Wm. FOSTER Jr.

Pneumatic Signal and Alarm Apparatus.

113646 PATENTED APR 11 1871

Fig. 1.

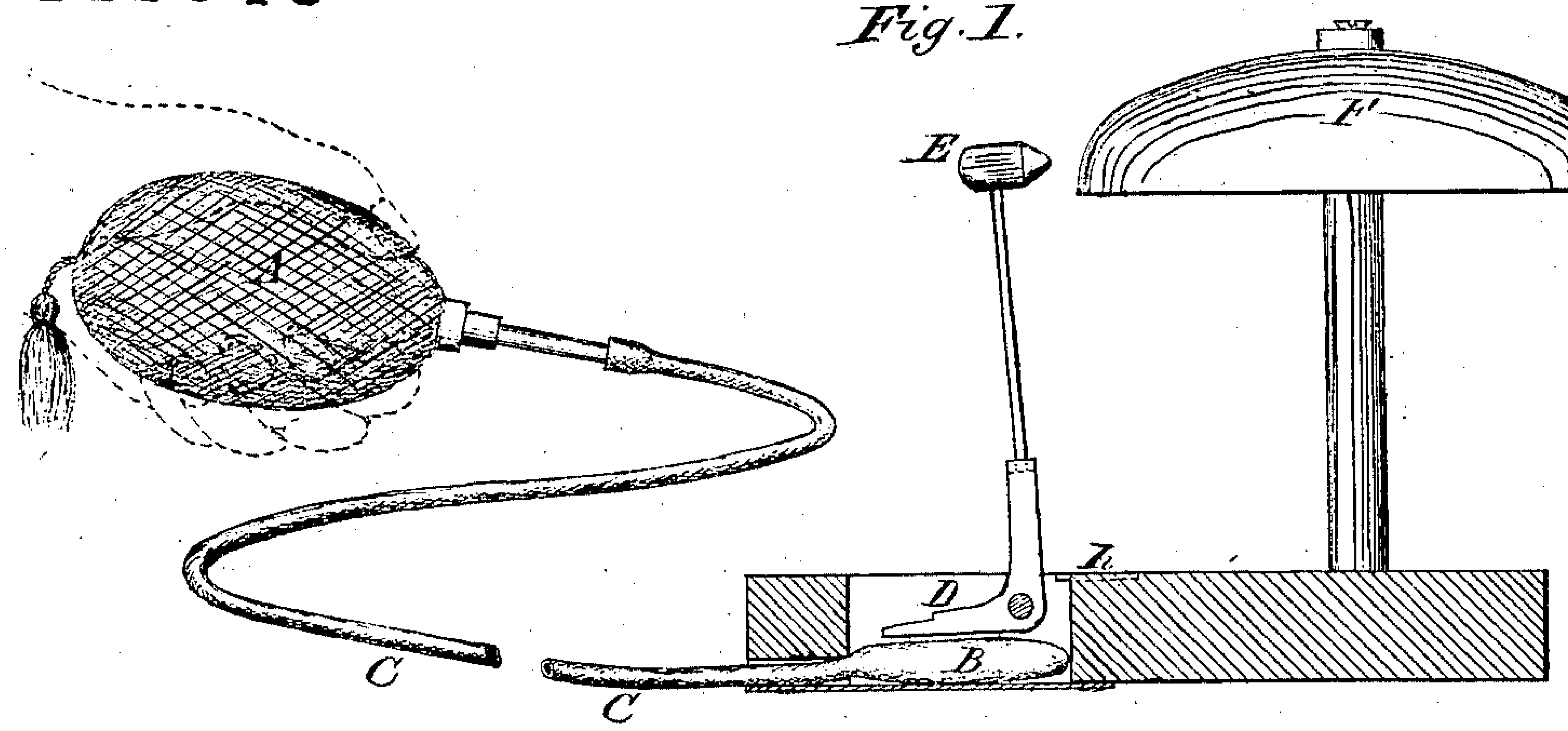


Fig. 2.

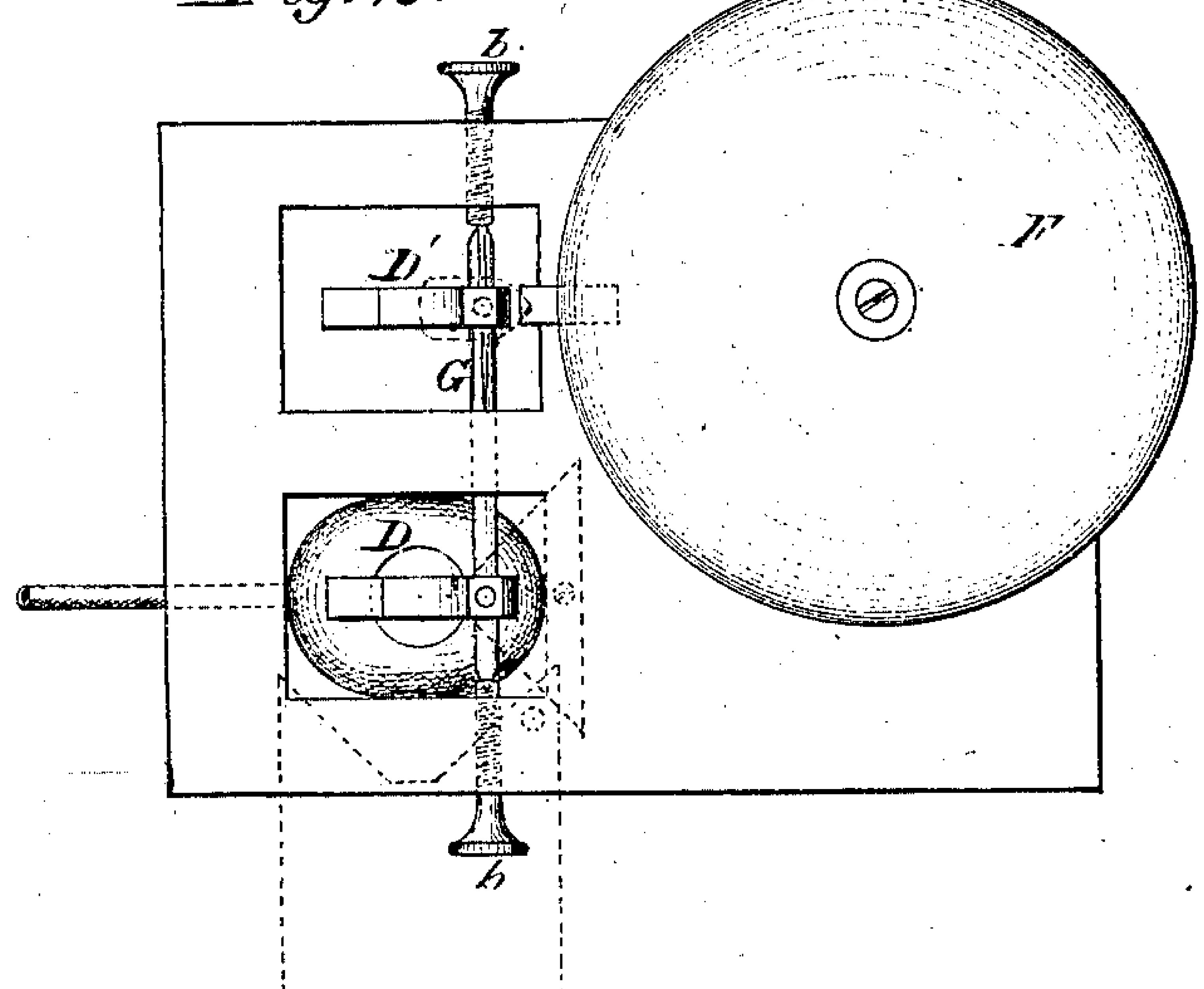
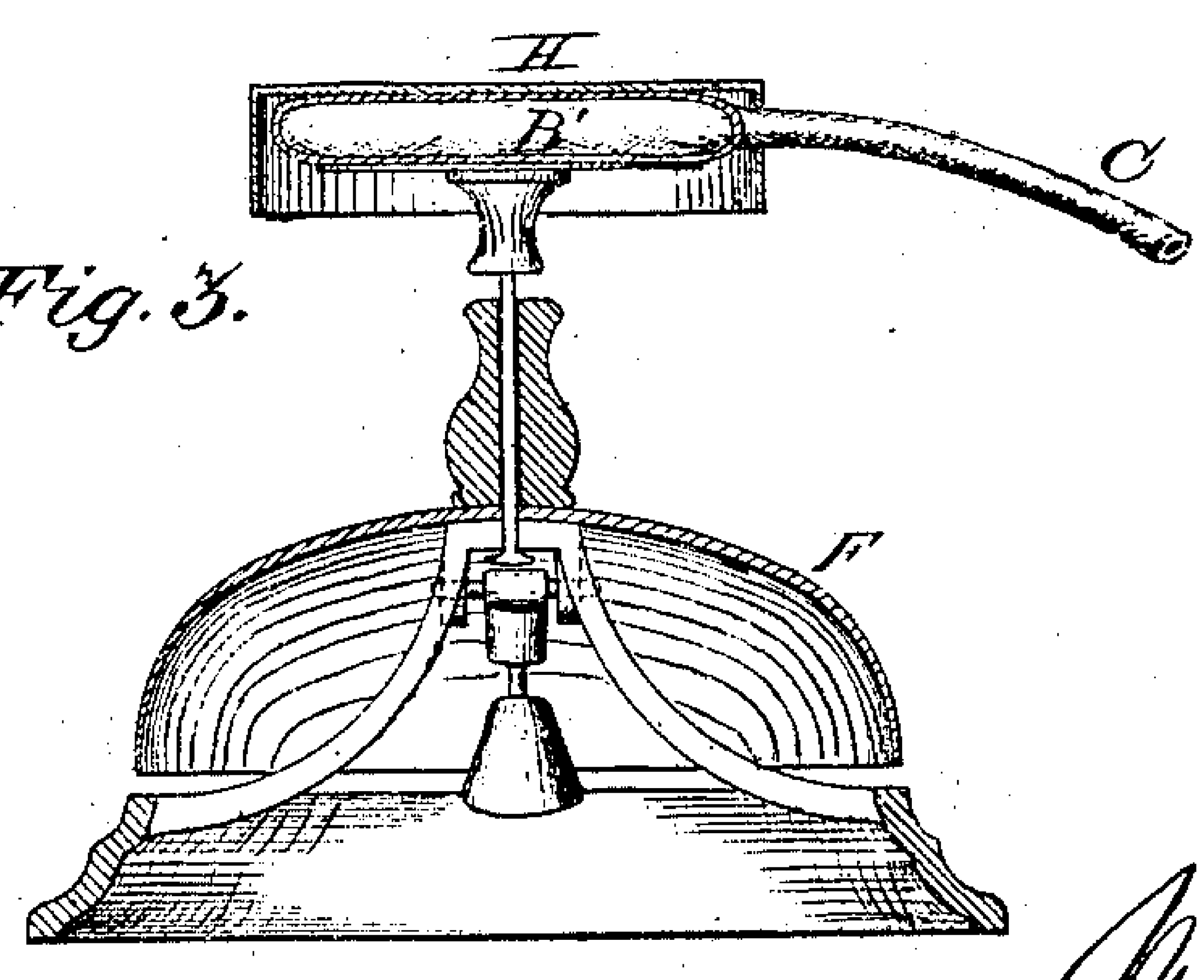


Fig. 3.



Witnesses:

A. Hoermann

[illegible]

Inventor:

Wm. Foster Jr

United States Patent Office.

WILLIAM FOSTER, JR., OF NEW YORK, N. Y.

Letters Patent No. 113,646, dated April 11, 1871.

IMPROVEMENT IN PNEUMATIC SIGNALING APPARATUS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WILLIAM FOSTER, Jr., of the city, county, and State of New York, have made a new and useful Improvement in Pneumatic-Signal Alarm and Telegraph Apparatus; and I hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawing which forms a part of this specification, and in which—

Figure 1 is an elevation, partly in section.

Figure 2 is a plan view.

Figure 3 is an elevation, partly in section, of a modification of the device shown in figs. 1 and 2.

The object of this invention is to simplify the apparatus for transmitting signals by means of air acting through a tube.

In order to make such apparatus generally applicable it must be simple in construction, cheap in cost, and not liable to get out of order.

I have so far succeeded in this that, by my invention, an apparatus suitable for signaling over a distance of several hundred feet can be constructed at a cost but little if any greater than that required for the ordinary device constructed by bell-hangers for similar purposes; and, at the same time, much more efficient in operation and much less liable to derangement.

The following description will enable any one to make and use my invention.

First, I employ two elastic bulbs or bellows of soft vulcanized India rubber or equivalent material, joined by a tube extending from the place at which the signal is to be given to that at which it is to be received.

Second, a vibrating lever with one part resting on the bulb at the receiving-end with sufficient force to cause it to be compressed or collapsed, and another part carrying a hammer in such a manner that when the bulb expands the hammer will strike a bell properly placed, and, after the stroke, recoil or leave the bell.

This arrangement produces an apparatus far simpler and cheaper than any heretofore produced.

In the drawing—

A shows a bulb of soft vulcanized India rubber at the transmitting-end of the line; and

B, a similar bulb at the receiving-end, with the tube C of lead or material which will not expand under the force of the air within when transmitting a signal.

A lead tube of three-sixteenths of an inch diameter will answer for distances not exceeding three hundred and fifty feet.

Upon the bulb B rests a disk or plate, forming part of a lever, simple or compound, with which is connected the hammer, arranged so as to strike the bell whenever the bulb B is made to expand suddenly by the sudden compression of the bulb A.

In figs. 1 and 2 the vibrating lever is made of three parts, viz., a shaft, G, to which is rigidly attached the disk D, and the hammer-arm E, with weight D'.

But it is obvious that the bulb B may be placed directly under the weight D', so that D' will serve both as a disk to receive the expansive force of the bulb B, and also as a weight to compress or collapse the bulb B as soon as the stroke is made and the bulb at the other end of the line released from compression.

The shaft G is held between two bearing-screws *b b*, which may be made to bind more or less, so as to give the lever the proper degree of freedom to vibrate.

A stop, *h*, is placed so as to throw back the hammer-arm, so that the hammer cannot rest against the bell.

In fig. 3 is shown a modification of my invention, so as to adapt it for use with a bell, such as the ordinary table-bell.

In this case, the bulb B', at receiving-end of the line, is placed in a cup, H, situated above the bell, and the plate D, under the bulb, as shown.

The sudden expansion of the bulb B' drives down the plate D and rings the bell in a manner quite similar to the stroke of the hand on the top of the ordinary table-bell.

The tube C may be concealed from view in this case by being made inside of one of the supports shown inside of the bell.

The uses to which this improvement may be applied are quite numerous.

For conveying signals from the house to the various offices and out-buildings it is far superior to any apparatus heretofore in use.

For door-bell, hotel, and shop annunciators it is very convenient.

It is easily arranged as a burglar-alarm by placing the bulb A in such position that, by the opening of a sash, door, or window, it will be compressed, and an alarm will be given.

When used as a door-bell, the bulb A is placed in a recess, so as to be compressed by the act of pulling the common bell-pull or knocker.

In case it is desirable to signal through long distances, the apparatus may be filled with compressed air by means of an ordinary air-pump, which is too

well known to need description. A pressure-gauge should also be attached.

By the arrangement of parts as herein described the impulse given to the bulb A is communicated almost directly to the hammer-arm or lever E.

I make no claim to a bell-hammer retracted by gravity; but,

Having thus described my invention,

What I claim, and desire to secure by Letters Patent of the United States, is—

The combination of the bulbs A and B, tube C, disk D, axle or shaft G, and hammer-arm E, all arranged and combined substantially as described.

Witnesses: WM. FOSTER, JR.

THOMAS D. STETSON,

A. HOERMANN.