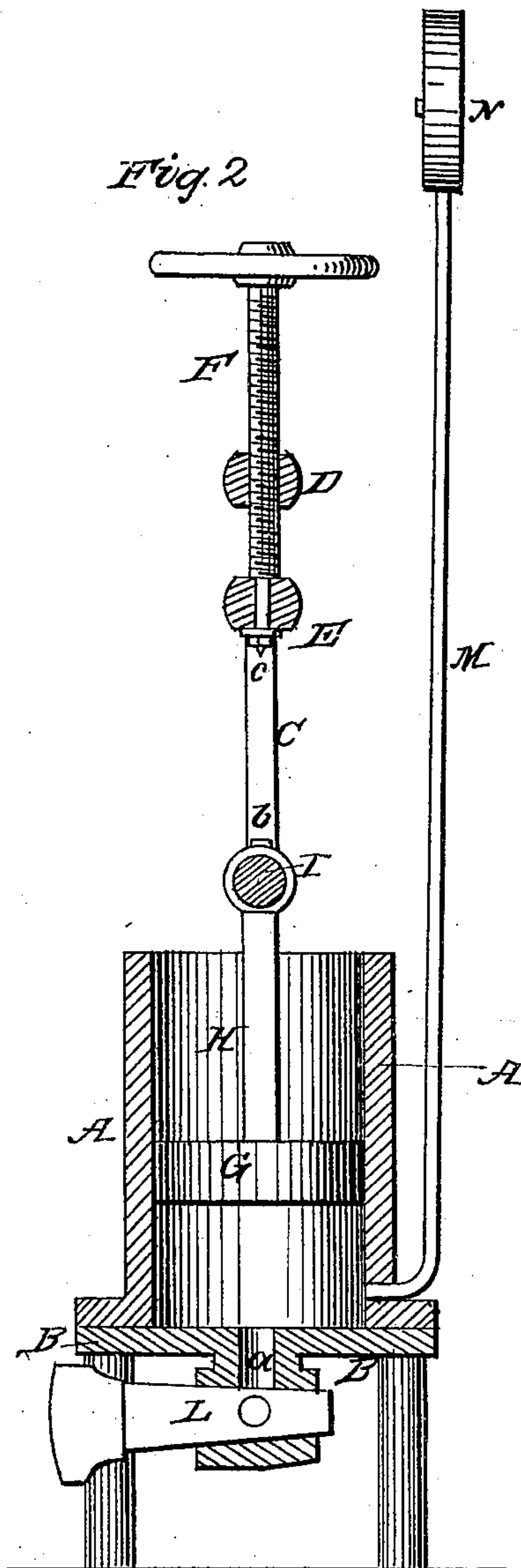


Testing Springs.

Patented July 6, 1858.



UNITED STATES PATENT OFFICE.

S. H. HARTMAN, OF PITTSBURG, PENNSYLVANIA.

MACHINE FOR TESTING THE STRENGTH OF SPRINGS.

Specification of Letters Patent No. 20,792, dated July 6, 1858.

To all whom it may concern:

Be it known that I, SAMUEL H. HARTMAN, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Machines or Apparatus for Testing Springs; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, represents a perspective view of the apparatus, Fig. 2, represents a vertical section through the same.

My invention consists in the application of steam through proper mechanical contrivances, for testing the temper and strength of springs.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A represents a vertical steam cylinder, supported on a bed or base B.

C, C, are guide rods connected to the cylinder, and tied by a cross head D, at their upper ends.

E, is a cross head which can be moved up and down on the guide rods, by means of a hand screw F, passing through the upper cross head D, and into or through the cross head E.

G, is a piston working steam tight by any ordinary packing, in the steam cylinder A, and H, the piston rod attached thereto—the upper end of said piston rod being secured in the crosshead I, that can also move up and down on the guides C C.

J, is an inlet steam pipe, and K, an exhaust pipe; a, a steam way or passage, connecting the interior of the steam cylinder with one or the other of said pipes J, K, as occasion may require, by means of a three-way cock L, arranged in a manner well known to mechanics.

M, is a steam pipe, leading from the interior of the steam cylinder A, and having upon its outer end a steam indicator N, for ascertaining in pounds the pressure of steam upon the piston G. This indicator may be of any of the well known kinds, and graduated on its dial to show the pressure in the usual way.

In testing springs there are two points to be ascertained, viz., the temper of the spring, and secondly its capacity to sustain a given weight. These are both accurately and expeditiously ascertained by this contrivance as follows: The spring is placed upon the point *b*, of the crosshead I, and the cross head E, is then run down upon it until its point *c*, rests upon the highest point of the spring, which is then held between its highest and lowest points. The steam cock L, is then turned so as to admit steam under the piston G, which rises, and compresses the spring, the pressure of the steam in pounds, being shown on the dial N. When an amount of pressure has been put upon the spring equal to that which it is designed to sustain, the steam cock L, is turned, so as to connect the cylinder with the exhaust. K, and the piston drops to its original position. If then, the spring also expands to its original position, it is found to be properly tempered, and its capacity ascertained by the indicator. The steam pipe M, may be placed near one of the guides C, so as to facilitate the placing and removing of the spring. It will be readily seen how much better this mode of testing springs is, than the old plan of beams, levers, weights, &c., which require so much time, and handling.

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

1. The application of steam through mechanical appliances substantially such as herein represented to the compressing of springs with a view of testing their temper or strength, substantially as described.

2. I also claim in combination with steam applied as herein above stated for compressing the spring to ascertain its temper or strength, the application of a steam indicator for showing in pounds weight or otherwise, the amount of pressure applied, as set forth.

S. H. HARTMAN.

Witnesses:

A. B. STOUGHTON,
THOS. H. UPPERMAN.