Aug. 19, 1941. C. W. SENN 2,252,868

EXERCISING DEVICE

Filed Dec. 11, 1939 3 Sheets-Sheet 1

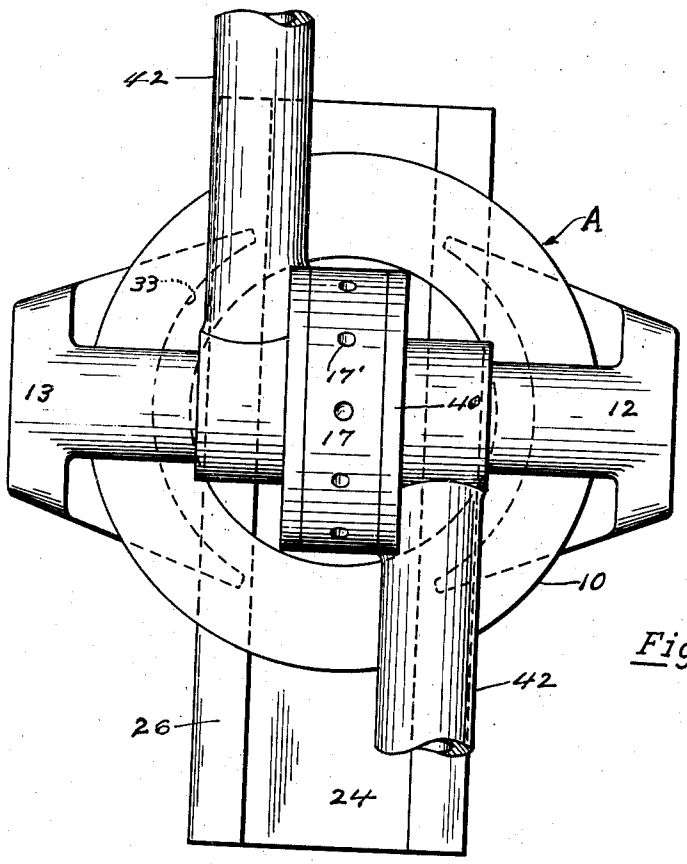


Fig. 1

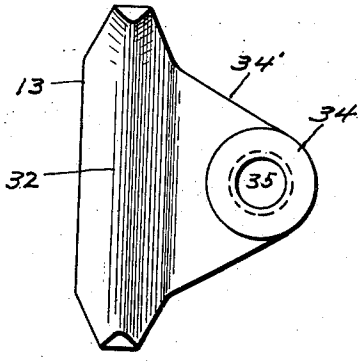


Fig. 2

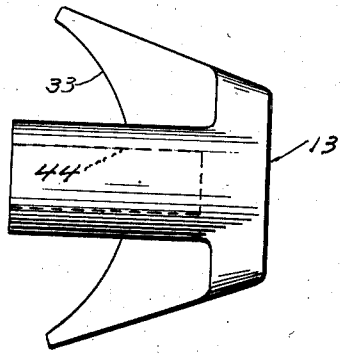


Fig. 3

INVENTOR.
Charles W. Senn
BY
E. Guyer Murphy.
ATTORNEY

Aug. 19, 1941. C. W. SENN 2,252,868

EXERCISING DEVICE

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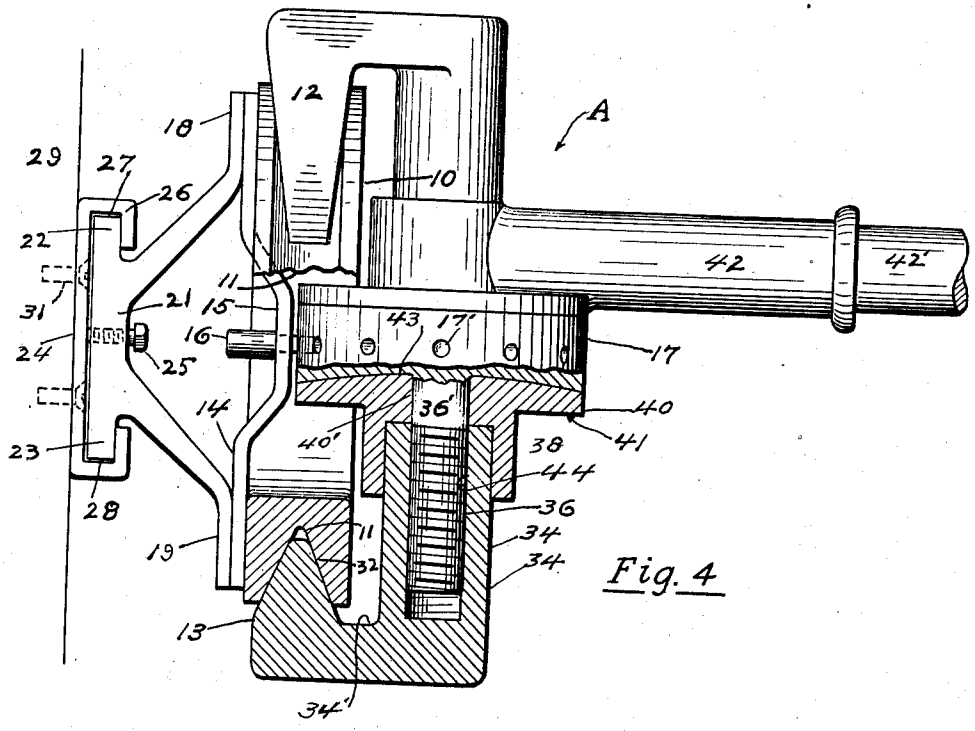


Fig. 4

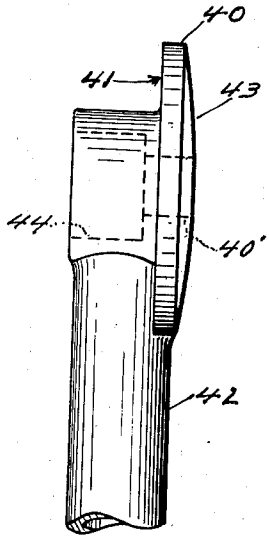


Fig. 5

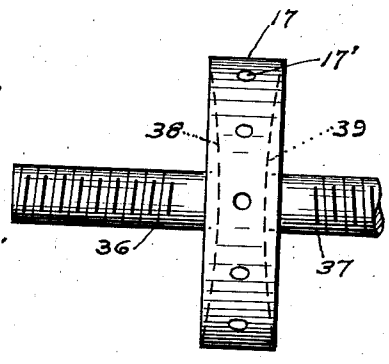


Fig. 6

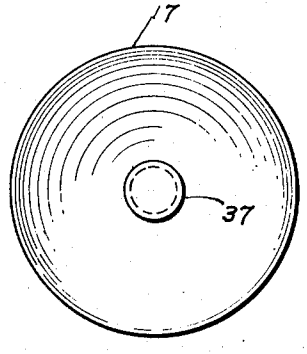


Fig. 7

INVENTOR.
Charles W. Senn

BY
C. Guyer Murphy
ATTORNEY.

Aug. 19, 1941. C. W. SENN 2,252,868

EXERCISING DEVICE

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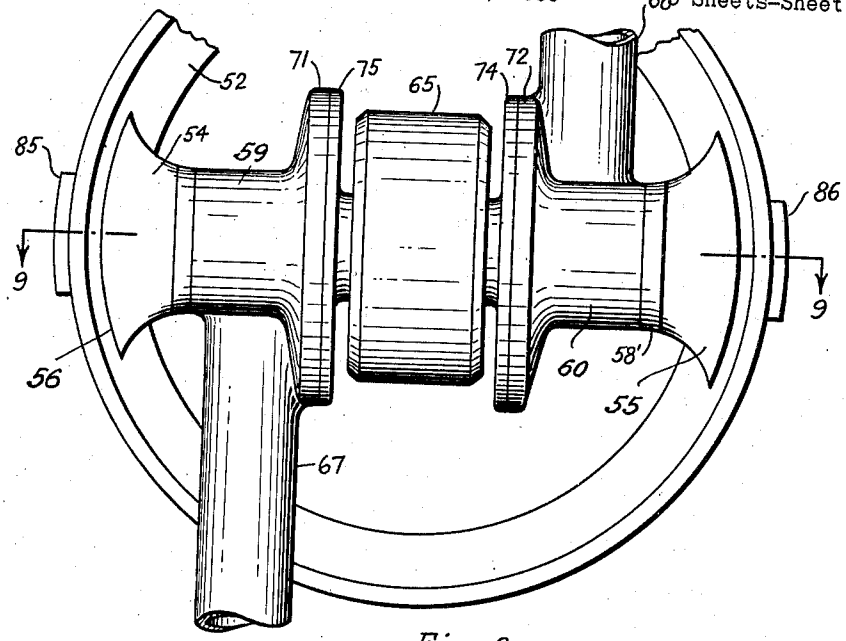


Fig. 8

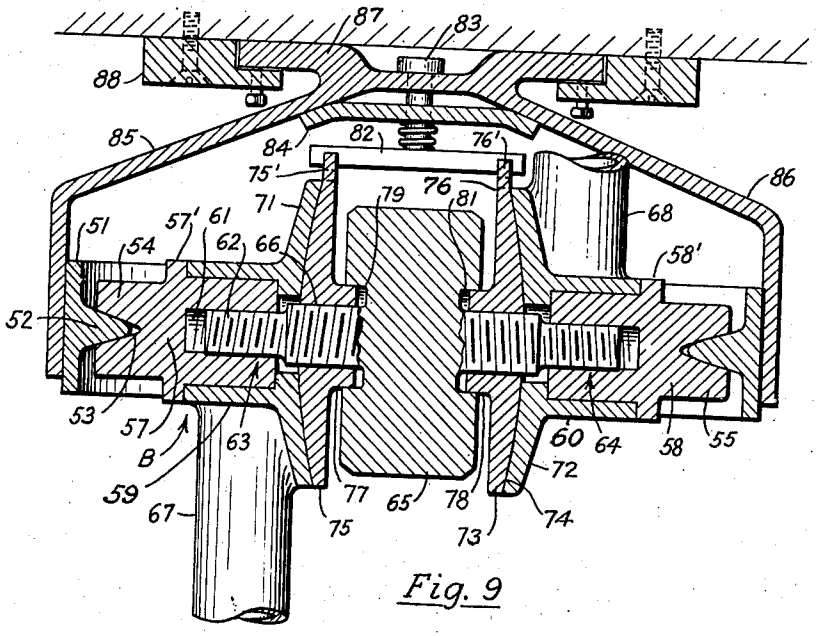


Fig. 9

INVENTOR.
Charles W. Senn
BY
E. Guyon Murphy
ATTORNEY.

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UNITED STATES PATENT OFFICE

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EXERCISING DEVICE

Charles W. Senn, Wildwood, N. J., assignor of three-eighths to John Gruninger, 2nd., Wildwood, N. J.

Application December 11, 1939, Serial No. 308,526

9 Claims. (Cl. 272—57)

This invention relates to exercising devices, having for its principal object the provision of a novel machine or device for exercising and developing the muscles of the human body, improving the health, and in general invigorating the muscular and nervous system of the user.

Another object of the invention is to provide a novel exercising device which is adapted to be conveniently secured to the wall, floor or ceiling of a room, and which may be adjusted to the requirements of users, young or old, and of different stages of physical development.

A further object is to provide an exercising device of the kind indicated with novel, adjustable, friction-applying means for graduating the force requisite for manipulating the device.

A still further object of the invention is to provide a novel exercising device of a design and construction suitable for gymnasiums, health and physical culture institutions, and wherever the development of a strong and rugged physique is a desideratum.

For the purpose of illustrating the invention, I have shown in the accompanying drawings two forms thereof which are at present preferred by me, since the same have been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized, and that the invention is not limited to the precise arrangement and organization of the instrumentalities as herein shown and described.

With these and other objects not specifically referred to, the invention consists in certain novel parts, arrangements and combinations which will be described in connection with the accompanying drawings wherein:

Figure 1 is a front elevational view of an embodiment of the invention with a portion of the operating handles broken away, and showing the device attached to means which permits its adjustment to the desired height or position;

Fig. 2 is a top plan view of one of the friction shoes or members removed from the assembly;

Fig. 3 is a side elevational view of the member shown in Fig. 2;

Fig. 4 is a top plan view of the device, partly in section, with parts broken away for clearer illustration, and showing the apparatus adjustably connected to a suitable support;

Fig. 5 is a fragmentary, elevational detail view, showing one of the coacting friction members and a portion of the socket which receives one of the operating handles;

Fig. 6 is a fragmentary, elevational, detail view of the centrally-located, friction-adjusting drum;

Fig. 7 is an end view of the member shown in Fig. 6;

Fig. 8 is a plan view, similar to Figure 1, depicting a modified form of the invention; and

Fig. 9 is a transverse sectional view, partly in elevation, with parts broken, as taken on the line and as viewed in the direction of the arrows 9—9 of Fig. 8; and showing the modified form of the invention adjustably connected to a suitable support.

The device described hereinafter and illustrated in the accompanying drawings, is designed and adapted to bring into play the majority of the principal muscles of the body and particularly those muscles which ordinarily are not called into action, this desideratum being achieved by the wide range of movements permitted by the apparatus and the various heights at which these movements can be performed. Furthermore, since the force or energy required to operate the device can be graduated from the pressure of a few ounces to a force equal to or greater than any which could be applied by the strongest man, it will be appreciated that the apparatus lends itself to the physical development of persons of all ages and of both sexes.

Referring now to the drawings wherein similar characters of reference indicate corresponding parts in the several views of the preferred form of the invention letter A designates an exercising device embodying the invention.

The exercising device comprises a ring 10 composed of wood, metal or other suitable material, the outer edge or periphery of which is provided with an annular groove 11 accommodating a pair of substantially similar friction shoes 12, 13, as hereinafter described more fully. The annular groove or the friction shoes may have, if desired, suitable friction or brake lining (not shown) secured thereto.

The annular member or ring 10 has fastened to one of its lateral faces, in any suitable manner, a plate or strap 14 which is bent at its centre to provide a depressed portion, as at 15, through which a spring pressed plunger or pin 16 is protruded. The pin 16 is adapted to be selectively inserted in any one of a series of pockets 17' arranged radially and in spaced relation in the circular periphery of a friction-adjusting drum or member 17.

The plate 14 of the device or assembly A is secured to suitable supporting means which may take the form of a member or spider having arms

18, 19 diverging from and integrally formed with a friction shoe 21 provided with oppositely-directed projections 22, 23. The friction shoe 21, which is formed of metal or other suitable material, is normally secured in adjusted position against the face of a support or retainer member 24 by means of a set-screw 25 (Fig. 4).

The opposite sides of the support 24 are suitably bent and folded, as at 26, to provide longitudinally-extending guiding recesses or slideways 27, 28 that slidably accommodate the projections 22 23 of the shoe 21, the bottom of which is juxtaposed against the central portion of the said support 24. The support or retainer member 24 is fastened to a wall 29 or any other suitable support by screws 31. As best shown in Fig. 4, it will be apparent that by loosening the set-screw 25, the shoe 21 and the entire assembly or device A secured thereto may be slid longitudinally of the support 24 and in a vertical plane, and then fastened thereto at the desired height or position convenient to the operator.

The ring-engaging portion of each of the similar friction shoes 12, 13 mentioned above, is substantially wedge-shape in cross-section, as at 32 (Fig. 4), and arcuately curved, as at 33 (Figs. 1 and 3) in order to smoothly fit into the V-shaped, annular groove 11 of the ring 10. Each of the shoes 12, 13, is formed with an integral offset 34' of a cylindrical member 34 which has a threaded bore or pocket 35 adapted to receive one of the adjacent threaded stems 36 or 37 that are formed integrally with and project from each of the concave opposite faces 38, 39, respectively of the friction-adjusting drum 17 referred to above.

By inspection of Fig. 6, it will be seen that a portion of the stem 36 is provided with a left-hand thread while a portion of the stem 37 has a right-hand thread, these threaded portions serving, as described more fully in ensuing paragraphs, to simultaneously move the diametrically-opposite shoes 12, 13 towards or away from the ring 10 in order to increase or decrease the friction and/or the force required to operate same.

As best shown in Fig. 4, it will be observed that each stem 36 or 37 has a smooth, unthreaded portion 36' which is freely rotatable in a passageway 40', provided in the enlarged head or disc 40 of a friction member 41 formed with an integral radially-projecting socket 42, the said socket accommodating an operating handle 42' adapted to be threadedly engaged therein.

Each of the concave faces 38, 39 of the friction drum 17 is coactingly engaged by a convex surface 43 formed on the face of each friction head 40 which is further provided with an enlarged pocket 44 communicating with the passageway 40', the pocket 44, as best shown in Fig. 4, being adapted to rotatably receive the cylindrical member or portion 34 of each shoe 12 or 13.

The function and mode of operation of the exercising device A has been in large measure indicated above, but may be summarized as follows:

Assuming the retainer member or support 24, which may extend from the floor to the ceiling, if desired, to be secured to a suitable support or wall 29, as indicated generally in Fig. 4, the operator, preparatory to using the apparatus, will initially raise or lower the assembly A to the height desired by loosening the set-screw 25, thus permitting the slidable adjustment of the shoe 21 and attached parts in the vertical recesses or slideways 27, 28. The set-screw 25 is then tightened and the assembly A accordingly fixed in position for manipulation. The friction drum 17 is now temporarily released by withdrawal of the pin 16 from the adjacent pocket 17' and turned to obtain the desired degree of friction both between the coacting surfaces of the shoes 12, 13 and the V-shaped groove 11 in the ring 10, and between the concavo-convex juxtaposed surfaces of the friction drum 17 and the adjacent friction heads 40, it being observed that rotation of the said drum and its oppositely-directed stems or studs 36, 37 in a clockwise direction, as viewed from the left in Fig. 1, will simultaneously cause the arcuate shoes 12, 13 to move towards each other, thus increasing their friction against the ring 10. This inward movement last described, will, at the same time, cause the inner ends of the cylindrical members or portions 34 to press against the bottoms of the pockets 44, thereby causing the friction heads 40 to simultaneously move into closer contact with the juxtaposed concave faces 38, 39 of the friction drum 17. The pin 16 is then returned to the nearest pocket 17', thereby locking the drum 17 against rotation and making the apparatus ready for use.

While actually using the apparatus, it is to be noted that the two manipulating handles 42', which are grasped by the operator's hands, may be independently turned about the axis of the friction drum 17, the hub portion or friction head 40 meanwhile turning on the outer periphery of the cylindrical member 34. In addition to this, the friction shoes 12, 13 attached to the stems of the friction drum and the associated parts of the latter, may be bodily revolved about the normally fixed ring 10 and about an axis coincident with the axis of the pin 16, the stem of which latter remains in the adjacent pocket of the now stationary drum, and in a plane normal thereto.

It will therefore be evident that the manipulating handles may be swung in two different planes, each normal to the other, and that, if desired, exercising movements made in connection with the device may simultaneously combine movements in both of said planes, thereby giving the widest latitude in bringing into play the various muscles of the body. The individual operating the apparatus will, of course, regulate the same to suit his own taste and requirements, and perform such movements as, it is felt, will develop and/or invigorate the desired muscles and organs of the body.

In Figures 8 and 9, a modified form of exercising device embodying the invention is depicted, and therein designated generally by the reference character B.

The device B comprises a ring 51 the inner periphery of which is formed with a rib 52 adapted to be received in the groove 53 of each of a pair of diametrically opposite and similar friction shoes 54, 55. The ring-engaging portion of each of the similar friction shoes 54, 55 is of an arcuate configuration, as at 56, in order to smoothly fit against and accommodate the rib 52 of the ring 51.

The shoes 54, 55 are formed as an integral part of similar cylindrical members 57, 58 respectively, each having an outer annular flange 57', 58' against which the outer ends of hubs

or sleeves 59, 60 are adapted to be engaged. The members 57, 58 are each provided with a threaded pocket 61 which receives a reduced, outer threaded portion 62 formed on each of a pair of studs 63, 64 projecting from opposite sides of a friction-adjusting drum 65, each of these differentially-threaded studs also having an enlarged threaded portion, as at 66, which has less threads per unit of length than the threaded portion 62. The differential threads on the stud 63, it will be observed, are both left-hand threads, while the differential threads on the stud 64 are both right-hand threads, for a purpose which will appear hereinafter.

The hubs 59, 60, which rotate freely on the peripheries of the members 57, 58, are formed with radially-projecting, tubular sockets 67, 68 adapted to receive operating handles (not shown), and are further provided with unitary friction heads or discs 71, 72 having outer, concave faces, as at 73, normally in frictional engagement with convex faces 74 of coacting friction discs 75, 76, integrally formed on hubs or sleeves 77, 78 mounted on the enlarged left-hand and right-hand threaded portions of the oppositely-directed studs 63, 64. The last-mentioned hubs 77, 78 may be partly accommodated in shallow pockets 79, 81 formed in the opposite sides of the friction-adjusting drum 65 and from which the doubly-threaded studs 63, 64 protrude.

The outer edges of the friction discs 75, 76 may have notched projections 75', 76' in which a locking bar 82 is normally engaged with a view to preventing rotation of the said friction discs 75, 76 while the friction-adjusting drum 65 is being turned to regulate the degree of friction desired and the consequent pressure or force required to operate the handles 69. The locking bar 82 is fastened to a spring-biased stud 83 protruded through aligned holes in a bracket member, designated generally at 84 and secured to a pair of arms 85, 86 which are welded or otherwise suitably fastened to opposite sides of the ring 51. A friction shoe 87, similar to the friction shoe 21 of the first form of the invention, is secured to the bracket 84 and is adapted to be slidably and adjustably confined in a support or retainer member 88 suitably anchored to an adjacent wall or other supporting structure.

The function and operation of the modified form of the invention B is substantially similar to the other form of the invention. In the instant form B, however, it will be noted that when the friction-adjusting drum 65 is turned, the left and right hand double threads on the differentially threaded studs 63, 64 will simultaneously move both the friction discs 75, 76 and also the cylindrical members 57, 58 having the friction shoes 54, 55. The coarser threads 66 of the enlarged portions of the studs 63, 64, it will be obvious, will advance the friction discs 75, 76 at a rate somewhat faster than the movement communicated to the members 57, 58 and their attached friction shoes 54, 55 which latter, as noted above, are operatively engaged with the friction rib 53 of the ring 51.

The net result of the above procedure will be an increase of friction of the outer shoes 54, 55 against the rib 53 and a slightly greater increase of friction of the friction discs 75, 76 against the coacting friction discs 71, 72. By withdrawing the locking bar 82 from the notched projections 75', 76' of the discs 75, 76, the latter may turn with the friction-adjusting drum 65, thereby permitting the independent movement and/or adjustment of the outer shoe-carrying members 57, 58 relative to the friction rib 53, and at the same time increasing or decreasing the pressure or friction between the adjacent concavo-convex faces 73, 74 of their respective discs, independently of the adjustment afforded by the enlarged threaded portions 66.

It is to be understood that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and it is therefore desired that the present embodiment be considered in all respects as illustrative and not restrictive, reference being had to the accompanying claims rather than to the foregoing description to indicate the scope of the invention; and it will be further understood that each and every novel feature and combination present in or possessed by the mechanism herein disclosed, forms a part of the invention included in this application.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. An exercising device of the character described, comprising, in combination, a support, an assembly connected to the support and capable of angular and translational movement relatively thereto, friction-applying instrumentalities connected to the assembly and to the support, and a pair of manually and independently operable means connected to the instrumentalities, said manually operable means being angularly and simultaneously movable in opposite directions about a plurality of different axes.

2. In a device of the character described, the combination of a support, means connected to the support and having a friction surface, other means frictionally engaged with the friction surface and rotatable about its axis, a pair of manually operable instrumentalities independently movable about portions of said last mentioned means, and a friction regulating member having a threaded connection with the said other means, said member having friction surfaces engaged by the instrumentalities.

3. In a device of the character described, the combination of a support, means connected to the support and having a friction surface, a second means frictionally engaged with the friction surface and rotatable about its axis, a pair of manually operable instrumentalities turnably connected to the said second means and adapted to rotate them in a plane normal to the plane of rotation of the instrumentalities, and a friction regulating member threadedly connected to the second means and having oppositely directed friction surfaces, said friction surfaces being engaged by coacting friction surfaces arranged on the manually operable instrumentalities.

4. In a device of the character described, the combination of a support, means connected to the support and having a friction surface, a second means frictionally engaged with the friction surface and rotatable about the axis thereof, a pair of manually operable instrumentalities turnably connected to the said second means and adapted to rotate them in a plane normal to the plane of rotation of the instrumentalities, a friction regulating member having oppositely directed friction surfaces, each of said surfaces being engaged by a coacting friction surface arranged on either of the instrumentalities, and a threaded extension projecting axially from each of the friction surfaces of the regulating member, said

extensions being operatively engaged with portions of the said second means.

5. In a device of the character described, the combination of a support, means connected to the support and having a friction surface, a second means frictionally engaged with the said friction surface and rotatable about the axis thereof, a pair of manually operable instrumentalities independently swingable in the same direction and in opposite directions about the longitudinal axis of the said second means but adapted to revolve with them as a unit about their axis of rotation when desired, a friction regulating member operatively connected to the second means and having friction surfaces engaged by coacting friction surfaces on the manually operable instrumentalities; whereby when the regulating member is turned, a simultaneous adjustment of the instrumentalities and of the second means is obtained.

6. In a device of the character described, the combination of a support, an assembly connected to the support and capable of angular and translational movement relative thereto, a pair of manually operable instrumentalities independently movable in the same direction and in opposite directions about a plurality of different axes and revolvable as a unit about the axis of rotation of the assembly, friction-applying means revolvable with the instrumentalities about the said axis of rotation, other friction-applying means forming an integral part of each of said instrumentalities, and a friction regulating member arranged between the instrumentalities and adapted to simultaneously adjust all of the friction-applying means.

7. In a device of the character described, the combination of a support, an annular friction surface adjustably connected to the support, friction-applying means revolvably arranged on the annular friction surface, a pair of manually operable instrumentalities independently rotatable on portions of the friction-applying means, and a friction-regulating member arranged between the pair of instrumentalities and having friction surfaces engaged with coacting friction-applying surfaces on the instrumentalities, said member having a threaded connection with the first-mentioned friction-applying means; whereby when the member is turned, a simultaneous adjustment of all the friction-applying means is obtained.

8. In a device of the character described, the combination of a support, an annular member connectible to the support at different heights thereof, a friction surface arranged on the outer periphery of said member, a pair of friction-applying shoes engaged with the friction surface, a manually operable friction-applying member rotatable on cylindrical portions of either of said shoes, a friction-regulating drum arranged between the shoes and the friction-applying members and normally juxtaposed against said members, and means connected to the support for locking the drum in desired position.

9. In a device of the character described, the combination of a support, an annular member connectible to the support at various heights thereof, a friction surface arranged on the inner periphery of the annular member, a pair of friction-applying shoes engaged with the friction surface, a pair of friction discs rotatable on inner cylindrical portions of the shoes, an operating handle integrally formed with each of said discs, a second pair of friction discs coactingly engaged with the first-mentioned friction discs, and a friction-regulating member arranged between the last-mentioned pair of discs and having a differentially threaded spindle projecting axially from each of its opposite sides, said spindle being threadedly engaged with the cylindrical portions of the shoes and with the second pair of friction discs.

CHARLES W. SENN.