

No. 820,102.

PATENTED MAY 8, 1906.

C. W. DUER.
AUTOMOBILE.

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Fig. 1.

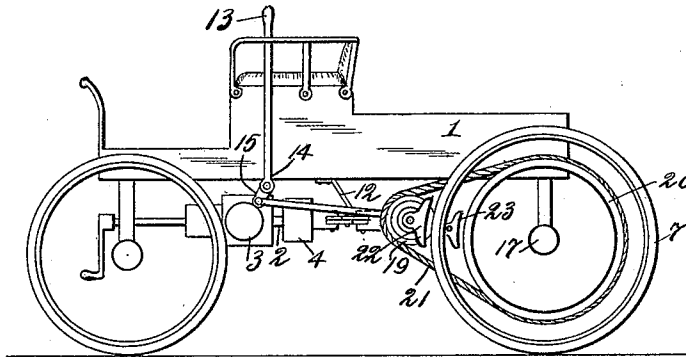


Fig. 2.

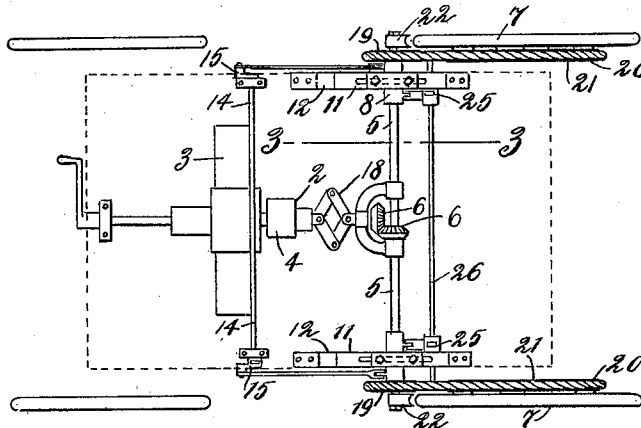


Fig. 4.

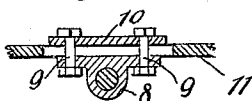
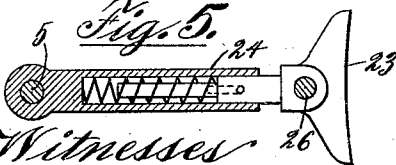


Fig. 5.

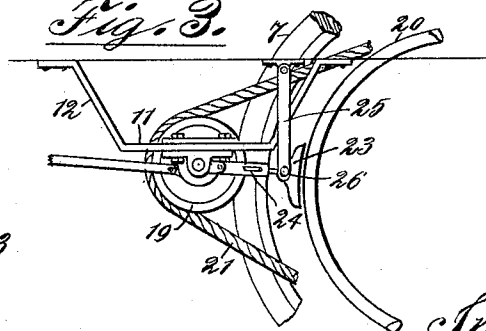


Witnesses

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Fig. 3.



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UNITED STATES PATENT OFFICE.

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AUTOMOBILE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES WILLIAM DUER, a citizen of the United States, residing at Austin, Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Automobiles, of which the following is a specification.

My improvements relate, mainly, to rope or belt driven automobiles, and have for their objects means whereby change of speed may be accomplished by increasing or diminishing frictional contact at some point in the driving-train, a more effective method of tightening and loosening the rope-drive, a better way of braking, a material reduction of parts, and various other matters that will be apparent from the ensuing description.

In the drawings, Figure 1 is a side elevation of so much of an automobile constructed according to my invention as will suffice to give a clear idea thereof. Fig. 2 is a top plan view of parts shown in the foregoing figure. Fig. 3 is an enlarged detail of parts sectioned on the line 3 3 of Fig. 2 viewed in the direction of the arrows, and Figs. 4 and 5 are enlarged details of parts hereinafter specifically referred to.

Referring now to said drawings, the numeral 1 indicates the carriage-box.

2 is the power-shaft, running centrally fore and aft of the carriage and driven from any suitable source, such as an explosion-engine 3, herein shown as located well forward under the carriage-box, and preferably so.

4 is a transmission-box inclosing gearing between the two sections of the power-shaft, which may be of frictional nature, and 5 is a driving-shaft at right angles to the power-shaft and constantly driven therefrom by positive gearing, advisably the bevel-gears 6, and transmitting to the traction-wheels 7, as presently explained. The driving-shaft 5 is supported in boxes 8, which by means of bolts 9 and plates 10 or other suitable agency are supported from longitudinally-slotted horizontal ways 11, forming part of brackets 12, one at each side of the carriage-box. By means of lever 13 and suitable connections, such as rock-shaft 14, crank-arms 15 at each end thereof, and links 16, connecting said crank-arms with the aforesaid bearing-boxes, the driving-shaft can be moved back and forth in parallelism with the main axle 17, upon which the traction-wheels are mounted,

the boxes being guided in or by the horizontal ways. In the case of such movement it will obviously be necessary, if the power-shaft is geared directly to the driving-shaft by bevel-wheels as advised, that there shall be a telescoping action in the power-shaft, so that it may be extended or contracted to accommodate the positions of the driving-shaft. Such action may be obtained in various well-known ways, and I have deemed it sufficient to illustrate one of the simplest, in which double toggles 18, resembling a section of lazy-tongs, are inserted in the length of the power-shaft. If the driving-shaft should be mounted in curved guides, it is evident that the gearing connecting it with the power-shaft might be made to take up the motion.

The driving-shaft is connected with the traction-wheels by pulleys 19 and 20 and rope belts 21, and when it is moved toward the rear axle the belts are slackened and the speed decreased to a less or greater extent, owing to slip, or the drive ceases altogether, depending on the amount of slack, while when it is moved away from said axle the belts are gradually tightened, restoring the speed by degrees until top speed is reached; but the same result may be reached by the insertion of controllable friction-couplings at any point along the train of gear—for instance, in the transmission-box.

Now in order to stop quickly it is necessary to brake the traction-wheels, and for this purpose brake-shoes 22 are hung upon the outer ends of the driving-shaft and sufficiently weighted to keep them in effective position notwithstanding the revolutions of the latter or otherwise controlled for this purpose. The same movement that slackens the rope belt carries these shoes toward and eventually against the tires of the traction-wheels, thereby braking the machine; but if said shoes should be brought suddenly and forcibly against the tires while the machine was still at full speed they would be likely to do injury, as by rupturing the tires or causing a too sudden and violent stop. Therefore I provide preliminary brakes, consisting of pivoted shoes 23, spring-seated in sockets 24, hung upon the driving-shaft, and supported by links 25, depending from the body or frame of the machine, to their pivots 26, which may be in the form of a through-rod,

and preferably is so. In the rearward or slackening movement of the driving-shaft these latter shoes are carried against the pulleys 20 on the traction-wheels in advance of the contact of the shoes 23 with the traction-wheel tires and exert an initial braking action which increases in strength as their springs are compressed until the first set of shoes becomes effective. Thus I have not only an initial braking action upon a rotating body of relatively small circumference—to wit, the pulley—but have at the end a braking action at four points along the rear or main axle—that is to say, two points represented by the pulleys and two other points represented by the tires of the traction-wheels, the application of the power being at the ends of radii of two differing lengths from the axis of the main axle and being gradual, first upon the shorter radii and then upon the longer.

Any suitable means may be introduced into the gear-train antecedent to the pulleys for reversing or backing the machine; but such means forms no part of the present invention and is therefore not illustrated or otherwise referred to than as immediately above.

I do not restrict myself herein to, as regards other features of my invention, a rope-belt transmission between the driving-shaft and the main axle, nor where such rope belt is used to taking up and letting out its slack by a bodily movement of the driving-shaft; neither do I limit myself to a non-rotatable main axle nor to a central fore-and-aft power-shaft, nor to the location of said power-shaft in front of the driving-shaft, nor to the specific location of the motor or explosion-engine; but

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

1. In an automobile, the combination of a transverse driving-shaft, means for driving it, pulleys upon the driving-shaft, a rear or traction axle and traction-wheels thereon, pulleys on the traction-wheels registering with the pulleys on the driving-shaft, belts connecting the pulleys on the wheels and shaft, self-adjusting brake-shoes registering with the tires of the traction-wheels, and means for causing relative movement of the shaft and axle in parallelism and simultaneously of the brake-shoes and traction-wheels toward and from each other, to slacken the belts and apply the brakes, or to tighten the belts and disengage the brakes.

2. In an automobile, the combination of a transverse driving-shaft, means for driving it, pulleys upon the driving-shaft, a rear or traction axle and traction-wheels thereon, pulleys on the traction-wheels registering with the pulleys on the driving-shaft, belts connecting the pulleys on said shaft and traction-wheels, brake-shoes loosely hung on the ends of the driving-shaft and registering

with the tires of the traction-wheels, and means for causing a relative movement of the driving-shaft and the traction-axle toward and from each other in parallelism, to slacken the belts and apply the brakes, or to disengage the brakes and tighten the belts.

3. In an automobile, the combination of a transverse driving-shaft, means for driving it, a rear or traction axle and traction-wheels thereon, releasable driving mechanism between the driving-shaft and the traction-wheels, brake-shoes loosely hung on the ends of the driving-shaft and registering with the tires of the traction-wheels, and means for causing a relative movement of the driving-shaft and the traction-axle toward and from each other in parallelism, to release the driving mechanism and apply the brakes, or to disengage the brakes and engage the driving mechanism.

4. In an automobile, the combination of a power-shaft, a laterally-movable driving-shaft, means for driving the latter from the former, pulleys on the driving-shaft, a rear or main axle and traction-wheels thereon, pulleys on the traction-wheels registering with the pulleys on the driving-shaft, belts connecting said pulleys, brake-shoes loosely hung on the ends of the driving-shaft and registering with the tires of the traction-wheels, and means for causing a relative movement between the driving-shaft and main axle toward and from each other in parallelism, to slacken the belts and apply the brakes, or to disengage the brakes and tighten the belts.

5. In a machine of the character described, the combination of a transverse driving-shaft, means for driving said shaft, a rear or main axle and traction-wheels thereon, means for driving the traction-wheels from the driving-shaft, means for applying a preliminary braking to the traction-wheels, means for concurrently releasing the drive between the driving-shaft and said wheels, and means for applying a final braking to the wheels concurrently with continued and increased effect of the preliminary braking.

6. In a machine of the character described, the combination of a driving-shaft, means whereby it is driven, a rear or main axle and traction-wheels thereon, pulleys and belts connecting the driving-shaft with the traction-wheels, means for tensioning and releasing said belts, mechanism for preliminarily braking the wheels when the belts are slackened, and means for succeedingly applying other and more powerful braking mechanism.

7. In a machine of the character described, the combination of a traction-axle, traction-wheels thereon, mechanism for driving said wheels, means for engaging and releasing said driving mechanism, mechanism for preliminarily braking the traction-wheels when

the driving mechanism is released, and means for succeedingly applying other and more powerful braking mechanism.

8. In a machine of the character described, 5 the combination of a transverse driving-shaft, fixed horizontal ways by which it is supported, means whereby it is driven, a rear or main axle and traction-wheels thereon, pulleys and belts connecting the driving- 10 shaft with the traction-wheels, and means for moving said shaft in parallelism along its ways to tension and release said belts.

9. In a machine of the character described, 15 the combination of a fore-and-aft power-shaft, a motor for driving it, a transverse driving-shaft, pulleys upon its ends, a main axle and traction-wheels thereon, pulleys on the traction-wheels registering with the aforesaid pulleys, rope belts connecting the 20 opposing pulleys, gearing connecting the power-shaft and the driving-shaft, and means in the train whereby the speed is variable by changing the degree of frictional connection.

25 10. In a machine of the character described, the combination of a fore-and-aft power-shaft, a motor for driving it, a transverse driving-shaft, pulleys upon its ends, a main axle and traction-wheels thereon, pulleys on the traction-wheels registering with 30 the aforesaid pulleys, rope belts connecting the opposing pulleys, guides on which the driving-shaft is supported in such manner that it can be moved laterally so as to allow 35 said belts to slip to change speed, means for moving said shaft in parallelism along said guides, means for maintaining its connection with the power-shaft, and bevel-gearing permanently connecting the two shafts.

40 11. In a machine of the character described, the combination of an extensible and contractible fore-and-aft power-shaft and a motor for driving it, a transverse driving-shaft and means for moving it back- 45 ward and forward in parallelism, gearing connecting the two shafts, a main axle and

traction-wheels thereon, and driving mechanism connecting the driving-shaft and traction-wheels.

12. In a machine of the character de- 50 scribed, the combination with an extensible and contractible fore-and-aft power-shaft and a motor for driving it, of a transverse driving-shaft and means for moving it back- 55 ward and forward in parallelism, bevel-gearing directly connecting the two shafts, a main axle and traction-wheels thereon, and belts connecting the driving-shaft to pulleys upon the traction-wheels.

13. In a machine of the character de- 60 scribed, the combination of a power-shaft, a laterally-movable transverse driving-shaft, means for driving the latter from the former, pulleys on the driving-shaft, a rear or main axle and traction-wheels thereon, pulleys on 65 the traction-wheels registering with the pulleys on the driving-shaft, belts connecting said pulleys, brake-shoes loosely hung on the ends of the driving-shaft and registering 70 with the tires of the traction-wheels, and means for moving the driving-shaft laterally in parallelism toward and from the main axle, to slacken the belts and apply the brakes, or to release the brakes and tighten 75 the belts.

14. In a machine of the character de- 75 scribed, the combination of a power-shaft, a driving-shaft, means for driving the latter from the former, a rear or main axle and traction-wheels thereon, means for driving 80 the traction-wheels from the driving-shaft, means for applying a preliminary braking to the traction-wheels, means for concurrently releasing the drive between the driving-shaft 85 and the traction-wheels, and means for applying a final braking to the traction-wheels concurrently with the continued and increased effect of the preliminary braking.

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Witnesses:

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