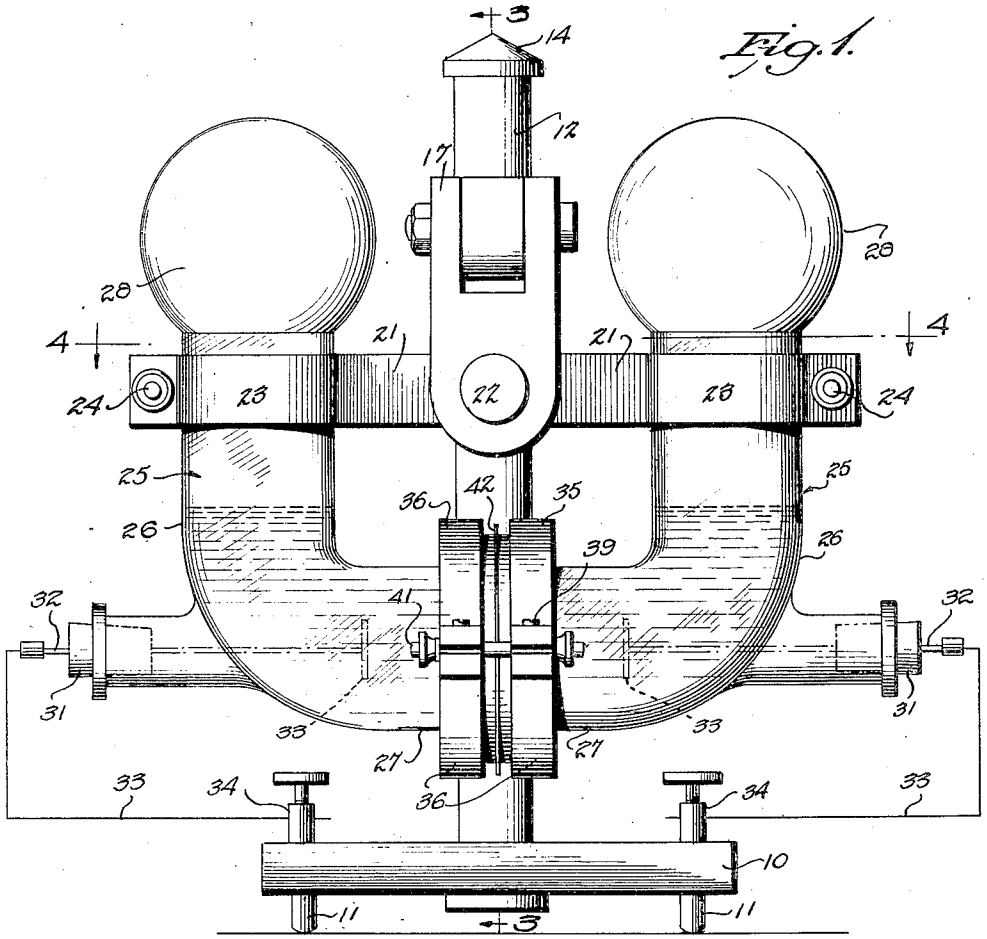
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SIZING TESTER

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Fig. 1.



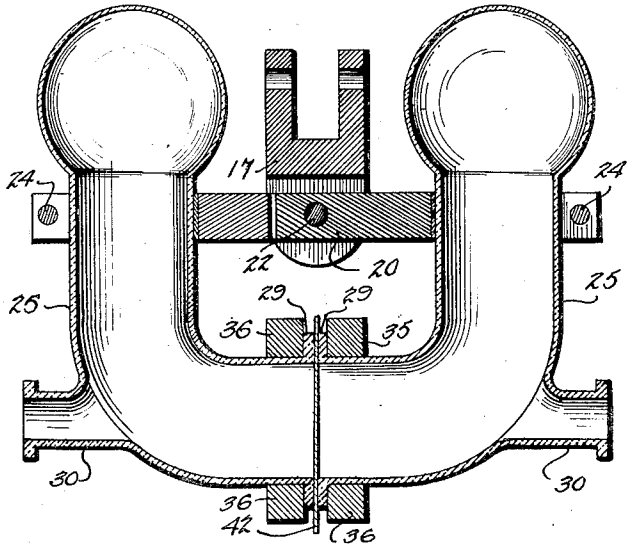


Fig. 2.

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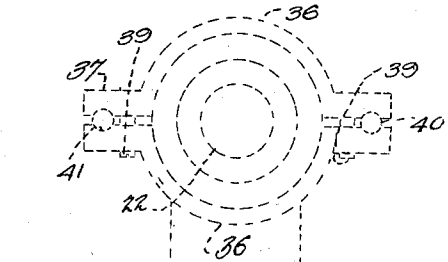


Fig. 3.

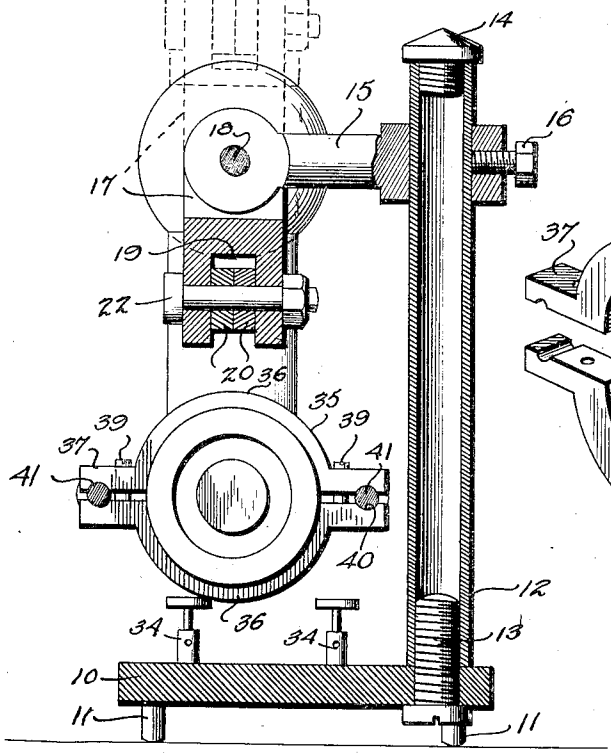
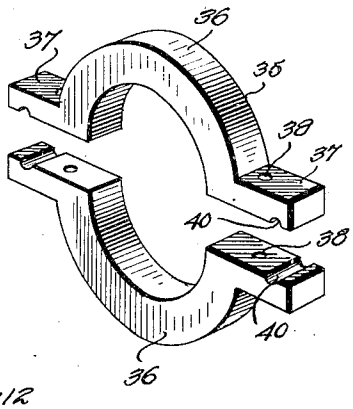


Fig. 5.



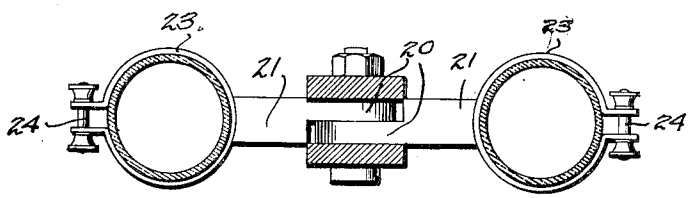


Fig. 4.

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UNITED STATES PATENT OFFICE.

ALFRED HENRIKSEN, NICHOLAS A. STEPHENS, AND VALENTINE J. ZBYSHEVSKI, OF PONCA CITY, OKLAHOMA.

SIZING TESTER.

Application filed February 11, 1924. Serial No. 692,133.

To all whom it may concern:

Be it known that we, ALFRED HENRIKSEN, NICHOLAS A. STEPHENS, and VALENTINE J. ZBYSHEVSKI, citizens of the United States and Russia, residing at Ponca City, in the county of Kay and State of Oklahoma, have invented certain new and useful Improvements in Sizing Testers, of which the following is a specification.

This invention relates to apparatus for determining the porosity of sheet material and more particularly to a device adapted for determining the amount of sizing upon a sheet of paper or the like.

An important object of the invention is to provide a device of the above mentioned character providing means for positioning a sheet of paper or other material between confined bodies of an electrolyte having electrodes therein, the amount of sizing on the paper being determined by the length of time necessary for the electrolyte to penetrate the paper and complete an electric circuit between the electrodes.

A further object of the invention is to provide novel containers for the electrolyte and novel means for pivotally supporting the containers whereby they may be swung to an inverted position and separated to facilitate the placing of the paper in proper position.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the drawings we have shown one embodiment of the invention. In this showing,

Figure 1 is a side elevation of the device,

Figure 2 is a vertical longitudinal sectional view through the container showing the paper to be tested in position,

Figure 3 is a section taken on line 3—3 of Figure 1,

Figure 4 is a section taken on line 4—4 of Figure 1, and,

Figure 5 is a detail perspective of one of the separable clamping rings.

Referring to the drawings the numeral 10 designates a base which may be supported upon suitable legs 11. The base is substantially rectangular in form and is provided rearwardly with a central upstanding tube or standard 12 which is internally threaded at its lower end for the reception of a screw 13 whereby the standard may be supported upon the base. The standard may be closed at its upper end by a plug 14. The numeral 15 designates a forwardly extending supporting arm vertically apertured adjacent its rear end to slidably receive the standard 12, a set screw 16 being provided whereby the arm 15 may be clamped in any suitable position.

A depending arm 17 is pivotally connected to the forward end of the arm 15 by means of a pivot pin 18 as shown in Figures 1 and 3, the upper end of the arm 17 being bifurcated to receive the forward end of the arm 15, as shown. The lower end of the arm 17 is transversely slotted as at 19 to receive the inner ends 20 of horizontal supporting members 21. A bolt 22 passes through the ends 20 and the lower end of the arm 17 to rigidly support the members 21. The outer ends of the members 21 are provided with split bands 23, the ends of the bands being turned outwardly and apertured to receive clamping screws 24, as shown in Figures 1 and 4.

The numeral 25 designates a pair of complementary container members comprising vertical portions 26 and horizontal portions 27, the members 25 together forming a substantially U-shaped container. The upper ends of the vertical portions 26 are preferably provided with enlarged heads or bulbs 28. The members 25 are preferably formed of glass as shown and the inner ends of the members 27 are flanged as shown at 29, the inner faces of the flanges being ground to provide a smooth surface for a purpose to be described. The members 25 are provided with horizontal alined tubular extensions 30 communicating with the interiors of the members 25 and the openings in the ends of the tubular extensions are adapted to be closed by apertured plugs 31. The apertures in the plugs 31 are adapted to receive bars 32 having electrodes 33 arranged upon their inner ends. The bars 32 are adapted to slide in the apertures in the plugs 31 so that the distance between the electrodes 32 may be varied if desired. The bars 32 are connected by wires 33 to binding posts 34 mounted upon the base 10.

The numeral 35 designates a pair of clamping rings formed of a pair of complementary sections 36, the ends of which are provided with horizontal extensions 37

as shown in Figure 5. The rings 35 are adapted to be positioned adjacent the inner ends of the containers 25 against the outer faces of the flanges 29 as shown in Figure 2. The ends 37 of the members 35 are provided with alined openings 38 adapted to receive screws 39 whereby the complementary members of each ring may be clamped about its corresponding container. The adjacent faces of the ends 37 are grooved as at 40 and clamping screws 41 pass through these grooves when the rings are assembled to clamp the two members 35 together, thus holding the horizontal portions 27 of the containers together. A sheet of paper 42 is arranged between the adjacent faces of the flanges 29 before the screws 41 are placed in position.

The operation of the device is as follows: When it is desired to test a piece of paper to determine the amount of sizing thereon, the containers 25 are swung about the pivot 18 to an inverted position as shown in dotted lines in Figure 3. An electrolytic solution is introduced into the containers 25 and a sample of the paper is introduced between the flanges 29 by swinging the containers 25 apart slightly upon the pivot 22. The horizontal portions of the containers are then drawn together with the flanges 29 contacting with the paper and the screws 41 placed in position to tightly clamp the paper between the flanges 29 to prevent leakage. The containers 25 are then swung from the dotted line position in Figure 3 to the solid line position whereupon the electrolyte within the container flows into the lower ends of the sections thereof in contact with the opposite faces of the sheet of paper being tested. A stop-watch may be employed for determining the time at which the electrolyte contacts with the paper. A source of current having been previously connected to the binding post 34 and a galvanometer having been arranged adjacent one of the wires of the circuit, it is merely necessary to determine the time that elapses before an electric current is completed through the sheet of paper. As soon as the penetration of the electrolyte through the paper has occurred, current will flow across the electrodes 33 and the exact time that the flow of current starts may be determined by reference to the galvanometer or other electrical instrument employed. Since the time required for the electrolyte to penetrate the paper and complete the circuit will depend upon the amount of sizing on the paper, it will be apparent that the latter may be easily found by determining the time of penetration.

It is to be understood that the form of our invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size, and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having described our invention, we claim:

1. A device of the character described comprising a pair of container members having upstanding vertical portions and open ended horizontal portions with adjacent parallel faces, said container members being pivoted to swing to a substantially inverted position, means for clamping a sheet of material between said faces, said members being adapted to contain an electrolyte, and electrodes mounted in said members below the level of the electrolyte therein and spaced from the sides of said sheet of material.

2. A device of the character described comprising a pair of container members having upstanding vertical portions and open ended horizontal portions with adjacent parallel faces, said container members being pivoted to swing to a substantially inverted position, one of said members being independently pivoted to permit insertion of a sheet of material, means for clamping the sheet of material between said faces, said container members being adapted to contain an electrolyte, and electrodes mounted in said members below the level of the electrolyte therein and spaced from the sides of said sheet of material.

3. A device of the character described comprising a vertical standard, a pair of container members each comprising an upstanding vertical portion and an open ended horizontal portion, the end faces of said horizontal portions being normally parallel and arranged adjacent each other, and means for clamping a sheet of material to be tested between said faces, said container members being pivotally connected to said standard to swing to a substantially inverted position and adapted to contain an electrolyte normally contacting with opposite sides of said sheet of material.

4. A device of the character described comprising a vertical standard, a pair of containers each comprising an upstanding vertical portion and an open ended horizontal portion, the end faces of said horizontal portions being normally parallel and arranged adjacent each other, means for clamping a sheet of material to be tested between said faces, each of said container members being adapted to contain an electrolyte in contact with the opposite sides of said sheet of material, and electrodes mounted in said container members below the level of the electrolyte therein, said container members being pivotally connected to said standard in vertical and horizontal planes whereby they may be swung to a substantially inverted position and the adjacent faces of

the horizontal portions of said container members may be separated.

5. A device of the character described comprising a pair of container members having upstanding vertical portions provided at their upper ends with closed enlarged heads, and open ended horizontal portions with adjacent parallel faces, means for clamping a sheet of material between said faces, said members being adapted to contain an electrolyte, and electrodes mounted in said members below the level of the electrolyte therein and spaced from the sides of said sheet of material.

In testimony whereof we affix our signatures in presence of two witnesses.

ALFRED HENRIKSEN.
VALENTINE J. ZBYSHEVSKI.
NICHOLAS A. STEPHENS.

Witnesses:
ORLIN D. HORNE,
CLAUDE L. JOHNSON.