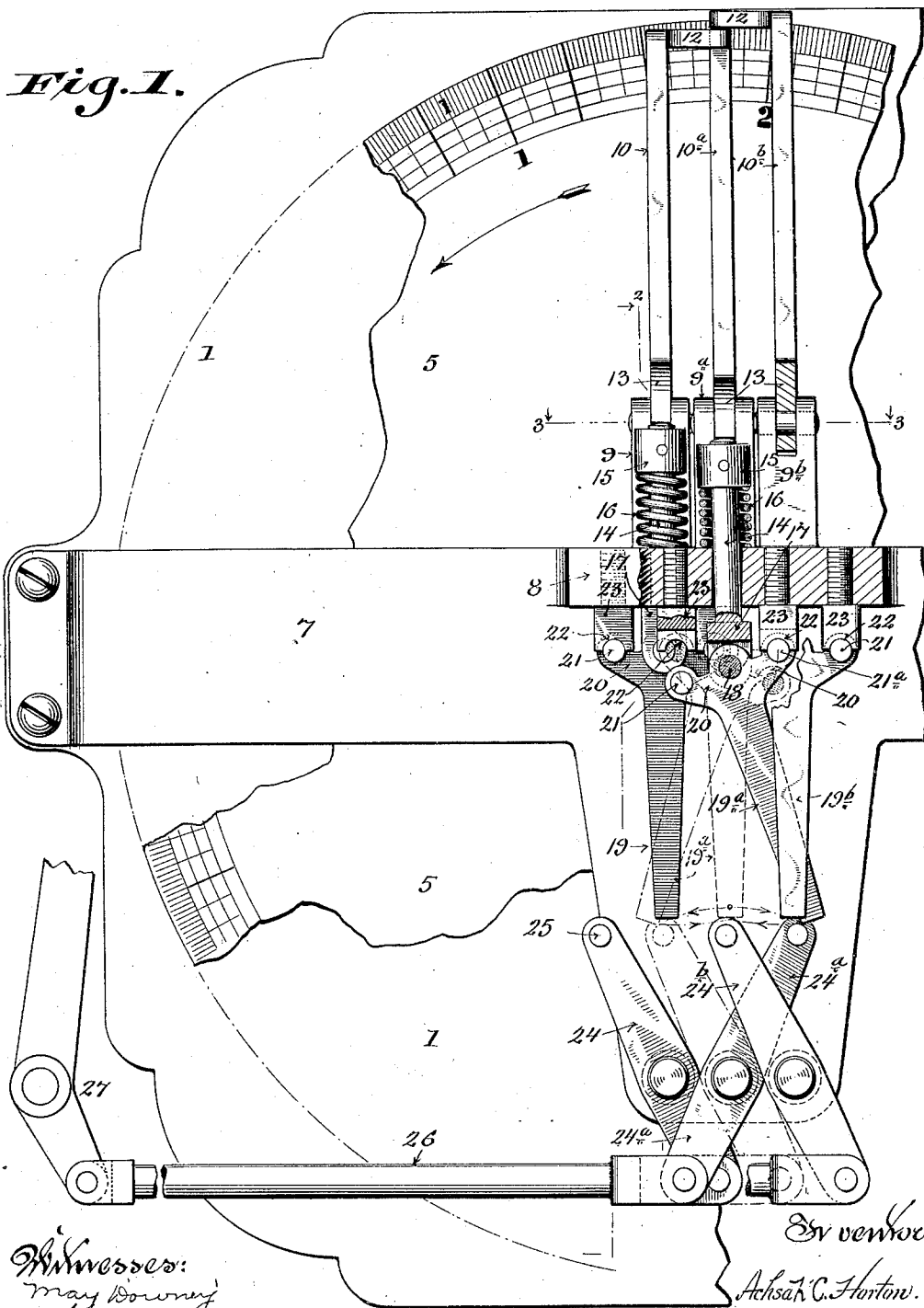


A. C. HORTON.
RECORDER FOR SWITCH AND SIGNAL SYSTEMS.
APPLICATION FILED MAY 9, 1910.

1,005,037.

Patented Oct. 3, 1911.

3 SHEETS—SHEET 1.



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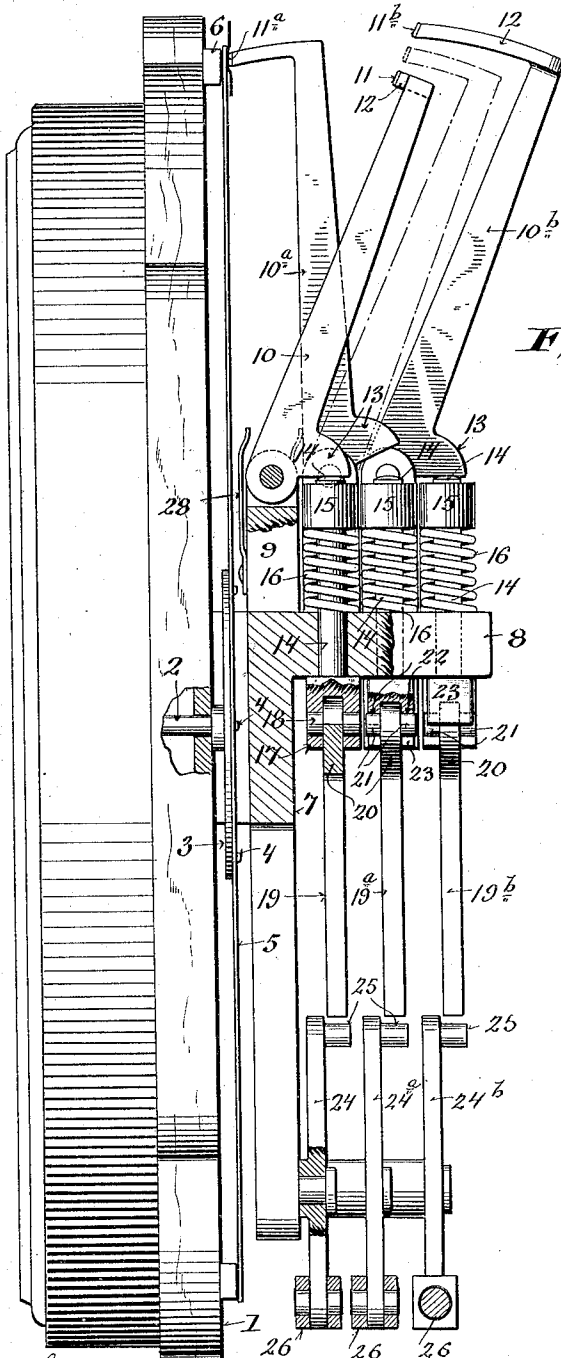


Fig. 2.

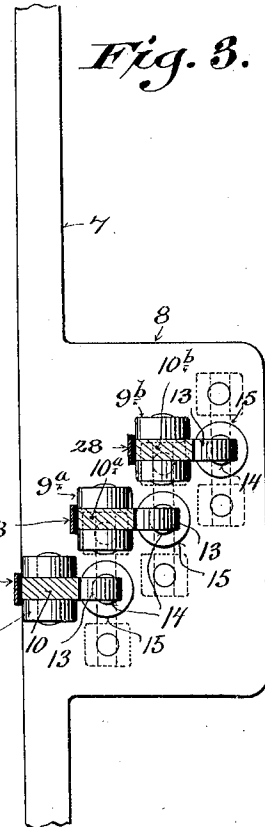


Fig. 3.

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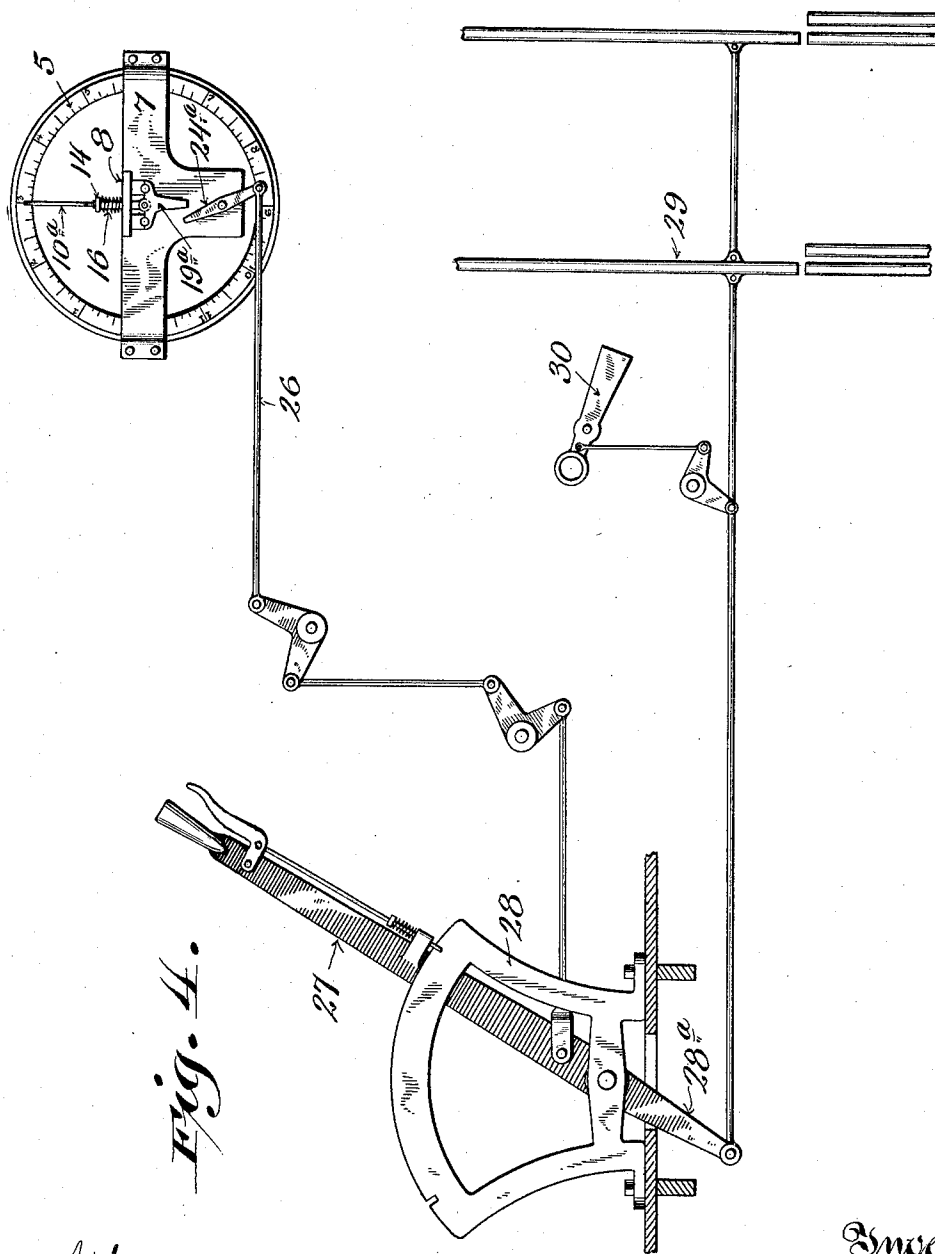


Fig. 4.

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UNITED STATES PATENT OFFICE.

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RECORDER FOR SWITCH AND SIGNAL SYSTEMS.

1,005,037.

Specification of Letters Patent.

Patented Oct. 3, 1911.

Application filed May 9, 1910. Serial No. 560,188.

To all whom it may concern:

Be it known that I, ACHSAH C. HORTON, a citizen of the United States, and resident of Troy, in the county of Doniphan and State of Kansas, have invented certain new and useful Improvements in Recorders for Switch and Signal Systems; and I do hereby declare that the following is a full, clear, and exact description thereof.

The object of my invention is to provide an apparatus in connection with a switch and signal system, whereby a permanent record of the time of each operation thereof is had, the invention being especially designed for use in connection with semaphores when operated in either a block or interlocked system.

The construction and arrangement of the apparatus is such that an individual printing mechanism is connected to each actuating lever of the system, whereby each printing mechanism will be actuated to record the various movements of its lever at a common printing point upon a time-controlled dial.

By utilizing an apparatus of this character it will be readily seen that greater caution will be exercised by the operators of a railway switch and signal system, and a complete history of the day's operations can be obtained and preserved for checking purposes.

With the above objects in view the invention consists in certain peculiarities of construction and combination of parts as hereinafter set forth with reference to the accompanying drawings and subsequently claimed.

In the drawings Figure 1 represents a fragmentary face view of an apparatus embodying the features of my invention, with parts broken away and parts in section to more clearly show certain details of construction in connection with the printing mechanism; Fig. 2, a side elevation of the same partly in section as indicated by line 2—2 of Fig. 1, Fig. 3, a detail sectional plan view of a printing mechanism the section being indicated by line 3—3 of Fig. 1, and Fig. 4, a view of a switch and signal mechanism illustrating the recorder connected to the switch and signal actuating lever.

Referring by characters to the drawings 1 represents the rear panel of a casing containing standard clock mechanism, the hour

hand 2 of which clock mechanism extends through the rear panel and has secured thereto a disk 3, carrying pins 4, for the support of a detachable dial 5. This dial is preferably composed of stiff paper and provided with a circumferential graduated scale indicating the hours and fractions thereof down to minutes. The dial as shown is spaced for twelve hours and is designed to make a complete rotation in the same period of time, after which it is disconnected from the disk and replaced by a similar dial for recording purposes. It is obvious, however, that a dial having a full twenty-four hour scale thereon may be substituted for that shown.

Rearward of the dial and extending from the panel 1 is a printing anvil 6, that is disposed just rearward of a printing point, which printing point is vertically alined with the axis of the dial. A bracket 7 is secured to the panel 1 having a horizontally disposed table portion 8, from which a series of three standards 9, 9^a and 9^b extend, the standards being arranged in echelon, as best shown in Fig. 3, to provide for clearance of the printing mechanisms hereinafter mentioned.

Type-bars 10, 10^a and 10^b, are pivoted in the upper ends of the respective standards, being provided with type characters 11, 11^a and 11^b respectively, at their free ends. The central type character 11^a, together with its type-bar, is alined with the printing point of the apparatus, while the other type-bars are disposed upon opposite sides thereof and arranged with off-set heads 12, which heads are deflected to a position in alinement with the printing point, the length of each type-bar from its fulcrum to the printing character being such that the type thereof will all print upon the same point when actuated, the variation in length being for the purpose of accommodating the dispositions of the pivotal or fulcrum points of the various levers relative to said printing point.

Each type-bar is provided with a foot 13, which is arranged to be engaged by a plunger 14. Each plunger is reciprocally mounted in a bearing aperture of the table 8 and provided with a collar 15 at its head end, between which collar and table there is interposed a spiral spring 16, which serves to hold the plunger in its normal position, in which position it is stopped by an eared head 17, that impinges against the lower

face of the table. Fulcrumed between the ears of the plunger heads upon pins 18 are depending double acting rocker-arms 19, 19^a and 19^b, having wings 20 extending from their upper portions. These wings carry trunnions 21 and 21^a, which trunnions rest in sockets 22 of lugs 23, the lugs being provided with shanks in screw-threaded engagement with the table 8.

As will be observed by referring to Fig. 2, the several rocker-arms are alined with their respective plungers and are consequently upon different planes, being offset so as to provide clearance for the movement of tappet levers 24, 24^a and 24^b respectively. These tappet levers are fulcrumed to a depending plate of the bracket 7 and carry fingers 25, for engagement with the lower ends of their respective rocker-arms. The three independent tappet levers carry connecting rods 26, each of which is linked to a switch and signal actuating lever 27, one of the series being shown in Fig. 1 and constitutes a part of the actuating mechanism of a switch and signal system.

As described, it will be seen that the apparatus as illustrated in Figs. 1, 2 and 3 is shown with three independent type-bar actuating mechanisms, which are the usual number for a simple system having a home, distant and dwarf signal semaphore connection, but it should be understood that the number of printing mechanisms may be varied in accordance with the multiplicity of the system.

In the diagram Fig. 4, a single switch and signal actuating lever 27 only is shown for clearness in illustration, the same being coupled to a recorder connecting rod 26 through a series of links and bell-cranks. The recorder connecting rod 26 in turn is connected to a tappet lever 24^a that operates the rocker arm 19^a when moved in either direction to thus effect a printing operation, the corresponding tappet levers of the series together with their actuating mechanism being eliminated. The switch and signal lever 27 shown is one of a series usually employed, being fulcrumed to a sector bracket 28 the same being provided with a short arm 28^a that is connected to a switch 30 and the usual semaphore 31, whereby the same are moved in either direction when the switch and signal lever is manually shifted.

In the operation of the system, all the levers being normal, the rocker-arms 19, 19^a and 19^b will be held by their coiled springs 16 in a vertical position. Now, should the intermediate tappet lever 24^a, be actuated in a direction as shown in full lines in Fig. 1, by means of its connection with its respective switch and signal lever 27, the finger 25 will engage the rocker-arm 19^a and cause the same to assume the angular position shown in Fig. 1, in which position the tap-

pet has just cleared the end of said rocker-arm and the same will be returned to its normal position by the action of its spring 16. In assuming the position just described and shown in Fig. 1, the trunnion 21 becomes a fulcrum-point upon which the rocker-arm is oscillated. Consequently as the double rocker-arm is displaced from its normal vertical position its trunnion 21 will swing downward from its seat 22 in the lug, causing a draw upon the plunger 14 and a consequent compression of its spring. This loading of the spring will be instantaneously released as the tappet 25 passes under the end of the rocker-arm 19^a, and the reaction of the spring causes the end of the plunger to impart a blow to the foot 13 of its respective type-bar 10^a, and the same is thereby forced forward to effect a printing operation of its type character upon the scale of the dial. A portion of this stroke is effected by momentum of the type-bar, which momentum is arrested by a leaf-spring 28 that engages the type-bar just prior to the contact of its type with said dial, it being understood that each type-bar is equipped with a similar spring. The effect of the blow of the type character upon the dial and engagement of the type-bar and spring will cause the same to return to its normal position as shown in dotted lines in Fig. 2. Thus it will be seen that at the instant the switch and signal mechanism is operated this particular signal mechanism will cause a character corresponding thereto to be imprinted upon the dial at the exact time of the operation, and the dial will then continue its movement, showing no further record until, for example, this switch and signal lever is restored to its normal position, at which time the operation will be repeated, except that the direction of movement of lever 19^a will be reversed and the trunnion 21 of said lever will then become the fulcrum-point upon which power is applied to the coiled spring for imparting the blow to the type-bar, it being understood that as the plunger is retracted in each instance the type-bar thereover will be caused to follow said plunger downward due to gravity.

From the foregoing it is clear that when a switch and signal is operated, the time of the operation of this particular switch and signal will be indicated upon the dial and when the said switch and signal has been restored to its normal position the time of such restoration will also be recorded upon the dial and thereby show the interval of time between such operations.

As indicated in Fig. 2, of the drawings, a printing ribbon 30 may be interposed between the dial and type characters for the purpose of effecting a clear impression of the type, but any method of obtaining this impression may be utilized as, for instance, the

type characters may be steel faced for the purpose of embossing the same upon said dial if desired.

I claim:

5 1. In a switch and signal system having a manually controlled switch actuating lever, a recording mechanism comprising a time-
controlled revoluble dial provided with
graduations indicating intervals of time, a
10 pivoted type-bar adapted to be brought to a printing point upon the dial, a spring-
controlled actuating plunger for the type-
bar, a double-acting rocker-arm for loading
the spring-controlled plunger, and a tappet
15 for engagement with the rocker arm in link
connection with the switch actuating lever.

2. In a switch and signal system having a manually controlled switch actuating lever, a time-controlled recorder, a type-bar for
20 the recorder, a spring-controlled actuating means for the type-bar under control of the switch actuating lever movement of which lever in either direction is adapted to impart a printing movement to the type-bar.

25 3. In a switch and signal system having a manually controlled switch-actuating lever, a time controlled recording mechanism, a spring-actuated printing mechanism therefor, and a reciprocative tappet connected to the switch-lever, the tappet being arranged
30 to engage and actuate the printing mechanism when moved in either direction.

4. In a railway switch and signal system having a series of actuating levers, a recording mechanism comprising a time-
35 controlled revoluble dial provided with graduations indicating intervals of time, a series of pivotally mounted type-bars adapted to be brought to a common printing point upon the dial, a spring-controlled plunger for
40 each type-bar, a rocker-arm in pivotal connection with the plunger, wings extending from the rocker-arm upon opposite sides of its pivotal point, seats for the wings, a tappet-lever for engagement with each rocker-
45 arm, and means connecting the tappet-levers

and actuating levers of the switch and signal system.

5. In a railway switch and signal system having a series of actuating levers, a time- 50
controlled rotatory dial provided with graduations indicating intervals of time, a series of pivotally mounted type-bars corresponding in number to the series of actuating levers, the type-bars being adapted to be brought to a common printing point upon the dial, feet extending from the type-bars, spring-controlled plungers for engagement with the feet, rocker-arms in pivotal connection with the plungers, wings extending 60
from the rocker-arms upon opposite sides of their pivot-points, seats for the wings, and actuating means for the rocker-arms controlled by the actuating levers of the switch and signal system. 65

6. In a railway switch and signal system having a series of actuating levers, a clock mechanism having an hour-shaft extending therefrom, a dial in detachable connection with the hour-shaft, pivotally mounted type- 70
bars corresponding in number to the series of actuating levers of the aforesaid system, the type-bars being adapted to be brought to a common printing point upon the dial, a spring-controlled plunger for each type- 75
bar, a rocker-arm in pivotal connection with the plunger, wings extending from the plunger upon opposite sides of its pivotal point, seats for the wings, independent tappet-levers for engagement with the rocker-arms, and means connecting the tappet-levers and actuating levers of the switch and signal system. 80

In testimony that I claim the foregoing I have hereunto set my hand at Troy in the 85
county of Doniphan and State of Kansas in the presence of two witnesses.

ACHSAH C. HORTON.

Witnesses:

MIKE FOVIER,
GRANT DISHON.