

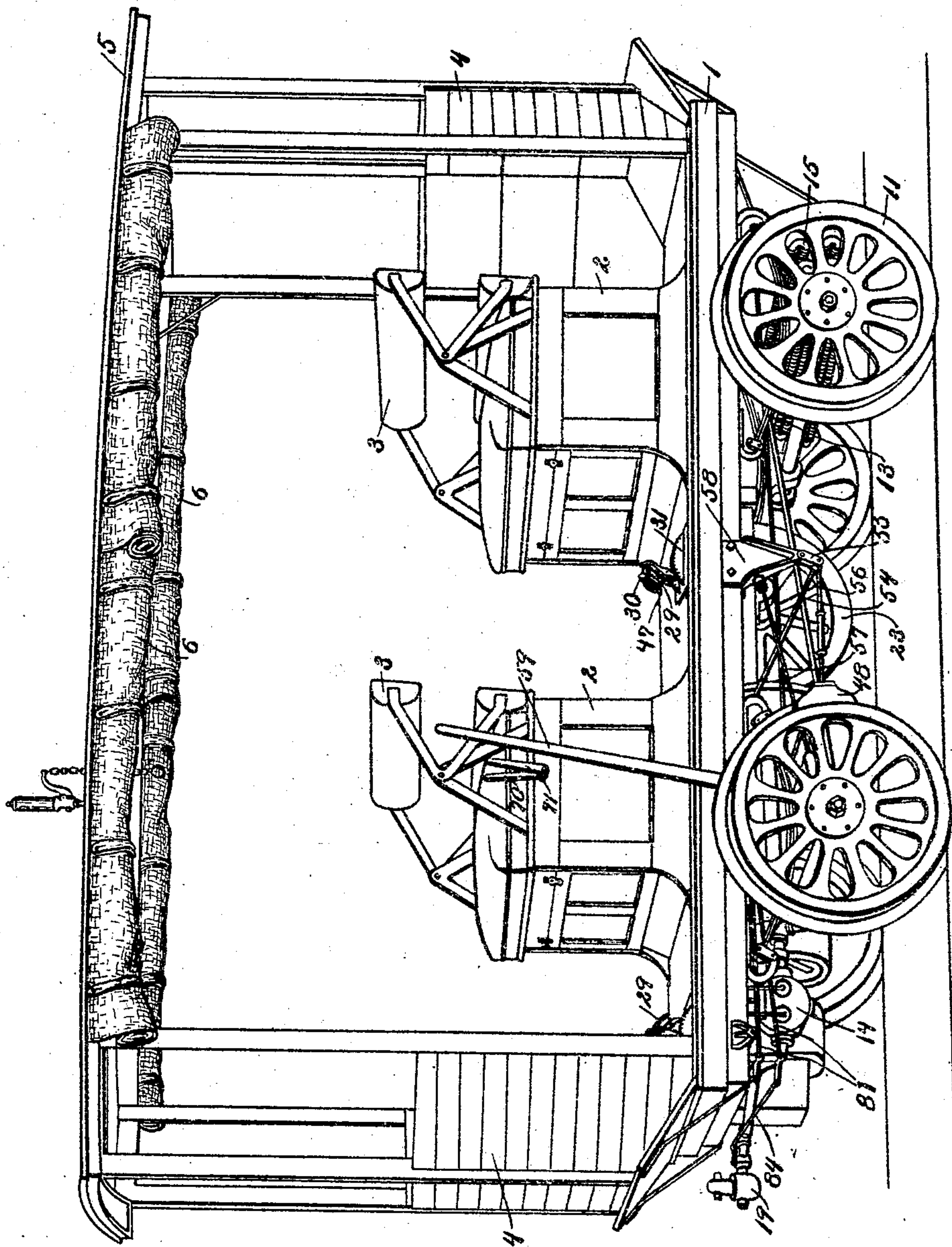
W. S. HOVEY & C. B. STEBBINS.  
MOTOR VEHICLE.

APPLICATION FILED MAR. 3, 1909.

944,556.

Patented Dec. 28, 1909.

4 SHEETS—SHEET 1.



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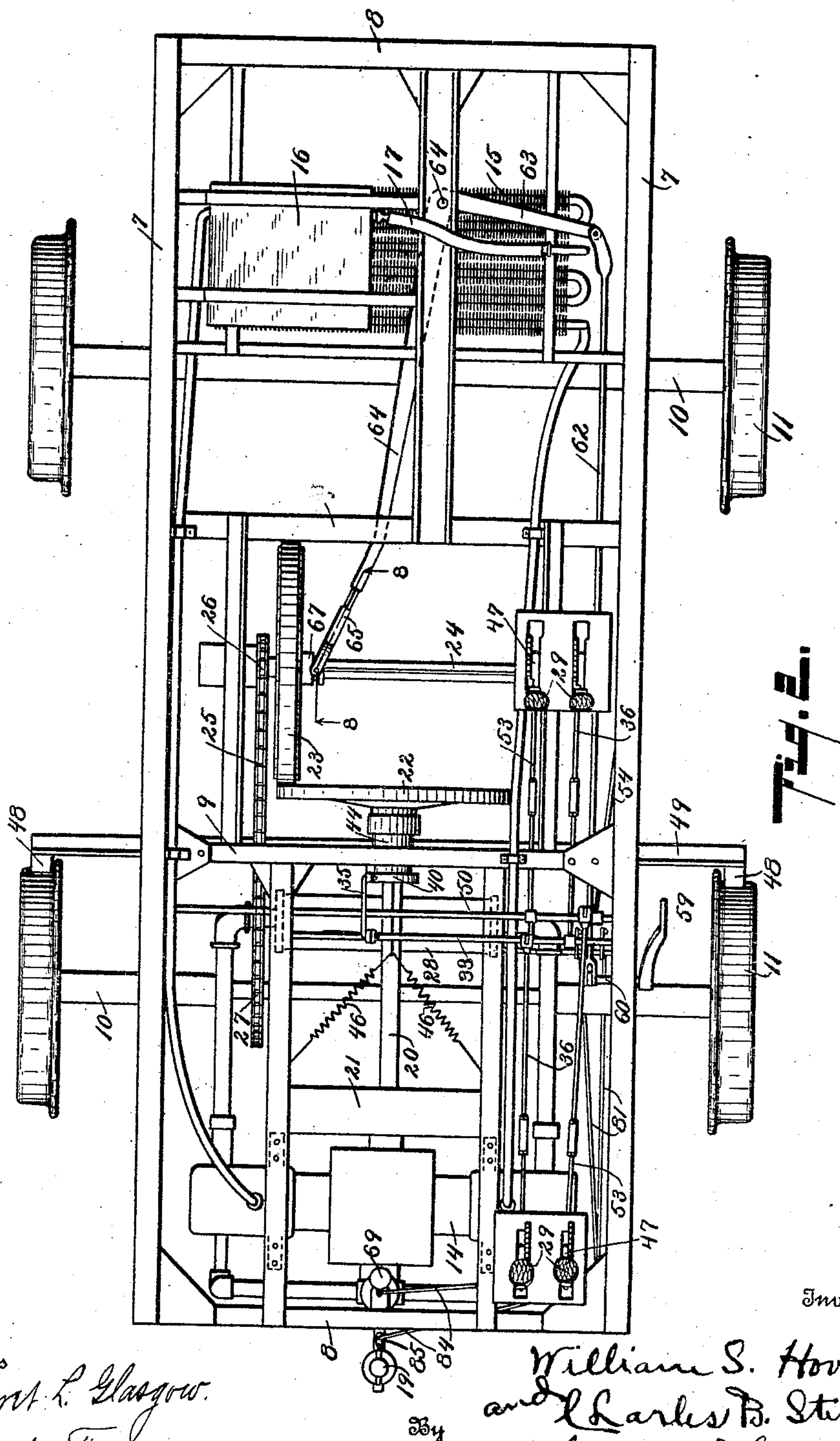
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4 SHEETS—SHEET 2.



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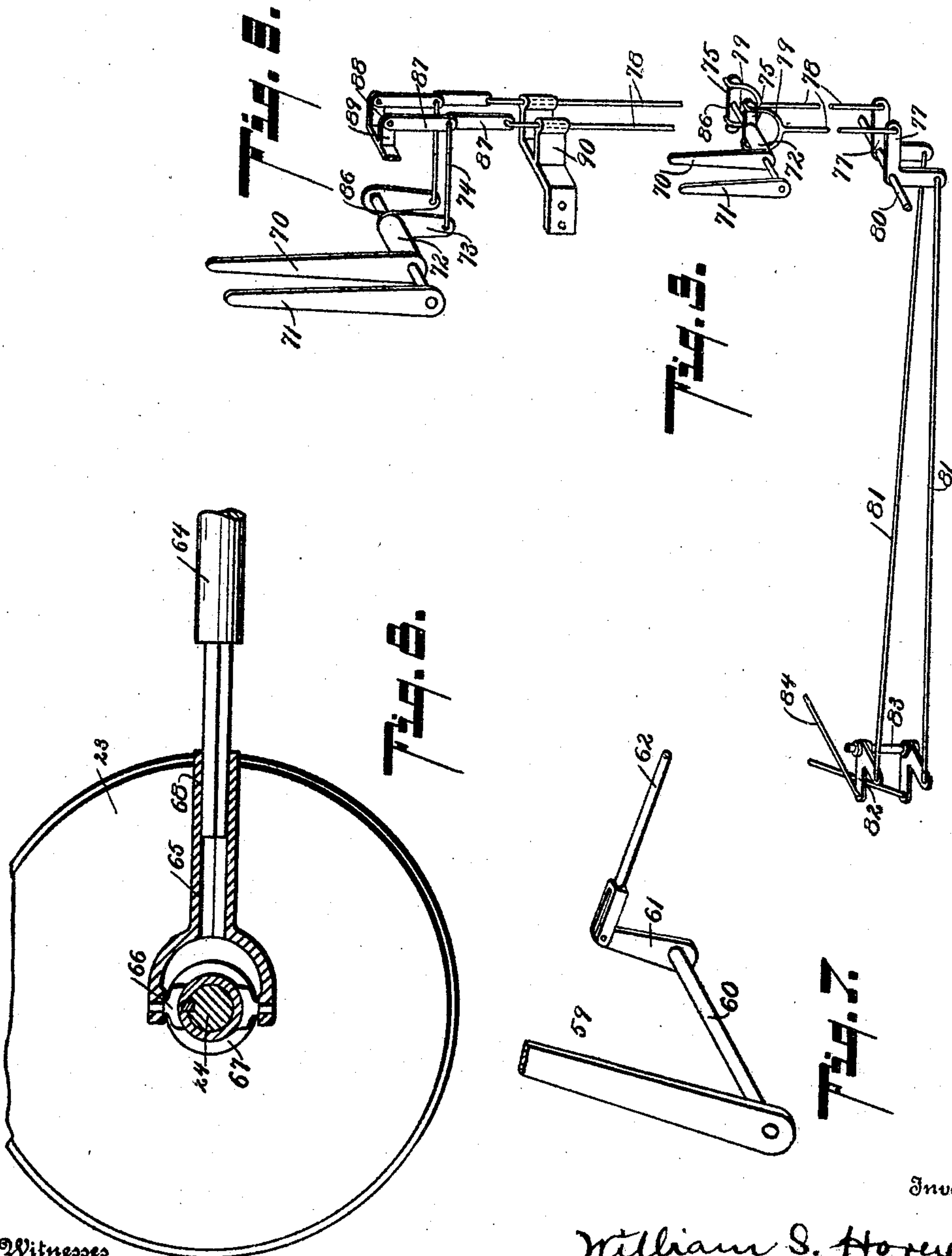
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4 SHEETS—SHEET 4.

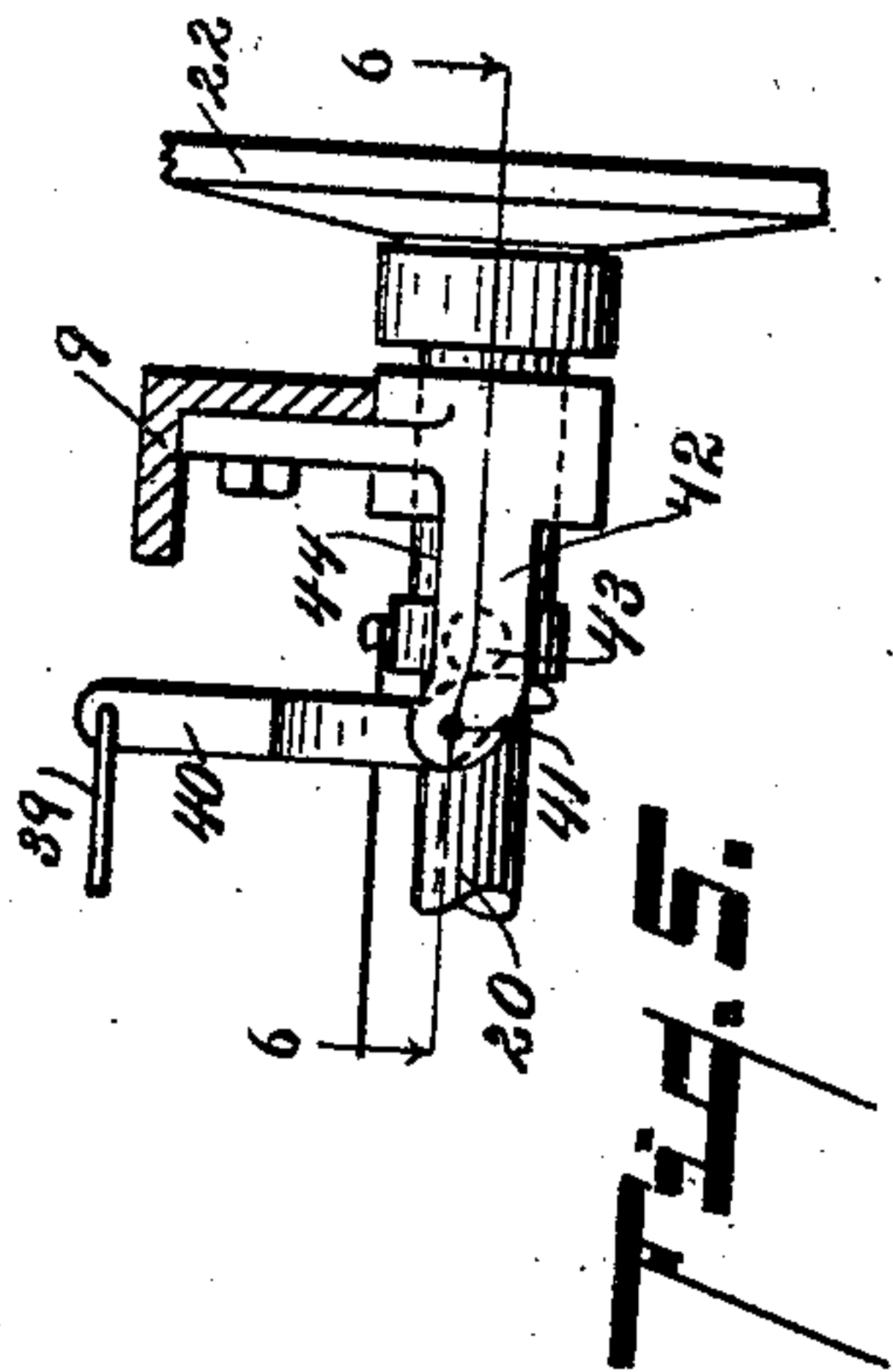


Fig. 5.

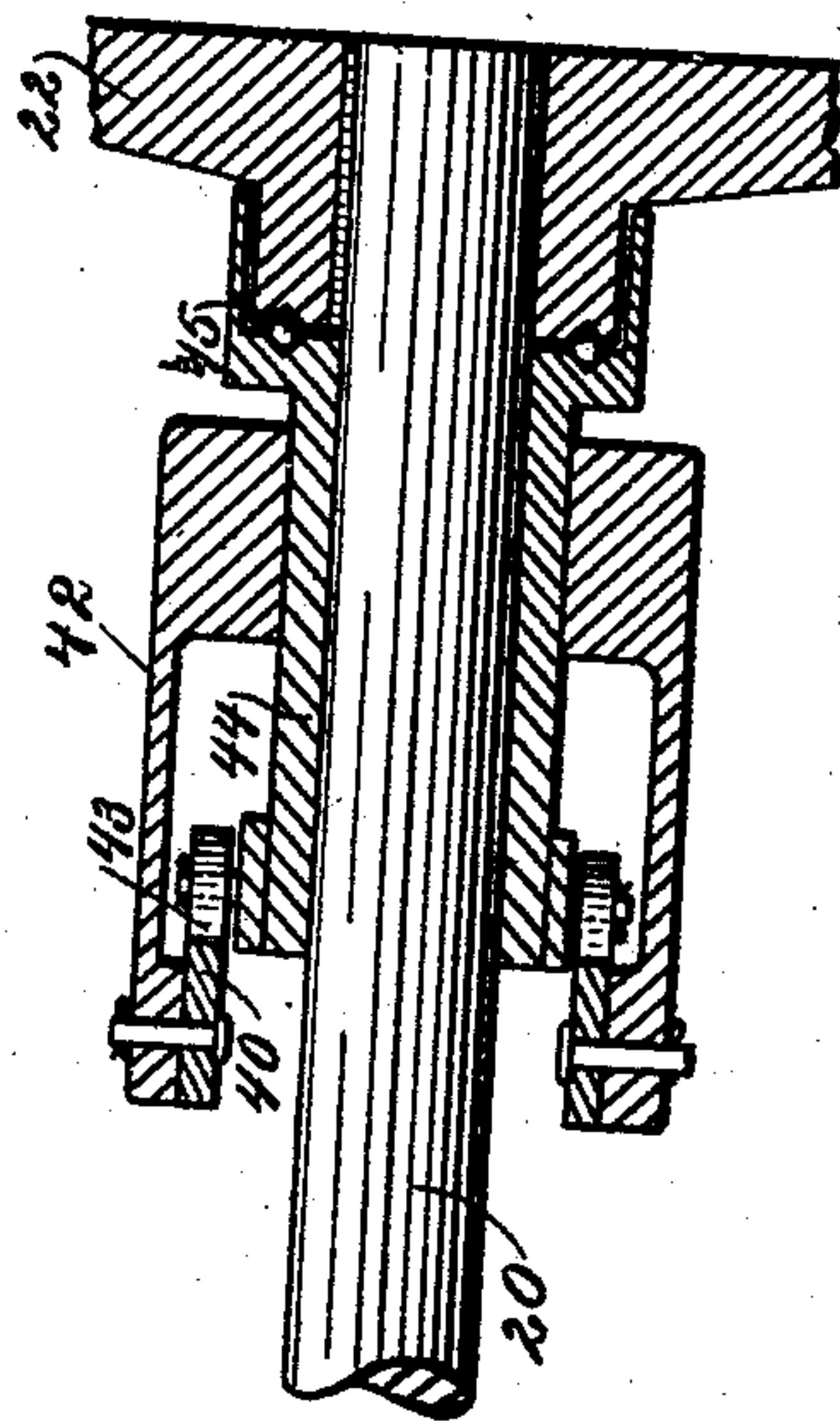


Fig. 6.

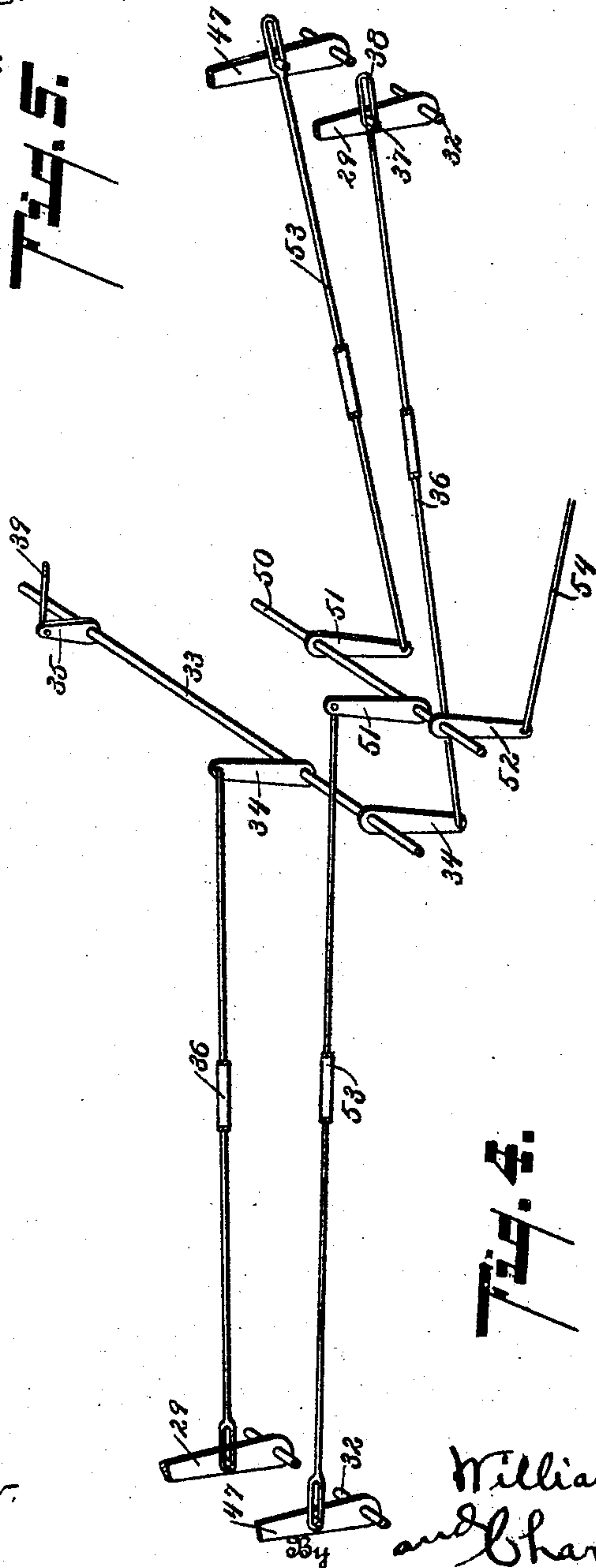


Fig. 4.

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# UNITED STATES PATENT OFFICE.

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MOTOR-VEHICLE.

944,556.

Specification of Letters Patent. Patented Dec. 28, 1909.

Application filed March 3, 1909. Serial No. 481,000.

*To all whom it may concern:*

Be it known that we, WILLIAM S. HOVEY, and CHARLES B. STEBBINS, citizens of the United States, residing at Three Rivers, Michigan, have invented certain new and useful Improvements in Motor-Vehicles, of which the following is a specification.

This invention relates to improvements in motor vehicles.

10 The main object of this invention is to provide an improved motor vehicle which is adapted to be driven in either direction with equal facility, the control mechanism being so arranged that they are operated in  
15 the same direction relative to the direction of movement of the vehicle to effect the same purpose or results.

Further objects and objects relating to structural details, will definitely appear  
20 from the detailed description to follow.

We accomplish the objects of our invention by the devices and means described in the following specification.

25 The invention is clearly defined and pointed out in the claims.

A structure embodying the features of our invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which:

30 Figure 1 is a perspective view of a railway motor car embodying the features of our invention. Fig. 2 is a plan view with the body removed. Fig. 3 is an enlarged detail perspective of the connections for operating the  
35 throttle and timer. Fig. 4 is a detail perspective of the operating mechanism for the brakes and the disconnecting means for the driving connections. Fig. 5 is a detail elevation of the driving connection. Fig. 6 is  
40 an enlarged detail taken on a line corresponding to line 6—6 of Fig. 5. Fig. 7 is a detail perspective of the variable speed and reversing gear lever and connections. Fig.  
45 8 is an enlarged detail taken on the broken line 8—8 of Fig. 2. Fig. 9 is a detail perspective of a modified form of the operating connections for the sparker and throttle levers.

50 In the drawings, similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, the body 1 of the structure illustrated is provided with 55 seats 2, which are made reversible by providing the adjustable backs 3 therefor. The ends 4 of the body are preferably of the same design, as the car is intended to be driven in either direction. The body is preferably 60 provided with a roof 5 and with side curtains 6, the curtains being illustrated rolled, in Fig. 1.

The body sills 7 are connected by end pieces 8 and intermediate cross-pieces 9. 65 The body is supported on the axles 10 for the wheels 11 by means of springs, as 13, which may be of any type desired. For convenience in operation and compactness of arrangement, the engine 14, which is of the 70 double cylinder type, is arranged at one end of the car on the outer side of one axle and the radiator 15 is arranged at the other end of the car on the outer side of the other axle. Above the radiator is a water reservoir 16, 75 which is connected to the radiator by a suitable pipe, as 17.

The crank or driving shaft 20 is arranged longitudinally of the car, being provided with a suitable balance wheel, as 21. The 80 driving wheel 22, which is of the friction type, is splined upon the driving shaft to permit a slight longitudinal movement thereon so that it may be thrown into or out of driving engagement with the driven wheel 85 23 on the driving shaft 24, which is arranged transversely of the driving shaft. The driven shaft is connected to one of the axles by means of the chain 25 and suitable sprockets, as 26 and 27. The wheels 22 and 90 23 are arranged between the axles, as is also the muffler 28. As the connections for the muffler to the engine and the engine to the radiator will be readily comprehended, they are not illustrated or described in detail 95 herein.

The driving connection is effected through the driving wheel 22, as stated. This we preferably accomplish by the following means. We provide a pair of foot levers 100 29 arranged one at each side of the operator's seat, the foot levers being oppositely disposed and positioned to be manipulated by the operator occupying the seat with which they are associated. These levers are 105 arranged through the floor of the body and



are provided with pawls 30 to engage the segments 31 for retaining them in their adjusted positions. The levers 29 are mounted on pivot shafts 32 arranged below the floor of the car. A rock shaft 33, having arms 34—34 and 35, is provided, the arms 34 being oppositely disposed and connected by the links 36 to the foot levers. This connection is made preferably by means of the pins 37 and slots 38 to secure lost motion in the connections.

The arm 35 of the rock shaft 33 is connected by the link 39 to a forked lever 40, which is pivoted at 41 on the bracket 42, the ends of the lever being arranged to engage the rollers 43 on the sleeve 44, forcing the driving wheel 22 into driving engagement with the driven wheel. Bearing balls 45 are preferably arranged between the end of the sleeve and the hub of the driving wheel to reduce the friction. The sleeve 44 is withdrawn by means of the springs 46. By this arrangement, the driving connections can be connected or disconnected through the foot levers 29 with the operator facing in either direction, the same movements of the levers relative to the movement of the car accomplishing the same end, so that no confusion results from the change of position of the operator.

The brake mechanism is arranged to be operated through the levers 47, which are oppositely disposed and arranged one on each side of the operator's seat. The brake shoes 48 are carried by the brake mechanism 49, which is suitably suspended from the frame, the suspending link not being here illustrated. A rock shaft 50 is arranged between the levers 47. This rock shaft is provided with arms 51—51 and 52, the arms 51 being oppositely disposed and connected by the links 53 to the levers 47, a pin and slot connection being provided as in the connection of the arms 34 to the foot levers 29.

The arm 52 is connected by the link 54 to the hanger link 55 which is, in turn, connected by the link 56 to the brake bar, the object of this connection being to bring the parts into proper relation and secure the desired strength and leverage for operating the brake. The levers 29 and 47 are arranged side by side so that one can be engaged by each foot of the operator. Their right and left positions on either side of the seat are maintained so that as the operator reverses his position, the same lever is presented to the same foot.

A radius rod 57 extends from the hanger 58 down to the axle to maintain the position of the driving axle. The connecting links are illustrated with turn buckles for adjusting the same, the advantage of which will be readily understood. The car is reversed and its speed controlled by the shifting of the drive wheel 23, which is splined upon

the driving shaft 24. This shifting is effected from the hand-lever 59, which is arranged at one end of the operator's seat, it being mounted on the rock shaft 60, see Fig. 7. On this rock shaft is an arm 61, which is connected by the link 62 to one arm of the bell crank lever 63 which is pivoted at 64, the other arm of the lever being connected by the yoke 65 to the hub of the wheel 23. The yoke 65 is provided with members 66 to engage the groove 67 in the hub of the wheel. The yoke 65 is connected to one arm of the lever 63 by the slip joint 68, the object of which will be apparent. By thus connecting the parts, the car can be reversed and its speed controlled. Further, corresponding movements relative to the direction of movement of the car will accomplish the same result, so that the operator is not confused by the reversing of his position.

The engine throttle 19 and the timer 69 are controlled through the levers 70 and 71, respectively, and their connections. These connections are also such that the corresponding movements of the levers relative to the direction of movement of the car to and from their neutral or normal position accomplish the same purpose or end. These connections in the construction illustrated consist of a rock shaft 72, for the hand member 70 having oppositely disposed arms 75 thereon. A bell crank lever 77 is connected by the link 78 to the arms 75, the link being provided with a forked coupling 79 which is provided with books which engage the opposed arms 75 of the rock shaft 72 so that no matter in which direction the lever 70 is operated to and from its central position, the link 78 is operated to the same end.

The bell crank lever 77 is mounted on the pivot shaft 80 and is connected by the link 81 to the bell crank lever 82 mounted on the pivot shaft 83. This bell crank lever 82 is connected by the link 84 to the throttle lever 85. It will be observed that the use of the second bell crank lever and the connecting links therefor is merely for convenience in connecting the parts.

The sparker lever 71 is connected to the timer by a substantially identical arrangement of parts. The rock shaft 86 is preferably arranged through the rock shaft 72 of the throttle lever so that both levers can be brought into convenient position for grasping at the end of the operator's seat, see Fig. 1. As the connections are, as stated, substantially duplicates of the connections for the throttle lever to the throttle, they are not repeated in this description.

In the modified construction shown in Fig. 9, the links 74 are connected to the links 78 through a toggle, consisting of a pair of links 87, one of which is pivoted at 88 on the bracket 89, the other of which is



mounted on the upper end of the link 78 which is arranged through a suitable bearing on the bracket 90. It will be obvious that the same movement is here secured as by the use of the arms 75 on the rock shaft,—that is, the link 78 is actuated in the same direction by the shifting of the link in either direction to and from its neutral or normal position so that the operator is not confused in his operation of the control levers by the reversal of his position. By thus arranging the parts, the car can be driven in either direction with equal facility, and the operator is not confused by the change of direction. This is of especial advantage in cars of the railway motor type where it is desirable to reverse them without resorting to a turn table.

We have illustrated and described our improvements in detail in the form preferred by us on account of the structural simplicity and convenience in operation. We are, however, aware that the structure may be very considerably varied in details without departing from our invention, but as these details will be readily understood by those skilled in the art to which this invention relates, we have not attempted to illustrate or describe the various modifications herein.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. In the structure of the class described, the combination with a body comprising a reversible seat; an engine; a throttle and timer therefor; controls for said throttle and timer, comprising a pair of rock shafts arranged one within the other to project at one end of the seat; opposed arms on said rock shafts; a pair of bell crank levers; connections for said bell-crank levers to said rock-shafts; comprising links having coupling yokes arranged to engage the opposed arms of said rock-shafts, whereby said bell crank levers are operated in the same relative directions by the shifting of said rock shaft levers in either direction to and from their neutral position; and connections for said bell crank levers to said throttle and timer.

2. In a structure of the class described, the combination with an engine; a throttle and a timer therefor; controls for said throttle and timer, comprising a pair of rock shafts; opposed arms on said rock shafts; comprising links having coupling yokes arranged to engage the opposed arms of said rock-shafts, whereby said bell crank levers are operated in the same relative directions by the shifting of said rock shaft levers in either direction to and from their neutral position; and connections for said bell crank levers to said throttle and timer.

3. In a structure of the class described, the combination with a body comprising a

reversible seat; an engine; a throttle and a timer therefor; controls for said throttle and timer, comprising a pair of rock shafts arranged one within the other to project at one end of said seat; opposed arms on said rock shafts; a pair of bell crank levers; connections for said throttle and timer to the opposed arms of said rock shaft, whereby said connections are operated in the same relative directions by shifting of said rock shaft levers in either direction to and from their neutral positions.

4. In a structure of the class described, the combination with an engine; a throttle and a timer therefor; controls for said throttle and timer, comprising a pair of rock shafts, opposed arms on said rock shafts; a pair of bell crank levers; connections for said throttle and timer to the opposed arms of said rock-shafts, whereby said connections are operated in the same relative directions by shifting of said rock levers in either direction to and from their neutral positions.

5. In a structure of the class described, the combination with a body comprising a reversible seat; an engine; a throttle and a timer therefor; controls for said throttle and timer, comprising hand levers; a pair of bell-crank levers; connections for said bell-crank levers to said hand levers, arranged so that bell crank levers are operated in the same relative directions by the shifting of said hand levers in either direction to and from their neutral position; and connections for said bell-crank levers to said throttle and timer.

6. In a structure of the class described, the combination with an engine; a throttle and a timer therefor; controls for said throttle and timer, comprising hand levers; a pair of bell-crank levers; connections for said bell crank levers, arranged so that bell crank levers are operated in the same relative directions by the shifting of said hand levers in either direction to and from their neutral position; and connections for said bell-crank levers to said throttle and timer.

7. In a structure of the class described, the combination with a body comprising a reversible seat; an engine; a control device, comprising a hand lever; a connection for said bell crank lever to said hand lever, comprising a link having a coupling yoke arranged to engage oppositely disposed arms actuated by said hand lever, whereby said bell-crank lever may be operated in the same relative directions by the shifting of said hand lever in either direction from its central position; and connections for said bell crank lever to said engine.

8. In a structure of the class described, the combination with an engine; a control device, comprising a hand lever; a bell crank lever; a connection for said bell crank



- lever to said hand lever, comprising a link having a coupling yoke arranged to engage oppositely disposed arms actuated by said hand lever, whereby said bell crank lever may be operated in the same relative direction by the shifting of said hand lever in either direction from its central position; and connections for said bell-crank lever to said engine.
9. In a structure of the class described, the combination with a body comprising a reversible seat, of an engine; a control device, comprising a hand lever; a bell crank lever; a connection for said hand lever to said bell crank lever arranged so that said bell crank lever is operated in the same relative direction by the shifting of said hand lever in either direction from its neutral position; and connections for said bell crank lever to said engine.
10. In a structure of the class described, the combination with an engine; of a control device, comprising a hand lever; a bell crank lever; a connection for said hand lever to said bell-crank lever arranged so that said bell-crank is operated in the same relative direction by the shifting of said hand lever in either direction from its neutral position and connections for said bell-crank lever to said engine.
11. In a structure of the class described, the combination with a body comprising a reversible seat, of a control member; a hand piece arranged to be operated from said seat and connections for said hand piece to said control member arranged so that said control member is actuated to the same purpose by the adjusting of said hand piece in either direction and from and to its neutral position.
12. In a structure of the class described, the combination with a body, of a seat, a control member; a hand piece arranged to be operated from said seat; and connections for said hand piece to said control member arranged so that said control member is actuated to the same purpose by the adjusting of said hand piece in either direction from and to its neutral position.
13. In a motor vehicle, the combination with a body comprising a reversible seat, of an engine throttle; a hand piece; and connections for said hand piece to said engine throttle arranged so that said throttle is opened and closed by the adjusting of said hand piece in either direction from and to its neutral position.
14. In a motor vehicle, the combination with a body comprising a reversible seat, of a motor control member; a hand piece arranged at the end of said seat; and connections for said hand lever to said motor control member arranged so that said control member is actuated to the same purpose by the shifting of said hand piece in either direction from and to its neutral position.
15. In a motor vehicle, the combination with a body comprising a motor control member, of a hand piece arranged at the end of said seat; and connections for said hand lever to said motor control member arranged so that said control member is actuated to the same purpose by the shifting of said hand piece in either direction from and to its neutral position.
16. In a motor vehicle, adapted to be driven in either direction, a reversible seat; a control device comprising a hand member and connections therefor to said control device arranged so that said control is actuated to the same purpose by the movement of said hand member in either direction to and from its neutral position.
17. In a motor vehicle, adapted to be driven in either direction, including a body, a reversible seat, a control device comprising a hand member adapted to be manipulated from said seat and connections arranged so that said control is actuated to the same purpose by the movement of said hand member in either direction to and from its neutral position.
18. In a motor vehicle, the combination with a body including a seat, of wheels; an engine; driving connections therefor to said wheels; means for connecting and disconnecting said driving connections including a rock shaft; a pair of levers arranged one at each side of said seat; oppositely disposed arms on said rock shaft; and connecting links for said arms to said levers, said links being connected to said levers by a pin and slot connection.
19. In a motor vehicle, the combination with a body including a seat, of wheels; an engine; driving connections therefor to said wheels; means for connecting and disconnecting said driving connections including a rock shaft; a pair of levers arranged one at each side of said seat; oppositely disposed arms on said rock shaft; and lost motion connections therefor to said levers for the purpose specified.
20. In a motor vehicle, the combination with a body including a seat, of wheels; an engine; driving connections therefor to said wheels; means for connecting and disconnecting said driving connections including a rock shaft; a pair of levers arranged one at each side of said seat; oppositely disposed arms on said rock shaft; and connections therefor to said levers for the purpose specified.
21. In a motor vehicle, the combination with a body including a seat, of the wheels; an engine; disengageable driving connections therefor to said wheels; a pair of levers arranged one at each side of said seat; and connections therefor to the disengaging



means of said driving connections arranged so that said driving connections is connected and disconnected by the actuation of said levers in the same corresponding directions relative to said seat.

22. In a motor vehicle, adapted to be driven in either direction, the combination with a body including a seat, of a control mechanism including a rock shaft; a pair of levers arranged one at each side of said seat; oppositely disposed arms on said rock shaft; and connecting links for said arms to said levers, said links being connected to said levers by a pin and slot connection.

23. In a motor vehicle, adapted to be driven in either direction, the combination with a body including a seat, of a control mechanism including a rock shaft; a pair of levers arranged one at each side of said seat; oppositely disposed arms on said rock shaft; and lost motion connections for said arms to said levers, for the purpose specified.

24. In a motor vehicle, adapted to be driven in either direction, the combination with a body including a seat, of a control mechanism including a rock shaft; a pair of levers arranged one at each side of said seat; oppositely disposed arms on said rock shaft; and slip connections for said arms to said levers for the purpose specified.

25. In a motor vehicle, adapted to be driven in either direction, the combination with a body including a seat, of wheels; a brake mechanism; a pair of levers arranged one at each side of said seat; and connections therefor to the said brake mechanism arranged so that said driving connections are connected and disconnected by the actuation of said levers in the same corresponding directions relative to said seat.

26. In a motor vehicle, adapted to be driven in either direction, the combination with the wheels, of an engine; disengageable driving connections therefor to said wheels; a pair of oppositely disposed levers, and connections therefor to the disengaging means of said driving connections arranged so that said driving connections are connected and disconnected by the actuation of said levers in the same corresponding direction relative to the direction of movement of said vehicle.

27. In a motor vehicle, adapted to be driven in either direction, the combination with a body including a seat, of a brake; a pair of levers arranged one at each side of said seat; and connections therefor to the said brake mechanism arranged so that said driving connections are connected and disconnected by the actuation of said levers in the same corresponding directions relative to said seat.

28. In a motor vehicle, adapted to be driven in either direction, the combination

with the wheels, of a brake mechanism including a pair of oppositely disposed levers; and connections therefor to the said brake mechanism arranged so that said brake mechanism is actuated by the actuation of said levers in the same corresponding direction relative to the direction of movement of said vehicle.

29. In a motor vehicle, adapted to be driven in either direction, a control device; a pair of oppositely disposed levers; and connections for said levers to said control device arranged so that said control is actuated by the actuation of said levers in the same corresponding directions relative to the direction of movement of said vehicle.

30. In a motor vehicle, the combination with a body including a reversible seat, of traction wheels; an engine; driving connections therefor to said wheels, including a driving shaft, a friction driving wheel splined to said shaft, a driven shaft, a driven wheel splined to said driven shaft whereby it may be adjusted relative to said driving wheel to vary the speed and to reverse the said driving connections; connections for said driven shaft to said traction wheels; means for adjusting said driving wheel into and out of driving relations to said driven wheel, including a rock shaft connected to said driving wheel; a pair of levers arranged one at each side of said seat; oppositely arranged arms on said rock shaft; connections therefor to said levers; and means for shifting said driven wheel, including a hand lever arranged at the end of said seat, all co-acting for the purpose specified.

31. In a motor vehicle, adapted to be driven in either direction, traction wheels; an engine; driving connections therefor to said wheels, including a driving shaft, a friction driving wheel splined to said shaft, a driven shaft, a driven wheel splined to said driven shaft whereby it may be adjusted relative to said driving wheel to vary the speed and to reverse the said driving connections; a pair of oppositely disposed levers; connections for said levers to said driving wheel arranged so that said driving wheel is shifted into and out of its driving position by the actuation of said levers in the same corresponding directions relative to the direction of movement of said vehicle; and means for shifting said driven wheel, all co-acting for the purpose specified.

32. In a motor vehicle adapted to be driven in either direction, the combination with a body comprising a seat, of an engine; an engine control means comprising a plurality of hand members and connections arranged so that the said control means are actuated to the same purpose by the movement of said hand members in either direction to and from their neutral position, said



hand members being located at one end of said seat; disengageable driving connections for said engine; means for disconnecting said driving connections, a pair of foot levers arranged one at each side of said seat; connections therefor to said disconnecting means arranged so that said driving connections are connected and disconnected by the actuation of said foot levers in the same corresponding directions relative to said seat; a brake mechanism; a pair of brake actuating levers arranged one at each side of said seat; connections for said brake actuating levers to said brake mechanism arranged so that said brake is acted upon to the same purpose when said levers are operated in the same directions relative to said seat; and a variable speed and reversing gear comprising a hand member arranged at one end of said seat, and connections for said hand member to said variable speed and reversing gear whereby said gear is adjusted to the same purpose by the operation of the same hand member in either direction relative to the direction of the movement of the car.

33. In a motor vehicle adapted to be driven in either direction, the combination with a body comprising a seat, of an engine; an engine control means comprising a plurality of hand members and connections arranged so that the said control means are actuated to the same purpose by the movement of said hand members in either direction to and from their neutral position, disengageable driving connections for said engine; means for disconnecting said driving connections; a pair of foot levers arranged one at each side of said seat; connections therefor to said disconnecting means arranged so that said driving connections are connected and disconnected by the actuation of said foot levers in the same corresponding directions relative to said seat, a brake mechanism; a pair of brake actuating levers arranged one at each side of said seat; connections for said brake actuating levers to said brake mechanism arranged so that said brake is acted upon to the same purpose when said levers are operated in the same directions relative to said seat; and a variable speed and reversing gear comprising a hand member, and connections for said hand member to said variable speed and reversing gear whereby said gear is adjusted to the same purpose by the operation of the said hand member in either direction relative to the direction of movement of the car.

34. In a motor vehicle adapted to be driven in either direction, the combination with a body comprising a seat; of an engine; an engine control means comprising a plurality of hand members and connections arranged so that the said control means are actuated to the same purpose by the move-

ment of said hand members in either direction to and from their neutral position, said hand members being located at one end of said seat; disengageable driving connections for said engine; means for disconnecting said driving connections; a pair of foot levers arranged one at each side of said seat; connections therefor to said disconnecting means arranged so that said driving connections are connected and disconnected by the actuation of said foot levers in the same corresponding directions relative to said seat; and a variable speed and reversing gear comprising a hand member arranged at one end of said seat, and connections for said variable speed and reversing gear whereby said gear is adjusted to the same purpose by the operation of the said hand member in either direction relative to the direction of movement of the car.

35. In a motor vehicle adapted to be driven in either direction, the combination with a body comprising a seat; of an engine; an engine control means comprising a plurality of hand members and connections arranged so that the said control means are actuated to the same purpose by the movement of said hand members in either direction to and from their neutral position, said hand members being located at one end of said seat; disengageable driving connections for said engine; means for disconnecting said driving connections; a pair of foot levers arranged one at each side of said seat; connections therefor to said disconnecting means arranged so that said driving connections are connected and disconnected by the actuation of said foot levers in the same corresponding directions relative to said seat; a brake mechanism; a pair of brake actuating levers arranged one at each side of said seat; and connections for said brake actuating levers to said brake mechanism arranged so that said brake is acted upon to the same purpose when said levers are operated in the same directions relative to said seat.

36. In a motor vehicle adapted to be driven in either direction, the combination with a body comprising a seat; of an engine; an engine control means comprising a plurality of hand members and connections arranged so that the said control means are actuated to the same purpose by the movement of said hand members in either direction to and from their neutral position, disengageable driving connections for said engine; means for disconnecting said driving connections; a pair of foot levers arranged one at each side of said seat; connections therefor to said disconnecting means arranged so that said driving connections are connected and disconnected by the actuation of said foot levers in the same corresponding directions relative to said seat; a brake



mechanism; a pair of brake actuating levers arranged one at each side of said seat; and connections for said brake actuating levers to said brake mechanism arranged so that  
 5 said brake is acted upon to the same purpose when said levers are operated in the same directions relative to said seat.

37. In a motor vehicle adapted to be driven in either direction, the combination  
 10 with a body comprising a seat; of an engine; an engine control means comprising a plurality of hand members and connections arranged so that the said control means are actuated to the same purpose by the move-  
 15 ment of said hand members in either direction to and from their neutral position, said hand members being located at one end of said seat; disengageable driving connections for said engine; means for disconnecting  
 20 said driving connections; a pair of foot levers arranged one at each side of said seat; and connections therefor to said disconnecting means arranged so that said driving connections are connected and disconnected  
 25 by the actuation of said foot levers in the same corresponding directions relative to said seat.

38. In a motor vehicle adapted to be driven in either direction, an engine; an  
 30 engine control means comprising a plurality of hand members and connections arranged so that the said control means are actuated to the same purpose by the movement of said hand members in either direction to and  
 35 from their neutral position; disengageable driving connections for said engine; means for disconnecting said driving connections; a pair of opposed levers; connections therefor to said disconnecting means arranged so  
 40 that said driving connections are connected and disconnected by the actuation of said levers in the same corresponding directions relative to the directions of movement of said vehicle; a brake mechanism; a pair of  
 45 opposed brake-actuating levers; and connections for said brake-actuating levers to said brake mechanism arranged so that said brake is acted upon to effect the same purpose when the said levers are operated in the  
 50 same directions relative to the movement of said vehicle, and a reversing gear comprising a hand member and connections for said hand member to said reversing gear, whereby said gear is adjusted to effect the same  
 55 purpose by the operation of said hand member in the same direction relative to the direction of movement of the car.

39. In a motor vehicle adapted to be driven in either direction, an engine; an  
 60 engine control means comprising a plurality of hand members and connections arranged so that the said control means are actuated to the same purpose by the movement of said hand members in either direction to and  
 65 from their neutral position; disengageable

driving connections for said engine; means for disconnecting said driving connections; a pair of opposed levers; connections therefor to said disconnecting means arranged so that said driving connections are connected  
 70 and disconnected by the actuation of said levers in the same corresponding directions relative to the directions of movement of said vehicle; and a reversing gear comprising a hand member and connections for said  
 75 hand member to said reversing gear whereby said gear is adjusted to effect the same purpose by the operation of said hand member in the same direction relative to the direction of movement of the car.  
 80

40. In a motor vehicle adapted to be driven in either direction, an engine; an engine control means comprising a plurality of hand members and connections arranged so that said control means are actuated to  
 85 the same purpose by the movement of said hand members in either direction to and from their neutral position; disengageable driving connections for said engine; means for disconnecting said driving connections; a  
 90 pair of opposed levers; connections therefor to said disconnecting means arranged so that said driving connections are connected and disconnected by the actuation of said levers in the same corresponding directions  
 95 relative to the directions of movement of said vehicle; a brake mechanism; a pair of opposed brake-actuating levers; and connections for said brake actuating levers to said brake mechanism arranged so that said  
 100 brake is acted upon to effect the same purpose when the said levers are operated in the same directions relative to the movement of said vehicle.

41. In a motor vehicle adapted to be  
 105 driven in either direction, an engine; disengageable driving connections for said engine; means for disconnecting said driving connections; a pair of opposed levers; connections therefor to said disconnecting  
 110 means arranged so that said driving connections are connected and disconnected by the actuation of said levers in the same corresponding directions relative to the directions of movement of said vehicle; a brake mech-  
 115 anism; a pair of opposed brake-actuating levers; connections for said brake actuating levers to said brake mechanism arranged so that said brake is acted upon to effect the same purpose when the said levers are op-  
 120 erated in the same directions relative to the movement of said vehicle; and a reversing gear comprising a hand member and connections for said hand member to said reversing gear whereby said gear is adjusted  
 125 to effect the same purpose by the operation of said hand member in the same direction relative to the direction of movement of the car.

42. In a motor vehicle adapted to be 130



driven in either direction, an engine; disengageable driving connections for said engine; means for disconnecting said driving connections; a pair of opposed levers; connections therefor to said disconnecting means arranged so that said driving connections are connected and disconnected by the actuation of said levers in the same corresponding directions relative to the directions of movement of said vehicle; a brake mechanism; a pair of opposed brake-actuating levers, and connections for said brake-actuating levers to said brake mechanism arranged so that said brake is acted upon to effect the same purpose when the said levers are operated in the same direction relative to the movement of the said vehicle.

43. In a motor vehicle adapted to be driven in either direction, an engine; an engine control means comprising a plurality of hand members and connections arranged so that the said control means are actuated to the same purpose by the movement of said hand members in either direction to and from their neutral position; a brake mechanism; a pair of opposed brake-actuating levers; connections for said brake actuating levers to said brake mechanism arranged so that said brake is acted upon to effect the same purpose when the said levers are operated in the same directions relative to the movement of said vehicle, and a reversing gear comprising a hand member and connections for said hand member to said reversing gear whereby said gear is adjusted to effect the same purpose by the operation of said hand member in the same direction relative to the direction of movement of the car.

44. In a motor vehicle adapted to be driven in either direction, an engine; a brake mechanism; a pair of opposed brake-actuating levers; connections for said brake-actuating levers to said brake mechanism arranged so that said brake is acted upon to effect the same purpose when the said levers

are operated in the same directions relative to the movement of said vehicle, and a reversing gear comprising a hand member and connections for said hand member to said reversing gear whereby said gear is adjusted to effect the same purpose by the operation of said hand member in the same direction relative to the direction of movement of the car.

45. In a motor vehicle adapted to be driven in either direction, an engine; an engine control means comprising a plurality of hand members and connections arranged so that the said control means are actuated to the same purpose by the movement of said hand members in either direction to and from their neutral position; a brake mechanism; a pair of opposed brake levers, and connections for said brake actuating levers to said brake mechanism arranged so that said brake is acted upon to effect the same purpose when the said levers are operated in the same direction relative to the movement of said vehicle.

46. In a motor vehicle adapted to be driven in either direction, an engine; an engine control means comprising a plurality of hand members and connections arranged so that the said control means are actuated to the same purpose by the movement of said hand members in either direction to and from their neutral position, and a reversing gear comprising a hand member and connections for said hand member to said reversing gear whereby said gear is adjusted to effect the same purpose by the operation of said hand member in the same direction relative to the direction of movement of the car.

In witness whereof, we have hereunto set our hands and seals in the presence of two witnesses.

WILLIAM S. HOVEY. [L. S.]  
C. B. STEBBINS. [L. S.]

Witnesses:

FRED SCHOOMAKER,  
D. C. MIX.