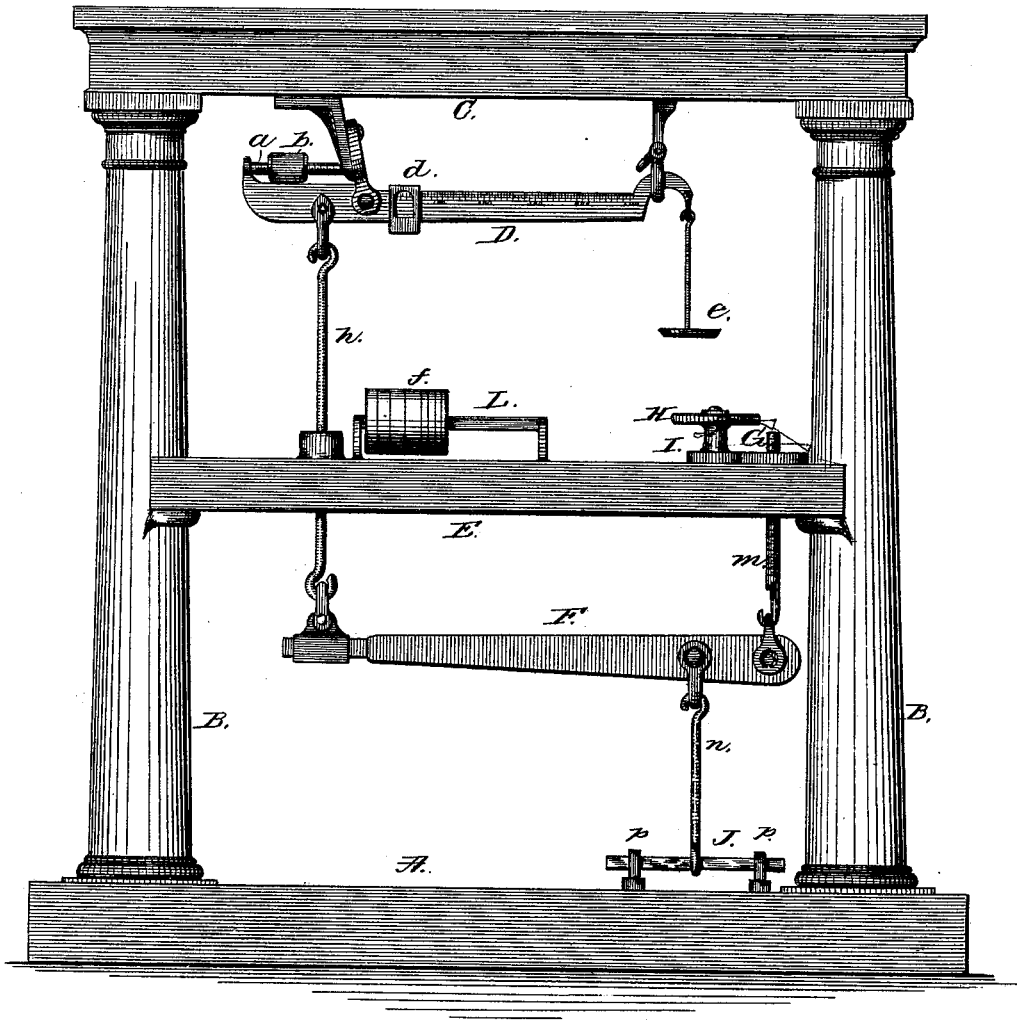
J. H. USHER.

Testing-Machine.

No. 213,362. Patented Mar. 18, 1879.



Witnesses:
John F. C. Preinkert
C. H. Watson

Inventor
John H. Usher,
Per C. H. Watson & Co. Attorneys.

UNITED STATES PATENT OFFICE.

JOHN H. USHER, OF BUFFALO, NEW YORK, ASSIGNOR TO BUFFALO SCALE COMPANY, OF SAME PLACE.

IMPROVEMENT IN TESTING-MACHINES.

Specification forming part of Letters Patent No. **213,362**, dated March 18, 1879; application filed February 10, 1879.

To all whom it may concern:

Be it known that I, JOHN H. USHER, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Machines for Testing Cast-Iron Bars; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which form a part of this specification.

The nature of my invention relates to machines for testing the strength of material; and it consists in the construction and combination of parts, as will be hereinafter more fully set forth, and pointed out in the claims.

In the annexed drawing, which fully illustrates my invention, the figure is a side elevation.

A represents the bed or bed-sill of my machine, upon which are secured two posts or standards, B B, having their upper ends connected by a top beam, C. At a suitable point between the bed A and top beam, C, is a horizontal beam, E, also connecting the two posts or standards B B, as shown.

From a suitable hanger below the top C is suspended an ordinary scale-beam, D, provided at its shorter end with a screw-rod, *a*, and adjusting-poise *b*, for properly balancing the scale-beam.

The scale-beam D is also provided with the usual movable poise *d*, and from its extreme end is suspended the device *e*, for receiving weights *f*, in the same manner as in an ordinary scale.

From the short end of the scale-beam D is suspended a rod, *h*, which passes through the bar E, and connects with one end of a multiplying-lever, F. The other end of this lever is suspended by means of a screw, *m*, connected thereto, as shown, and which screw passes up through the bar E, and has a nut, G, screwed on its upper end. This nut is in the form of a large cog-wheel, which rests on top of the bar E, and has female threads in its hub to fit on the screw *m*. On a vertical stud projecting upward from the bar E is placed a hand-wheel, H, with pinion I, which latter meshes with the large cog-wheel G.

From the lever F, at a suitable distance inward from the screw *m*, is suspended a rod, *n*, which is provided at its lower end with an eye or ring to pass over the iron bar J, or other material to be tested, said bar being placed in or passed through rings *p p*, fastened in the bed A of the machine, as shown.

By turning the wheel H in the proper direction the cog-wheel or nut G is turned so as to raise the screw *m*, whereby that end of the multiplying-lever is raised, and it pulls up on the iron J, and the scale-beam D goes up. Then the poise *d* is run out or weights put on until the beam comes down. The hand-wheel is then again turned until the strain on the bar of iron causes the beam to rise again, when more weights are put on, as before, and so on.

When the bar J breaks, the weight indicated by the weights *f* and sliding poise *d* shows the strength of the iron.

This machine is simple and cheap, and is accurate, durable, and not liable to get out of order.

On the bar E is arranged an arm or rack, L, for holding necessary weights *f*.

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

1. In a machine for testing the strength of material, the scale-beam D, with adjustable poises, lever F, screw *m*, and rod *n*, in combination with a device for holding the material, substantially as and for the purpose set forth.

2. The combination of the multiplying-lever F, connected to the scale-beam D, as described, the screw *m*, cog-wheel G, forming a nut on the screw, and the hand-wheel H, with pinion I, substantially as and for the purposes herein set forth.

3. The combination of the multiplying-lever F, operated as described, the rod *n*, bar J, and rings *p p*, as and for the purpose specified.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

JOHN H. USHER.

Witnesses:
A. A. HOUGHTON,
FRANK WIDMER.