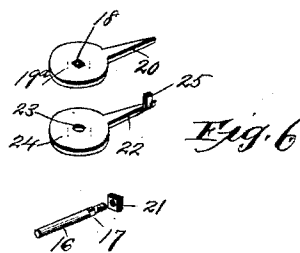
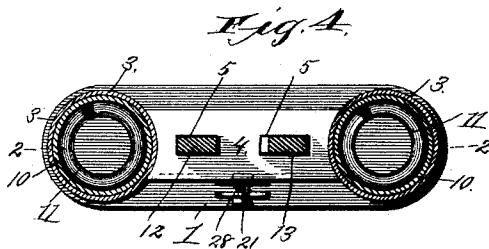
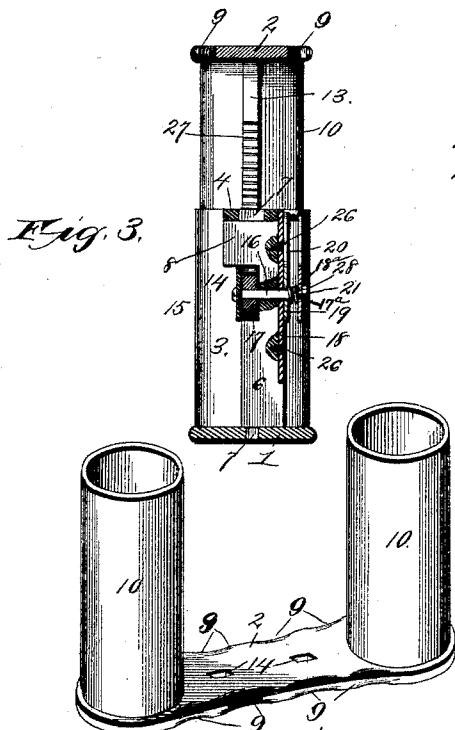
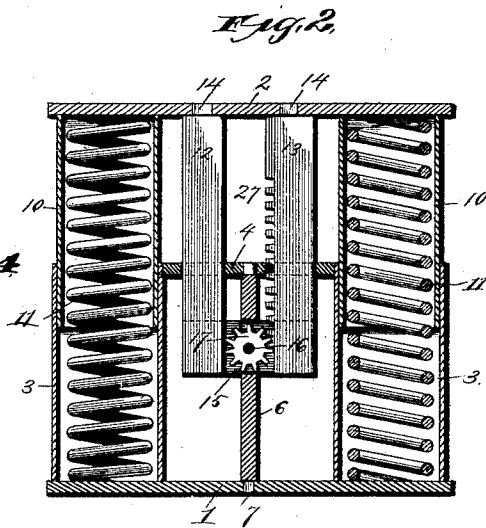
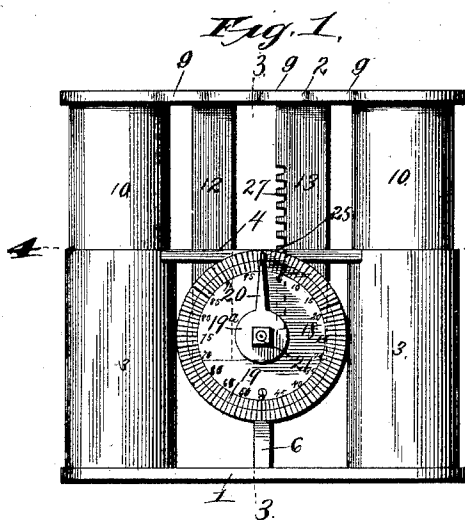


(No Model.)

C. W. McCLURE.
POCKET GRIP TESTER.

No. 468,154.

Patented Feb. 2, 1892.



Witnesses:
W. H. Thrope.
Geo. L. Condon

Fig. 5.
Inventor:
C. W. McClure,
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attorneys.

UNITED STATES PATENT OFFICE.

CHARLES W. McCLURE, OF KANSAS CITY, KANSAS.

POCKET GRIP-TESTER.

SPECIFICATION forming part of Letters Patent No. 468,154, dated February 2, 1892.

Application filed August 4, 1891. Serial No. 401,627. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. McCLURE, of Kansas City, Wyandotte county, Kansas, have invented certain new and useful Improvements in Pocket Grip-Testers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to appliances for indicating the muscular strength or power developed by the muscles of the hand, wrist, and forearm in the operation of grasping or gripping with the hand; and the objects of my invention are to produce a simple, durable, and inexpensive form of grip-tester, which shall possess such compactness of construction as will render it easy and convenient to carry the tester in a pocket of the user's clothing, and, furthermore, to produce a tester which shall be easy to use, and the proper manipulation of which shall be easily comprehended by the user.

To the above purposes my invention consists in certain peculiar and novel features of construction and arrangement, as herein-after described and claimed.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a front side elevation of my improved pocket grip-tester. Fig. 2 is a transverse vertical section of the same on the line 2 2 of Fig. 4. Fig. 3 is a transverse vertical section of the same on the line 3 3 of Fig. 1, the plane of such section being at right angles to that of Fig. 2. Fig. 4 is a horizontal cross-section of the same on the line 4 4 of Fig. 1. Fig. 5 is a detached perspective view of the finger-plate of the tester and its tubular telescoping casings. Fig. 6 comprises detached perspective views of certain of the operative parts of the tester, to be hereinafter described.

In the said drawings, 1 designates the palm-plate, and 2 the finger-plate, of my improved pocket grip-tester, the said plates being of elongated form and preferably rounded off smoothly at their ends, so as to prevent any injury to the material of the user's pocket. The palm-plate 1 is provided on its upper or inner side with two tubular casings, which

are either formed upon or suitably secured to the said palm-plate and which are open at their upper ends. The upper ends of these two casings are connected to each other by a cross bar or plate 4, which is likewise either secured to or formed integrally with the casings 3, and which is, furthermore, formed with two openings or apertures 5, for a purpose to be hereinafter explained. From the inner surface of the palm-plate 1 extends a support or standard 6, which is connected at its opposite end to the cross bar or plate 4, and which extends midway between the two tubular casings 3. As shown, the ends of this support are formed with reduced portions or dowels 7, which enter corresponding openings in the said palm and cross plates and secure the support 6 in position in the tester. It is to be understood, however, that, while this is the preferred manner of securing the support to the palm and cross plates, the support may be secured in position in any other suitable or preferred manner, or it may form an integral part of the said palm and cross plates. That end of the support 6 which is adjacent to the cross-plate 4 is provided with a rearward enlargement 8, for a purpose to be also hereinafter explained.

The finger-plate 2 corresponds in length and general form with the palm-plate 1, and the ends of said finger-plate are preferably rounded off smoothly similarly, as are the ends of the said palm-plate. The side edges or margins of this finger-plate, are, however, preferably provided with a number of smooth rounded indentations 9, which are designed to receive the fingers of the user; but it is to be understood that, if desired, these indentations may be dispensed with without departing from the essential spirit of my invention. To the lower or inner surface of this finger-plate 2 are secured two tubular casings 10, which are located near the ends of said finger-plate, and which are either formed integrally with said plate or suitably secured thereto, as preferred. These casings 10 are preferably of equal length with the casings 3, above described, but may, if preferred, be of greater length than the latter. In either event the tubular casings 10 are of sufficiently less diameter than the casings 3 to slide freely and telescopically within said casings 3, and

within each telescopic pair of casings 3 and 10 is inclosed one of two spiral compression-springs 11. Each of these springs is of steel, brass, or any other material possessing sufficient strength or resilience to retain the fingers in their remote positions and to require increasing force in order to compress the springs and to bring the plates 1 and 2 toward each other.

12 and 13 designate, respectively, a guide-bar and a rack-bar, each of which projects parallel with the other from the under or inner surface of the finger-plate 2. These guide and rack bars work through the openings 5 in the cross-plate 4, above described, and their upper or outer ends are preferably provided with reduced portions or dowels 14, which are secured in openings in the said finger-plate. It is to be understood, however, that these guide and rack bars may be secured to the finger-plate in any other suitable or preferred manner, and that they may be formed integrally with the finger-plate, if so preferred, without departing from the essential spirit of my invention. At their inner or lower ends the guide-bar and rack-bar are connected together by a cross piece or brace 15, which is secured at its ends to the ends of the said bars by screws 15 or equivalent means, the said cross-piece serving both as a brace to connect the two bars 12 and 13 and as a stop to engage the shoulder of the enlargement 8, and thus limit the outward movement of the finger and palm plates, as hereinafter described.

In the upper or inner part of the support 6 is journaled a short arbor 16, which is thus arranged to revolve in said support, and upon the rear end of this spindle is mounted a gear-wheel 17, by which said spindle is rotated. Upon the front of the support 6 is secured a disk 18, the outer face of which is provided with a circular indicating-scale 19, which is graduated to pounds, ounces, and fractions thereof or which is graduated to the units and multiples and fractions of units of any other system of indicating pressure or weight. The outer or front part of the spindle or arbor passes centrally through this disk or dial 18, and this outwardly or forwardly extending portion of the spindle 16 is formed with a squared portion 17^a, which extends into the square or angular opening 18^a in the hub 19^a of a pointer 20, the said pointer thus extending radially from the spindle 16 and parallel with the outer face of disk or dial 18, said pointer being retained upon the spindle by a nut 21, which is screwed upon the front extremity of the spindle. If desired, a second dial hand or pointer may be provided, the rounded part of the spindle just back of its squared portion 17^a extending into a circular opening 23 in the hub 24 of said pointer, so that said pointer can be turned upon the spindle 16 when desired. This auxiliary pointer is thus located immediately back of

the main pointer 20 and between said pointer and the outer face of the dial 18, and the outer end of said auxiliary pointer is provided with an outwardly-extending lug 24, which is engaged at times by the main pointer 20. The disk or dial 18 is shown as secured to the support 6 by pins or screws 26, but it is to be understood that said disk or dial may be otherwise secured to the support and may be soldered thereto, if preferred. The teeth 27 of the rack-bar 13 engage at all times with the teeth of the gear-wheel 17, and a coiled spring 28 surrounds the outer end of the spindle 16 between the main pointer 20 and the auxiliary pointer 22, and thus presses frictionally upon the hub 24 of the latter pointer.

The operation of the above-described pocket grip-tester is as follows: When the user desires to test his or her grasping strength, the palm-plate 1 is placed in the palm of the hand near the wrist or base of the thumb, and the fingers are placed over the finger-plate 2. The user now closes the hand as tightly as possible, which movement compresses the springs 11 more or less according to the muscular strength of the user, and causes the tubular casing 10 to slide telescopically within the tubular casings 3. At the same time the rack-bar 13 moves toward the inner surface of the palm-plate and the teeth of the rack-bar revolve the pinion 17, and by it the spindle more or less, thus causing the pointer 20 to move around the face of the dial to a greater or less distance according to the strength of the user. By now examining the dial-face and pointer the amount of pressure exerted will be ascertained and consequently the grasping or gripping force of the user. When the auxiliary pointer is used its advancing side will engage the lug 25 of the auxiliary pointer and carry said pointer around as long or as far as the main pointer is advanced. As soon, however, as the user has relaxed the grasp upon the instrument the auxiliary pointer will remain at the precise point to which it was carried by the main pointer, and thus the pressure exerted, and consequently the muscular grasping power of the user, can be accurately ascertained. After this has been done the user can set the auxiliary pointer back to the starting-point in readiness for further use.

I desire it to be understood that the auxiliary pointer may be dispensed with, if desired, without departing from the essential spirit of my invention, but that I regard it as a novel and useful attachment to the tester.

From the above description it will be seen that the pocket grip-tester is very simple, strong, and durable in construction, easy to operate, and capable of accurately indicating the grasp or gripping strength of the user. Owing to its adaptability to be carried in the user's pocket, it can be used as frequently as desired, and will consequently rapidly develop the strength of the muscles of the hands,

wrists, and arms, and will, moreover, be found to pleasantly divert the user.

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

1. A pocket grip-tester comprising a palm-plate provided with a pair of tubular casings, a finger-plate also provided with a pair of tubular casings working telescopically within the casings of the palm-plate, and a pair of coiled compression-springs, each located within one pair of said telescopic casings, substantially as set forth.

2. A pocket grip-tester comprising a palm-plate provided with a pair of tubular casings and carrying a graduated dial, a pointer mounted upon a rotating arbor and provided with a gear-wheel, a finger-plate carrying also a pair of tubular casings working telescopically within the casings of the palm-plate, a rack-bar carried by the finger-plate and meshing with the cog-wheel, and a pair of coiled compression-springs, each located within one pair of the tubular casings, substantially as set forth.

3. A pocket grip-tester comprising a pair of plates having tubular and telescopic casings, a pair of coiled springs inclosed within said casings, a cross-bar connecting the telescopic casing of one of the plates, a dial carried by one of the plates, a main and auxiliary pointer carried by an arbor, and a coiled

spring surrounding one end of said arbor, substantially as set forth.

4. A pocket grip-tester comprising a finger-plate having a pair of tubular casings, a guide-bar and a rack-bar located intermediately of said casings and connected at their outer ends by a cross-piece, a number of curved indentations in the edges of said finger-plate, a palm-plate having also a pair of tubular casings arranged to work telescopically upon the casings of the finger-plate, a cross-piece connecting the ends of said casings, a support connected to the palm-plate and to the cross-piece and having an offset or enlargement adjacent to the cross-piece, a spindle journaled in said support and carrying a pinion engaging the rack-bar, a dial-plate secured to the support, a pair of pointers secured upon the front end of the spindle, one of said pointers turning with said spindle and the other turning upon the spindle, and a coiled spring interposed between the hubs of the pointers and surrounding the front end of the spindle, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES W. McCLURE.

Witnesses:

JNO. L. CONDRON,
H. E. PRICE.