(120.)

3 Sheets--Sheet 1.

DANIEL F. SWEET.

Improvement in Railway Signal.

No. 122,924.

Patented Jan. 23, 1872.

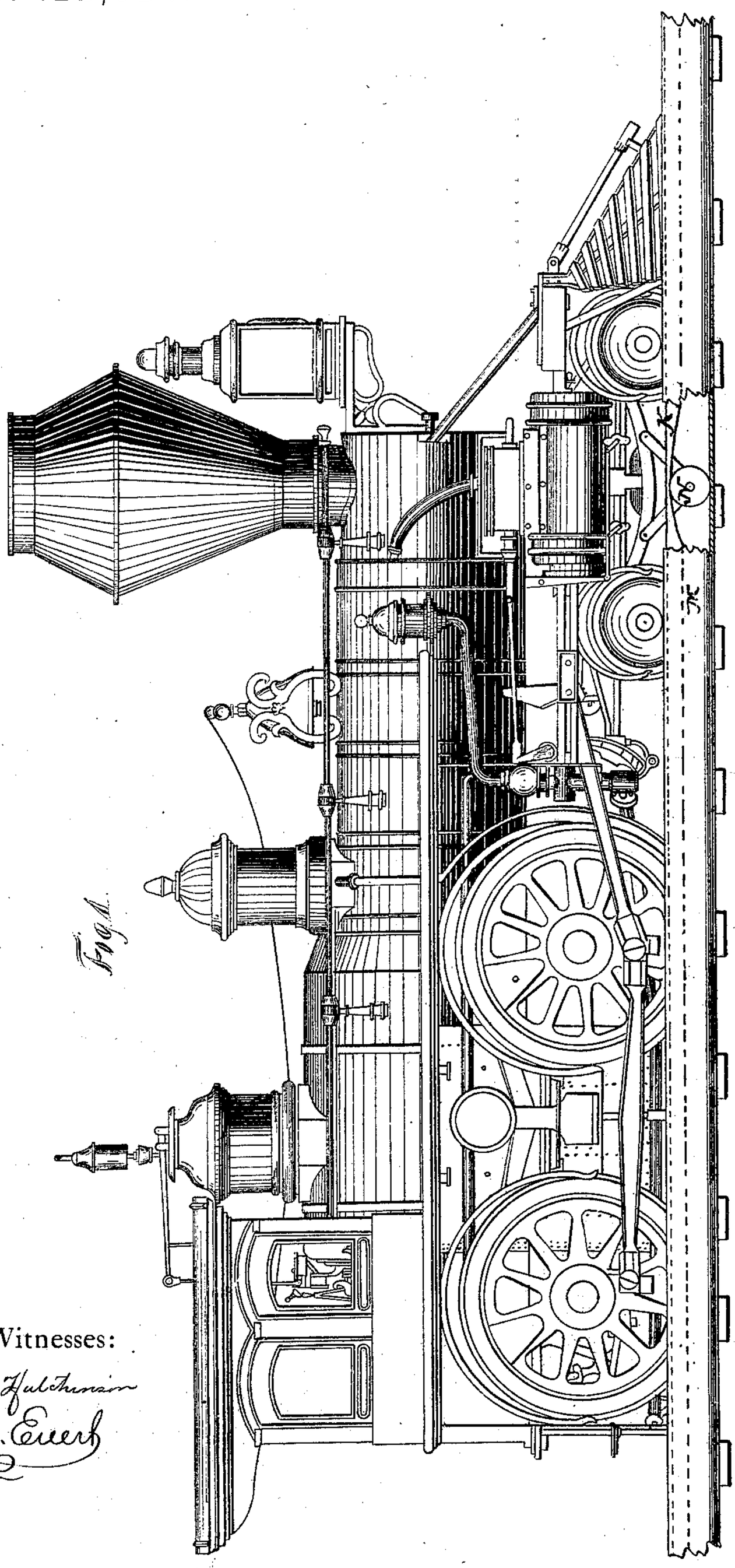

Fig. 1.

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Fig. 2.

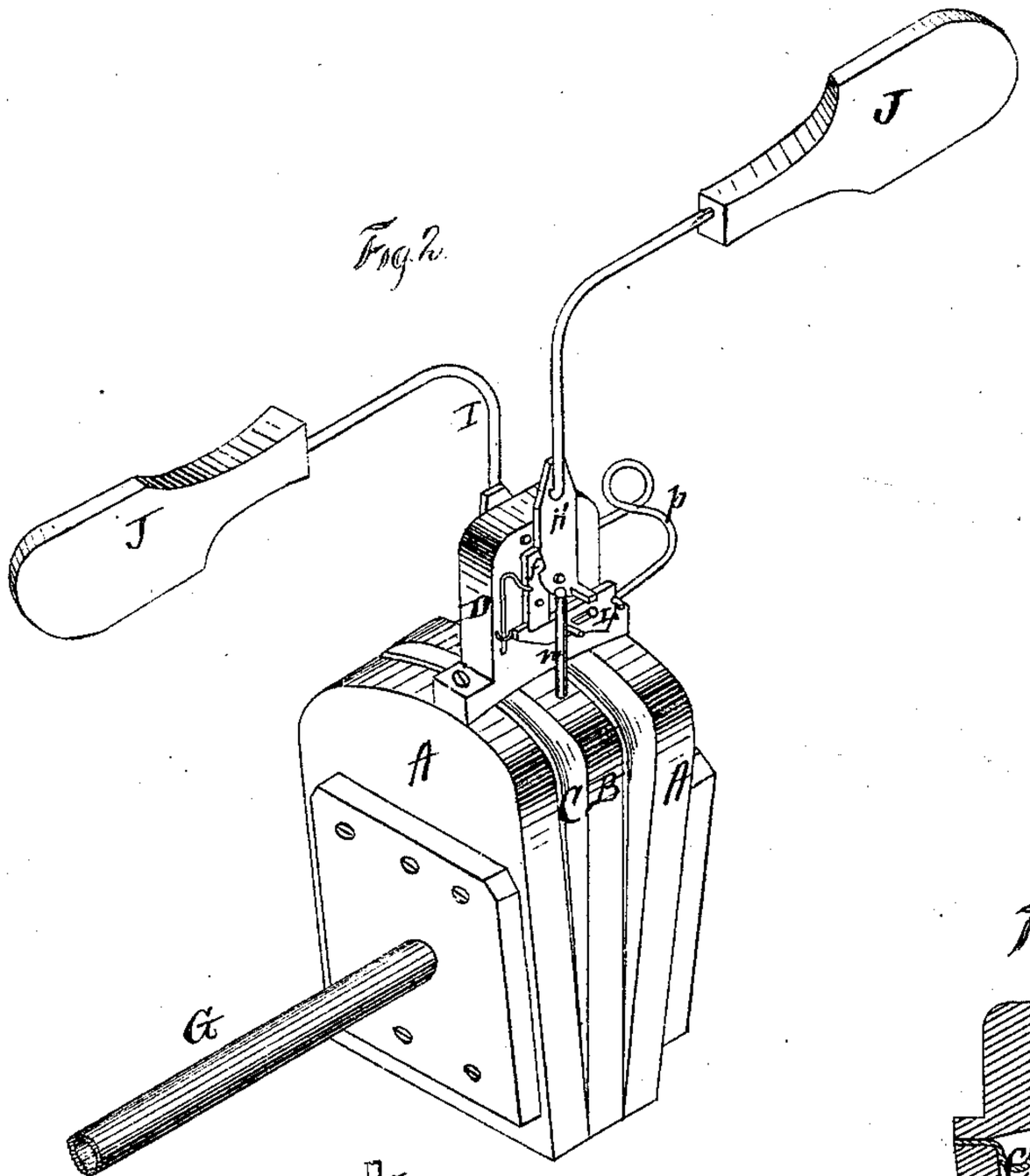

Fig. 4.

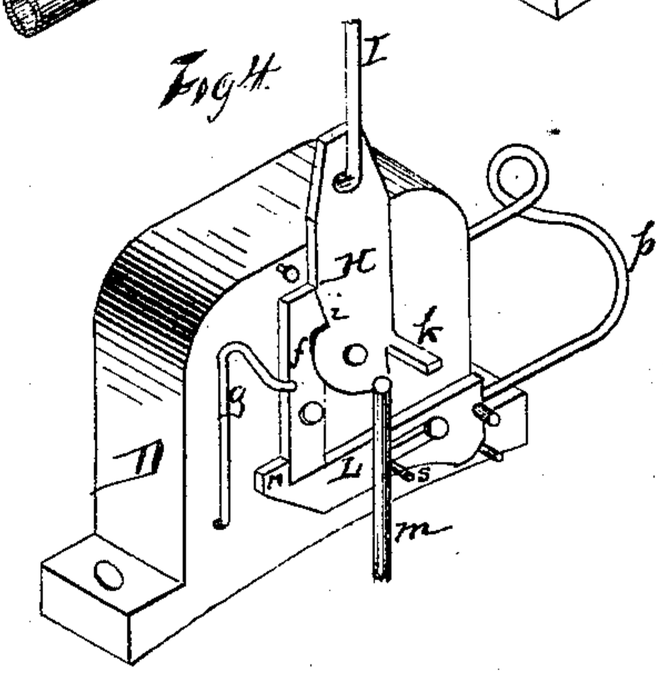

Fig. 3.

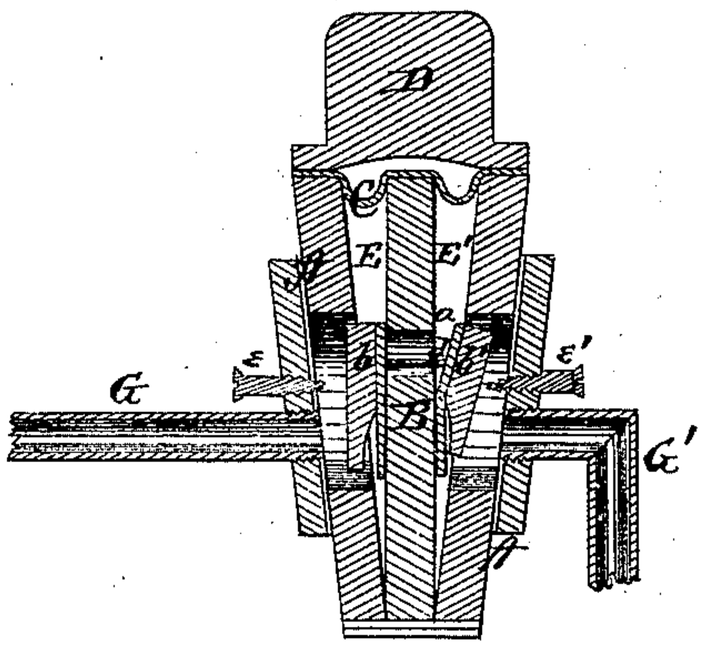

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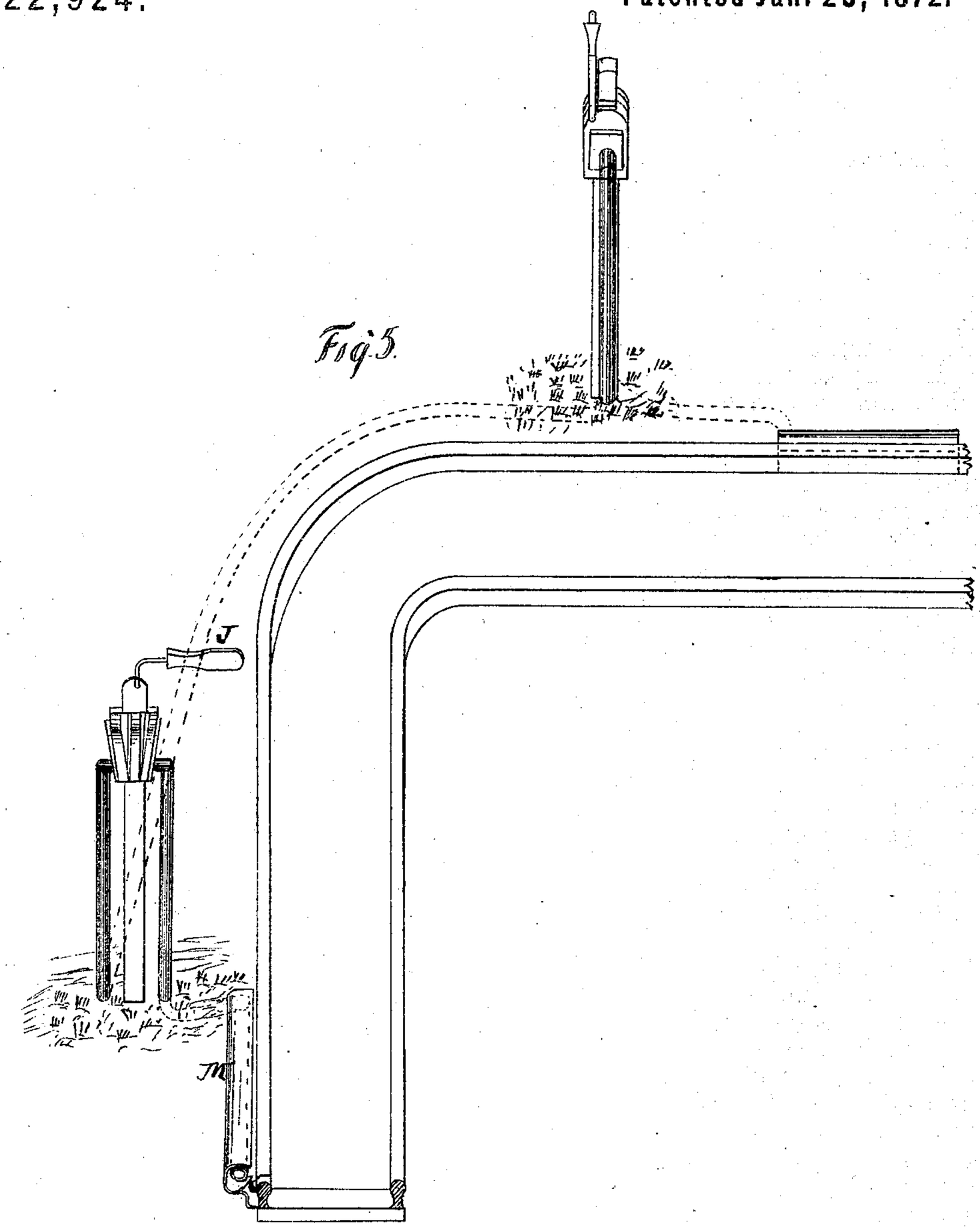
Fig. 5.



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UNITED STATES PATENT OFFICE.

DANIEL F. SWEET, OF OTSEGO, MICHIGAN.

IMPROVEMENT IN RAILWAY SIGNALS.

Specification forming part of Letters Patent No. 122,924, dated January 23, 1872.

To all whom it may concern:

Be it known that I, DANIEL F. SWEET, of Otsego, in the county of Allegan and in the State of Michigan, have invented certain new and useful Improvements in Automatic Railroad Signal; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon making a part of this specification.

The nature of my invention consists in the construction and arrangement of a railroad signal, designed especially for curves, and operated by the pressure and suction of air, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a side elevation of a locomotive, showing the means employed to create the pressure and suction of air to operate my signal. Fig. 2 is a perspective view of my railroad signal. Fig. 3 is an enlarged vertical section of the same. Fig. 4 is an enlarged perspective view of a part of my signal; and Fig. 5 represents a railroad curve with my signals in position.

My signal is constructed somewhat on the principle of a pair of bellows, having two side pieces, A A, and a center piece, B, inclosed around their edges by leather, rubber, or other suitable air-tight material, C. These parts are so arranged that the lower edges of the side pieces A A and center piece B will be close together, while the upper edges of the side pieces are held stationary at a suitable distance apart by a block, D, secured to them, as shown. The covering C is secured to the edges of both the side pieces and the center piece, said center piece thus dividing it into two chambers, E and E′, and is capable of being moved sidewise, as occasion may require. Through the center piece B is a passage, *a*, with valves *b b′*, one on each side, said valves being connected by a short rod, *d*, passing through the opening *a*. Pipes G G′, straight or bent, lead into the chambers E E′, respectively, through the side pieces, and through said side pieces are also passed set-screws *e e′*, respectively, for a purpose that will be hereinafter described. On each side of the block D is pivoted a plate, H, at the upper end of which is the bent arm I, carrying the signal J. This plate has a notch, *i*, into which a hooked bar, *f*, catches, said bar being also pivoted to the block D, and by a spring, *g*, pressed into the notch *i* to hold the plate in proper position when necessary to have the signal raised. From the lower end of the plate H projects a short arm, *k*, to be operated upon by a pin, *m*, projecting upward from the center piece B to raise the signal. L represents a sliding plate, provided at its inner end with a hook, *n*, to catch on the lower end of the hooked bar *f*, it being pressed inward by a spring, *p*, as shown. From this sliding plate L also projects a short arm, *s*, to be operated upon by the pin *m* on the center piece B.

The two signals, one on each side of the block, with their operating mechanisms, are reversed from each other, so that the signals will extend in opposite directions. Two or more of these signals are placed upon high posts suitable distances apart around a curve in a railroad track, and connected by pipes in any desired manner. From the first and last of these signals in the series pipes lead to rubber or other flexible pipes, K, arranged along and outside of the track. The flexible pipe K is shielded by a cover or guard, M, open on the inner side; and this pipe may be of any desired length, depending upon the number of signals and the distances they are apart. On the side of the locomotive is arranged a roller, N, in such a manner that it will come under and compress the flexible pipe K, as shown in Fig. 1. All the signals being down, as the train approaches the curve the roller N passes under the flexible pipe K, causing pressure of air through the pipe G into the chamber E on the center piece B. This being movable yields to the pressure of the air, causing the pin *m* to strike the arms *s* and *k* of the plates L and H, respectively, moving the plate L outward, and turning the plate H on its pivot. The outer end of the sliding plate L being beveled, as shown in Fig. 4, and striking a pin or projection on the block D, it is caused to pass from under the hooked bar *f* until the plate H has

been raised far enough to allow said hooked bar to drop into the notch *i*, and hold the plate and signal in proper position. At this time the valve *b'* will strike the end of the set-screw *e'*, and the valves *b b'*, being connected, open the valve *b*, and allow the accumulated or compressed air in the chamber E to pass into the chamber E', and from thence to the next signal, and so on through the series, raising all the signals one after the other in very rapid succession. As soon as the roller N clears the flexible pipe K, the center piece B resumes its original position, and the spring *p* throws the sliding plate L inward again, so that its hook *n* will catch on the lower end of the hooked bar *f*. When the train arrives to and beyond the last signal in the series, the roller N compresses the flexible pipe K at that end, causing a suction in the signal, which, being naturally not so powerful as the pressure previously exerted, will only move the center piece B far enough to cause the pin *m*, striking the arm *s*, to move the sliding plate L, so that the hook *n* will turn the bar *f* sufficiently to release it from the notch *i*, when the signal will fall of its own weight.

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

1. A railroad signal operated by the pressure of air forced through a flexible tube lying along the track, the said tube compressed by suitable mechanism, as set forth.

2. A railroad signal suitably elevated and connected with a flexible tube on each side, which tube is extended to the ground within or near to the railroad track, and is operated upon by a device or devices attached to the locomotive, substantially as and for the purposes herein set forth.

3. In combination with the above, I claim a bellows or its equivalent placed upon the signal elevation to operate the signal arms, substantially as set forth.

4. The combination of the side pieces A A, center piece B, covering C, block D, and pipes G G', all constructed and arranged substantially as and for the purposes herein set forth.

5. The combination of the "bellows" A B C D, passage *a*, valves *b b'*, connecting-rod *d*, and set-screws *e e'*, all substantially as and for the purposes herein set forth.

6. The combination of the pivoted plate H with signal J and arm *k*, the pivoted hooked bar *f*, and spring *g*, operated by the pin *m* on the "bellows," substantially as and for the purposes herein set forth.

7. The sliding plate L, provided with hook *n* and arm *s*, and operated by means of the spring *p* and pin *m*, substantially as and for the purposes herein set forth.

8. The combination of the flexible tube K connected with a signal, the shield or cover M, and roller N, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 14th day of December, 1871.

D. F. SWEET.

Witnesses:

A. N. MARR,

C. L. EVERT.