Sept. 18, 1923. 1,468,322

D. E. ODOM

OVERWINDING PREVENTER

Filed March 4, 1922

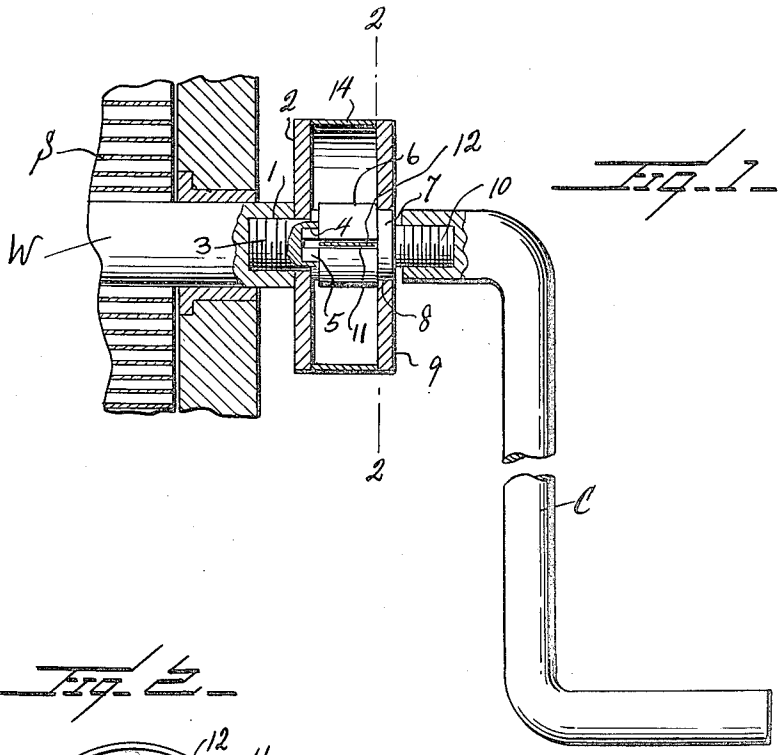
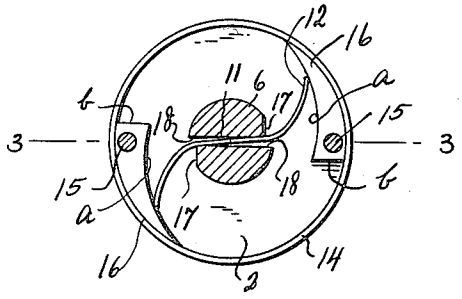


Fig. 1

Fig. 2



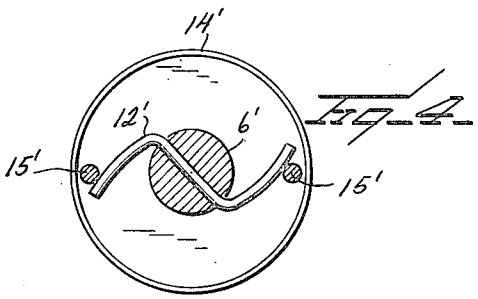
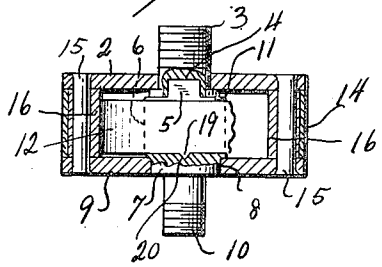


Fig. 4

Fig. 3



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UNITED STATES PATENT OFFICE.

DANIEL E. ODOM, OF BENNETTSVILLE, SOUTH CAROLINA.

OVERWINDING PREVENTER.

Application filed March 4, 1922. Serial No. 541,136.

To all whom it may concern:

Be it known that I, DANIEL E. ODOM, a citizen of the United States, residing at Bennettsville, in the county of Marlboro and State of South Carolina, have invented certain new and useful Improvements in Overwinding Preventers, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to certain improvements in overwinding preventers and has relation more particularly to a device of this character designed for use in connection with the winding shaft of a spring motor, and it is an object of the invention to provide a novel and improved device of this character which operates as a clutch normally connecting the spring shaft and a coacting winding element locked for unitary rotation and which becomes inoperative by the resistance of the spring when the tension of said spring has reached a predetermined degree and particularly when said spring has been substantially completely wound.

Another object of the invention is to provide a novel and improved device of this general character comprising two relatively rotatable members having associated therewith means for normally connecting the same for unitary rotation, one of said members being adapted for operative connection with the winding shaft of a spring and the other of said members being adapted for operative connection with a means for rotating both of said members under normal conditions.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved overwinding preventer whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:

Figure 1 is a fragmentary view partly in section and partly in elevation illustrating an overwinding preventer constructed in accordance with an embodiment of my invention;

Figure 2 is a sectional view taken substantially on the line 2—2 of Figure 1;

Figure 3 is a sectional view taken substantially on the line 3—3 of Figure 2; and

Figure 4 is a view partly in front elevation and partly in section illustrating an overwinding preventer constructed in accordance with a further embodiment of my invention.

As disclosed in the accompanying drawings, W denotes a winding shaft for a spring S comprised in a motor structure or the like and one end portion of the shaft W is provided with a socket 1 to provide means whereby my improved overwinding preventer may be operatively engaged therewith.

2 denotes a plate preferably circular in form and of desired diameter and which has extending outwardly from its central portion a shank or shaft section 3 which is adapted to be threaded within the socket 1 so that the plate 2 is operatively engaged with the shaft W. The shank or shaft section 3 may be secured to the plate 2 in any desired manner so that said shank or shaft section 3 and plate 2 are connected for unitary rotation.

The inner or connected end portion of the shank or shaft section 3 is provided with a socket 4 which receives a reduced extension 5 carried by a cylindrical block or head 6. The extension 5 is at the axial center of the block or head 6 and extending outwardly from the opposite end of the head or block 6 and at the axial center thereof is a reduced cylindrical extension 7 which is snugly engaged within an opening 8. The opening 8 is arranged at the central portion of a second plate 9 also circular in form and of substantially the same radius as the plate 2 hereinbefore referred to. Through the instrumentality of the extensions 5 and 7, the block or head 6 is supported for rotation independently of the shank or shaft section 3.

Extending outwardly from the extension 7 of the block or head 6 and at the axial center thereof is a shank 10 with which is adapted to be engaged an operating member C herein disclosed as a crank of a conventional type. The block or head 6 has disposed radially therethrough a kerf 11, said kerf being herein disclosed as also continued through the extension 5, said kerf providing an opening through which is disposed an elongated resilient member 12. As is herein disclosed the

resilient member 12 comprises a flat strip of metal substantially-sigmoidal in form with its opposite extremities substantially equidistantly spaced from the axial center of the block or head 6.

Interposed between the plates 2 and 9 and at the peripheral portions thereof is a collar or sleeve 14 which provides means to prevent the ingress of dust or other foreign matter between said plates 2 and 9 and which otherwise would have a tendency to interfere with or hinder the desired functioning of the device. The plates 2 and 9, together with the collar or sleeve 14, are maintained in required assembly through the medium of the substantially diametrically opposed rivets 15 or other holding members, said rivets being positioned in close proximity to the sleeve or collar 14.

Secured between the plates 2 and 9 and held in desired position by the rivets 15 are the blocks 16, the peripheral configuration of each of said blocks being such as to have close contact at all points with the interior wall of the sleeve or collar 14. The inner longitudinal faces *a* of the blocks 16 are disposed on a predetermined contour, the contour of the face *a* of one block being complemental to the face *a* of the second block. The provision of the faces *a* cause said blocks to serve as wedges and the end of each of said blocks 16 at the high point of the curved face *a* is substantially radially disposed to provide an abrupt drop or shoulder *b*.

The resilient member 12 is of such length that the extremities thereof will contact with the interposed sleeve or collar 14 at the portions thereof between the blocks 16 but upon requisite rotation of the block or head 6 through the instrumentality of the crank C or the like, the extremities of said resilient member 12 will ride over the curved or wedged faces *a* of said blocks with sufficient resultant friction to cause the plates 2 and 9 to rotate in unison with the head or block 6 to effect the desired turning of the shaft W to wind the spring S. When the spring S has been wound to a degree of tension in excess of the frictional resistance of the extremities of the member 12 with the wedges or blocks 16, the extremities of said resilient member 12 will ride over said wedges or blocks toward the high end thereof so that as said extremities pass beyond the shoulders *b*, the same will have forcible contact with the collar or sleeve 14 and with sufficient impact to give an audible signal that the spring S has been sufficiently or properly wound.

When it is desired to remove the device from the shaft W, it is only necessary to turn the operating member or crank C in the reverse direction. This will result in the extremities of the resilient member 12 contacting with the shoulders *b* of the wedges or blocks 16, causing the plates 2 and 9 to rotate in the required direction to separate the shank or shaft section 3 from the shaft W.

As is particularly illustrated in Figure 2, it is to be noted that the periphery of the head or block 6 rearwardly of the extended portions of the resilient member 12, considered during the normal rotation of the head or block 6, is cut away, as at 17. This permits increased flexure of the resilient member 12 during its normal functioning and also provides the shoulders 18 to further strengthen or stiffen the resilient member 12 when the block or head 6 is rotated in the reverse direction to separate the device from the shaft W.

In order that the resilient member 12 may be maintained against endwise movement through or independently of the head or block 6, said member 12 is provided at its central portion with a small extension or spur 19 which engages within a suitable recess 20 formed in the inner or base wall of the kerf 11. This feature is believed to be clearly illustrated in Figure 3 of the accompanying drawings.

In the embodiment of my invention as illustrated in Figure 4, the head or block 6 has disposed therethrough a resilient member 12′. This member 12′ preferably comprises a wire of requisite guage and tension. This member 12′ is also substantially sigmoidal in form and the extremities of said member engage or coact with the rivets 15′ to effect the desired rotation of the spring shaft. As the extremities of the resilient member 12′ pass over the rivets 15′, after the spring has been sufficiently wound, they will contact with the sleeve or collar 14′ with sufficient force or impact to give the required audible signal.

From the foregoing description it is thought to be obvious that an overwinding preventer constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:

1. Spring overwinding preventing means embodying a shaft and means placed under tension by the shaft upon rotation thereof, two members connected for relative rotation, one of said members being engaged with the shaft for rotation therewith, the second member being provided with means

for rotating the same, one of said members comprising a sleeve and the second of said members being rotatably arranged therein, and a resilient member carried by the last named member and having contact with the sleeve, said sleeve being provided with means coacting with the extremities of the resilient member to increase the frictional contact of said resilient member with the sleeve upon relative rotation of the two first named members.

2. Spring overwinding preventing means embodying a shaft and means placed under tension by the shaft upon rotation thereof, a member engaged with said shaft for rotation therewith, a second member, means for rotatably supporting said second named member by the first named member, means for rotating said second named member, a resilient member carried by the second named member and extending laterally therefrom, and means carried by the first named member positioned to be engaged by the resilient member upon rotation of the second named member to increase the tension of the resilient member to cause both of the members to rotate in unison, said resilient member passing out of contact with said last named means when the exertion of the tensioning means reaches a predetermined degree.

3. Spring overwinding preventing means embodying a shaft and means placed under tension by the shaft upon rotation thereof, a member engaged with said shaft for rotation therewith, a second member, means for rotatably supporting said second named member by the first named member, means for rotating said second named member, a resilient member carried by the second named member and extending laterally therefrom, and means carried by the first named member positioned to be engaged by the resilient member upon rotation of the second named member to increase the tension of the resilient member to cause both of the members to rotate in unison, said resilient member passing out of contact with said last named means when the exertion of the tensioning means reaches a predetermined degree, said last named means comprising a wedge-shaped member.

4. Spring overwinding preventing means embodying a shaft and means placed under tension by the shaft upon rotation thereof, a sleeve operatively engaged with the shaft for rotation therewith, a member rotatably supported within the sleeve and provided with means for rotating the same, a resilient member carried by the first named member and extending laterally therefrom and of a length to contact with the sleeve, and means arranged inwardly of the sleeve and movable therewith to increase the tension of the resilient member.

5. Spring overwinding preventing means embodying a shaft and means placed under tension by the shaft upon rotation thereof, a sleeve operatively engaged with the shaft for rotation therewith, a member rotatably supported within the sleeve and provided with means for rotating the same, a resilient member carried by the first named member and extending laterally therefrom and of a length to contact with the sleeve, and means arranged inwardly of the sleeve and movable therewith to increase the tension of the resilient member, said resilient member upon passing over the last named means contacting with the sleeve with sufficient impact to produce an audible signal.

6. Spring overwinding preventing means embodying a shaft and means placed under tension by the shaft upon rotation thereof, of two members, one of said members constituting a sleeve and the other a block within the sleeve, one of said members being operatively engaged with the shaft and the second member being provided with means for rotating the same, a resilient member extending laterally from the block, and means associated with the sleeve to increase the tension of the resilient member to cause both of the first named members to rotate in unison.

7. Spring overwinding preventing means embodying a spring supporting shaft, a socket member threaded in an opening provided in the spring supporting shaft, a holding member having a threaded stem and an extension, said extension being disposed in the socket member, a handle member engaged with said threaded stem, a plate carried by the threaded socket, a plate carried by the holding member adjacent the threaded stem thereof, a band secured between said plates, in spaced relation to the holding member, wedge shaped blocks disposed between said plates and engaged with the band, and a combined resilient clapper and pawl member carried by the holding member and having its ends disposed for engagement with the wedge blocks.

In testimony whereof I hereunto affix my signature.

DANIEL E. ODOM.