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IMPROVED FAUCET.

We illustrate herewith a new and simple form of faucet, the advantages claimed for which are that it is not liable to be injured by being screwed into or out of the cask, that it is not liable to leak, cannot be left open through carelessness or accident, and has its button protected from injury.

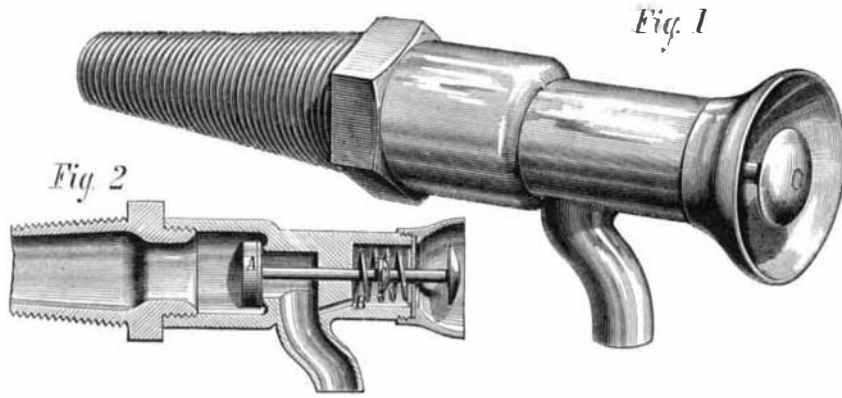
The portion of the device, which enters the cask is tapered and screw threaded. Near its outer end is an octagonal portion adapted to receive a wrench. Beyond this part, as shown in section in Fig. 2, is a screw-threaded projection which engages with the outer portion of the device. A is the valve seated on a shoulder, as shown. The stem passes up through the casing and terminates in a button which is surrounded by the cup-shaped top. In a chamber in the casing is a spiral spring, B, which acts against a collar applied to the valve stem. It will be evident that, by pushing in upon the button, the valve, A, will be moved from its seat, the liquid will pass it and flow out at the nozzle. On the valve stem is a shoulder, C, which, when the valve is moved from its seat, closes the orifice through which the stem passes and prevents any liquid entering the spring chamber. Should, however, any liquid enter this portion of the device it at once escapes, by the channel shown, into the nozzle. Patented through the Scientific American Patent Agency, September 18, 1877. For further particulars address the inventor, Mr. William S. Lempert, Fort Davis, Presidio county, Texas.

PROFESSOR MAYER'S NEW METHOD OF FINDING THE COEFFICIENT OF EXPANSION OF METALS AND ALLOYS.

In the accompanying engraving we illustrate a new and exceedingly ingenious apparatus devised by Professor A.

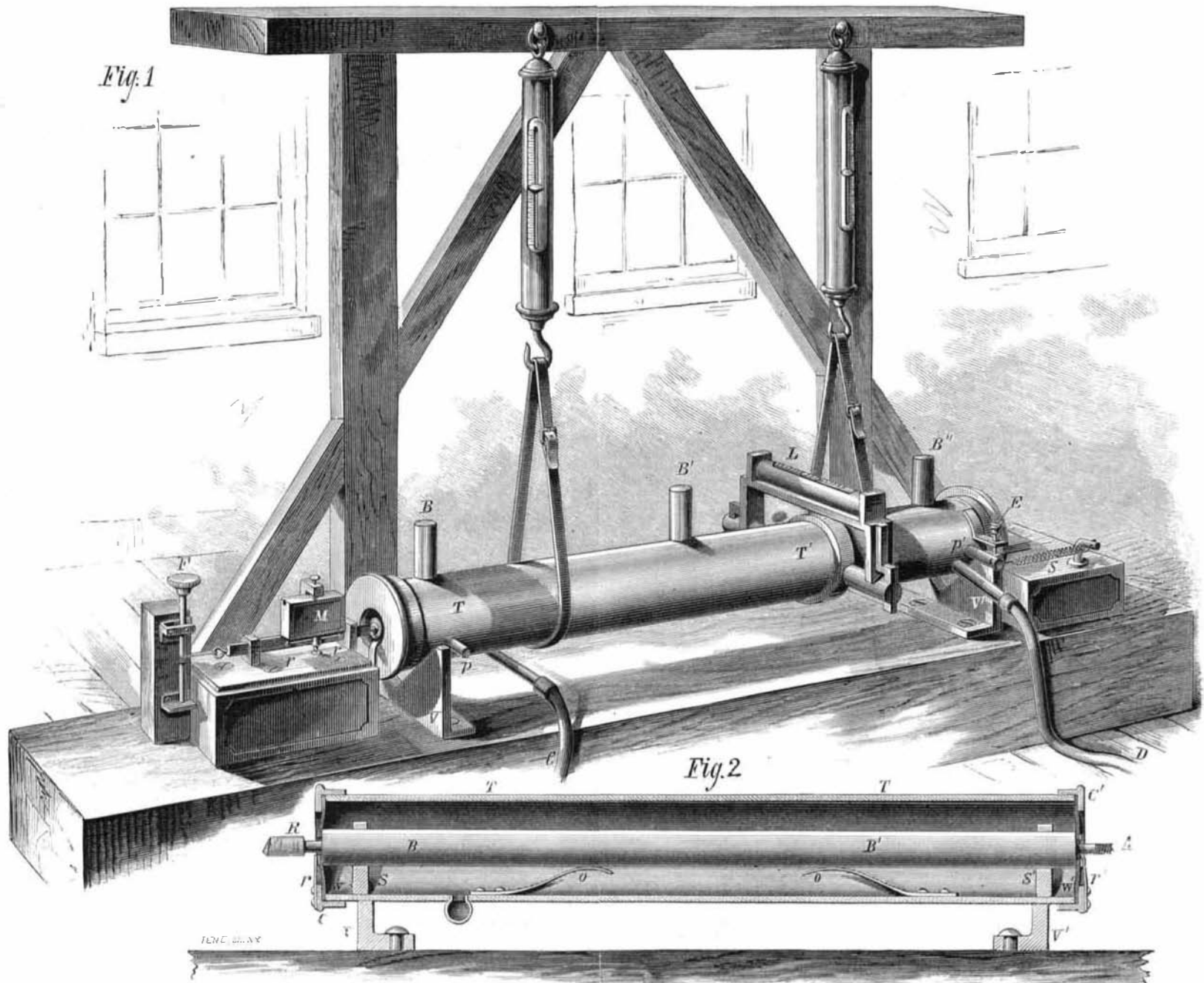
ries of articles "On the Minute Measurements of Modern Science," written by Professor Mayer, and which now are in course of publication in the SCIENTIFIC AMERICAN SUPPLEMENT. No such series has ever been published, nor has any physicist yet attempted to gather and present, in the very complete form which Professor Mayer has adopted, the refinements which now exist in the art of measuring. We need not point out of what value to every mechanic a thorough knowledge of this branch of science is. Perhaps the chief peculiarity of modern mechanism is its accuracy and perfection of fitting, and to these qualities the machine tools of to-day owe in large measure their remarkable capabilities.

Our second reason for asking especial notice for Professor Mayer's apparatus is that it is a capital instance exemplifying how a thoroughly scientific investigator goes to work. There is so much done now-a-days that is called scientific investigation which far from merits the title, that we are almost ready to credit the idea that some recognized standard, showing how a typical investigation ought to be conducted, would be valuable for comparative purposes. Such work involves the gathering together of every thread connected with the subject and not merely those that are plain and easy to follow, but those which the skill of the investigator is taxed to discover and take account of. Doubtless Professor Mayer would object quite strongly to our taking the present machine—which is only one bit of apparatus out of a long and



LEMPERT'S IMPROVED FAUCET.

M. Mayer, of the Stevens Institute, for the purpose of determining experimentally the coefficient expansion of metals and alloys. Apart from the value of the contrivance as applied to its specific purpose, which we shall explain further on, we desire to draw especial attention to it here for two reasons. First, because it will serve as an excellent exemplification of the accuracy and importance of the se-



PROFESSOR MAYER'S NEW INSTRUMENT FOR SHOWING THE ELONGATIONS OF METALS.