

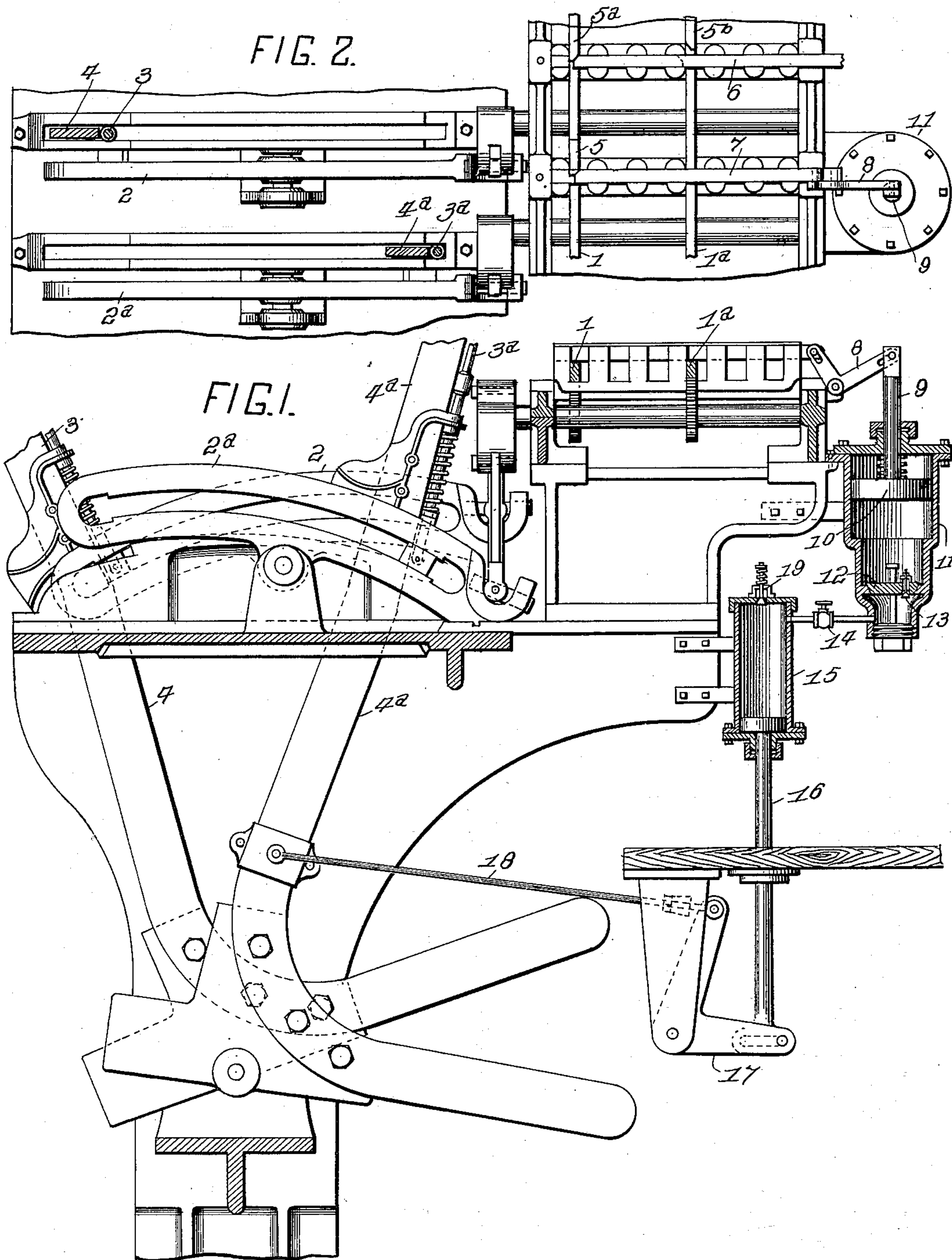
No. 628,638.

Patented July 11, 1899.

V. K. SPICER.  
SWITCH AND SIGNAL MECHANISM.

(Application filed May 23, 1899.)

(No Model.)



WITNESSES:

Herbert Bradley  
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Att'y.



# UNITED STATES PATENT OFFICE.

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## SWITCH AND SIGNAL MECHANISM.

SPECIFICATION forming part of Letters Patent No. 628,638, dated July 11, 1899.

Application filed May 23, 1899. Serial No. 717,904. (No model.)

*To all whom it may concern:*

Be it known that I, VIBE K. SPICER, a citizen of the United States, residing at Kenilworth, in the county of Cook and State of Illinois, have invented or discovered certain new and useful Improvements in Switch and Signal Apparatus, of which improvements the following is a specification.

In applications of even date herewith I have described and shown certain improvements in switch and signal mechanism having for their objects the locking up of the switch mechanism in reverse position by a lock independent of the ordinary interlocking mechanism and which will maintain the switch mechanism in reverse position for a certain predetermined time, even after the signal mechanism has been restored to normal position, and thereby unlock, as regards the ordinary interlocking mechanism, the switch mechanism. In the applications referred to I have claimed broadly and specifically mechanisms for effecting the above-described operation, and the invention described herein relates to certain further improvements in that class of mechanisms.

In the accompanying drawings, forming a part of this specification, Figure 1 is a sectional elevation of a switch and signal apparatus having my improvement applied thereto, and Fig. 2 is a top plan view of a portion of such apparatus.

In the practice of my invention the switch and signal levers 4 4<sup>a</sup> are provided with the usual latch-rods 3 and 3<sup>a</sup>, which engage the quadrants 2 2<sup>a</sup> for the purpose of shifting the latter and through suitable connections therefrom the slides 1 1<sup>a</sup>, &c., of the interlocking mechanism. On the slides 1 1<sup>a</sup>, &c., are secured blocks 5, 5<sup>a</sup>, and 5<sup>b</sup>, with which locking-bars 6 and 7 engage when properly shifted, and thereby prevent the movement of the switch-levers. As will be readily understood by those skilled in the art, the switch-lever is first shifted from normal position in the orderly operation of the machine, and then the signal-lever is shifted from normal position, and thereby, through suitable connections, so moving the locking-bar 6 longitudinally that its front end will project across the path of movement of the block 5<sup>a</sup> on the slide 1, which,

as stated, is connected to the quadrant 2 of the switch-lever. While the signal-lever is in reverse position, the switch-lever will be held as against any movement from reverse position, but can be moved as soon as the signal-lever has returned to normal. In order to prevent the immediate return of the switch-lever to normal position, and thereby affording opportunity to the operator to take a second thought as regards the proposed change of the previously-given route, an additional lock is provided. This lock, as stated in the applications referred to, may be applied to any moving part of the switch-operating mechanism or its interlocking devices, but is preferably applied to an independent lock—such, for example, as the bar 7—which is so arranged on the machine that it can be moved longitudinally into the path of movement of the block 5 on the switch-slide 1. This longitudinal movement of the locking-bar 7 and its locking in its shifted position can be effected by a vertically-movable locking-bar, as set forth in the applications referred to, said bar being operated by the devices to be hereinafter described; but it is preferred to effect such longitudinal movement by a bell-crank lever 8. This lever is pivotally mounted on the frame of the machine and has one end loosely connected to the rear end of the sliding bar 7, while its opposite end is similarly connected to the rod 9 of the piston 10. This piston is arranged within a cylinder 11, provided at its lower end with an admission-valve 12, which will allow the free inward flow of fluid, but will prevent a return or outward flow thereof. The escape of fluid from the cylinder 11 is permitted by a valved port, preferably in the valve 12, said port being provided with a valve 13. This valve is adjustable by means of a nut or other suitable device in relation to its seat, so that the rapidity of flow through the port can be controlled. The portion of the cylinder below the valve 12 is connected in any suitable manner—such, for example, as that shown—i. e., a pipe 14—to the upper end of a pump-cylinder 15. The piston of this cylinder has its stem 16 connected to one arm of the bell-crank lever 17, while the opposite end thereof is connected by the rod 18 to the signal-lever 4<sup>a</sup>.



In such a construction the movement of the signal-lever 4<sup>a</sup> from normal position will force the pump-piston up, thereby causing any fluid contained in the pump-cylinder to flow 5 into the lower portion of the cylinder 11 and, passing the valve 12, cause an upward movement of the piston 10 and the consequent shifting of the locking-bar 7, so that it will project into the path of movement of the 10 block 5 on the switch-slide 1. If the signal-lever be returned to normal position, it will leave a vacuum in the upper portion of the pump-cylinder, and into this vacuum will flow the fluid from the cylinder 11. This flow, 15 as stated, is controlled entirely by the adjustment of the valve 13, as the valve 12 will be seated as soon as the pump-piston is moved down. In order to allow the free downward movement of the pump-piston, a normally 20 open valve 19 is arranged in the upper end of the pump-cylinder. This valve is constructed to be seated as the pump-piston moves up, so as to prevent the escape of liquid from the pump-cylinder. If desired, air may be em- 25 ployed, it being admitted to the pump-cylinder through the valve 19 as the pump-piston moves down. In such case the air need not

be returned to the pump-cylinder, but can be allowed to escape from the cylinder 11 to the open air.

I claim herein as my invention—

1. In a switch and signal apparatus, the combination of a switch-operating mechanism, a lock for holding the switch mechanism in normal position, and a fluid-pressure mechanism for shifting said lock and holding it in such position for a predetermined time, substantially as set forth. 30 35

2. In a switch and signal apparatus, the combination of a switch-lever, a signal-lever, 40 an interlocking mechanism for said levers, a lock adapted to engage one of the parts of the interlocking mechanism controlling the switch-lever, a cylinder having its piston connected to said lock, a valved outlet for said 45 cylinder, and means controlled by the signal-lever for forcing fluid into said cylinder, substantially as set forth.

In testimony whereof I have hereunto set my hand.

VIBE K. SPICER.

Witnesses:

E. T. BARNES,  
J. W. PECK.