

(No Model.)

D. F. VAUGHAN.  
COMPENSATOR FOR SIGNALS.

No. 564,351.

Patented July 21, 1896.

Fig. 1.

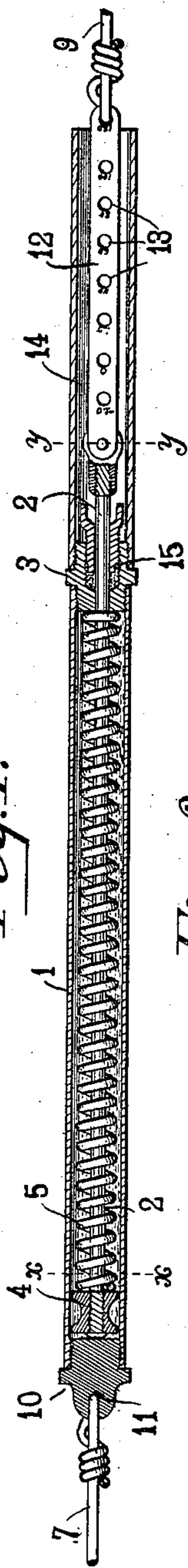


Fig. 2.

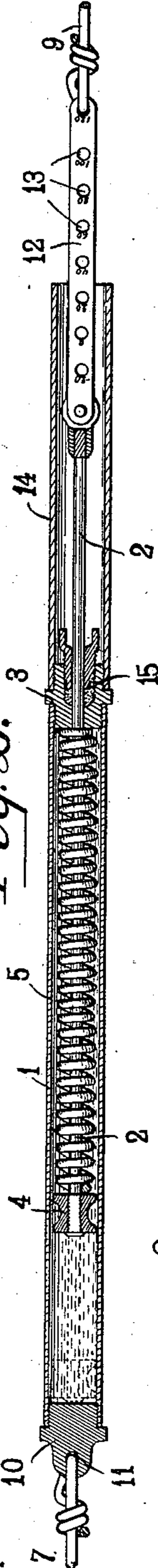


Fig. 3.

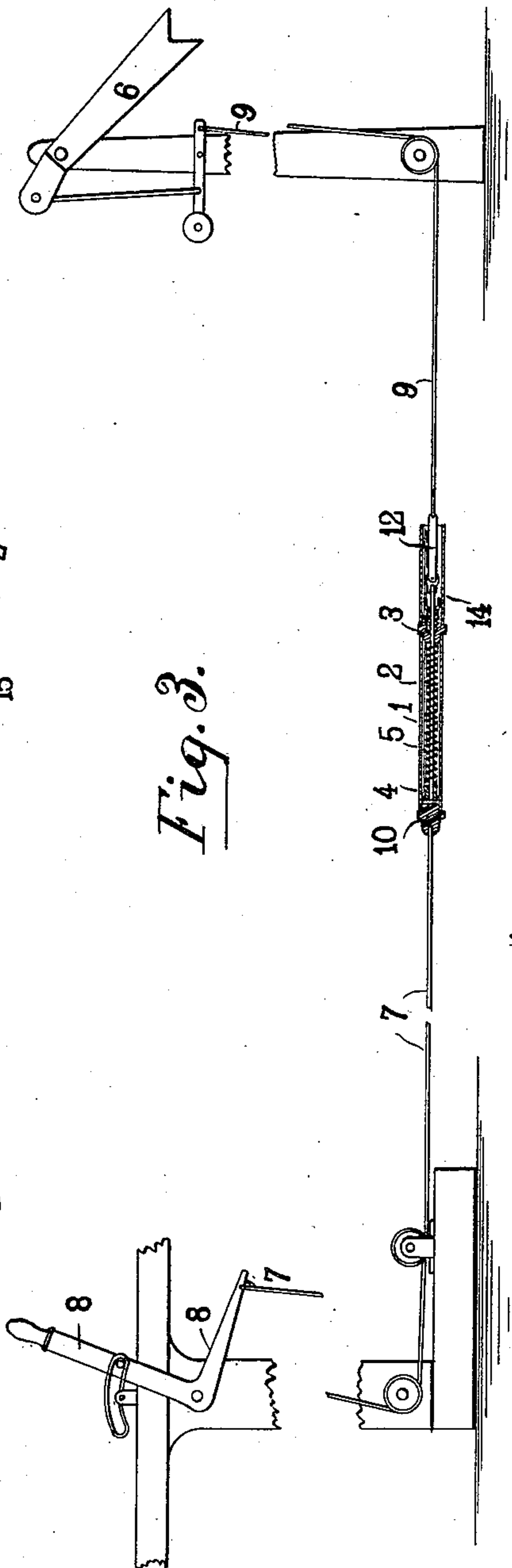


Fig. 5.

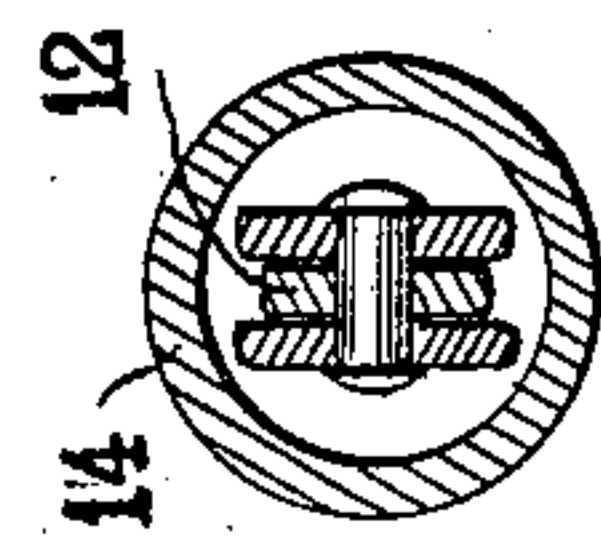
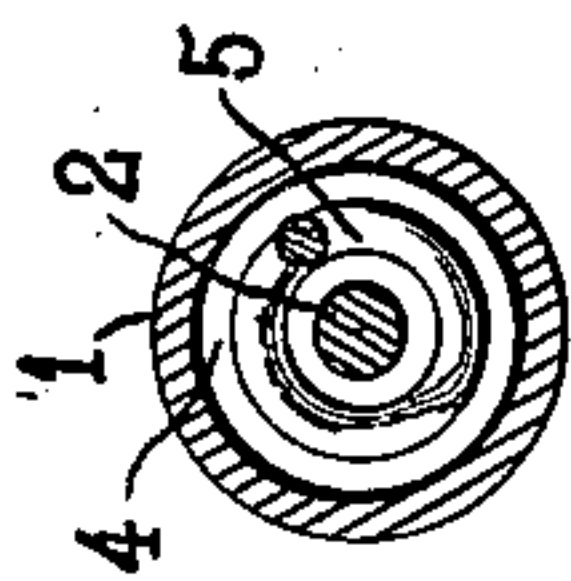


Fig. 4.



WITNESSES:

Walter C Pusey.  
A. V. Grouse

INVENTOR

David L. Vaughan  
BY  
Joshua Pusey,  
ATTORNEY.



# UNITED STATES PATENT OFFICE.

DAVID F. VAUGHAN, OF HADDONFIELD, NEW JERSEY.

## COMPENSATOR FOR SIGNALS.

SPECIFICATION forming part of Letters Patent No. 564,351, dated July 21, 1896.

Application filed March 18, 1896. Serial No. 583,678. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID F. VAUGHAN, a citizen of the United States, residing at Haddonfield, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Compensators for Signals, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, of which—  
10 Figure 1 is a sectional side elevation showing the piston at its farthest forward position; Fig. 2, a similar view, the piston being retracted; Fig. 3, a side elevation of a railway-signal with the device as used in connection therewith; Fig. 4, a section on line *x x*, Fig. 1; Fig. 5, a section on line *y y*, Fig. 1.

My invention relates to devices known as "compensators," which are used for compensating for the natural expansion and contraction of wires or the like, connecting the usual railroad-signals with the levers or other means for operating the signals at a distance.

The object of my improvement is to produce such a compensator as will be simple, reliable, and efficient in operation.

The construction and mode of operation of the invention are of such a simple character that the same will be readily understood from the following description, reference being had to the accompanying drawings.

1 designates an elongated hollow cylinder, closed at both ends.

2 is a rod or piston within the cylinder, that passes through a plug 3 and extends outwardly beyond the latter. On the other or inner end of the rod is secured a head 4, that loosely fits the interior of the cylinder, so as to leave a narrow passage-way between the two.

5 is a spiral spring surrounding the piston-rod and having its ends bearing against plug 3 and head 4, respectively.

When the device is prepared for use, the cylinder 1 is filled with a suitable liquid, such as glycerin, which will not congeal at ordinary natural temperatures.

When the device is to be used with the connecting wire or chain of a railway or other signal 6, one section of the wire 7, running to the signal-operating arm 8, is secured to the end of the cylinder. The other section of wire 9, running to the signal, is fastened to the pro-

truding end of the piston-rod, the connections being fully shown in Fig. 3.

By the stress of the spring 5 the wires are obviously maintained taut, and thus any change of temperature that lengthens or shortens the wire is compensated for by the action of the spring.

The narrow passage-way before alluded to, between the head 4 and the wall of the cylinder 1, permits the liquid to flow slowly around the head, as the latter moves in either direction. When, however, it is required to lower the signal, which is done by drawing back the usual lever by a quick motion, the liquid has not sufficient time in which to escape back of the head 4 through the narrow passage-way, and consequently the result is that, practically, the connection between the wire sections is for the moment unyielding, to achieve which result is the main purpose of my improvement. This normally-yielding, compensating, and at the proper instant practically rigid, wire connection, obviates the defect heretofore experienced when the connection was a simple spring or weight, which, although compensating for the changes of temperature, yielded to such an extent when drawn upon by the operating-lever, in the attempt to lower the signal, as to defeat that object; and when the spring was made of sufficient resistance as not to thus yield, it was at the same time so rigid that the wire would be broken by the contraction resulting from a falling temperature.

For convenience of securing the wire section 7 to the cylinder, I fasten a head 10 in the end of the latter, with a transverse hole 11 therein, through which the end of the wire is passed and then twisted around itself. I also, instead of securing the other wire section 9 to the end of the piston-rod directly, employ a bar 12 with a series of holes 13 therein for the purpose of adjusting the compensator to any required adjustment. This is done by drawing out the rod to the desired distance, inserting a pin in one of the holes 13 just beyond the end of the tube 14, (hereinafter referred to,) and then securing the wire section 9 to one of the holes, preferably in the one at the extreme outer end of the bar 12, the pin being then removed.

In order to prevent the escape of the liquid



from the cylinder 1, I use a stuffing-box 15, through which rod 2 passes.

I sometimes use a tubular extension 14 for covering over and protecting the stuffing-box 15, but this is, of course, not essential.

Either the head 10 or the plug 3 may be screwed into the cylinder 1, so as to afford access to the interior of the latter.

It will be obvious that in lieu of play between the head 4 and the cylinder a small longitudinal orifice through the former may be employed.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a compensator for signals, the combination of the elongated, closed cylinder, adapted to receive and retain a suitable liquid, and adapted to be connected to the signal-operating device; the piston-rod within and extending from said cylinder and adapted to be connected to the signal; the head upon

said rod having a narrow passage-way there-through; together with the spring tending to retract the said rod, substantially as and for the purpose set forth.

2. In a signal mechanism, the combination of wire sections or the like connected with the signal and its operating device, the liquid-containing cylinder attached to one of said sections, the spring-controlled rod within, and extending from said cylinder, and attached to the other of said wire sections, together with the head upon said rod having a narrow passage-way therethrough, as and for the purpose set forth.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

DAVID F. VAUGHAN.

Witnesses:

ISAAC W. HEYSINGER,  
WALTER C. PUSEY