

Oct. 12, 1965

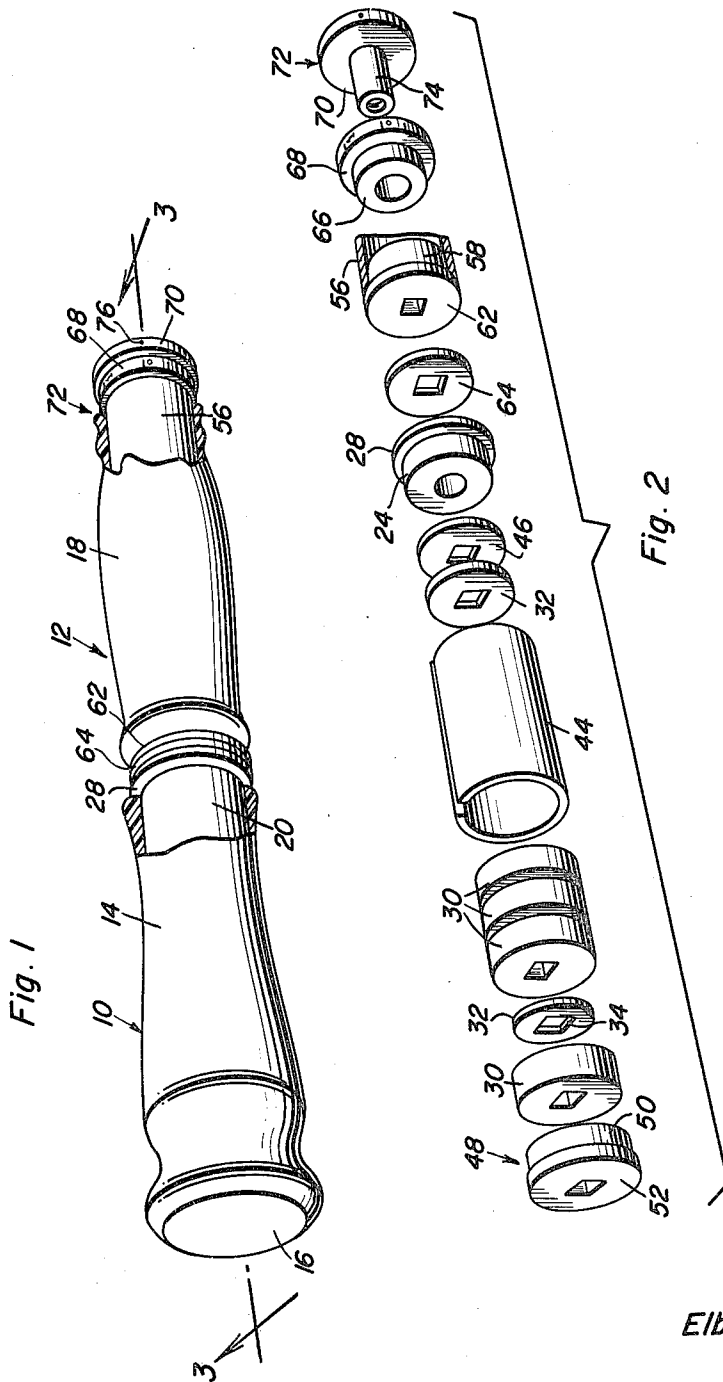
E. C. WILLIAMS

3,211,453

HAND, WRIST AND ARM EXERCISER

Filed Nov. 21, 1962

2 Sheets-Sheet 1



Elbert C. Williams

INVENTOR.

BY *Oliver A. Brown*  
and *Harvey B. Jacobson*  
Attorneys

Oct. 12, 1965

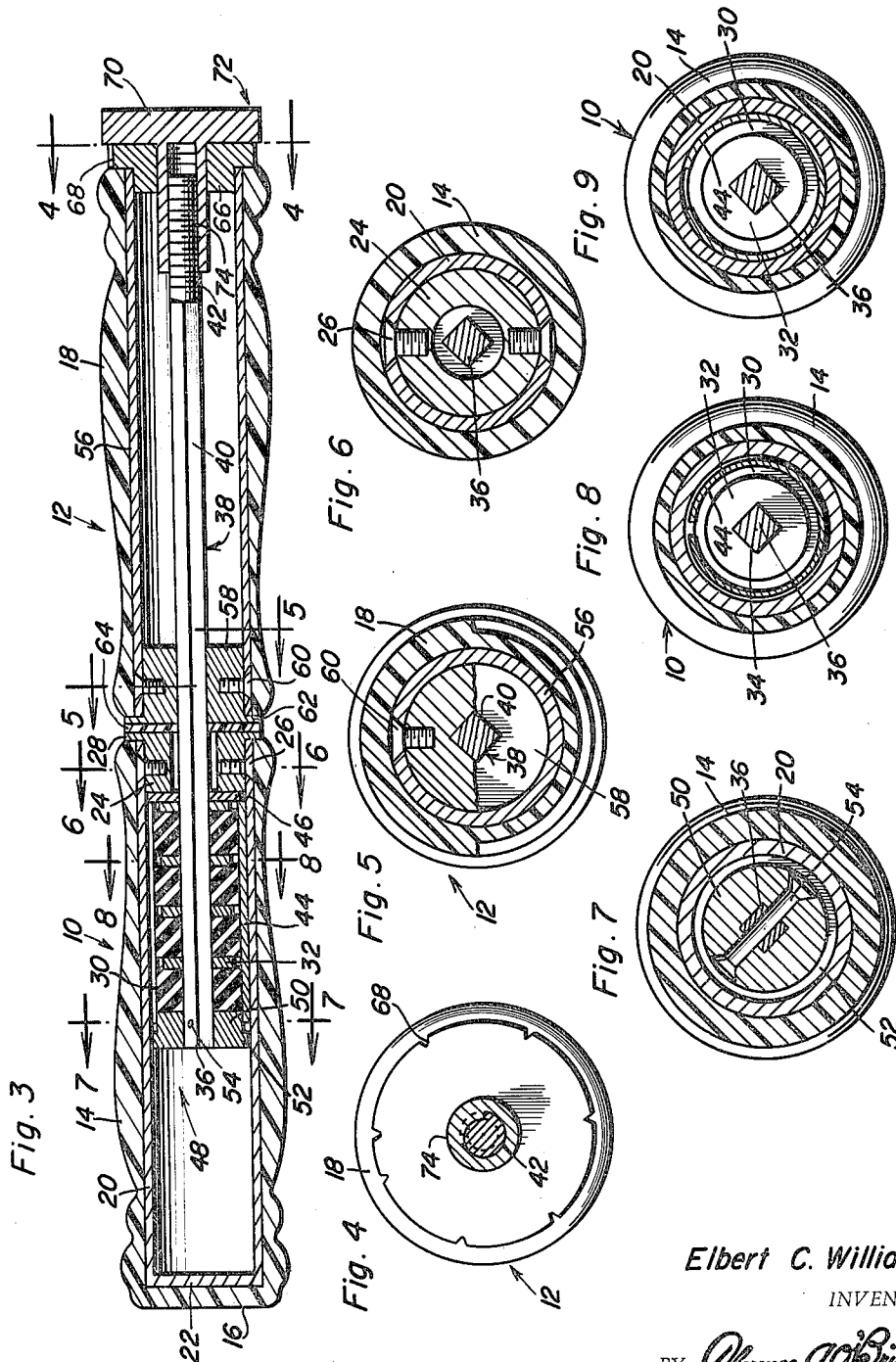
E. C. WILLIAMS

3,211,453

HAND, WRIST AND ARM EXERCISER

Filed Nov. 21, 1962

2 Sheets-Sheet 2



Elbert C. Williams

INVENTOR.

BY *Clarence A. O'Brien*  
*and Harvey B. Jackson*  
Attorneys

1

3,211,453

## HAND, WRIST AND ARM EXERCISER

Elbert C. Williams, Medford, Oreg., assignor, by direct and mesne assignments, to Will-Hav Mfg. Co., a corporation of Oregon

Filed Nov. 21, 1962, Ser. No. 239,138

3 Claims. (Cl. 272-68)

The present invention relates to a portable manually usable appliance of a type characterized by interconnected axially aligned handgrips one for the left hand and the other for the right hand and which when gripped and manipulated relative to each other function to exercise the user's hands, wrists, arms and shoulders.

As will be doubtless evident from the explanatory nature of the opening statement of the invention hand implements and appliances for strengthening purposes and which in instance after instance were thought to be geared to the needs of the various users are old and well known. Persons conversant with the state of the art to which the invention relates are aware that it is old to provide a wrist exerciser, for example, which utilizes end-to-end cylindrical or tubular members, means for operatively joining the contiguous ends of the members together, and, in addition, to provide friction clutch means and to employ the latter in a manner to increasingly resist, according to adjustment, the relative rotation between the two handgrips. An exerciser characterized by the structure briefly recited is disclosed in U.S. Patent 2,668,055 of February 2, 1954. Accordingly, if the reader will familiarize himself with the disclosure in the stated patent he will then have comprehended the general background and state of the art to which the present invention relates.

A general objective is to structurally, functionally and in other ways improve upon the Sharp et al. Patent 2,668,055 and generally analogous manually manipulatable appliances and implements. To the end desired and to achieve optimum function a number of significant improvements, those which are acceptable to the manufacturer, retailer and user, have been worked out and perfected. Whereas, for example, the prior art adaptation utilizes a mechanical clutch with fiber washers moving between stationary metal washers and requires a tension spring to achieve desired friction results the present invention involves and resorts to the use of a highly efficient readily controllable brake, more particularly, a brake whose component parts are embodied in a simplified assembly controllably housed in an accompanying hollow handle or casing provided therefor.

More specifically the present invention comprises a simple, practical and an efficient appliance embodying a pair of companion end-to-end axially aligned handgrips. One grip is provided for each hand the same being appropriately shaped and contoured for safe and reliable retention in the hand when the hand is wrapped around it similar, for example, to composition and rubber grips which are used on the handle bars of a bicycle. These two grips are coupled in axial alignment, each have a tubular casing or hollow handle, the contiguous inner ends being plugged and the plugs being disposed in abutting relationship and relatively movable one in relation to the other by turning the handgrips in opposite rotatable directions. The brake assembly is in one handle while the other handle is provided at an outer end with a finger-turned knob, said knob serving to actuate a brake operating rod and said rod being arranged with one end portion connected to the friction brake means and the other end portion adjustably and operatively connected with the knob.

Stated somewhat more broadly it is a general objective to improve upon and reduce the number of component parts entering into the overall combination and

2

to increase the efficiency of the implement or appliance as a structural entity, to so construct and assemble the component parts that the finished product will be less costly to manufacture and which is also susceptible of ready repair and adjustment by unskilled repairmen.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a view in perspective with portions of the rubber or equivalent grips broken away and shown in section showing an exerciser constructed in accordance with the principles of the present invention;

FIGURE 2 is an exploded perspective view wherein the component parts which are normally concealed within the confines of the handgrips are illustrated in a systematic ready-to-assemble manner;

FIGURE 3 is a view in section and elevation and taken on an enlarged scale on the plane of the section line 3-3 of FIGURE 1;

FIGURES 4, 5, 6, 7 and 8 are exaggerated cross-sectional views taken on the section lines 4-4, 5-5, 6-6, 7-7 and 8-8, respectively, of FIG. 3; and

FIGURE 9 is a view corresponding to FIGURE 8 but which serves to show the manner in which the split sleeve or brake shoe is expanded to apply a maximum braking result.

With reference to FIGS. 1 and 3 it will be evident that the composite or multi-part handgrip at the left is denoted by the numeral 10 while the companion or complementary handgrip at the right is denoted by the numeral 12. The conformingly shaped rubber or equivalent component (the grip proper) is denoted at 14 and it is closed at the lefthand end as at 16 and open at the inner or righthand end. On the other hand the component of the righthand grip 12 is denoted at 18 and is open-ended and constitutes a sleeve-like jacket. Manifestly, these component parts 14 and 18 may be varied in material, shape and size to provide conveniently usable anti-slipping surfaces.

With reference more in particular to FIGURE 3 the rigid component or part of the handle means 10 at the left comprises a suitably elongated hollow handle or casing (generally cylindrical tube) which is denoted at 20, is closed at the outer or lefthand end 22 and open at the opposite or inner end, the same being proportional to and fitting within the grip 14. These parts are, of course, secured together so that they constitute a readily grippable and turnable handle or handgrip. There is a plug 24 fitted telescopically into the right hand end and held in place by setscrews or the like 26, said plug provided with a limit flange 28. The anchored radially expandable and contractible remote controlled friction brake means is confined in the hollow portion of the handle 20 between the end 22 and the plug 24. This means is of composite construction and is characterized chiefly by a plurality of compressibly resilient (rubber or the like) expandable and contractible collars or bushings 30. There are four of these bushings 30 and they are spaced apart by intervening metal washers 32. These bushings have square holes at the centers thereof which register with corresponding square holes 34 in the washers 32. The washers are of a diameter less than the diameter of the bushings 30. All of these 8 parts (see at the left in FIG. 2) are strung on the complementary half-portion 36 (FIG. 3) of the reciprocable brake applying and releasing rod or means 38. While considering this rod it is to be pointed out that the other half-portion at the right is denoted at 40 and it is screw-threaded as at 42 to serve in a manner to be later described. With reference again to the friction brake means it will be evident that the component

parts 30 and 32 are confined within a longitudinally split sleeve 44, the righthand end of the sleeve bearing against a supplemental metal washer 46 which, in turn, abuts the cooperating end of the plug 24. An end thrust metal collar 48 is provided and has a reduced portion 50 which is telescoped into the lefthand end of the sleeve 44 and has a flange portion 52 which is to the left of the sleeve and which is of a diameter less than the interior diameter of the hollow handle or casing 20 as shown. This end thrust member is secured by a headed pin or equivalent fastening means 54 to the cooperating end of the shaft as detailed in FIG. 7.

Taking up now the righthand handle means or handgrip 12 it will be seen that this likewise comprises a hollow rigid handle of requisite length, more particularly an open-ended cylindrical barrel or casing 56 encased by the aforementioned rubber grip 18. The plug or fitting 58 which is opposite the aforementioned plug 24 is fitted telescopically into the cooperating inner end of the barrel or casing 56 and anchored in place by screws or equivalent headed fasteners 60 and has a flange 62 which is opposed to the flange 28, there being a composition washer 64 mounted on the cooperating portion of the rod and interposed between the two flanges 28 and 64. This plug 58 is force-fitted into the end of the casing or tube and secured by fasteners. It extends a requisite distance into the hollow portion of the casing to provide stability for the complete implement. The center hole therein is square and slightly larger in dimension than the cross-section of that portion of the actuating rod 38 which passes therethrough and is consequently keyed therein in a manner to provide the intended torque action. It may be added that this part absorbs the entire torque action requirements of the friction brake assembly. With reference now to the righthand end of the tubular casing or handle it will be seen that the reduced portion 66 of a closure is fitted and in fact telescopically anchored in place and has an annular flange 68 which is of a suitable diameter and is provided with appropriately marked graduations constituting a dial for appropriate indicator means on the opposed cooperating knob 70. This knob constitutes the headed part of the manually turnable rod moving unit 72. The principal part of this unit comprises an axially disposed sleeve 74 which passes through the bushing 66 with the screw-threaded portion 42 of the rod 40 screwed therein in the manner illustrated in FIG. 3. The marginal edge of the knob may be milled or knurled (not detailed) to facilitate turning the same. The numeral 76 (see FIG. 1) constitutes an indicator dot or the like which is turned in relationship to the calibrations on the index rim 68. This knob means may be considered as being held up or at the top when the device is being used. The index 76 and tell-tale graduations 68 may be employed as a tension meter. The rod 40 is sometimes referred to in practice as a tension applying and relieving as well as brake assembly operating rod. It will be evident that a significant purpose of the metal washers 32 is to achieve a more equal distribution of expansion of the bushings 30.

It will be evident that in practice the handgrip 10 may be grasped in the left hand while the handgrip 12 may be grasped with the right hand and the device as an entity may be held in a vertical position or a horizontal position whichever suits the user. The brake action is adjusted by way of the dialing or metering means as already described, the means 76 and 68. Depending on whether the knob 70 is turned clockwise or counterclockwise the split sleeve or brake shoe 44 is either expanded or contracted and the friction clutch and braking action between the two handgrips 10 and 12 can be properly attained. It follows that the user soon learns how to regulate and set the respective handgrips with a view toward exercising the hands, fingers, wrists, arms, muscles and ligaments with a view toward exercising and strengthening the same.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those

skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A manually grippable and manipulable implement through the medium of which the user can exercise and strengthen his hands, fingers, wrists and arms comprising: a first hollow handle provided exteriorly with an attached hand grip, a second axially aligned hollow handle likewise provided exteriorly with an attached hand grip, the inner ends of the respective handles being disposed in adjacent end-to-end relation and being provided with aligned fixed mounted plugs, said plugs having flanges and said flanges being in abutting relationship with an interposed cooperating washer, a split sleeve confined in the hollow portion of the first-named hollow handle and constituting an expansible and contractible brake shoe, means within said brake shoe for expanding the same, said brake shoe having inherent resilient properties whereby it is normally contracted, a brake shoe applying and releasing rod having a median portion slidably keyed in an inner end portion of said second-named hollow handle, having an end portion operatively connected with the brake shoe expanding means, the opposite end portion of said rod being located in the hollow portion of the second-named handle, a manually rotatable knob mounted for rotation on an outer end of the second-named handle and having operating connection with an adjacent end of said rod, said operating connection comprising an internally screw-threaded socket fixedly carried by said knob and projecting into the hollow portion of the cooperating handle, the adjacent end of said rod being screw-threaded and screwed into said socket to provide an operating connection between the knob and rod, the end of said rod which is located in the hollow portion of said first-named hollow handle being provided with a fixedly mounted end thrust member, said end thrust member having a reduced portion projecting telescopically into an adjacent end of said split sleeve, said expanding means within said split sleeve comprising a plurality of compressibly resilient normally contracted bushings strung on the cooperating portion of the rod, and a plurality of intervening spacing washers also strung and keyed on said rod and interposed between adjacent bushings.

2. A portable manually grippable and manipulable exercising appliance comprising a first hollow handle provided with a handgrip for the left hand and closed at its opposite ends, an elongated split resilient sleeve arranged in the hollow portion thereof and constituting a brake shoe and having friction gripping contact with the interior surfaces of said handle, an end thrust member located in said hollow portion, a non-circular brake-applying and releasing rod having a portion projecting into the hollow portion of said handle and connected to said end thrust member, said rod being located axially within and passing through the axial portion of said sleeve and being provided with longitudinally spaced compressibly resilient expanding bushings and intervening spacing washers, said bushings and washers being strung on the cooperating portion of said rod and being located within the confines of said split sleeve, a second hollow handle provided exteriorly with a handgrip and provided at its inner end with a plug telescoping and secured in the hollow portion thereof and provided with an axial bore, the median portion of said rod passing through and being keyed in said bore and projecting into the hollow portion of said last-named handle, and having a terminal portion thereof screw-threaded, the outer end of said last-named handle having a bushing therein, a knob abutting said bushing and provided with an axial socket member, said socket member being internally screw-threaded and the screw-threaded end of said rod being screwed into said socket member.

5

6

3. An exercising device for the hands comprising a first hollow handle provided with a hand grip, a second hollow handle provided with a hand grip, said hollow handles being orientated in axial alignment, one of said hollow handles having an elongated split resilient sleeve rotatably orientated therein and constituting a brake shoe for friction engaging contact with the interior surface of the handle when the split sleeve is being expanded and being rotatable in relation to the handle when contracted, an operating rod having a portion extending axially into both handles, one end of said rod being engaged with an end thrust member, a plurality of longitudinally spaced compressible resilient expanding bushings mounted on said rod, intervening washers between said bushings whereby compression of the washers and bushings will cause the bushings to expand, said bushings being disposed within the split sleeve whereby expansion of the bushings will cause frictional engagement with the split sleeve and expansion of the split sleeve into frictional gripping contact with the handle, the end thrust member en-

gaged by the rod serving to axially compress the bushings upon axial movement of the rod, and external means operable from the other of said handles for moving the rod axially in relation to the handles for compressing the resilient bushings, and means non-rotatively and axially slidably interconnecting the rod and the other of said handles for rotatably interconnecting the handles and enabling the frictional resistance to such rotation to be varied by axially sliding said rod thereby expanding and contracting the resilient bushings.

References Cited by the Examiner

UNITED STATES PATENTS

15	261,887	8/82	Whitney	64—30
	1,604,333	10/26	Anderson	272—67
	2,668,055	2/54	Sharp et al.	272—68
	3,067,597	12/62	Sauerbrey	64—29
20	RICHARD C. PINKHAM, <i>Primary Examiner.</i>			