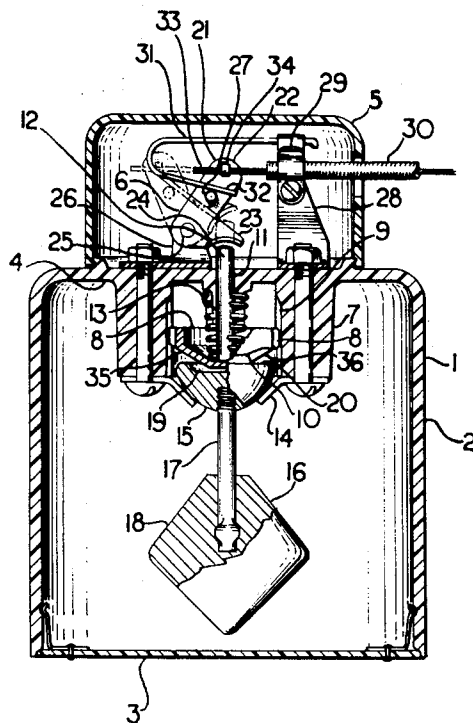


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TRACTOR SAFETY SWITCH

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TRACTOR SAFETY SWITCH

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1 Claim. (Cl. 200—61.5)

My invention relates to tractor safety switches the primary object whereof is to provide a simple and reliable, wholly mechanical means conveniently purchasable and installable upon a tractor as an accessory, whereby the fuel supply or ignition system may be immediately interrupted upon the excessive tilting of the tractor either longitudinally, transversely, or so tilted in any direction, such interruption being calibrated to occur before the tilt becomes dangerous so that the tractor will become stalled at that angle.

A further object of the present invention is to provide means whereby a greater degree of tilt or inclination in longitudinal directions will be permitted before the fuel or ignition is interrupted than will be permitted in a transverse direction.

A further object of my invention is to provide means whereby the inertia member thereof may be free to rotate without influencing its ability to act upon the associated follower piston.

With the foregoing more important objects in view, and such other objects as may become apparent as this specification proceeds, my invention consists in the following arrangement and construction of parts all as hereinafter more particularly described, reference being had to the accompanying drawing which is a vertical cross-section of my invention.

It is well known that many accidents, frequently fatal have been caused by the overturning of tractors consequent upon their being driven on to inclined surfaces too steep for their operating centers of gravity. The present invention will prevent tractors from being driven on to surfaces which are excessively steep by causing the fuel supply, ignition system, or perhaps some other point of vital operation to be interrupted in its function before the tractor can be driven onto a surface which is too steep for it. When such interruption occurs, it will be necessary for the operator to re-set the device I am about to describe, and either hold it re-set until the tractor has been moved onto more nearly horizontal territory, or in some other way to provide for a temporary resumption of the interrupted means of operation. Thirdly of course the stalled tractor could be pulled by another tractor onto more horizontal territory.

Proceeding therefore to describe my invention, the same is to be understood as comprising a mounting structure collectively designated 1 in the form of a preferably cylindrical casing 2 provided with a removable base 3 and an overspanning portion 4 upon which is mounted an enclosing turret 5 for a cutout movement collectively designated 6. Within casing 2 and projecting downwardly and concentrically from the overspanning portion 4 is an open-ended cylinder 7.

Movable within cylinder 7 is a follower piston 8 in the form of a cup suitably splined to the cylinder 7 as at 9 to permit linear but non-rotary motion. Such follower piston is diametrically lobed as at 10 for a reason which will presently become apparent. The lobes so indicated

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are also preferably bilaterally situated for a reason which also will presently become apparent.

Overspanning portion 4 is centrally apertured as at 11 to permit projection therethrough of a thrust element 12 in the form of a rod the lower end of which bears against the crater-center of piston 8, while the upper end bears against cutout movement 6 as will presently be more particularly described. Surrounding rod 12 is a spring 13, the upper end of which may be said effectively to bear against overspanning portion 4 while the lower end thereof, like the lower end of thrust element 12, bears against the crater-center of follower piston 8.

Situated to swing freely at the lower open end of cylinder 7, and suitably held in position as by means of the clips 14 is a hemi-spherical rim-cam 15 forming part of a governor assembly collectively designated 16. The remaining parts of said governor assembly comprise the pendulum rod 17, and an inertia member or weighted element 18 secured thereto. Cam 15 will be observed as slightly dishd as at 19 to provide the actual cam rim 20 thereof.

The cutout movement collectively designated 6 comprises a bell-crank 21 embodying an arm 22 and a foot 23, the foot being preferably capped as at 24 the more comfortably to accommodate the bearing end of thrust element 12. Bell-crank 21 is journaled at 25 upon the upstanding ear piece 26. At approximately mid-point of the length of arm 22, a dog 27 is provided.

To one side of cutout movement 6, an upstanding support collectively designated 28 is provided. This support includes a clip 29 designed to receive the Bowden cable 30. At the upper end of support 28, a hair-pin spring 31 is secured horizontally by one end thereof. The free and subadjacent end 32 bears downwardly against dog 27.

The bared end 33 of Bowden cable 30 is anchored to the eyelet 34 on the upper end of arm 22, such eyelet being swivelable for preference so as to avoid torsion upon bared end 33 in the operation about to be described.

When a tractor to which the device which I have now described structurally is attached, is permitted to incline longitudinally from the horizontal beyond a predetermined limit, the inertia member 18 will swing leftwardly or rightwardly with respect to the accompanying drawing. It will so swing to an extent sufficient to cause the camming rim 20 to engage the annular region 35 of the conical undersurface 36 of follower piston 8 and move the same upwardly against the resistance of spring 13. In so moving member 8 upwardly, thrust element 12 will also be caused to rise. This will rotate bell-crank 21 counter clockwise as I have indicated in phantom lines. In so moving, bell-crank 21 will move the bared end 33 of the Bowden cable 30 leftwardly and thereby cause interruption of an associated fuel supply system, ignition system, or other vital operating part. As dog 27 is also moved counter clockwise, the free end 32 of hairpin spring 31 will be compressed. When the point of effort exerted downwardly by the spring portion 32 is slightly to the right of the common central axial plane of journal 25 and dog 27, such free end 32 will snap arm 22 over into the irreversible (until manually re-set), or locked position indicated by phantom lines. Due to the functional description which I have given of cutout movement 6, I designate its action as self-locking and epicentric.

Diametrically opposed lobes 10 are intended to take care of excessive lateral tilt, as when the associated tractor is travelling at uniform altitude along a hill-side. Obviously the rim 20 will then engage one or the other of these lobes rather than the regions 35. Upon being so contacted, the same train of mechanical events will be initiated as I have already described.

In conclusion I would add that it is a convenience if a visual or audible device actuated by inertia member 18

be associated with this invention in order that a signal be conveyed to the operator before interruption occurs such as I have described, whereby the inconvenience of resetting my device may be avoided.

Since various modifications can be made in my invention as hereinabove described, and many apparently widely different embodiments of same made within the spirit and scope of the claim without departing from such spirit and scope, it is intended that all matter contained in the accompanying specification shall be interpreted as illustrative only and not in a limiting sense.

What I claim as my invention is:

A tractor safety switch comprising in combination a mounting structure, a cylinder thereon, a cutout movement, means for actuating said cutout movement comprising a piston having a pair of diametrically lobed followers, and inverted conical areas therebetween, said piston being movable within said cylinder, a spring actuated thrust element also within said cylinder actuable by said piston, and a governor assembly including a hemispherical cam having an upwardly projecting cam-rim surrounding a dished center portion, an inertia member

connected to said cam responsive to change in the center of gravity of said tractor, for moving the rim of said cam into contact with said follower upon the excessive tilting of said tractor, to actuate said follower piston and thereby said thrust element and cutout movement, said cutout movement being in the form of a bell-crank against one end of which said thrust element is bearable, a dog on said bell-crank, a spring in contact with said dog, said bell-crank, dog and spring being so related as to constitute an epicyclic-throw whereby said cutout movement is self-locking upon actuation by said thrust element.

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