Feb. 5, 1963 M. KNUTSON 3,076,960

BACK-UP WARNING SIGNAL FOR AUTOMOTIVE VEHICLES

Filed Dec. 15, 1961

FIG. 1

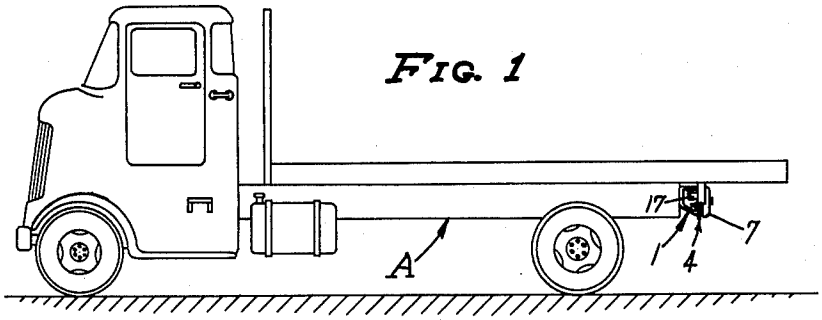



FIG. 2

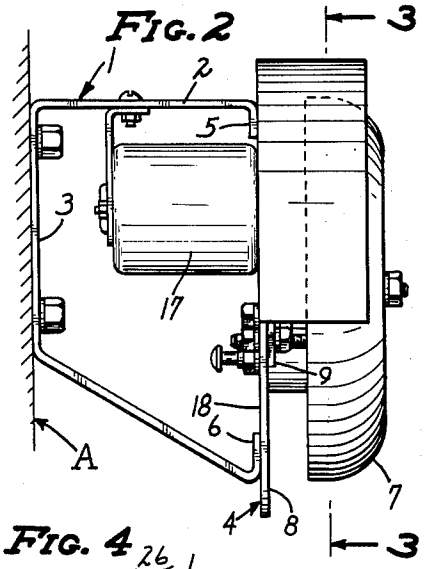



FIG. 3

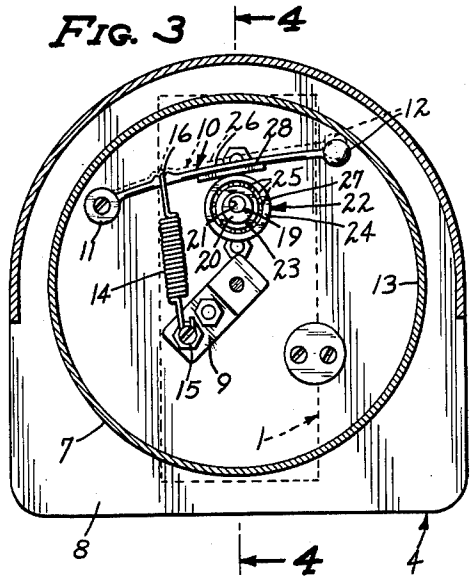



FIG. 4

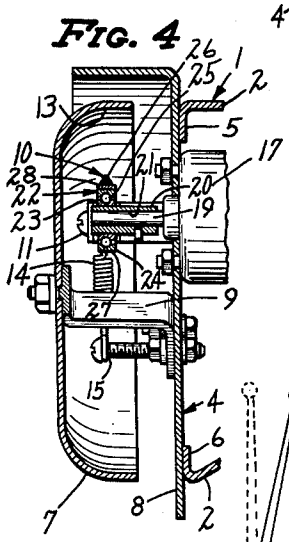



FIG. 5

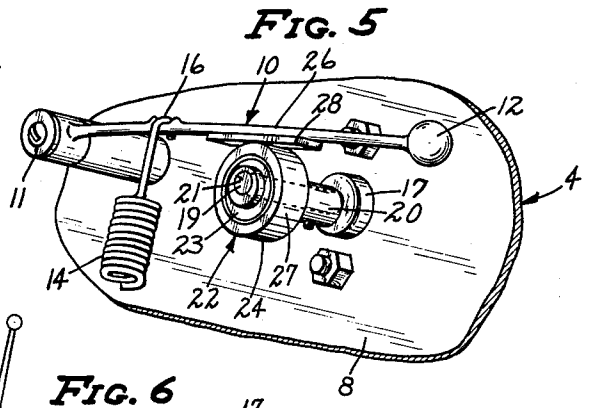
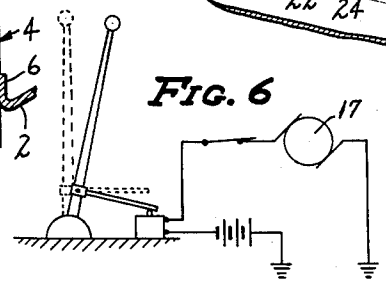



FIG. 6




INVENTOR.
MERRITT KNUTSON
BY
Merchant, Merchant & Gould
ATTORNEYS

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# BACK-UP WARNING SIGNAL FOR AUTOMOTIVE VEHICLES

Merritt Knutson, Williston, N. Dak.

Filed Dec. 15, 1961, Ser. No. 159,498
2 Claims. (Cl. 340—392)

My invention relates to and provides a novel warning signal for automotive vehicles having reversing mechanisms, and more specifically is in the nature of an improvement upon the structure of my Patent No. 2,972,139 of February 14, 1961, entitled "Back-Up Warning Signal for Automotive Vehicles."

Still more specifically, my invention relates to novel means for substantially reducing the wear between the limited moving parts, namely, between the bell striker and the cam means for imparting the bell striking movements to the striker.

The primary objects of my invention is the provision of a device of the class immediately above described which incorporates but a minimum of working parts, is rugged and durable in construction, and may be produced and sold at a minimum of cost.

The above and still further objects of my invention will become apparent from the following detailed specification, appended claims and attached drawings.

Referring to the drawings wherein like characters indicate like parts throughout the several views:

FIG. 1 is a view in side elevation of a conventional motor truck having my novel warning apparatus attached thereto;

FIG. 2 is a view in side elevation of my novel warning apparatus;

FIG. 3 is a sectional view taken on the line 3—3 of FIG. 2;

FIG. 4 is a sectional view taken on the line 4—4 of FIG. 3, some parts being broken away;

FIG. 5 is an enlarged fragmentary view in perspective of a striker and operating cam therefor; and

FIG. 6 is a diagrammatic view of the electrical circuit utilized in my invention.

Referring with greater particularity to the drawings, the numeral 1 indicates in its entirety a mounting bracket adapted to be suitably secured to the chassis of a conventional motor vehicle identified by the letter A. As shown, the bracket 1 comprises a generally C-shaped element 2 formed from metal strap material or the like and having a vertically extended portion 3 which is adapted to be secured to the vehicle A by any suitable means. A mounting plate 4 is welded or otherwise rigidly secured to the extended upper and lower end portions 5, 6 of the C-shaped bracket 2 in a vertical plane.

A conventional bell 7 is rigidly secured to the outer surface 8 of the mounting plate 4 through the medium of a mounting post 9, the projected outer end of which engages the center of the bell 7 and holds the same in spaced relation to the mounting plate 4, as shown particularly in FIG. 4. A striker 10 has one end pivotally secured as at 11 to the outer surface 8 of the mounting plate 4 within the confines of the bell 7 for swinging movements of the free opposite end 12 thereof toward and away from the inner peripheral surface 13 of the bell 7. A coil tension spring 14 has one end anchored as at 15 remotely from the striker 10 and has its opposite end in engagement with the intermediate portion of the striker 10 as indicated at 16, whereby to yieldingly bias tthe free end 12 of the striker 10 away from striking engagement with the inner peripheral surface 13 of the bell 7.

For the purpose of imparting striking movements to



the striker 10. I provide an electric motor 17 which is rigidly secured to the inner face 18 of the mounting plate 4. The motor 17 has a drive shaft 19 which projects through the mounting plate 4 and terminates in laterally outwardly spaced relation thereto. Fast on the projected outer end of the drive shaft 19 is a tubular bushing 20 having a shaft-receiving opening 21 which, as shown particularly in FIGS. 3 and 5, is eccentric to the axis of said bushing 20.

Mounted on the bushing 20 is a roller contact bearing, identified in its entirety by the numeral 22, and comprising an annular inner race 23 fast on said bushing 20, an outer race 24 and roller elements, shown as being in the nature of balls 25, interposed between the inner and outer races 23, 24. As shown, the coil spring 14, in biasing the striker 10 away from engagement with the peripheral inner wall 13 of the bell 7, biases the intermediate portion 26 thereof toward engagement with the peripheral outer surface of the outer race 24. Consequently, rotation of the motor drive shaft 19 with the eccentric bushing 20 thereon positively forces the striker 10 toward the dotted line position of FIG. 3 during each rotation wherein the enlarged free end 12 is in striking engagement with the peripheral surface 13 of the bell 7. Obviously, because of the frictional engagement between the striker 10 and the outer peripheral surface 27 of the outer race 24, there will be practically no rotation of said outer race 24 with respect to the striker 10, this being due to the fact that there is practically no resistance afforded between the inner and outer race elements 23, 24. However, to even further reduce wear between these elements, I preferably rigidly secure to the intermediate portion 26 of the striker 10 a wear-resistant plate 28 which as a transverse width substantially equal to the axial dimensions of the outer race 24 and which is adapted to ride upon the outer peripheral surface 27 of the said outer race 24. Wear-resistant plate 28 can be made from any suitable metal or other substance known to resist frictional wear.

My invention has been thoroughly tested and found to be completely satisfactory for the accomplishment of the above objects and while I have shown a preferred embodiment thereof, I wish it to be understood that same may be capable of modification without departure from the scope and spirit of the appended claims.

What I claim is:

1. In a device of the class described, a mounting plate, a bell, anchoring means extending between said mounting plate and the central portion of said bell and rigidly maintaining said bell in spaced overlying relationship to said mounting plate, a striker for said bell, means pivotally securing one end of said striker to said mounting plate within the confines of said bell for movements of the opposite end thereof toward and away from striking engagement with the internal periphery of said bell, an electric motor, means securing said electric motor to the opposite side of said mounting plate with its drive shaft projecting therethrough, cam means on the projected end of said drive shaft and engageable with the intermediate portion of said striker to move the free end thereof into bell striking engagement, spring means yieldingly biasing said striker in a direction away from striking engagement with said bell, said mounting plate projecting laterally outwardly in all directions from the perimeter of said bell, the upper end portion of said mounting plate defining a semi-cylindrical guard plate which overlies said bell in spaced concentric relationship to said bell and substantially covering said bell, said cam means comprising a rolling contact bearing comprising inner and outer annular races and rolling elements between said races, said

inner race being mounted on said drive shaft in eccentric relationship to the axis thereof, said outer race having an outer peripheral surface operatively engaging said striker.

2. The structure defined in claim 1 in which said inner race is mounted on said drive shaft by means of a bushing having a shaft-receiving opening eccentric to the axis of said bushing, and in further combination with an



enlarged wear-resistant plate secured to the intermediate portion of said striker and engageable with the outer peripheral surface of said outer race, said wear-resistant plate having a transverse width corresponding approximately to the axial dimension of said outer race.

No references cited.