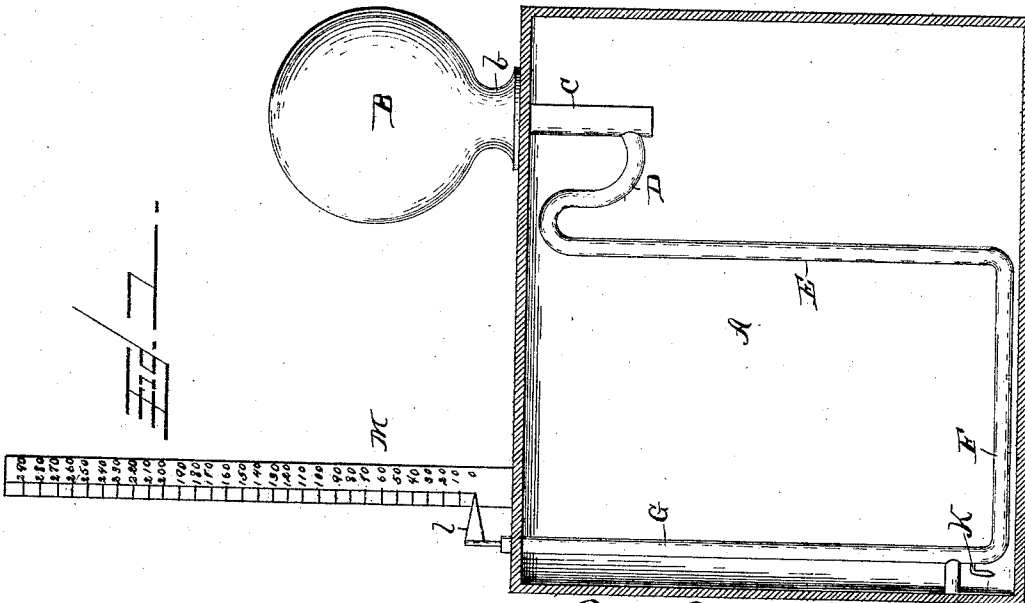
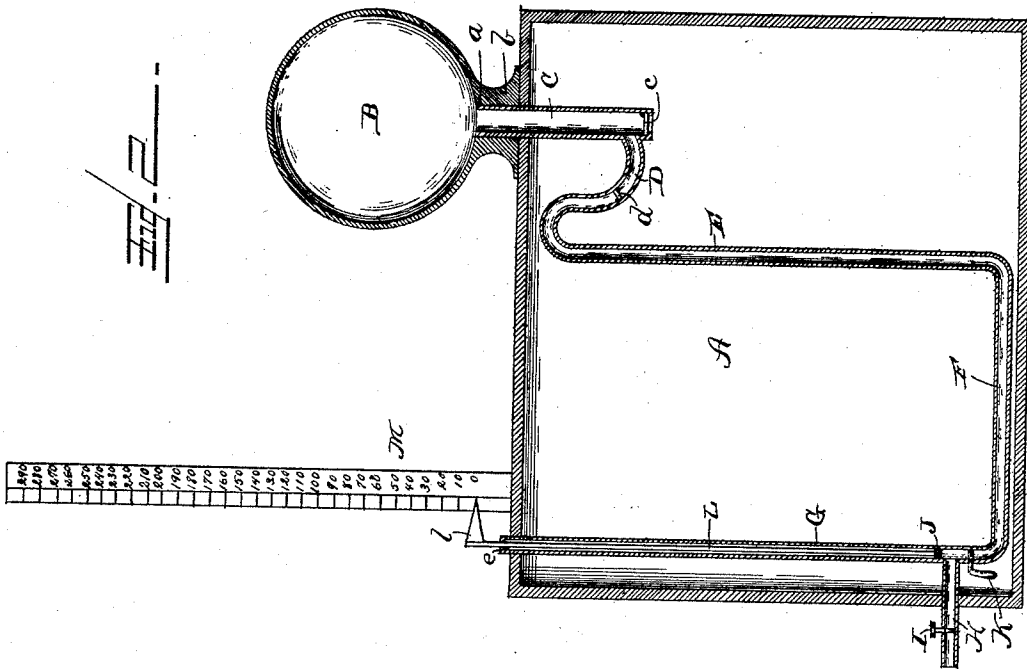


(No Model.)

P. J. DOOLING.
STRENGTH TESTING DEVICE.

No. 482,623.

Patented Sept. 13, 1892.



WITNESSES

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UNITED STATES PATENT OFFICE.

PATRICK JAMES DOOLING, OF FOLSOM, CALIFORNIA.

STRENGTH-TESTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 482,623, dated September 13, 1892.

Application filed April 28, 1892. Serial No. 431,018. (No model.)

To all whom it may concern:

Be it known that I, PATRICK JAMES DOOLING, a citizen of the United States, residing at Folsom, in the county of Sacramento and State of California, have invented certain new and useful Improvements in Strength-Testing Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to an improved strength-testing device; and it has for its object to provide a device of a cheap, simple, and durable construction through the medium of which the power of a blow or number of blows may be ascertained.

The invention will be fully understood from the following description and claims when taken in conjunction with the accompanying drawings, in which—

Figure 1 is an elevation of my improved device, and Fig. 2 is a vertical longitudinal section of the same.

Referring by letter to the said drawings, A indicates the main frame or casing of my testing device, which may be of any approved form and construction, although that illustrated is preferable.

Suitably connected to and braced by the frame or casing A upon which it rests is a bulb B, which is formed from a suitable resilient material—such as rubber—whereby it will resume its normal shape after being struck or indented. This bulb B, as better shown in Fig. 2 of the drawings, is provided with an aperture *a* and a neck *b*, surrounding said aperture, in which is seated and secured the end of a pipe C, which is provided at or adjacent to its lower end with an upwardly-opening clack or check valve *c*, which is designed and adapted to permit the passage of air to the bulb B when the same is resuming its normal form after being indented.

Connected at one end to the pipe C at an intermediate point in the length thereof is a preferably-curved pipe D, which is provided, as shown, with a clack or check valve *d*, which opens away from the pipe C, and is designed to permit the passage of air to the pipe E and prevent the same from returning to the pipe C. This pipe E, which is connected to or

formed integral with the pipe D, is connected at its opposite end to a pipe F, which is connected in turn to a pipe G, which is provided at its free end with a cap *e*, having a central aperture, for a purpose presently described.

Leading from the pipe G at a point adjacent to the lower end thereof is a branch pipe H, which is provided with a suitable cock or valve I, through the medium of which air may be exhausted from the pipe G to permit the piston J, which is movable in said pipe, to resume its normal position after it has been forced up the pipe G by compressed air admitted from the pipe F by opening the valve K, which is preferably situated between the pipes F G, as illustrated.

Connected to the piston J, which is provided with suitable packing to prevent the air from passing by the same, is a piston-rod L, which takes up through the central aperture in the cap *e* of the pipe G, and is provided at its upper end with a lateral index finger *l*, which when the piston is moved, as presently described, will travel along a graduated bar, as M, and indicate the power of the blow or blows upon the resilient bulb B. This bar M may be graduated in any approved manner and its divisions numbered from "0" to "200," as illustrated or in any suitable manner.

In operation when it is desired to ascertain the power of a single blow the cock or valve K is opened and the bulb B is struck, when the air from said bulb B will take through the pipes C, D, E, and F, and will cause the piston J to take up or along the pipe G and the index-finger *l* to move along the graduated bar M and indicate the power of the blow. When, however, it is desired to ascertain the collective power of a number of blows, the valve K is closed and the bulb B is struck the desired number of times. As the bulb B is struck each time it will be readily perceived that a quantity of air will be forced into the pipes E F and will in a measure be compressed therein. After the bulb B has been struck the desired number of times the cock or valve K is opened, when the piston J will be forced up or along the pipe G, and the index-finger carried by the piston-rod will indicate upon the graduated bar M the collective power or force of the number of blows.

Although I have in some respects specifically described the construction and relative arrangement of the several elements of my improved testing device, yet I do not desire
 5 to be confined to the same, as such changes or modifications may be made as fairly fall within the scope of my invention.

Having described my invention, what I
 10 claim, and desire to secure by Letters Patent, is—

1. In a strength-testing device substantially as described, the combination, with a resilient bulb and a suitable means for feeding
 15 the resilient bulb, a piston movable in said pipe G, the piston-rod connected to the piston and carrying an index-finger, and a graduated scale or bar placed adjacent to the path of the index-finger, substantially as and for the
 20 purpose set forth.

2. In a strength-testing device substantially as described, the combination, with a resilient bulb and a suitable means for feeding
 25 air thereto, of the pipe G, a pipe intermediate the pipe G and a clack or check valve arranged in the intermediate pipe and opening away from the bulb, a piston movable in the pipe G, the piston-rod connected to the piston and carrying an index-finger,
 30 and a graduated scale or bar placed adjacent to the path of the index-finger, substantially as and for the purpose set forth.

3. In a strength-testing device substantially as described, the combination, with a
 35 resilient bulb, a suitable means for feeding

air thereto, the pipe G, a pipe intermediate the pipe G and the bulb, a piston movable in the pipe G, the piston-rod connected to the piston and carrying an index-finger, and a graduated scale or bar placed adjacent to the
 40 path of the index-finger, of a check or clack valve arranged in the intermediate pipe and opening away from the bulb and a cock or valve arranged in the intermediate pipe at a point between the check or clack valve and
 45 the pipe G, substantially as and for the purpose set forth.

4. In a strength-testing device substantially as described, the combination, with the bulb, the pipe C, connected therewith and having
 50 a check or clack valve opening toward the bulb, the pipe G, a pipe intermediate the pipes C and G, a check or clack valve arranged in the intermediate pipe and opening away from the bulb, a cock or valve arranged
 55 in the intermediate pipe between the clack or check valve and the pipe G, the branch leading from the pipe G, and a cock or valve mounted in said branch, of a piston mounted in the pipe G and a piston-rod connected to
 60 the piston and carrying an index-finger at its free end, all substantially as and for the purpose described.

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

PATRICK JAMES DOOLING.

Witnesses:

J. H. BURNHAM,
 T. P. BURNHAM.