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L. E. ENDSLEY

APPARATUS FOR RECORDING IMPACTS

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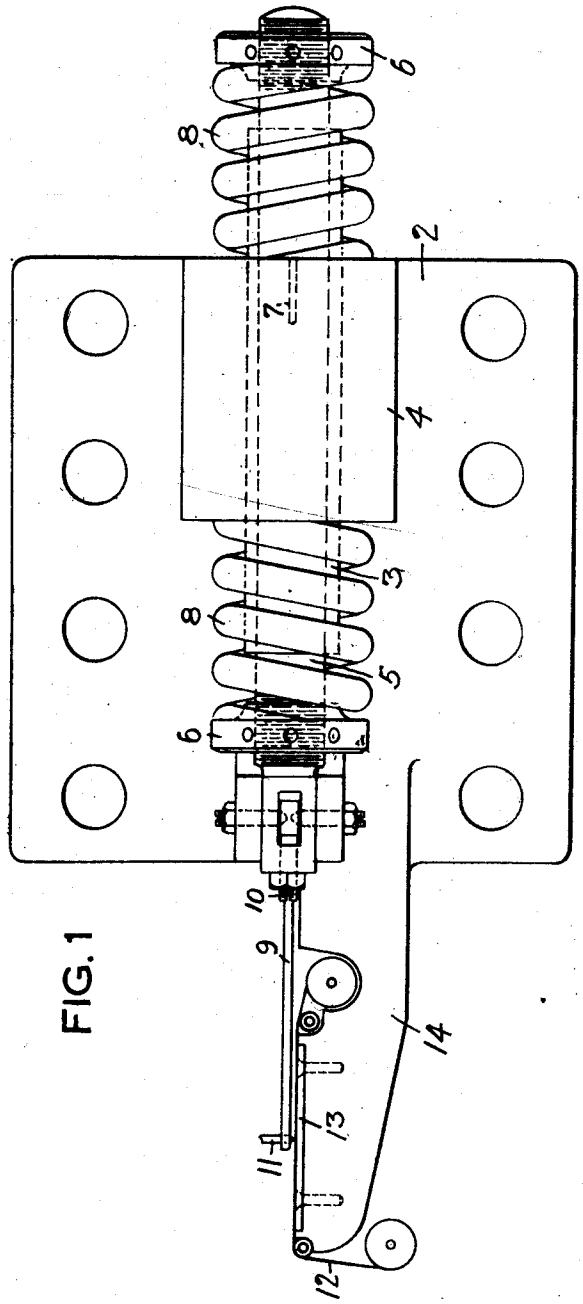


FIG. 1

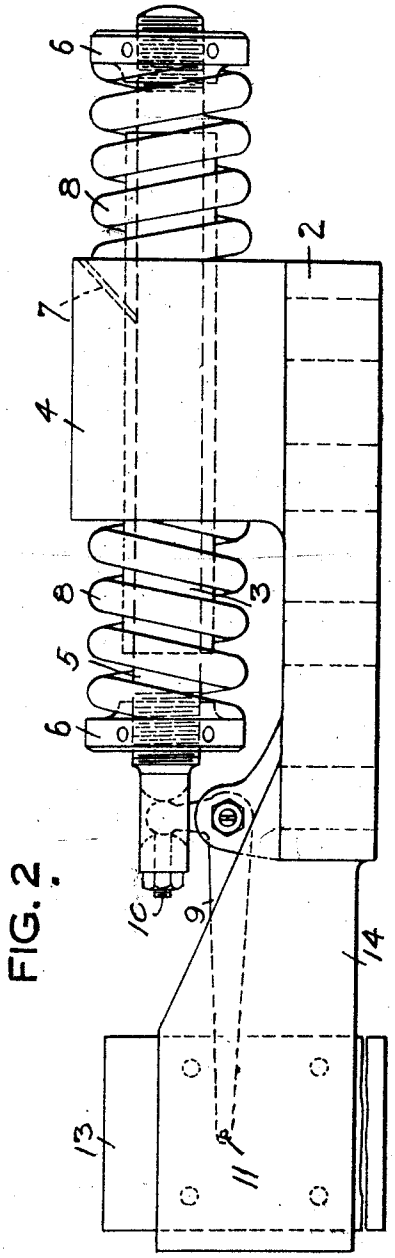


FIG. 2.

INVENTOR

Louis E. Endsley

By Archworth Martin,

Attorney.

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UNITED STATES PATENT OFFICE.

LOUIS E. ENDSLEY, OF PITTSBURGH, PENNSYLVANIA.

APPARATUS FOR RECORDING IMPACTS.

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My invention relates to the recording of shocks and impacts imposed upon given objects, and is particularly applicable to use in connection with railway cars and the like, for recording any rough handling which the cars may receive in transit, in order to determine at what points, or during what periods of time, the car was subjected to rough treatment.

Recording apparatus of this character usually comprises a weighted member that is normally yieldably supported at neutral position and connected to a pencil which cooperates with a tape that is driven either by clock mechanism or in definite relation to the movement of the car, to record deflections of the weight from its normal position.

One object of my invention is to provide an impact recording apparatus which will more accurately record shocks than those heretofore employed, by reason of the fact that movement is imparted positively to an indicator from a point in the axial line of the yieldable weight elements entering into the structure of the apparatus.

Another object of my invention is to simplify and improve generally the structure and operation of impact recording apparatus.

One form which my invention may take is shown in the accompanying drawing, wherein Fig. 1 is a plan view of apparatus embodying my invention, and Fig. 2 is a side elevational view thereof.

The apparatus comprises a base plate 2 provided with bolt holes by means of which it may be secured to a railway car or other object with which it is to be employed. The base 2 is provided with a boss 4 within which is supported a sleeve 3 through which extends a rod 5. The rod 5 has its end portions reduced and threaded for the reception of nuts 6 which, together with the rod 5, serve as the weight element of the apparatus. The body portion of the rod 5 is enlarged to fit within the perforation in the boss 4 and has sliding movement in the sleeve 3. An oil hole 7 extends through the boss and the sleeve to lubricate the coacting bearing surfaces of the rod and the sleeve.

Compression springs 8 are interposed between the nuts 6 and the boss 7. The nuts 6 are adjustable to vary the tension of the springs. Both springs are placed under a heavy initial compression so that no blows will result in either of them being entirely relieved. The springs have merely abutting engagement with the nuts and boss so that when one spring is slightly compressed by reason of an impact imparted in a direction longitudinally of the rod 5, the other spring will be relieved to a degree corresponding to the degree of compression of the first-named spring.

The forward end of the rod 5 is recessed for the reception of one arm of a bell crank lever 9, a screw 10 being provided in order to effect proper relative adjustment as between the bell crank 9 and the rod 5. The lever 9 is pivotally supported upon the base 3 and carries a pencil 11 in its longer arm. The pencil 11 records movements of the lever 9, upon the usual paper strip 12 that is moved across a platen 13 which is mounted upon an extension 14 of the base 2.

The sleeve 3 provides a long bearing surface for the rod 5, thus reducing any tendency of the rod to bind when shocks are imparted thereto in an angular direction, and also holds the spring coils in spaced relation to the body of the rod.

By reason of the fact that the pencil-carrying member had direct connection with the rod 5 at its axial point, and the rod 5 is surrounded by the springs 8 and the nuts 6, there is greater accuracy than is likely to be found in those devices wherein the pencil carrying member is connected to a weighted element at a point removed from the center of the mass, or wherein the mass of the weight element is not symmetrically distributed with respect to the spring.

It is also to be noted that the apparatus is of extremely simple and efficient form, requiring a minimum number of parts, and not likely to become disarranged.

I claim as my invention:

1. Impact recording apparatus comprising a base member provided with a bearing portion, a longitudinally movable rod extending through said bearing, a stop member mounted on each end of said rod, a spring interposed between each of said stops and one side of the bearing portion, an indicator arm pivotally connected to said rod, and a pivotal support for said arm.

2. Impact recording apparatus comprising a base member having a perforated portion, a rod extending through said portion, a stop member mounted on each end of said rod, a spring interposed between each of said stops and one side of the perforated

portion, and a bell crank lever pivotally mounted upon said base and having one of its ends positioned for operative engagement with said rod.

3. Impact recording apparatus comprising a base having a perforation, a sleeve extending through said perforation, a rod extending through said sleeve and movable longitudinally of the said perforated portion, a stop member on each end of the rod, a spring interposed between each stop and one side of said perforated portion and surrounding said sleeve, and an indicator connected to said rod.

4. Impact recording apparatus comprising a base member provided with a bearing portion, a longitudinally movable rod, a yieldable member disposed coaxially of said rod, an indicator arm pivotally connected to the rod at a point on the axial line thereof and a pivotal support for said arm.

In testimony whereof I, the said LOUIS E. ENDSLEY, have hereunto set my hand.

LOUIS E. ENDSLEY.