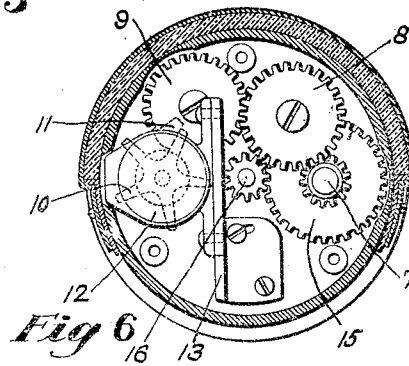
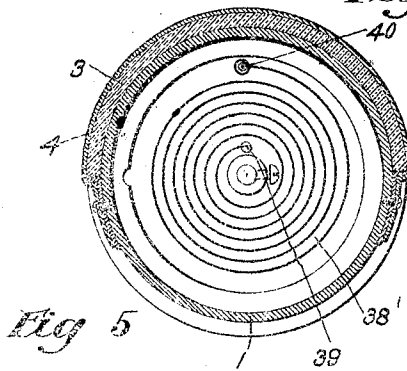
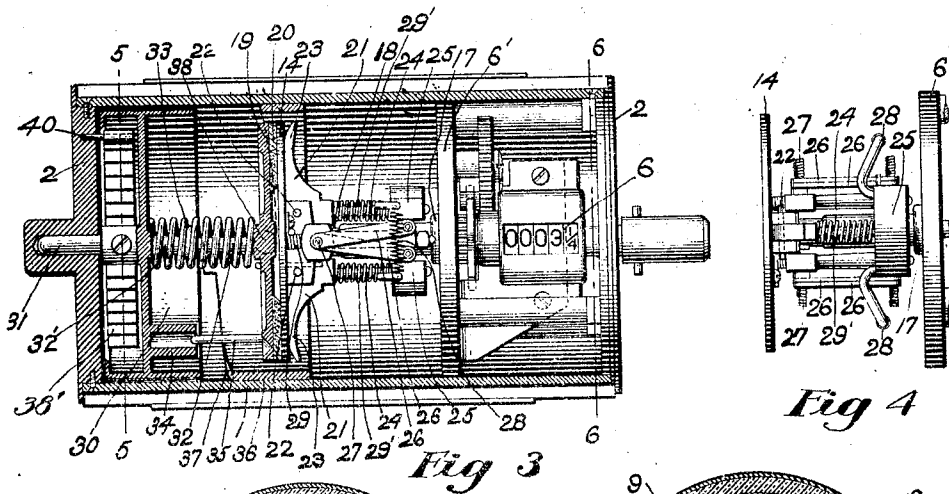
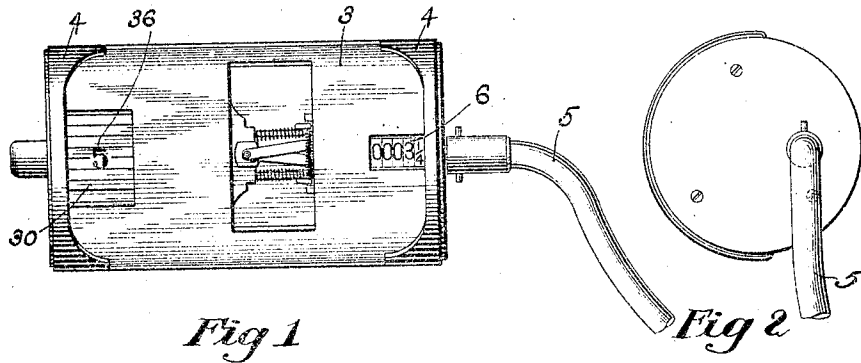


T. M. FOOTE.
SPEED INDICATING AND DISTANCE RECORDING MECHANISM.
APPLICATION FILED OCT. 11, 1906.

937,231.

Patented Oct. 19, 1909.

2 SHEETS—SHEET 1.



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Fig 8

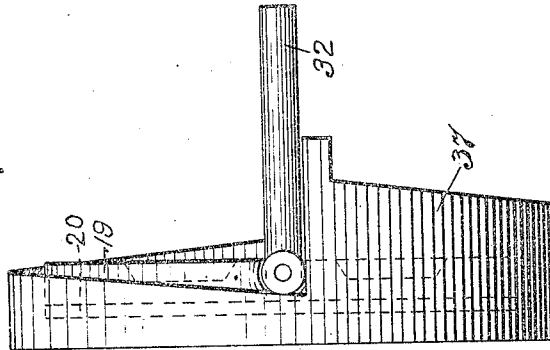
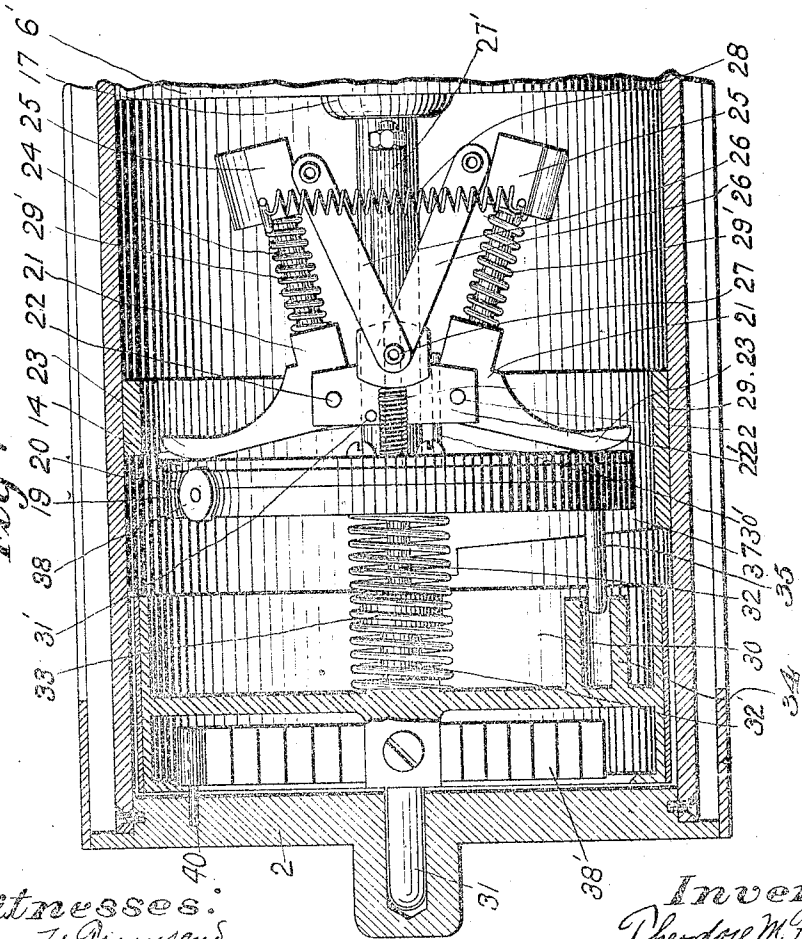


Fig 7



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UNITED STATES PATENT OFFICE.

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SPEED-INDICATING AND DISTANCE-RECORDING MECHANISM.

937,231.

Specification of Letters Patent.

Patented Oct. 19, 1909.

Application filed October 11, 1906. Serial No. 338,380.

To all whom it may concern:

Be it known that I, THEODORE M. FOOTE, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Speed-Indicating and Distance-Recording Mechanism, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

This invention relates to speed indicating and distance registering mechanism for use upon moving devices such, for example, as motor vehicles.

The object of my invention is to provide in simple and compact form an accurate mechanism from which the speed of the vehicle or other moving device can be readily determined and if desired the distance traveled thereby.

In order that the invention may be fully understood I will now set forth one specific embodiment or type thereof and explain the manner of its operation.

Having reference to the drawings: Figure 1 is a side elevation of one embodiment of the speed indicating and distance registering mechanism constituting the subject matter of my invention; Fig. 2 is an end view thereof; Fig. 3 is a longitudinal central section of the said mechanism the metallic strips 4 being omitted; Fig. 4 is a side elevation showing the rotating driving disk and a form of speed controlled member cooperating therewith to project the same into driving relation with a driven element; Fig. 5 is a vertical transverse section of the mechanism upon the line 5—5 of Fig. 3 and showing the coil spring tending normally to maintain the rotatable or driven disk at the inward movement of its travel; Fig. 6 is a vertical transverse section upon the line 6—6 of Fig. 2 and showing a preferred form of distance indicating mechanism; Fig. 7 is a longitudinal central section upon an enlarged scale, of the speed indicating mechanism and surrounding casing, and Fig. 8 is a side elevation showing a preferred form of cam mechanism for terminating the period of driving contact between the driving and driven disks and showing the latter disk in its relation thereto.

Having reference to that preferred type or embodiment of my invention herein disclosed, the casing wherein the mechanism is

preferably inclosed (Fig. 3) is shown at 1, the same comprising preferably a cylindrical metallic member having openings therein for the inspection of the desired portions of the mechanism such, for example, as the distance recording counter and the speed indicating symbols. The casing may if preferred be provided with an opening as shown in Fig. 1 to disclose the speed controlled member, and is provided with preferably disk-like end members and, if desired, the whole or a portion of the casing may be inclosed in glass or other transparent material 3 so that the parts may be protected from dust and dirt and yet exposed for inspection. In Fig. 5 the casing is shown as having applied thereto a semi-cylindrical glass member 3 secured in position at its ends by suitable semi-cylindrical metallic strips 4.

The speed indicating and distance registering mechanism may be mounted on any convenient part of the moving device or other vehicle but I preferably in the case of motor vehicles mount the same upon the dashboard thereof and preferably connect the same (Fig. 1) by a suitable flexible shafting 5 to any part of the running gear beyond the clutches, as for example the front wheel.

Any suitable type of distance registering mechanism may be employed. I have shown one type of distance registering mechanism, the same being preferably located in one end of the cylindrical casing so that the counter 6 thereof is exposed through an opening therein as previously stated. Any suitable mechanism may be employed to impart the proper degree of rotation to the counter to register the distance traversed by the vehicle. Preferably near one end of the cylindrical casing is provided a disk-like partition 6', serving to space the distance registering mechanism from the speed indicating mechanism and to sustain portions of the operative parts of each. I have here shown (Fig. 6) as a preferred form of distance indicating mechanism, a series of intermeshing pinions suitably mounted upon the partition 6', and preferably comprising a driving pinion 7, to which motion is imparted by the said flexible shafting 5 from a running part of the vehicle, and from which motion is conveyed through the intermeshing pinions 8 and 9 to the counter 6, the shaft of the counter being provided with a star wheel 10, or equivalent device, with the

teeth of which a lug 11 upon the pinion 9 meshes. The number of teeth upon the various pinions is such that the lug 11 upon the pinion 9 engages the star wheel 10 to rotate the same at a suitable speed to correctly indicate the distance traveled by the vehicle. The counter 6 is preferably inclosed in a casing 12 suitably mounted upon a metallic casting 13 that is secured to and projects longitudinally from the partition 6'.

The preferred embodiment of speed indicating mechanism herein disclosed is provided with a driving member to which motion is imparted in any suitable manner. The said driving member (Figs. 3, 4 and 7) is herein shown as a disk 14, rotated in any suitable manner but preferably from the driving pinion 7 through the intermeshing pinions 15 and 16, the latter being preferably arranged centrally of the casing and supported upon the partition 6'. Projecting centrally from the face of the said partition 6', that is opposite the distance recording mechanism, is a cylindrical bearing 17 wherein is mounted a shaft 18 (Fig. 3) supporting for rotative movement the disk 14 which, in the present embodiment of the invention, constitutes the driving member of the speed indicating mechanism. In the present type of the invention speed controlled means is employed to project or axially move the rotatable disk into driving relation with a second and symmetrically arranged disk 19, the latter being here shown as provided with a leather face 20 whereby it may the more readily partake of the rotative movement of the driving member or disk. Any suitable form of speed controlled means may be employed. In the present instance a centrifugal governor is provided, the same here shown as consisting of levers 21—21 pivoted at 22 in ears 22' projecting from the shaft 18 of the driving member or disk 14. The said levers 21 have in the present instance preferably radially extending arms 23—23, adapted to contact with a face of the driving member or disk 14, the other arms 24 of the said levers extending preferably axially of the casing and receiving loosely thereon weighted members 25, each of which is carried upon the outer end of corresponding lever arms 26—26, pivoted upon the heads 27 of tubular sockets 27' that have secured therein pins projecting from the adjacent face of the rotating disk or driving member 14, the said pins being surrounded intermediate the disk 14 and the heads 27, by coiled springs 29. The said weighted members 25—25 are preferably connected by coiled springs 28, tending to normally maintain them in their inner or non-active position and are preferably held upon the outer ends of the lever arms 24 by the coiled springs 29' surrounding the said arms. Any other suitable form

or construction of speed controlled means may be employed.

The driving member of the speed indicating mechanism, herein shown as the rotating disk 14, is in this embodiment of my invention so mounted that it may be moved axially by the lever arms 21 when the weighted members 25 of the speed controlled member are thrown outward or separated during the travel of the motor vehicle. In order that the said rotating disk 14 may be so moved, it is preferably provided upon that face thereof that is adjacent the speed controlled member with a centrally disposed projecting pin not herein shown mounted for sliding movement in the shaft whereby the disk is rotated, the said rotating disk being normally held in a retracted position by means of the coiled spring 29 previously described, and partaking of the rotative motion of its shaft 18 by reason of the pin 30' projecting from the face of the disk 14 and received for sliding movement in the ears 22' projecting from said shaft. During the travel of the motor vehicle the weighted members 25 of the speed controlled member are thrown outwardly under centrifugal action and the lever arms 23 thereupon act to move axially the rotating disk 14 which in this embodiment of my invention constitutes the driving member, thereby projecting a face of the said disk into driving relation or contact with the face of the driven member of the speed indicating mechanism which as previously stated is in this embodiment of my invention the rotating disk 19, the same being when the vehicle is at rest either entirely out of contact with the rotating disk 14 or out of effective driving contact therewith. In the described axial movement of the disk 14, a pin 31' upon the ears 22' limits the axial movement of the tubular sockets 27' said pin serving as a stop to the heads 27. The said driven member or disk 19 carries or is connected for rotative movement with a speed symbol carrying element or disk 30 the said speed symbol carrying disk 30 having a spindle 31 which is mounted for rotation in a head or end 2 of the casing. The element or disk 30 is rotatably connected in any operative manner that may be desired to the driven member to effect the presentation of the speed symbols by the driven member. The manner of operative connection to insure such presentation is quite immaterial, being varied as desired. Projecting from the opposite face of the said speed symbol carrying disk 30 is a sleeve 32', adapted to receive a pin 32 projecting from the adjacent face of the rotatable disk 19, constituting the driven member, a coiled spring 33 surrounding the said pin and tending normally to project the said rotatable disk 19 toward the driven member or disk 14. In order in this

embodiment of my invention to provide means whereby the rotative movement of the disk 19 is transmitted to the said speed symbol carrying disk I may employ any suitable connection and have herein shown a socket or sleeve 34 projecting from the face of the said speed symbol carrying disk that is adjacent the disk 19, the said socket or sleeve being adapted to slidably receive therein the pin 35 projecting from the adjacent face of the said driven disk 19.

The speed symbol carrying rotatable element or disk may be provided with any suitable symbols to indicate the speed at which the motor vehicle or other device is driven. I prefer, however, and in this type of my invention have shown numerals, between which may be arranged if desired suitable lines or marks 36, indicating miles, numerals being employed in this instance to represent every fifth mile.

It will be apparent from the construction of the mechanism thus far disclosed that the driving element or rotating disk 14 is during the travel of the motor vehicle projected toward the driven element or rotatable disk 19 to bring the faces thereof into driving contact, for an axial distance dependent upon the extent of outward swinging movement of the weighted members 25 of the centrifugal governor or speed controlled device. As soon as the face of the driving or rotating disk 14 is brought in driving contact with the driven or rotatable disk 19 an impulse of partial rotation is imparted to the said rotatable disk 19 thereby to impart a similar impulse of partial rotation to the speed symbol carrying disk thereby to present the proper symbol, in this case a line or numeral, opposite a predetermined portion of the opening in the casing through which the said speed symbol bearing disk is exposed. In order that the driven or rotatable disk 19 may have an impulse of rotation imparted thereto which shall correspond to the speed of the motor vehicle so that the proper speed symbol may be presented, I have in this embodiment of my invention provided a driving contact period terminating means to terminate the period of driving or rotative engagement of the disks 14 and 19. I have here shown said contact period terminating means as consisting of means whereby the driven disk 19 may be removed or withdrawn from driving contact with the disk 14 but I wish it to be understood that any other suitable device may be employed for the purpose. As a convenient and suitable means to move the disk 19 from the driving disk 14, I have in the present instance shown the casing 1 as provided with a cylindrical cam member 37 having an edge formed as a spiral camway whereon is received a preferably projecting portion of the disk 19 such as (see dotted lines Fig. 3 and Fig. 7) a

roller 38 projecting from the periphery of the said disk 19. The projecting portion or roller 38 of the rotatable disk 19 is held in contact with the camway of the cam member 37 by means of the coiled spring 33 previously referred to and it will be understood that the force of the said spring is such that as soon as the said disk 19 is removed or withdrawn from driving contact with the face of the disk 14 by the movement of the same along the camway the rotative impulse imparted to the said disk 19 is at once terminated. The said spiral camway is so proportioned that the disk 19 directed thereby will, when a rotative impulse is imparted thereto, be projected along it and thereby be removed from driving contact with the driving member or disk 14, the extent of axial movement of the disk 14 and therefore the period of driving contact of the disks 14 and 19 depending upon the speed of the vehicle and therefore upon the extent of outward movement of the weighted members 25. Surrounding the spindle 31 of the speed symbol carrying disk 30 (Figs. 3 and 5) is a coiled spring 38', one end thereof being attached to a lug 39 projecting from a face of the said disk and the other end being suitably connected to a pin 40 projecting from the inner face of the adjacent head 2 of the casing, the tendency of the said coiled spring being therefore to rotate the said speed symbol bearing disk and the rotatively connected disk 19 in a direction to project the said disk 19 along the camway toward the said disk 14 or in a direction the reverse of that in which it has been forced by the rotative impulse imparted thereto by the said disk 14. It will be apparent that such tendency of the coiled spring 38' is opposed by the axial movement of the driving disk or member 14 so that the said disk 19 and the speed symbol carrying disk connected thereto are sustained or held in such a position that the proper speed symbol is presented at the proper or predetermined point.

Having thus set forth one type or embodiment of my invention I wish it to be understood that although I have described the same specifically yet the terms employed by me are used in a broad and general sense and not in their specific nature and that I am in nowise limited thereby, the scope of the invention being set forth in the following claims.

Claims—

1. A speed indicator for vehicles comprising a driving member, a driven member, a speed symbol carrying element rotatably connected to the latter and having speed symbols, speed controlled means relatively to move said members into driving contact, and driving contact terminating means to terminate the period of driving contact upon the presentation of the proper symbol.

2. A speed indicator for vehicles comprising a rotating member, a rotatable member, a speed symbol carrying element rotatably connected to the latter and having speed symbols, speed controlled means relatively to move said members into driving contact, and driving contact terminating means to terminate the period of driving contact upon the presentation of the proper symbol.
3. A speed indicator for vehicles comprising a rotating member, a rotatable member, a speed symbol carrying element rotatably connected to the latter and having speed symbols, speed controlled means relatively to project said members into driving contact and driving contact terminating means to terminate the period of driving contact upon the presentation of the proper symbol.
4. A speed indicator for vehicles comprising a rotating disk, a rotatable disk, a speed symbol carrying element rotatably connected to the latter and having speed symbols and normally out of driving contact with the rotating disk, speed controlled means to project the former disk into driving contact with the latter disk, and driving contact terminating means to terminate the period of driving contact upon the presentation of the proper symbol.
5. A speed indicator for vehicles comprising a driving member, a driven member, a speed symbol carrying element rotatably connected to the latter and having speed symbols, speed controlled means relatively to project said members into driving relation, and driving period terminating means to terminate the period of movement of the driven member upon the presentation of the proper speed symbol.
6. A speed indicator for vehicles comprising a rotating disk, a rotatable disk, a speed symbol carrying element rotatably connected to the latter and having speed symbols, speed controlled means to project said former disk into driving engagement with the latter disk, and means to remove the rotatable disk from driving engagement upon the presentation of the proper speed symbol.
7. A speed indicator for vehicles comprising a rotating member, a rotatable member, a speed symbol carrying element rotatably connected to the latter and having speed symbols, speed controlled means to move said rotating member into driving contact with the rotatable member, and driving contact terminating means whereby the rotation of said rotative member removes the same from driving contact with the rotating member.
8. A speed indicator for vehicles comprising a rotating disk, a rotatable disk, a speed symbol carrying element rotatably connected to the latter and having speed symbols, speed controlled means to move said rotating disk into engagement with said rotatable disk, and cam mechanism to terminate the period of driving contact upon the presentation of the proper speed symbol.
9. A speed indicator for vehicles comprising a rotating disk, a rotatable disk, a speed symbol carrying element rotatably connected to the latter and having speed symbols, speed controlled means to move said rotating disk into engagement with said rotatable disk, and a cam with which said rotatable disk engages and along which the same is projected when rotative movement is imparted thereto, to terminate the period of driving contact upon the presentation of the proper symbol.
10. A speed indicator for vehicles comprising a rotating disk, a rotatable disk, a speed symbol carrying element rotatably connected to the latter and having speed symbols, speed controlled means to move said rotating disk into engagement with said rotatable disk, and a stationary cam with which said rotatable disk engages and along which the same is projected when rotative movement is imparted thereto, to terminate the period of driving contact upon the presentation of the proper symbol.
11. A speed indicator for vehicles comprising a rotating disk, a rotatable disk, a speed symbol carrying element rotatably connected to the latter and having speed symbols, speed controlled means to move said rotating disk axially into engagement with said rotatable disk, and contact period terminating mechanism to move said rotatable disk axially to control the presentation of the proper speed symbol.
12. A speed indicator for vehicles comprising a rotating member, means to rotate the same, a rotatable member, a speed symbol carrying element rotatably connected to the latter and having speed symbols, said latter member being rotated from the former, and means to project axially said latter member to determine the presentation of the proper speed symbol.
13. A speed indicator for vehicles comprising a rotating disk, a rotatable disk, speed controlled means to move said former disk axially into driving contact with said latter disk, a spiral cam with which said rotatable disk is in engagement and along which the same is projected axially during the period of rotation thereof to terminate the period of driving contact upon the presentation of the proper symbol, a speed symbol disk, and connections between the same and said rotatable disk whereby said speed symbol disk partakes only of the rotative movement of said rotatable disk.
14. A speed indicating mechanism for vehicles comprising a cylindrical casing, a rotating disk therein, a rotatable disk within said casing, a speed controlled member to

move said rotating disk axially into driving contact with said rotatable disk, a spiral cam way upon the inner surface of said cylinder with which said rotatable disk is in constant engagement, and along which the same is moved during its period of rotative movement to terminate the period of driving contact upon the presentation of the proper symbol and a non-axially movable speed symbol disk in rotative relation with said rotatable disk.

15. A speed indicating mechanism for vehicles comprising a rotating disk, distance registering mechanism, means to rotate said disk therefrom, a rotatable disk, a speed symbol carrying element rotatably connected to the latter and having speed symbols, speed controlled means to move the rotating disk into driving relation with the rotatable disk, and means to terminate the period of driving relation upon the presentation of the proper speed symbol.

16. A speed indicator for vehicles comprising a driving member, distance registering mechanism, means to drive the former from the latter, a driven member, a speed symbol carrying element rotatably connected to the latter and having speed symbols, speed controlled means relatively to move said driving and driven members into driving relation, and means to terminate the period of driving relation upon the presentation of the proper speed symbol.

17. A speed indicator for vehicles comprising a rotating disk, a rotatable disk, a speed symbol carrying element rotatably connected to the latter and having speed symbols, a speed controlled member to move the former disk into driving contact with the latter, means active during the period of driving contact to move said rotatable disk from driving contact and means tending to restore the same to driving contact.

18. A speed indicator for vehicles comprising a rotating disk, a rotatable disk and a speed symbol disk concentrically arranged, speed controlled means to move the rotating disk into face driving contact with the rotatable disk, means to rotate said speed symbol disk from the rotatable disk, and driving contact terminating means to remove the rotatable disk from driving contact upon the presentation of the proper symbol.

19. A speed indicator for vehicles comprising a rotating disk, a rotatable disk, a speed symbol carrying element rotatably connected to the latter and having speed symbols, a speed controlled member to project said former disk into driving engagement with the latter disk, and means to move said rotatable disk during its period of driving contact in the direction of projection of the rotating disk, whereby upon the projection of the rotating disk to a limit deter-

mined by the speed of the vehicle the rotatable disk maintains the presentation of the proper speed symbol.

20. A speed indicator for vehicles comprising a rotating disk, a rotatable disk, a speed symbol carrying element rotatably connected to the latter and having speed symbols, speed controlled means to project said former disk axially into face driving engagement with the latter disk, and means to move the rotatable disk axially during its period of driving engagement in the direction of projection of the rotating disk, whereby upon the projection of the rotating disk to a limit determined by the speed of the vehicle, the rotatable disk maintains the presentation of the proper speed symbol.

21. A speed indicator for vehicles comprising a rotating disk, a rotatable disk, a speed symbol carrying element rotatably connected to the latter and having speed symbols, speed controlled means to protect the former disk axially into face driving contact with the latter disk, and a spiral cam encircling the rotatable disk and cooperating therewith to move said rotatable disk axially during the period of projection of the rotating disk.

22. A speed indicator for vehicles comprising a rotating disk, a rotatable disk, a speed symbol carrying element rotatably connected to the latter and having speed symbols, speed controlled means to project the former disk axially into face driving contact with the latter disk, a spiral cam encircling the rotatable disk and cooperating therewith to move said rotatable disk axially during the period of projection of the rotating disk, and means tending to move said rotatable disk along said cam toward the rotating disk.

23. A speed indicator for vehicles comprising a rotating disk, a rotatable disk controlling the presentation of speed symbols, speed controlled means to project the former disk axially into face driving contact with the latter disk, a spiral cam encircling the rotatable disk and cooperating therewith to move said rotatable disk axially during the period of projection of the rotating disk, means tending to move said rotatable disk along said cam toward the rotating disk, and a non-axially movable rotatable speed symbol presenting disk in operative engagement with said rotatable disk.

24. A speed indicator for vehicles comprising a driving member, a driven member, a speed symbol carrying element rotatably connected to the latter and having speed symbols, speed controlled means constructed to move the driving member into driving contact with the driven member, and driving contact terminating means to terminate the period of driving contact upon the presentation of the proper speed symbol.

25. A speed indicator for vehicles com-

prising a driving member, a driven member,
a speed symbol carrying element rotatably
connected to the latter and having speed
symbols, and speed controlled means to move
5 the driving member into driving contact
with said driven member, whereby the
proper speed symbol may be presented.

In testimony whereof, I have signed my
name to this specification, in the presence of
two subscribing witnesses.

THEODORE M. FOOTE.

Witnesses:

D. H. HAYWOOD,
C. F. CARRINGTON.