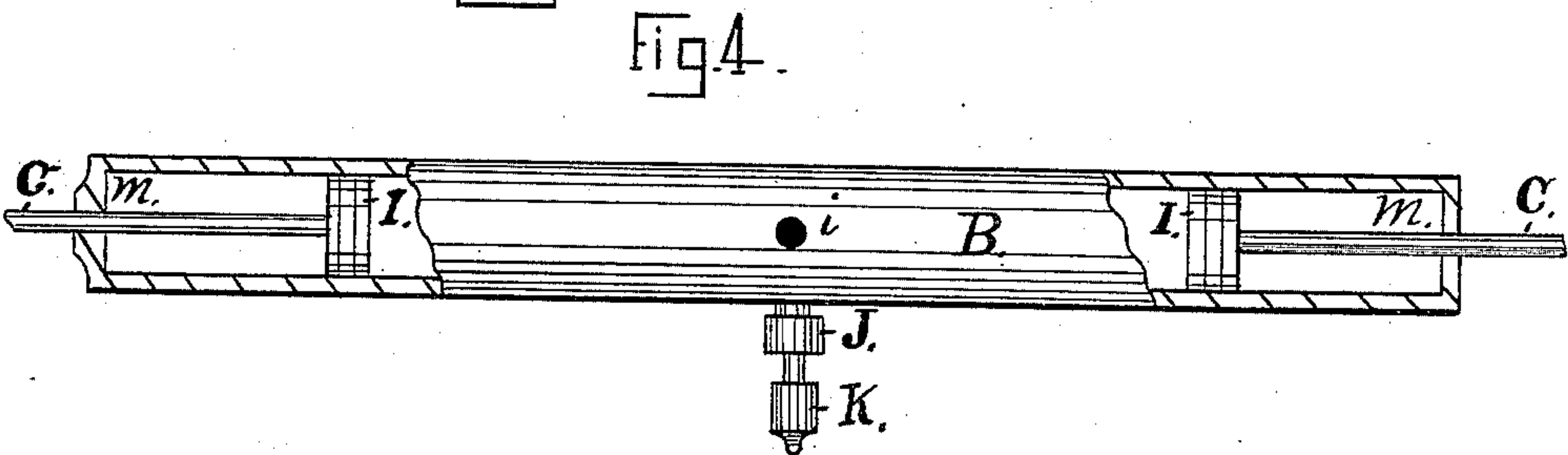
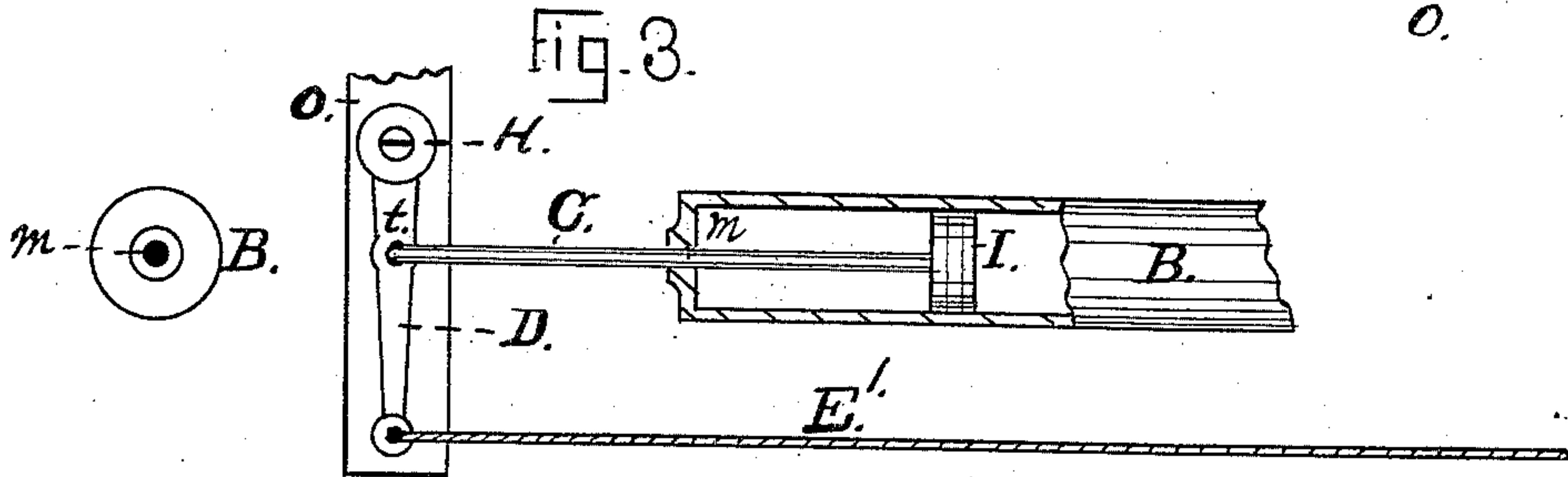
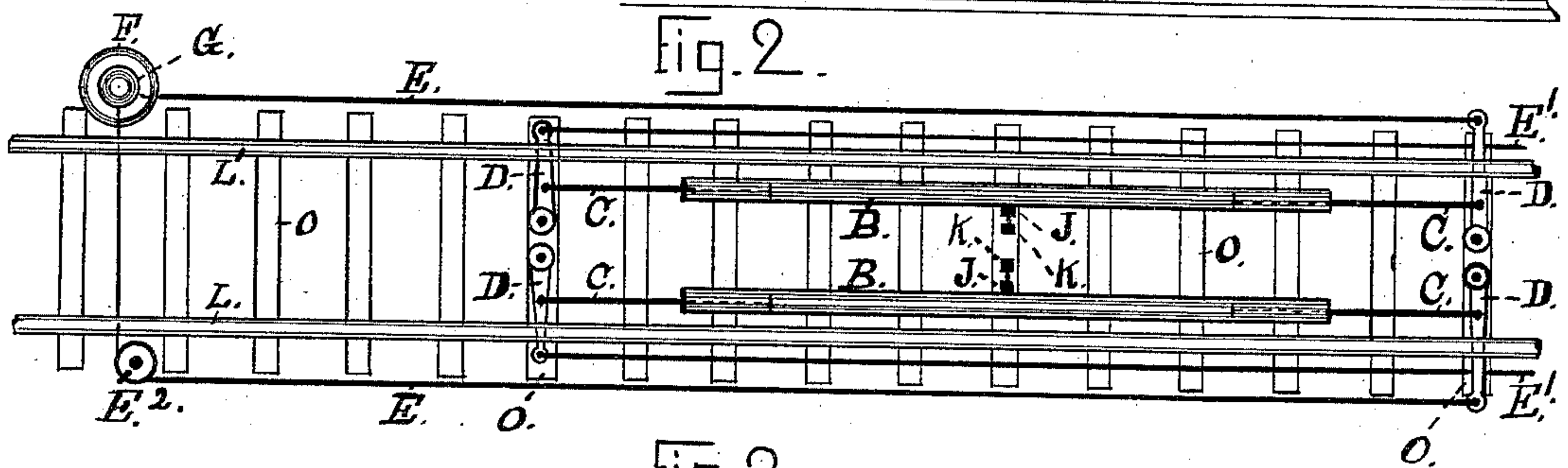
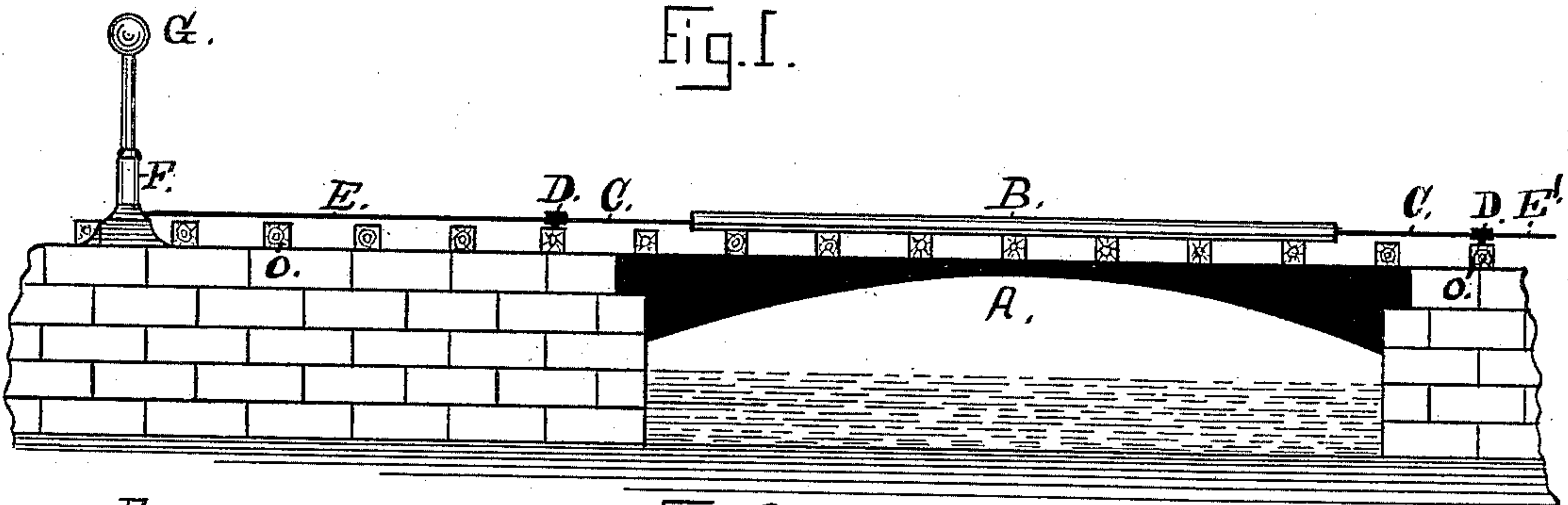


(No Model.)

J. HAHN.  
AUTOMATIC DANGER SIGNAL.

No. 397,546.

Patented Feb. 12, 1889.



WITNESSES:

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ATTORNEY,



# UNITED STATES PATENT OFFICE.

JOHN HAHN, OF NEW YORK, N. Y.

## AUTOMATIC DANGER-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 397,546, dated February 12, 1889.

Application filed May 1, 1888. Serial No. 272,462. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN HAHN, a citizen of the United States, and a resident of the city, county, and State of New York, have invented  
5 a new and useful Improvement in Operating Signals and Alarms, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 The object of this invention consists in providing railroad-bridges or trestle constructions with devices for operating signals to avoid accidents in case of fire or other causes.

The invention consists in the combination,  
15 with a railroad-bridge or trestle construction, of a receptacle containing liquids, gases, or air, and means to operate a signal and audible alarm.

Figure 1 represents a railroad-bridge having one of my improved signal-operating devices applied, with signal and connecting appliances. Fig. 2 is a top view of Fig. 1. Fig. 3 is an enlarged section of the cylinder or receptacle and cables for operating the signals  
25 and alarms. Fig. 4 is an enlarged cylinder or receptacle, showing the pistons, safety-valve, and whistle.

A, Fig. 1, represents a bridge, on which are mounted ties *o o*, that support my improved  
30 signal-operating device, by which approaching trains are warned of any danger from a bridge or trestle-work being on fire or otherwise damaged by displacement.

B in the various figures represents the construction of a receptacle containing liquids,  
35 gases, air, or any substance that may operate the piston-rods C and head I within the said receptacle B, as shown in Figs. 3 and 4.

The piston-rods C extend through the cylinder-heads *m*, Figs. 3 and 4, connecting with the pivoted levers D at *t*, Fig. 3. The levers D are secured to the ties *o* by bolt H, Fig. 3. The levers D have secured to one end cables E, which extend along the track and connect  
40 with the signals F, Fig. 1, at a sufficient distance from the bridge to enable the approaching train to stop.

The piston-rods C push the levers D away from the signal. This is necessary to operate  
50 the cables E as they are drawn toward the bridge when the signal is worked. It will also

be observed that the cables E are extended across the bridge or operated upon by the piston farthest from the signals. This makes the operation of the signals certain in case  
55 the bridge is destroyed by other means than fire, as the cables would be displaced.

I have shown only one signal, F, operated by the two cylinders B B through the cables E E, Fig. 2. The other signal (not shown, and  
60 operated by cables E') warns the approaching train in the opposite direction.

The signal-head G may be of the ordinary kind—a light by night and color-sign by day.

I have not shown in the drawings the actual  
65 position of the cylinders B or their full length, as the user may determine their length as well as the position.

I do not deem it important to have double cylinders or two pistons to each cylinder. I  
70 may use one or both in actual practice.

When it is necessary to operate signals at a long distance from the bridge, an electric circuit may take the place of the cables, the displacement of the bridge or pistons being  
75 relied upon to close the circuit and operate the signals.

Instead of the cables E, a tube of small diameter may extend from the receptacle B to the desired signal-point, and then connect  
80 with an audible alarm or signal.

The cylinders B are provided with the safety-valve J, which, being set at a low gage, will allow the escaping pressure to blow the signal-whistle K and give warning of the fire to  
85 the surrounding neighborhood.

The gage J and whistle K are of ordinary construction and do not need description.

Instead of liquids being employed in the receptacles B, gases may be used, which ex-  
90 pand under heat and produce the same effect upon the various signals. I may also charge the cylinders B with ordinary atmospheric air at a normal or forced pressure and produce the desired effect on the signal. I may also  
95 charge the cylinders B with solids, and by evaporation or explosion produce the desired result on the signal.

The operation is as follows: Steam-generating liquids or the aforesaid-mentioned in-  
100 ingredients are located in the cylinder B through the inlet *i*, Fig. 4, between the properly-ad-



justed piston-heads I I, until it is partly filled. The inlet is then closed. When the bridge is burning, the liquids or other ingredients generate a steam or pressure sufficient to  
 5 force the piston-heads I back to the ends of the cylinders B, operating the cables E and setting the danger-signals to warn the approaching trains, thereby avoiding the great loss of life and property which is of so frequent occurrence in bridge disasters. When  
 10 the piston-heads I have been driven back and sufficient power generated, the safety-valve is opened and the escaping pressure is forced through the whistle, which alarms the neighborhood in time to put out the fire.

I have placed the cylinders near the rails, as shown in Fig. 2. This is over the part of the ties most saturated with oil, and which would burn more readily than the rest.

20 The cable E can be constructed of wire, tubing, rod, or any non-combustible material.

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

25 1. The cylinders B, having pistons C and heads I, in combination with the bridge A and a signal, as and for the purpose specified.

2. The cylinder B, provided with means to operate the signal, in combination with the bridge A and said signal, as and for the purpose specified. 30

3. The cylinder B, having piston C, to operate the lever D, in combination with the bridge A and a signal, as and for the purpose specified. 35

4. The cylinder B, having piston C, operating the lever D, and cable E, in combination with the bridge A and a signal, as and for the purpose specified.

5. The receptacle B, provided with means to operate the whistle K when in combination with a bridge, as and for the purpose specified. 40

6. The receptacle B, provided with safety-valve J and having piston C, in combination with the bridge A and the signal, as and for the purpose specified. 45

In testimony whereof I have signed my name in the presence of two subscribing witnesses.

JOHN HAHN.

Witnesses:

ALBERT HENSEL,  
F. DE LYSLE SMITH.