

## FIRE AND WATERPROOF CHIMNEY GUARD.

It is not an uncommon defect in a chimney, which is so constructed that the weight of its external upper portion is supported by the roof, that, when the lower part of the masonry within the building begins to settle, a separation in the brickwork occurs just at or a little below the point of junction of chimney and roof. The opening thus made, while serving as an entrance for water during rainy weather, also allows of the escape of soot, sparks, and flame, thereby exposing the adjoining woodwork to imminent danger of conflagration. The following description and accompanying illustration will explain how the inventor below named proposes, by means of a quite simple device, to overcome the difficulty.

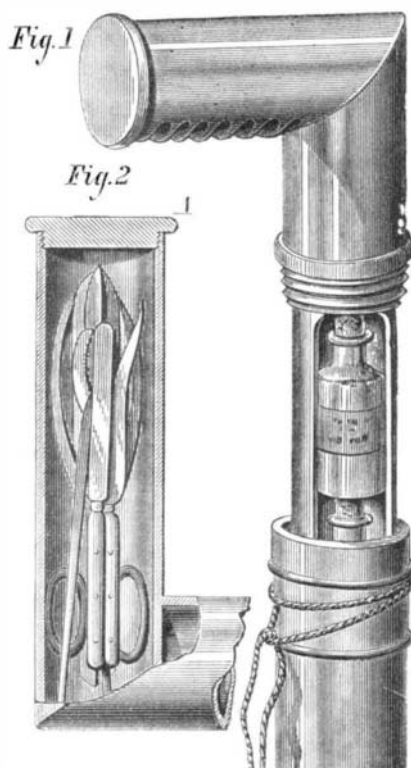
Figs. 1 and 2 are respectively perspective and sectional views. The lower or roof cap, made of galvanized iron, is in two parts, A and B. The funnel, A, is at least one inch larger in length and breadth than the size of the chimney. Its top is horizontal and extends three or more inches above the peak of the roof, B; the flange is about three inches in width and supports the funnel, which is slipped over and soldered to the turned up ends of its inner margin, as represented in section, Fig. 2. The roof being shingled or covered, the roof cap is put in position when the chimney is built through. It is located so as to be free from contact with the latter and is finally nailed fast.

C is the chimney cap, made sufficiently large to slip over the funnel, A, and of similar material. Its sides are three or more inches in width, having flanges at least one inch wide, bent inward at right angles to the faces, forming a part to rest on the outer margin of a layer of brick, the top of which is from one to two inches above the funnel, A. By this arrangement, it is stated, when the chimney settles, the upper cap, C, slides down over the lower cap, A B, thus offering no obstruction to the settling, as will be readily understood from the sectional view. If the roof is shingled or covered after the chimney is built, we learn that the roof cap can be applied by soldering the parts after they are placed in position around the chimney. In chimneys, however, the base of which is low down in the building, and in others the tops of which are high and heavy, it is advisable to apply supports at the roof, and to this end the inventor proposes a staple, D, Fig. 2, of light bar iron, the points about one inch long and the crossbar four and a half inches in length, so as to allow it to straddle two layers of brick. One of these staples is placed in each face of the chimney, where the latter passes through the roof, the points entering between the courses of brick, and the crossbar, parallel with the face, taking against the roof boards. It is stated that these staples will not interfere with the settling of the chimney, and will hold it as firmly as in the usual way of shingling up close.

Patented December 2, 1873, by Josephus F. Schuyler, of Fostoria, Seneca county, Ohio, to whom letters for further information regarding sales of territory and shop rights may be addressed.

## PHYSICIAN'S CANE.

We are familiar with sword canes, with canes with leaden heads for use as bludgeons, with walking sticks the staff of



which is a rifle and the handle the shoulder rest, and even with the hollow affairs used by smugglers, in which valuable laces or dutiable drugs are concealed, and others to which canvas seats are attached for artists; but our readers will generally agree with us in considering, as a genuine novelty, a cane which is, at the same time, a receptacle for all the paraphernalia of the healing art—an invention, in fact, which may fairly dispute with bread the title of “the staff of life.”

Much inconvenience, says the inventor, frequently arises from the breaking of phials in the usual pocket cases carried by physicians, and the contents are often entirely injured or ruined. It occurs to him, therefore, that all the contents of the offending case may be stowed away in the cane, as represented in our engravings. The staff is made hollow and the handle fits on by a screw thread. To the handle (Fig. 1), however, is attached a long case fitting closely within the staff, and also hollow. The space within the case is divided in suitable compartments, into which, through a long opening, the bottles are slipped.

The handle itself is made hollow and access to its interior given by a screw cover, A, Fig. 2, fitting in its end. It forms a receptacle for lancets, scissors, powder knife, a bistoury



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or two, and such other pocket instruments needed in everyday practice. The invention possesses the merit of novelty at least, and is the device of Mr. Milton Osborn, of Albion, Mich.

## THE TOSELLI TORPEDO.

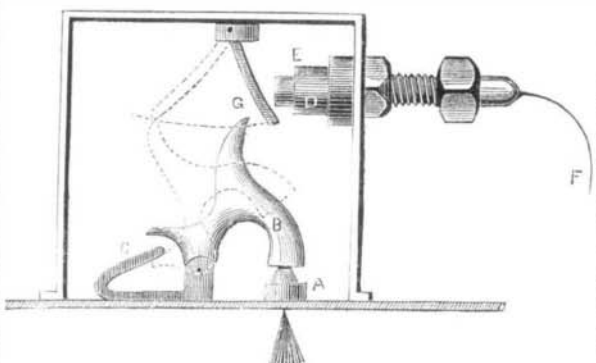
M. Toselli is an Italian inventor who does not believe in the use of electricity for the purpose of firing torpedoes or blasts. He says it is expensive, uncertain, and often perilous.

FIG. 1.



The substitute he proposes is force, transmitted to the firing mechanism through a fine hollow thread filled with water and acted upon by a powerful hydraulic press. This will be understood from our engravings, in which Fig. 1 is the press, of which P is the handle, and on the right the hollow wire is seen emerging. The diameter of the latter is about 0.06 inch. When this tube is once filled, one or two strokes of the piston, according to the inventor, are sufficient to determine an explosion. In Fig. 2, which shows the firing apparatus, A is the nipple, having a fulminating

FIG. 2.



cap; B is the hammer, and C a spring by which it is actuated; D is a cylinder in which moves the piston, E, through the power communicated through the tube, F. When the piston, E, is pushed forward, it strikes the spring lever, G, pushing it inwards, and this, impinging against the hammer, raises it to the position shown in the dotted lines. The lever continuing its retrograde motion, the hammer slips from under it, and is carried by the spring forcibly against the cap, thereby causing explosion.

## The Home of the Porcelain of China.

Baron Richthofen writes from China that he has discovered, near Hangtcheu, east of Lake Pajang, the material from which the Chinese have for nearly three thousand years manufactured their porcelain. He found to his great surprise that the material is a stone of greenish color, and of the hardness of felspar, and is placed in the strata between clay slate. The stone is ground into a fine powder, the finest particles of which are again separated and formed into small bricks. The Chinese distinguish between two kinds of the

earth, which are obtained from different quarries, but appear to be almost alike. The country where Richthofen discovered the porcelain earth was covered with the densest vegetation of azaleas, rhododendrons, and numerous other flowers.

## Science for Rum Drinkers—Effects of Alcohol on the Body.

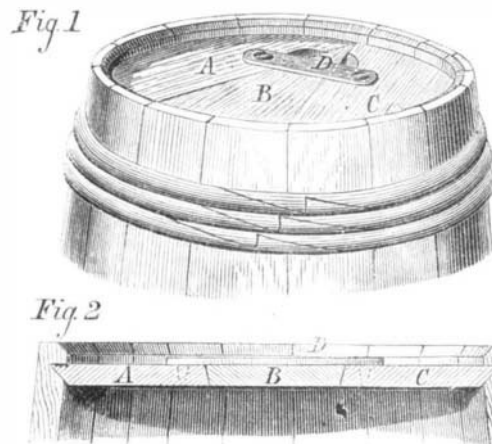
Dr. Brunton remarked that the performance of the vital functions depended on oxidation of the tissues and Professor Binz's observation that this was lessened by alcohol was the key to an explanation of its physiological effects. These may be nearly all explained on the supposition that the power of the nervous system is diminished, different parts of it becoming successively paralyzed. First, the vasomotor

nerves become affected and the blood vessels consequently dilated. After a glass or two of wine, the hands may be noticed to be of a very red color and plump, showing that arterial blood is flowing freely through the capillaries and at the same time the veins are dilated and full. All the vessels of the body, however, are not dilated at the same time. In some persons those of the stomach or intestines become dilated; and the blood being thus abstracted from the head, the brain becomes anæmic, and the individual dull and sleepy. In others the arteries of the head become dilated first, and in consequence the brain receives a full supply of blood, and the intellect becomes more vigorous. If this stage is not passed, the functions return to their normal condition, and no harm ensues; but if more alcohol is taken, the paralysis extends to other parts of the nervous system. Sometimes the cerebral lobes, which are the organs of the mental faculties, are first affected, and sometimes the center, for co-ordinated

movements usually supposed to be the cerebellum, or, as it is often expressed, “one man gets drunk in his head, another in his legs.” When the head is affected, the judgment becomes impaired, though memory and imagination may still be more active than usual. These faculties next fail, and the emotions become hilarious, pugnacious, or lachrymose. The spinal cord is generally unaffected even when the cerebellum is paralyzed; and a man who is utterly unable to walk can still ride, the mere pressure of the saddle upon his thighs being sufficient to cause reflex contraction of his adductor muscles and fix him firmly on his seat, although the upper part of his body may be swaying about like a sack of wheat. The cord itself next becomes paralyzed, and lastly the *medulla oblongata*, which regulates the respiratory movements.

## PATENT BARREL HEAD.

An ingenious device for enabling barrel heads to be readily removed and repaired, without taking off the hoops, is represented in the accompanying illustration. The device is quite simple, and appears to be a really handy and convenient improvement. It is made in three parts, A, B and C, the jointed edges of which, as shown in Fig. 2, are beveled off (sections A and C on the top side and section B on the lower side) so as to form a solid head both as to inward and outward pressure, when the metallic plate, D, is properly affixed. Section B is of V shape, and its wide end enters the croze, while the point reaches near to the opposite side of the barrel, and is held in place by the plate, D, which is secured by screws to sections A and C. To remove the head from the barrel, one of the screws is withdrawn and the plate turned on the other screw until it clears section B, when the latter is easily removed by the thumb and finger



inserted in the notches, shown near the end. To place the head in the barrel, the above operation is simply reversed. Patented by Mr. Alexander Hanvey, of Steubenville, Ohio.

PROFESSOR JAMES ORTON, of Vassar College, whose interesting letters descriptive of his recent exploration of the great Amazon river have from time to time appeared in our columns, has arrived safely home and has resumed his duties in the class of Natural History and Zoölogy.

Professor Orton states that his travels extended from the mouth of the Amazon river through the Southern Continent to the Andes, and over them to Lake Titicaca in Peru. In this classic region, 12,000 feet above the sea, he found the SCIENTIFIC AMERICAN regularly received and highly prized.