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* *General Papers*. Contact M. D. Saltzman (see address above).

* *C. K. Ingold, 1893-1970. Master and Mandarin of Physical Organic Chemistry*. Contact M. D. Saltzman, Department of Chemistry, Providence College, Providence, RI 02918, (401) 865-2298, or Derek Davenport, Department of Chemistry, Purdue University, West Lafayette, IN 47907, (317) 494-5465.

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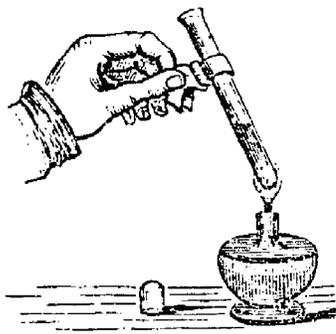
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PARTING SHOTS

The Stoddard Test Tube Clamp

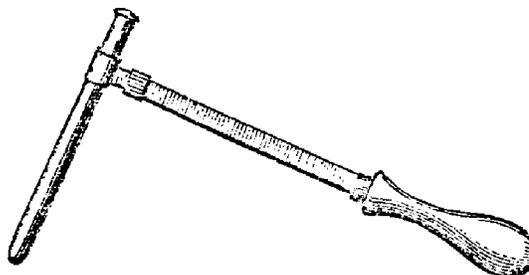
William D. Williams, Harding University

The ubiquitous spring wire test tube holder is such a simple, logical, convenient device that we tend to assume that it has been in use forever. Surprisingly, it was invented about 1886 by an American chemist, John T. Stoddard. Although chemical supply catalogs from 1893 to the present day have listed this item as the "Stoddard test tube clamp", Stoddard himself remains relatively unknown.



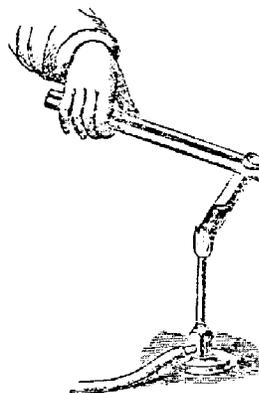
A paper twist test tube clamp, circa 1850 (1)

Prior to 1890 the most often used test tube clamp was a strip of heavy paper twisted around the test tube (1). Campbell Morfit, in his 1857 encyclopedic *Chemical and Pharmaceutical Manipulations*, described a sophisticated "spring holder, consisting of a wooden handle affixed to two flat pieces of sheet brass, indented at their ends so as to form a round catch, and tightened or loosened by a slide" (2).



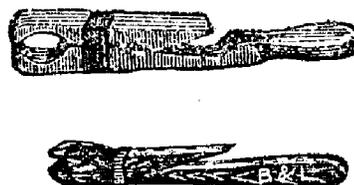
Morfit's metal slide clamp, circa 1857 (2)

A prominent text of 1873 described "wooden nippers, made with two bits of wood about a foot long, hinged together at the back and at once connected and kept apart by a sliding steel or brass spring, somewhat like those used on certain pruning shears" (3).



A wooden nippers clamp, circa 1873 (3)

Chemical supply catalogs of the 1890s and early 1900s offered a test tube clamp made of two notched pieces of wood held together by a heavy rubber band (4).

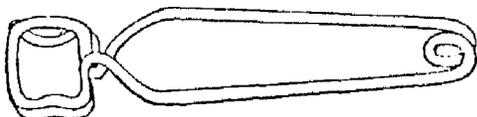


The rubber band clamp, circa 1890 (4)

John T. Stoddard found this last mentioned clamp objectionable and in 1890 published a paper describing his "New Test Tube Holder" (5):

The annoyance experienced in using the common wooden test-tube holder led me some years ago to attempt to devise a holder which should serve its purpose more perfectly. The wooden holder is clumsy, its rubber band rots and is liable to give way at awkward moments, the peg becomes unglued and drops out, and even in its best estate it holds securely only medium-sized test-tubes ... The new holder has been in use in my laboratory for four years now, and has given such good satisfaction that I venture to call attention to it in a form recently somewhat improved. It is made of brass wire, and opens by pressure on the straight sides of the handle; its jaws open to the width of 5 cm and it holds firmly any tube from 5 mm up. I have recently had a larger size made of stiffer wire for the purpose of holding flasks, &c. It proves very convenient as a holder of wash-bottles when one is washing with boiling water, and also for holding beakers when decanting hot solutions. Both sizes are furnished by the Victor Manufacturing Co., Northampton, Mass.

Stoddard's article included a drawing of the clamp that is almost identical to those in current apparatus catalogs.



Stoddard's original wire test tube clamp, circa 1890 (5).

John Tappen Stoddard (1852-1919) graduated from Amherst in 1874 and received a Ph.D. under Hans Hübner at Göttingen, Germany in 1877. Joining the faculty of Smith College, Northampton, Massachusetts in 1878, he served 41 years as professor of chemistry and physics. A new chemistry building he helped design in 1898 was named Stoddard Hall after his death (6). Primarily an educator rather than a researcher, he encouraged undergraduate research at Smith and wrote chemistry texts that were widely used through several editions, including a volume on qualitative analysis (7), two general chemistry texts (8, 9), a laboratory manual for general chemistry (10) and an organic text (11). A slightly different aspect of his personality is revealed in his book, *The Science of Billiards with Practical Applications*, which he published in 1913 (16).

A search of early American chemical supply catalogs reveals that Stoddard's clamp was quickly accepted. The 1893 catalog of Emil Greiner listed "Clamps, of brass, Stoddard's form, in two sizes, the smaller suitable for all sizes of test tubes; the larger, of stiffer wire, for holding flasks, wash-bottles with



John Tappen Stoddard (15)

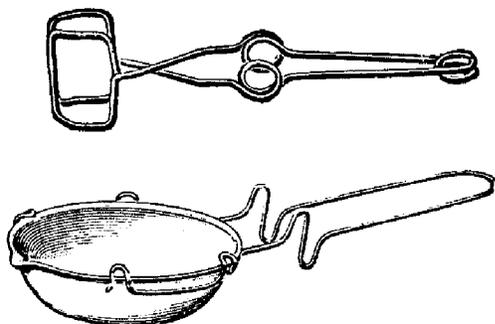
boiling water, or beakers, when decanting solutions. Small size, 20 cents each; Large size, \$0.25" (12). This same catalog also offered the wooden-rubber band model for 15 cents and the wooden handle-metal with slide catch model for 40 cents. The 1906 Arthur H. Thomas catalog listed the wooden-rubber band model for 15 cents and "Stoddard's Test Tube Clamp" for 15 and 20 cents in brass wire and for 10 and 15 cents in "nickel" wire (13). The 1914 E. H. Sargent catalog offered "Stoddard's Clamps for Test Tubes, of spring brass" for 10 cents and a wood clamp of "improved construction with wire spring" for 10 cents (14). The latter was the clothes-pin type that, despite its antiquated look, is still available in some 1991 catalogs.



A clothes-pin clamp, circa 1914 (14)

Although Stoddard's original design is still available in all current apparatus catalogs, some suppliers no longer use his name in the listing. The clamp is attributed to Stoddard in the 1991 Sargent-Welch catalog, the 1990 catalog of Carolina Biological Supply Co. and the 1990 Cenco catalog. The 1988 Arthur H. Thomas catalog identifies this model as "Test tube holder, Thomas", but offers a modified model as "Stoddard-Thomas." Recent Fisher Scientific catalogs do not use the name Stoddard, but their 1972 and earlier catalogs identified it as "Clamp, Stoddard." Some suppliers also list a second

Stoddard model with "finger grips" and a "Stoddard Dish Clamp, for holding and manipulating evaporating dishes".



Modern versions of Stoddard's wire clamps

References and Notes

1. J. Booth, *The Encyclopedia of Chemistry*, Henry C. Baird, Philadelphia, 1850, p. 171.
2. C. Morfit and C. Morfit, *Chemical and Pharmaceutical Manipulations ...*, Lindsay and Blakiston, Philadelphia, 1857, p. 446.
3. W. Nichols, *An Elementary Manual of Chemistry*, Ivison, Blakeman, Taylor and Company, New York, 1873, p. 2 and xxx.
4. *Illustrated and Priced Catalogue of Chemical Apparatus*, Emil Greiner, New York, 1893, p. 85; *Laboratory Apparatus ... Catalogue F*, Arthur H. Thomas Company, Philadelphia, 1906, p. 126.
5. J. Stoddard, "Notes from the Laboratory of Smith College," *Journal of Analytical Chemistry*, 1890, 4, 34; Reprinted in *Chemical News (London)*, 1890, 61, 223-224.
6. See biographies in W. Miles, *American Chemists and Chemical Engineers*, American Chemical Society, Washington, 1976, pp. 460-461 and *Dictionary of American Biography*, Vol. 18, Charles Scribner's Sons, New York, 1936, p. 56.
7. J. Stoddard, *Outline of Qualitative Analysis for Beginners*, Northampton, MA, 1883.
8. J. Stoddard, *Outline of Lecture Notes on General Chemistry*, Gazette Publishing, Northampton, MA, 1884 and 1885.
9. J. Stoddard, *Quantitative Experiments in General Chemistry*, Longmans, Green & Co., London, 1908.
10. J. Stoddard, *Introduction to General Chemistry*, Macmillan, New York, NY, 1910.
11. J. Stoddard, *Introduction to Organic Chemistry*, Blakiston, Philadelphia, PA, 1914.
12. *Illustrated and Priced Catalogue of Chemical Apparatus*, Emil Greiner, New York, 1893, p. 86.
13. *Laboratory Apparatus ... Catalogue F*, Arthur H. Thomas Company, Philadelphia, 1906, p. 126.
14. *Scientific Laboratory Apparatus*, E. H. Sargent & Company, Chicago, 1914, p. 90.
15. Courtesy of Smith College Archives.
16. J. Stoddard, *The Science of Billiards with Practical Applications*, Butterfield, Boston, MA, 1913.

Dr. William D. Williams is well known to readers of the Bulletin for his articles on early American chemistry texts which appear regularly in the Old Chemistries column. He is Professor of Chemistry at Harding University, Searcy, AK 72143.

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