June 2, 1936. E. F. BIRCH 2,042,764

EXERCISER

Filed Dec. 3, 1934

Fig. 1.

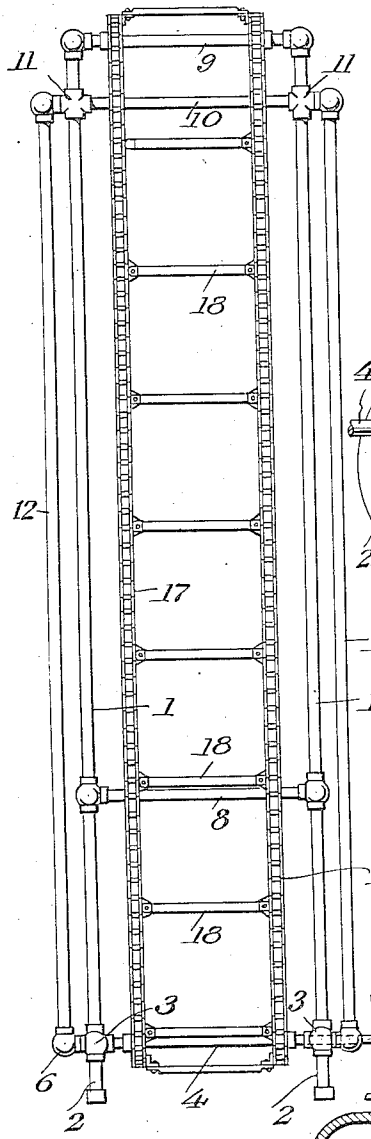


Fig. 4.

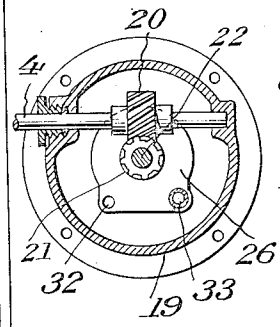


Fig. 2.

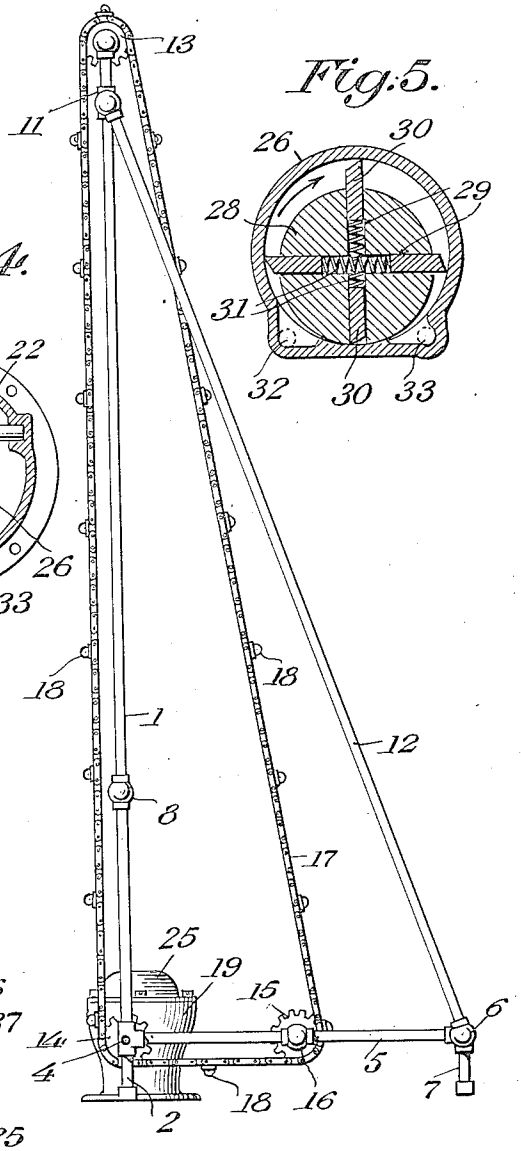
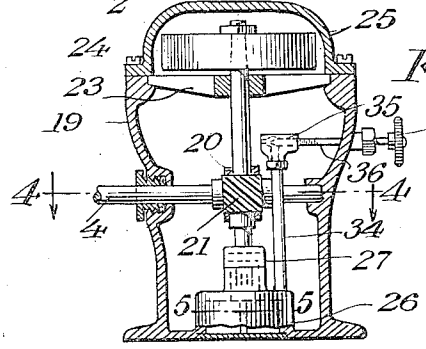


Fig. 5.

Fig. 3.



Erastus Franklin Birch
INVENTOR

BY Victor J. Evans & Co.
ATTORNEYS

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EXERCISER

Erastus Franklin Birch, Eureka, Utah

Application December 3, 1934, Serial No. 755,803

1 Claim. (Cl. 272—69)

This invention relates to exercising apparatus for developing and strengthening the human body and its object is to provide an apparatus which will occupy a small floor space and will furnish exercise for all parts of the body. It is also an object of the invention to provide an apparatus which will furnish resistance to the progress of the person exercising and also to provide means whereby the resistance offered may be easily adjusted to the age or strength of the user. These objects and other objects which will appear as the description proceeds are attained in such an apparatus as is illustrated in the accompanying drawing and the invention consists in certain novel features which will be particularly defined in the appended claim.

In the drawing:

Figure 1 is a front elevation of the exercising apparatus.

Figure 2 is a side elevation.

Figure 3 is a vertical section through the governing mechanism, on a larger scale.

Figure 4 is a section on the line 4—4 of Figure 3.

Figure 5 is a section on the line 5—5 of Figure 3.

The frame of the apparatus comprises two uprights or standards 1 to the lower ends of which feet 2 are coupled by fittings 3. A bracing cross bar 4 is secured in and extends between the fittings and longitudinal side bars 5 are also secured to said fittings, said side bars having their ends more remote from the standards secured in fittings 6 from which depend feet 7, similar to the feet 2. A cross bar 8 connects the standards at an intermediate point of their height, while a third cross bar 9 connects their upper ends and another cross bar 10 is secured in and extends between fittings 11 on the standards near but below their upper ends. Braces 12 are secured to and extend between the fittings 6 and 11, a very strong and rigid frame being thus produced, and the arrangement is such that the braces 12 are at the outer sides of the standards.

Sprockets 13 are mounted on the cross rod 9 at the upper ends of the standards; similar sprockets 14 are mounted on the cross rod 4 at the lower ends of the standards, and a third set of sprockets 15 are mounted on a cross rod carried by and extended between fittings 16 on the side bars 5. Parallel endless chains 17 are trained around the sprockets and are connected at intervals by rungs 18 so that, in effect, a traveling ladder is produced. The sprockets 14 are secured to the rod and said rod is journaled in the fittings 3 and extends laterally beyond one of said fittings but the other sprockets may be rotatable on stationary rods or fixed on rotatable rods as preferred.

The person using the apparatus will endeavor to climb to the top of the ladder but his weight will cause the chains to move downwardly and his efforts to progress will develop agility and strengthen his muscles, especially the muscles of the legs, arms and chest.

The apparatus includes means for governing the movement of the ladder and regulating the same according to the weight and condition of the user. The rod or shaft 4 is extended into and journaled in the sides of a casing 19 which is arranged at the side of the frame and is filled with oil or other non-compressible fluid. Within the casing 19, a spiral or worm gear 20 is secured on the shaft 4 and meshes with a worm 21 on a vertical shaft 22, the upper end of which is journaled in and extends through a spider 23 in the top of the casing, a fly wheel 24 being secured on the shaft above the spider and a cover 25 being secured on the casing to house the fly wheel. The lower end of the shaft 22 extends into a pump casing 26 on the floor of the casing 19 and is journaled in a thrust bearing 27 on top of the pump casing. Within the pump casing, the shaft is connected to a rotary impeller consisting of a disk 28 disposed eccentrically in the casing and having radial recesses or slots 29 in which are slidably mounted blades 30, expansion springs 31 holding the outer ends of the blades against the wall of the casing, as shown in Figure 5. An inlet port 32 admits oil from the oil chamber or casing 19 into the pump or impeller chamber from which it is driven through the outlet port 33 into a pipe 34 rising in the oil casing. The upper end of the tube 34 is connected to a valve casing 35 within which is a cut-off valve of any approved form having its stem 36 extending through the casing 19 and equipped with a handle 37 at the exterior of said casing. By properly setting the valve, the volume or speed by which the oil is permitted to return to the main body of oil may be nicely regulated.

When a person is on the ladder, his weight will cause it to move downwardly as has been stated. The movement of the ladder will rotate the shaft 4 and the rotation will be transmitted through the gearing in the oil casing to actuate the pump and thereby set up a circulation of the oil, the fly wheel imparting steadiness to the operation. Obviously, if the governing valve be wide open the circulation of the oil will be more free than if the valve be nearly closed, so by adjusting the valve the travel of the ladder will be regulated to

obtain the best results with any individual user.

Having described my invention, what I claim is:

In an exerciser, spaced standards, a cross bar connecting the lower ends of the standards, horizontal side bars extending from the lower ends of the standards, a cross bar connecting the side bars, supporting feet for the standards and for the side bars, inclined braces connecting the upper ends of the standards to the outer ends of the side bars, a cross bar connecting the upper ends of the standards, spaced sprockets on each of the said cross bars, parallel endless chains trained around the sprockets, ladder rungs connecting the chains at intervals, and means for controlling movement of the chains as the weight of the user encounters the ladder rungs.

ERASTUS FRANKLIN BIRCH.