J. S. C. NICHOLLS AND M. W. SMITH.

EXERCISING APPARATUS.

APPLICATION FILED AUG. 17, 1920.

1,416,741.

Patented May 23, 1922.

2 SHEETS—SHEET 1.

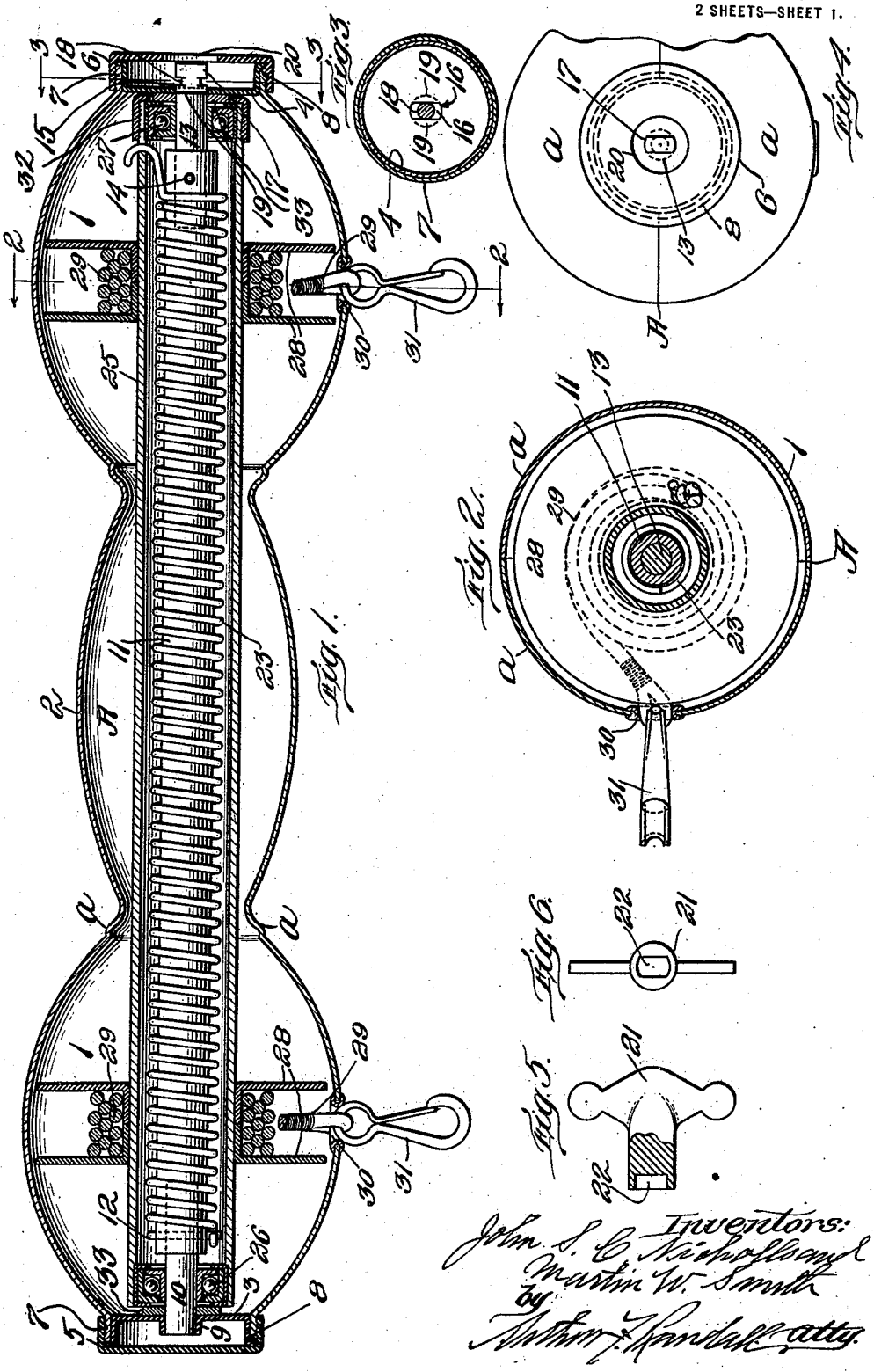


Fig. 1.

Fig. 4.

Fig. 2.

Fig. 6.

Fig. 5.

Inventors:
John S. C. Nicholls and
Martin W. Smith
by
Arthur J. Randall, atty.

J. S. C. NICHOLLS AND M. W. SMITH.

EXERCISING APPARATUS.

APPLICATION FILED AUG. 17, 1920.

1,416,741.

Patented May 23, 1922.

2 SHEETS—SHEET 2.

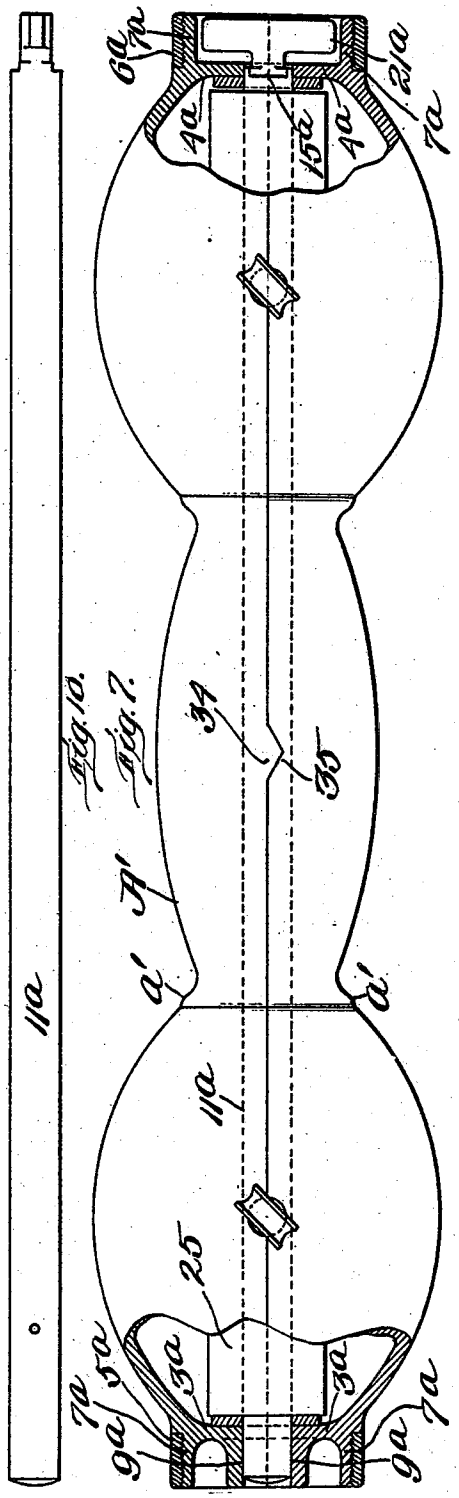
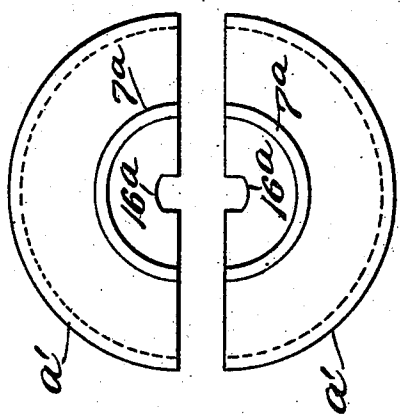


Fig. 9.



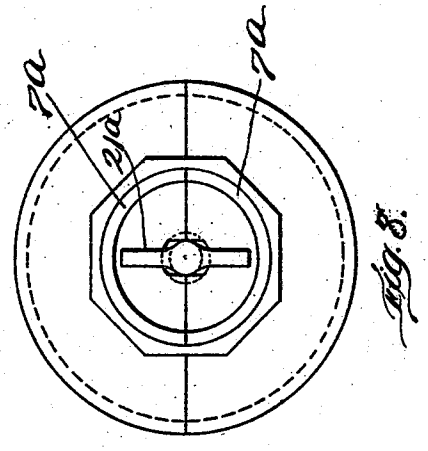


Fig. 8.

Inventors:
John S. C. Nicholls and
Martin W. Smith
by
William F. Randall
Atty.

UNITED STATES PATENT OFFICE.

JOHN S. C. NICHOLLS, OF BOSTON, AND MARTIN W. SMITH, OF SOMERVILLE, MASSACHUSETTS.

EXERCISING APPARATUS.

1,416,741. Specification of Letters Patent. Patented May 23, 1922.

Application filed August 17, 1920. Serial No. 404,281.

To all whom it may concern:

Be it known that we, JOHN S. C. NICHOLLS, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, and MARTIN W. SMITH, a citizen of the United States, residing at Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Exercising Apparatus, of which the following is a specification.

This invention relates to exercising apparatus and particularly to exercising apparatus of that class comprising a hollow handle-piece within which is arranged a drum on to which is wound a cable or the like having one end thereof fastened to the drum, said cable extending from the drum through an opening in the wall of the handle-piece to the exterior of the latter and being normally held wound up upon the drum by means of a spring arranged within the handle-piece and connected with said drum. The usual manner of using an apparatus of this class is to fasten the outer end of the cable to a wall or other fixture and while grasping the handle-piece, move the latter toward and from the place where the outer end of the cable is anchored. As the handle-piece is moved away from said anchorage the cable is drawn out thus winding up the spring which opposes the movement of the handle-piece away from said anchorage, and as the handle-piece is moved toward the anchorage the spring takes up the slack of the cable and rewinds the latter upon the drum.

This invention has for its object to provide an improved exercising apparatus of the class indicated and it consists of an exercising apparatus of this class having the peculiar features of construction and arrangement of parts set forth in the following description and particularly pointed out and defined in the claims at the close thereof.

In the accompanying drawings:

Figure 1 is a central longitudinal sectional view of an exercising apparatus constructed in accordance with this invention.

Figure 2 is a section on line 2—2 of Fig. 1.

Figure 3 is a section on line 3—3 of Fig. 1.

Figure 4 is a partial end view of the apparatus shown in Fig. 1.

Figures 5 and 6 are details of the key hereinafter referred to.

Figure 7 is a side elevation partly broken away of another form of the invention.

Figure 8 is an end view of the same.

Figures 9 and 10 are details hereinafter referred to.

The handle-piece A of my improved exercising apparatus as herein shown is of substantially the same size and shape as an ordinary dumb-bell, comprising two end enlargements or balls 1, 1 connected by a hand grip 2 of relatively small diameter. The handle-piece A is made hollow, the ends thereof being closed by pressed sheet metal end walls 3 and 4 removably fastened in position by pressed sheet metal caps 5 and 6, respectively. The handle-piece A is formed at each end thereof with a cylindrical nipple 7 which is exteriorly threaded to receive upon it one of the caps 5 or 6, both of which latter are interiorly threaded as shown. Both end walls 3 and 4 are cup-shaped and of the same exterior diameter and shape as the interior of the nipples 7 within which they are fitted, each of said cup-shaped end walls being made at its chine with an outwardly extending flange 8 clamped firmly against the end of its nipple 7, or 8, by its cap 5, or 6 so that it cannot rotate relatively to handle-piece A. The end wall 3 is formed with a central circular hole therethrough which provides a bearing 9 within which is journaled a trunnion 10 consisting of a short length of metal rod whose inner end occupies a hole bored into one end of a wooden spindle 11, said metal trunnion being rigidly fastened within said hole by a pin 12. At its opposite end the wooden spindle 11 is similarly bored to receive the inner end of another metal trunnion 13 likewise fastened to spindle 11 by a pin 14. Near its outer end trunnion 13 is, as shown in Figs. 1–4, made with a short length 15 which is non-circular in cross-section and which occupies a correspondingly shaped hole 16 provided through end wall 4 at the center thereof. Thus the trunnion 13 is normally locked against rotating relatively to end wall 4, and at the same time shoulders 19 are provided at opposite sides thereof to bear against the inner face of said wall. Outside of wall 4 the trunnion 13 is made with an end portion 17 that is non-circular in cross-section and connected with the non-circular portion 15 by a cylindrical neck 18 which is about the same

in length as the thickness of wall 4. The cap 6 at this end of the handle-piece A is made with a central hole 20 to admit the socket end of a key or wrench 21, Figs. 5 and 6, said key or wrench being made at its end with a socket 22 which is of the same size and shape, both as to cross-section and depth, as the non-circular end portion 17 of trunnion 13.

The spindle 11, together with its trunnions 10 and 13 are yieldingly urged toward the wall 4 by a helical spring 23 surrounding said spindle, so that said spring normally holds shoulders 19 against the wall 4 with the non-circular portion 15 of trunnion 13 within the non-circular hole 16 of said end wall. It will be clear, however, that by inserting key 21 in hole 20, sliding it onto the non-circular end portion 17, and pushing said key inwardly until it bears against wall 4, the spindle 11 together with its trunnions may be shifted axially against the force of spring 23, and that when this is done the non-circular portion 15 of trunnion 13 is moved out of hole 16 and the cylindrical portion 18 into said hole thus freeing the spindle 11 from wall 4 so that it may be rotated either to wind up or unwind spring 23. It will also be clear that as the key is withdrawn the spring 23 shifts the spindle back toward the right replacing the non-circular portion 15 within hole 16. The spring 23 thus serves two purposes, viz, to rotate spindle 11 and also yieldingly urge it toward wall 4 so as to hold said spindle interlocked with the wall.

Rotatably mounted at its ends upon the trunnions of spindle 11 is a metal tube 25 within which is arranged the spring 23, one end of said spring being fastened to pin 12 near one end of the spindle and the opposite end thereof being fastened to tube 25. Ball bearings 26 and 27 are provided between the ends of tube 25 and trunnions 10 and 13, the bearing 26 being permanently secured within its end of the tube and the bearing 27 being removably secured within its end of said tube by an interiorly threaded cap or thimble 32 screwed onto the exteriorly threaded end of tube 25.

The tube 25 has fast upon it two pairs of flanges 28 and to one of the flanges of each of said pairs is secured the inner end of a cable 29 normally held wound upon tube 25 by the spring 23. Each cable 29 extends from tube 25 through a hole 30 formed through the wall of handle-piece A to the exterior of the latter where it is provided, at its outer end, with a snap-hook 31 which is greater in size than the hole 30 so as to serve as a stop to limit the movement of the cable into handle-piece A under the influence of spring 23.

Fibre washers 33 mounted upon trunnions 10 and 13 between the ends of tube 25 and walls 3 and 4 prevent wear of said tube and walls.

Preferably the handle-piece A is made from two sheet metal segments a, a pressed to shape by means of dies and which, when placed together, provide a hollow sheet metal dumb-bell-shaped handle-piece having circular nipples at its ends adapted to be exteriorly threaded to receive upon them the caps 5 and 6, said nipples each being constituted by two semi-circular nipple segments. As will be clear, the caps 5 and 6 serve not only to fasten the walls 3 and 4 to the handle-piece A but also to fasten the two segments a—a together.

If desired the non-circular outer end of trunnion 13 may be used as a handle or finger piece by means of which the spindle 11 may be manually manipulated to adjust or regulate the normal stress of spring 23, thus dispensing with key 21.

In Figures 7 to 10, inclusive, is illustrated a form of the invention, in which the spindle 11^a, shown by itself in Fig. 10, is a single piece of metal rod provided at one end with an integral handle 21^a. The handle piece A′ consists of two concave-convex dumb-bell-shaped sections a', a' of cast metal, made at their ends with abutting walls 3^a and 4^a. The walls 3^a are formed with registering semicircular notches 9^a, 9^a within which the adjacent cylindrical end of spindle 11^a is journaled, while the abutting edges of walls 4^a are made with registering notches 16^a which provide a non-circular aperture that is normally occupied by the non-circular portion 15^a of spindle 11^a. The spindle 11^a has a tube or sleeve 25 mounted upon it and connected therewith by a spring (not shown) like the spring 23 of Fig. 1.

Exteriorly threaded registering nipple segments 7^a are provided at the opposite ends of segments a' upon which are screwed nuts 5^a and 6^a by which the two segments a' are fastened together.

Upon one side edge of one section a' is provided a lug 34 occupying a notch 35 formed in one side edge of the other section to lock the two sections together against endwise displacement.

The improved exercising apparatus above described is of very simple, inexpensive and strong construction; the pull of the spring upon the cables during use of the apparatus remains substantially constant owing to the comparatively great length of spring which it is possible to use, and the stress of the spring can be regulated with ease and dispatch to suit the user.

What is claimed is:

1. An exercising apparatus of the character described comprising a handle-piece consisting of two concavo-convex metal sections each made at opposite ends thereof with nip-

ple segments; means fitted onto said nipple segments to hold said sections together; a drum rotatably mounted within said handle-piece; a cable having one end thereof fastened to said drum, said cable extending from said drum through a hole in said handle-piece to the exterior of the latter, and a spring within said handle-piece and connected with said drum for winding said cable onto the latter.

2. An exercising apparatus of the character described comprising a hollow handle-piece consisting of two concavo-convex sections each made at its ends with nipple segments, said sections being disposed side-by-side with their nipple segments registering to form a complete nipple at each end of said handle piece, and each complete nipple being exteriorly threaded; an interiorly threaded nut screwed onto each nipple; a drum rotatably mounted within said handle-piece; a cable having one end thereof fastened to said drum, said cable extending from the latter through a hole in said handle-piece to the exterior of the latter, and a spring within said handle-piece connected with said drum for winding said cable onto the latter.

3. An exercising apparatus of the character described comprising a hollow handle-piece consisting of two concavo-convex dumb-bell sections each made at its ends with nipple segments, said sections being disposed side by side with their nipple segments registering in pairs to provide two complete nipples each of which is exteriorly threaded; an interiorly threaded nut screwed onto each of said complete nipples; a drum rotatably mounted within said handle-piece; a cable having one end thereof fastened to said drum, said cable extending from the latter through a hole in said handle-piece to the exterior of the latter; a spring within said handle-piece connected with said drum for winding said cable onto the latter, and attaching means secured to the outer end of said cable.

4. An exercising apparatus of the character described comprising a hollow handle-piece; a spindle mounted within said handle-piece with provision for rotary and endwise movement thereof; a drum rotatably mounted within said handle-piece; a cable having one end thereof fastened to said drum and extending from the latter through a hole in said handle-piece to the exterior of the latter; a spring having one end thereof connected with said drum and the other end thereof connected with said spindle so as to act rotatively upon the drum and in an endwise direction upon the spindle; means on said spindle normally held interlocked with said handle-piece by said spring to prevent rotation of said spindle, said means being disengaged from the handle-piece to permit of adjustment of said spindle and spring by endwise movement of the spindle in opposition to the spring.

5. An exercising apparatus constructed in accordance with claim 4 but having one end of the spindle extending to the exterior of the handle-piece so as to be accessible for use in manual manipulation of said spindle.

6. An exercising apparatus constructed in accordance with claim 4 but having one end of the spindle extended to the exterior of the handle-piece and provided with a handle.

In testimony whereof we have affixed our signatures.

JOHN S. C. NICHOLLS.
MARTIN W. SMITH.