

H. E. KNIES.
ALARM FOR TIRES.
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1,061,184.

Patented May 6, 1913.

Fig. 1.

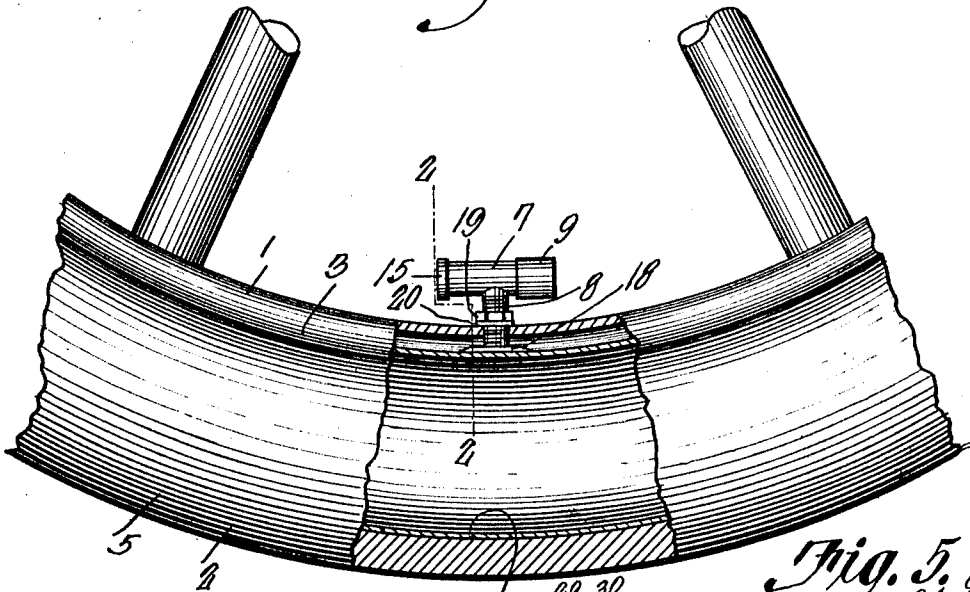


Fig. 2.

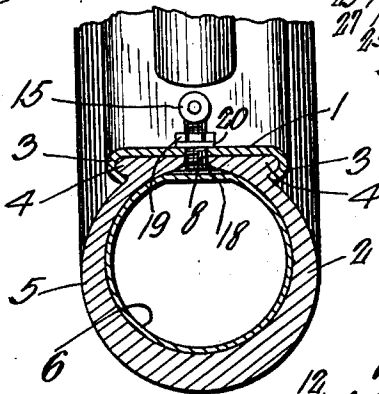


Fig. 5.

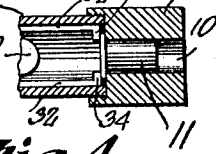


Fig. 4.

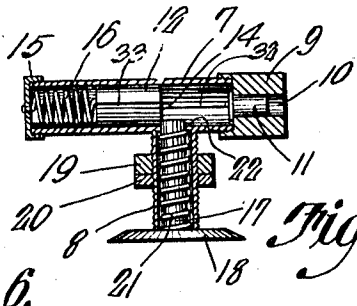
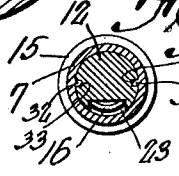


Fig. 3.

Fig. 6.



Witnesses

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ALARM FOR TIRES.

1,061,184.

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To all whom it may concern:

Be it known that I, HENRY E. KNIES, a citizen of the United States, residing at White Haven, in the county of Luzerne and State of Pennsylvania, have invented a new and useful Alarm for Tires, of which the following is a specification.

The invention aims broadly, to provide a novel means whereby, when a tire yields, due to deflation, or loss of resiliency, a firing member will be permitted to advance against a charge holder, thereby producing an explosion acting as a signal notifying the occupants of the vehicle of the failure of the resiliency of the tire.

A further object of the invention is to provide novel means for actuating the sear and the firing member, to provide a device of this type in which the sear and the firing member coöperate in a novel and improved manner, to provide novel means for operatively connecting the charge holder and the firing member, together with the sear, with the supporting structure.

The invention aims further to provide novel means for guiding the firing member in its movement and for holding a cartridge in place in the charge holder.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings,—Figure 1 shows in sectional side-elevation, a portion of a wheel equipped with the device constituting the subject-matter of the present invention; Fig. 2 is a section on the line 2—2 of Fig. 1; Fig. 3 is a longitudinal section of the mechanism, detached from the vehicle wheel; Fig. 4 is a view similar to Fig. 3, the firing member, however, being shown in section; Fig. 5 is a section on the line 5—5 of Fig. 4; and Fig. 6 is a section on the line 6—6 of Fig. 4.

In the drawings, the numeral 1 indicates

the wheel rim and the numeral 2 indicates a pneumatic tire which is carried by the rim 1. The form of the rim and of the tire may be varied, but in the present instance, the rim 1 is shown as provided with clencher flanges 3 engaging clencher beads 4 upon an outer casing 5, the casing inclosing the inner tube 6.

There is provided a supporting member, comprising a primary tubular part 7 and an angularly disposed secondary part 8. Threaded upon one end of the primary part 7, or removably secured thereto in any other desired manner, is a charge holder 9, provided with a bore 10 adapted to receive a cartridge 11, the primed end of which is located within the primary member 1. The cartridge, if desired, may be coated with paraffin.

Mounted for right line movement in the primary part 7 of the supporting structure is a firing member 12 having a firing pin 14 which is adapted to engage the cartridge 11 to explode the same. The pin 14 may be so positioned upon the firing member 12 as to explode a rim fire cartridge or a center fire cartridge. A cap 15 is removably secured to one end of the primary part 7, preferably by threading, and interposed between the cap 15 and the firing member 12 is a compression spring 16. The spring 16 is preferably secured to the cap 15 and to the firing member 12, so that the cap 15, the spring 16 and the firing member 12 may be removed from the primary part 7 in one piece.

The firing member 12 is provided with a longitudinal channel 23, communicating with a transverse passage 24. Extended laterally from the passage 24 is a slot 28. The slot 28 extends but part way through the firing member 12, thereby to form a shoulder 25 at the lower end of the slot. A latch 26 is mounted for sliding movement in the passage 24, there being a pin 27 projecting from the latch, the pin 27 moving in the slot 28. The pin 27 is adapted to engage the shoulder 25 to limit the movement of the latch 26 when the same is actuated by a compression spring 29, abutting at one end against the latch, and at the other end abutting against the cover plate 30 which is secured to the

firing member 12 and extends across one end of the passage 24. The inner end of the latch 26 is beveled as indicated at 31.

Mounted to slide in the secondary part 8 of the supporting structure is a sear 17 provided at its outer end with a tire-engaging head 18. The outer face of the secondary part 8 of the supporting structure is preferably threaded into the rim 1, the head 18 resting against the inner tube 6, or against some other yieldable portion of the tire, Fig. 2 illustrating the relative positions of the head 18 and of the yieldable portion of the tire. When the parts are thus positioned, the inner end of the sear 17 is held in the path of the latch 26, as shown in Fig. 4. If desired, a nut 19 may be threaded upon the secondary part 8, and between the nut 19 and the rim 1 may be interposed a resilient gasket 20, the parts 19 and 20 serving to prevent dirt and water from entering into the casing 5. A compression spring 21 surrounds the sear 17, the outer end of the spring 21 abutting against the head 18 and the inner end of the spring 21 abutting against a shoulder 22 formed in the part 8 adjacent point of juncture between the parts 8 and 7.

The part 7 is provided in its interior with longitudinally extended ribs 32 received within guideways 33 formed in the firing member 12. The ends 34 of the ribs 32 extend into close vicinity to the charge holder 9 and to the cartridge 11, for a purpose which will be set forth hereinafter.

Let it be supposed that the parts are positioned as shown in Figs. 2, 3 and 4. Under such circumstances, the tube 6, being inflated, will bear against the head 18, putting the spring 21 under tension and advancing the inner end of the sear 17 into the path of the latch 26, the latch being advanced to engage with the sear, through the action of the spring 29. The spring 16 is therefore held under compression, and is operative, when the sear 17 moves, to advance the firing member 12 until the pin 14 strikes and explodes the cartridge 11. Suppose that the tire loses its resiliency. Then the head 18 of the sear 17 is no longer afforded a support, and the spring 21 will slide the sear and withdraw the inner end of the same from engagement with the latch 26. Thereupon, the spring 16 will advance the firing member, until the projection 14 strikes and explodes the cartridge 11, an audible signal being thus given to the occupants of the vehicle, notifying them that the tire has failed. In order to re-load the device and to re-set the same, the charge holder 9 is removed from the primary part 7. A rod is introduced into the tubular part 7 and the firing

member 12 is thrust back until the latch 26 engages again with the sear 17; the spring 16 being thereby put under tension. During the re-setting of the firing member 12, the channel 23 will permit the firing member to clear the inner end of the sear 17, the inner end of the sear engaging the beveled end 31 of the latch 26 and permitting the latch to ride over the inner end of the sear and to snap behind the same.

In order that the inner end of the sear 17 may traverse the channel 23 when the firing member 12 is retracted, it is necessary that a rotation of the firing member be prevented. A rotation of the firing member, obviously, is prevented by the engagement of the ribs 32 of the member 7 in the guideways 33 of the firing member 12.

Since the device is to be used upon a vehicle wheel, it is necessary that the cartridge 11 be held in the bore 10 of the charge holder 9, so that it cannot be displaced therefrom. This end is accomplished by reason of the fact that the forward extremities 34 of the guide ribs 32 engage with the flange of the cartridge, as clearly shown in Fig. 5. The charge holder 9, when threaded upon the member 7, will abut against the member 7 before the flange of the cartridge is bound tightly between the ends 34 of the ribs and the charge holder. An accidental explosion of the cartridge 11, during the mounting of the charge holder 9 upon the part 7 is thus prevented.

The pin 27 engages the shoulder 24 to limit the movement of the latch 26, so that when the firing member 12 is advanced toward the charge holder 9, the inner end of the latch will not engage with the secondary part 8.

Having thus described the invention, what is claimed is:—

1. In a device for indicating tire-failure, a supporting structure; a charge holder carried thereby; a firing member in the supporting structure movable toward and away from the charge holder; a latch movable in the firing member, transversely of the line of movement of the firing member, the latch and the firing member being provided with interengaging elements limiting the movement of the latch; means for actuating the latch; a sear movable in the supporting structure, into and out of the path of the latch; and means for advancing the firing member toward the charge holder.

2. In a device for indicating tire-failure, a supporting structure; a charge holder carried thereby; a firing member movable in the supporting structure; means for actuating the firing member; there being a rib upon the supporting structure, engaging

in a groove in the firing member, to prevent
a rotation of the firing member, the rib be-
ing prolonged into close relation to the
charge holder, to hold the charge in the
5 charge holder; and a sear movable into and
out of the path of the firing member.

In testimony that I claim the foregoing

as my own, I have hereto affixed my signa-
ture in the presence of two witnesses.

HENRY EDWARD KNIES.

Witnesses:

ARTHUR F. KNIES,

ADAM S. KNIES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."