

D. MASON.

INDICATING APPARATUS FOR MOTOR VEHICLES.

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Fig. 1

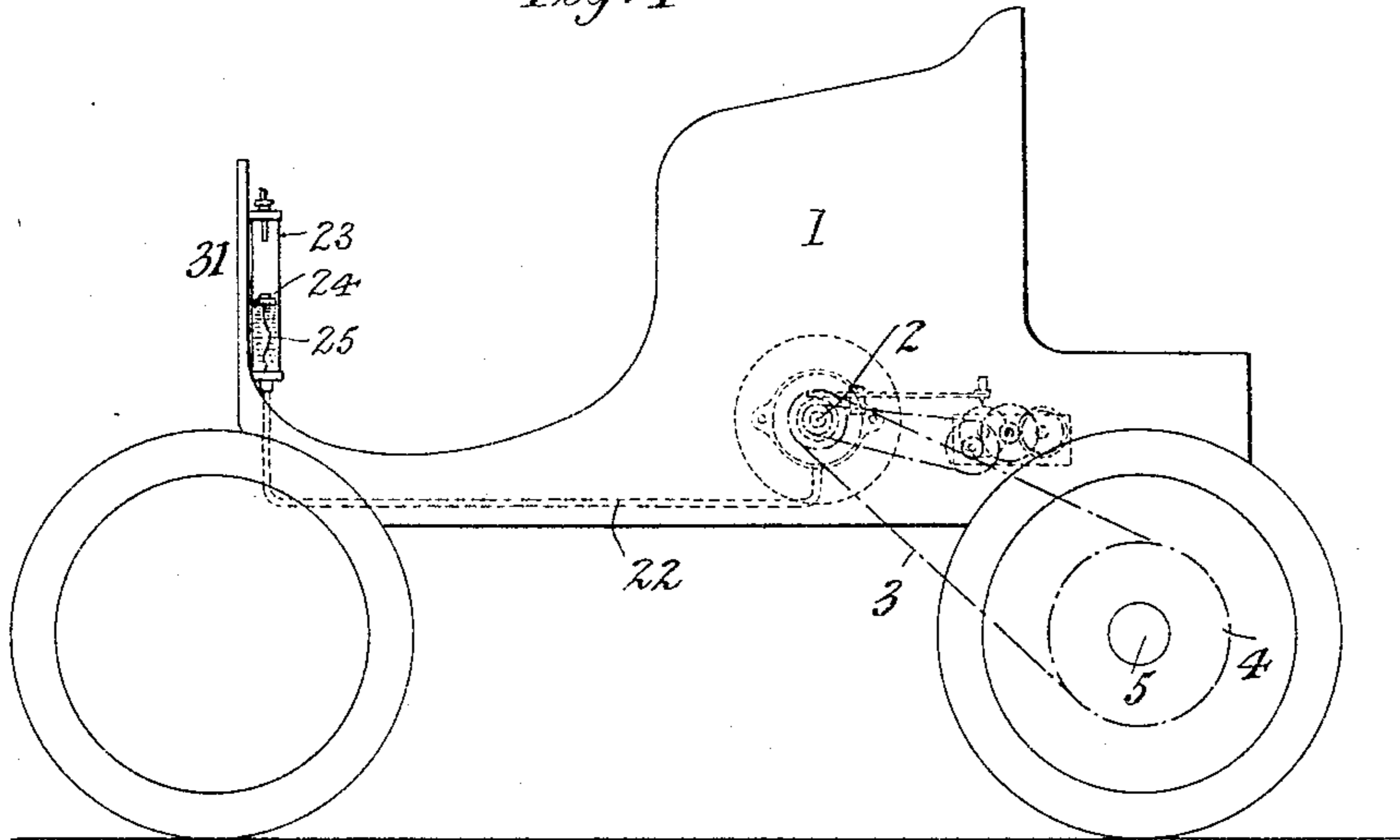


Fig. 2

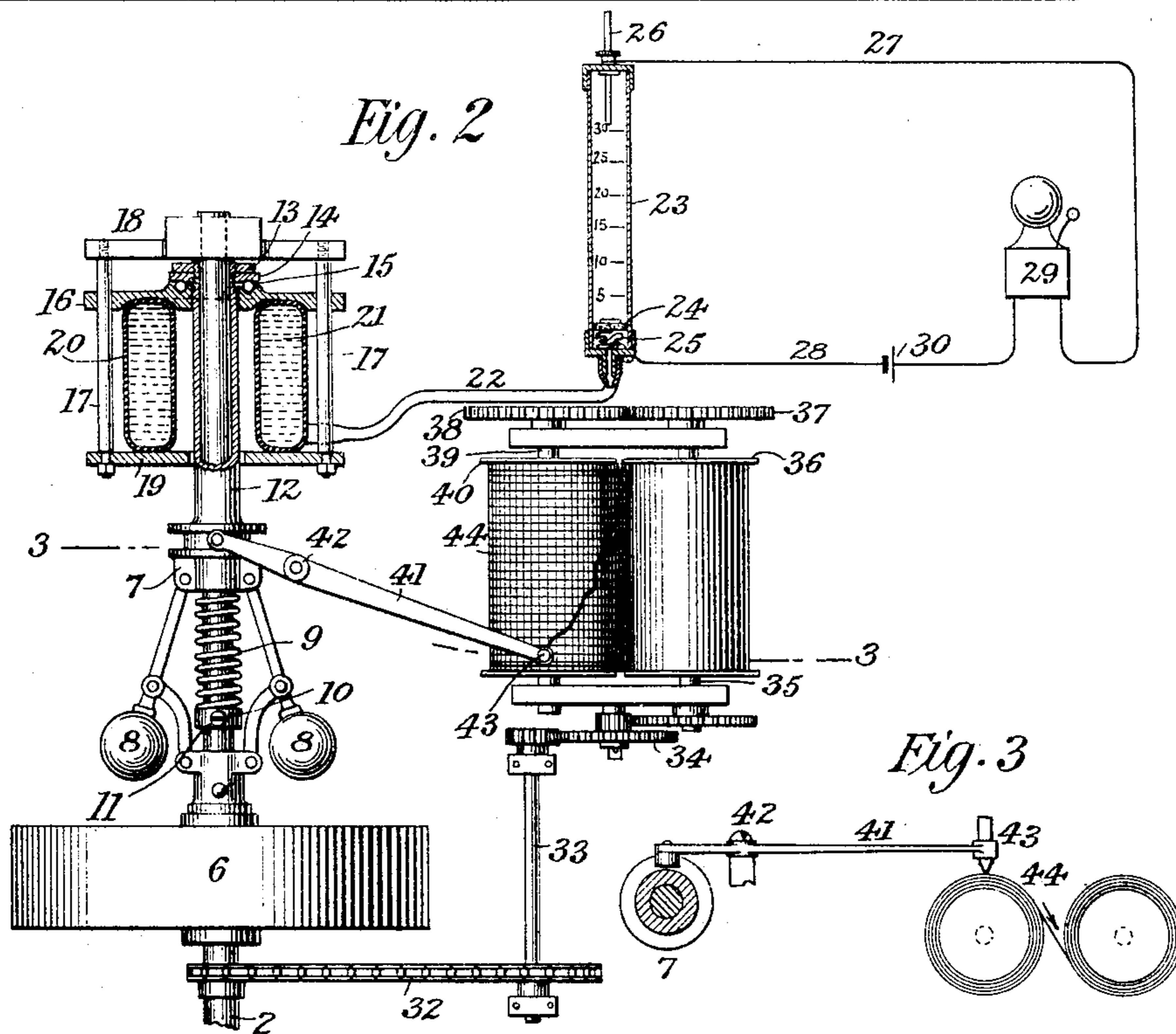
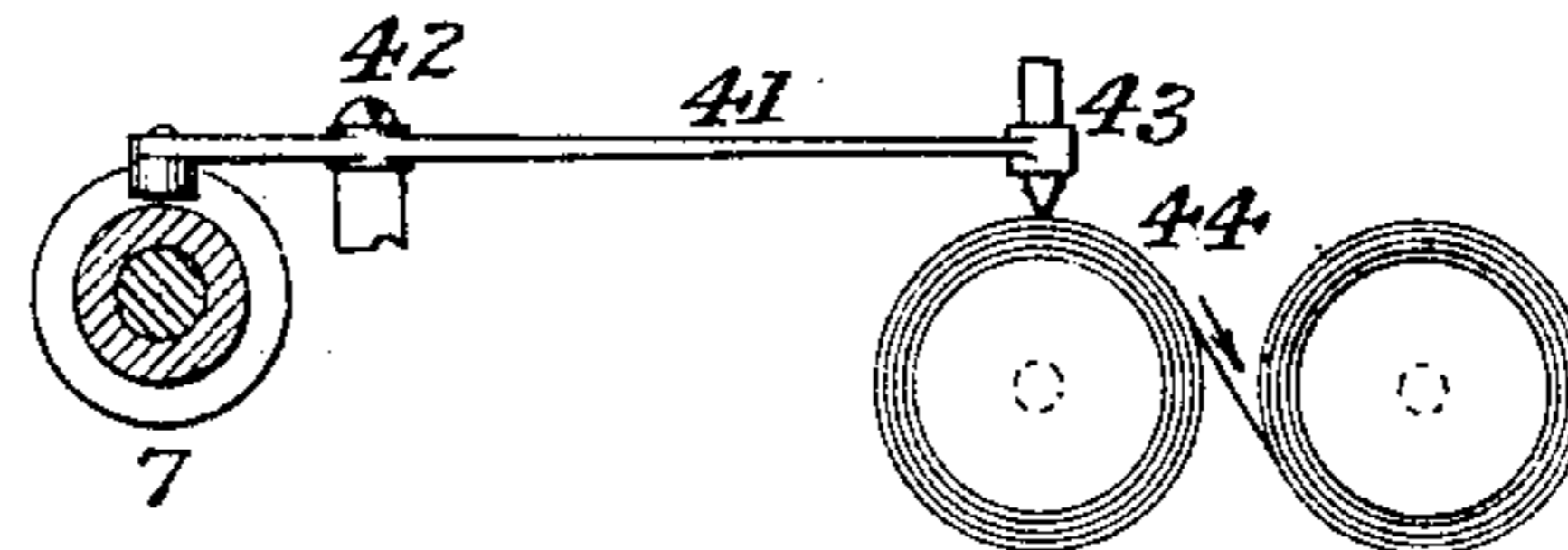


Fig. 3



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UNITED STATES PATENT OFFICE.

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INDICATING APPARATUS FOR MOTOR-VEHICLES.

SPECIFICATION forming part of Letters Patent No. 785,816, dated March 28, 1905.

Application filed August 25, 1903. Serial No. 170,681.

To all whom it may concern:

Be it known that I, DAVID MASON, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Indicating Apparatus for Motor-Vehicles, of which the following is a specification.

The present invention relates to indicating, recording, and alarm apparatus capable of being used in connection with automobiles or other self-moving vehicles, such as motor-cars and the like, for the purpose of showing to the operator at all times the speed at which the vehicle is traveling, recording the speed which the vehicle has attained during various portions of a completed journey, and sounding an alarm when the speed at which the vehicle is running reaches a certain predetermined limit.

The details of my invention will be clearly understood by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of an automobile, showing in dotted or broken lines some of the details of my special apparatus. Fig. 2 is a plan and part section of some of the special appliances invented by me, including a vertical section of the indicating devices and a diagram of the alarm-circuit. Fig. 3 is a section along the line 3 3 in Fig. 2.

Referring to the drawings, 1 is the body of an automobile. 2 is the driving-shaft thereof, and 3 is the driving-belt or other connection between the driving-shaft and a disk or wheel 4 on the rear axle 5. On the driving-shaft I mount a fly-wheel 6 and a governor 7, having the usual governor-balls 8 8 and provided with the usual spring 9 for regulating the throw of the governor-balls as the driving-shaft rotates. The position of one end of the spring 9 is adjustable by means of a collar 10, having a set-screw 11, whereby the tension of the spring can be regulated.

A sleeve 12, connected with the governor, is adapted to move upon the shaft 2, the degree of movement depending upon the speed with which the shaft rotates by reason of the governor-balls 8 8 being thrown out to differ-

ent distances, according to the speed of the shaft. The upper end of the sleeve 12 is screw-threaded externally, and over its end are screwed nuts 13 14, below which are steel balls 15 15, constituting a ball-bearing, as between the lower nut 14 and a sliding disk 16, as shown. The disk 16 is adapted to slide upon guides 17 17, supported in a frame made up of end pieces 18 and 19, for which end pieces the rods 17 act as supports. The whole frame, including the rods and the end pieces, is mounted at one end on the shaft 2 and at the opposite end on the sleeve 12.

Between the sliding disk 16 and the end piece 19 I locate an elastic bag or holder 20, adapted to contain a liquid 21, which is preferably colored, so as to be easily seen by the eye. I prefer a red-colored liquid, such as glycerin tinted red by any suitable coloring method. The bag or holder 20 is filled with the liquid and hermetically sealed. A flexible pipe 22 connects the bag with the lower end of a vertical transparent tube 23, which is duly marked with characters—such as “5, 10, 15, 20, 25, 30”—for a purpose which will presently be described. Within the tube 23 is located a floating contact-piece 24, with which a flexible wire 25 is connected, and at the top of the tube an adjustable contact-rod 26 is provided. The rod 26 and the flexible wire 25 are connected by suitable circuit-wires 27 and 28 with the circuit of an electric bell 29 and a battery or other electric source 30.

It will be observed that the longitudinal movements of the governor-sleeve 12 on the shaft 2 serve to regulate the position of the sliding disk 16 with relation to the end plate 19. As the sliding disk is moved toward the said end plate it is evident that a compression of the bag or holder 20 takes place, whereupon the liquid is forced from the bag or holder through the flexible tube 22 up into the indicating-tube 23. At the same time the floating terminal 24 is lifted and the red liquid, which can clearly be seen by the operator, is brought to a certain definite level within the tube 23, the particular level depending upon the amount of compression of the bag 20, which in turn depends ultimately upon the

speed of the vehicle affecting the position of the sliding disk 16. The operator can accordingly know at any moment at what rate of speed the vehicle is traveling, it being assumed, of course, that the proper adjustments are made in the first instance. The indicating-tube 23 will generally be located directly in front of the operator—say just inside the dash-board 31 in the apparatus shown. Should the speed increase to such an extent that the floating contact 24 is carried against the terminal 26, the circuit of the electric source 30 will be completed and the bell 29 will ring, thus warning the operator that he is exceeding the limit determined upon. This limit will usually be chosen as the speed limit which is allowed in the part of the country through which the vehicle is traveling, or it may be selected for any other reason at the will of the operator. By adjusting the terminal 26 the limit can be changed at will.

Through the medium of the devices already described it is evident that the operator of a motor-vehicle to which these appliances are attached will be automatically warned when the predetermined limit of speed has been reached, while he will at all times be able to observe at what rate the vehicle is progressing.

I may in some cases dispense with the alarm apparatus and depend solely upon the indicating apparatus as a sufficient protection in some cases. I may also combine with both or either of the above-described devices a recording apparatus, which I will now proceed to describe.

On the shaft 2 I may arrange a suitable sprocket-wheel and connect it by a sprocket-chain 32 with a corresponding wheel on a shaft 33, mounted underneath the seat of the vehicle, as indicated in Figs. 1 and 2. The shaft 33 may be connected by a suitable gearing (illustrated at 34) with a shaft 35, carrying a spool 36 and also carrying at its remote end a gear-wheel or pinion 37, which engages with a corresponding gear-wheel 38 on a shaft 39. The latter shaft also carries a spool 40, as shown. The arrangement of the spools 36 and 40 is the usual one whereby a sheet of paper or other material suitably marked with indicating-lines is reeled off from one spool and wound up on the other. In the present instance the spool 40 is first loaded with the roll of paper or other material, and the action is to wind this paper or other material on the spool 36 and reel it off from the spool 40. It is evident that such action will take place through the action of the driving-shaft in connection with the gearing already described. Inasmuch as the spools should be wound very slowly, the gearing between the driving-shaft and the spools should gradually reduce the speed when transmitted to the shaft 35.

On the hub of the governor 7 I may mount a lever 41, which is pivoted at 42. As the governor changes its position under the influence

of the rotation of the shaft 2 the outer end of the lever 41, which carries a pencil 43, will be carried along the surface of the paper on the spool 40, thereby tracing a line upon the paper. The location of the pencil-line upon the paper will indicate at what speed the vehicle was traveling at the time the line was made. Referring to the drawings, if we assume that the line marked 44 represents the extreme distance to which the pencil-point should be allowed to travel in order not to exceed the predetermined speed then it is evident that the throw of the lever 41 should not be carried beyond this point. Should it appear upon removing the record that a pencil-line was found farther along than the line 44, it would indicate that the speed of the vehicle had been excessive during a certain portion of its run. Such record might be appealed to as conclusive evidence of the maximum speed during a given run of the vehicle.

I claim as my invention—

1. The combination with a motor-vehicle, of a visual speed-indicator consisting in part of a transparent tube, a flexible liquid-containing bag, pipe-connected with said tube, a governor operatively connected with the motor of the vehicle, and means actuated by said governor for compressing said bag and for forcing the liquid therefrom into the transparent tube.

2. In an apparatus of the character described, the combination with a driven shaft, of a sleeve longitudinally movable on said shaft, a governor having a connection with said sleeve and arranged to move the same longitudinally, a disk secured to the sleeve and adapted to partake of the longitudinal movement thereof, guides for said disk, a fixed disk, a compressible liquid-containing bag located between said disks, and a transparent sight-tube pipe-connected with the bag, substantially as described.

3. In an apparatus of the character described, the combination with a driven shaft and a governor operatively connected thereto, of an annular liquid-holder of compressible material surrounding said shaft and containing a liquid, a fixed and a movable plate between which the liquid-holder is located, a transparent sight-tube having communication with the liquid-holder and constituting a visual indicator, and means actuated by the governor for moving said movable plate to and from the fixed plate and for compressing the said holder to force the liquid therefrom into the sight-tube.

4. In an apparatus of the character described, the combination with a driven shaft, of a sleeve longitudinally movable on said shaft, a governor having a connection with said sleeve and arranged to move the same longitudinally, a disk secured to the sleeve and adapted to partake of the longitudinal movements thereof, guides for said disk, a fixed

disk, an annular compressible liquid-containing bag located between said disks and surrounding the sleeve, and a transparent sight-tube pipe-connected with the said bag, the 5 parts operating in the manner and for the purpose described.

5. In an apparatus of the class described, the combination with a driven shaft and a governor operatively connected thereto, of a flexible bag containing a liquid, a transparent sight-tube having communication with said bag and constituting a visual indicator, means operated by the said governor for forcing the liquid from the bag into the said transparent tube, 10 and an audible signal controlled in its operation by the liquid in the tube.

6. In an apparatus of the class described, the combination with a driven shaft and a governor operatively connected thereto, of a flexible liquid-containing bag, a transparent sight-tube having communication with said bag and constituting a visual indicator, and means operated by said governor for collapsing the said flexible bag to force the liquid therefrom into 20 the sight-tube.

7. In an apparatus of the class described, the combination with a driven shaft and a gov-

ernor operatively connected thereto, of a flexible liquid-containing bag, a fixed and a movable plate between which the bag is located, a transparent sight-tube having communication 30 with the bag and constituting a visual indicator, and means actuated by the governor for moving said movable plate to and from the fixed plate and for compressing the flexible 35 bag to force the liquid therefrom into the said sight-tube.

8. The combination with a motor-vehicle, of a driving-shaft therefor, a sleeve longitudinally movable on the said driving-shaft, a disk 40 adapted to partake of the longitudinal movement of the said sleeve, an annular elastic liquid-holder surrounding said sleeve and adapted to be compressed or released by the movements of the disk, and an indicating de- 45 vice consisting of a vertical transparent tube-pipe connected with the said liquid-holder.

Signed at New York, in the county of New York and State of New York, this 3d day of August, A. D. 1903.

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Witnesses:

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