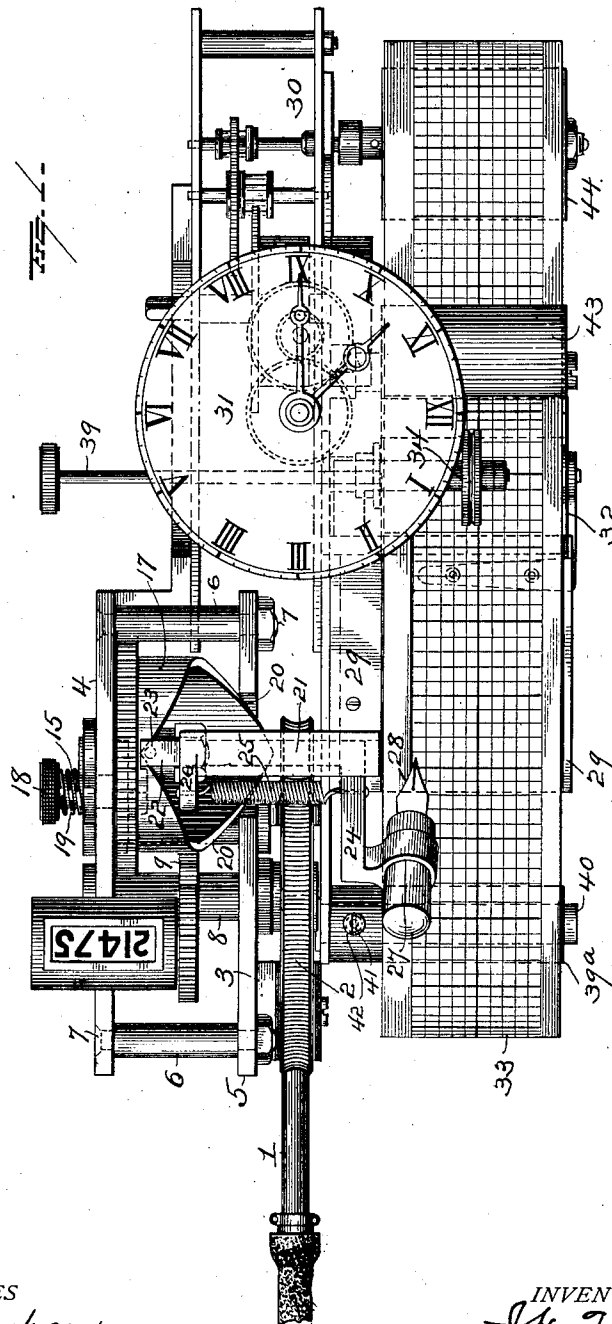


1,050,872.

J. H. TORNEY.
RECORDER FOR USE ON VEHICLES.
APPLICATION FILED SEPT. 30, 1910.

Patented Jan. 21, 1913.
3 SHEETS—SHEET 1.



WITNESSES
E. Nottingham
G. F. Downing

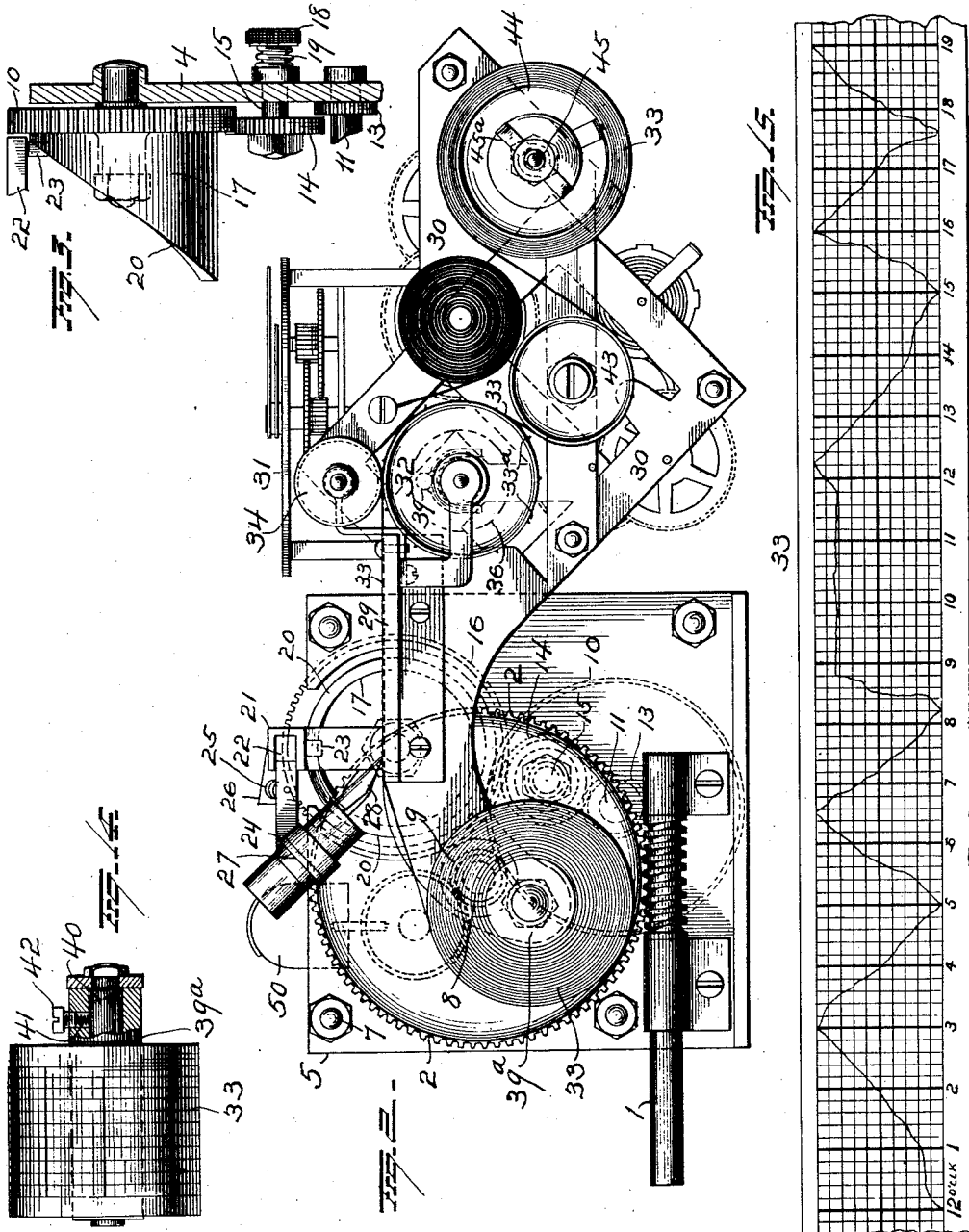
INVENTOR
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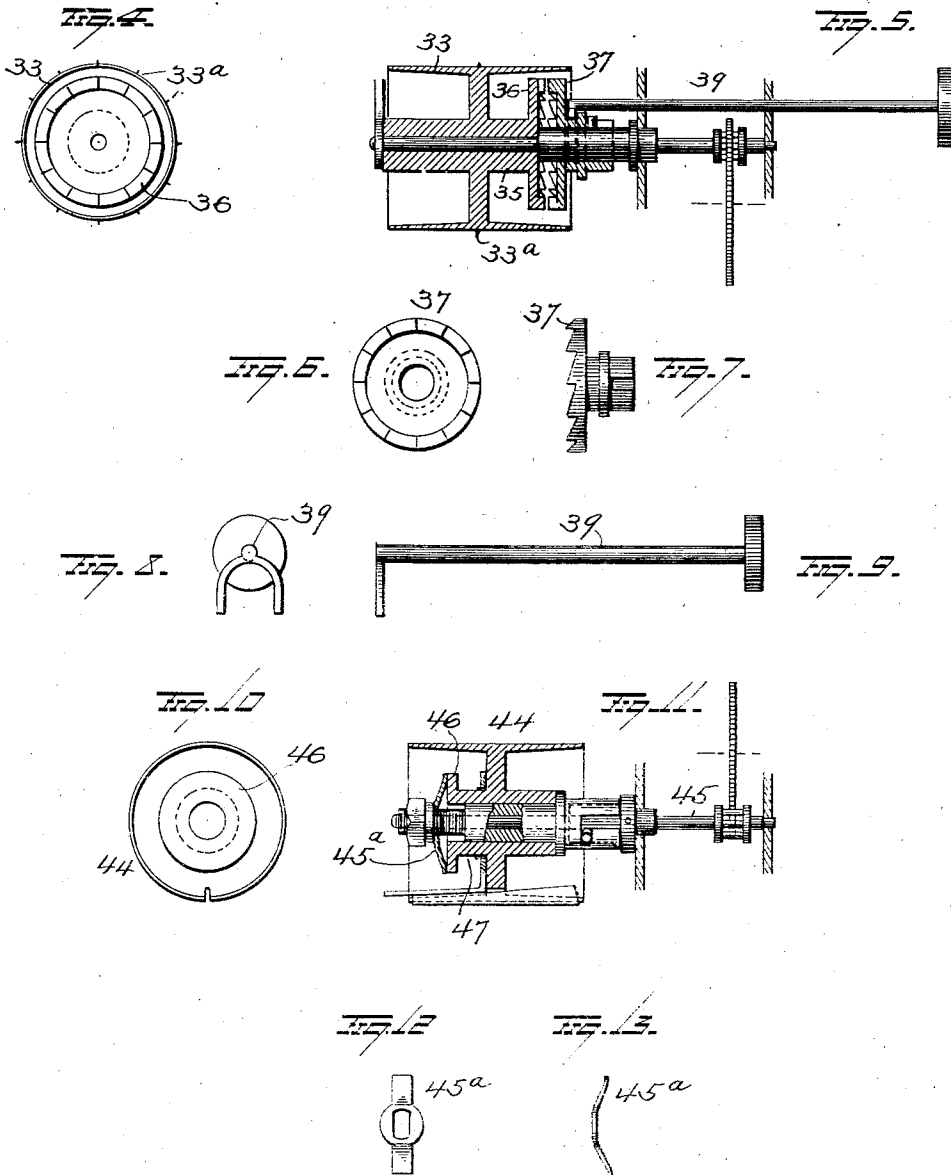
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3 SHEETS—SHEET 3.



WITNESSES
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UNITED STATES PATENT OFFICE.

JOHN H. TORNEY, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR OF ONE-THIRD TO ANDREW C. GLAIZE AND ONE-THIRD TO WAYNE M. ELLER, BOTH OF WASHINGTON, DISTRICT OF COLUMBIA.

RECORDER FOR USE ON VEHICLES.

1,050,872.

Specification of Letters Patent.

Patented Jan. 21, 1913.

Application filed September 30, 1910. Serial No. 584,705.

To all whom it may concern:

Be it known that I, JOHN H. TORNEY, of Washington, in the county of Washington and District of Columbia, have invented certain new and useful Improvements in Recorders for Use on Vehicles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in recorders for use on vehicles of various constructions, but particularly adapted for automobiles, the object being to provide a device capable of attachment to any vehicle, and which will furnish a permanent record of the speed attained from the time of start to the finish, together with a record of all stops and the length of each stop.

With these and other objects in view my invention consists in the parts and combinations of parts as will be more fully described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in plan of my improvement. Fig. 2 is a view in side elevation of same. Fig. 3 is a view in plan of the cam which controls the movements of the pen or pencil. Figs. 4 and 5 are views respectively in end and side elevation, the latter being partly in section of the feed wheel. Figs. 6 and 7 are similar views of the movable clutch member for locking and releasing the feed wheel. Figs. 8 and 9 are similar views of the clutch actuating rod. Figs. 10 and 11 are views in end and side elevation of the reel. Figs. 12 and 13 are views of the friction bar which yieldingly connects the reel to its shaft. Fig. 14 is a view of the friction devices for the receiving reel and Fig. 15 is a view of a section of the paper strip or ribbon showing the time and space division and the manner of recording the speed thereon.

1 represents a shaft adapted to be actuated by means of a flexible shaft of the ordinary and well known kind, from a wheel of the automobile or other vehicle. This shaft 1 is provided with a worm which meshes with the worm wheel 2 carried by frame 3, which latter is composed of two plates 4 and 5 held apart by spacing blocks 6 and bolts 7. Worm

wheel 2 is secured to shaft 8 mounted in frame 3, and the shaft 8 is provided intermediate the plates 4 and 5 with a small pinion 9 meshing with larger pinion 10 on shaft 11. This shaft is also provided with a smaller pinion 13 which meshes with pinion 14 on sliding shaft 15, the said pinion 14 also meshing with pinion 16 rigid with the V-shaped cam 17. All of the parts thus far described are carried by shafts mounted in the frame 3, and all of the parts except worm wheel 2, are located intermediate the plates 4 and 5, the said worm wheel being located to the outside and adjacent to the rear plate 5, of the frame.

Pinions 13 and 14 are of substantially the same width, and are of less thickness than pinion 16, and as before explained pinion 14 is carried by sliding shaft 15 which latter is mounted in a bearing in plate 4 and is provided at its outer end with a disk 18 by means of which it may be rotated by hand. A spring 19 is interposed between plate 4 and the disk 18, which spring normally tends, by its expansion, to hold pinion 14 adjacent to plate 4 of frame 3 and in contact with pinion 13. By pressing against disk 18 and thus compressing the spring 19, the shaft 15 and its pinion 14, will be moved away from plate 4 and out of mesh with pinion 13, but as pinion 16 is of greater thickness than pinion 13, this movement of the shaft 15 and pinion 14, does not carry the teeth of the latter out of contact with the teeth of pinion 16, hence when it is desired to reset the recording pen or pencil, to be hereinafter referred to, it is simply necessary to press in on the disk 18 until pinion 14 is disengaged from pinion 13, and then turn the disk either to the right or left, thus turning the V-shaped cam 17 to the desired position. This cam 17 is cylindrical in form, the double cam surfaces being at the free end. Both cam surfaces 20 are of the same pitch which is uniform from end to end, so as to impart uniform travel to the recording pen or pencil, (with respect of course to the speed of travel of the car) throughout the entire rotation of the cam 17. The speed of rotation of the cam is dependent upon the speed of the vehicle, but the gears are so propor-

tioned that each whole revolution of the cam represents a fixed distance traveled by the machine. In the present instance the parts are so proportioned that the cam makes one revolution in two miles, or a half revolution to a mile, and as each cam face 20 has a pitch of one inch, it will be seen that the pencil or pen will be moved laterally one inch rearwardly and one inch forwardly, at each forward and rearward movement representing one mile of travel of the vehicle.

Secured to the frame is the fixed bearing 21, in which the sliding carrier 22 is mounted as shown in Fig. 1. This carrier is provided at its forward end with a pin 23 which rests in contact with the cam end of cam 17, and at its rear end with an arm 24 to which one end of the spring 25 is secured, the opposite end of the spring being secured to the arm 26 rigid with the bearing 21. The arm 24 carries the holder 27 in which the pen or pencil 28 (pen in the present instance) is mounted and in which it may be secured. The spring 25 yieldingly holds the pin 23 of carrier 22 against the cam faces of the cam 17, hence it will be seen that during one half revolution of the cam, the carrier will be moved rearwardly a distance equal to the pitch of the cam, by the latter, and during the other half revolution of the cam, the carrier will be moved forwardly by the spring 25, the movement in each direction being equal to the pitch of the cam, which in the present instance is one inch. It will therefore be seen that one continuous rearward stroke of the pencil represents one mile of travel of the vehicle and one continuous forward stroke another mile. The carrier 22, is angular in cross section and as the bearing 21 conforms thereto in shape, all rotary movement of the carrier is prevented.

Located adjacent the frame 2, immediately under the pencil or pen 28 is the flat table 29 over which the paper ribbon passes. This table is grooved longitudinally as shown in dotted lines in Fig. 2, the groove being as wide as the ribbon so as to prevent any sidewise movement or creeping of the ribbon while the ribbon feeding mechanism is in operation.

The feeding mechanism consists of a time train, mounted in the frame 30, which may be and preferably is a continuation of the frame 3. This time mechanism is provided with a clock face 31, located at the top of the apparatus so as to be within sight of the driver or operator, and actuates the feed drum 32, which latter will feed the paper ribbon 33, under the pen or pencil 28, regularly and at a fixed speed, irrespective of the speed of the vehicle. In the present instance the wheel is so proportioned and geared to feed the paper ribbon one half

inch per minute, so that each inch of ribbon passing under the pen or pencil represents two minutes of travel. This feed drum 32 is provided with small pins 33^a projecting from the face thereof so as to penetrate and impart positive feed to the ribbon and prevent any slipping thereof, while the grooved idler wheel 34 located above the feed drum 32, holds the ribbon solidly on the drum, the groove in the idler being adapted to receive the points of the pins 33^a.

As shown in Fig. 5 the drum is provided with a central hub 35, provided at its forward end with a clutch section 36 which latter is adapted to be engaged by sliding clutch section 37. This clutch section 37 is secured to a shaft of the time movement so as to be positively rotated thereby, while the feed drum is loosely mounted on the shaft 38. The sliding clutch section 37 is actuated by the rod 39, which latter projects at the front of the apparatus, or on the side adjacent the operator of the machine, so that it can be actuated to connect or disconnect the feed drum and time mechanism.

The time mechanism is supposed to be running continuously, consequently with the clutch mechanism described, the paper ribbon may be fed under the pen or pencil only when the machine is out of the garage.

The ribbon is wound on a supply reel 39^a in rear of the table 29, and said reel is provided with a friction spring 41, and a screw 42 for adjusting the pressure of the spring against the pin 40 on which the reel 39^a is mounted, whereby the reel is held by friction against turning, and will only turn, as the paper is drawn therefrom by the feed drum.

The ribbon passes from the feed drum under the idle drum 43, and up to the winding or receiving reel 44. The shaft 45 on which this winding reel 44 is mounted is driven by the time mechanism, while the reel 44 is loose thereon but connected thereto by the friction shoe 45^a secured to the shaft 45 and bearing at its ends against the disk 46 on hub 47 of reel 44. By this arrangement the reel while driven by shaft 43, has a slipping connection therewith, so that as the ribbon is wound thereon, and its diameter is increased, it may readily slip so as to prevent any undue pulling strains on the ribbon, but will always keep the ribbon wound up and prevent any slack.

In Fig. 15 I have shown a section of the ribbon with a record thereon. This ribbon or record slip is ruled transversely into spaces half inch in length and an inch wide, and each half inch space is subdivided by transverse and longitudinal lines into five spaces of equal size, longitudinally, and ten transversely. As before explained the ribbon travels one half inch per minute, and

the pencil travels at right angles to the feed of the ribbon one inch per mile, hence the record shown, indicates the first mile was traversed in three minutes; the second in two minutes; the third in about one minute and a half and the fourth mile in three minutes and forty two seconds. The next eight-tenths of a mile is represented in forty-eight seconds, and the straight line shows that the vehicle was then at rest for three minutes. The start and the time is shown by the upward continuation of the straight line, while any backward movement of the vehicle would be indicated by a reversal in the direction of the line, providing of course the pen or pencil was at any point intermediate its extremes.

I prefer to number the transverse lines dividing the ribbon as shown, and by marking with a pencil on the ribbon, the time of starting, it will be evident that the time machine was out of the garage the number of miles traveled, the speed of each mile and fraction thereof and the stops made will all be accurately recorded, thus providing an accurate check not only on the distance traveled, but the time in which it was traveled; the stops made, and the speed at any period while the vehicle was running. I may also provide the apparatus with a distance recorder 50 of the ordinary and well known form shown in Fig. 1, for recording the total distance traveled.

As the ribbon and marker are in plain sight of the operator, it is evident that the apparatus, in addition to recording the speed, will also indicate to the operator the speed at all times, and thus enable him to regulate the speed so as to keep within the limits allowed. Again the apparatus is useful in following a charted route. As an illustration, if the operator is at a given point and the instructions on the chart are in turn out of the main road at a point, say five miles distant, the marking device could be shifted to either the top or bottom of the record ribbon, by adjusting the cam as previously explained, and the machine run until the desired distance has been traversed, and the turn out located, thereby enabling an operator in possession of a chart and unacquainted with the country through which he is traveling to readily follow the desired route without danger of going astray.

It is to be understood of course that the various details including the size of the ribbon and the manner of subdividing it into time and distance sections may be more or less modified without departing from the general scope of the invention.

Having fully described my invention what I claim as new and desire to secure by Letters-Patent, is:—

1. In a time and distance recorder, the combination with a double cam, means for

changing the position of said cam independently of the movement of the vehicle wheel, gearing actuated by a vehicle wheel for rotating said cam, and a marking device actuated by the cam, of a time mechanism, a feed wheel actuated thereby, and a winding reel also actuated by said time movement and having a slipping connection therewith.

2. In a time and distance recorder, a cylindrical cam, concentrically mounted to rotate, the said cam having two faces which are continuous and which are of the same length and pitch, in combination with a pen-carrier and a spring for holding said carrier in contact with the two faces of the cam whereby the carrier will be moved by one cam face and be held against the other by said spring.

3. In a time and distance recorder, the combination with a double cam, the two cam faces being of the same pitch and length, actuating means for said cam, a carrier for a marking device and a spring for holding said carrier against the cams, of means for adjusting or changing the position of the cam, with relation to the marking device independently of the movement of the vehicle wheel.

4. In a time and distance recorder, the combination with a cam, gearing for actuating same and means whereby said cam may be wholly or partly turned independently of said driving gear, of a carrier for a marking device and a spring for holding said carrier in contact with the cam faces of the cam.

5. In a time and distance recorder the combination with a marking device and means for moving the same over a record strip, of gearing for actuating said means, one member of said gearing adapted to be shifted to disconnect it from the gearing in advance of same, and adapted when so disconnected to be turned to adjust or reset the moving means for the marking device.

6. In a time and distance recorder, the combination with a marking device, and means for moving the same over a record strip, of gearing connecting said device moving means with a wheel of the vehicle, one intermediate member of said gearing adapted to be disconnected from the gearing leading from the vehicle wheel without being disconnected from marking device moving means, whereby when the said intermediate member is disconnected from the gearing in advance of same and turned, the marking device moving means may be adjusted.

7. In a time and distance recorder, the combination with a marking device and means for moving the same over a record strip of gearing connecting marking device moving means with a wheel of the vehicle, one intermediate member of said gearing being secured to a longitudinally movable

shaft, whereby it may be moved out of mesh
with the gear wheels in advance of same,
without being disconnected from the gear
directly actuating the marking device mov-
5 ing means.

In testimony whereof, I have signed this

specification in the presence of two subscri-
ing witnesses.

JOHN H. TORNEY.

Witnesses:

CHARLES H. GETZENDANNER,
ADA R. SHUTTERS.