4 Sheets—Sheet 1.

L. S. & L. WHITE

TELEGRAPHIC KEY APPARATUS.

No. 12,929. Patented May 22, 1855.

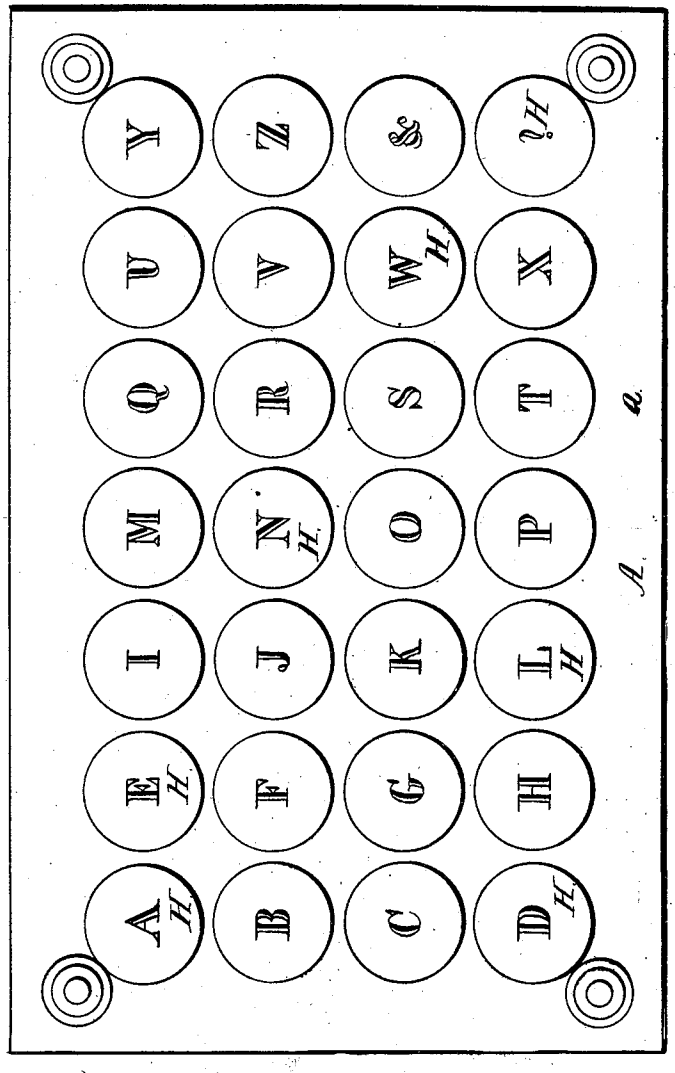


Fig. 1.

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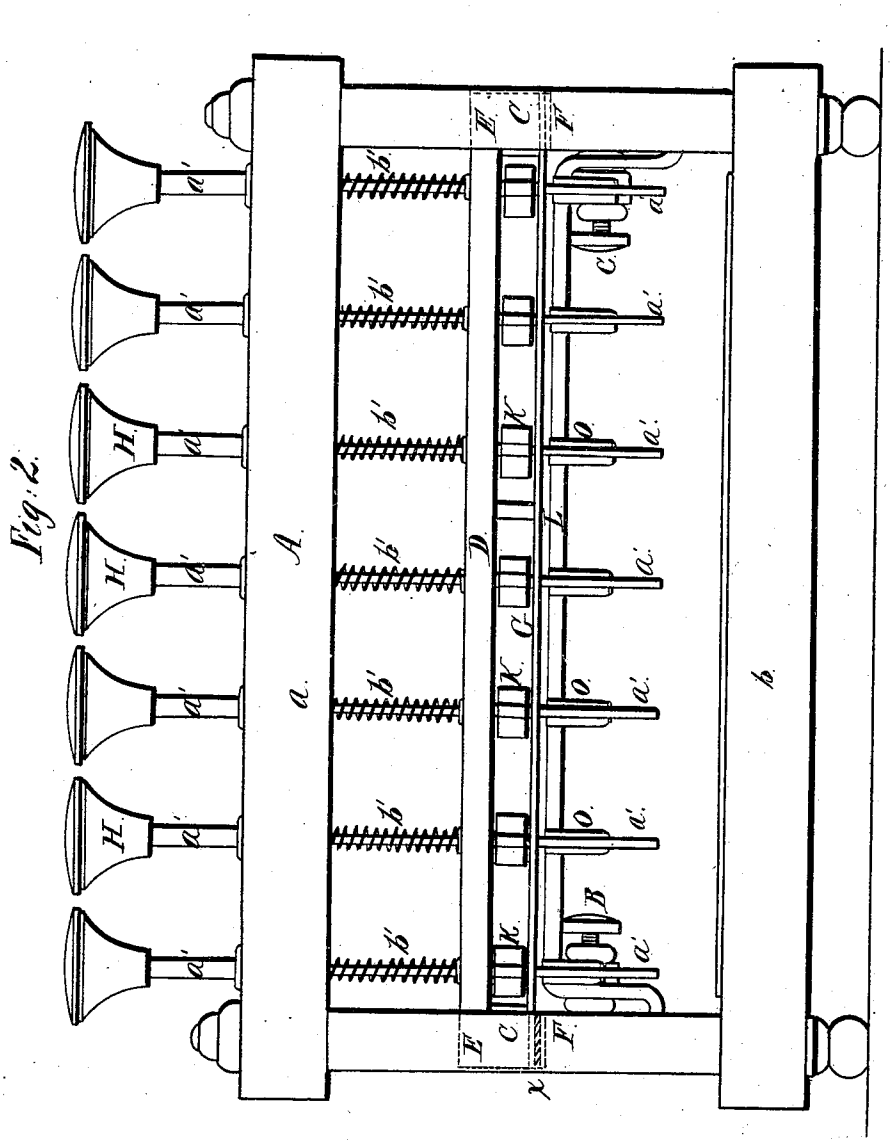
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No. 12,929. Patented May 22, 1855

Fig. 2.



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TELEGRAPHIC KEY APPARATUS.

No. 12,929. Patented May 22, 1855.

Fig. 3.

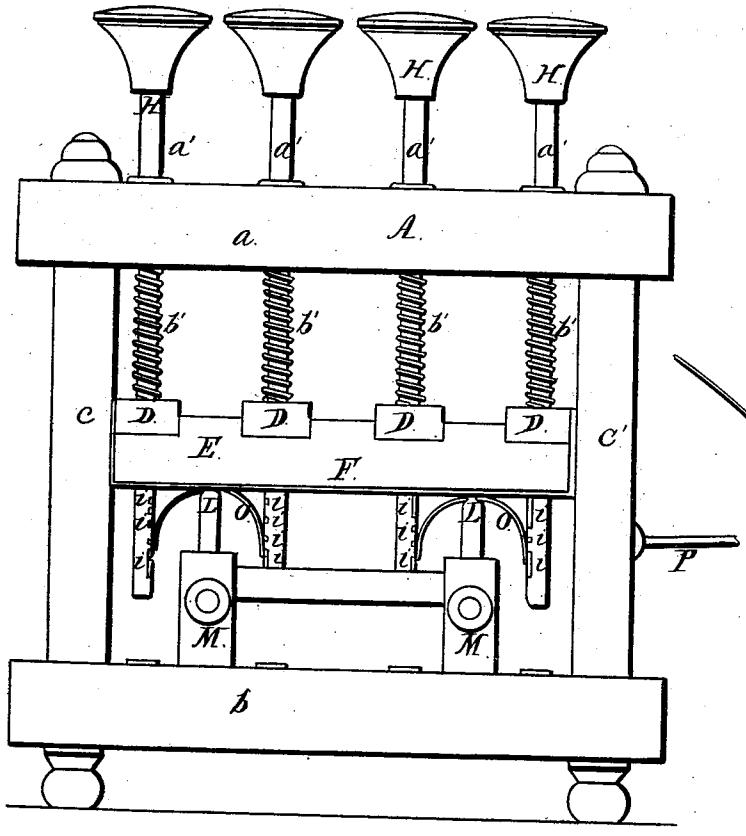
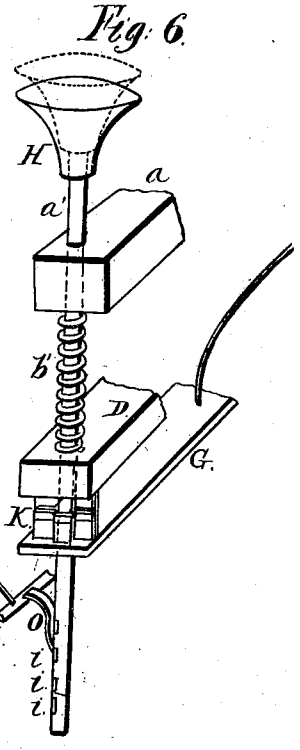


Fig. 6.



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TELEGRAPHIC KEY APPARATUS.

No. 12,929

Patented May 22, 1855.

Fig: 4.

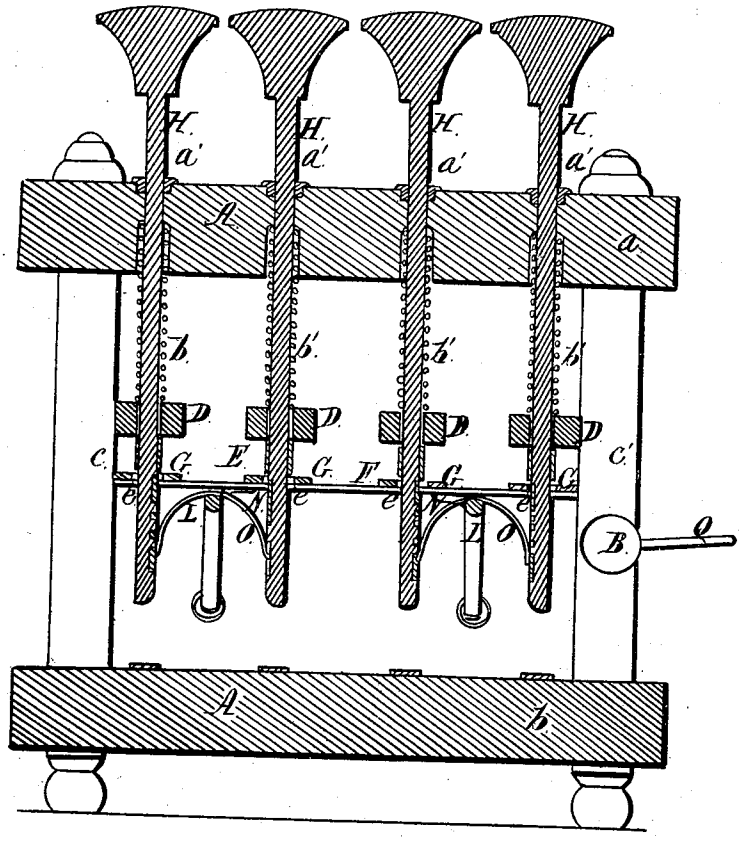
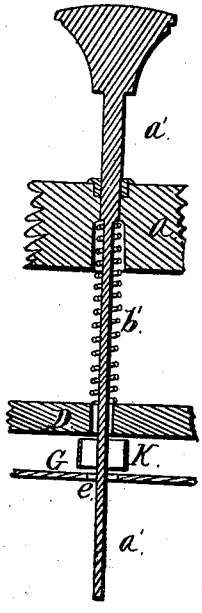


Fig: 5.



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UNITED STATES PATENT OFFICE.

LEROY S. WHITE, OF CHICOPEE, MASSACHUSETTS, AND LEWIS WHITE, OF HARTFORD, CONNECTICUT.

IMPROVEMENT IN TELEGRAPHIC KEY APPARATUS.

Specification forming part of Letters Patent No. **12,929**, dated May 22, 1855.

To all whom it may concern:

Be it known that we, LEROY S. WHITE, of Chicopee, in the county of Hampden and State of Massachusetts, and LEWIS WHITE, of Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Telegraphic Key Apparatus, to be used in opening and closing an electro-magnetic telegraph-circuit, and so as to effect the production of characters indicative of a communication to be transferred; and we do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, letters, figures, and references thereof.

Of the said drawings, Figure 1 represents a top view of our apparatus; Fig. 2, a side elevation of it. Fig. 3 is an end elevation of it; Fig. 4, a vertical and transverse section of it, and Fig. 5 a vertical and transverse section of one of the keys and the metallic and wooden bars through which said key is made to operate.

In the said drawings, A denotes a frame, composed of two boards, *a* and *b*, placed parallel to one another and united together by four metallic posts, *c c c' c'*. To two of these posts—viz., *c' c'*—on one side of the apparatus, positive and negative wires of an electro-telegraphic circuit are to be connected by means of screw-connections, as seen at B C, the wires being indicated in the drawings at Q P.

About midway between the two boards *a b* there is placed a platform, of wood or some other suitable material which is a non-conductor of electricity, the said platform being composed of four or any other suitable number of bars, D D, which are placed parallel to one another and at equal distances apart, and are united at their ends by two cross-bars, E E. Each of these bars E E rests in a metallic saddle or supporting-bar, F, extended from and between two contiguous end posts, as seen in the drawings.

Directly under each of the bars D D, &c., and at a short distance therefrom, a metallic bar, G, is extended from one to the other of the saddle-bars F F, it being attached to one and insulated from the other, which is electrically connected with rods L L, as hereinafter explained, the saddle-bars being respectively electrically connected with the two positive and negative wires of the battery.

The insulator, placed between the bar G and one of the bars F, is seen at *x* in Fig. 2, wherein the bars E E and F F are denoted by red lines. To each of the said bars G and the bar D, directly over it, and the top board, *a*, of the frame, a series of keys, H H, is adapted in such manner as to enable each key of said series to slide freely upward and downward upon and away from the bottom board, *b*. Each of said keys is composed of a metallic bar, *a'*, which passes through and is supported by a helical spring, *b'*, that rests upon the bar D, through which the key plays, such spring serving to elevate the key immediately after it has been moved downward.

The hole or passage *e*, made in the metallic bar G, for the reception of the key, is not to be made of a diameter sufficient to permit the key to come in contact with the bar G, and each key is provided with a friction-slide, K, that is placed on it and between its bars D and G, and is made to slide on the key, but with friction sufficient to cause the key not only, when moving downward, to press and keep it against the bar G, but also, when moving upward, to raise it from the bar G and carry and keep it in contact with the bar D. the slider K being made vertically of a width less than the distance between the bars D and G, while its length is such as to entirely straddle the opening *e* and rest on the bar G when it (the said slide) is forced downward. The object of this friction-slide is to close and break the electric connection between its key and the bar G.

Between each two longitudinal ranges of keys there is a metallic rod, L, which is arranged horizontally and supported at one end by an insulating-post, M, while at its other end it is supported by a metallic connection or arm, N, extended down from one of the saddle-bars F. From this rod L a bent metallic spring, O, extends to and presses against the inner edge of the contiguous key H, as seen in the drawings. Such edge is provided with pieces or strips of ivory, as seen at *i i i*, which are let into it and so as to bring their external surfaces in line with the inner edge of the key. The lowermost one of these strips on

each key is formed with a notch for the end of the spring to take into or catch, so as to arrest any further upward movement of the key when said end passes into said notch.

While the end of the spring is in contact with one of the strips of ivory the electric circuit will be broken; but when in contact with the metal between these strips it will be closed. Consequently, the length of time that the circuit remains closed will depend on the width of the metal passing in contact with the metallic spring; so the time which the circuit will remain broken will depend upon the width of the piece of ivory which may be in the act of moving against the spring. Therefore, if the sizes of the strips of ivory and metal are regulated to produce a closing and breaking of the circuit, as such is generally closed or broken, for the purpose of causing a Morse telegraphic register to produce a character indicative of a letter of the alphabet, a manipulator can, by a simple downward movement of the key, effect the production of such a character. Just before the key descends far enough for the end of the spring O to come in contact with the metal of the key the slider K of said key should have been moved by the key in contact with its bar G. Immediately after the character has been produced by the descent of the key the spring O should rest upon the uppermost one of the ivory strips *i i*, and the extreme end of the spring in contact with the strip should stand a short distance above the metal directly below the said strip, and this when the lower end of the key is brought down to a bearing upon the board *b*. The instant the manipulator removes the pressure of his finger from the key it will rise upward and elevate the slider K from the bar G, so as to break the circuit during the entire upward movement of the key.

Fig. 6 is a perspective view of one of the keys and the parts with which it is immediately connected and operated, the red lines in such figure being made to indicate the positions of the key and the slider K when the latter is moved off the bar G, so as to break the circuit.

If we place upon the heads of the several keys the letters of the alphabet, as seen in Fig. 1, and we apply the above-described apparatus to one terminus of an electro-telegraphic line, a person entirely unskilled in manipulating by an ordinary finger machine or board, such as is used in Morse telegraph and various others to open and close the circuit by mental direction, can operate a telegraphic line so as to send communications over it and to cause its recording-instrument at the other terminus to record the signs of such communication, so that they may be read and understood by a person skilled in reading them, the person sending a message having only to press downward in succession such keys as indicate the letters of the words of the communication to be made.

The advantages of such an apparatus to a line of telegraph will be apparent to any one skilled in telegraphy.

We are aware that it is not new to close and break an electric circuit by means of a moving piece of metal having strips of ivory or other electro non-conducting material inserted within it and made to operate against a metallic spring connected with one pole of an electric battery, while the said moving piece of metal was connected with the other pole thereof. Therefore, we do not claim such to be our invention; but

What we do claim, in combination with a sliding-key circuit-breaker of such description, is—

A friction-slider, a metallic bar, G, and an insulated stop-bar, D, or the equivalent thereof, the whole being made to operate together, substantially as specified.

In testimony whereof we have hereunto set our signatures this 22d day of July, A. D. 1854.

LE ROY S. WHITE.
LEWIS WHITE.

Witnesses:
CHAS. R. LADD,
A. W. UNDERWOOD.