

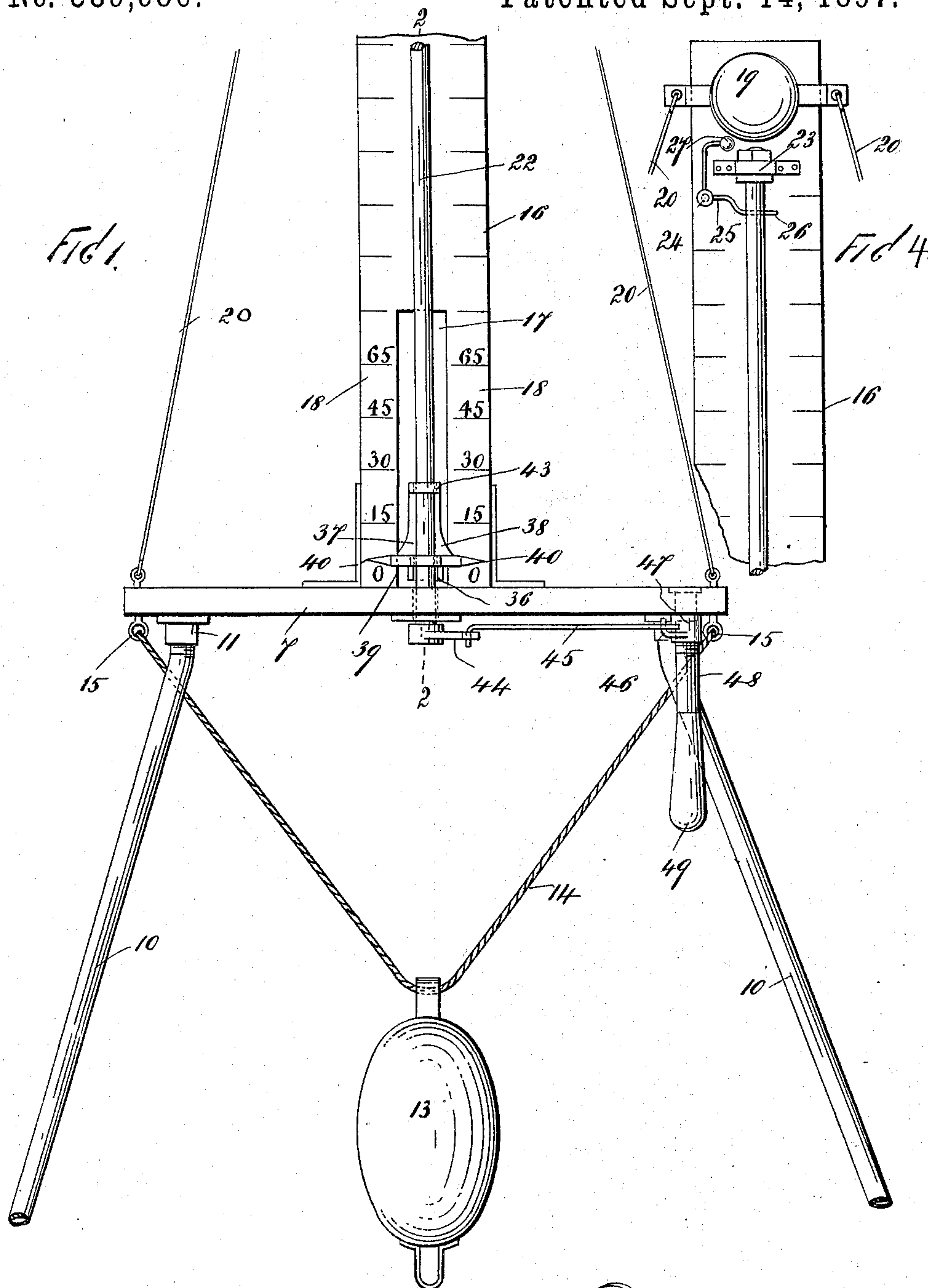
(No Model.)

3 Sheets—Sheet 1.

W. SHAY.  
TESTING MACHINE.

No. 589,986.

Patented Sept. 14, 1897.



WITNESSES.

John Buckler  
C. Gerst

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3 Sheets—Sheet 2.

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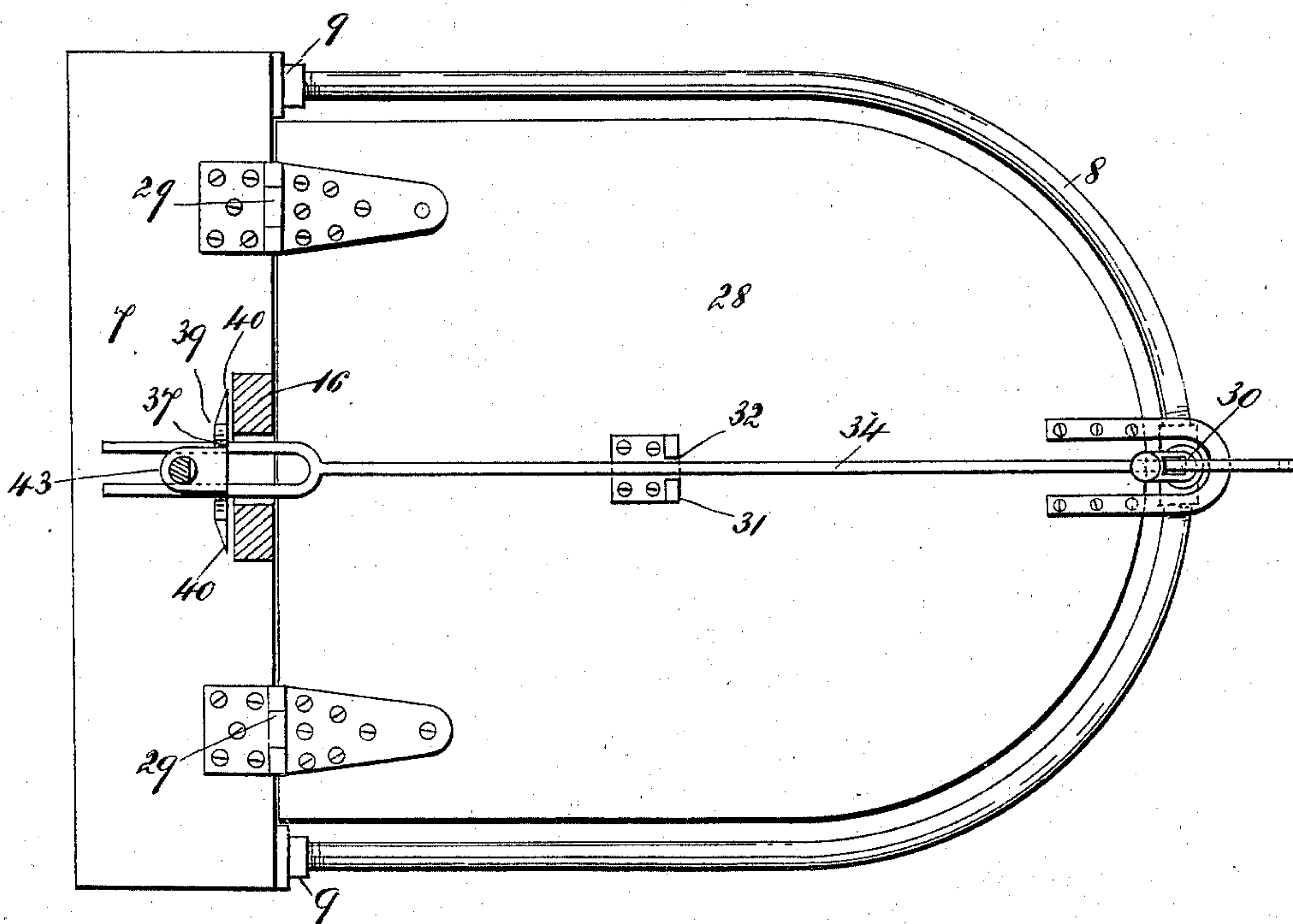
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*Fig. 3.*



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# UNITED STATES PATENT OFFICE.

WILLIAM SHAY, OF ANSONIA, CONNECTICUT.

## TESTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 589,986, dated September 14, 1897.

Application filed July 8, 1897. Serial No. 643,847. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM SHAY, a citizen of the United States, residing at Ansonia, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Testing-Machines, of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to testing-machines, and particularly to that class thereof which are designed to measure the force of a blow delivered by the arm; and the object thereof is to provide an improved device of this class which is simple in construction and operation and which is also comparatively inexpensive.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which—

Figure 1 is a front view of a part of my improved machine; Fig. 2, a partial section on the line 2 2 of Fig. 1; Fig. 3, a partial section on the line 3 3 of Fig. 2; Fig. 4, a front view of the top portion of the machine, and Fig. 5 a sectional side view thereof.

In the drawings forming part of this specification the separate parts of my improvement are designated by the same numerals of reference in each of the views, and in the practice of my invention I provide a machine for the purpose herein specified which comprises a main frame composed of a front plate 7, to which is secured a yoke 8, said yoke consisting, preferably, of a tubular rod, the ends of which are screwed into keepers 9, secured to the plate 7. The frame, consisting of the plate 7 and the yoke 8, is provided with a plurality of legs 10, which are preferably three in number, and two of which are detachably connected with the plate 7, as shown at 11 in Fig. 1, and the other being detachably connected with the rear end of the yoke 8, said yoke being provided with a tubular sleeve 12, through which said leg passes. I also provide an ordinary punching-bag 13, which is suspended from a rope 14, the ends of which are connected with the plate 7, as shown at 15, and mounted centrally of the plate 7 is a standard 16, which is provided at its lower end with a vertical slot

or opening 17, at each side of which is a scale 18, and the upper end of the standard 16 is provided with a bell or gong 19, which is connected therewith in any desired manner, and said standard is also provided with two guy or brace rods 20, which are connected with the ends of the plate 7, and with another guy or brace rod 21, which is connected with the upper end of the leg 10, which supports the yoke 8 of the frame.

Mounted in front of the standard 16 is a rod 22, the upper end of which passes loosely through a keeper 23, and adjacent to this keeper is pivoted at 24 a crank-lever 25, one arm of which projects between the rod 22 and the standard 16, as shown at 26, and the other projects upwardly and is provided with a ball or knob 27, which is adapted to operate in connection with the bell or gong.

The space between the yoke 8 and the plate 7 of the main frame is closed by a supplemental plate 28, which is hinged to the plate 7 at 29, and the outer end of the plate 28 is circular in form to correspond with the form of the yoke 8, and secured thereto is a yoke 30, through which the upper end of the leg 10, which is connected with said yoke, passes, and said plate 8 is provided centrally with a fulcrum-block 31, which is provided with a notch or recess 32, and pivotally connected with the upper end of the leg 10, which is connected with the yoke 8 of the main frame, as shown at 33, is a lever 34, with the outer end of which is connected a spring 35, which is also connected with the said leg 10, and the forward end of the lever 34 is provided with a straight extension 36, which passes through the slot or opening 17 in the standard 6, and mounted on the rod 22 and adapted to rest on the extension 36 of the lever 34 is a gage 37, said gage consisting of a vertical plate 38, provided at its lower end with a cross-head 39, the ends of which are pointed, as shown at 40, and the upper end of the plate 36 is provided with a downwardly-directed spring 41, which is adapted to operate in notches or recesses 42, formed in the rod 22, and secured to the upper and lower ends of the said plate 38 of the gage 37 are keepers 43, through which the rod 22 passes.

The lower end of the rod 22, which passes through the plate 7 of the main frame, is pro-



vided with an arm 44, with which is pivotally connected a rod 45, which is pivotally connected with an arm 46, formed on a sleeve 47, secured to a shaft 48, which is revoluble in the plate 7 and which is provided at its lower end with a handle 49, and by turning the shaft 48 by means of the handle 49 the rod 22 may be turned in its supports, so that the notches or recesses 42 therein will be at the front or at the side thereof and not at the back, as shown in Fig. 2.

The gage 37 is adapted to move vertically and freely on the rod 22 and is designed to be raised and lowered by the lever 34, and said gage will be held at any point on said rod by means of the spring 41, and in order to release said spring so that the gage will drop to the bottom of the rod 22 it is only necessary to turn said rod by means of the shaft 48, as hereinbefore described.

Secured to the coupling-head 12, through which the leg 10, which supports the yoke 8 of the main frame, passes, is a registering apparatus 50, through the upper end of which projects a pin 51, by means of which the registering apparatus is operated, and said registering apparatus is held normally in the position shown in Fig. 2, and said pin 51 is adapted to be struck by the yoke 30 in such manner as to operate said registering apparatus, as hereinafter described.

The operation will be readily understood from the foregoing description, when taken in connection with the accompanying drawings and the following statement thereof.

The plate 28, which is hinged to the plate 7 of the main frame or the free end of said plate, is adapted to be raised when struck from beneath, and in practice the punching-bag 13 is struck from the front and forced backward and upward until it strikes the plate 28. This operation forces said plate upwardly, and the fulcrum-block 31 forces the free end of the lever 34 upwardly in the slot 17 of the standard 16, and this operation forces the gage 37 upwardly on the rod 22, and said gage will be locked at the highest point it reaches by the spring 41, which forms a part thereof. The force of the blow will of course be measured by the gage 37, the points 40 of the cross-head 39 thereof indicating on the scale or scales 13 the force of the blow, as will be readily understood. Each time that the plate 28 is struck and forced upwardly, as described, it immediately drops backward into position and the outer end of the yoke 30 will operate the registering apparatus 50 and thus record each strike or each time that the machine is operated. If the gage 37 be driven to the top of the rod 22, it will operate the crank-lever 25 and cause the latter to sound the bell or gong 19, and this device is intended to indicate the force of the greatest blow that can be measured by the apparatus. The gage 37, while being free to move vertically on the rod 22, cannot turn thereon by reason of the

standard 16, adjacent to which it is supported, and by reason of this construction it will be apparent that when the rod 22 is turned by the shaft 48, as hereinbefore described, the spring 41 of the gage 37 will be disconnected from the notches or recesses 42 in said rod 22 and said gage will be free to drop downwardly on said rod.

It will thus be seen that I accomplish the object of my invention by means of a device which is simple in construction and operation and is perfectly adapted to accomplish the result for which it is intended, and it will be apparent that changes in and modifications of the construction herein described may be made without departing from the spirit of my invention or sacrificing its advantages.

Having fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A testing-machine comprising a suitably-supported main frame, composed of a front plate, and a yoke secured thereto, a supplemental plate hinged to said front plate and occupying the space within said yoke, a vertical standard secured to the front plate and provided in its lower end with a slot at the side of which is a scale, a lever pivotally supported above the rear end of said yoke and provided with a fulcrum-block which is mounted on said supplemental plate, and with an extension which passes through the slot in said standard, a revoluble rod mounted in front of said standard, and provided with notches or recesses in one side thereof, and with a vertically-movable gage which rests upon the extension of said lever, said gage being provided with a spring which operates in connection with said notches or recesses, substantially as shown and described.

2. A testing-machine comprising a suitably-supported main frame composed of a front plate, and a yoke secured thereto, a supplemental plate hinged to said front plate and occupying the space within said yoke, a vertical standard secured to the front plate and provided at its lower end with a slot at the side of which is a scale, a lever pivotally supported above the rear end of said yoke and provided with a fulcrum-block which is mounted on said supplemental plate, and with an extension which passes through the slot in said standard, a revoluble rod mounted in front of said standard, and provided with notches or recesses in one side thereof, and with a vertically-movable gage which rests upon the extension of said lever, said gage being provided with a spring which operates in connection with said notches or recesses, and a punching-bag suspended beneath said front plate by a flexible support, substantially as shown and described.

3. A testing-machine comprising a suitably-supported main frame composed of a front plate, and a yoke secured thereto, a supplemental plate hinged to said front plate and



occupying the space within said yoke, a vertical standard secured to the front plate and provided at its lower end with a slot at the side of which is a scale, a lever pivotally supported above the rear end of said yoke and provided with a fulcrum-block which is mounted on said supplemental plate, and with an extension which passes through the slot in said standard, a revoluble rod mounted in front of said standard, and provided with notches or recesses in one side thereof, and with a vertically-movable gage which rests upon the extension of said lever, said gage being provided with a spring which operates in connection with said notches or recesses, and a punching-bag suspended beneath said front plate by a flexible support, said standard being also provided at its upper end with a bell or gong which is adapted to be operated by said vertically-movable gage, substantially as shown and described.

4. A testing-machine comprising a suitably-supported main frame, composed of a front plate, and a yoke secured thereto, a supplemental plate hinged to said front plate and occupying the space within said yoke, a vertical standard secured to the front plate and provided at its lower end with a slot at the side

of which is a scale, a lever pivotally supported above the rear end of said yoke and provided with a fulcrum-block which is mounted on said supplemental plate and with an extension which passes through the slot in said standard, a revoluble rod mounted in front of said standard, and provided with notches or recesses in one side thereof, and with a vertically-movable gage which rests upon the extension of said lever, said gage being provided with a spring which operates in connection with said notches or recesses, and a punching-bag suspended beneath said front plate by a flexible support, said standard being also provided at its upper end with a bell or gong which is adapted to be operated by said vertically-movable gage, and a registering apparatus which is adapted to be operated by said supplemental plate, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 7th day of July, 1897.

WILLIAM SHAY.

Witnesses:

C. GERST,  
B. RHEDER.