

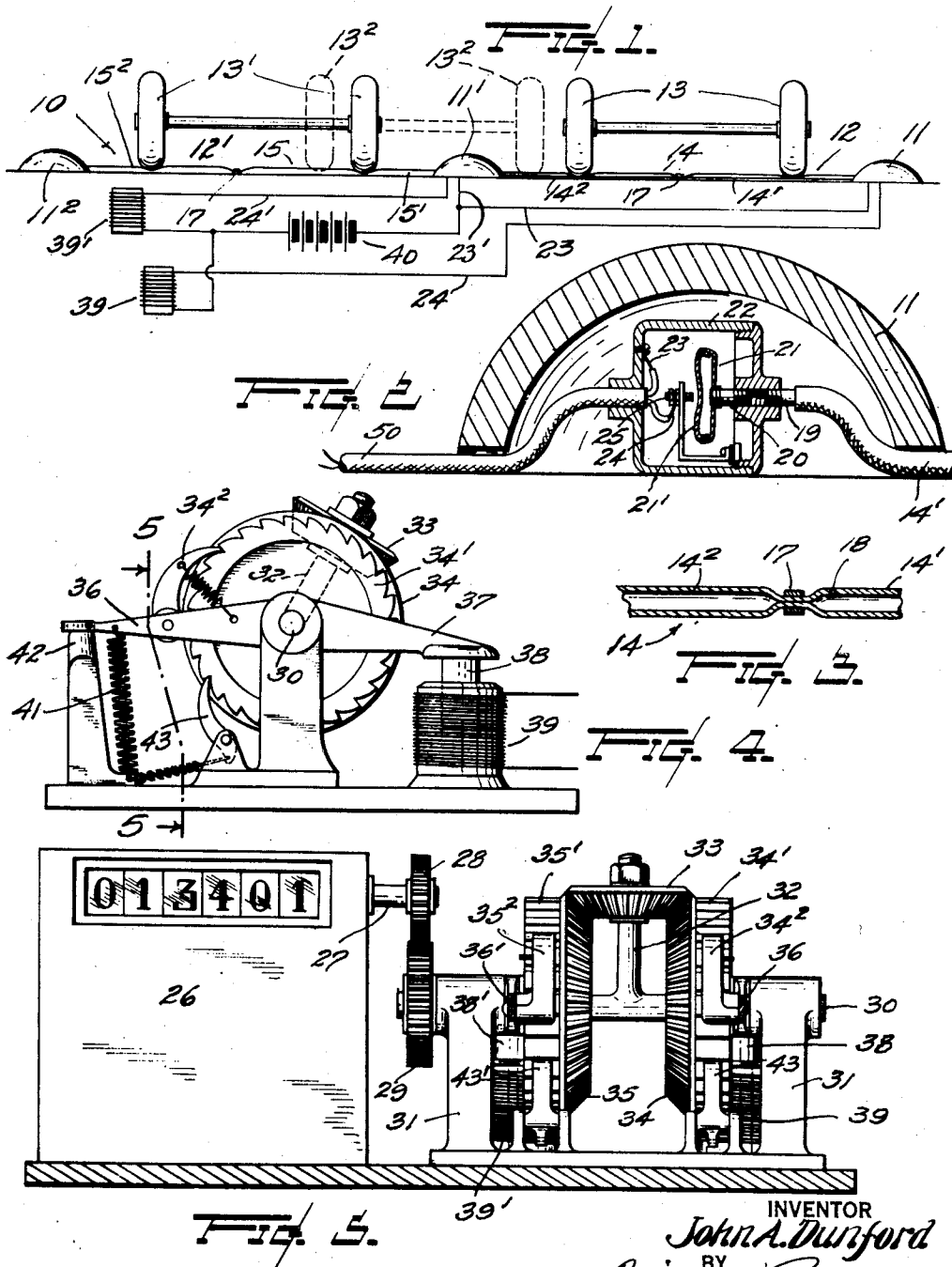
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VEHICULAR TRAFFIC RECORDER

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VEHICULAR TRAFFIC RECORDER

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This invention relates to vehicular traffic meters; and its object, generally, is to provide apparatus of this character which will be of simple, inexpensive and durable construction, efficient in operation, and one in which the indicating device is adapted to be located at a distance from the vehicle actuated operating devices of the apparatus.

More specific objects and advantages of the invention will appear in the following specification.

The invention consists in the novel construction, adaptation and combination of parts hereinafter described and claimed.

In the accompanying drawings,—

Figure 1 is a transverse vertical sectional view of a portion of a street or highway with devices, shown somewhat diagrammatically, embodying the present invention, and in full and broken lines portions of vehicle running-gears to illustrate an application of the invention. Fig. 2 is a view in transverse vertical section of a traffic detector member of the apparatus and the protective casing therefor. Fig. 3 is a detail sectional view of a tube partitioning means. Fig. 4 is a side elevation of mechanism for actuating the traffic indicating meter; and Fig. 5 is a transverse sectional view taken substantially on broken line 5—5 of Fig. 4 and including the meter not shown in Fig. 4.

In said drawings, the reference numeral 10 represents a side portion of a street or road upon which vehicles travel in one direction, and, as shown, is divided by means of dome-like hollow bodies 11, 11¹, 11², which serve as guides to define vehicular lanes 12 and 12¹. Each of said lanes is, advantageously, of a width exceeding the gage or lateral spread of the respective wheels as 13 and 13¹ of the vehicles which are to be counted by the present invention.

The running space between adjacent domes, as 11—11¹ or 11¹—11², is, however, of less width than requisite to accommodate two vehicles travelling side by side in either of said lanes.

In carrying out my invention, I provide upon the road surface of the lanes 12 and 12¹ resilient tubes 14 and 15 which extend trans-

versely of the respective lanes and into the chambers of the markers 11 and 11¹. Where two or more traffic lanes are employed in side by side relation the tubes therefor are advantageously extended entirely across the same to enable both ends of the tubes being secured to the markers at opposite sides of the respective lanes. Where a tube thus extends entirely across a lane it is contracted at about its midlength as by means of a clamp 17 (Fig. 3), to divide, in effect, the tube 14 into two portions 14¹ and 14², and the other tube 15 into portions 15¹ and 15².

The internal spaces of the tube portions 14¹ and 15¹ constitute receptacles for air, and are each provided with a small perforation—such as 18—affording communication between the external atmosphere and the interior of the tube portion 14¹, or 15¹. The ends of the respective tube portions 14¹ and 15¹ are operatively connected with air controlled impulse detectors, one for each tube. As illustrated in Fig. 2 with respect to the tube 14, the end of a tube is connected by means of nipples 19 and 20 with the interior of a hollow metal member 21 having a resilient end wall or diaphragm 21¹ which adapts the member to be distended by the pressure of air therein when such pressure is capable of overcoming the opposing pressure of the external atmosphere plus the resistance of the metallic walls 21 and 21¹ to cause a change from their normal shapes.

The member 21 is enclosed in a protective casing 22 and, as illustrated, provides therein an electrical conductor with respect to a circuit wire 23.

A circuit wire 24 complementary to the wire 23 is connected to a binding post 25 which constitutes the stationary element of the detector and serves as the terminal of a normally open switch whose other terminal is provided by the element 21¹ which is movable into gap-closing contact with the element 25 by an increase of air pressure within the member 21 responsive to a compressive force applied by a vehicle when passing over the associated road tube.

In Fig. 2 the circuit wires above referred

to are represented as extending through a flexible covering 50 of insulating material.

Included in the invention is a counting machine or meter, indicated by 26 in Fig. 5, which may be of any suitable or known type. In the illustrated embodiment the counting mechanism is actuated through the medium of a rotary shaft 27 operated by means of spur gears 28 and 29 from a rotary shaft 30 which is journaled in bearings provided in standards 31 of a supporting frame. Rigid with the shaft 30 and extending at right angles therefrom is an arm 32 upon which is rotatably mounted a toothed pinion 33 which is in continuous mesh with the teeth of two spaced bevel gears 34 and 35 which are mounted upon the shaft 30 for independent rotary motion. Integral or rigid with the respective gears 34 and 35 are ratchet wheels 34¹ and 35¹ whereby rotary motion is imparted to the respective gears by means of reciprocatory pawls 34² and 35².

As shown in Fig. 4, the pawl 34² for the ratchet wheel 34¹ is carried by an arm 36 of a lever fulcrumed upon the shaft 30 and has provided on its other arm 37 the armature 38 of an electromagnet whose winding 39 is included in the circuit 23—24 extending from the detector within the marker 11.

In like manner, the pawl 35² (Fig. 5) for the ratchet wheel 35¹ is carried by an arm 36¹ of a second lever whose other arm (not shown) carries the armature 38¹ of an electromagnet winding 39¹ which is included in the circuit 23¹—24¹ of the detector within the marker 11¹. The electric current for said circuits may be supplied from any suitable source—as, for example, a battery 40, shown in Fig. 1. The arms 36 and 36¹ of the respective levers are each yieldably held, as by means of a spring 41, against a stop such as 42 when the respective magnets are deenergized.

Spring actuated dogs 43 and 43¹ are provided to prevent the respective ratchet wheels from retrogression.

In operation, the weight of a vehicle passing over the operable portion 14¹ (or 15¹) of a road tube effects through the medium of its front and rear wheels, respectively, two successive compressions of the tube whereby two compressed air impulses are applied to a movable element 21¹ to close intermittently the respective electric circuit. When an electric circuit is thus closed, its magnet is energized resulting in the pawl 34² (or 35²) being actuated to impart two rotative movements through the medium of the respective ratchet wheel 34¹ (or 35¹) to the gear 34 (or 35) which is integral therewith. When either of the gears 34 or 35 are thus rotated singly, it acts upon the gear 33 to impart a rotary movement thereto and also, by reason of its engagement with the non-rotating gear 35 or 34, the gear 33 is

caused to revolve about the axis of the shaft 30.

Such revoluble motion of the pinion 33 imparts rotative motion to said shaft, whence motion is transmitted through gears 29 and 28 to actuate the counting devices within the meter 26.

In practice, the counting devices and the gearing of the actuating mechanism therefor are so arranged and proportioned that two impulses—one originating from the front wheels and the other from the rear wheels of a vehicle—when applied through the pinion 33 acting as described above will cause the indicator of the meter to count one. When wheels of two vehicles pass coincidentally over the tubes of both lanes (12 and 12¹) both of the gears 34 and 35 will be rotated simultaneously thereby revolving the pinion 33 about the shaft 30 without any rotary motion on the arm 32 and, in consequence, the revoluble arcuate movement of the pinion 33 will be twice the arcuate movement of the same when influenced by rotary movement of either of the gears 34 or 35 taken singly; hence the double throw, so to speak, of the pinion 33 when actuated by two vehicles acting upon the respective tubes will cause the indicated record of the meter to be increased by two instead of by one.

Two vehicles traveling in side by side relation will affect separate tubes because of the arrangement of the operable portions 14¹ and 15¹ thereof as hereinbefore described. This will be understood from an inspection of Fig. 1, wherein is represented by dotted lines 13² the wheels of a vehicle axle assembly which straddle the marker 11¹, making engagement only with the idle portion 14² of the tube 14 and with the operable portion 15¹ of the tube 15 and hence has no effect upon the operable portion 14¹ which is subject to the action of a wheel 13 of the axle assembly of a vehicle traveling through the lane 12.

The invention will, it is thought, be understood from the foregoing description of the embodiment now preferred by me.

I do not, however, wish to be understood as confining myself specifically to the illustrated embodiment except as I may be limited by the following claims.

What I claim, is,—

1. In traffic counting apparatus having a normally open electric circuit, an expandable electric-conducting means adapted to close said circuit responsive to passage of vehicle wheels, a tubular compressible member communicatively attached to said circuit closing means and adapted to project transversely of a vehicle lane in the path of said vehicle wheels, and means to render a portion of said compressible member operatively responsive to the passage thereover of said vehicle

wheels and the other portion of said member inoperative.

2. In traffic counting apparatus having a normally open electric circuit, an expandable
5 electric-conducting means, and a tubular compressible member communicatively attached thereto, said member being adapted to transmit to said conducting means intermittent air impulses responsive to the wheels
10 of a vehicle passing thereover to expand said electric conducting means into circuit closing engagement.

Signed at Seattle, Washington, this 2nd day of June, 1927.

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