March 12, 1957 H. B. MININBERG 2,785,393

COMBINED SPEEDOMETER SIGNALLING DEVICE

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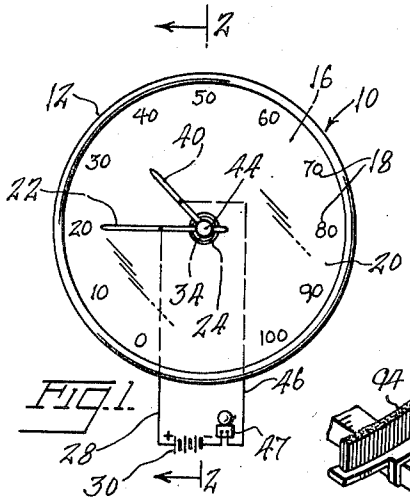

FIG. 1.

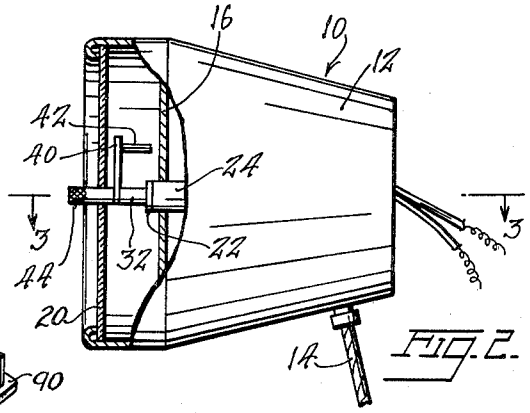

FIG. 2.

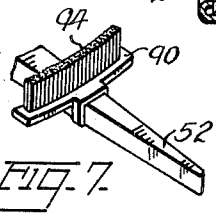

FIG. 7.

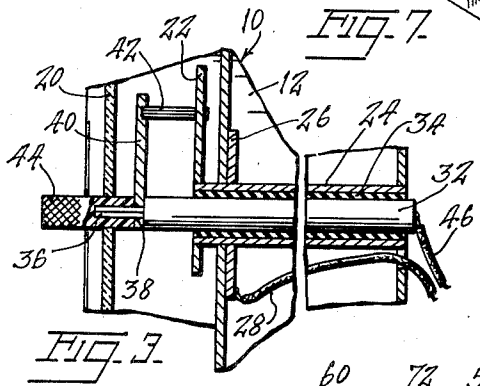

FIG. 3.

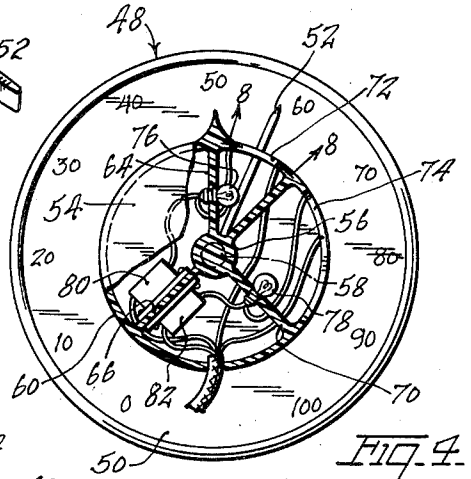

FIG. 4.

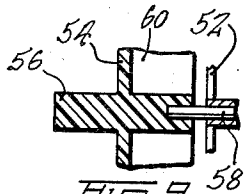

FIG. 9.

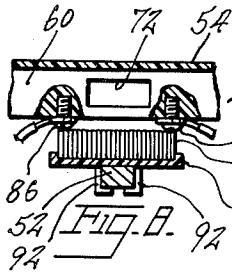

FIG. 8.

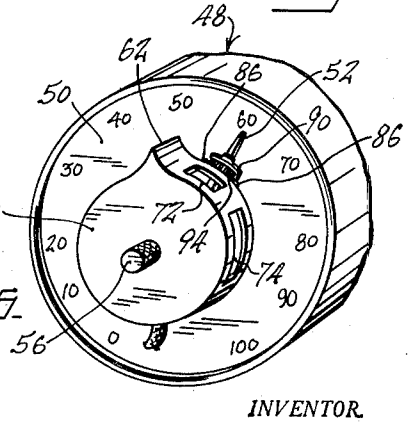

FIG. 5.

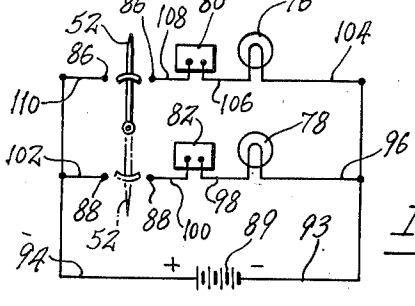

FIG. 6.

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COMBINED SPEEDOMETER SIGNALLING DEVICE

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6 Claims. (Cl. 340—266)

This invention relates to a signaling device for association with an automobile speedometer. More particularly, the invention has reference to a signaling device which is adapted to be preset at a selected location, after which the device will be operative to provide a signal (either audible or visible) that will acquaint the operator with the fact that he is either exceeding the speed at which the device has been preset, or alternatively, has decelerated below said speed.

The desirability of a signaling device of the type stated will be well appreciated among vehicle operators. Often, particularly when one is driving over a flat straight highway, the speed of the vehicle tends to "creep" upwardly, without the operator's being aware that he is accelerating above the speed limit for the particular road. Under these circumstances, it is desirable that some means be provided which will immediately signal to the vehicle operator that where, for example, the speed limit is 50 miles per hour, he has increased the speed of the vehicle to an extent beyond a safe speed, as for example, to 57 or 60 miles per hour.

Another object of the present invention is to provide a device as described which will not only acquaint the vehicle operator with the fact that he has increased the vehicle speed above that permissible for the particular road over which he is traveling, but also, will acquaint the operator with the fact that he has, subsequently, decreased the speed until it is again at a safe level. All this is done without necessity of the vehicle operator glancing down at the speedometer under circumstances that would take his attention away from the road.

Another object of importance, in at least one form of the invention, is to provide a device as stated which can be mounted upon conventional speedometers without requiring more than a minimum modification or redesign of said speedometers, thus permitting the device to be sold as a separate attachment or accessory, that can be mounted in place upon a speedometer, without more than a minimum amount of difficulty.

Yet another object is to provide a device as stated in which, in at least one form of the invention, means is provided that will produce different visual and/or audible signals, depending upon the extent to which the vehicle operator has exceeded the speed limit. In this way, it is proposed to provide even more of a deterrent for the vehicle operator to drive at a speed in excess of the maximum speed permitted on the particular road.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a front elevational view of a vehicle speedometer, equipped with a signaling device formed in accordance with the present invention, the wiring used in the device being illustrated diagrammatically.

Fig. 2 is a view substantially on line 2—2 of Fig. 1.

Fig. 3 is an enlarged sectional view substantially on line 3—3 of Fig. 2.

Fig. 4 is a view of a modified form, partly in front elevation and partly in section.

Fig. 5 is a fragmentary perspective view of the form of the device shown in Fig. 4.

Fig. 6 is an electrical diagram of the modified form.

Fig. 7 is an enlarged, fragmentary perspective view of the mileage indicator arm, equipped with an electrical brush used for the device.

Fig. 8 is a greatly enlarged, transverse sectional view substantially on line 8—8 of Fig. 4.

Fig. 9 is an enlarged, detail sectional view taken through the center of the signaling device shown in Fig. 4.

In the form of the invention shown in Figs. 1–3, a generally conventional automobile speedometer has been designated by the reference numeral 10, and includes the usual casing 12 which in the illustrated example is of tapering formation. The speedometer cable 14 extends to the casing 12, and as will be understood, said cable 14 when rotated serves to actuate the indicator arm of the speedometer, so as to show the speed at which the vehicle is traveling. The dial on the speedometer has been designated at 16, and is provided with the usual numerical indicia 18 arranged in a circular series about the margin of the dial to designate the miles per hour at which the vehicle is traveling.

Spaced forwardly of the dial 16 is a cover glass or side window 20 secured in the open front of the casing 12.

The indicator arm has been designated by the reference numeral 22, and during use of the vehicle, said arm will traverse the series of indicia 18, so as to continually provide a visual indication as to the speed at which the vehicle is traveling. At its inner end, the arm 22 is secured to a hollow shaft or sleeve 24, rotatably mounted in a center opening provided in the dial 16, and it will be understood that although not illustrated, a completely conventional mechanism well known in the art, would be used to transmit movement to the hollow shaft 24 and arm 22, responsive to rotation of the speedometer cable 14.

In accordance with the invention, circumposed about the hollow shaft 24 in contact with said shaft, is a flat plate 26 which is stationarily mounted against the back of the dial 16, the plate 26 having a center opening of the same diameter as and registering with the center opening of the dial 16.

A lead 28 is connected to the flat plate 26, and extends through an opening formed in the back end of the housing 12, the lead extending (see Fig. 1) to one post of the automobile battery 30.

Rotatably mounted within the hollow sleeve 24 in concentric relation to said sleeve, but electrically insulated from the sleeve by a spacer sleeve 34 of electrical insulative material such as fiber, is a shaft or spindle 32. This projects beyond the front end of the hollow shaft 24 in the space between the cover plate 20 and dial 22. The forwardly projecting end of the spindle 32 is formed with a reduced, axial extension 36 of non-circular cross sectional configuration, the extension 36 in the illustrated example being square in cross section. The extension 36 engages in a complementarily shaped opening 38 formed in the inner end of the indicator member 40 of the device. The member 40, like the index arm 22 of the speedometer, extends radially from the axis of rotation of the shaft 32, 24. In this connection, the shaft 32 is frictionally engaged within the fiber sleeve 34, to such an extent as will permit the shaft 32 to be rotated, but to frictionally engage the inner surface of the spacer sleeve 34 in each position to which the shaft 32 is rotated, thus

to hold the shaft 32 in the selected position of rotation.

Secured to the outer end of the member 40 is a wire brush 42, the brush 42 being formed as a set of bristles of fine, highly flexible and resilient, electrically conductive wires. The member 40, in this connection, is of electrically conductive material, as is the shaft 32. Further, the mileage indicating arm 22 of the speedometer is also of electrically conductive material, as is the hollow shaft 24 and plate 26.

Receiving the forwardly projecting end of the extension 36 is a turning knob 44, the outer end of which is knurled, the knob 44 being rotatably engaged in a center opening formed in the cover plate 20. The knob 44 is adhesively or otherwise fixedly secured to the extension 36, and permits the user to rotate the shaft 32 to a selected extent, to dispose the member 40 in a selected position, in which it points to a selected numerical indicium 18.

Soldered or otherwise fixedly secured to the back end of the shaft 32 is a lead 46, extending to one side of a bell 47, buzzer, or other audible signal device, to the other side of which is connected a lead extending to the negative post of the battery 30.

By reason of this arrangement, it will be seen that there is a normally open switch, when the arm 40 and member 22 are not in longitudinal alignment. Thus, in operation of the vehicle, and assuming that the vehicle owner is traveling over a stretch of road in which the speed limit is 35 miles per hour, the operator rotates the knob 44 to dispose member 40 where it will point to the 35 mile per hour location on the speedometer dial 16. If desired, the member 40 can be advanced 2 or 3 miles per hour beyond the maximum speed limit, since ordinarily, one can exceed the legal speed limit by 2, 3, or even 5 miles per hour without subjecting himself to arrest by an enforcement officer.

In any event, during operation of the vehicle, as long as one is traveling below the speed limit, the circuit to the audible signal device 47 will not be closed. However, as one reaches the speed limit, the brush 42 will be engaged by the speedometer index arm 22. A circuit will thus be closed to the signal device 47, providing the operator with an audible signal that he has reached the maximum speed limit permitted.

If the vehicle continues to accelerate, ultimately the arm 22 will travel past the member 40, out of engagement with the bristles of the wire brush 42, and the circuit will again be opened. Subsequently, during deceleration, as the speedometer arm 22 again passes the arm 40 at the 35 mile per hour location, the bristles will be contacted once again and a circuit will be closed to energize the audible signal device 47 again. In this way, the vehicle operator need not glance at the speedometer, and can devote his full time and attention to the road. Should he exceed the speed limit, he need only decelerate until he again hears the audible signal, at which time he knows that he has lowered the vheicle speed to a proper extent.

Of course, the member 40 is presettable at any desired location, and on the open road, can be set at 50, 55, or 60, depending upon the speed limit of the particular road over which the vehicle is being driven.

In the form of the invention shown in Figs. 4–9, the speedometer 48 is wholly conventional, and the device illustrated is one that can be used as an accessory or separate attachment capable of being mounted upon the speedometer without requiring modification or redesign of the speedometer. In this form of the invention, the speedometer 48 has a dial face 50, traversed by a speedometer index arm 52. All this is of conventional construction.

In mounting the device, one first removes the cover plate or glass of the speedometer 48. Then, a flat, circular disc 54 smaller in diameter than the diameter of dial 50, and formed throughout of plastic or other non-electrically-conductive material, is inserted, said disc being integral at its center with a forwardly projecting knob 56 adapted to extend through a center opening formed in a cover plate similar to that shown in Fig. 2. Knob 56 is continued inwardly of the disc 54 as shown in Fig. 9, and is formed at its inner end with an axial recess rotatably engaging a forwardly projecting extension 58 provided upon the shaft of the speedometer index arm 52. It will be understood, in this connection, that the extension 58 would be a stationary portion of the speedometer, the index arm 52 being mounted upon a sleeve that is rotatable upon the shaft extension 58. The knob 56 is engaged with the extension 58 sufficiently tightly to permit the knob to be rotated relative to the shaft extension, but to be held in selected positions to which it is rotated.

Integrally formed upon the disc 54, at its margin, is a flange 60 extending toward the dial face 50, and also integral with the disc is a radial indicator member 62, which can comprise simply a small point formed upon the flange 60. Also integrally formed as a part of the device are radial partitions 64 extending between the knob 56 and the flange. The partitions 64, 66, 68, 70 are spaced angularly about the axis of rotation of the device. Between the partitions 64, 68, which partitions are disposed at approximately 45° to one another, there is defined a space provided with a window opening 72. A larger window opening 74 is formed in the flange, between partitions 68, 70, which are disposed at a wide obtuse angle to one another. Mounted in the partitions 64, 70 are electric light bulbs 76, 78, which can be ordinary flashlight or small vehicle light bulbs. The bulb 76 is preferably amber colored and the bulb 78 is red in color. Alternatively, white bulbs can be used and the window openings 72, 74 respectively covered over with amber and red translucent material.

Mounted upon opposite sides of the partition 66 are buzzer devices 80, 82, the sounds of which differ. For example, the buzzer device 80, which is in series with the amber bulb 76, can have a relatively light sound, while the buzzer 82 can be provided with a stronger, harsher tone.

Secured to the bottom edge of the flange 60 (see Fig. 8) are spaced terminals 86, 86, and 88, 88. These can comprise screws threaded into openings formed in the flange 60, and as shown in Fig. 8, the terminals are adapted to be bridged by a bridging member carried by the arm 52 of the speedometer. The bridging member has been designated at 90, and comprises a cross arm of plastic or the like overlying the arm 52, said cross arm being provided with depending ears or fingers 92 that engage about the speedometer arm 52. Embedded in the cross arm 90 are bristles 94, said bristles extending through an arcuate path about the center of rotation of the arm 52, the bristles being arranged in a row as long as the space between the terminals 86.

As a result, when the arm 52 moves into a position in which the cross arm will bridge the terminals 86, the electrically conductive bristles will permit a circuit to be closed through the terminals 86. Similarly, when the arm 52 continues to move about its axis of rotation, to bridge the terminals 88, a circuit will be closed once again.

In use of the device, it will be seen that the conventional speedometer can be equipped with the device, with said device constituting a separate accessory that can be easily mounted in place. It is merely necessary that the bridging element shown in Fig. 7 be attached to the speedometer arm 52, and further, the necessary wiring connections are made to the vehicle battery 89. A lead 93 extends from one side of the battery, and a lead 94 extends from the other side of the battery. A lead 96 is connected to lead 93, and is connected to one side of the red bulb 78. A lead 98 is connected to the other side of the blub, and it is connected to one side of the buzzer 82. A lead 100 is connected between the other side of the buzzer 82 and one of the terminals 88. A lead 102 is connected between the other terminal 88 and

the lead 94 extending back to the battery. Similarly, a lead 104 is connected between lead 93 and one side of amber bulb 76, while a lead 106 is connected between the other side bulb 76 and buzzer 80. A lead 108 is connected between the other side of buzzer 80 and one of the terminals 86, while a lead 110 is connected between the other terminal 86 and the lead 94.

It will be seen that by reason of this wiring, the device can be bodily adjusted about its axis of rotation to a selected location. For example, if the device is being used on a highway in which the speed limit is 50, it can be set as shown in Fig. 4. Subsequently, when the speed exceeds 50 to the extent of 3 or 4 miles per hour, the arm 52 will be disposed as shown in Fig. 4, and the bridging element 90 will be disposed in the position shown in Fig. 8. This will cause a circuit to be closed to the amber bulb 76, and at the same time, the signal 80 will be audibly sounded. If the vehicle is being operated at night, the amber light cast through the opening 72, to the space on the speedometer dial between the numerals 50, 60, illuminates in an amber glow the outer end of the index arm 52, the driver thus being given both a visual and an audible warning signal that he has exceeded the speed limit.

If the vehicle speed continues to accelerate, ultimately the contacts 88, 88 will be bridged by the bristles 94. Now, the other buzzer 82 will be sounded, in a more harsh tone, and the red bulb 78 will be illuminated, casting a red glow over the full range of the speedometer between 60 and 100 miles per hour to provide a further, more serious warning.

Of course, the device can be used at any location, and for example, when the member 62 is arranged to point at the number 35, the amber and red lights will go on as before, but will illuminate different parts of the speedometer dial.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and that various changes and modifications may be made within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. In a speed signaling assembly for vehicle speedometers the combination with a casing, a dial thereon having a series of indicia designating miles per hour, and with a speedometer index arm mounted to traverse said dial, of means mounted to rotate about an axis common to that of the arm, an indicating member carried by said means and adjustable by rotation of said means to a position in which it points to a selected indicium, a signal device, and means responding to movement of the index arm past said indicium for actuating said signal device, said first-named means comprising a disc having a peripheral flange, the signal device being carried by said disc, the flange having an opening, and a lamp bulb carried by the disc in position to cast its beams through the opening to provide a second, visual signal, the lamp bulb being in circuit with the signal device.

2. In a speed signaling assembly for vehicle speedometers the combination with a casing, a dial thereon having a series of indicia designating miles per hour, and with a speedometer index arm mounted to traverse said dial, of means mounted to rotate about an axis common to that of the arm, an indicating member carried by said means and adjustable by rotation of said means to a position in which it points to a selected indicium, a signal device, and means responding to movement of the index arm past said indicium for actuating said signal device, said first-named means comprising a disc having a peripheral flange, the signal device being carried by said disc, the flange having an opening, and a lamp bulb carried by the disc in position to cast its beams through the opening to provide a second, visual signal, the lamp bulb being in circuit with the signal device, the flange having a second opening spaced circumferentially thereof from the first opening, said first-named means further including a second lamp bulb casting its beams through the second opening, the speed signaling assembly including a second signal device in circuit with the second lamp bulb, said disc including means responding to further movement of the index arm past said indicium for energizing the circuit including the second signal device and second lamp bulb.

3. In a speed signaling assembly for vehicle speedometers the combination with a casing, a dial thereon having a series of indicia designating miles per hour, and with a speedometer index arm mounted to traverse said dial, of means mounted to rotate about an axis common to that of the arm, an indicating member carried by said means and adjustable by rotation of said means to a position in which it points to a selected indicium, a signal device, and means responding to movement of the index arm past said indicium for actuating said signal device, said first-named means comprising a disc having a peripheral flange, the signal device being carried by said disc, the flange having an opening, and a lamp bulb carried by the disc in position to cast its beams through the opening to provide a second, visual signal, the lamp bulb being in circuit with the signal device, the flange having a second opening spaced circumferentially thereof from the first opening, said first-named means further including a second lamp bulb casting its beams through the second opening, the speed signaling assembly including a second signal device in circuit with the second lamp bulb, said disc including means responding to further movement of the index arm past said indicium for energizing the circuit including the second signal device and second lamp bulb, the second-named means including a cross arm carried by the index arm, the disc having spaced sets of contacts in circuit with the respective signal devices, and a bridging element carried by the cross arm engageable with the respective sets of contacts on said movement of the index arm past the selected indicium.

4. In a speed signaling assembly for vehicle speedometers the combination with a casing, a dial thereon having a series of indicia designating miles per hour, and with a speedometer index arm mounted to traverse said dial, of means mounted to rotate about an axis common to that of the arm, an indicating member carried by said means and adjustable by rotation of said means to a position in which it points to a selected indicium, a signal device, and means responding to movement of the index arm past said indicium for actuating said signal device, said first-named means comprising a disc having a peripheral flange, the signal device being carried by said disc, the flange having an opening, and a lamp bulb carried by the disc in position to cast its beams through the opening to provide a second, visual signal, the lamp bulb being in circuit with the signal device, the flange having a second opening spaced circumferentially thereof from the first opening, said first-named means further including a second lamp bulb casting its beams through the second opening, the speed signaling assembly including a second signal device in circuit with the second lamp bulb, said disc including means responding to further movement of the index arm past said indicium for energizing the circuit including the second signal device and second lamp bulb, the second-named means including a cross arm carried by the index arm, the disc having spaced sets of contacts in circuit with the respective signal devices, and a bridging element carried by the cross arm engageable with the respective sets of contacts on said movement of the index arm past the selected indicium, the bridging element including a series of

resilient, electrically conductive bristles carried by and extending longitudinally of the cross arm.

5. In a speed signaling assembly for vehicle speedometers the combination with a casing, a dial thereon having a series of indicia designating miles per hour, and with a speedometer index arm mounted to traverse said dial, of means mounted to rotate about an axis common to that of the arm, an indicating member carried by said means and adjustable by rotation of said means to a position in which it points to a selected indicium, a signal device, and means responding to movement of the index arm past said indicium for actuating said signal device, said first-named means comprising a disc having a peripheral flange, the signal device being carried by said disc, the flange having an opening, and a lamp bulb carried by the disc in position to cast its beams through the opening to provide a second, visual signal, the lamp bulb being in circuit with the signal device, the flange having a second opening spaced circumferentially thereof from the first opening, said first-named means further including a second lamp bulb casting its beams through the second opening, the speed signaling assembly including a second signal device in circuit with the second lamp bulb, said disc including means responding to further movement of the index arm past said indicium for energizing the circuit including the second signal device and second lamp bulb, the second-named means including a cross arm carried by the index arm, the disc having spaced sets of contacts in circuit with the respective signal devices, and a bridging element carried by the cross arm engageable with the respective sets of contacts on said movement of the index arm past the selected indicium, the bridging element including a series of resilient, electrically conductive bristles carried by and extending longitudinally of the cross arm, the series of bristles extending in an arc about the axis of rotation of the arm.

6. In a speed signaling assembly for vehicle speedometers the combination with a casing, a dial thereon having a series of indicia designating miles per hour, and with a speedometer index arm mounted to traverse said dial, of means mounted to rotate about an axis common to that of the arm, an indicating member carried by said means and adjustable by rotation of said means to a position in which it points to a selected indicium, a signal device, and means responding to movement of the index arm past said indicium for actuating said signal device, said first-named means comprising a disc having a peripheral flange, the signal device being carried by said disc, the flange having an opening, and a lamp bulb carried by the disc in position to cast its beams through the opening to provide a second, visual signal, the lamp bulb being in circuit with the signal device, the flange having a second opening spaced circumferentially thereof from the first opening, said first-named means further including a second lamp bulb casting its beams through the second opening, the speed signaling assembly including a second signal device in circuit with the second lamp bulb, said disc including means responding to further movement of the index arm past said indicium for energizing the circuit including the second signal device and second lamp bulb, said lamp bulbs being of different colors, the signal devices respectively associated therewith being of the audible type and being of different sounds.

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