

W. FOSTER, Jr.
PNEUMATIC SIGNALING APPARATUS.

No. 113,647.

Patented Apr. 11, 1871.

Fig. 1.

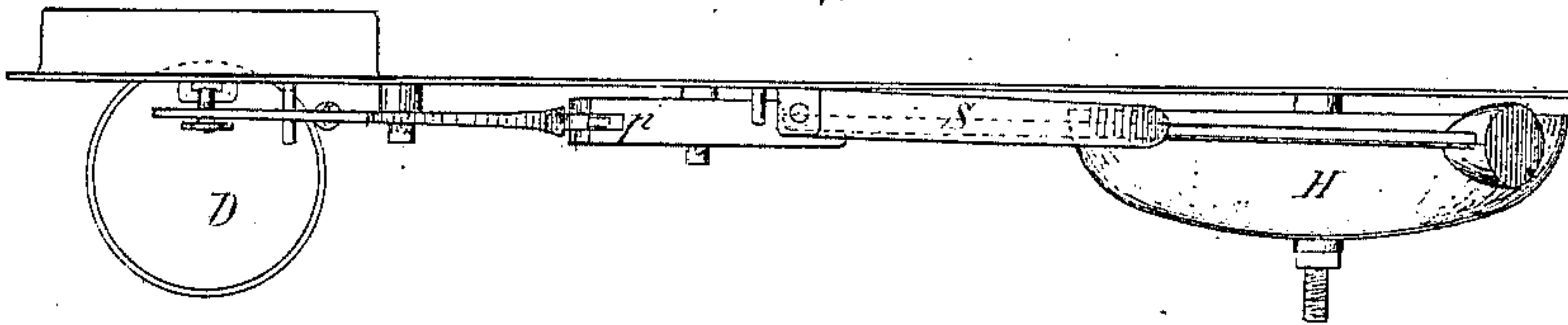


Fig. 2.

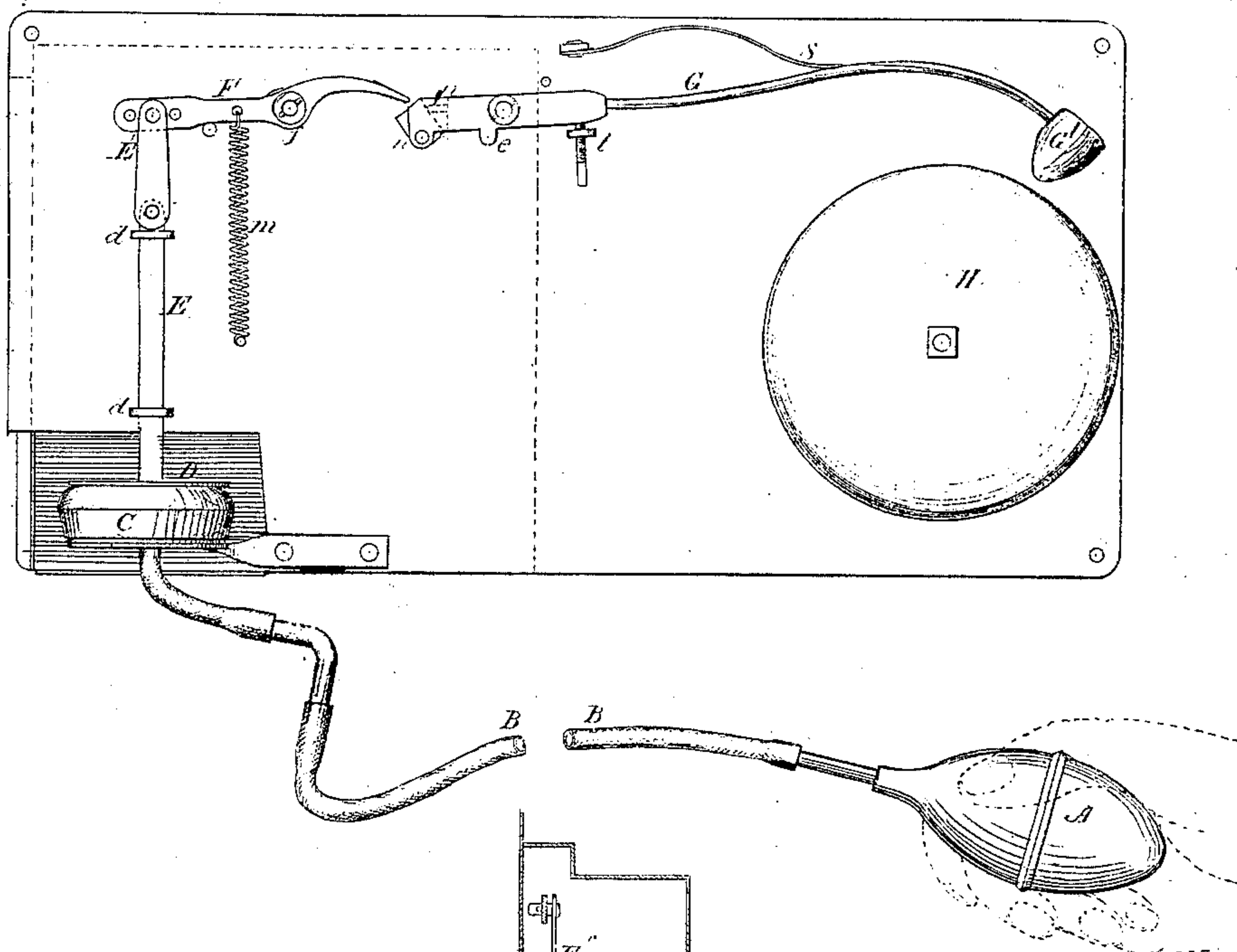
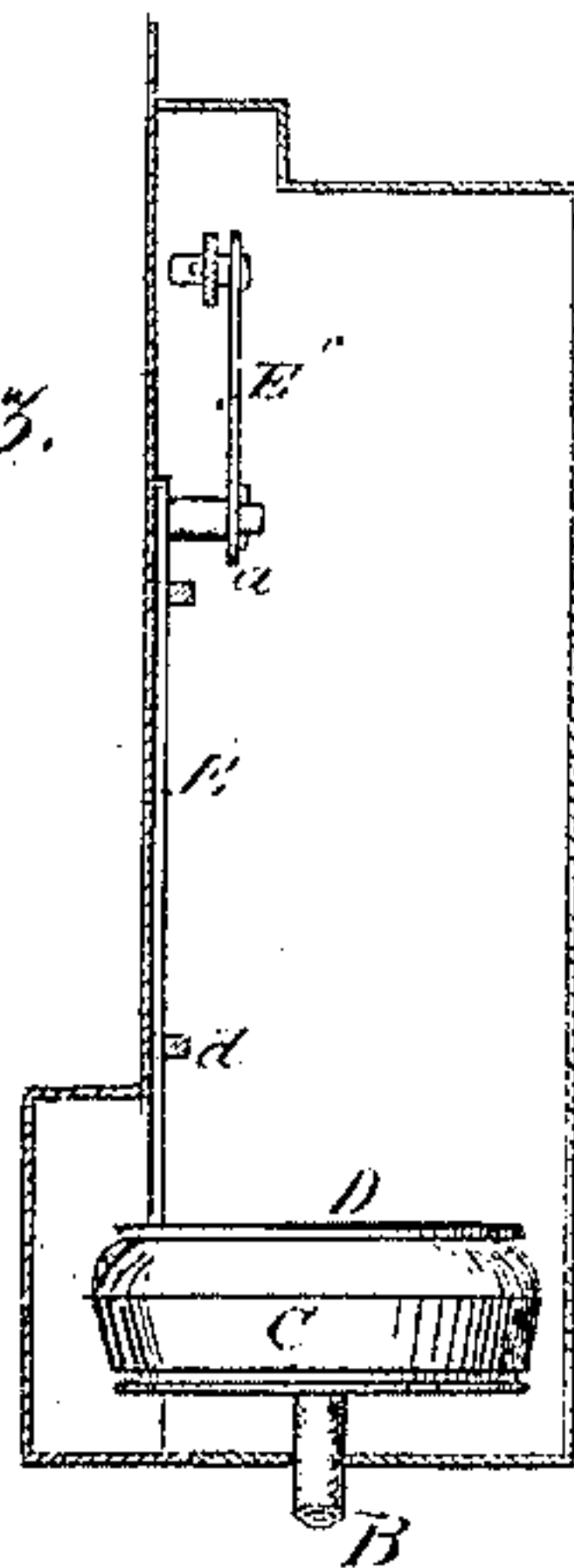


Fig. 3.



Witnesses:
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United States Patent Office.

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

Letters Patent No. 113,647, 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., in the city, county, and State of New York, have invented a new and useful Improvement in Pneumatic Signal and Telegraph Apparatus; and I hereby declare the following to be a full and exact description of the same, reference being had to the annexed drawing, which forms a part of the specification.

Figure 1 is a side view.

Figure 2 is a plan view and elevation showing all the working parts of my apparatus.

Figure 3 is a vertical cross-section and elevation.

The object of my invention is to provide a simple apparatus for communicating signals by means of air operating through tubes by means of a bellows, a series of levers, and springs, as hereinafter set forth.

The pneumatic telegraph is well known, and has been used to transmit signals through such distances as air may be driven through pipes and tubes; but the devices heretofore employed have been complicated, and required some degree of skill to work them. They also were very easily deranged so as not to be useful as a common mode of transmitting signals through limited distances.

For communicating through short distances the speaking-tube and the arrangement of wires or cords to ring a bell are the means everywhere employed, and many ingenious devices for this purpose have been described. The distance through which these may be employed is very limited, generally not beyond the walls of a single building.

For communicating through long distances the electric telegraph is used.

My invention will answer for communicating and signaling through short distances, such as are now accomplished by speaking-tubes and by wires and cords, and will answer also for much greater distances, so as to bring buildings far separated into communication.

The devices are simple and cheap, not liable to get out of order, and may be worked by any person of sufficient intelligence to be employed in any of the useful occupations of life.

The means which I prefer are as follows, viz:

An elastic bulb, A, such as used in blow-pipes and syringes, which is attached to a tube, B, of any suitable material.

The tube B is connected to the bottom of a bellows, C.

On the top of the bellows C is a disk, D, and bar, E, which moves in guides *d d*.

The bar E is connected, by flexible joints and the bar E', to the lever F.

The lever F operates the pivoted lever G, which is mounted like a trip-hammer, so that the hammer G' may be made to strike the bell H.

The spring *m* serves to bring the lever F to its original position after it has been tilted by the rising of the disk D.

In the end of the lever G is a pivotal block, *n*, and back of it a small spring, *p*.

A spring, S, is placed so as to drive the hammer G' against the bell when the lever G, after being raised, is released.

The bar E', at its connection with the lever F, may be adjusted so as to give a longer or shorter motion to the lever F.

The stroke of the hammer G' is regulated by the set-screw *t*.

The operation of the instrument is as follows:

By compressing the bulb A, by means of the hand or other suitable means, the bellows is expanded, the disk D moves the bars E and E' so as to raise the end of the lever F, which turns on the pivot *f* and depresses the end of the lever G until the lever F trips, so that the lever G is released, and the spring S drives the hammer G' against the bell H, so as to give a stroke.

The set-screw *t* is to be so adjusted that the hammer, after giving the stroke, is raised from the bell.

The portion of the lever G which carries the hammer is itself a spring, or is elastic, but stronger than the spring S.

With this instrument signals on the bell may be given very rapidly, and, by means of an arbitrary alphabet or system of signals, communication may be established between the different parts of a building or a ship, and between buildings and structures entirely separated, but at such distances that the air may be driven through the tube B by compressing the bulb A, so as to expand the bellows C.

I do not claim any of the elements or devices which make up my apparatus separately, as they are all well known, and have been frequently employed in various useful machines; nor do I limit myself to the exact forms of the several levers, springs, and pivots which I have described and shown, for these may be varied to some extent.

The apparatus may be made to give signals at both ends of the line by duplicating all the parts. One main conducting-tube will serve for transmitting the air in both directions, and may have any suitable number of branch connections leading to different stations.

The flexibility of the tube B and the capacity of the elastic bulb A to endure all sorts of violence allow my device to be used on floors, and to be operated by the feet under chairs and tables, and to be moved

about to accommodate differences in the lengths of extension-tables and the like, while no ordinary accidents in moving tables and chairs, sweeping, and the like, will injure it. It is for these reasons peculiarly adapted to call servants into a dining-room or signal orders to them without annoying guests or involving the expense and trouble of magnetic telegraphing.

I claim as my invention—

1. The adjustable or movable elastic bulb A and flexible tube B, in combination with a pneumatic

telegraph mechanism, and adapted for use therewith, as specified.

2. The adjustable stop *t*, arranged relatively to the hammer G G' and bell or equivalent H, for signaling by delicate and feeble powers, as specified.

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Witnesses:

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