention as set forth in claim 2 wherein said drive plate and flexible finger are integrally molded, with said flexible finger being arcuate in shape, and generally formed along a radius inwardly from the perimeter of said drive plate, and spaced from the main body of said drive plate so as to define the undercut portion, said tooth on said finger having a surface on one side that mates with the teeth on the least significant numbered wheel to drive said counting device, and a cam surface on the opposite side that slides over the teeth on said least numbered wheel, to thereby cause the flexible finger to deflect into the undercut portion on said drive member and slip to prevent rotation in the reverse direction.

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