(No Model.) 3 Sheets—Sheet 1.

A. A. WHITELY.

EXERCISING MACHINE.

No. 546,568. Patented Sept. 17, 1895.

Fig. 1.

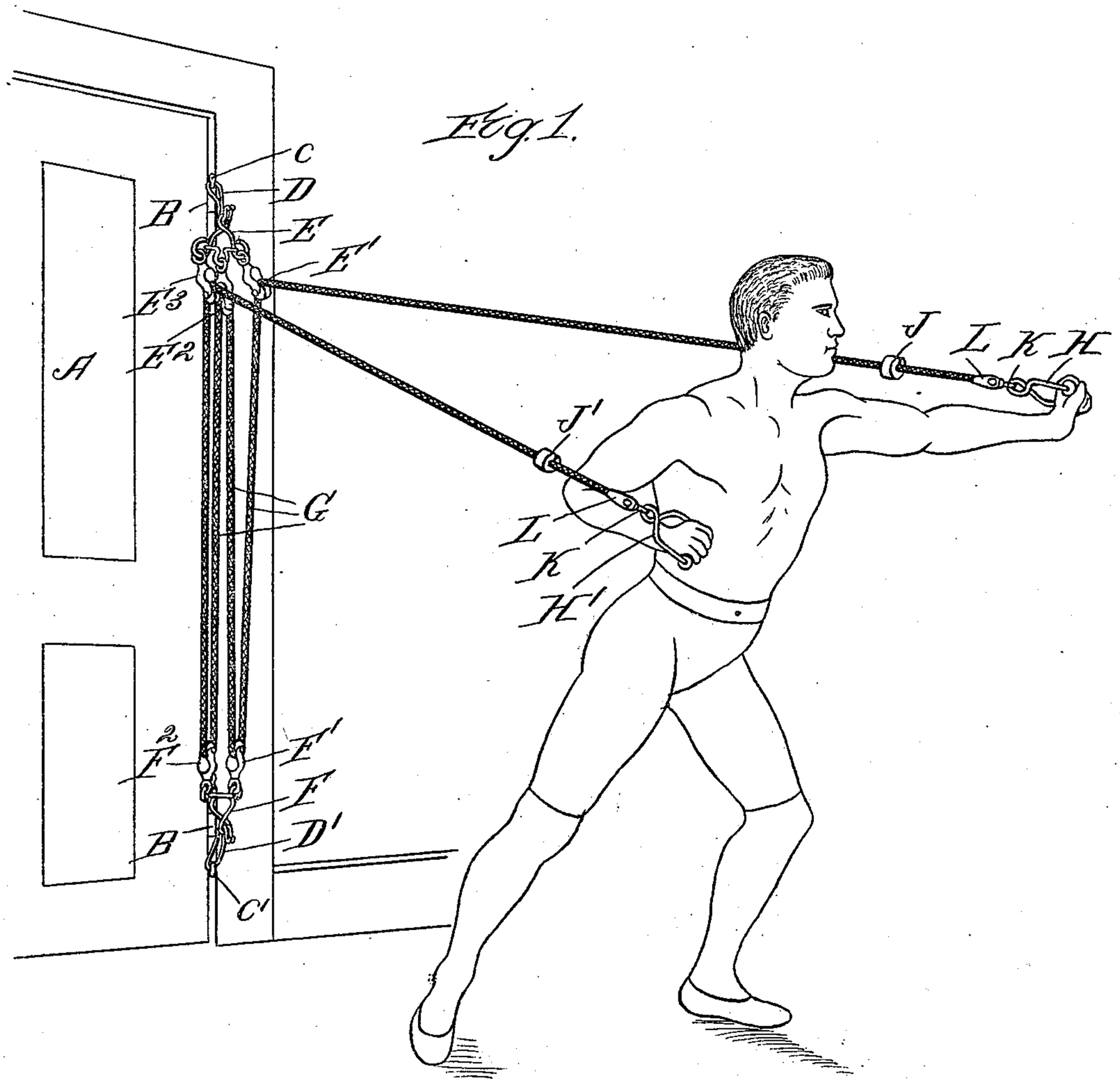

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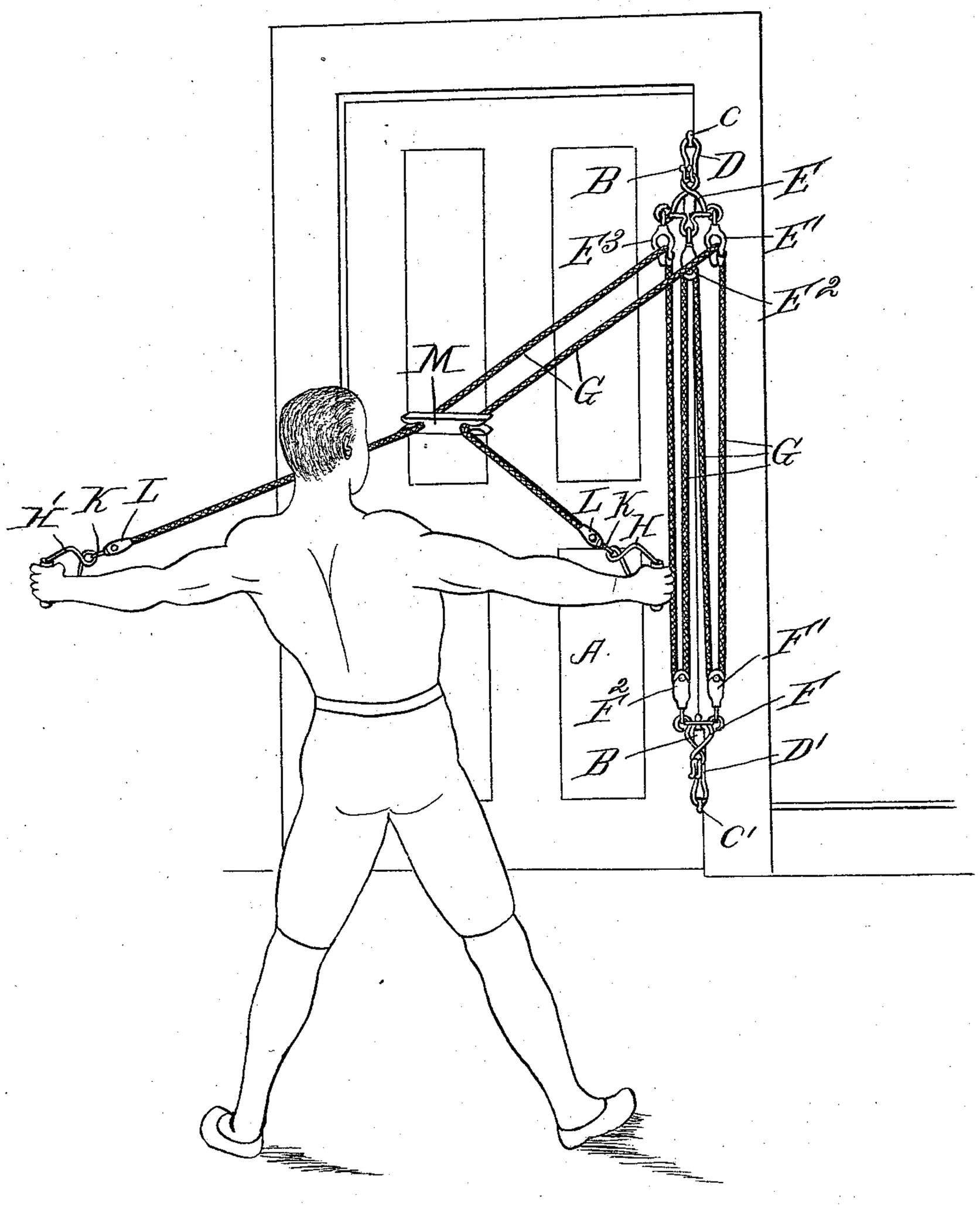
Fig. 2.



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EXERCISING MACHINE.

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Fig. 7.

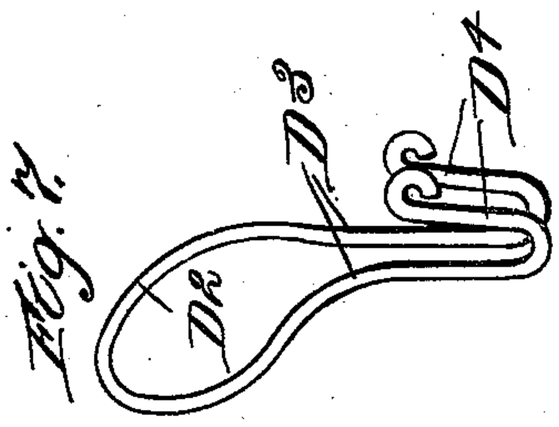


Fig. 4.

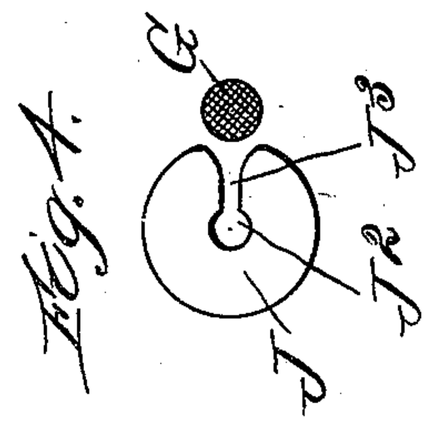


Fig. 6.

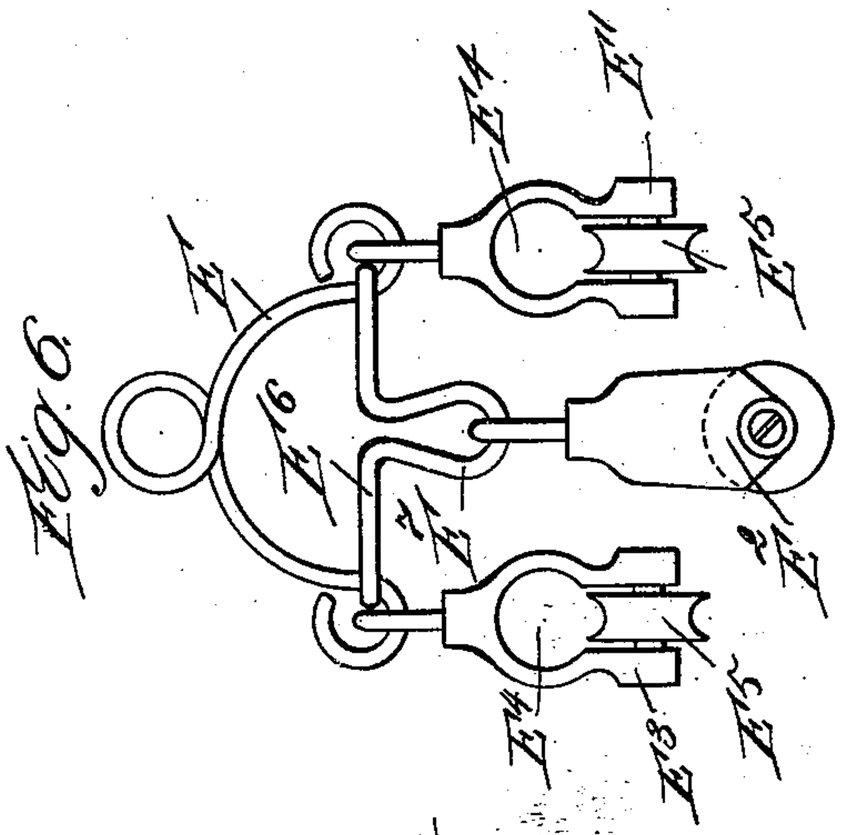


Fig. 5.

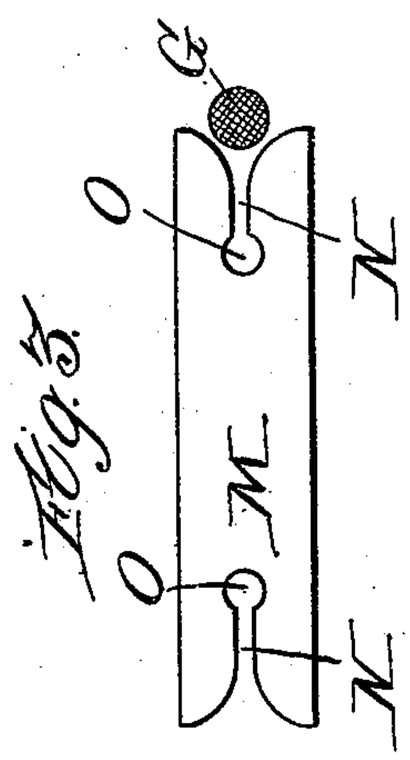


Fig. 8.

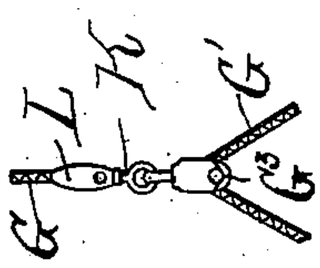
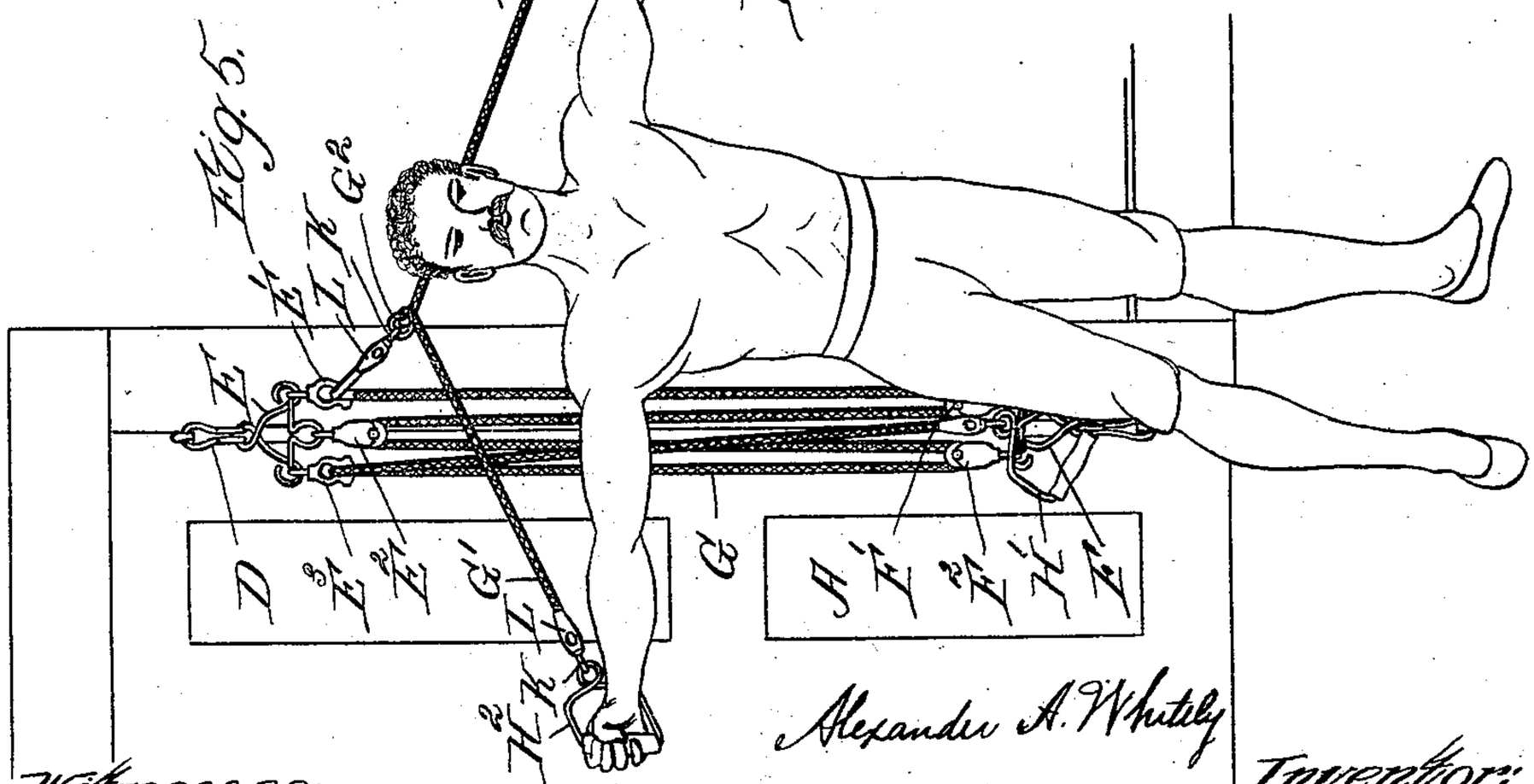


Fig. 5.



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UNITED STATES PATENT OFFICE.

ALEXANDER A. WHITELY, OF ST. LOUIS, MISSOURI.

EXERCISING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 546,568, dated September 17, 1895.

Application filed April 16, 1894. Serial No. 507,719. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER A. WHITELY, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Exercising Apparatus, of which the following is a specification.

My invention relates to exercisers, and has for its object to provide certain new and useful improvements whereby to increase the utility of such exercisers and extend the range and increase the variety of uses to which they may be put. These improvements are illustrated in the accompanying drawings, wherein—

Figure 1 represents an exerciser as applied to a hinged door and in use, with hinge-hooks, quadruple cord, and single stops. Fig. 2 is a similar view with double clamp. Fig. 3 is a detail of the double clamp; Fig. 4, a detail of the single stop. Fig. 5 is a view of the exerciser with a two-handle single-end attachment in use. Fig. 6 is a detail of the upper pulleys and support, and Fig. 7 of a hinge-hook. Fig. 8 is a detail of the two-handle end piece when operated over a pulley.

Like parts are indicated by the same letters in all the figures.

A is a door, and B B the hinges thereon, having the projecting free parts C C′, over which fit the hinge-hooks D D′.

E is an upper triangular-shaped piece carrying three pulleys E′ E^2 E^3, and F is a lower triangular portion carrying two pulleys F′ F^2.

G is a continuous elastic cord traveling over these several pulleys and provided with the handles H H′ and with the single stops J J′, adjustable along the cord G. Each handle is secured to the hook K, which is attached to the end of the cord by means of the coupling L.

M is the double clamp, having its ends separated, as indicated at N, and provided with holes O O, through which the cord G is adapted to pass.

The single stops J J′ are alike, and are preferably in the shape of washers, having the central hole J^2 and entering-slots J^3. The hinge-hooks D D′ are alike, except that some may have swiveled heads or eyes, and each is provided with the large upper loop D^2 to fit over the hinge portion, the spring ends D^3, somewhat separated, and the upwardly-turned hook ends D^4. The several pulleys E′, E^2, E^3, F′, and F^2 are all alike, and they are provided each with the upper aperture E^4, of proper size to admit the coupling L and hook K to pass therethrough, and each is provided with the pulley-wheel E^5, having a suitable surface groove. The triangular-shaped portion E is in substance a somewhat triangular-shaped wire frame, whereby the pulleys associated therewith are held at a practically uniform distance from each other rigidly, and whereby they are all suspended from the hook, nail, or the like, or from the hinge by means of the hinge-hook. In the case illustrated the central pulley E^2 is suspended slightly below the other pulleys by means of the bar E^6 and downwardly-depending loop E^7. Where but two pulleys are used, as in the case of the triangle F, the shape of such triangle is slightly modified.

The triangular frame-piece just described is particularly advantageous, because it has the suspending loop at the apex of the triangle and the loops for suspending the pulleys at the other angles, while such suspending loops or portions of the triangular frame are held apart by the cross bar or piece extending between them, thus not only making the device easy to be hung up or placed in working position, but also insuring rigidity of structure in a frame constructed of light-weight material, so that the pulleys will maintain a practically uniform relation to each other whatever be the strain to which they are subjected.

G′ is a cord, which may or may not be elastic, and which may be attached midway to the ring G^2, whereby it is secured to one of the hooks K, and the two ends of this cord are provided each with a similar hook K and coupling L. H^2 is a third handle. (Illustrated in Fig. 5.)

It will be evident that the parts illustrated and above described may be considerably altered without departing from the spirit of my invention, and it will also be evident that some of the features described may be dispensed with without abandoning the use or losing the benefit of others of the described features.

G^3 is a pulley adapted to be attached to one end of the cord, and over it plays the cord G′ of the two-handle end piece.

I have alluded to the exerciser-cord proper as being elastic, or elastic substantially, throughout its entire length. Of course many of the features of my invention could be employed with a cord other than an elastic cord, and I do not wish to be limited in all cases to a cord throughout its length. On the other hand, much the same result could be accomplished, perhaps, but not in so desirable a manner, by using a cord which would have some small portion or portions of its length non-elastic, but this would be a mere evasion of what I am seeking here to cover.

I will now describe the use and operation successively of the several features of my invention.

In some instances, and with regard to certain kinds of training, it is desirable to secure a great length of cord, for the strain is distributed more or less throughout the entire length of the cord, and the resistance offered to the muscles in using such a device is more nearly uniform throughout the stroke. I have therefore, by means of the arrangement here illustrated in Fig. 1 and elsewhere, secured a quadruple cord, or four lengths, between the two points of attachment of the ends of the cord. I do this by placing two pulleys at one point of attachment and three at the other, carrying the cord about the middle pulley, so that the middle of the cord is substantially coincident with the middle pulley. It is very desirable, in order to fit the exerciser for use generally and in connection with various kinds of hooks, nails, and the like, and particularly to qualify the exerciser for the use of persons when traveling, in which event it is often desirable to support the exerciser upon door-hinges, to supply the exerciser with what I have called "hinge-hooks," although of course the hooks can be used with other than hinge-supports. These hooks are provided with a large loop portion, which can be readily bent to suit the size and shape of the part to which they are to be attached. The two extremities of the hook are held somewhat separated by a spring-action, and are of such size as to pass when forced together conveniently through the eye of the triangular pulley-support or the pulley-eye. These two hooks terminate in overturned portions, so that they are not easily removed from such triangle or eye except by the effort of the operator. When the hook is inserted into the eye, the parts are released from the pressure previously applied, and as they tend to separate they thus hold themselves securely in the triangle eye. It is found desirable to keep the cord always slightly taut when it is suspended, and it is particularly desirable to keep it always taut while in use, for if it is relaxed, and especially if it is relaxed while in use suddenly, the hooks are very likely to become loosened, and this regardless of the manner in which the device is suspended. To avoid this difficulty, both when the form of device shown in Fig. 1 is used and when other similar devices are used, I have provided the two single stops J J′. These stops may of course be varied in construction; but, as here shown, the inner hole J^2 is somewhat smaller than the cross-section of the cord G. The cord G is therefore stretched until its cross-section is greatly reduced, when it is forced through the slot J^3 into the hole J^2 in the center of the stop, and here it is allowed to expand, and thus hold the stop securely in its proper position on the cord. Of course the stop may be adjusted along the cord in the same manner. These stops are of such size as to engage the pulley-frame and prevent the cord from passing farther through the pulley, and they are preferably so situated that when both are in position against their respective pulleys the cord G will be slightly taut, so as to hold itself in proper position.

For certain kinds of exercise it is very desirable to have the cord stretched, so as to require the exercise of considerable power to make the required movements, and at the same time to have the cord arranged so that there will be a strong inward pull of the arm. This I accomplish by means of the double clamp, which is applied to the two ends of the cord and near the two handles, whereupon it will be evident that the result last above suggested is attained, and also that the cords are kept always taut while the machine is in position for use.

In the adjustment of the cords and the application of the parts it is very desirable to remove sometimes the entire cord from its pulleys, and this is rendered possible by making the coupling and hook of such cross-sectional area as just to pass easily through the aperture E^4 in the pulley-case.

It is sometimes desirable for the development of certain muscles, and with persons of a certain strength, to perform the movements on but one end of the cord. To accomplish this I provide a double-handle end piece, which is provided with a ring or the like to engage one of the end hooks on the cord, and the two ends of the double-handle end piece are provided with similar hooks and couplings, to which handles are attached. This cord may be continuous and elastic or non-elastic, and may pass over a pulley instead of being supplied with a ring. I have stated before that all these several features need not be used at the same time, nor is it necessary to get the benefit or effect of some that all the others be employed; but altogether they constitute a complete machine, adapted for several uses to which such device may profitably be applied.

The device having the pulleys at both ends, and there may be one or more pulleys at each end, is secured in position upon the lower and upper hooks, nails, or the like, and if employed with the hinge-hook attachments then these two hinge-hooks are sprung into the re-

spective eyes of the pulley-supports and then over the freed portions of the hinges or the fixed hooks. The cords are then supplied with the single stops or with the double clamp, or one end of the cord is made fast to some point—as, for example, one of the hooks—and the other end has the handle removed and the double-handle end piece attached. A wide range of motions may thus be obtained, some of which motions and uses are indicated in Figs. 1, 2, and 5. The clamp M is moved along the cords to vary the length of the portions between such clamp and the handles, and the stops may be moved along the cord to vary the tension of the cord when at rest. If while operating with the stops, the clamp, or the two-handle end piece the cord is suddenly relaxed or escapes from the hand, the main body of the cord will still remain taut or tight enough to keep the parts in position on the hooks. The stops may be placed at any point along the cord to keep any particular part of the cord taut while the remaining portion may be loose. The objection to making the two-handle end piece elastic is this: If the main cord or parts break or come loose, the elasticity of the end piece will throw the parts against the user. Hence a non-elastic piece is preferred.

I speak of elastic cord or cords; but these terms should be understood to mean either one continuous cord, or substantially the same thing, consisting of two or more sections or pieces.

I claim—

1. In an exercising machine, the combination of pulleys adapted to be attached to the wall or the like with an elastic cord passing about such pulleys and connecting them, and a stop near each end of such elastic cord to engage the case of the last pulley and prevent the cord passing therethrough, said stop consisting of a collar or the like with a central aperture of less cross-section than the cross-section of the cord, and a slot opening into such aperture so that the elastic cord can be stretched and introduced into the aperture through the slot and then partially relaxed so as to be cramped by the collar and held in position.

2. In an exercising machine, the combination of pulleys adapted to be attached to the wall or the like, with an elastic cord passing about such pulleys and connecting them, and a stop near each end of such elastic cord to engage the case of the last pulley and prevent the cord passing therethrough, said stop consisting of a collar or the like with a central aperture of less cross-section than the cross-section of the cord, and a slot opening into such aperture so that the elastic cord can be stretched and introduced into the aperture through the slot and then partially relaxed so as to be cramped by the collar and held in position, the slot of less width than the diameter of the aperture so that the partially relaxed cord in the aperture is prevented from escaping through the slot.

3. In an exercising machine the combination of pulleys adapted to be attached to the wall or the like with an elastic cord passing about such pulleys and connecting them, and having two projecting ends and a double stop for the two projecting or free ends of the cord, said stop consisting of a piece with two apertures of less cross-section than the cross-section of the cord, and a slot opening into each so that the elastic cords can be stretched and introduced into the apertures through the slots and then partially relaxed.

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