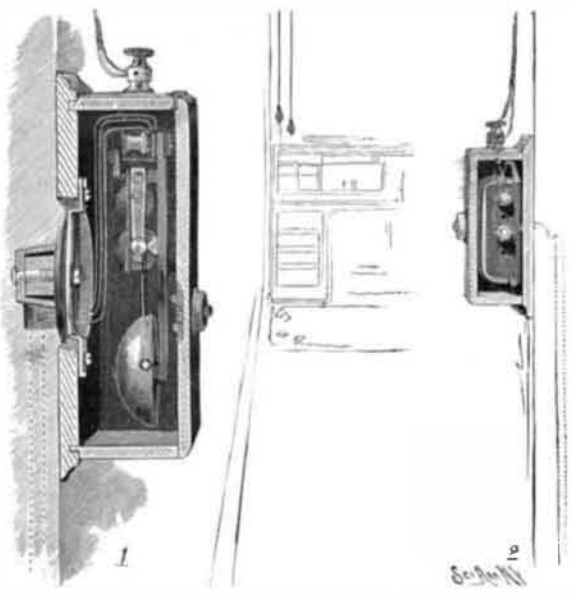
A COMPACT ELECTRIC SIGNALING DEVICE.

The illustration represents a signaling outfit contained in a small box or case, for convenient installation in residences, hotels, or other buildings, either during or after the erection of the buildings, without injury to the walls or woodwork. The improvement has been patented by Mr. James N. Connolly, of No. 452 Madison Avenue, New York City. The case is dust proof, and has an opening in the rear to permit it to be placed over the socket of a bell-pulling outfit, a support over the opening being adapted to receive the center post of the outfit, and a nut screwing upon the center post clamping the box firmly to the wall. The box has a hinged cover, readily thrown open to facilitate making any adjustment which the bell requires, or any desired change in the circuit connections, and the bell is preferably mounted on the cover of the box, which thus serves as a sounding board and intensifies the sound. The circuit wires, also connecting with a suitable battery, are carried in the tubes which extend to the several rooms or a house, after the manner of equipping many large buildings not strictly modern in construction, and a push button or other circuit closer is mounted on the outside of the box. The two binding posts on top are for use when it is desired to ring by means of a flexible cord from different parts of a room, as from a bed, a desk, etc., the cord terminating in a pear-shaped button. By using a buzzer instead of a bell, the case may be made materially smaller, or a buzzer may be placed in circuit and mounted in another part of the room, when either one of the devices may be used, as desired.



CONNOLLY'S ELECTRIC SIGNALING DEVICE.

Peroxide of Hydrogen.

By a process patented in England Dr. Richard Wolffenstein, of Berlin, prepares a more stable and chemically pure peroxide of hydrogen of high percentage. The dilute peroxide solution, which contains perhaps 3 per cent peroxide, is heated at a constant temperature of between 100 deg. and 110 deg. C., with or without the aid of rarefied vessels, until the fluid has a proportion of about 60 per cent peroxide. Then in a vacuum at a moderate temperature the peroxide is distilled over. With gradual rising of the boiling point a watery vapor first passes over until, at 84 deg. C. and a pressure of 24 millimeters, a 99 per cent solution of superoxide distills over. A chemically pure peroxide can be got from this by pouring it into a solvent which does not combine with water, i. e., ether, and dissolving again the pure peroxide out of the ether solution. It is claimed that the product is stable in concentrated solution, and does not decompose even on long keeping. The dilute solution, to begin with, must be entirely free from foreign substances, even from mechanical impurities such as sand.

History of the Barometer.

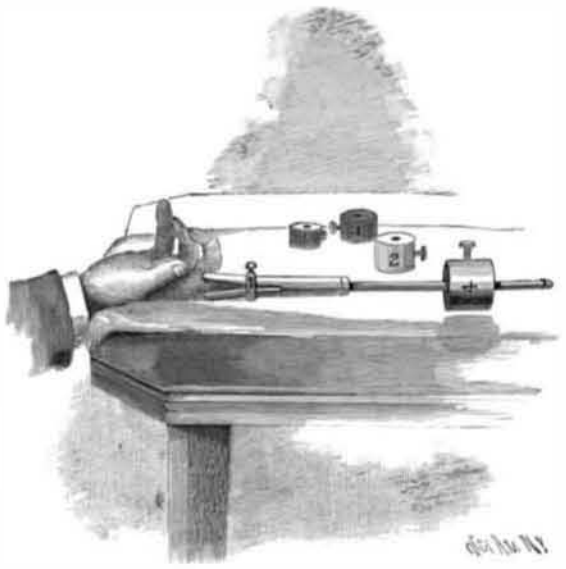
In the Meteorologische Zeitschrift for December last, Prof. G. Hellmann gives a very interesting account of the invention of the barometer, which has now been in use 250 years. Torricelli, who died at the early age of thirty-nine years, was too busily engaged in mathematical studies to publish an account of his discovery, but on June 11, 1644, he wrote a description of it to his friend Ricci. This letter, and Ricci's objections to the experiment, were published in 1663 by C. Dati, a friend of Torricelli's, and as this work is now exceedingly scarce, Prof. Hellmann has reprinted the correspondence, in the original Italian, in the above-mentioned journal. Some of the paragraphs, says Nature, are noteworthy, especially those in which Torricelli states that it was not merely a question of producing a vacuum, but of making an instrument which would indicate the changes of the atmosphere. The first continuous barometrical observations appear to have been made in France. In England they were first taken by Robert Boyle, about the year 1659, to whom we owe the invention of the word "barometer."

A FINGER EXERCISING DEVICE.

An extremely simple device to facilitate the development of muscular strength in the fingers is represented in the accompanying illustration. It is designed to be of especial benefit to violin players, piano players, etc., or may be used by a surgeon to develop a contracted cord or muscle of the fingers, hand, or arm, being also of utility to penmen, telegraph operators, typewriters, and all who require finger dexterity. It has been patented by Mr. Frank E. Osterhout, Oneida Castle, N. Y. It consists of a tube or sleeve with longitudinal side slits at one end to permit the convenient insertion of the finger, while from the other end extends a rod on which a weight is adjustably held at the desired distance by means of a set screw. The sleeve at its split end is fastened on the finger by a clamp consisting of an elongated slotted ring passing around the sleeve, and a clamping plate slidable vertically in the ring, and engaged by a set screw at the top. The exercise is made more or less severe, not only by moving the weight out or in on the rod, but weights of different sizes are employed, as may be deemed most advantageous.

MANUFACTURE OF WHITE VINEGAR.

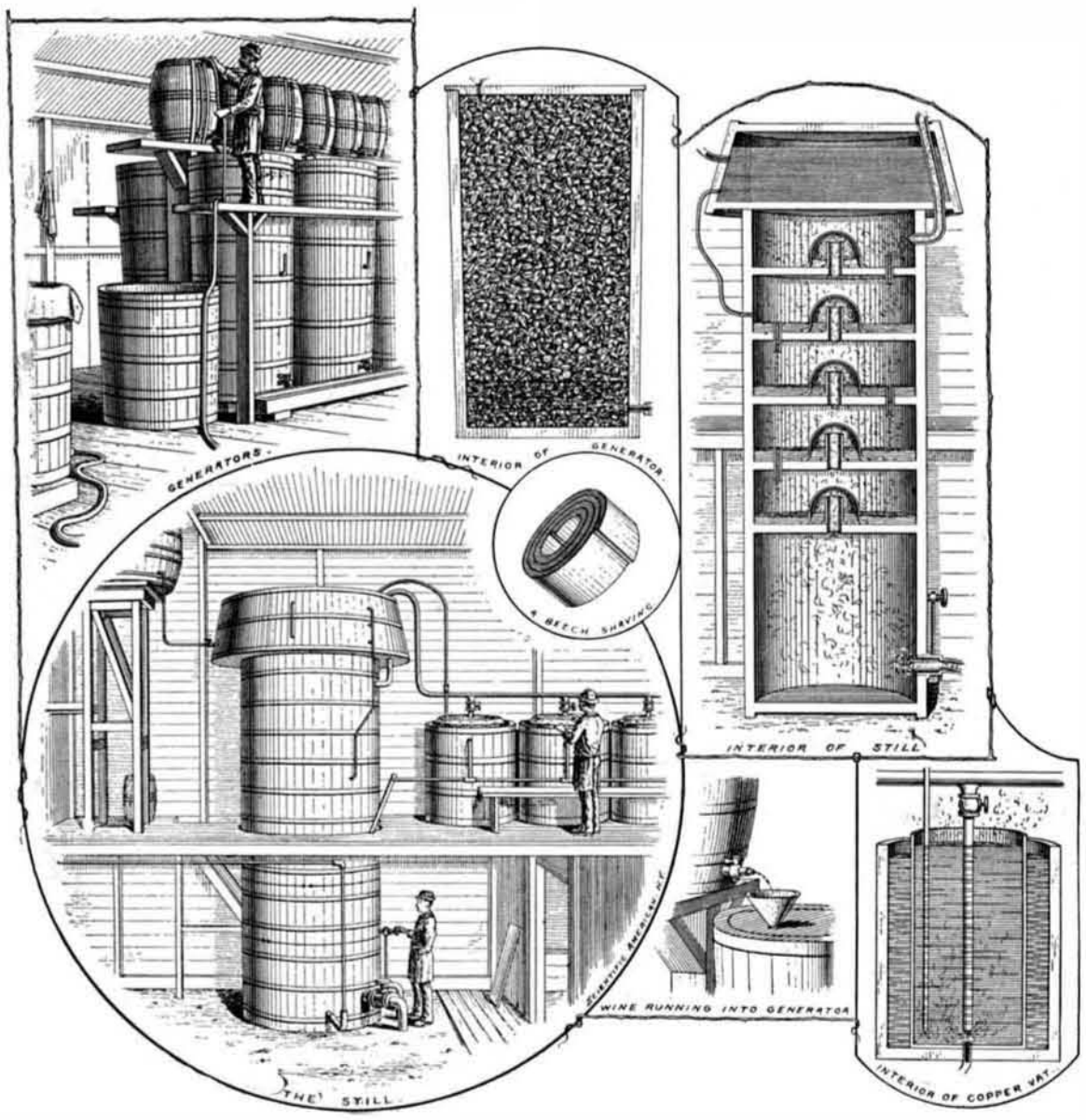
White vinegar can be manufactured from molasses, corn, etc., or from almost any substance that will ferment. The material is first passed through a fermenting and distilling process which turns the liquid into what is called a low wine. This wine is then allowed to trickle slowly into generators filled with beechwood shavings, where it works and becomes sour. The material used principally by the manufacturers is molasses. The casks or hogsheads of molasses are first emptied into an underground reservoir and thinned down with water. It is then pumped up through a rubber hose into a 1,000 gallon fermenting tank, where it is allowed to stand for about two days and ferment. After fermenting it is forced up into another reservoir, from which by means of pipes the liquid passes down into a wooden mash tub connected to the top of the still. This mash tub is about 3 feet in height and about 7 feet in diameter, and holds about 600 gallons. The still is circular in shape and is about 20 feet in height, about 6 feet in diameter and made of ash. The interior is divided off into five compartments. The partitions or headings are made of wood about 6 inches in thickness and about 2 feet apart. Running through the center of each heading is a copper pipe or tube about 14 inches in height and about 8 inches in diameter. Directly over the top of each pipe is a circular copper head 18 inches in height, the bottom of which connects to the flooring of the headings by means of a number of arms. Through each heading midway between the copper heads and sides of still is a 3 inch drop pipe which projects above and below the partition about 6 inches. Attached to the side of mash tub is a small 1¼ inch copper pipe which connects with the second compartment in the still. The liquid passes down this pipe on to the floor of this heading. As soon as it reaches to the depth of 6 inches it begins



OSTERHOUT'S FINGER EXERCISING DEVICE.

to run down the drop pipe to the next heading. When the liquid again reaches to the top of the pipe it drops down again in the same manner to the next heading below. The steam is turned on from the bottom of the still and passes up through the center and drop pipes and underneath the copper head of the first heading.

From the first heading it passes upward through the different compartments in the same manner, heating and steaming up the liquid, which passes off at the top of the still in the form of vapor through a 4 inch pipe to a number of copper vats below. The vats are about 5 feet in height and about 3½ feet in diameter. Running into each vat within 2 inches of the bottom is a pipe which connects with the still pipe. About 120 gallons of water is placed in each vat through which the vapor passes, mixing itself with the water. Each vat rests in a wood tub containing about 300 gallons of cold water. After about 120 gallons of the vapor has been thoroughly mixed with the 120 gallons of water, it is then allowed to cool. After cooling, which takes about 24 hours, the material is drawn off from the bottom and run into a receiving tank. From the receiving tank it is pumped into casks and left to stand for about 12 hours. To make the low wine work quickly in the generators, a quantity of strong vinegar is mixed with it, the proportions being about ½ gallon



MANUFACTURE OF WHITE VINEGAR.