BOEKLEN & STAEHLEN.

Hygrometer.

No. 49,221. Patented Aug. 8, 1865.

Fig: 1.

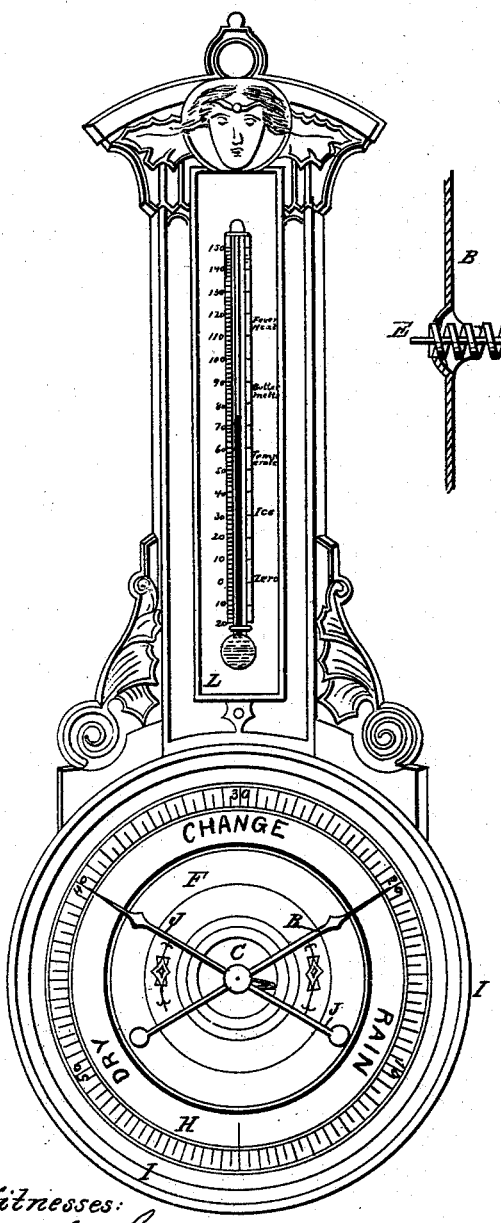


Fig: 3.

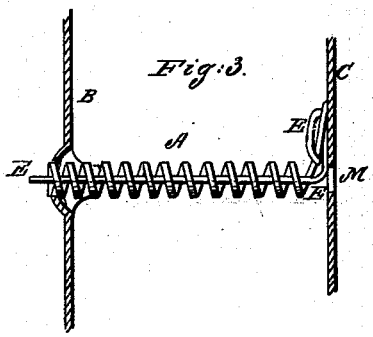
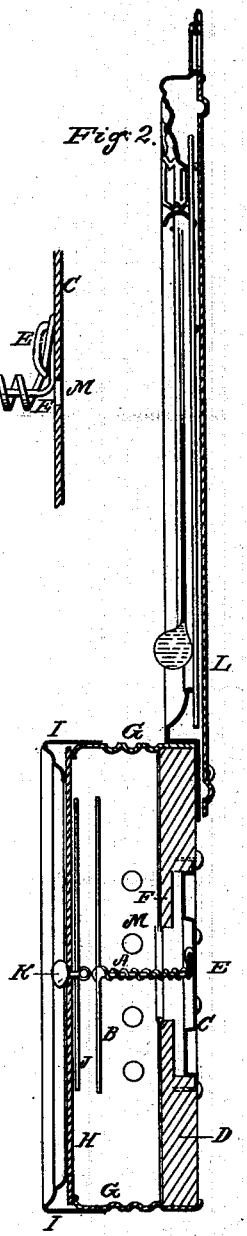


Fig: 2.



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UNITED STATES PATENT OFFICE.

REINHOLD BOEKLEN AND WM. STAEHLEN, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN HYGROMETERS.

Specification forming part of Letters Patent No. **49,221**, dated August 8, 1865.

To all whom it may concern:

Be it known that we, REINHOLD BOEKLEN and WILLIAM STAEHLEN, both of the city of Brooklyn, county of Kings, and State of New York, have made certain new and useful Improvements in Hygrometers; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents a front elevation of our improved hygrometer having a thermometer attached to it. Fig. 2 is a vertical central section of the same. Fig. 3 is a detached view of the hygrometrical spring of the same on an enlarged scale.

Similar letters of reference indicate corresponding parts in the several figures.

The nature of this invention consists, first, in the employment of a peculiar wooden spring which is artificially coiled, hardened, and prepared to absorb and deliver moistness from and to the atmospheric air very rapidly, whereby the same is expanded or allowed to contract in accordance with the amount of said moistness, and also by being properly arranged and one end of it made stationary with a dial, while its other end is provided with an indicator or hand, whereby the said moistness will be indicated on the dial, and a hygrometer will be produced cheaper and in a more accurate manner than those heretofore known or used.

It consists, second, in the employment of rattan and the peculiar treatment to which the same is subjected, whereby said hygrometrical springs are manufactured in a simple and reliable manner to act more sensitively and more regularly expanding than other substances and treatments heretofore known or used.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation.

In order to produce said hygrometrical spring A, Fig. 3, we obtain rattan properly seasoned, or any other suitable kind of wood, but of which the fibers have not lost their natural strength, and we slice the same longitudinally, with care to retain the air-cells of the same, and in a manner to obtain a strip, which we shape with proper tools to an even thickness and to a certain size corresponding with the dial or instrument for which it is intended. After these strips are shaped they are bundled and softened, either by subjecting the bundles to steam or placing the same in boiling water for a certain time. Having thus far proceeded, strip after strip is taken out from the hot water and carefully secured to the end of a wire or mandrel of proper dimension, and the strip wound around said wire, similar to winding a common coiled spring, until the other end of the strip is wound up, which is then secured to the wire also. After having a number of these strips spun upon the respective wires and secured to the same, the whole is allowed to soak in a warm lye of potash in order to remove the greasy matters from the same, and is afterward drawn through hot water again and in a perfectly wet state. The same are one by one dipped in alcohol, to which fire is set and allowed to burn off from it, whereby the pores of the springs or strips are forced open. Hereafter the outside of the springs are hardened and preserved by means of drawing one by one through a gas-flame or over a hot iron, or by means of dressing the circumference with alum or water-glass and coating the same with paraffine, and finally the wires, with the springs, are dipped in a solution of carmine in spirit of sal-ammoniac, and after having become dry again they are taken off from the wires. The springs are now cut off to the proper length and proved by subjecting the same to a certain amount of moist air, and are properly adjusted with a corresponding number of coils to expand corresponding with their intended dial. The springs are now completed, and are ready to be applied to the instrument. To one end of the spring A is now cemented or otherwise secured an indicator or hand, B, as represented in Figs. 2 and 3.

C is a round metal plate, fitted in the back D of the instrument in a manner so that it may be turned around in the same, if desired. Now, the said spring A is secured to this back plate, C, by means of a central guide-wire, E, fixed on the said plate C, where the final end of the wire E is turned over upon said end of the spring A, as clearly shown in Figs. 2 and 3, so that the hand B will properly turn in front of the dial F of the instrument, and that it may be set to any place on the dial by means of turning the said plate C from the back of the instrument.

G represents a metal casing of the instrument, the front of which is covered with a glass plate, H, secured to it by a ring, I.

J is a secondary hand placed on the inside of said glass plate H, and secured to a button, K, on the outside of said plate H through a hole drilled in the center of the plate H. The object of the hand J is to register the movement of the indicating-hand B.

L represents a thermometer attached to the hygrometer, and serves to ornament the same as well as to hang it up by.

M M are perforations to allow a free communication of the atmosphere with the spring A.

The instrument is easily regulated and set, either by a common barometer or by placing the instrument for a short time in a known very dry room, and setting the hand B by means of the plate C to indicate "dry." If afterward then situated to its designated place, the spring A will expand or contract in accordance with the moistness contained in its surrounding air, and indicate the same accordingly on its dial by the hand B.

Instead of using rattan to make the spring A, other woods—such as willow—may be substituted; but rattan is preferred, it being less liable to decay or to lose it properties as a spring.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The employment of the spring A, made of rattan or any other kind of wood, and artificially coiled and prepared, operating in the manner and for the purpose herein shown and described.

2. The combination of the spring A, made of rattan, with the hand B, or its equivalent, for indicating moistness contained in the air surrounding it.

3. The peculiar treatment and construction of the spring A in hardening, preparing, and preserving the same, for the purpose and in the manner herein shown and described.

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