

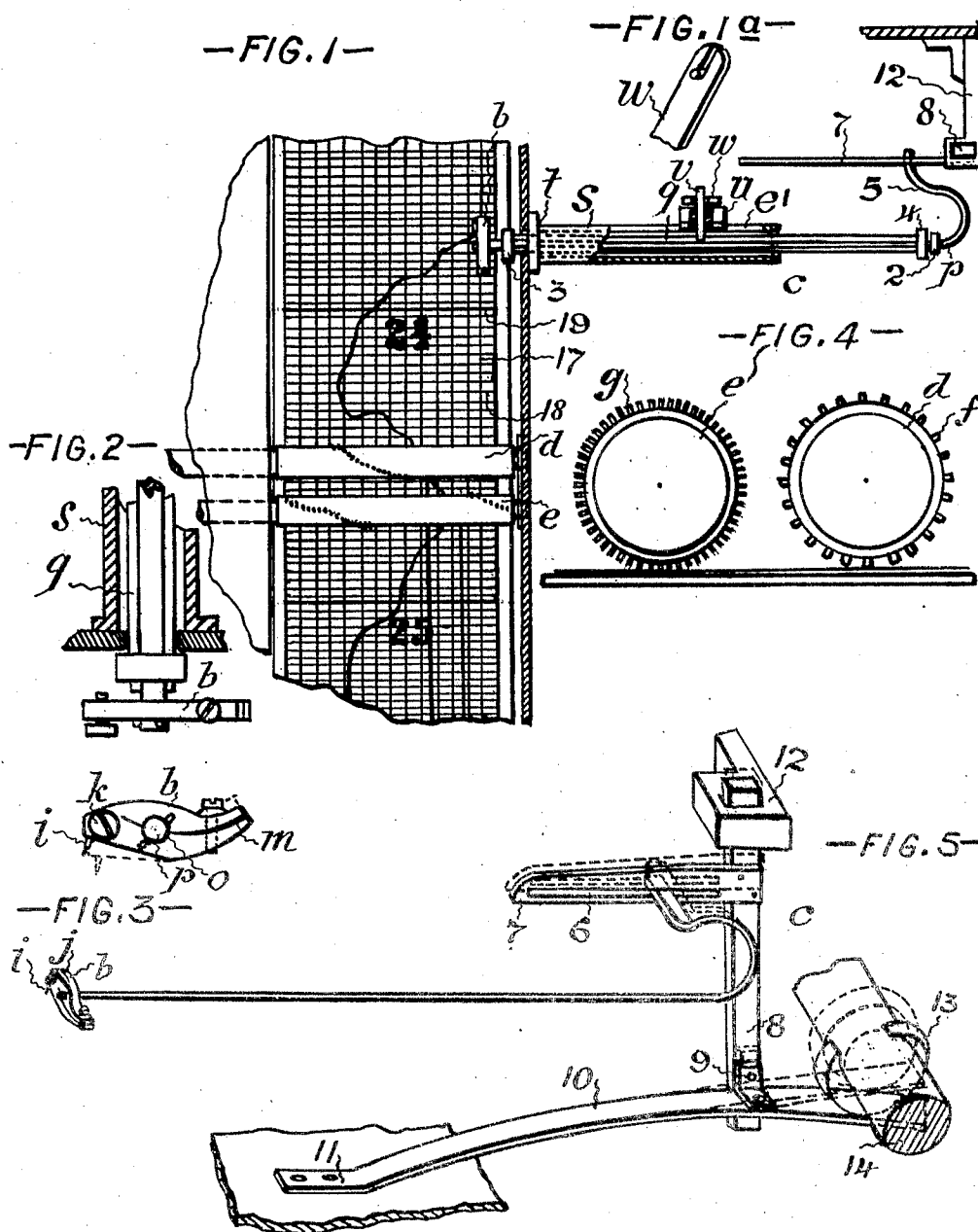
March 19, 1929.

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1,706,044

RECORDER

Filed Jan. 12, 1928



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RECORDER.

Application filed January 12, 1928. Serial No. 246,322.

My invention relates particularly to re-
corders which graphically record the syn-
chronized operations of timing mechanism
and mechanisms for inscribing the varia-
5 tions in the operations of a motor car or bus
or other motor driven machine; and has for
its object to combine with these mechanisms
an instrumentality for inscribing the rec-
ord on a ribbon moved by one of these mech-
10 anisms and an instrumentality co-acting
with the inscribing instrumentality and
marking the time, such latter instrumental-
ity being operated continuously by clock
work. More specifically stated the opera-
15 tions inscribing instrumentality consists of
a vibratory stylus-carrying head and the
time inscribing instrumentalities consist of
a pair of rollers one operatively connected
with the minute indicating mechanism of
20 the clock work and the other operatively
connected with the hour indicating mecha-
nism of the clock work.

For full comprehension, however, of my
invention reference must be had to the ac-
25 companying drawings in which similar ref-
erence characters indicate the same parts
and wherein:

Figure 1 is a plan view of a portion of a
movable ribbon with the vibratory stylus
30 carrying head and the means for operating
it, and the time indicating rollers;

Figure 1^a illustrates in perspective the
upper end of the lever through which the
bar carrying the stylus is reciprocated.

35 Figure 2 is a plan view of the stylus car-
rying head and illustrating partly in hori-
zontal sectional view its connection to the
operating rods therefor;

Figure 3 is a side elevation of the stylus
40 carrying head;

Figure 4 is a detail end view of the time
inscribing rollers in inscribing relation with
the ribbon and the supporting table there-
for;

45 Figure 5 illustrates particular means for
vibrating the stylus carrying head.

The stylus carrying head with its stylus
detachably carried thereby is governed as
to its movement preferably by the mecha-
50 nism disclosed in an application about to be
filed by James Russell Mackenzie Tisdale
for Letters Patent for improvements in re-
corders set forth in that application, and

the time indicating rollers and the mecha-
nism for causing the ribbon to travel are 55
also disclosed in the said application.

The stylus carrying head is indicated at *b*
and its carrying and operating mechanism at
c. The time indicating rollers are indicated
at *d* and *e* and the pin-like protuberances 60
from their surfaces are indicated at *f* and *g*
respectively. The roller *d* being connected
to the hour hand mechanism of the clock is
adapted to make one revolution each twenty-
four hours and has twenty-four of the radial 65
pin projections arranged in spiral series
around the roller and extending from one
end to the other; and the pins of roller *e*
are 60 in number and also arranged in spiral
series as shown in Figure 1. The effect is 70
that as the rollers rotate each pin individu-
ally and successively touches the movable
ribbon whether the latter is moved or not,
and as the ribbon feeding mechanism is op-
erated by the driving mechanism of the car, 75
bus or other machine through transmission
mechanism, the pins being arranged spiral-
ly along the rollers each roller inscribes on
the ribbon a straight line transversely
across it and spaced a distance apart cor- 80
responding with the distance the rollers are
separated from each other. When the rib-
bon is moving, the rollers, through their
spiral series of pins, inscribe a positive line.
The spiral series of pins *f* being twenty-four 85
in number while the spiral series of pins *g*
are sixty in number, the lines inscribed are
slightly different in appearance. This dif-
ference is enhanced by the fact that the six-
ty pin roller, which inscribes a minute line, 90
owing to the pins being sufficiently close to-
gether, presents what is in effect a double
line, while the pins *f* of the roller *d* inscribe
a single line.

The vibratory head *b* is preferably made 95
of metal and the stylus *i* is of brass. The
head is split as at *j* to form jaws for grip-
ping the stylus and a clamping screw *k*
clamps the jaws together holding the stylus
rigidly between them. The body of the 100
stylus head is split as at *m* at its opposite
end to a short distance beyond its middle and
near this inner end the stylus head is bored
as at *o* to receive one end of the oscillatory
rod *p* carried in a slide rod *q* carried in turn 105
slidably in a sleeve *s* secured rigidly as at *t*

to the frame of the machine. The sleeve has a slot e^1 through which a block u is connected, by a pin v for instance, to the slide rod, and a lever w operated by any suitable governor is caused to have its end moved to and fro in proportion to the speed of the motor and consequently to the expansion and contraction of the governor. This end of the lever is forked and engages the pin through which the rod g is reciprocated and the stylus moved proportionately. The oscillatory rod p has a collar 2 secured to it to prevent the relative axial movement of this rod p in the slide rod g while collars 3 and 4 mounted on and encircling the slide rod keep the oscillatory rod in its groove in the slide rod. This oscillatory rod is oscillated through the medium of one of its ends which is bent to goose-neck form as at 5 and has one end in slidable engagement with a slot 6 in a guide bar 7 carried by a vertically reciprocating bar 8 attached at its lower end as at 9 to a spring 10 fastened as at 11 to the frame of the recorder. The upper end of this vertical bar 8 is guided in a bracket 12 and it is vibrated by an eccentric 13 on a shaft 14 bearing on the spring during each revolution of the shaft 14 thus depressing the spring and releasing it alternately. The effect is that when the spring is released it lifts the bar 8 which is lowered by the eccentric and its raising and lowering is more or less rapidly repeated by rotation of the shaft 14 which is connected to the driving gear of the car or bus or other machine. As the bar 8 is vibrated in this manner the guide bar 7 carried by it transmits the vibrations to the goose-neck end 5 of bar p thus vibrating it and the stylus carrying head b and through it the stylus z . The ribbon is printed with longitudinal time indicating divisions 17 and transverse divisions 18 and sub-divisions 19 of distance. This vibrating of the stylus while the ribbon is moving inscribes a path on the ribbon graphically presenting with

the other markings in the ribbon the variations in the speed of the car or bus.

These instrumentalities coact with the ribbon and their various operating mechanisms and the divisions of the ribbon are coordinated to produce an accurate record.

Although I have described and illustrated the structural features coacting with the ribbon other than the stylus and its vibrating mechanism and the time indicating rolls I do not claim other than the particular stylus carrier and vibratory mechanism and the time inscribing rollers as the said other mechanism forms a part of the subject-matter of the separate application filed by James Russell Mackenzie Tisdale, before mentioned.

What I claim is as follows:—

In a recorder for inscribing a readily readable record of time, distance and speed, having a record ribbon divided and subdivided into representations of divisions of distance and time; an oscillatory stylus for inscribing a path on the ribbon, and time inscribing instrumentalities coacting and synchronized with the ribbon and vibratory stylus, a stylus carrying rod having a lateral extension, for oscillating the stylus carrying rod; a vertical reciprocal bar; a guide bar carried rigidly by the bar having a longitudinal slot extending parallel to the rod and slidably engaged by the lateral extension of the stylus carrying rod; a shaft; an eccentric cam mounted upon and rotatable with the shaft; a spring secured at one end and having its opposite end disposed in position to be acted upon by the eccentric cam and having the lower end of the vertical bar connected thereto for the purpose of causing the vertical bar to be alternately lowered and raised, thereby oscillating the stylus carrying rod.

In testimony whereof I have signed my name to this specification.

CHARLES H. TAYLOR.