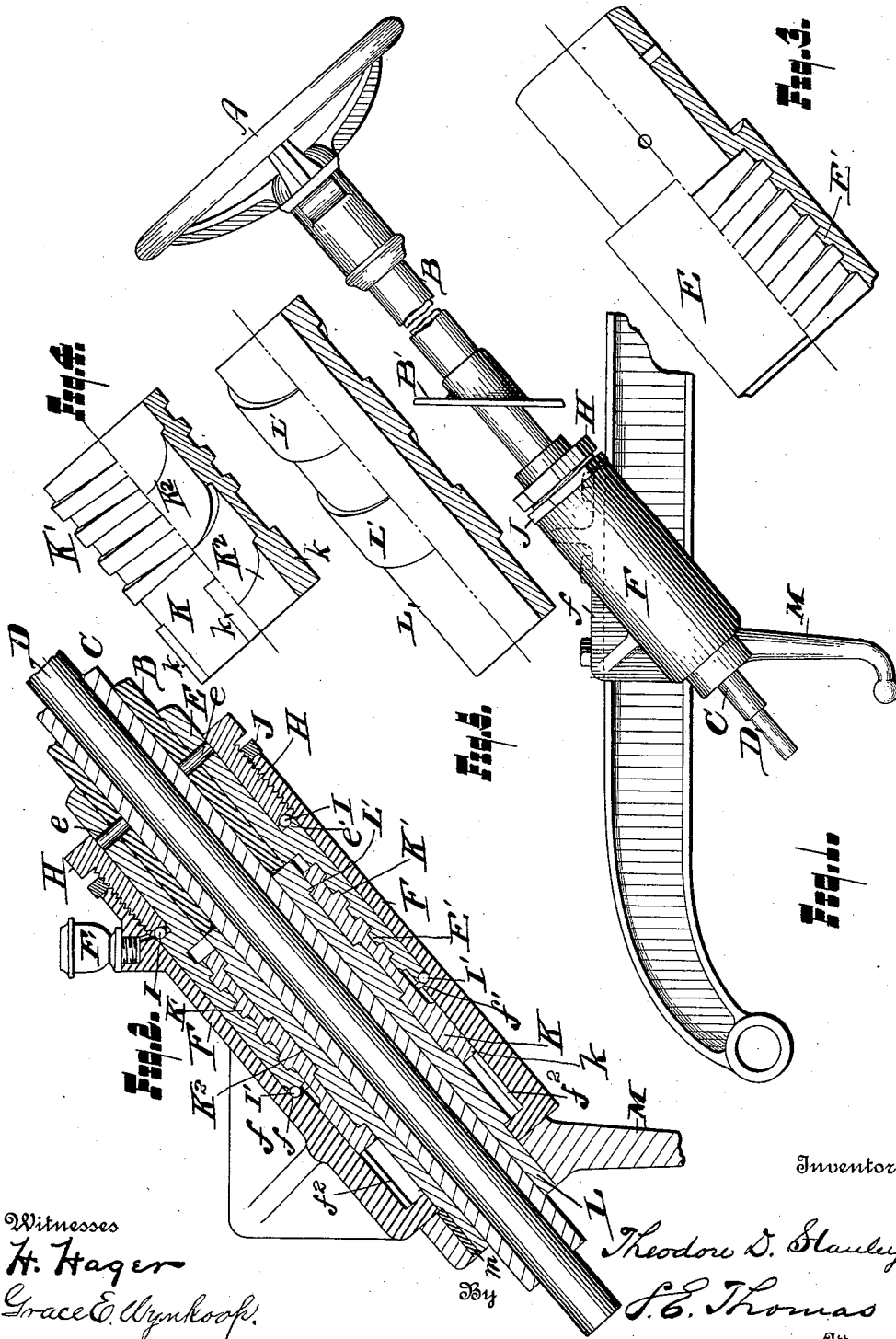


T. D. STANLEY.
STEERING GEAR FOR AUTOMOBILES.
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Witnesses
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STEERING-GEAR FOR AUTOMOBILES.

1,065,183.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, THEODORE D. STANLEY, citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Steering-Gears for Automobiles, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improvement in steering gears for automobiles, shown in the accompanying drawings and more particularly pointed out in the following specification and claims.

One of the objects of my invention is to provide a steering gear having a relatively large bearing surface between the co-acting parts receiving the greatest strain.

Another feature of the invention is in concentrically sleeving the respective co-acting parts within each other that they may be enabled to withstand greater shocks resulting from the vehicle traveling over rough or rugged roads, than would otherwise be possible.

A further object in housing the several working parts within one another, is to insure against the entry of grit or other foreign matter,—the construction providing no open spaces of any considerable size to permit of the respective parts becoming dislodged or displaced.

A further object is to reduce the number of parts over those employed in devices of this character now in general use.

A still further object is to insure a constant and equal leverage regardless of the position of the working parts,—this result being due to the peculiar construction of the co-acting elements,—which provide for a relatively greater leverage at the steering wheel.

Other advantages and improvements will hereafter appear.

In the drawings accompanying this specification:—Figure 1 is a side elevation of a steering post and wheel, with parts broken away, showing the post attached to a fragmentary portion of an automobile frame. Fig. 2 is a longitudinal section through a portion of the steering post and the co-acting gears. Fig. 3 is a side elevation of a de-

tail of the steering wheel shaft fitting, with parts in section to disclose the thread of its internal spiral gear. Fig. 4 is a detail showing the reciprocating sleeve with a portion in section to disclose the thread of its internal spiral gear. Fig. 5 is an elevation with parts in section, of a detail of the tubular crank shaft.

Referring now to the letters of reference placed upon the drawings:—A denotes a steering wheel; B the tubular steering post to which it is secured; B' a fitting attached to the dash or frame of the vehicle—adapted to support the upper end of the steering post; C a tubular shaft sleeved within the steering post on which the control sector (not shown) is mounted; and D one of the control rods for governing the supply of fuel.

E is a fitting mounted on the end of the steering post B, secured thereto by pins *e*; it may, however, be engaged in any other suitable manner.

F is a supporting sleeve to receive the steering post and fitting,—bolted to the frame G of the machine,—the fitting being preferably provided with an off-standing wing *f* pierced for the passage of bolts by which it is secured to the frame.

H is an adjustable thimble having a screw-threaded engagement with the fitting E; and I are balls housed in a race provided between the shoulder *e'* formed in the wall of the fitting and the inner end of the thimble H.

J is a lock nut engaging the thimble to secure the same against displacement when adjusted.

I' denotes a plurality of balls lodged between the end of the fitting E and the shoulder *f'* of the sleeve F.

The fitting E is provided with an internal spiral threaded gear E' in mesh with a spiral threaded gear K', formed on the reciprocating sleeve K.

k indicates a plurality of splines or keys carried by the reciprocating sleeve and projecting into the keyways *k'*, in the sleeve F.

K² is an internal spiral threaded gear formed in the reciprocating sleeve which in turn meshes with the spiral threaded gear L' formed on the tubular crank shaft L.

M is a crank arm to control the adjustment of the vehicle wheels (not shown) which may be secured to the crank shaft L by the key *m* in the usual manner.

F' is an oil cup, mounted upon the supporting sleeve F, from which suitable ports lead to the ball bearings,—the oil passing from these to the other bearing surfaces of the several parts to lubricate the latter.

Having indicated the several parts by reference letters, the construction and operation of my improved steering wheel gear will be readily understood. Upon rotating the wheel A in either direction as required, the fitting E, secured to the end of the steering post is caused to revolve whereupon the thread of its internal spiral gear in mesh with the thread of the spiral gear K' on the sleeve K, causes the latter to reciprocate,—the sleeve being held against rotation by the keys *k* traveling in the ways *f*² of the supporting sleeve F. It will now be seen that the thread of the internal spiral gear K² of the reciprocating sleeve, meshing with the thread of the spiral gear L' of the crank shaft L, will cause the latter to rotate and through it the crank arm M which is keyed thereto by the pin *m* will be actuated, thus shifting the direction taken by the wheels of the vehicle (not shown), as may be required. In place of the crank arm other means actuated by the shaft L may be employed to shift the direction of the wheels of the vehicle if desired.

By providing the several concentric working parts with a bearing surface throughout their entire length, the leverage exerted is equal and constant, irrespective of the position of the several parts. So also the wearing surfaces being relatively long wear longer and insure greater stability, while the parts being arranged in a concentric manner, their combined strength is greater and their rigidity materially increased.

Having thus described my invention, what I claim is:—

1. In a device of the character described, a stationary casing, a reciprocating sleeve disposed within the casing, said sleeve being externally and internally threaded the external and internal threads being of different pitch but disposed on the same transverse axis, a steering post entering the cas-

ing at one end, an internally threaded member on the end of the steering post for engagement with the external threads on the reciprocating sleeve, and a crank shaft having a bearing within the reciprocating sleeve and having external threads in engagement with the internal threads of said sleeve.

2. In a device of the character described, a steering post, means for rotating said post, a tubular fitting carried by said post provided with an internal spiral thread, a concentrically arranged sleeve to receive the fitting provided with keyways, an adjustable thimble having a screw-threaded engagement with the sleeve to secure said fitting against displacement along the line of its axis, a reciprocating sleeve housed within the fitting provided with a spiral thread in mesh with the internal spiral thread of the fitting and with projecting keys adapted to reciprocate in the co-acting keyways of the sleeve, a shaft concentrically arranged within the reciprocating sleeve provided with a spiral thread in mesh with the internal spiral thread of the reciprocating sleeve.

3. In a device of the character described, a steering post, a stationary casing provided with a key-way at one end, a tubular fitting carried by the post and disposed within the stationary casing, said tubular fitting being provided with an internal spiral gear, a reciprocating sleeve threaded exteriorly at one end for engagement with the internal spiral gear of the tubular fitting and provided at its other end with a spline for engagement with the key-way of the casing, said reciprocating sleeve being internally threaded, a crank shaft housed within the reciprocating sleeve and threaded for engagement with the internal threads of said sleeve, and a crank arm secured to said crank shaft.

In testimony whereof, I sign this specification in the presence of two witnesses.

THEODORE D. STANLEY.

Witnesses:

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SAMUEL E. THOMAS.

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