Aug. 12, 1930. F. E. LUKAN 1,772,906

SAFETY GUARD BUMPER

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Fig. 1.

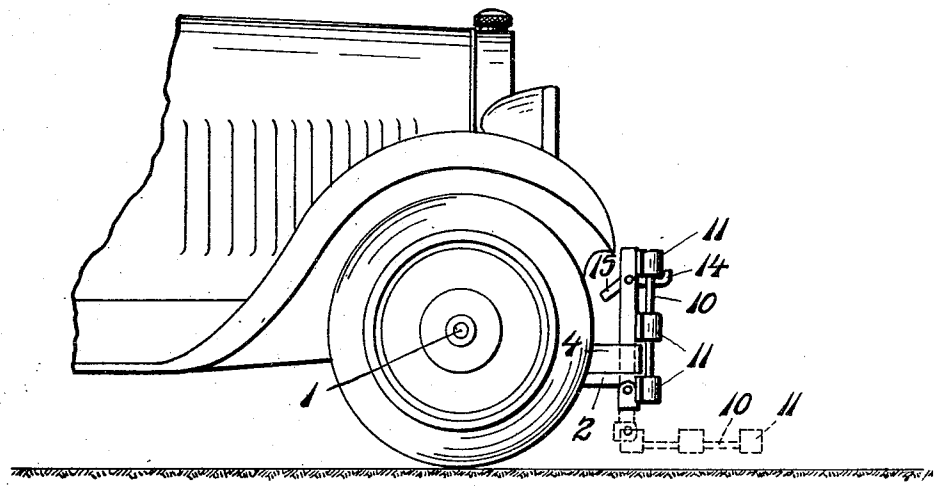


Fig. 2.

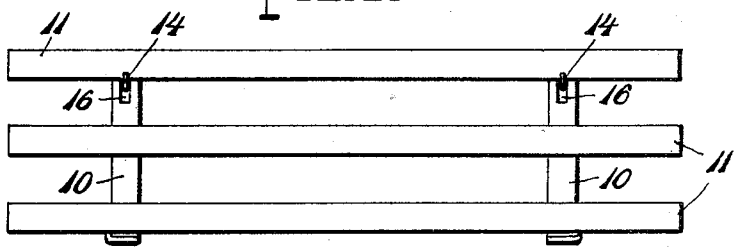
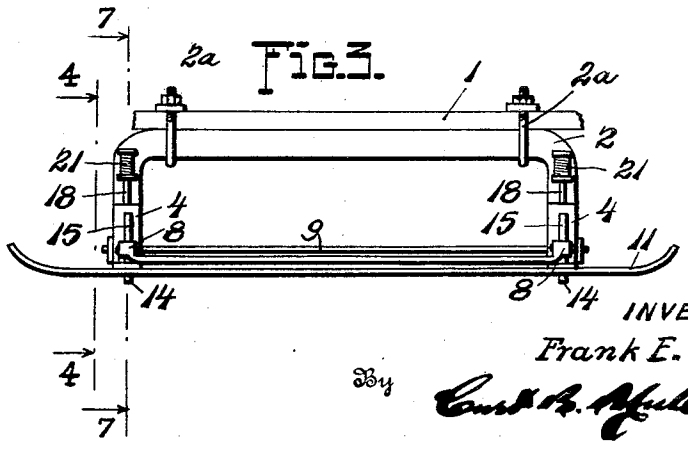


Fig. 3.



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Fig. 4.

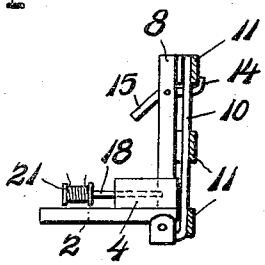


Fig. 5.

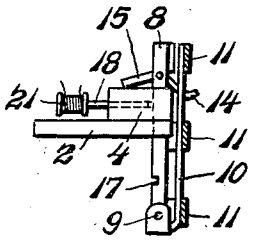


Fig. 6.

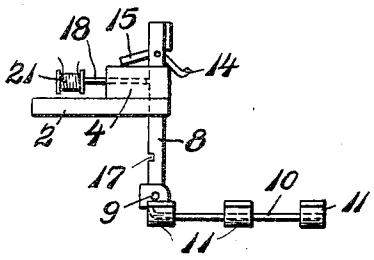


Fig. 7.

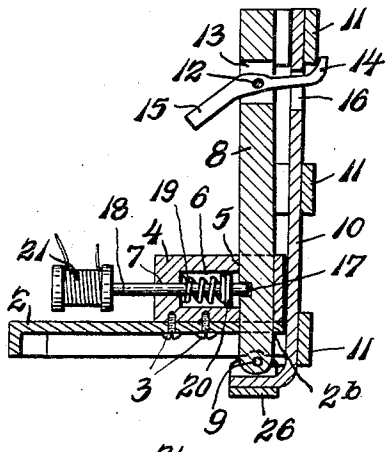
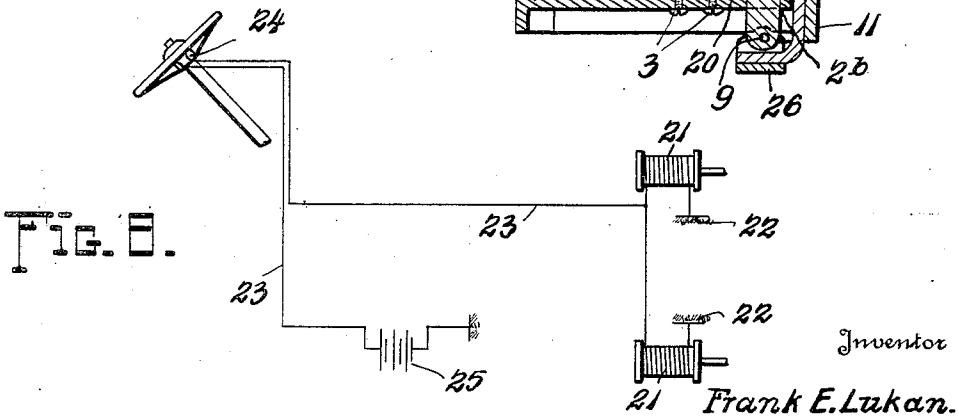


Fig. 8.



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Patented Aug. 12, 1930 1,772,906

UNITED STATES PATENT OFFICE

FRANK E. LUKAN, OF CLEVELAND, OHIO

SAFETY GUARD BUMPER

Application filed December 3, 1929. Serial No. 411,255.

My invention pertains to a safety guard bumper and more specifically to a safety attachment intended for mounting on the front of an automobile, or other vehicle which is adapted to assume two alternative positions and to be shifted from one to the other subject to the control of the driver of the vehicle.

I am not unaware that the art to which my invention pertains is rather highly developed and as evidence state my familiarity with adopted street car fenders and with the following chronological list of prior patents:

O. G. Clay, No. 1,106,783, of Aug. 11, 1914; W. I. Gates, No. 1,121,346 of Dec. 15, 1914; A. L. Patterson and A. M. Ferguson, No. 1,125,877 of Jan. 19, 1915; R. D. Braddy, No. 1,154,478, of Sept. 21, 1915; H. H. Barr, No. 1,220,930, of Mar. 27, 1917; M. Ihnat, No. 1,238,677, of Aug. 28, 1917; G. Halliday, No. 1,368,142, of Feb. 8, 1921; T. F. Buck, No. 1,415,519, of May 9, 1922; R. Mayne-Reade and P. J. Quinn, No. 1,437,945, of Dec. 5, 1922; S. Morgenstein No. 1,448,459, of Mar. 13, 1923; M. Resk, No. 1,459,314, of June 19, 1923; E. Panza, No. 1,488,551, of Apr. 1, 1924; H. G. Stump, No. 1,558,411, of Oct. 20, 1925; M. Poljanic, No. 1,575,227, of Mar. 2, 1926.

The objects of my invention are:

(1) To provide a durable construction adequately economical of manufacture.

(2) To provide a device of the character stated, which will normally assume an elevated and substantially vertical position, but which on emergency is adapted to be released and allowed gravitationally to fall a predetermined distance and a part thereof to be automatically released in a distinct manner so that it will assume a substantially horizontal position close to the eground.

It is to be realized that the scope of my invention comprehends many equivalent constructions. The showing of the drawings and the particular description are merely specific exemplifications of a plurality of mechanical embodiments and arrangements.

Adverting to the drawings:

Figure 1 is a side elevation of the front end of an automobile showing carried ahead of it a bumper embodying my invention and in broken lines an alternative position of certain parts thereof.

Figure 2 is a front elevation solely of my bumper in its normal position.

Figure 3 is a top plan view of Figure 2.

Figure 4 is an end view viewed on line 4—4 of Figure 3.

Figure 5 is a view corresponding to Figure 4 showing certain movable parts after the first step of emergency shift to a lowered position.

Figure 6 is a view corresponding to Figures 4 and 5 showing one movable part after the second step of emergency shift to a horizontal position.

Figure 7 is an enlarged vertical section on line 7—7 of Figure 3.

Figure 8 illustrates a wiring diagram of the electric control circuit.

To the front axle 1 of an automobile chassis I clamp the primary supporting member 2 of my appliance as by means of U-bolts 2^a. As illustrated in Figure 3, the member 2 is of inverted U-shape to include forwardly extending extremities so that certain other parts of my appliance will be carried ahead of the front wheels. Directing attention to Figure 7, it will be observed that there is secured to each of the forwardly projecting extremities of the support 2, as for instance by screws 3, a block 4 of appropriate hollowed form to include a vertically extending hole 5 which registers with a hole 2^b in one of the forward extremities of the support, and to include also a horizontally extending bore 6 which communicates with the hole 5 and rear end 7, which is of smaller diameter. Loosely mounted in each of the holes 5 is a supporting bar 8 adapted gravitationally to slide therein and to be held in an elevated position in a manner to be hereinafter explained. Hinged at 9 to each of the lower extremities of the two bars 8 is a bumper composed of two upright members 10 and three spaced steel bands 11, which are secured to the members 10 in any suitable manner.

A pivot pin 12 extends horizontally across a hole 13 provided near the top of each of the bars 8 and mounted to swing on each of the pins 12 is a catch including a forwardly

and upwardly directed hook 14 and also including a rearward projection 15. Each hook 14 projects through a slot 16, near the top of one of the members 10, and is long enough to engage the lower front edge of the upper one of the three bands 11 when the bumper is swung upwardly to the position shown in Figures 4 and 7, where its members 10 are juxtaposed to the bars 8 and when also the heavier rear projection 15 has been allowed to swing the hook 14 into its functionating position. The position in which my bumper appears in Figures 4 and 5 is the one in which it is normally to be held preparatory to releasing only in the event of emergency.

The rear of each bar 8 is provided with a recess 17, which will be horizontally alined with the bore 7 when the bar 8 has been slid to its elevated position, whereby the forward extremity of one of a pair of elongated armatures 18, which is slidable in the bore 7, may occupy a recess 17 as normally urged to such position by the action of a spring 19, which is located in the bore 6 and which acts against a collar 20 interiorly formed on the armature. The recessional movement of each armature, against the action of the spring 19, is accomplished through the agency of an electro-magnet 21. The two electro-magnets 21 are part of an electric circuit diagrammatically shown in Figure 8 to comprise grounds 22, leads 23 to and from a switch 24 conveniently located on the steering wheel and a battery 25.

Ordinarily, my bumper will be caused to assume the position shown in full lines in Figure 1, to which it has been normally swung after raising the rear ends 15 of the catches to permit the hooks 14 to pass through the slots 16 and after the springs 19 have been permitted to project the armature extremities into the recesses 17 by reason of the latter having been brought into proper alinement upon elevation of the bars 8 to their upward limit as prescribed by lower rearward projections 26 on the bumper. In order to move the bars 8 to their uppermost position, the circuit will have to be closed in order temporarily to hold the forward ends of the armatures from their obstructing positions. When the switch 24 is opened, the armatures will be urged into the recesses 17 to thereby hold the bars 8 in their raised positions and the gravitationally downward swing of rear ends 15 of the catches would cause the hooks 14 to hold the bumper frame in a substantially vertical position. On emergency, as for instance, when collision with a pedestrian is imminent, the driver will close the switch 24 thereby simultaneously retracting both armatures whereupon gravity causes the bars 8 and attached bumper frame to fall. Near the end of such falling movement, the rear ends 15 of the catches will impinge upon the upper surfaces of the blocks 4, to become raised in consequence to the position shown in Figures 5 and 6, whereby the bumper frame is released and due to the jar the latter swings forwardly in a downward direction from the position in which it appears in Figure 5, to the position in which it appears in Figure 6 and also in dotted lines in Figure 1.

I claim:

1. In a safety-guard bumper, the combination with a bumper support, of a bumper comprising two pivotally connected parts adapted for movement in unison on said support and one also for automatic movement relatively to the other after a predetermined distance of their movement in unison.

2. In a safetv-guard bumper, the combination with a bumper support, of a bumper, comprising two upright members slidably connected with said support and a guard frame pivotally connected with each of said members.

3. In a safety-guard bumper, the combination with a bumper support, of a bumper comprising two members slidably connected in spaced relation with said support, a guard frame pivotally connected with the lower ends of said members, and releasable means for holding said members in an elevated position.

4. In a safety-guard bumper, the combination with a bumper support, of a bumper comprising two upright members slidably connected in spaced relation with said support, a guard frame pivotally connected with the lower ends of said members, releasable devices for holding said members in an elevated position against the action of gravity and means for locking said members and guard to each other, said means being adapted automatically to unlock following the release of said devices.

5. In a safety-guard bumper, the combination of a support fixed to the front of a vehicle, a structure including a bumper and a member having ends which are hinged together, said member being loosely connected with said support, means for holding said bumper in juxtaposition to said member, and a locking device subject to release by the driver of the vehicle for holding said member in an elevated position, said means being automatically released during the gravitational fall of said member to permit said bumper to swing to a substantially horizontal position.

6. In a safety-guard bumper, the combination of a support fixed to the front of a vehicle and provided with upright guiding holes, a structure including a bumper and pair of bars having ends which are hinged together, said bars being slidably mounted in said holes respectively, means carried by said bars for holding said bumper in juxtaposition to said bars, and locking devices carried by said support and subject to release by the driver of the vehicle for holding said bars in their elevated positions in said holes, said

means being automatically released during the gravitational fall of said bars to permit said bumper to swing to a substantially horizontal position.

7. In a safety-guard bumper, the combination of a support fixed to the front of a vehicle and provided with a pair of spaced vertically extending holes, a pair of holders slidable in said holes, a bumper having spaced portions of one of its edges hinged to said holders respectively, catches carried by said holders for holding said bumper in juxtaposition to said holders, and locking devices carried by said support and subject to release by the driver of the vehicle for sustaining said holders in their elevated positions in said holes, said catches being automatically released during the gravitational fall of said holders to permit said bumper to swing to a substantially horizontal position.

8. In a safety-guard bumper, the combination of a support fixed across the front of a vehicle and provided with a pair of spaced vertically extending holes, a pair of holders slidable in said holes, a bumper having spaced portions of one of its edges hinged to said holders respectively, catches pivotally carried by said holders for holding said bumper in juxtaposition to said holders when the latter are elevated, armatures carried by said support and subject to release by the driver of the vehicle for sustaining said holders in their elevated positions in said holes, said catches being adapted to be automatically released during the gravitational fall of said holders to permit said bumper to swing to a substantially horizontal position and electro-magnets for withdrawing said armatures upon emergency.

Signed by me this 30th day of November, 1929.

FRANK E. LUKAN.