F. A. CLIFFORD.
Health-Lift.

No. 196,435. Patented Oct. 23, 1877.

FIG. 4.

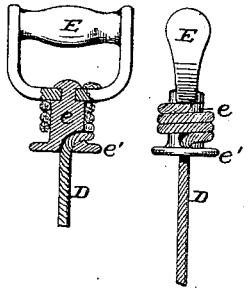
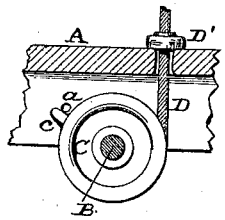


FIG. 3.



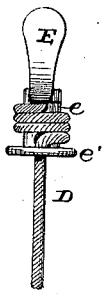


FIG. 5.

FIG. 1.

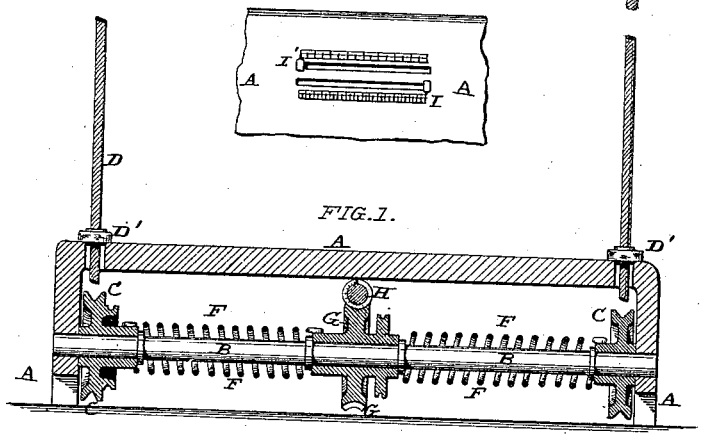
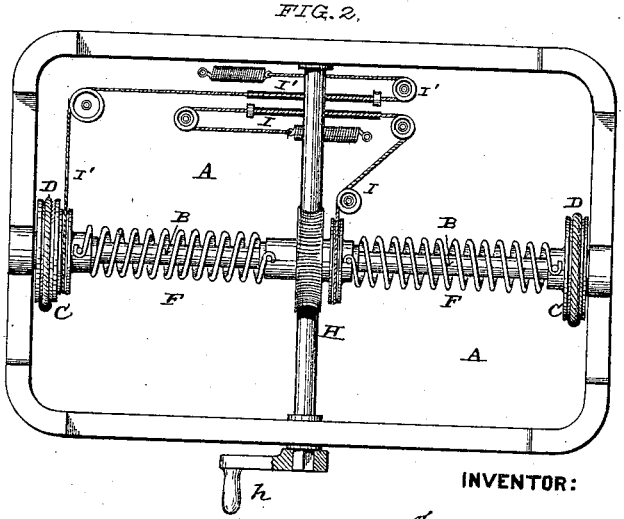


FIG. 2.



ATTEST:

Robert Burns
Le Blond Burdett.

INVENTOR:

Frank A. Clifford.
per Knight Bros
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UNITED STATES PATENT OFFICE.

FRANK A. CLIFFORD, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN HEALTH-LIFTS.

Specification forming part of Letters Patent No. **196,435**, dated October 23, 1877; application filed March 29, 1877.

To all whom it may concern:

Be it known that I, FRANK A. CLIFFORD, of the city and county of St. Louis, and State of Missouri, have invented a certain new and useful Improvement in Health-Lifts, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, making part of this specification.

My improvement relates to a health-lift of that class in which the person lifts against the tension of springs; and consists, first, in the construction of the springs and connections; secondly, in the manner of adjusting the spring-tension by a screw-gear; and, thirdly, in the manner of adjusting the length of the lifting-cords, which is done by means of a swivel upon the handles, upon which more or less of the cords may be wound.

In the drawings, Figure 1 is a longitudinal vertical section of the apparatus. Fig. 2 is a bottom view. Fig. 3 is a detail section, showing the stop device of the lifting' cord-pulley. Fig. 4 is a section of one of the handles. Fig. 5 is a view of the indicator.

A is the stand, and B is a fixed bar, extending horizontally from end to end of the same. Upon the ends of this bar B, beneath the stand, are loose pulleys C C, grooved at the periphery to receive the lifting-cords D D, which are attached at the lower ends to the said pulleys, and which pass through holes in the stand. The cords carry at the upper ends handles E. Upon each handle is a swivel, *e*, whose bottom consists of an out-turned flange, *e'*, through which the rope or cord passes, and the end of the cord is attached to the handle above the swivel, so that by turning the handle on the swivel the cord is wound upon the swivel or unwound therefrom, to regulate the height of the handles to suit the person using the apparatus.

D' is an india-rubber collar on each cord, to prevent slackness of the cord beneath the stand, and thus keep the cords in the grooves of the pulleys C. To each of the pulleys C is attached one end of a spiral spring, F, whose other end is attached to the screw-gear wheel G, turning loosely on the bar B, and kept in place at the middle of the bar by collars, pins, or other usual means. The screw-gear of this wheel engages with a screw, H, turned by a hand-crank, *h*.

The pulleys C are limited in their rotation by projections *c* of the pulleys, which come in contact with projections *a* of the stand. The arrangement is such that the strain of the springs on the pulleys keeps the projections *c* and *a* in contact, except when the pulleys are turned by the lifting of the handles E.

By the hand-screw H the screw-gear wheel G is caused to rotate, to regulate the tension of the spiral springs.

I propose to indicate the amount of tension in the springs by an indicator, I, connected with the wheel G, so as to show its position, and the increase of tension as the handles are raised, by an indicator, I', connected to one of the pulleys C.

I claim—

1. The combination, in a health-lift, of the lifting-cords D, pulleys C, spiral springs F, and tension-regulating screw-gear G H.

2. The combination of the swivels *e*, having flanges *e'*, the handles E, and the lifting-cords D, passing through said flanges, as and for the purpose set forth.

3. The combination of lifting-cords D, pulleys C, and spiral springs F, substantially as and for the purpose set forth.

FRANK A. CLIFFORD.

Witnesses:

SAML. KNIGHT,

ROBERT BURNS.