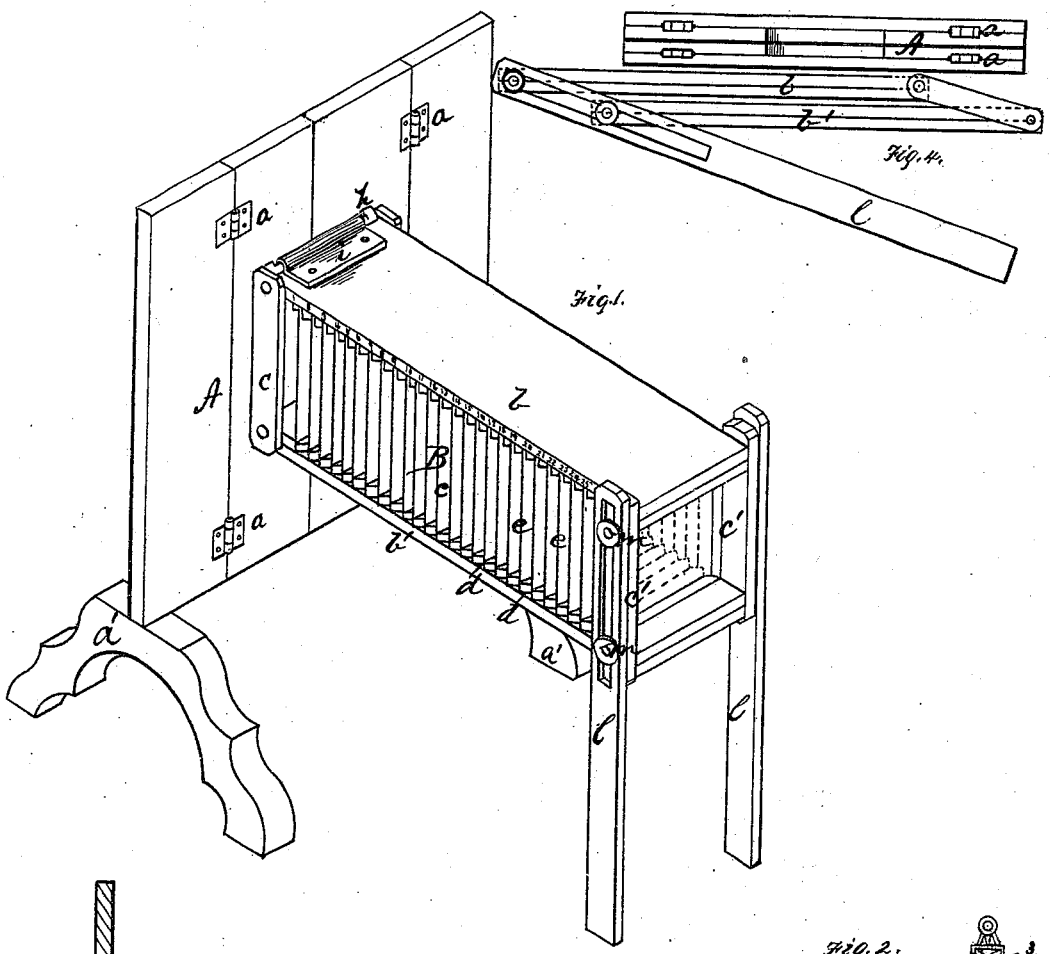
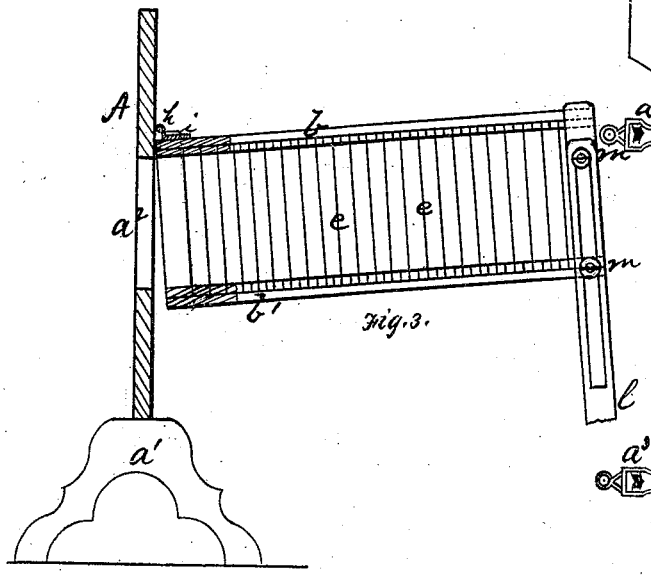
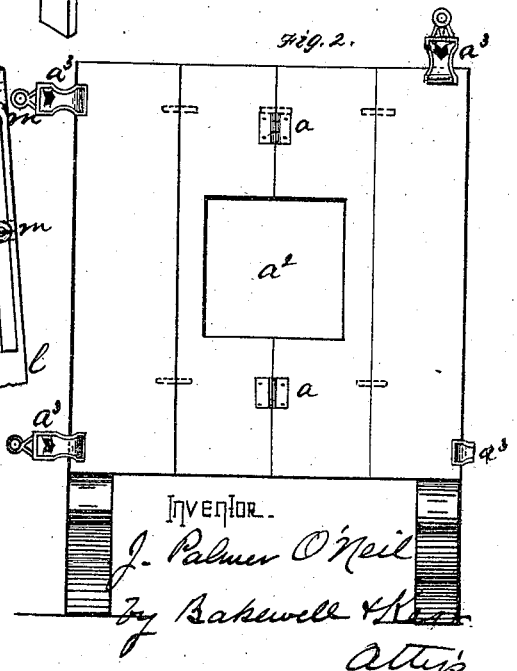
J. P. O'NEIL.

Target for Testing Penetration of Shot.

No. 197,398. Patented Nov. 20, 1877.







Witnesses.
R. C. Wrenshall
John K. Smith

Inventor.
J. Palmer O'Neil
by Bakewell & Kerr
Atty's

UNITED STATES PATENT OFFICE.

J. PALMER O'NEIL, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN TARGETS FOR TESTING PENETRATION OF SHOT.

Specification forming part of Letters Patent No. **197,398**, dated November 20, 1877; application filed October 9, 1877.

To all whom it may concern:

Be it known that I, J. PALMER O'NEIL, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Devices for Testing the Distribution and Penetration of Shot, &c.; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, in which—

Figure 1 is a rear perspective view of devices embodying my invention. Fig. 2 is a front view of target. Fig. 3 is a side elevation, partly in section, showing the adjustment of the devices for rising or falling ranges. Fig. 4 is a view of the parts detached and folded for transportation.

Like letters refer to like parts wherever they occur.

My invention relates to portable and adjustable devices for testing the distribution and penetration of shot and quality of powder; and consists, first, in combining, with a target which will give the distribution, a test-rack for supporting a series of papers in rear of the target, which determine the penetration or power of the gun; secondly, in so constructing and connecting the target and test-rack that the latter can be adjusted with relation to the target to suit the grades upon which it may be necessary or desirable to use the devices; and, finally, in details of construction, hereinafter more specifically set forth.

The object of the present invention is to provide devices by means of which an uniform and standard test can be applied to ammunition and fire-arms, especially shot-guns and sporting-powder, so that comparative values may be determined independently of the mere judgment of the shooter.

The ordinary method of testing the power of shot-guns as to penetration, &c., as now practiced, is to fire the charge from a given distance into a blank or other book, the number of leaves perforated determining the penetration; but it is evident that the varying quality of paper and the solidity or compact arrangement of the leaves, as well as other causes apparent to the sportsman, must render such a method at all times uncertain, variable in results, and generally unsatisfactory.

With my devices, a standard as to distance, distribution, penetration, &c., having been once fixed and determined, unvarying tests can be applied, and comparative results established.

I will now proceed to describe my invention, so that others skilled in the art to which it appertains may apply the same.

In the drawing, A indicates the target, which is usually a frame from thirty to forty inches square, composed of light boards, preferably hinged or jointed, as shown at *a a*, so as to be folded or detached for packing and transportation. This target A is supported by detachable feet a^1, has a central opening, a^2, about nine to twelve inches, or corresponding to the cross-section of the test-rack employed, and is provided with clamps a^3 or other suitable means of securing the target-sheet.

B is the test-rack, constructed of bottom and top pieces *b b'*, connected by side bars or uprights *c c'*. The pieces *b b'* are grooved at regular intervals, as at *d d*, for the reception and support of cards or papers *e*, and the grooves are numbered to indicate the relation of the test-card to the target. The connection between the target and test-rack is preferably made by means of a detachable hinge or hook-and-eye connection, *h i*, and the opposite end of the rack is supported by slotted uprights *l*, secured thereto by set-screws *m*, which permit of the downward extension of the uprights when the rear end of the rest is to be elevated, as in firing upon a rising or falling grade.

In such tests as I have made heretofore, I have found a rack ten inches square and thirty-six to forty inches in length to answer the purpose. In such or a similar rack straw-board, varying from No. 45 to No. 60 (well-known to the trade) may be employed, the pieces being arranged from one-half to three-fourths of an inch apart.

The devices are employed as follows: The ground having been selected and marked off, the target is arranged in position for the shooter. Two cards, *e*, of the test-rack are perfoated in the center and placed at opposite ends of the rack, and a person standing in rear of the rack loosens the set-screws, raising or lowering the rear end of the rack, and extend-

ing the uprights *l* until the sight through the openings in both cards show that the rack is in line with the range, after which the set-screws are tightened, the perforated cards are removed, and other cards *e* inserted, and *a* sheet secured by clamps or otherwise to the face of the target. After the firing, the distribution can be readily determined by counting the number of shots in a selected circle of thirty inches or more diameter, and the penetration by the number of cards perforated by a given number of shot.

The adjustability of the test-rack insures the fair presentation of the test-sheets, so that no glancing can occur.

The parts *b b'* constituting the rack may be as shown or side pieces, and made by sawing grooves in boards, or by corrugating strips of sheet metal, which will answer the purpose very well.

The devices, when not in use, can be packed for storage or transportation by unhooking the rack, removing the cards *e*, and pressing the two parts *b b'* together, so as to bring the extension-supports *l* in line with the parts *b b'*. The feet *a* are then removed from target A, (or may be hinged to fold against the same,) the sections folded together, and the whole arranged as shown in Fig. 4.

The advantages of my invention are: First, that an unvarying standard test for penetration and distribution of shot and quality of powder can be established; secondly, the devices are simple and effective for the purposes intended; and, thirdly, they are cheap, compact, and can be readily packed and transported.

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

1. In a device for testing the distribution and penetration of shot and quality of powder, the combination of a target and a rack for test-cards, arranged in rear thereof, substantially as specified.

2. In a device for testing the penetration of shot and quality of powder, the adjustable test-card rack, substantially as and for the purpose specified.

3. In a device for testing the distribution and penetration of shot, the combination of the target and detachable test-rack, the parts constructed and adapted to be folded for transportation, substantially as specified.

4. The test-rack for testing the penetration of shot, consisting of boards *b b'*, grooved at intervals, and connected, to form a frame for the reception of cards *e*, substantially as specified.

5. The combination, with the test-rack B, of the extension-supports *l l* and set-screws, substantially as and for the purpose specified.

In testimony whereof I, the said J. PALMER O'NEIL, have hereunto set my hand.

J. PALMER O'NEIL.

Witnesses:

F. W. RITTER, Jr.,

JAMES I. KAY.