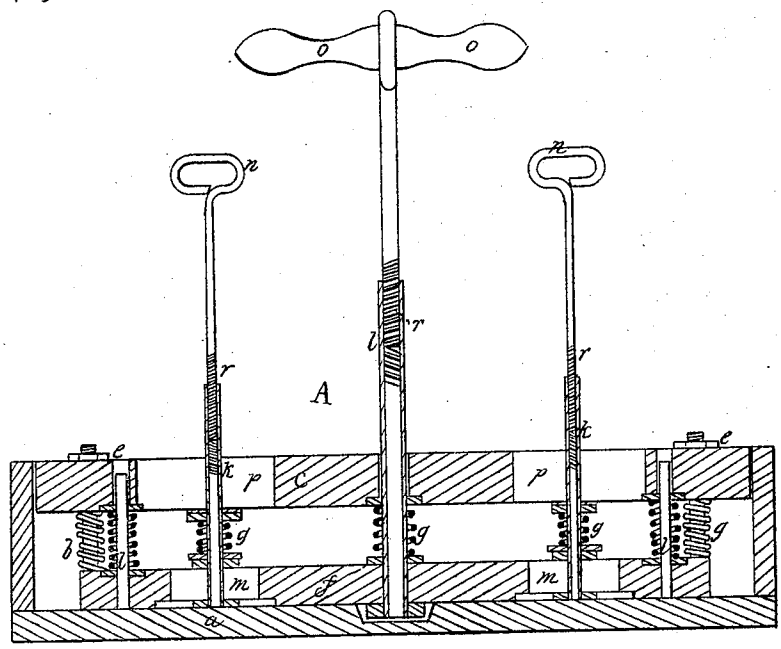
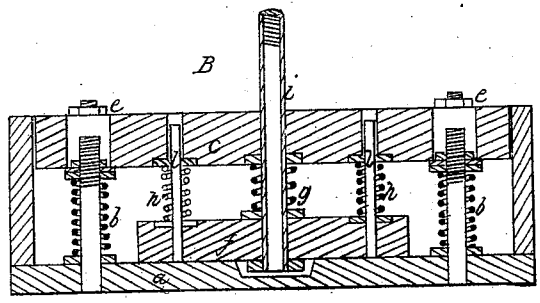
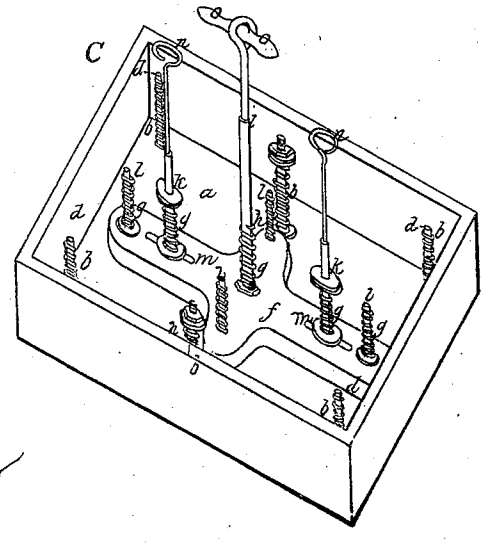
D. P. Butler.

Spring Lifting-Apparatus.

No. 92793. Patented Jul. 20. 1869.







Witnesses:

G. F. Crosby

C. Warren Brooks

Inventor.

D. P. Butler

United States Patent Office.

D. P. BUTLER, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 92,793, *dated July* 20, 1869.

IMPROVEMENT IN SPRING LIFTING-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, D. P. BUTLER, of Boston, in the county of Suffolk, and State of Massachusetts, have invented an Improved Spring Lifting-Apparatus; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practise it.

In the construction of hygienic apparatus, to be used for the development of muscular power, and where the force is exerted to lift, it is customary to provide for gradual development of the lifting-power, by means of series of weights, as is fully shown in the United States Letters Patent, Nos. 48,050, 85,596, and 87,-465, granted to me.

In one kind of weight-lifting apparatus employed by me, I so construct and arrange the various parts, that the weights may be raised by lifting upon two rods rising from opposite ends of the weight-supporting device, or by lifting upon one centre-rod, rising from the centre of such weight-supporting device, a lifter-bar being passed through an eye at the top of this centre-rod, said bar being thrust between the legs, and being grasped at its opposite ends by the hands of the lifter, one before his body and one behind. This I call a side and centre lifting-apparatus.

My present improvements have particular reference to such side and centre-lifting, substituting, however, for weights, a system or series of springs, against the stress of which the muscular power is exerted precisely in the same manner as in lifting weights.

Strictly speaking, the force thus exerted against the springs is not "lifting," as it is the stress of the springs that is overcome, and not the force of gravity, but as the motions of the body are the same as in lifting, and the apparatus is to appearance not unlike the weight-lifting apparatus, I term the apparatus a "spring lifting-apparatus," and shall describe it as such.

My invention consists primarily in combining, with a platform or stand, a spring-plate, held in normal position by a series of springs, and having at its opposite ends, vertical rods for side-lifting, or at its centre a vertical rod for centre-lifting, or both the centre and the side lifting-rods, the springs being compressed by muscular exertion.

The invention also embraces various details of construction and arrangement, which will be fully set forth in the following description of the drawing, in which drawing—

A shows a vertical longitudinal and central section of the apparatus.

B, a vertical and central cross-section thereof.

C, an isometrical perspective, the platform being removed.

a denotes a bed, upon which rests a series of strong springs, *b*, which support upon their tops a platform, *c*, for the lifter to stand upon, the springs forming a yielding cushion for the platform, but the pressure exerted by them may be such that they will not be materially depressed by the weight of the person or the force he exerts in lifting.

Screw-spindles, *d*, extend through the springs, and through the platform, having nuts, *e*, upon their outer ends, the screws and nuts preventing the platform from rising, and permitting it to fall by compression of the springs upon which it rests.

Upon the bed *a* rests a long plate or bar, *f*, and upon this I stand a series of springs, *g h*, as seen at C, two or more of these springs, *h h*, being upon opposite sides of the plate, and the others, *g*, being distributed along the centre of the plate, in the direction of its length.

The centre lifting-rod *i* may pass through one of these springs, and the side lifting-rods *k*, through two others of them, while through each of the others passes a spindle, *l*, fixed to the bed.

The foot of the centre-rod *i* is fixed to the bed, but the two side rods, *k k*, pass, at their lower ends, through slots *m*, the foot of each rod being provided with two nuts, one above and one below the slot, which permit the rods to move toward or from the centre-rod, but retain the connection of the rods to the plate.

The top of each spring, *g h*, or a cap, or washer, resting thereon, presses directly against the bottom of the platform, as seen at A and B.

When the apparatus is to be used, the person stands upon the platform *c*, and grasps the two handles *n n*, of the side rods, if he wishes to "side-lift," or passes the bar *o* between his legs, and grasps its opposite ends with his two hands, if he wishes to "centre-lift," first bringing the handles to such position that he slightly bends his legs at the knees to establish his grasp.

He then straightens his body to its full height, in doing which he draws up the spring-plate *f*, by compressing the springs *g h* against the platform above them, or between the plate *f* and the platform.

The intensity of the springs *b* may be such that the platform *c* will not move materially in distance under the strain exerted in lifting upon the side or centre-rods.

In lifting upon the side rods, they are slid to or from the centre-rod, in accordance with the size of the lifter or his breadth of shoulders, the rods sliding through slots *p*, cut through the platform.

The position of the lifter-bar, or of the handles *n n*, above the platform, is adjusted in accordance with the height or length of limbs of the lifter, the shank of each handle, *n*, or of the lifter-bar, being adjusted for this purpose, by means of a screw, *r*, working in a nut-thread, cut in the lifter-rod, as in my weight-lifting apparatus.

To prevent wear and breakage of the spring, the end of each spring may be cushioned against a rubber washer, or against rubber tubing, pressed into a recess bored in the adjacent surface of the bed, platform, or spring-plate.

In the use of this apparatus, it will be obvious that with a series of gauged springs upon the plate *f*, or upon both the plate *e* and the platform *b*, a certain fixed force will be exerted in lifting the plate a certain distance, or the distance required to straighten the body, and a force in proportion thereto, up to the point where the limbs and body become erect, and this force, so exerted, may be read by a suitable index, the same as is the stress exerted by the weight in weighing with spring-balances or scales.

Now by taking away springs, or by adding more springs, or by using interchangeable springs, of less or greater intensity, the power required in lifting may be graduated the same as in weight-lifting.

To increase the number of springs, or to remove or replace any of them, the platform may be removed, or it may be provided with lids, by raising which, access may be had to the springs of the spring-lifter plate.

It will be obvious that springs may be used in which the expended force expands instead of compresses or contracts the springs, but I prefer the arrangement shown.

I claim a spring lifting-apparatus, in which the muscular force is exerted against a series of springs, substantially as described.

Also, in combination with the series of lifter-springs *g h*, the side and centre lifter-rods, substantially as described.

Also, in combination with the lifter-rods, lifter-plate, and springs *h i*, the platform *c*, supported upon springs, substantially as described.

D. P. BUTLER.

Witnesses:
J. B. CROSBY,
FRANCIS GOULD.