A. W. LOZIER.

EXERCISING MACHINE.

No. 190,151. Patented May 1, 1877.

Fig: 1

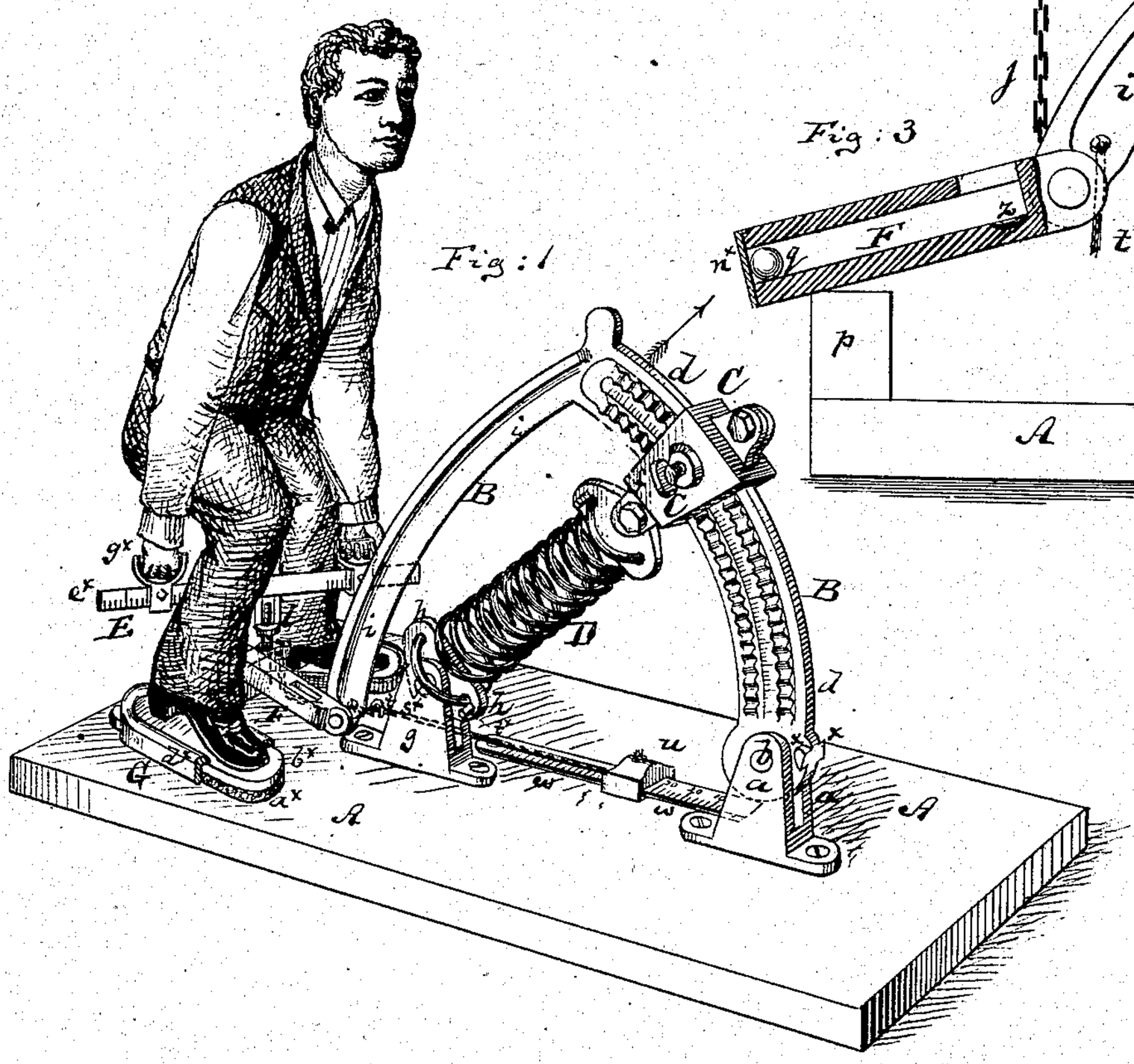

Fig: 3

Fig: 2

Witnesses
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Inventor:
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by his attorney
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UNITED STATES PATENT OFFICE.

ABRAHAM W. LOZIER, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO MRS. J. DE LA M. LOZIER, OF SAME PLACE.

IMPROVEMENT IN EXERCISING-MACHINES.

Specification forming part of Letters Patent No. **190,151**, dated May 1, 1877; application filed February 8, 1877.

To all whom it may concern:

Be it known that I, ABRAHAM W. LOZIER, of New York city, county and State of New York, have invented an Improved Health-Lift, of which the following is a specification:

Figure 1 is a perspective view of my improved health-lift. Fig. 2 is a plan view of the same; Fig. 3, a detail vertical section on an enlarged scale of part of the same.

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

This invention relates to an improved and much simplified construction of health-lift, and consists, principally, in the arrangement of a graduated and doubly-curved lever, which, when operated, excites the resistance of a spring, whose farther fixed point is the center of an arc constituting the curve of the lever, along which the lever end of the spring may be adjusted according to the degree of extension required, as indicated by a graduated scale; also, in the method by which the force so exerted may be registered; in improvement in the foot-support for the exercising person; and in the handle and other features of construction, all as hereinafter more fully described.

The letter A in the drawing represents the bed-plate of the machine. From this bed-plate project lugs *a a*, in which, by a pin, *b*, is pivoted what I term the doubly-curved or segmental lever B. The same is yoke-shaped, as shown in Fig. 1, each of its members being made of arched form, as clearly indicated. The pivoted member *d* of this segmental lever B is corrugated or roughened on its face or edge, and is embraced by a box, C, that contains a plate of metal, $i^{\times}$, pressing upon another plate, *e*, of rubber, or other material, which friction-plate *e* may, by a screw, *f*, be forced against the corrugated face of the arc for holding the box C in a suitable position on the said member. The box C connects with a spring, D, whose lower part is attached to a plate, *h*, which is pivoted by pivot $s^{\times}$ in the lugs *g g*, which also project from the bed-plate, as shown. I prefer that the pin $s^{\times}$ should be substantially central to the arc of the member or segment *d*. For varying the power of the machine, it is only necessary to shift the box C on the corrugated face of the lever B, for the farther the box is placed from the center of motion *b* of the lever, the more power will be required for moving the lever on such center of motion, and for expanding the spring. The pivoted plate *h* facilitates the adjustment of the box C on the arc, and is furthermore so perforated that the spring may be readily shortened or withdrawn from it, if desired, and replaced and relocked by a suitable wedge, $t^{\times}$. The other member *i* of the doubly curved lever connects, by a suitable chain or cord, *j*, with the vertical shank *l* of the handle E. In this handle the chain *j* can be secured by a sliding wedge, *m*, which is pressed and crowded against the vertical face of the chain, as clearly indicated in Fig. 2—that is to say, the chain is drawn through a hole formed in a projecting rib on the handle-shank, and exposed to the friction of the wedge *m* at the point where it issues from said hole. A friction-spring, *n*, tends to keep the wedge *m* in place. The lower end of the arc *i* is, or may be, connected with a suitable hollow box, F, which is pivoted to the end of the arc *i*, and partly supported on a projecting ledge or block, *p*, of the bed. This hollow box F contains a suitable ball or movable clapper, *q*, which, when the lever B has been raised by the operator to the proper extent, drops from a depression, *z*, within which it was contained, against the sonorous plate $n^{\times}$ of the box F, producing a noise that indicates when the exertion should cease. The arc *i* connects also by a cord or chain, *t*, with a sliding index, *u*, which, as the lever B is raised, is drawn along a graduated scale, *w*, and at the end of the motion indicates to what extent the lever B has been moved. The corrugated face of lever B is provided with a graduated scale, to permit the placing of the box C into a position which will exactly indicate a certain number of pounds with which the tension of the spring may correspond, provided the arc is raised to the extent indicated by the clapper. For the purpose of limiting the motion of the arc and preventing the spring from being unduly strained by too great an extension, I provide the lever B, near its pivoted end, with projecting lugs *x*, which, when they strike the

lugs *a* or other stop or stops, prevent the lever from being further raised by the operator. The foot-supports G G are constructed of a body of felt, $a^{\times}$, upon which a sheet of rubber, $b^{\times}$, is placed, the whole being surrounded by an inclosing-frame, $d^{\times}$, of metal or other proper material, as indicated in Fig. 2. I find that the felt beneath the rubber plates improves the position of the operator, by giving a soft and slightly-yielding support without rendering it as expensive as it would be were the support entirely of rubber; but even if it were entirely of rubber it could not be made so soft, to the degree of resistance, as it is when felt is used.

The handle E is made in form of a long bar, $e^{\times}$, from the center of which the shank-piece $l^{\times}$ projects. This piece connects by screw-thread with the shank proper, *l*, so as to allow said shank to be lengthened or shortened.

The grip-pieces $g^{\times}$ $g^{\times}$ are provided with sockets $h^{\times}$ that embrace the bar $e^{\times}$, and are capable of sliding thereon. By set-screws they can be fastened to the bar in any suitable place. By the above arrangement the distance between the grip-pieces may be varied to suit the operator.

It is evident that in place of the spring D an equivalent weight may be used.

I claim as my invention—

1. The combination of the bed-plate A with the curved lever B, which, by its pivoted member *d*, connects with the tension spring or device D, said spring being contained within the hollow of the curved lever, and interposed between the operating-bar and the pivot *b*, substantially as specified.

2. The combination of the curved lever B with the adjustable box C, which connects with the resisting spring or weight D, substantially as herein shown and described.

3. The combination of the curved lever B with the adjustable box C, spring D, and pivoted plate *h*, substantially as herein shown and described.

4. The wedge $t^{\times}$, combined with plate *h*, for the purpose of shortening or lengthening the spring, and securing it when so adjusted, substantially as shown and described.

5. The curved lever B, having its portion *d* made corrugated or roughened, and combined with the sliding box C, set-screw *f*, and elastic friction-plate *e*, substantially as specified.

6. The combination of the curved lever B, and operating-handle E, with the stop *x*, which is applied at or near the pivoted end of said lever, substantially as herein shown and described.

7. The combination, in a health-lift, of the segmental portion *d* of curved lever B with the hollow box F, containing the ball *q*, substantially as specified.

8. The combination, in a health-lift, of the operating-chain *j*, with the handle-shank *l*, the shank having the locking-wedge *m*, and friction-spring *n*, substantially as shown and described.

9. In a health-lift, the combination of the curved lever B, with the sliding index *u*, and chain or cord *t*, substantially as specified.

10. In a health-lift, the foot-support G, constructed of a layer of felt, $a^{\times}$, and a layer of rubber, $b^{\times}$, substantially as herein shown and described.

11. The surrounding frame $d^{\times}$, combined with the felt layer $a^{\times}$, and the rubber layer $b^{\times}$, substantially as specified.

12. In a health-lift, the combination of a curved lever, B, having a graduated scale and a spring, with the pivot-pin $s^{\times}$, to which the curve of said lever is concentric, substantially as described.

13. The handle E, made with the central threaded projection $l^{\times}$ for connection with the threaded shank *l*, and combined with the sliding handles $g^{\times}$ $g^{\times}$, that have sockets, and are fastened by set-screws, substantially as specified.

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Witnesses:

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