March 23, 1937. G. W. GRISDALE 2,074,585

DRIVE MECHANISM

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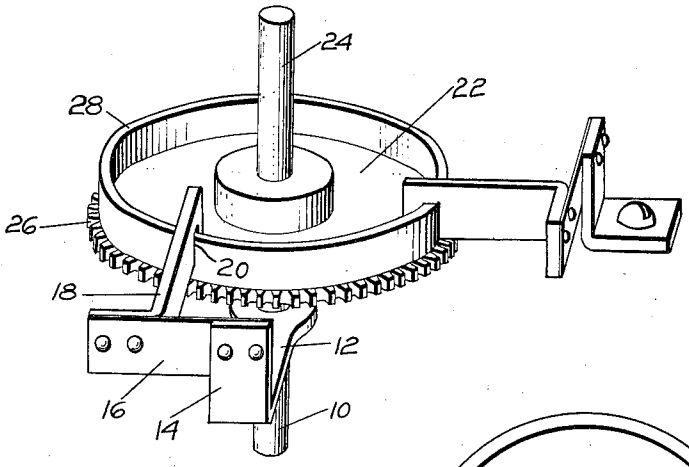


Fig. 1

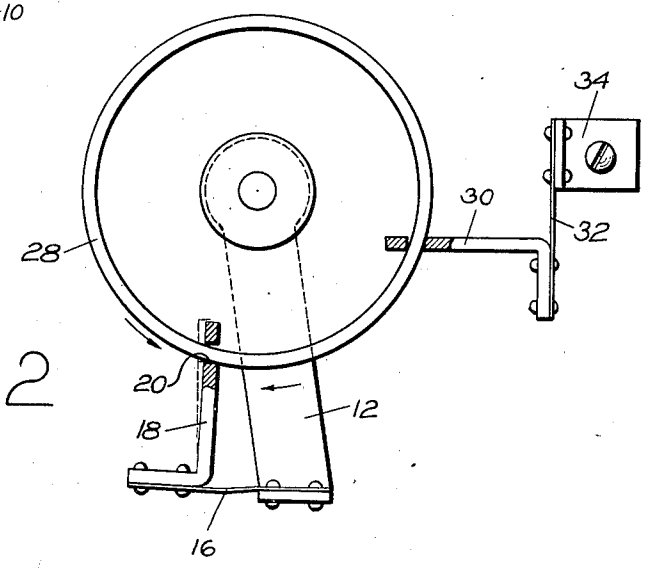


Fig. 2

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DRIVE MECHANISM

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11 Claims. (Cl. 192—12)

This invention relates to one-way drive mechanism and more particularly to mechanism of this type for use in measuring instruments in which it is desired to drive a rotatable driven member from an oscillating driving member.

The mechanism of the present invention is particularly adapted for use to operate a totalizer for a measuring instrument in which a driving member is given a periodic oscillating movement whose amplitude depends upon the quantity to be measured during a given period and which movements are to be totaled by rotating a driven member to indicate the total quantity. Such an instrument is shown, for example, in the copending application of Otto T. Handwerk, Serial No. 5,779, filed February 9, 1935.

In instruments of this character it is highly important that the full amplitude of movement of the driving member shall be transmitted to the driven member in order that the indicated total shall be correct. Thus it is essential that a one-way drive shall be employed between the driving and driven members in which lost motion is reduced to a minimum and which is positive and reliable in its action.

It is accordingly one of the objects of the present invention to provide a one-way drive in which lost motion is reduced to a minimum, which is positive and reliable in its action and which is simple and cheap to manufacture.

According to one embodiment of the invention, a rotatable flanged driven member is provided and an oscillating driving lever is pivoted coaxially therewith. The driving lever has secured to its free end a second lever which has a notch receiving the flange, the two levers being connected together by a leaf spring. Thus when the driving lever oscillates in one direction the notch binds on the flange and rotates the driven member while oscillation of the driving lever in the other direction permits the notch to slide on the flange.

A similar notched lever is mounted on a leaf spring secured to a stationary part and is so arranged that its notch will release the flange and permit movement of the driven member when the driving lever tends to rotate it but will bind to prevent reverse rotation of the driven member.

Other objects, advantages and novel features will appear from the following detailed description when taken in connection with the accompanying drawing showing one embodiment of the invention.

In the drawing wherein like reference numerals refer to like parts throughout the two views:

Figure 1 is a perspective view of a one-way drive device constructed according to the present invention; and

Figure 2 is a partial plan view with parts in section of the device of Figure 1.

In the embodiment illustrated in the drawing, an oscillating driving shaft **10**, which may be driven by the measuring instrument shown in the application of Otto T. Handwerk referred to above, has a lever **12** secured thereto to oscillate therewith. The lever **12** has a flange **14** turned up at its free end and a leaf spring **16** is secured to this flange by any suitable means such as rivets or the like.

To the free end of leaf spring **16** is secured a lever **18** having a notch **20** adjacent its free end, for a purpose to appear hereinafter.

The mechanism described above constitutes a driving means and is adapted to drive a rotatable driven member **22** mounted on a suitable shaft **24** which is coaxial with the driving shaft **10**. The driven member is preferably provided with gear teeth **26** for connection with a suitable totalizing device, not shown, and a peripheral, axially extending flange **28**. As shown, this flange is received within the notch **20** and the lever **18** is so arranged that a radius from the axis of rotation through its point of contact with the flange forms an angle of less than 180° therewith.

In operation of the device as so far described, when the lever **12** swings in a clockwise direction as viewed in the drawing, lever **18** moves to the full line position of Figure 2 in which it is more nearly aligned with a radius from the center of rotation and the flange **28** can slip through the notch **20**. When, however, lever **12** swings in a counterclockwise direction, lever **18** assumes the dotted position of Figure 2 in which the corners of notch **20** bind on flange **28** and turn the driven member with the driving lever. Thus the driven member is rotated with the driving member in a counterclockwise direction but, the driving member moves relatively to the driven member in a clockwise direction.

In order to prevent undesired reverse rotation of the driven member, a suitable one-way device is provided to permit rotation thereof in a counterclockwise direction but to prevent rotation in a clockwise direction. As shown, this device is constituted by a notched lever **30** similar to lever **18** and secured to a leaf spring **32** which is carried by a suitable stationary bracket **34**. This

lever is so arranged that when the driven member is moved in a counterclockwise direction the flange 28 will slip through the notch therein, but if the driven member tends to move in a clockwise direction, the notch will bind and hold the driven member against rotation. By this means the driven member is held against undesirable clockwise rotation under the influence of friction in the driving mechanism.

Thus by the present invention there is provided a one-way drive device which is simple in construction, positive and reliable in operation and in which lost motion is reduced to a minimum.

While only one embodiment of the invention has been shown and described, it will be apparent that the same is susceptible of various changes and it is not intended that the scope of the invention shall be limited to the exact form shown nor otherwise than by the terms of the appended claims.

What is claimed is:

1. A one-way drive device comprising an oscillating driving member, a lever connected thereto to be driven thereby, a driven member to be rotated in one direction only, a leaf spring secured at one end to said lever and extending therefrom, a member secured to said spring at its other end and engaging said driven member and so constructed and arranged as to grip said driven member when the lever is moved in one direction but not when the lever is moved in the other direction, said gripping member engaging solely said leaf spring and said driven member whereby the spring flexes to permit the gripping member to grip and to release the driven member, and means secured to a stationary part and engaging said driven member to prevent rotation thereof in one direction but to permit rotation thereof in the other direction.

2. A one-way drive device comprising an oscillating driving member, a lever connected thereto be driven thereby, a leaf spring having one end attached to said lever, a driven member to be rotated in one direction only, said driven member having a peripheral flange, a member fixedly secured to the other end of said spring and engaging said flange, said lever and spring being so constructed and arranged as to grip the flange to move the driven member with the lever when the lever is moved in one direction but not when the lever is moved in the other direction, said gripping member engaging solely said leaf spring and said flange whereby the spring flexes to permit the member to grip and to release said flange, and a member movably secured to a stationary part and so constructed and arranged as to grip said flange to prevent movement of the driven member in one direction.

3. A one-way drive device comprising a rotatable driven member, a coaxial oscillatable driving member, a lever drivingly secured to the driving member and pivoted about the axis thereof, a second lever engaging the driven member, resilient means connecting said levers and solely supporting said second lever and holding it so that it will grip said driven member to rotate it with the first lever in one direction but not in the other direction, and means secured to a stationary part and engaging said driven member to prevent rotation thereof in one direction.

4. In a one-way drive device having a driven member with a peripheral flange, means for engaging said flange in one direction only, comprising a lever having a notch to receive the flange, said lever engaging the flange at an angle less than a right angle to a tangent at the point of engagement, a leaf spring secured to and carrying said lever, and a mounting for said leaf spring so arranged as to flex the leaf spring in a direction to urge the lever into gripping engagement with the flange.

5. A one-way drive device comprising, a driven member, an oscillating driving member, a resilient member attached to said driving member, and a fourth member attached to said resilient member, engageable with said driven member to drive it in one direction but not in the other, said fourth member engaging solely said resilient member and said driven member.

6. A one-way drive device comprising a driven member, an oscillating driving member, a resilient member attached to said driving member, and a fourth member attached to said resilient member and solely supported and held in engaging position thereby and engageable with said driven member to drive it in one direction but not in the other.

7. A one-way drive device comprising a driven member, an oscillating driving member, a leaf spring attached to said driving member and a third member attached to said leaf spring, engageable with said driven member to drive it in one direction but not in the other, said third member engaging solely said leaf spring and said driven member.

8. A one-way drive device comprising a driven member, an oscillating driving member, a leaf spring attached to said driving member, and a third member attached to said leaf spring and solely supported and held in engaging position thereby and engageable with said driven member to drive it in one direction but not in the other.

9. A one-way drive device comprising, a driven member, an oscillating driving member, a leaf spring attached to said driving member at one of its ends and extending therefrom, and a third member attached to the free end of the leaf spring and engageable with said driven member to drive it in one direction but not in the other, said third member engaging solely said leaf spring and said driven member.

10. A one-way drive device comprising, a driven member, an oscillating driving member, a leaf spring attached to said driving member at one of its ends and extending therefrom, and a third member attached to the free end of the leaf spring and engageable with said driven member to drive it in one direction but not in the other, said third member being solely supported and held in engaging position by the spring.

11. A one-way drive device comprising, a driven member having a peripheral flange, an oscillating driving member, a resilient member attached to said driving member at one of its ends and extending therefrom, a fourth member attached to the free end of said resilient member, having a notch adapted to receive said flange, said resilient member solely supporting and holding said fourth member so that the edges of said notch engage said flange when the driving member moves in one direction and release said flange when the driving member moves in the other direction.

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