Oct. 4, 1938. L. HOWE 2,131,805

BENDING STRENGTH TESTER

Filed April 17, 1936

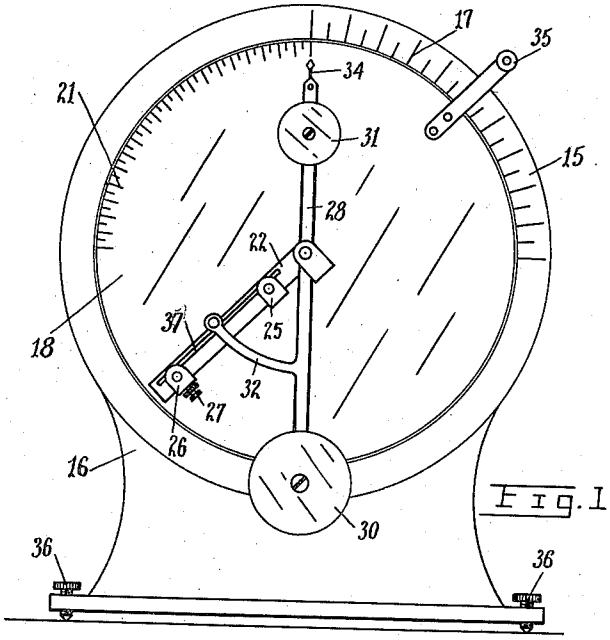


Fig. 1.

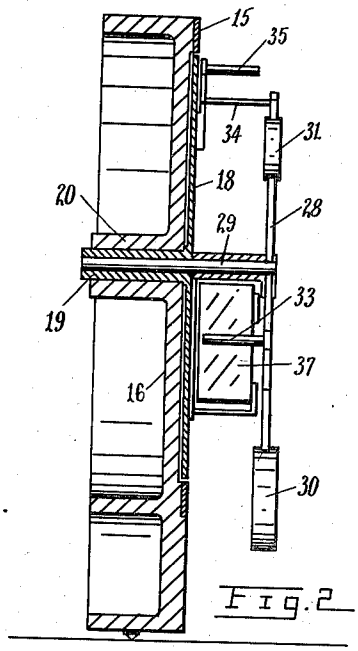


Fig. 2.

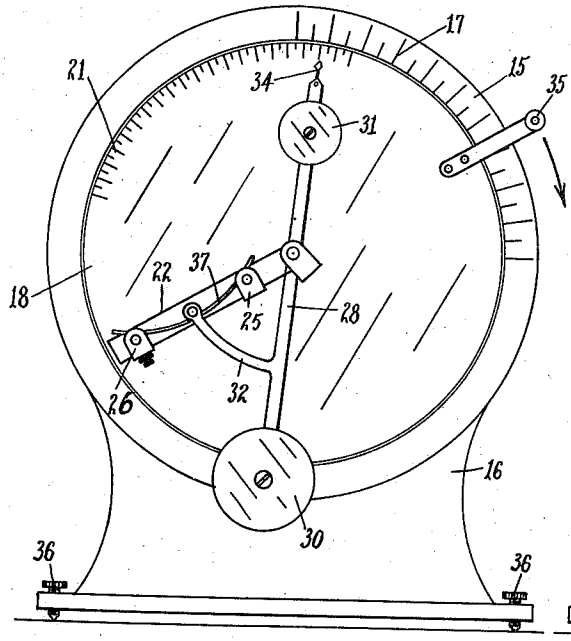


Fig. 3.

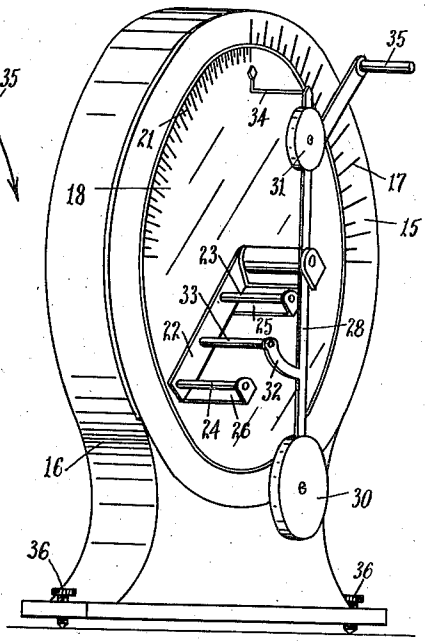


Fig. 4.

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BENDING STRENGTH TESTER

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Application April 17, 1936, Serial No. 74,985

1 Claim. (Cl. 265—17)

The invention relates to bending strength tester for cardboard and like materials as described in the present specification and illustrated in the accompanying drawing that forms part of the same.

The invention consists essentially in a rotary dial forming an indicator operating in conjunction with a fixed scale and gravity member as pointed out in the claim for novelty following a description in detail of the parts and the operation.

The objects of the invention are to determine the bending strength of cardboard up to the breaking point if necessary of card or like material, so that in use, it will have all the strains required of it for the particular purpose and so that in such devices it will not be required to clamp the card tightly and thus limit the value of the test; to furnish a tester that can be used directly at the job in hand, and to provide a tester for various products, such as playing cards, book covers, photo mounts and other articles.

Referring to the drawing, Figure 1 is a front elevational view of the bending strength tester and showing a card threaded between the holding pins.

Figure 2 is a vertical sectional view showing the card mounted and ready for testing.

Figure 3 is a front elevational view showing the testing device in operation, and recording the degree of bending and the strength of the card.

Figure 4 is a perspective view showing in greater detail novel features of the device.

Like numerals of reference indicate corresponding parts in the various figures.

The bending scale 15 in the form of a flat ring is fixedly mounted on the face of the main body or frame 16, and has the graduations 17 set out to a predetermined scale, and which represents the bending force to which the article being tested, is subjected.

The bending scale 18 is in the form of a disc having a central sleeve 19 journalled in the bearing 20 of the frame 16, and is free to rotate within the ring scale 15. The graduations 21 of the bending scale are predetermined by mathematical computation and are shown set out in the top left hand quadrant of the disc, while the graduations 17 of the breaking scale are set out in the upper right hand quadrant of the ring.

Fixedly mounted on the disc scale 18 is the bar 22 radiating from the center, and carrying the pins 23 and 24 supported in the brackets 25 and 26 projecting outwardly from the bar 22. The pin 24 is adjustable in the bracket by means of the adjustment screw 27 set in the bracket 26.

The pendulum rod 28 is mounted in the end of the shaft 29, which in turn is freely journalled in the sleeve 19, and carries the main weight 30 and the balance weight 31. These weights are adjustable on the arm 28. An offset arm 32 carries the pin 33, and this pin is spaced midway between the pins 23 and 24 and slightly beyond, to give a spacing between the pins equal to the thickness of the card or article being tested. The pendulum rod 28 swings beyond the brackets 25 and 26, while the pin 33 projects inwardly into line with the pins 23 and 24.

A pointer 34 is projected from the upper end of the arm 28 towards the graduations 21 of the scale 18.

A handle 35 is secured to the scale 18 for rotating the scale in testing, while the levelling screws 36 in the base of the main body or frame ensures the accurate setting of the device before the testing is carried out.

In the operation of this device, the sample 37 to be tested is threaded between the pins 23 and 24 and the pin 33, and the device is then set and adjusted by means of the screw 27 and the levelling screws 36 so that the ends of the graduations of the scales 15 and 18 are brought into alignment in the vertical center and also the pointer 34, and when the graduations and the pointer are in this zero position, the sample should be held on the pins but without strain.

The scale 18 is then rotated by means of the handle 35 against the pull of the weighted pendulum, the pull of which bends the sample 37. The degree of bend is indicated on the scale 18 by reading the graduations as under the pointer, while the strength of the sample will be indicated on the scale 15 by the displacement of the pointer 34 as illustrated in Figure 3.

This operation can be carried on until the sample is broken, when the scales will indicate the absolute bending that the sample will stand and also the maximum strength of the sample.

With such a device samples can be tested at short intervals right at the point of manufacture and the device can be readily carried around to various producing machines and by this means a constant and accurate check can be kept on the quality and strength of the material being manufactured, ensuring uniform grade of production.

What I claim is:

In a bending strength tester for cardboard and the like, a rotary member having graduations thereon, arranged in a circle about the center thereof, and having a central tubular shaft, a pair

of radially spaced card engaging members projecting from said member, a frame having a bearing journalling the shaft of said rotary member and having graduations thereon arranged concentrically with said first named graduations, the two sets of graduations extending in opposite directions from a given datum point when the rotary member is in its initial position, a second shaft journalled in the tubular shaft and carrying a weighted pendant, an offset card engaging member connected to said pendant and co-operating with the first mentioned card engaging members and having a pointer directed towards and co-operating with the said sets of graduations.

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