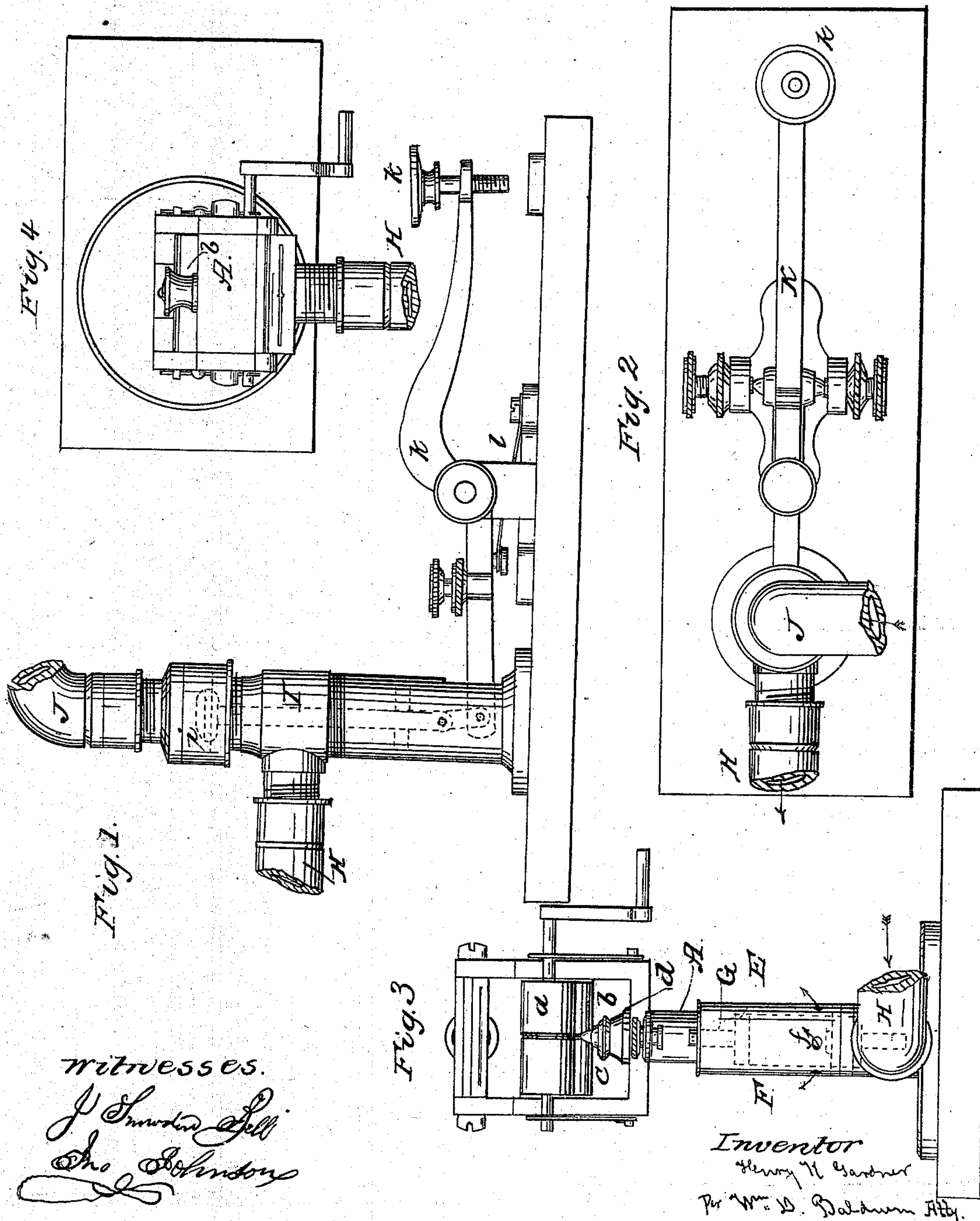


H. K. GARDNER.
Pneumatic Telegraph.

No. 35,416.

Patented May 27, 1862.



UNITED STATES PATENT OFFICE.

HENRY K. GARDNER, OF YORK, PENNSYLVANIA, ASSIGNOR TO HIMSELF
AND ADAM J. GLOSSBRENNER, OF SAME PLACE.

IMPROVEMENT IN PNEUMATIC TELEGRAPHS.

Specification forming part of Letters Patent No. 35,416, dated May 27, 1862.

To all whom it may concern:

Be it known that I, HENRY K. GARDNER, of the borough and county of York, in the State of Pennsylvania, have invented a certain new and useful Method of Transmitting Signals by Means of Compressed Air, (which improvement I denominate a "Pneumatic Telegraph,") of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make part of this specification, and in which—

Figure 1 represents a view in elevation of one side of a transmitting apparatus embracing my improvement. Fig. 2 represents a plan or top view of the same. Fig. 3 represents a view in elevation of one side of a receiving and recording instrument embracing my improvement, and Fig. 4 represents a plan or top view of the same.

My invention has for its object a novel method of transmitting intelligence by means of currents of air; and to this end my improvement consists in operating a recording-instrument at one end of a line by means of a current of compressed air passing through a tube and controlled by a transmitting-instrument at the other end of the line.

The accompanying drawings represent a convenient arrangement of parts for carrying out the objects of my invention.

In this instance the recording-instrument A is shown as constructed in a manner well known to all skillful telegraph-instrument makers. It consists, mainly, of two rollers, *a* *b*, which give motion to the paper upon which the message is recorded, and of a pen or style, *c*. The rollers turn in suitable bearings in the frame of the instrument. They are intended to be moved by clock-work in the manner usual in such cases. The pen *c* is secured in a bracket, *d*, projecting from the frame, and slides freely endwise in its bearings in order that its point may touch the paper when required. The pen is actuated by a plunger, *E*, which also plays freely endwise in its bearings in a cylinder, *F*, and is actuated by the direct impulse of a current of air passing through the tube *H*. The plunger and cylinder are shown in red in Fig. 3. An aperture, *f*, in the cylinder *F*, near its bottom, permits the air to escape and causes the plunger to drop the moment the

current ceases, as hereinafter more fully explained. The plunger and cylinder are inclosed by a casing, *G*, which acts as a guide to the plunger, which plays through an opening in its top. This casing is also perforated in order to permit the escape of the air which issues from the cylinder *F*.

The recording and transmitting instruments are connected by a tube or pipe, *H*, which should be air-tight. The transmitting apparatus consists of a cylinder or pillar, *I*, which contains a passage leading to a suitable bellows or pump which supplies the compressed air necessary to operate the apparatus. This pump is not shown in the drawings, but the pipe *J* leads to it. A suitable valve, *i*, (shown in red in Fig. 1,) keeps the passage *I* closed at all times when not held up by the operator. This valve is operated by means of a rocking lever or key, *K*, one end of which enters a slot in the cylinder *I*, and is connected to the valve-spindle by a link or other suitable means. The other end of the lever is provided with an adjusting screw and button, *k*, upon which the operator presses in order to open the valve and operate the recording-instrument. A spring, *l*, underneath the lever serves to hold the valve down upon its seat or to pull the valve down when raised.

The operation of the machine is as follows: A slip of paper is inserted between the rollers *a* *b* of the recording-instrument, and they are then set in motion. The pump is put in motion and the air compressed in the tube *J*. The operator then depresses the button *k* on the lever *K*, and thus lifts the valve *i*, when the air rushes through the tube *H* into the cylinder *F* and forces up the plunger *E*, which strikes the pen *c* and causes its point to bear against the paper. The pen is held against the paper as long as the lever *K* is depressed and the valve *i* kept open, and as the paper is kept in continuous motion by the revolution of the rollers, a straight line or mark of any desired length may be made upon it. By alternately elevating and depressing the valve *i* at irregular intervals, a combination of dots and dashes similar to the Morse or any other similar alphabet may be made, and intelligence thus transmitted from one place to another. The red arrows in the drawings show the direction of

the current of air through the instruments and tube. As the plunger *E* rises the air escapes through the aperture *f* in the cylinder *F*. The pressure, however, is still sufficient to uphold the plunger so long as the valve *i* remains open; but the moment it closes the pressure ceases and the plunger drops. From this it will be seen that the aperture contributes materially to the certainty and celerity of the operation of the recording-instrument.

By my invention I am enabled to secure a simple and efficient means of transmitting intelligence, and one which requires no expenditure of material or power while not in operation.

It is obvious that the details of my invention may be modified in various ways without departing from the spirit of my invention; but a detailed description of such modifications is deemed unnecessary here, as they would readily suggest themselves to a skillful mechanic after reading my specification.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of a recording-instrument operated by means of a current of compressed air with a transmitting-instrument which controls said current, for the purpose of transmitting intelligence, substantially in the manner described.

2. The combination of the pen *c* and plunger *E*, substantially in the manner described, for the purpose set forth.

3. Making an aperture, *f*, in the cylinder *F*, for the purpose of securing celerity and certainty in the action of the plunger *E*, substantially as described.

In testimony whereof I have hereunto subscribed my name.

HENRY K. GARDNER.

Witnesses:

WM. D. BALDWIN,
J. SNOWDEN BELL.