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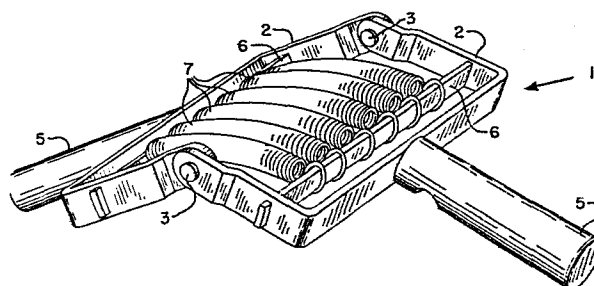
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54 **Muscle-building apparatus.**

57 An adjustable apparatus (1) for developing bending strength in the muscles of a user. The apparatus (1) simulates resistance encountered when attempting to bend metal bars with the arms outstretched forwardly and the hands initially in a horizontal, palms downward position, and thus develops specifically those muscles and skills required for such feats. The apparatus (1) is formed of two U-shaped members (2, 2) hinged at their open ends to form an O-shaped assembly. Each U-shaped member (2, 2) has a handle (4, 4) attached near the middle of the base portions, for grasping by the user's hands. Bend-resistant lengths (7, 7) of fairly rigid, yet resilient, material can be added successively between the U-shaped members (4, 4) to obtain an increased resistance to bending pressures, thus providing a device for progressively developing strength in the sets of muscles involved in bending strength.



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MUSCLE BUILDING APPARATUS

This invention relates to muscle-building apparatus for developing muscles of the human body.

Apparatus utilizing the resistance of coil
5 springs for building, toning and more clearly
defining musculature of the human body is known.
Common examples are chest cables, handgrips and the
so-called "German Horseshoe". Apparatus requiring
the bending of steel coil is also known, comprising
10 two bars with grips having a length of steel coil
connecting the two bars. However, such apparatus
tends to have the disadvantage of skewing into
different planes when used, thus preventing smooth
pulls by the muscles involved. Moreover, such
15 apparatus may not build true bending power, tending
only to more clearly define the muscles involved.

The apparatus of the present invention may
specifically address those muscles that are used in
20 bending, its regular use rendering them more
powerful and at the same time toning and helping
define them. The specific muscles involved are
those in the thumbs, fingers, hands, wrists,
forearms, triceps, pectorals, shoulder caps and
25 trapezius.

It is an object of the present invention to
provide apparatus that enables a user to gradually
develop bending force in the muscles of the back,
30 shoulders, arms, chest and hands.

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It is another object of the present invention to provide apparatus that gradually builds, tones and defines muscles of the back, shoulders, arms, chest and hands.

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Embodiments of the present invention may provide apparatus of an inexpensive, easy-to-use and simple design.

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These and other objects may be accomplished by the provisions of a generally O-shaped frame which is hinged at its midpoint, thus dividing the frame into two halves, each half being provided with a handle and means for holding one end of a multiplicity of lengths of fairly rigid yet resilient material such as steel springs.

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According to the present invention there is provided muscle-building apparatus comprising a first rigid portion with a first handle and a second rigid portion with a second handle, characterized by the first and second rigid portions being substantially identical and connected together so that each one of said handles is capable of being rotated relative to the other with the first or second rigid portion respectively, about an axis, the apparatus being substantially symmetrical about said axis and having resilient biasing means arranged to provide resistance to

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said relative rotation of said handles.

Further according to the present invention there is provided a muscle-building flexing apparatus for developing bending strength comprising:

- 5 (a) a substantially O-shaped frame hinged at its midpoint so as to form two generally U-shaped members that face each other and are pivotally connected to one another;
- 10 (b) each U-shaped member having a handle rigidly connected thereto and a retainer means for releasably retaining at least one end of one of a multiplicity of lengths of fairly rigid, yet resilient material; and
- 15 (c) said handles lying generally in a common plane and along a common axis prior to flexing the ends of the resilient material toward each other.
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An embodiment of muscle-building apparatus will now be described by way of example only, with reference to the accompanying drawings in which;

30 Figure 1 is a perspective view of the apparatus of the present invention showing it in a flexed mode;

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Figure 2 is a plan view of the apparatus of the present invention showing the preferred embodiment, and

5 Figure 3 is a side view of the apparatus shown in Figure 2 taken along the line 3-3, with the rest position of the apparatus in dotted outline.

Referring now to the drawings wherein like numerals indicate like elements, Figures 1 and 2
10 show the apparatus of the present invention as a generally O-shaped frame 1 comprising two U-shaped members 2 that are pivotally connected to each other at 3, each U-shaped member 2 having a handle 4, preferably with a handle grip 5, and retaining
15 means 6 for supporting either end of fairly rigid yet resilient material such as steel springs 7.

The frame 1 is generally O-shaped, comprising two generally U-shaped members 2 that may have
20 generally square corners as shown in Figure 1 or radiused corners. It should be of rigid construction, preferably of chrome-plated tempered steel, the pivotal connection 3 being of any suitable construction.

25 Connected to each U-shaped member 2 at or near the midpoint of the bottom of the U is a handle 4 which may be fastened thereto by welding, bolting, or tapping. The handles 4 are also preferably
30 made of tempered steel and are knurled to more tightly secure handgrip 5. The handgrips 5 may be fabricated from wood, rubber or other suitable material and preferably have notches

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therein as illustrated in Figure 1 to receive the thumbs of the user so as to relieve excessive stress on the thumb and hand muscles.

5 Inset within each U-shaped member is a retainer
6 for attaching the resilient material such as
spring steel having notches or other fastening means
adapted to detachably receive lengths of
resilient material such as spring steel. The
10 retainer 6 may be either rigidly or pivotally
attached to the U-shaped member, and may be of
virtually any cross-sectional shape. Any
suitable arrangement will do as the retainer
means, another example being in the form of
15 eyelets (not shown).

The resilient material 7 should be fairly
rigid yet flexible, such as steel coils or
ribbons of spring steel and should be fabricated
20 so as to be detachable at either end from retainer
6. In the case of steel coils, the ends are
preferably in the shape of nearly closed loops or
circles to engage notches on retainer 6. In
the case of flat ribbons of spring steel, each
25 end is preferably punched with a hole in the
same manner as a hacksaw blade, so as to engage
corresponding male members (not shown) on
retainer 6.

30 The amount of spring tension on each resilient
member 7 may be varied to accommodate the
particular level of muscle power of the user all
the way from the novice to the professional body
builder. The resistance of the apparatus to

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muscles may be gradually increased by simply adding additional lengths of resilient material; conversely, the resistance may be decreased by detaching the desired number. As power increases, the number and tension of springs may be increased to develop, strengthen and define the muscles of the thumbs, fingers, hands, wrists, forearms, triceps, pectorals, shoulder caps and the trapezius muscles. Preferably, the apparatus is provided to utilize from one to six lengths of 1/8 inch coil steel 3/4 inch in diameter and 6 inches long, although other lengths, diameters and strengths of steel may be used, depending upon the needs of the user.

In use, one handle is grasped in each hand, palms in the horizontal position facing downward, with the apparatus in rest position as shown in dotted outline in FIGURE 3. The handles are forced downward and inward along a curved path, as represented by the downward curving arrows in FIGURE 3 to a flexed position as therein shown in solid outline. Resistance of the apparatus to such bending motion develops those muscles, for example, of the back, shoulders, arms, chest and hands.

It is to be appreciated that the term "0-shaped" covers any loop, and embodiments may work on a tensional or compression restoring force tending to urge the apparatus to its initial position prior to use.

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A pneumatic cylinder may possibly be arranged instead of inherently resiliently biasing means.

5 The handles may in some embodiments be arranged to lie initially at any angle to one another rather than in a common plane and may be rotatable against resistance provided by the biasing means through any convenient angle, for example, 360° or 180° .

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The retaining bars 6 may be mounted in slots in the frame 1 and may be arranged to be detachable from the frame by sliding them out of the slots in some embodiments.

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The handles need not be axially aligned when they lie in a common plane.

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CLAIMS

1. Muscle building apparatus (1) comprising a first rigid portion (2) with a first handle (4) and a second rigid portion (2) with a second handle (4), characterized by the first and second rigid portions (2, 2) being substantially identical and connected together so that each one of said handles (4, 4) is capable of being rotated relative to the other with the first or second rigid portion (2, 2) respectively, about an axis, the apparatus being substantially symmetrical about said axis and having resilient biasing means (7) arranged to provide resistance to said relative rotation of said handles (4,4)
2. Apparatus (1) as claimed in Claim 1 in which the resilient biasing means (7) is preferably inherently resilient and the resistance provided by the biasing means (7) is adjustable.
3. Apparatus (1) as claimed in Claim 2 in which the biasing means (7) comprises a plurality of releasably attachable members (7) so that the biasing force provided by the biasing means (7) is capable of being adjusted to suit individual needs by detaching or attaching selected ones of said members (7) from or to the remainder of the apparatus (1).
4. Apparatus (1) as claimed in any one of the preceding claims in which the biasing means (7) provides a tensioned biasing force on said relative rotation.

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5. Apparatus as claimed in any one of the preceding claims in which the handles (4, 4) are biassed to lie in a first position relative to one another such that resistance to relative rotation of the handles (4, 4) is encountered on relative rotation of the handles (4, 4) towards each other and preferably each of said handles (4, 4) is capable of being rotated substantially through 360° relative to the other.
6. Apparatus (1) as claimed in Claim 5 in which said first position (2) is an open position in which the handles (4, 4) are apart from one another and preferably the handles (4, 4) and the first and second rigid portions (2, 4) lie in a common plane and preferably the handles (4, 4) are axially aligned and lie perpendicularly to said axis in said open position.
7. Apparatus as claimed in any one of the preceding claims in which the first and second rigid portions (2, 2) comprise generally U-shaped members (2, 2) and preferably spaced retaining means (6, 6) is provided to retain the biasing means on each said U-shaped member (2, 2) and preferably each retaining means (6, 6) comprises a bar (6,6) extending across the respective U-shaped member (2, 2) parallel to said axis each bar (6, 6) being rigidly or pivotally attached to its respective U-shaped member (2, 2).

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8. A muscle-building flexing apparatus (1) for developing bending strength comprising:
- (a) a substantially 0-shaped frame (2, 2) hinged at its midpoint (3, 3) so as to form two generally U-shaped members (2,2,) that face each other and are pivotally connected to one another;
 - (b) each U-shaped member (2, 2) having a handle (4, 4) rigidly connected thereto and a retainer means (6) for releasably retaining at least one end of one of a multiplicity of lengths (7) of fairly rigid, yet resilient material; and
 - (c) said handles (4, 4) lying generally in a common plane and along a common axis prior to flexing the ends of the resilient material (7) toward each other.
9. The apparatus of Claim 8 wherein the fairly rigid yet resilient material (7) is spring steel and preferably the spring steel is in the form of steel coil or in the form of ribbons.
10. The apparatus of Claim 8 wherein the retainer means (6) is a bar and preferably the bar (6) has connecting means for detachably engaging the fairly rigid yet resilient material and preferably the connecting means is in the form of notches.

FIG. 1

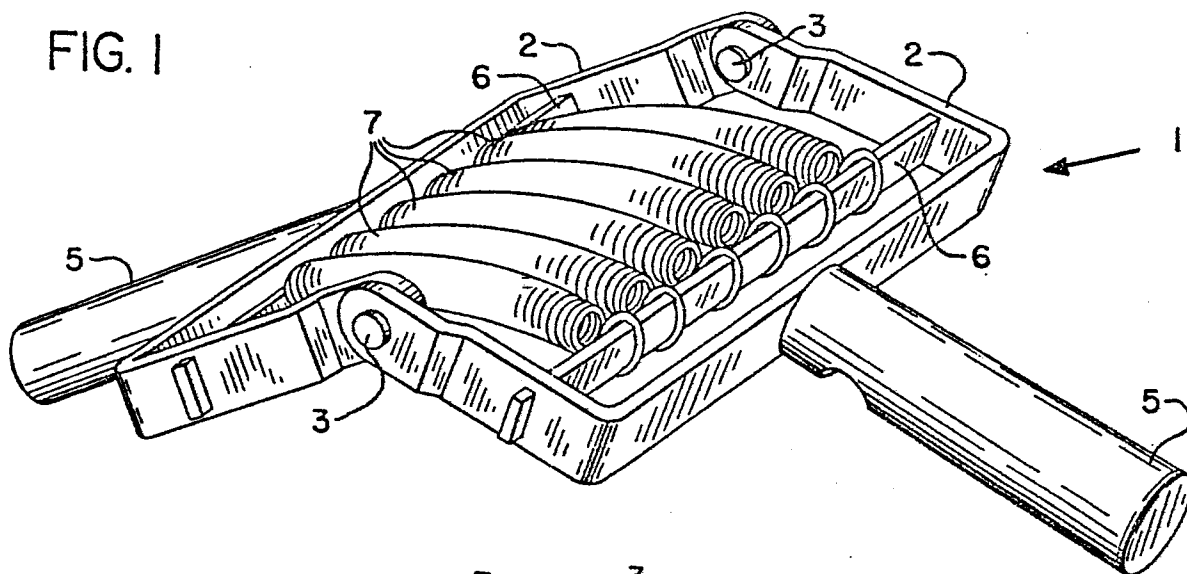
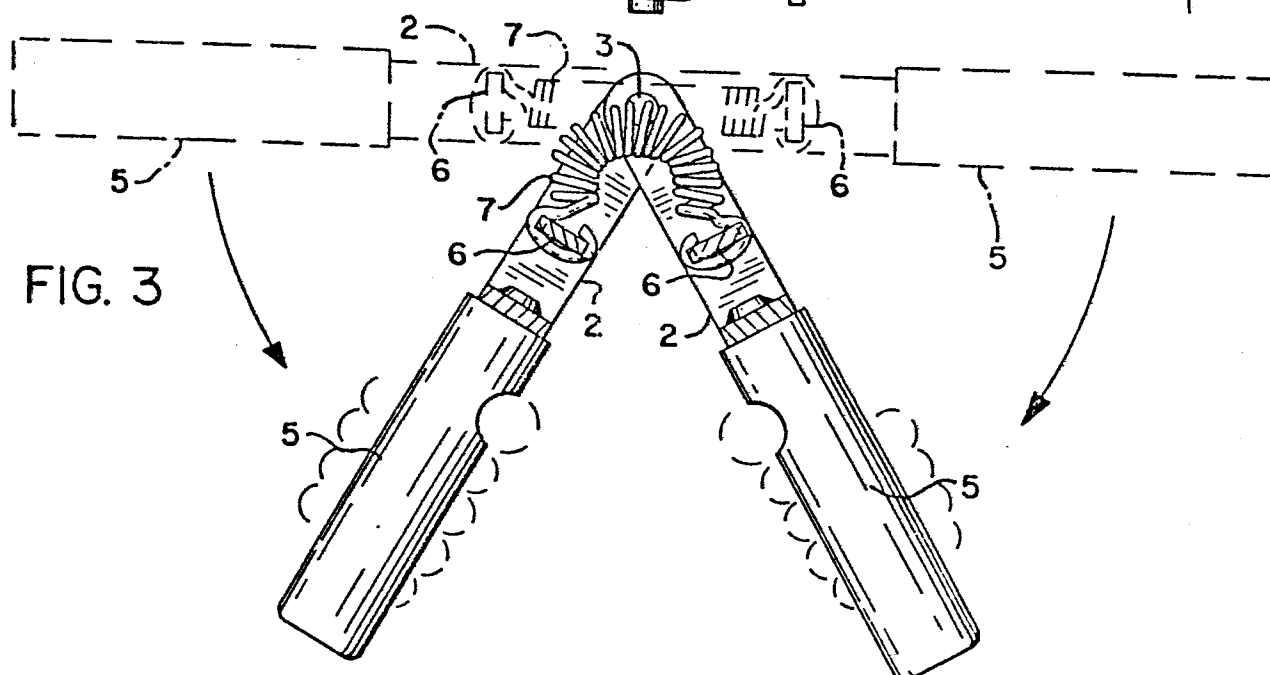
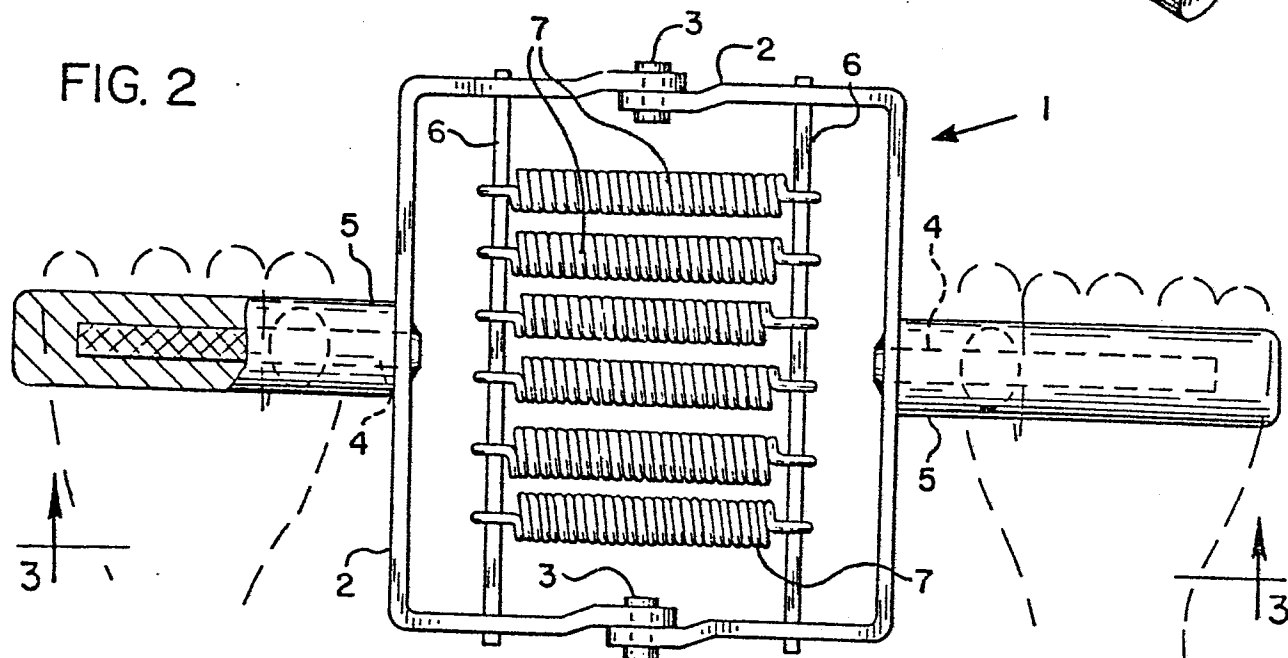


FIG. 2





DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
X	--- DE-A-1 678 245 (HEIMSPORT GmbH) * Whole document *	1-5	A 63 B 21/32
A		9	
X	--- FR-A- 635 954 (A. ULRICH et al.) * Whole document *	1-5	
X	--- DE-C- 448 275 (O. SCHMIDT) * Whole document *	1,2,4-6	
A		3,7,9	
			TECHNICAL FIELDS SEARCHED (Int. Cl. 3)
			A 63 B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 09-02-1983	Examiner VEREECKE A.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	