E. L. ZANE.

PULLING ATTACHMENT FOR VEHICLES.

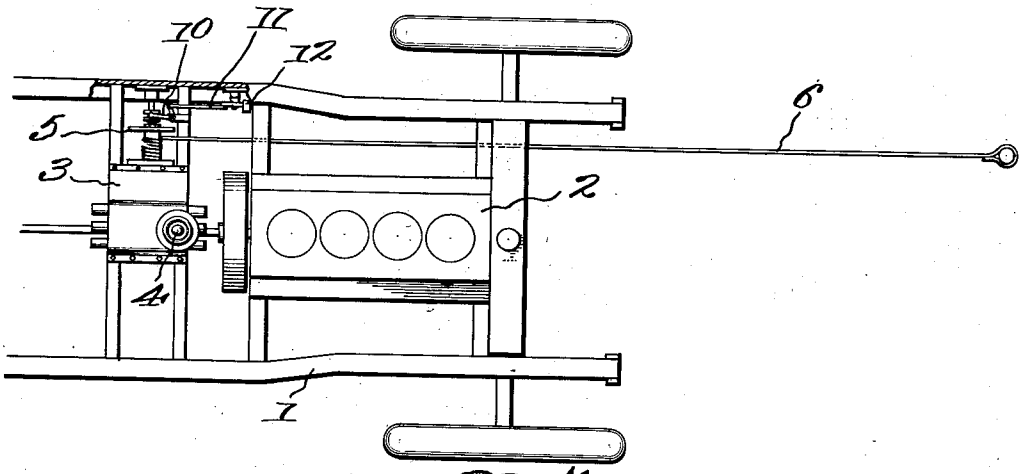
APPLICATION FILED AUG. 12, 1916.

1,219,209.

Patented Mar. 13, 1917.

3 SHEETS—SHEET 1.

Fig. 1.



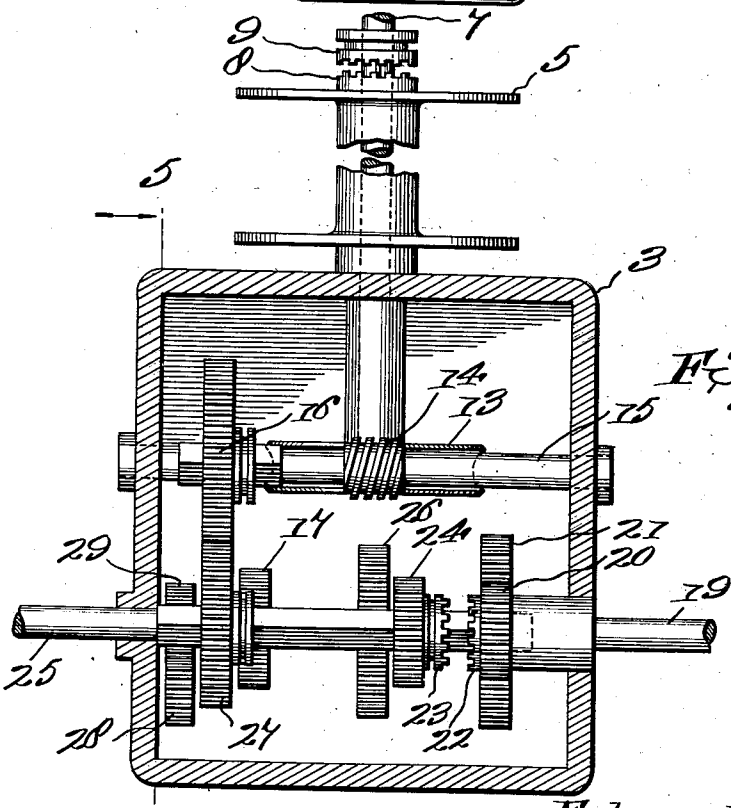


Fig. 2.

Witnesses

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3 SHEETS—SHEET 2.

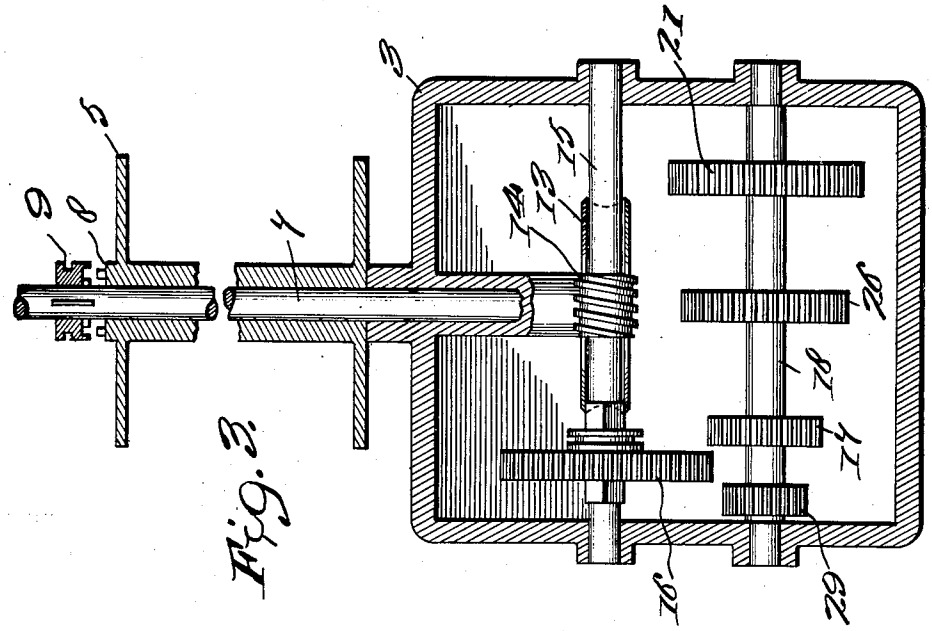


Fig. 3.

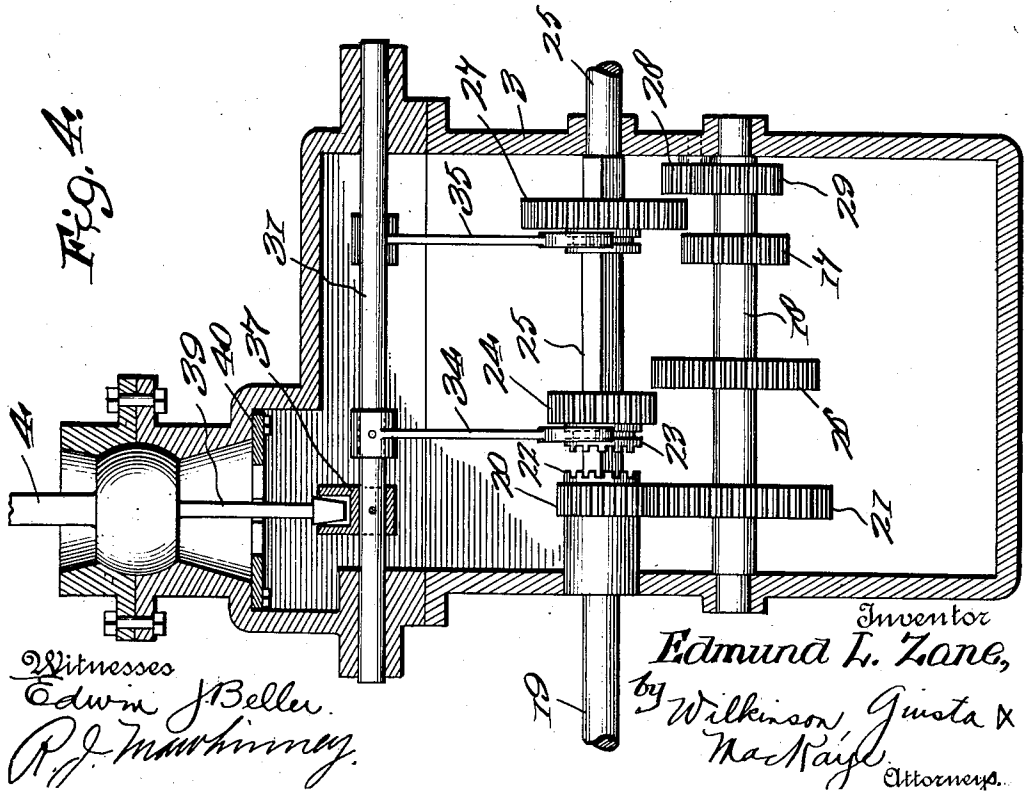


Fig. 4.

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3 SHEETS—SHEET 3.

Fig. 6.

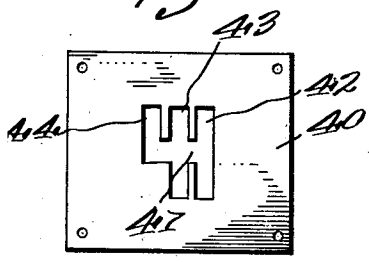


Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

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PULLING ATTACHMENT FOR VEHICLES.

1,219,209. Specification of Letters Patent. Patented Mar. 13, 1917.

Application filed August 12, 1916. Serial No. 114,599.

To all whom it may concern:

Be it known that I, EDMUND L. ZANE, a citizen of the United States, stationed at Fort Bliss, in the county of El Paso and State of Texas, have invented certain new and useful Improvements in Pulling Attachments for Vehicles; 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 improvements in pulling attachments for vehicles in which a winch is mounted in operative relation to the vehicle motor, and arranged to be driven therefrom to wind up a cable attached to a dead man for pulling the vehicle out of a stalled position, such as a bog, or slippery surface affording little or no traction, or up a steep incline, or the like.

I am aware that devices intended to accomplish a similar purpose have been heretofore proposed, but to my knowledge such devices have not been put into extensive use; for the reason, as I understand, that such prior devices are complex in construction, impose great additional weight on the vehicle, and are awkward to operate.

It is the primary purpose of the present invention to eliminate the above difficulties, and to provide an improved winch attachment that will be associated with the usual transmission mechanism of an automobile and in operative relation to be controlled from the usual transmission lever.

A further object of the present invention resides in providing an improved pulling attachment which will be simple in construction, and readily placed in operation when the vehicle becomes stalled.

With these and other objects in view the invention consists in the novel details of construction and combinations of parts more fully hereinafter disclosed and particularly pointed out in the claims.

In the accompanying drawings forming a part of this application, and in which similar reference symbols indicate corresponding parts in the several views:

Figure 1 is a plan view of a portion of the chassis of an automobile, partly in section, and illustrating as applied thereto an attachment constructed in accordance with the present invention.

Fig. 2 is a horizontal sectional view taken on the line 2—2 in Fig. 5.

Fig. 3 is a similar view taken on the line 3—3 in Fig. 5.

Fig. 4 is a vertical sectional view taken on the line 4—4 in Fig. 5.

Fig. 5 is a transverse sectional view taken on the line 5—5 in Fig. 2; and

Fig. 6 is a plan view of the guide plate.

Referring more particularly to the drawings, 1 designates generally a vehicle on which is installed a motor 2 and transmission gear, of any suitable character, contained in a casing 3, and under operation of the usual control lever 4.

At one side of the transmission casing 3 is shown, in Fig. 1, a drum 5 about which is wound a cable 6, drawn out beyond the front of the vehicle 1, where it is adapted to be attached to a stump or dead man. The drum 5 is loosely mounted over a drum shaft 7, journaled at one end in the transmission casing 3 and at its opposite end in the vehicle framework. The drum is formed with a half-clutch 8 disposed opposite a complemental half-clutch 9, keyed to rotate with the shaft 7 and to slide longitudinally thereon into and out of engagement with the half-clutch 8. The half-clutch 9 may be shifted along the drum shaft 7 by any suitable means, advantageously by the bell crank lever 10 shown in Fig. 1. A link 11 connects the bell crank 10 with a foot pedal 12 disposed convenient for engagement by the driver.

The drum shaft 7 extends within the transmission casing 3, where it is provided with a worm wheel 13 in continuous mesh with a worm 14 on a winch shaft 15. The worm wheel 13, worm 14, and winch shaft 15 are contained wholly within the transmission casing 3, the latter being journaled to rotate therein and having a gear 16 fitted to rotate therewith and slide axially therealong.

As clearly shown in Fig. 3, the gear 16 is adapted to be shifted into mesh with one of the gears 17 on the countershaft 18, when it is desired to drive the drum 5.

At 19, in Fig. 4, is shown the engine shaft, which is coupled to drive a countershaft 18 through the gears 20 and 21, the gear 20 being formed with a half-clutch 22 for engagement with a complemental half-clutch 23 on a shifting gear 24 fitted over the transmis-

sion shaft 25. The gear 24 is arranged to mesh with a companion gear 26 on the countershaft 18; and a similar sliding gear 27 on the transmission shaft 25 is adapted to be moved into engagement either with the gear 17 or with the gear 28 of the reverse gears 28, 29, all as in accordance with the well known construction and operation.

These shiftable gears may be moved into and out of engagement with their companions by any suitable mechanism, of which there are a variety, and one form of which is illustrated in the drawings. This mechanism consists in shifting rods 30, 31 and 32 having forks 33, 34 and 35 connected respectively to the gears 16, 24 and 27. With the forks 33, 34 and 35 are associated claws 36, 37 and 38 arranged to be engaged by a stem 39 projecting below the fulcrum of the control lever 4. Such stem 39 operates in the usual H-plate 40.

In operation, the control lever 4 normally occupies the transverse slot 41 in the guide plate 40, which corresponds to the neutral position of the transmission gears. In a well known manner this control lever 4 may be shifted into the longitudinal slots 42 and 43 to obtain the three speeds forward and the reverse movement.

When, however, after the vehicle has become stalled in a place which affords little or no traction, and the cable 6 has been pulled out beneath the vehicle in the manner shown in Fig. 1 and attached to a stump or dead man, by swinging the lever 4 into the L-shaped slot 44 in the guide plate 40 the stem 39 will be engaged with the claw 36 and the shifting rod 30, together with the fork 33, moved to engage the gear 16 with its complement 17 on the countershaft 18. The clutch 8, 9, having been coupled by operation of the foot pedal 12, and the motor 2 being in operation, it will be seen that the drum 5 will be rotated to wind up the cable 6, and consequently draw the vehicle 1 toward the dead man and out of the stalled position.

According to my improved device the motor 2 is allowed to run free of the vehicle while operating the drum 5, so that the engine will not be choked in case the vehicle wheels are so firmly rooted as to resist turning. The arrangement of the gearing is preferably such as to obtain a highly multiplied effect on the drum 5, so as to secure the maximum power of the engine for the drawing operation.

It will be appreciated that the control of the attachment is derived from the usual transmission lever 4, and that the operation therefor is essentially no different and involves no unusual operation than attends the usual control of an automobile.

It is obvious that those skilled in the art may vary the details of construction and arrangements of parts without departing from the spirit of my invention, and therefore I do not wish to be limited to such features except as may be required by the claims.

I claim:

1. In an improved attachment of the character described, the combination of a transmission mechanism embodying shiftable gears, a lever for throwing the transmission gears, an H-plate for guiding said lever in moving to throw in the different speeds, said plate having an additional L-slot therein communicating with the H-slot, an additional claw for engagement by said lever when swung into said L-slot, a fork movable with said claw, a gear element slidably mounted and shiftable through said fork into and out of engagement with one of the transmission gears, a drum in operative relation to be driven from said gear element when the same is shifted into engagement with the transmission mechanism, and a cable wound on said drum and adapted to be attached to a fixed object for drawing the vehicle out of a stalled position, substantially as described.

2. In an attachment of the character described, the combination of a transmission mechanism embodying shiftable gears, a lever for shifting the transmission gears, a claw arranged adjacent said transmission mechanism and adapted to be engaged by said lever when swung to one position, a fork movable with said claw, a slidable gear element movable with said fork into and out of engagement with one of the transmission gears, a drum in operative relation to be driven from said gear element when the latter is shifted into engagement with one of the transmission gears, and a cable adapted to be wound on said drum and fixed to an object for drawing the vehicle out of a stalled position, substantially as described.

3. In an attachment of the character described, the combination with a vehicle having a power source, a transmission mechanism for said vehicle embodying shiftable gears, a lever for shifting said transmission gears, a guide plate having communicating slots therein for receiving a part of the lever when moved to control the several speeds, said guide plate having an additional communicating slot therein for receiving a part of the transmission lever, a gear element shiftable into and out of engagement with one of the transmission gears, means connecting said gear element in position to be engaged and shifted by said transmission lever when moved into the additional slot in said guide plate, a drum, a shaft for said drum, gear connections between said drum shaft and shiftable gear element for rotating the drum, and a cable wound about said drum and adapted to be attached to a fixed

object for drawing the vehicle out of a stalled position, substantially as described.

4. The combination with an automobile having the usual transmission gearing contained in the usual transmission casing, and the usual lever for throwing the transmission gears, of an attachment mounted on said vehicle and including a drum shaft journaled in the vehicle frame and extending into said transmission casing, a drum loosely mounted over said shaft on the exterior of said transmission casing, a clutch for connecting said drum to said drum shaft, a cable adapted to be wound about said drum and arranged to have its ends attached to some fixed object for drawing the vehicle out of a stalled position when the cable is wound up, a worm wheel on said drum shaft within the transmission casing, a winch shaft journaled in said transmission casing, a worm on said winch shaft in continuous mesh with said worm wheel, a gear wheel shiftable on said winch shaft and adapted to drive the latter when said gear is moved into mesh with one of the transmission gear wheels, a fork connected to said shiftable gear, a claw carried on said fork and adapted to be engaged by said transmission lever when moved to one position and whereby the drum gear train is placed in mesh with the transmission gearing to drive the drum from the automobile motor, substantially as described.

In testimony whereof, I affix my signature.

EDMUND LOUGHBOROUGH ZANE.