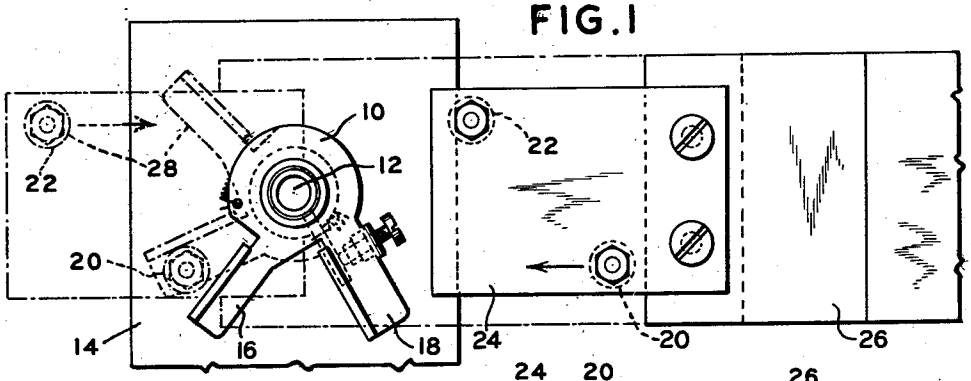
March 31, 1964 L. EICKHOFF 3,126,751

SHAFT POSITIONING DEVICE

Filed June 20, 1961

FIG. 1



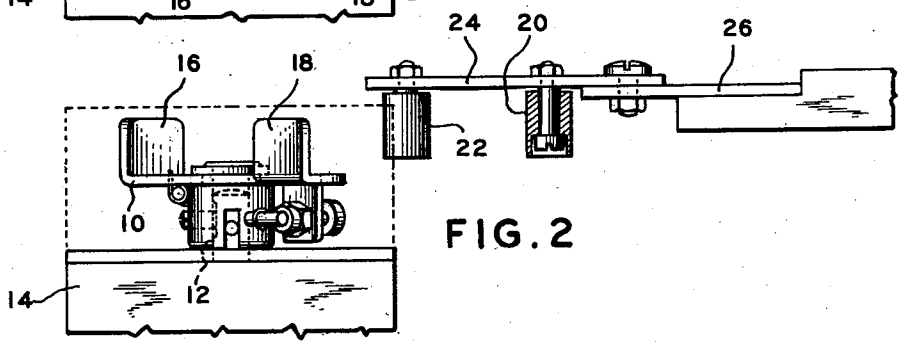
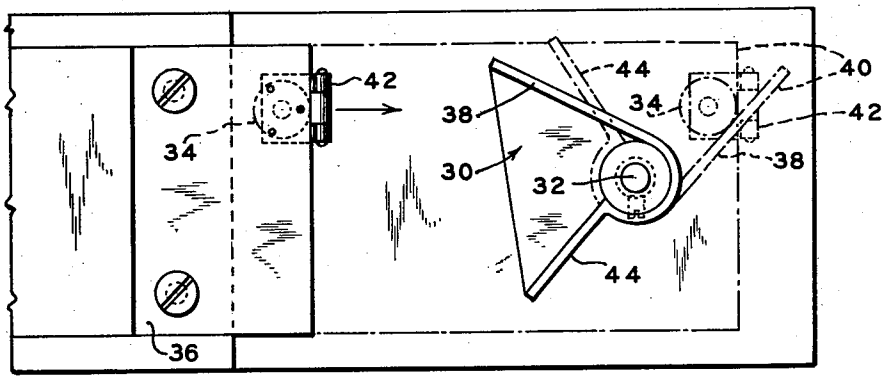


FIG. 2

FIG. 3



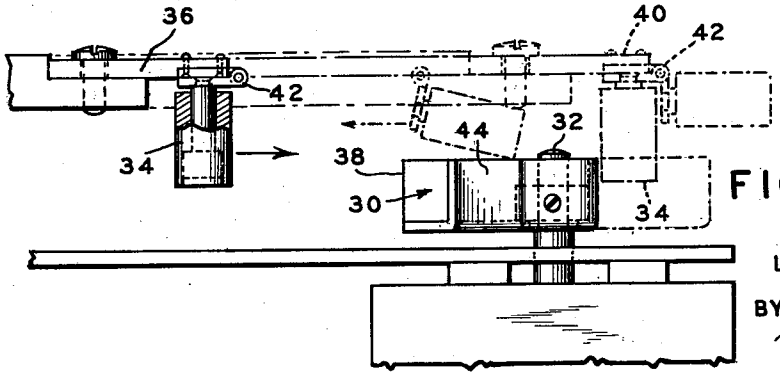


FIG. 4

INVENTOR
LOUIS EICKHOFF

BY

ATTORNEY

United States Patent Office 3,126,751 Patented Mar. 31, 1964

3,126,751

SHAFT POSITIONING DEVICE

Louis Eickhoff, % Robco Corp., 235 W. Main St., Patchogue, N.Y.

Filed June 20, 1961, Ser. No. 118,324
2 Claims. (Cl. 74—129)

This invention relates to a positioning device for a rotatable shaft which permits a slide mechanism to rotate the shaft through a large angular movement.

In devices which utilize coin operated timing mechanisms to establish a desired sequence of operation and timing interval, a rotatable shaft is usual positioned at a particular angular setting by the movement of a coin slide and receiving unit. The coin slide engages a lever or collar arm connected to the shaft to rotate the shaft to the desired position. The slide generally has a limited movement or stroke and cannot provide more than a small angular rotation which may be inadequate in certain applications. Some devices provide greater shaft movement by utilizing complex stepped gears which permit an accumulation of coins or employ specially designed timers. However, it is difficult to increase this angular range within the limits imposed by the standard timing device and the movement of a common coin receiver.

It is, therefore, the object of the present invention to provide a novel device which permits a simple coin slide to drive a shaft of a standard timing device through a large angular rotation.

The present invention utilizes a novel positioning mechanism for a shaft, which incorporates two radially positioned arms engageable with the coin slide. In one form, a pair of rollers on the coin slide separately engage each arm to rotate the shaft on both the forward and return strokes of the slide. Another form of the invention utilizes one pivotally secured roller to engage each arm alternately on two separate strokes of the coin slide.

The detailed description and accompanying drawings which follow, consider the invention in certain particular configurations. It is to be understood that these represent embodiments chosen for the purpose of explanation and illustration and are not to be construed as defining the limits of the instant invention.

FIG. 1 is a top view of the novel positioning mechanism and one form of coin slide adapted to drive the shaft.

FIG. 2 is a side view thereof.

FIG. 3 is a top view of the novel positioning mechanism operated in conjunction with a second form of coin slide mechanism.

FIG. 4 is a side view of the second configuration.

As shown in FIGS. 1 and 2, a collar plate **10** is secured to a rotatable shaft **12** of a timing device enclosure **14**. The plate may be secured to the shaft by means of an incrementally adjustable positioning mechanism such as more fully described in co-pending application No. 847,976, filed October 22, 1959 in the name of Louis Eickhoff, now Patent No. 2,896,023 and assigned to the same assignee as the instant application. The collar plate described in that application incorporates one upright arm engageable with a single roller affixed to the coin slide, and, therefore, is limited in the extent of its angular movement. The present collar plate, however, utilizes a pair of radially arranged upright arms **16** and **18** angularly spaced at predetermined positions. The arms are located to be separately engaged by rollers **20** and **22** mounted on the underside of an extension plate **24** on coin slide **26**, as shown in the first form of the invention.

When a coin is inserted into the receptacle, the slide is moved forward so that roller **20** engages arm **18** to rotate the shaft clockwise to a position determined by the stroke or the extent of forward movement of the slide. As roller **20** moves arm **18**, forwardly positioned roller **22** by-passes the similarly rotating arm **16**, until the latter arm reaches a point in line with and behind roller **22**. Roller **22** is so positioned and spaced from roller **20** that arm **16** moves between the two rollers and is then in a position to be engaged by roller **22** on the return stroke of the slide, to achieve the full shaft rotation. The limit of the forward movement of the slide rollers and collar arms are shown by dotted lines **28**. Thus the use of two rollers and arms permit a substantially greater angular rotation of shaft **12** and meets a different timing interval requirement with the same timer than could be obtained by the usual single arm and roller.

The configuration shown in FIGS. 3 and 4 utilizes a similar double arm collar plate **30** affixed to the shaft **32**. However, since only one roller **34** is secured to the coin slide **36**, the arms are positioned to permit movement on consecutive forward strokes. In this instance the roller is inserted between the two arms to engage arm **38** on the first forward stroke, with the extended position shown by dotted lines **40**. The roller is connected to the slide by hinge **42** to pivot outwardly on the return stroke so that passage over the second arm **44** occurs without causing the shaft to move back. A second forward stroke of the slide then rotates arm **44** to complete the positioning of the shaft at a particular angular setting. Thereafter, the timing mechanism is actuated to continue movement of the shaft to establish a predetermined timing interval or control the performance of a desired operating sequence.

It may thus be seen that the present novel device provides a simple collar configuration which achieves a larger angular setting for a rotatable shaft than ordinarily obtainable with a slide mechanism. While particular embodiments of the invention have been illustrated, it is apparent that the device is not limited to the exact forms or uses indicated and that many other variations may be made in the instant design and configuration without departing from the scope of the invention as set forth in the appended claims.

I claim:

1. In a coin-operated timing mechanism, means for driving the shaft of a timing device, comprising a coin slide which is mounted for linear movement adjacent the end of said shaft, perpendicular to the longitudinal axis thereof, said coin slide having a pair of rollers mounted thereon on opposite sides of said shaft, one of said rollers being forward of the other, a collar secured to said shaft, a pin connected to said collar and projecting radially therefrom, a plate rotatably mounted on said collar, the axis of rotation of said plate coinciding with the longitudinal axis of the shaft, a pair of angularly spaced arms projecting radially from said plate, an adjustable screw mounted on one of said arms for engagement with said pin, a spring mounted between said collar and said plate and biased to urge said screw and said pin into and maintain them in engagement with each other, said arms being so positioned on said collar as to be engageable by said rollers on the coin slide, in such sequence that when the coin slide is moved in one direction across the end of said shaft one of said rollers engages one of said arms and drives it angularly about the axis of the shaft, thereby driving said shaft in the same angular direction by reason of the engagement of said screw with said pin on said collar, and when the coin slide is then moved in the opposite direction across the end of said shaft the second roller engages the second arm and drives it angularly about the axis of said shaft, in the same angular direction as the first arm was driven by the first roller, thereby further rotating the shaft through said screw,

pin and collar, to a pre-determined angular position relative to its starting position.

2. In a coin operated timing mechanism, means for driving the shaft of a timing device, comprising a coin slide which is mounted for linear movement adjacent the end of said shaft, perpendicular to the longitudinal axis thereof, said coin slide having a pair of cam elements mounted thereon on opposite sides of said shaft, one of said cam elements being forward of the other, a pair of angularly spaced arms adjustably secured to said shaft, said arms being so positioned as to be engageable by said cam elements on the coin slide in such sequence that when the coin slide is moved in one direction across the end of said shaft one of said cam elements engages one of said arms and drives it angularly about the axis of

the shaft, thereby driving said shaft in the same angular direction, and when the coin slide is then moved in the opposite direction across the end of said shaft the second cam element engages the second arm and drives it angularly about the axis of the shaft in the same angular direction as the first arm was driven by the first cam element, thereby further rotating the shaft to a predetermined angular position relative to its starting position.

References Cited in the file of this patent

UNITED STATES PATENTS

2,627,755	Hooker	Feb. 10, 1953
2,942,486	Beguin	June 28, 1960
2,947,186	Greenwald	Aug. 2, 1960