

P. A. CURTIN.
COMBINATION MEASURING TOOL.
APPLICATION FILED NOV. 27, 1908.

987,703.

Patented Mar 22 1911

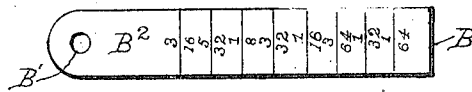
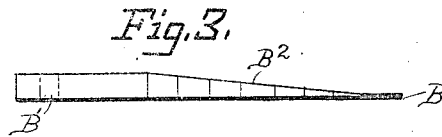
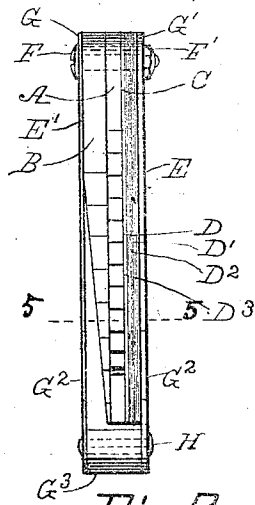
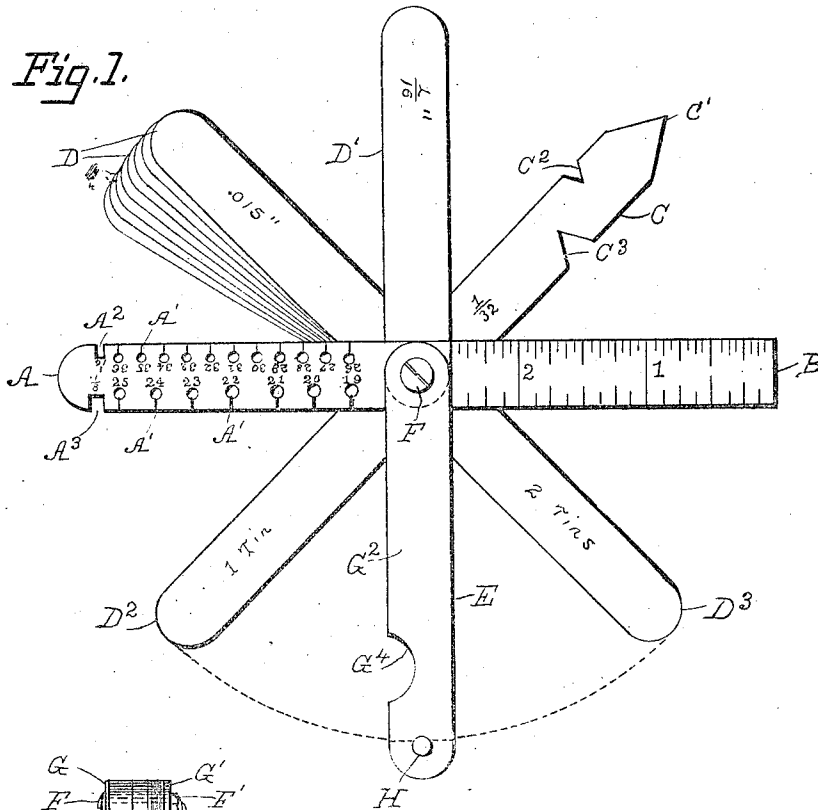


Fig. 5.



WITNESSES:

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COMBINATION MEASURING-TOOL.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, PETER A. CURTIN, a citizen of the United States, and a resident of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Combination Measuring-Tools, of which the following is a specification.

This invention relates to combination scales, gages and measuring tools, and it consists in a novel construction of a scale, a wire or sheet metal gage, thread gage and a series of blades of varying thicknesses, known as "feelers", and all of these tools being hinged at one end upon a pivot pin and adapted to be incased within a handle, as the blades of a jack knife are arranged in its handle.

The object of the invention is to provide these several tools in a combined and convenient form, so as to be of a minimum bulk and adapted to be carried in the pocket when not in use and so that the particular member or members to be used can be projected from the handle, while the remaining members are incased therein, as may be desired, and for the more effective and convenient usage of the device.

The object of the invention is also to provide all the component members of the tool with thickness indication marks or characters thereon, the respective thicknesses of which members, are of common or decimal fractions of an inch or other similar unit of measurement, and of well known and varying fractional dimensions, so that by placing two or more of the members side by side, composite dimensions of thickness can be obtained, when the tool is to be used.

The nature of the invention can be more fully understood from the following specification, taken in connection with the accompanying drawing, forming a part thereof, and in which similar letters refer to similar parts throughout the several views.

In the drawings:—Figure 1, represents a front elevation of my improvement, showing the parts spread open to view. Fig. 2, is a side view of the device with the parts closed into the handle like the blades of a jack knife when closed therein. Figs. 3 and 4, are side and back views respectively, of the scale, exposed in Fig. 1 on the right. Fig. 5, is a cross section of Fig. 2, on line 5-5, Fig. 2.

In the drawings:—A, is a sheet metal

gage; B, is a scale; C, is a thread gage; and D, D, D, are a series of "feeler" gages, respectively; and all having holes at one end as seen at B', in Figs. 2 and 3, in the scale B, and through which, the pivot screw F, having the nut F', passes and which secures them to the sides G, G', of the handle G². The handle G², has a bolster G³, at its lower end which keeps the sides the proper distance apart and being held thereto by means of the rivet H. The handle G², has a notch G⁴, near its lower extremity to facilitate the opening of the parts of the device, when closed. There being no back to the handle, the parts can be pushed out from either side. These feelers, being intended for measuring openings and thicknesses of small dimensions, by the sense of feeling, are made of a series of thicknesses, varying about a thousandth part of an inch when combined differentially, that, is, one feeler may be .002 of an inch thick, another .003, another .004, another .006 and so on; so that when placed side by side the combinations of such individual feelers will indicate thickness dimensions, equal to those of the combined feelers.

The gage A, has slits, A', A', A', running from Number 36, to 19, of the American standard gage, which are indicated by appropriate numerals, and also slits, A², A², of 1/16th and 1/8th of an inch, respectively, and these dimensions being the ones that are mainly to be measured where the tool is to be used. The gage A, is an eighth of an inch in thickness, and can be used as a feeler for thickness of that dimension, or in combination with other of the feelers. The scale B, besides being graduated in the usual manner, in fractions of an inch, is also tapering like a wedge, so that widths of openings within its limit can be indicated by inserting it therein, and noting the extent of such insertion on the side B², which is graduated for the purpose. The feelers D¹, D², D³, respectively, may be of the thickness of 1/16th of an inch, and the others, (D, D, D,), either 1 "tin" or 2 "tins", that is about the thickness of one or two pieces of standard tin plate. The thread gage C, is 1/32nd of an inch thick, and has the pointed end C', and the notches C², C³, respectively; and all being of an angle of 60 degrees, the angle of the common V thread, in general use.

By referring to Figs. 2 and 5 of the drawings, it will be observed that the thinner

members of the combination (the thread gage and feelers) are arranged upon one side of the device, while the thicker members (the scale and wire gage) are upon the other side of it. By this construction, the thinner members owing to their consequent flexibility due to their thinness, can be brought together at their free ends and about to their middle parts by compression between the fingers, even though they are not adjoining at the pivot end of the device. In the same manner, any one or all of the thinner members can be brought against the scale B, if the wire gage A is pushed away from between at its free end, to allow of this being done. The result of this construction is, that any two or more of the non-adjoining members can be brought together at their free ends by the flexibility of the thinner members, while the thicker non-flexible members (the wire gage A, and the scale B,) being adjoining each other, the factor of flexibility is not essential, and they can be of any convenient thickness desired. The gage A, which is in the middle of the device, and adjoining the thinner members, makes it of course, an easy matter to bring any one or more of the flexible thinner members together at and near their free ends, and in the same manner as described in making composite thickness gages.

The construction and manner of using these measuring tools separately is well known and, therefore, no further description thereof is necessary. Engineers and mechanics generally, who use such tools, find it convenient and desirable to have them constantly at hand, ready for use in an emergency, and by the novel construc-

tion and combination of the several members of the combined device, herein shown and described, the requirements are fully met in this invention. It is not new to pivot measuring tools in a handle, nor is it new to mount thickness gages of different sizes in a case from which they may be taken out as wanted and held together like type or the like, in making up a composite thickness gage. It is old to bind together in a suitable binder two or more of such gages to get a composite dimension of thickness. It can thus be seen, that it will provide a simple and inexpensive combination measuring device, and that it meets all the requirements of such an article for the purposes intended.

Having thus described my invention, what I claim, and desire to prove by Letters Patent, is:—

In a combination measuring tool, a series of gages of varying thicknesses and flexibility having indices thereon denoting their respective thicknesses, and one of which is of a tapering thickness and having a graduated scale of thickness thereon, and all pivoted together in an incasing handle so that any desired thickness equal or less than that of two or more of their number may be measured by bringing the proper gages together side by side, at and near their free ends.

Signed at the city and county of San Francisco and State of California this 19th day of November A. D. 1908.

PETER A. CURTIN.

Witnesses:

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