

W. F. BRADBURY.

DEVICES FOR TEACHING THE METRIC SYSTEM.

No. 176,735.

Patented May 2, 1876.

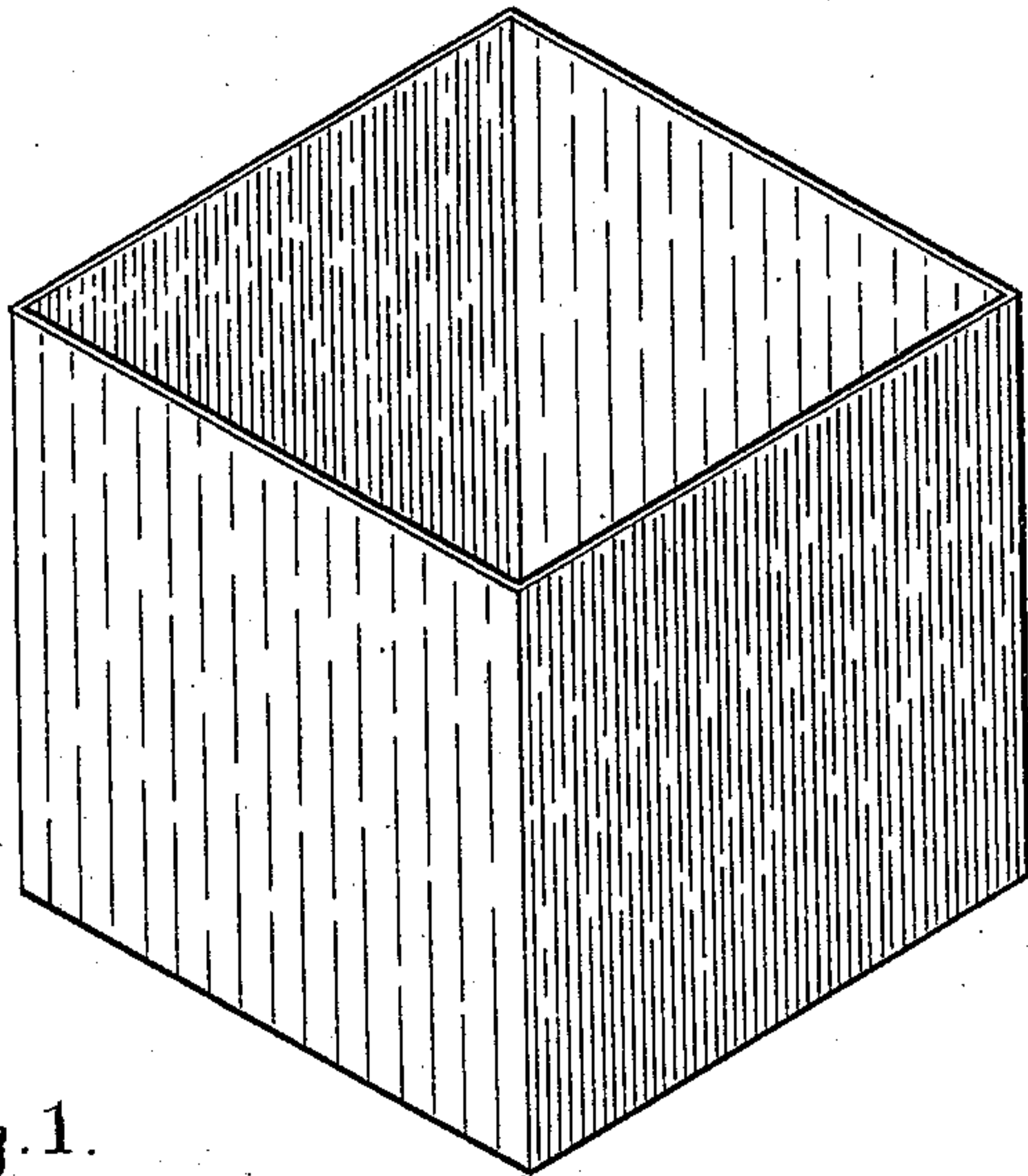


Fig. 1.

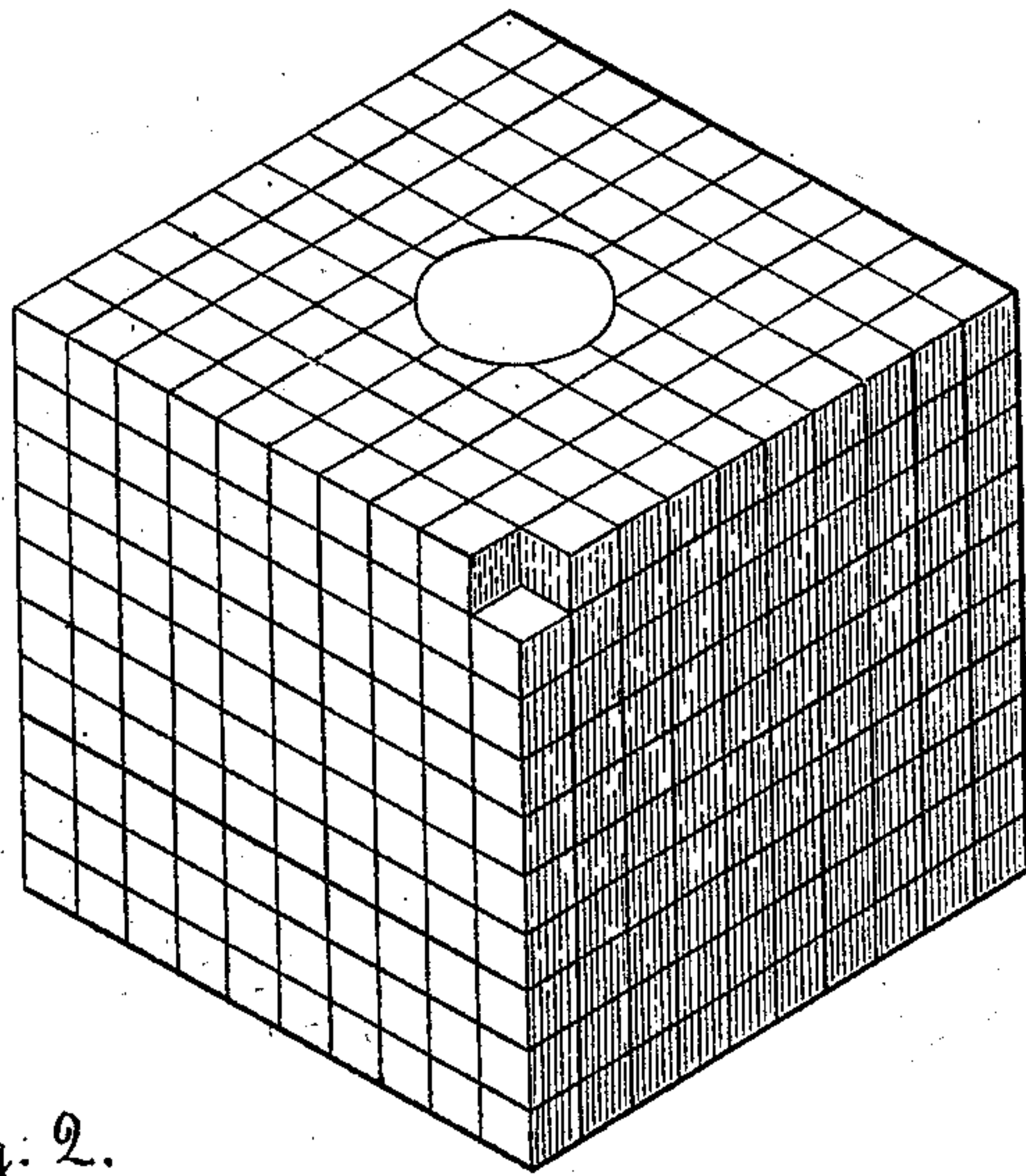


Fig. 2.



Fig. 3.

Witnesses.  
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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN DEVICES FOR TEACHING THE METRIC SYSTEM.

Specification forming part of Letters Patent No. 176,735, dated May 2, 1876; application filed March 1, 1876.

*To all whom it may concern:*

Be it known that I, WILLIAM F. BRADBURY, of Cambridge, Middlesex county, Massachusetts, have invented a new and useful device for comparing the several tables of the metric system, which invention is fully set forth in the following specification, and represented in the accompanying drawing.

The object of my invention is to furnish a means of comparison of the various tables of weights and measures of the metric system, which shall be obvious to the senses of sight and feeling; and it consists in the use of a liquid-measure, in cubical form, containing one liter, in combination with a cube of wood, or other suitable material, fitting and filling the same, and thus representing a cubic decimeter, which is so loaded or compounded as to weigh one kilogram, the weight of a liter of water.

My invention also consists in said combination when one or more of the sides of such cube, one decimeter in length, are laid off in parallel lines at a distance of one centimeter from each other, representing long measure, or when these surfaces are further subdivided by crossing lines into square centimeters, representing square measure.

My invention also consists in making removable one or more of the cubic centimeters into which the said cube is supposed to be divided by intersecting planes through the surface-lines.

In the drawing, Figure 1 is an isometrical perspective of the liquid-measure. Fig. 2 is a similar view of the solid cube with one cubic centimeter removed; and Fig. 3 is the removed cubic centimeter.

In this description of my invention I have chosen the liter and the corresponding cubic decimeter as the unit of measure, because of its greater convenience; but the same principle is involved in the use of a larger or smaller unit, and a cylindrical or other form may be given to these measures without departing from the spirit of my invention.

In the construction of my apparatus I form a cube of hard wood, or other material, having the specific gravity of water at a temperature of 39°; or I so load or lighten the cube as to give to it that specific gravity, by filling

a central cavity with a heavier or lighter material, as the case may require, as shown in Fig. 2. Each side of the cube is a square decimeter, and these several faces are divided by crossing lines into one hundred square centimeters, which may be subdivided into millimeters. The lines which divide the surfaces into hundredths are cut or engraved into the material, so as not to be effaced, and so as to be perceptible to the touch.

The cubic decimeter is supposed to be cut by intersecting planes passing through the engraved lines into thousandths, each of which is a cubic centimeter; and the removal of one or more of the thousandths from the cube makes more evident to the senses the relative proportions of the several measures. Suitable means of securing and releasing the removable cube are desirable.

The liter-measure, shown in Fig. 1, forms a close-fitting case to receive and protect the other measures, Figs. 2 and 3.

Ten of the cubic centimeters may be detached together from the main cube, and their weight will be one decigram, or one hundred may be removed, weighing together one hectogram, if the uniform specific gravity is equal to that of water at 39°.

By means of my apparatus I am enabled to present, in tangible form, certain units of measure from each of the several tables named, susceptible of comparison with each other; viz: First, a measure of length in decimeters, centimeters, and millimeters; second, a measure of surface in square decimeters, centimeters, and millimeters; third, a measure of solid contents in cubic decimeters, centimeters, and millimeters; fourth, a measure of weights in grams, decigrams, hectograms, and kilograms; fifth, a measure of capacity for dry or liquid measure in liters.

The relation existing between the measures of weight, capacity, and bulk become more apparent by the use of my apparatus, which serves to demonstrate that a liter of the table of dry or liquid measures and a cubic decimeter of the table of cubic measures are of equal size or capacity, and that a kilogram in weight of a body having the specific gravity of water is, in bulk, equal to a cubic decimeter, and also equal to a liter; and that a cubic

centimeter of a body having the specific gravity of water will weigh one gram, &c.

I claim as my invention—

1. The combination of the rectangular measure for liquids with the cubical block representing or indicating the corresponding long, square, and cubic measures, and the measure of weight, substantially as herein described.

2. A measure for liquids, adapted to serve as a close-fitting case for a measure of solids, and in combination therewith, the latter having the specific gravity of water, and suitably

spaced to designate certain decimal parts of its bulk, substantially as herein described.

3. A cubic decimeter, weighing one kilogram, provided with a removable section representing one or more cubic centimeters, weighing one or more grams, substantially as herein described.

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Witnesses:

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