

(No Model.)

E. BÜTIKOFER.  
SPEED AND DISTANCE INDICATOR.

No. 558,351.

Patented Apr. 14, 1896.

Fig. 1.

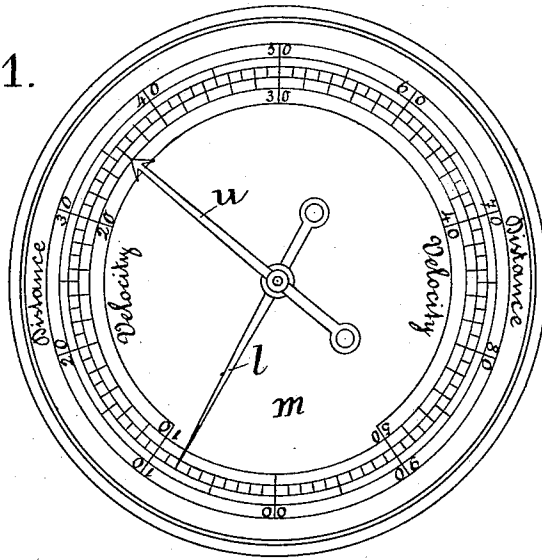


Fig. 2.

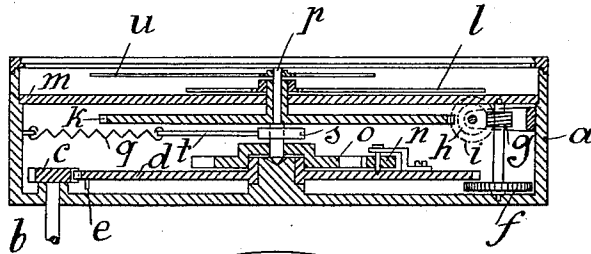
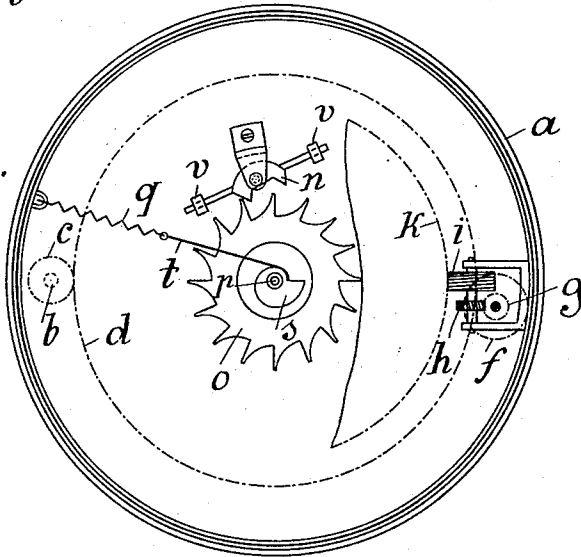


Fig. 3.



Witnesses.

H. N. Jenkins  
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# UNITED STATES PATENT OFFICE.

EDUARD BUTIKOFER, OF BIEL, SWITZERLAND.

## SPEED AND DISTANCE INDICATOR.

SPECIFICATION forming part of Letters Patent No. 558,351, dated April 14, 1896.

Application filed September 24, 1895. Serial No. 563,522. (No model.) Patented in Switzerland October 7, 1893, No. 7,471; in Germany March 3, 1894, No. 79,019; in England March 7, 1894, No. 4,828; in France April 5, 1894, No. 237,544; in Belgium April 5, 1894, No. 109,332, and in Austria May 31, 1894, No. 44/2,050.

*To all whom it may concern:*

Be it known that I, EDUARD BUTIKOFER, a citizen of the Republic of Switzerland, residing at Biel, in said Republic of Switzerland, have invented certain new and useful Improvements in Speed and Distance Indicators, (for which I have obtained patents in Switzerland, No. 7,471, dated October 7, 1893; in Germany, No. 79,019, dated March 3, 1894; in Austria, No. 44/2,050, dated May 31, 1894; in England, No. 4,828, dated March 7, 1894; in France, No. 237,544, dated April 5, 1894, and in Belgium, No. 109,332, dated April 5, 1894;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to indicators for measuring the speed and the distance used on all kinds of vehicles, but especially on velocipedes, and showing at any moment the rate of speed as well as the length of road actually made.

One form of the apparatus is shown in the accompanying drawings, in which—

Figure 1 is a plan view of the dial, Fig. 2 is a vertical cross-section, and Fig. 3 is a plan view of the inner parts, the dial-plate and cover being taken away.

The whole mechanism is inclosed in a casing *a*, and the hand of the speed-indicator, as well as the hand of the distance-meter, is moved by the same shaft *b* which by means of the pinion *c* turns the wheel *d*, from the lower surface of which a pin *e* is projecting, which at every complete revolution engages into the teeth of the wheel *f*, to the shaft of which a worm *g* is secured. The motion is transferred from this worm *g* upon a worm-wheel *h*, and the worm *i* being on the same shaft, said worm *i* engaging into the worm-wheel *k*, carrying on its shaft a hand *l*, which marks on the dial-plate the distance of the road which the vehicle has passed.

The measuring of the speed is also effected by the wheel *d*, which to this end carries on its upper surface an anchor *n*, which, when

the wheel *d* is revolving, strikes the teeth of the anchor-wheel *o*, keyed upon a shaft *p*. The same shaft *p* carries a cam-disk *s*, being under the influence of the spring *q*, attached to the band *t*, secured to the cam-disk *s*, so as to be wound upon the same when the anchor-wheel revolves in the direction of the hand *l*. The shaft *p* carries on its outer end a hand *u*, adapted to indicate on the above-mentioned dial *m* the speed of the vehicle in kilometers or other units.

When the vehicle is in motion, so that the wheel *d* is revolving, the teeth of the anchor *n* engage with the teeth of the spring-actuated anchor-wheel *o*, and the anchor *n*, under the strain of the spring, will naturally oscillate. The faster wheel *d* is revolving the harder the teeth of the anchor *n* will strike the teeth of the anchor-wheel *o*, and the oscillations of the anchor will consequently be more lively and the blows of the anchor-teeth against the wheel *o* will be harder, so that the wheel *o* is obliged to follow under the quickly-repeated blows of the anchor *n*, thus giving to the spring *q* a higher and higher tension.

It will be readily understood that when the wheel *o* is turning, therefore, at a greater speed in the instrument, the hand *u* on the end of shaft *p* will indicate such greater speed accordingly on the dial *m*. When the speed decreases, the tension of the spring *q* will act to turn the anchor-wheel *o* backward and the hand *u* will indicate an inferior velocity.

When the vehicle stops, the anchor-wheel *o* will be pulled by the spring *q* back into its normal position, and the hand *u* returns to zero.

The regulation of the instrument can be effected in different ways—for instance, by varying the strength of the spring *q* or by varying the dimensions of the disk *s*, by employing a heavier or lighter anchor *n* with the adjustable weights *v v*, or by employing several of these means together.

It is self-evident that in lieu of the coil-spring *q*, as shown, a leaf-spring may be employed just as well.

Having thus described my invention, what

I claim, and desire to secure by Letters Patent, is—

5 In a speed-indicator the combination of a gear-wheel *d* moved by a shaft of the vehicle and having on its upper surface an anchor *n* adapted to engage the teeth of an anchor-wheel *o* the shaft of which is provided with a hand *u* for indicating the speed and with the cam-disk *s* to the rim of which a band *t* is secured be-

ing under the tension of a spring, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ED. BUTIKOFER.

Witnesses:

C. HANSLIN,

G. SULZBERGER.