

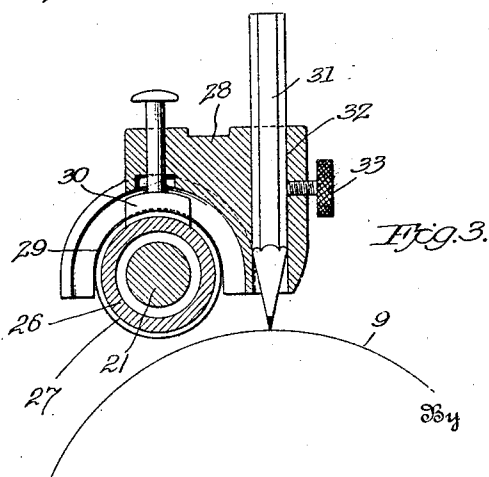
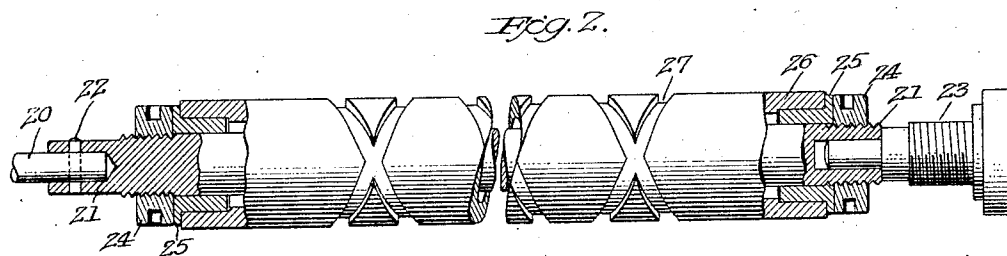
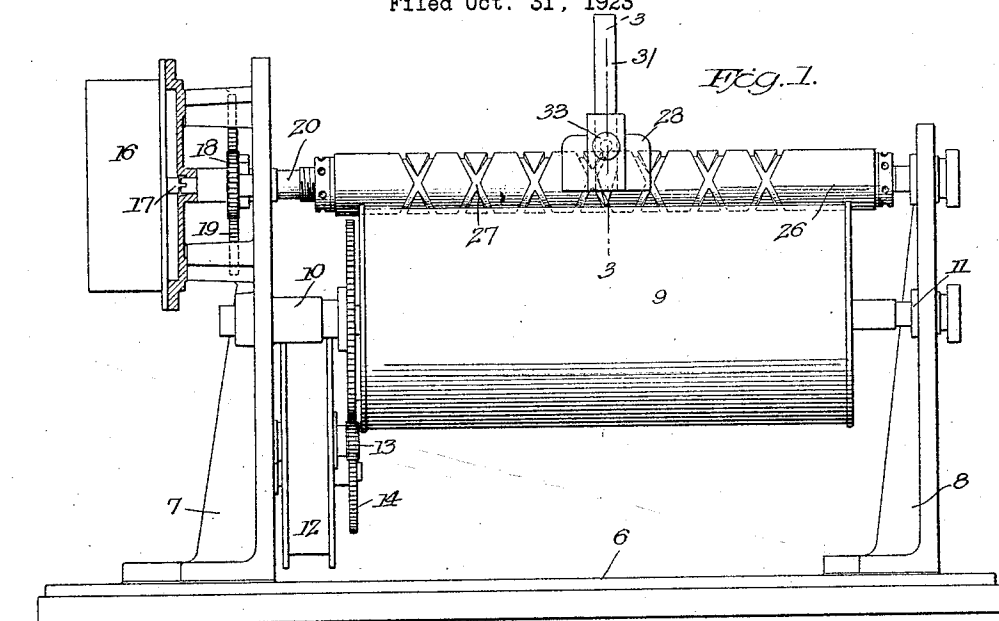
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W. L. EGY ET AL

RECORDER

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UNITED STATES PATENT OFFICE.

WILLARD L. EGY AND ROBERT P. DODDS, OF TROY, NEW YORK, ASSIGNORS TO W. & L. E. GURLEY, OF TROY, NEW YORK, A CORPORATION OF NEW YORK.

RECORDER.

Application filed October 31, 1923. Serial No. 671,987.

To all whom it may concern:

Be it known that we, WILLARD L. EGY and ROBERT P. DODDS, citizens of the United States, residing at Troy, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Recorders, of which the following is a specification.

This invention relates to recorders and particularly to details of the construction of the marker carriage, and the feeding mechanism therefor.

The object of the invention is to provide a structure in which the carriage may be readily removed and replaced, in which the carriage may be quickly adjusted to time and in which the rate of feed of the carriage may readily be changed by interchanging the carriage feeding element or lead screw.

The ready removability of the carriage is secured by merely causing it to straddle the feed screw, the carriage being so arranged that it is guided conjointly by the lead screw and by the record drum. Convenient interchangeability of the feeding element or lead screw is secured by forming the screw on a removable sleeve which is clamped on a clock-driven arbor by means of centering bushings and nuts. This construction also permits the sleeve to be rotated relatively to the arbor and clamped in adjusted relation thereto. In this way the position of the carriage may be adjusted so that the marking made by the pencil or stylus has the proper relation to the time rulings on the record sheet.

A preferred embodiment of the invention is illustrated in an accompanying drawing in which:

Fig. 1 is a side elevation of so much of a water stage recorder as is necessary to illustrate the invention;

Fig. 2 is an enlarged view of the carriage feeding member partly in elevation and partly in longitudinal axial section; and

Fig. 3 is an enlarged section on the line 3—3 of Fig. 1 showing how the marker carriage is guided and fed.

Many parts of the recorder, not essential to the understanding of the present invention, are only conventionally illustrated.

The recorder is supported on a base 6, which carries near its opposite ends two up-standing frame members 7 and 8. The rec-

ord drum 9, which is of the usual form, is journaled at one end in a bearing 10, formed in the frame member 7, and at the other end in a bearing 11, carried by the frame member 8. The drum may be driven in any suitable manner, but I show a mechanism commonly used with water stage recorders. This consists of a sprocket pulley 12, having the usual projecting pins to coact with the perforated bronze tape (not shown) customarily used to convey the motion of the float to the sprocket 12. The sprocket 12 has fixed to it a spur pinion 13 which drives a spur gear 15 through an idler 14. Any desired drive for the drum 9 may be substituted so far as the present invention is concerned.

A clock 16, of any suitable form, is mounted on the frame member 7. Its hour shaft is indicated at 17 and drives through a reduction train, consisting of the gears 18 and 19, a stub shaft 20. This stub shaft 20 supports and centers one end of an arbor 21, which fits over it, and which is connected to it by means of a removable drift or pin 22.

The opposite end of the arbor 21 is supported by a retractable journal member which enters a bearing formed in the end of the arbor 21, and which is generally indicated by the numeral 23. The retractable journal 23 is threaded into the frame member 8. By removing the journal 23 and the drift 22, it is possible to remove the arbor 21 from the recorder. The arbor 21 is threaded near its opposite ends to receive capstan nuts 24, which engage flanged bushings 25. These fit snugly on the arbor 21, and within the ends of a sleeve 26 clamped between them.

The sleeve 26 is formed with an endless groove 27, that is to say, with two reversely pitched helical grooves connected with each other at the opposite ends of the sleeve 26 and hence forming a single continuous groove adapted to feed the carriage back and forth at uniform rate.

Since the sleeve 26 may be rotated on the flanged bushings 25, it is possible to adjust the sleeve angularly relatively to the arbor 21 when the capstan nuts 24 are released slightly. As explained, this permits the desired adjustment of the carriage position to correspond with the time.

A marker carriage is indicated generally at 28 and consists of a relatively heavy cast-

ing having an elongated semi-cylindrical bearing surface 29, which straddles and rests upon the top of the sleeve 26.

A follower or key 30 is swiveled in the carriage 28 on a vertical axis, and engages the groove 27, accommodating itself to the reversal of pitch of the groove at the opposite ends of the sleeve. The marker, here shown as an ordinary lead pencil 31, is claimed in a vertical guide passage 32, formed in the carriage 28 by means of a clamp screw 33. The carriage 28 is so designed that its weight produces the necessary marking contact between the pencil 31 and the drum 9.

Since the axis of the arbor 21 is parallel with the axis of the drum 9, the traversing movement of the carriage 28 moves the point of the pencil 31 along an element of the cylindrical drum 9 and consequently the carriage 28 is guided by the sleeve 26 and the drum 9. The position of the carriage may be adjusted in the manner explained by an angular adjustment of the sleeve on the arbor. The carriage 28 may be readily removed from its operative position to permit inspection of the record, and may as readily be replaced.

It is occasionally desirable to change the rate of feed of the pencil by the clock, and this is effected by removing the arbor 21 in the manner already described, removing one of the nuts 24 and substituting another sleeve 26, whose cam groove 27 has the desired pitch, after which the parts are replaced in reverse order.

The construction described is simple and easy to manufacture, and permits standardization of parts with the resultant reduction in the cost of manufacture.

What is claimed is:

1. A marking carriage movement for recorders and the like, comprising in combination a rotatable shaft; an arbor releasably

connected at one end with said shaft; a retractable bearing for the other end of said arbor; a sleeve surrounding said arbor and provided with a spiral cam groove; releasable means for fixing said sleeve in place; and a marking carriage arranged to be driven by engagement with said cam groove.

2. A marking carriage movement for recorders and the like, comprising in combination a shaft; an arbor releasably connected with one end of said shaft; a retractable bearing for the other end of said arbor; a sleeve surrounding said arbor and provided with a spiral cam groove; clamping means for adjustably fixing said sleeve in place on said arbor; and a marking carriage straddling said sleeve, engaging the cam groove therein and guided in part thereby.

3. A marking carriage movement for recorders and the like, comprising in combination a shaft; an arbor releasably connected at one end with said shaft to rotate therewith; a retractable bearing for the other end of said arbor; a sleeve surrounding said arbor and provided with an endless double-spiral cam groove; centering bushings surrounding said arbor and entering the ends of said sleeve; clamping means for urging said bushings into engagement with the ends of said sleeve; and a marking carriage in driving engagement with said cam groove.

4. The combination of an arbor; a sleeve surrounding said arbor and provided with a double-spiral cam; bushings surrounding said arbor and entering the ends of said sleeve; nuts threaded on said arbor and serving to clamp said sleeve in place on said bushings; and a marking carriage in driving engagement with said cam.

In testimony whereof we have signed our names to this specification.

WILLARD L. EGY.
ROBERT P. DODDS.