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W. J. TRETCH.

COMPRESSOMETER.

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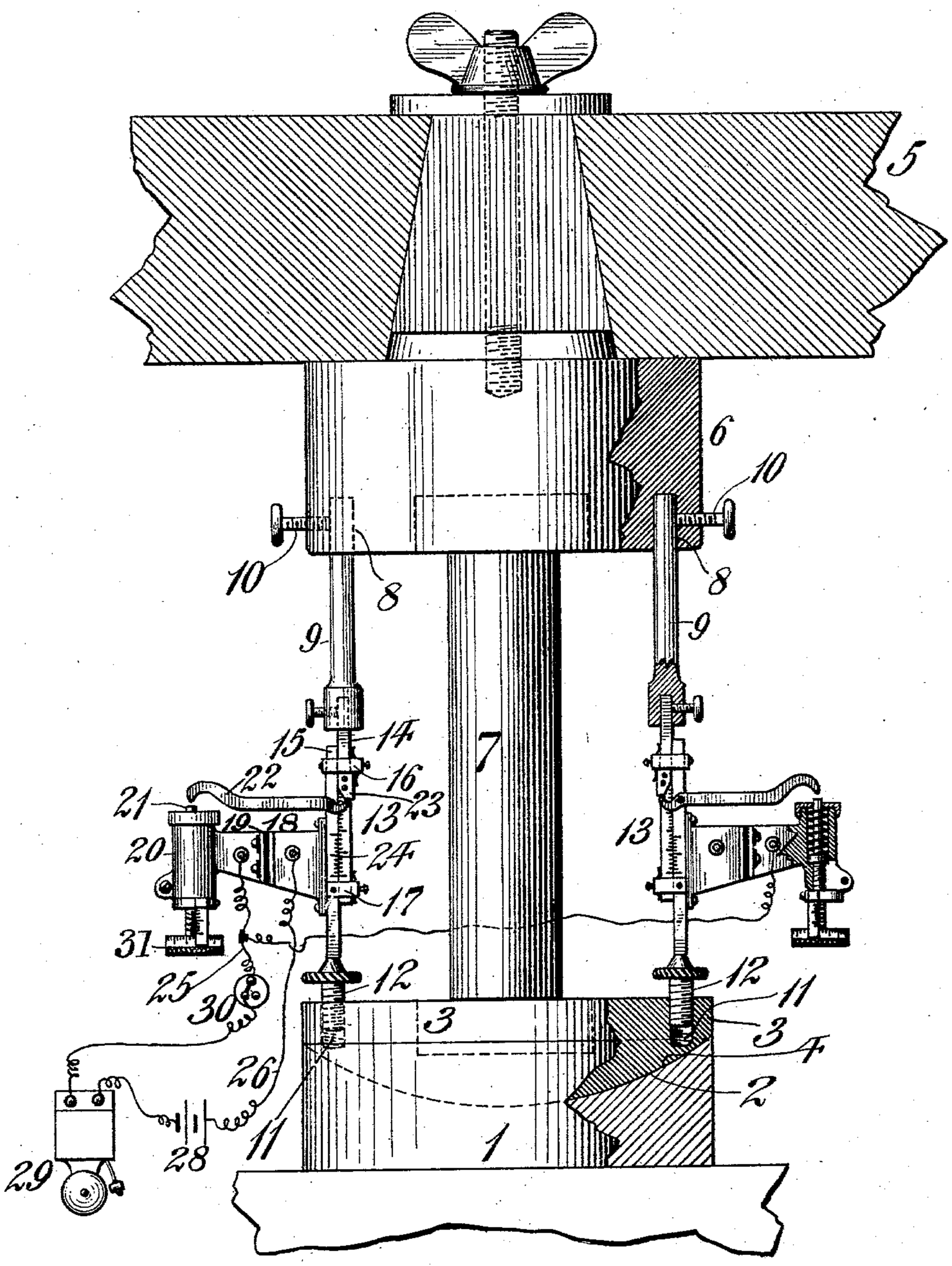
NO MODEL.



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UNITED STATES PATENT OFFICE.

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COMPRESSOMETER.

SPECIFICATION forming part of Letters Patent No. 753,015, dated February 23, 1904.

Application filed November 19, 1903. Serial No. 181,791. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. TRETCH, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Compressometers, of which the following is a specification.

My invention relates to compressometers.

It consists of means for determining with great accuracy the reduction in the length or other dimensions of a specimen subjected to compression in a testing-machine.

It also consists of electric means for calling the attention of an observer to the necessity of reading a gage.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings which represent my device in elevation, 1 designates a portion of the base of a compression-testing machine, the upper face 2 of which is in the form of a segment of a hollow sphere. In this rests a block or anvil 3, the lower face 4 of which is spherical and conformable to the face 2. At a distance above the block 3 is a beam 5, which supports a head-block 6. Between the blocks 3 and 6 is placed the specimen 7, the resistance to compression or the elastic limit of which is to be tested. As shown, the test piece or specimen is a cylindric bar, which may of course be of metal, stone, wood, or other material.

In the lower face of the head-block 6 are drilled holes 8, in which sockets 9 are secured by set-screws 10. Directly beneath these in the block 3 are holes 11, threaded to receive adjusting-screws 12. It is understood that the socket 9 and the screws 12 are on diametrically opposite sides of the test-piece 7. Extending between the sockets 9 and the screws 12 and supported by the former are two gages 13. As these are alike, except in being "right and left," I will describe them in the singular. The gage consists of two parallel bars 14 15, provided with guides 16 17, by which they are maintained in sliding contact. Secured to the bar 15 is a laterally-extending bracket 18, divided into two parts by a strip 19, of insulating material. The outer portion of the bracket 18 supports a micrometer-gage 20, the pin 21 of which projects vertically through its case, as shown. Pivoted to the bar 15 is a multiplying-lever 22, the shorter end of which bears against a lug 23 on the bar 14. The faces of the bars 14 15 may be marked with a vernier-scale 24. To the outer part of said bracket 18 is attached a wire 25, a second wire 26 being attached to any part of the device in metallic communication with the corresponding lever 22. Within the circuit of the wires 26 and 27 are a battery 28, a magneto-bell 29, and a switch 30.

The operation is as follows: The parts being assembled as shown, the adjusting-screws 12 are set to give an initial zero-reading on the scales 24 of both gages 13. The desired compressive force having been applied through the beam 5, the longitudinal reduction of the test-piece 7 will be indicated by the scale 24. Deflection in any direction from a true rectilinear movement of the beam 5 and box 1 toward each other will ordinarily be compensated for by an equivalent movement of the block 3 in the concave base 1; but to secure still greater accuracy I have provided the two oppositely-disposed gages the mean reading of whose scales will give the true compression.

When it is desired to measure the reduction in length of a specimen under a given stress, the test-piece is placed in the machine, as shown in the drawings. The micrometer-gages are then set at zero, and the adjusting-screws are raised until both gage-pins 21 contact with the levers 22, which contact is shown by the ringing of the bell 29. The effect of compression is of course to raise the outer end of the arm-levers 22 and break the circuit. The desired compression having been applied, the gage-screw is turned until a second contact is made and a reading of the scale on the head 31 taken. To secure the advantage of a mean reading of both gages, contact with the first gage is released after reading and contact made in like manner between the pin of the

second gage and the end of the corresponding lever, when the reading of this gage may also be taken.

It will be noted that in my device the gages are supported directly between the blocks through which the pressure is applied. There are no laterally-extending arms, joints, or swivels by which part of the motion may be lost. It will be also noted that the gages are conveniently suspended from the upper block and that by means of the screws 12 of the lower block any desired adjustment, either of the vernier-scales or of the micrometer-gages, may be made. It will also be seen that the micrometer-gages 20 are so supported as to be removed from danger of injury, either in the placing or the breaking of the test specimen, and yet so that the scales on their heads 31 may be conveniently read.

By the term "compression-blocks" wherever used I wish to be understood as including any form of blocks adapted to be forced together by means of a testing-machine and to receive between them a test-piece the compression of which is to be measured.

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

1. A compressometer including compression-blocks adapted to receive between them a test-piece, a gage operatively connected to said compression-blocks to measure the reduction of distance between them and a portion on which one of said blocks bears, said portion and said block having the one a convex and the other a concave surface.

2. A compressometer including compression-blocks adapted to retain between them a test-piece, a gage and means in the faces of said blocks for supporting said gage between them.

3. A compressometer comprising compression-blocks adapted to retain between them a test-piece, a plurality of gages and means in the faces of said blocks for supporting said gages at opposite sides of and substantially equal distances from said test-piece.

4. A compressometer including compression-blocks adapted to retain between them a vertically-disposed test-piece, a gage suspended from the upper of said blocks and adjustable means in the lower of said blocks bearing against said gage.

5. A compressometer comprising compression-blocks adapted to contain between them a test-piece, a gage supported between said blocks and an adjusting-screw in one of said blocks bearing against said gage whereby said gage may be brought to an initial zero.

6. In a compressometer, a gage comprising portions adapted to relative movement, a multiplying-lever operatively connected to said portions, contact-points connected to each of said portions and electrically insulated from each other, one of said contact-points being adjacent the end of said multiplying-lever, a micrometer-screw for adjusting the position of the other of said contact-points and an electric circuit, the flow of current through which is alterable by the contact of said points.

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Witnesses:
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