H. TILDEN.

HYDRAULIC RAILROAD SIGNAL.

No. 193,625. Patented July 31, 1877.

Figure 1,

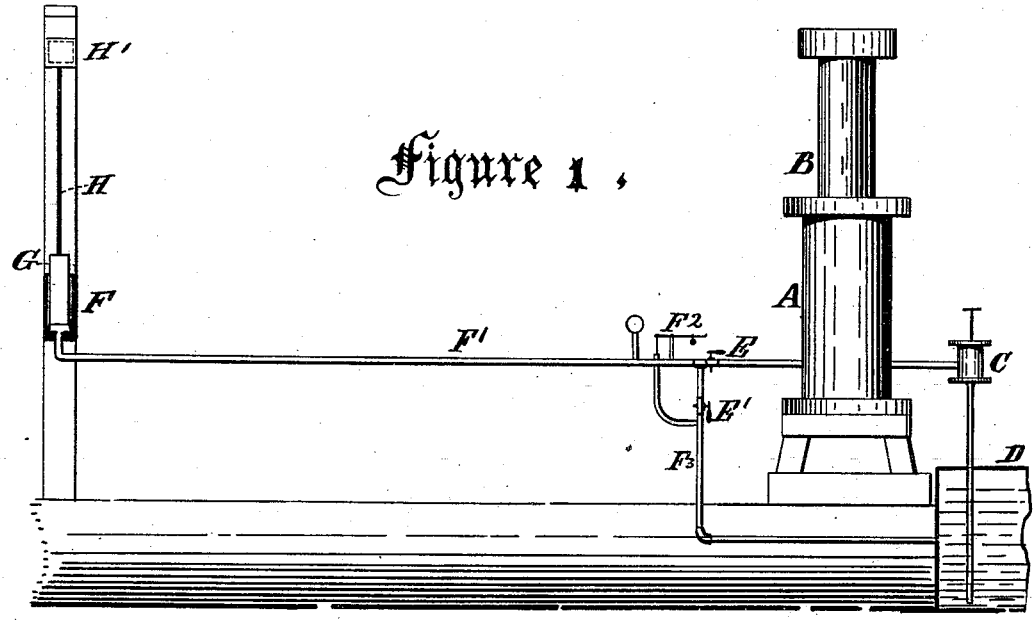


Figure 2,

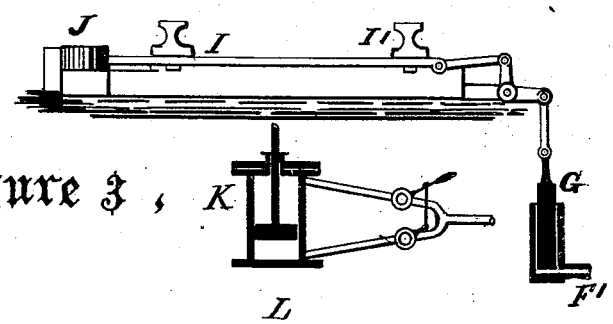
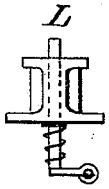


Figure 3,

Figure 4,



Witnesses,
C. L. Pond.
Wm. S. Grosvenor

Inventor,
Harvey Tilden.
Per; James Sampter
atty,

UNITED STATES PATENT OFFICE.

HARVEY TILDEN, OF CLEVELAND, OHIO.

IMPROVEMENT IN HYDRAULIC RAILROAD-SIGNALS.

Specification forming part of Letters Patent No. **193,625**, dated July 31, 1877; application filed July 2, 1877.

To all whom it may concern:

Be it known that I, HARVEY TILDEN, of the city of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Hydraulic Apparatus for Operating Signals, Targets, or other Devices from a Distance, which improvements are fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a side elevation, showing a suitable arrangement for adapting my invention for operating a railroad-target or other signal, the cylinder and piston for moving the signal or target being in section. Fig. 2 represents a front view of a convenient arrangement for adapting my invention for moving or operating a switch or other device for preventing accidents; also a section through the moving cylinder and piston. Fig. 3 is a vertical central section through a double-acting cylinder and piston; and Fig. 4 is an end view of a T-rail, showing an arrangement by which a train of cars may be made to operate the device.

The object of my invention is to provide a convenient means for operating signals, targets, or gates, or for opening or closing switches, blocking trains, sounding alarms, or other similar purposes, from a distance; and it consists of a cylinder having a suitable forcing-pump connected therewith, for forcing oil, water, or other equivalent liquid therein, and provided with a heavy or weighted piston, for supplying the necessary power, or holding it ready for instant use when required, in combination with a reservoir for supplying the water or other liquid, and a pipe provided with one or more stop-cocks or valves, having a cylinder and piston or plunger at its opposite end, to which is connected a signal, target, or other device to be moved or otherwise operated, as will be more clearly hereinafter shown.

In said drawings, in which I have shown a suitable apparatus for carrying out my invention, A represents the cylinder for supplying the power; B, a heavy or weighted plunger or piston, having the proper area and sufficient weight to produce the required effect. It is pumped up by the hydraulic pump C, which takes suction from the reservoir D. E represents a stop-cock or valve for opening or closing communication with the cylinder F and plunger G. F^1 is a pipe connecting cylinders A and F, which may be placed either above or under ground. F^2 represents a relief-valve and indicator, which relieves the pressure when the target, signal, gate, or switch has been placed in its proper position by the action of the reserve power in the cylinder A. When such position shall have been reached the operator closes valve E, and thereby holds the target, switch, signal, or gate in the position desired. The relief-valve and indicator is adjusted by either a weight or spring, so as to adapt it to any pressure required. H is a rod connected to the plunger G and signal or target H′.

In Fig. 2 I have illustrated a convenient means for adapting my invention to operate a switch. I I′ is the switch; J, an elliptic or other spring for causing its return movement after the plunger G has moved it one way by hydraulic force.

An equivalent device for producing both movements, or opening or closing a switch, would be a double-acting cylinder, K, Fig. 3, arranged in any well-known way, so that the compressing liquid could move it either way, the valves being arranged so that when one is open to admit pressure from cylinder A on one side of the piston, the other is shut against this compressing force, and opened so as to relieve the other side of the piston, and allow the liquid therefrom to run back into the reservoir or its equivalent.

In operating this invention, the plunger B is first pumped up to its extreme height by means of the pump C, which thereby stores the power, ready for use. When either a signal, target, gate, or switch is required to be moved or operated, the target-man or telegraph-operator using the mechanism opens the stop-cock or valve E, thereby admitting the compressing liquid through the pipes F^1 to the cylinder F and plunger G, which lifts or forces up the plunger G, rod H, and signal or target H′, and holds them there until it is necessary to reverse or lower them, which is done by closing the valve E and opening valve or stop-cock E′, which allows the compressing liquid to run back into the reservoir D.

It will be readily seen that a gate, switch, target, or other device requiring considerable force to move it, may by this means be easily operated from a distance by the man in the target-house or telegraph-office; or a train of cars may produce the same effect by forcing down the pin L, (which passes up through the railroad-track, as shown,) and thereby open or close the valve which operates it, by allowing the compressing liquid to move the plunger G.

The valve or stop-cock F^1 is on the discharge-pipe F^3, and, when not in use, remains closed.

The liquid to be used in connection with this power may be non-freezing, when necessary.

I claim as my invention—

1. The cylinder A, provided with the heavy or weighted piston B and forcing-pump C, in combination with the pipe F^1, reservoir D, cylinder F, and plunger or piston G, substantially as and for the purposes specified.

2. The combination of the indicator and relief-valve F^2 with the pipe F, discharge-pipe F^3, and cylinders A and F, substantially as and for the purposes described.

HARVEY TILDEN.

Witnesses:
JAMES SANGSTER,
F. P. STIKER.