

Self-acting Trap for Sewer and Drainage Reservoirs.

Our engraving is an illustration of a self-closing sewer trap, invented by M. K. Couzens, civil engineer, Yonkers, N. Y., for which a patent was issued, through the Scientific American Patent Agency, January 10, 1871.

The inefficiency of the various traps in use, to prevent the clogging of pipes leading from street receiving basins to sewers, led to this invention, which secures a secondary, self-closing, and higher outlet to the sewer of the drainage waters received, whenever the lower or ordinary one is clogged by sediment.

The body of the trap is of cast iron or other metal, and the horizontal portion that enters the connection pipe is of double capacity or area of section to the vertical part. A float valve of non-corrosive metal is fitted to the trap, and, in its elevation and depression by the rise and fall of waters in the basin, is guided by, or plays upon, a vertical rod, suspended from the metal bucket frame that is attached to the upper part of the trap. A permanent conical hood is seen above the valve to protect the central opening therein. The peculiar shape of the basket frame and its wire covering protect the valve from sticks or blocks that may enter the basin. The compression of air in sewers by froshets has often occasioned damaging explosions, before air escape valves were invented and applied.

This invention incidentally supersedes such valves, entirely accomplishing that object in a more certain and preferable manner. The simplicity and details of the plan will, from the clearness of the illustration, be readily conceived by practical men. A represents the surface of the street, B the drip stone, C the iron cover in the sidewalk, D the connecting pipe with the sewer, and E the basket frame inclosing the float valve and its attachment, as described.

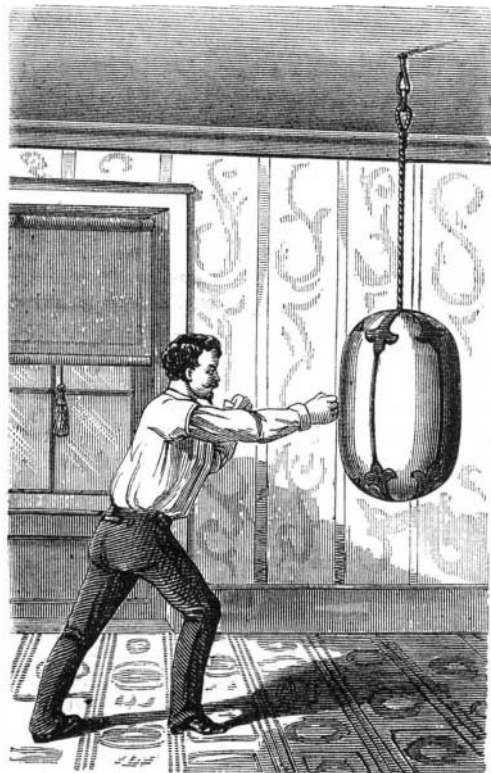
We are told that Strickland Kneass, Esq., Chief Engineer of Philadelphia, and other eminent engineers, who have examined the invention, have recommended its general adoption. For further particulars, address the patentee as above.

The Use of Earthquakes.

The usefulness of earthquakes was a favorite subject with the late Sir John Herschel. Were it not for the changes in the earth's crust which are constantly being effected by the action of subterranean forces, of which the earthquake is the most active manifestation, there can be no doubt that the action of the sea beating upon the land, together with the denuding power of rain, would inevitably cover the entire earth with one vast ocean. "Had the primitive world been constructed as it now exists," says Sir John Herschel, "time enough has elapsed, and force enough directed to that end has been in activity, to have long ago destroyed every vestige of land." Mr. Proctor shows most clearly the beneficial manner in which the restorative action of the earth's subterranean forces is arranged. Of course, every upheaval of the surface must be either accompanied or followed by a depression elsewhere. "On a comparison of the various effects, it has been found that the force of upheaval acts (on the whole) more powerfully under continents, while the forces of depression act most powerfully (on the whole) under the bed of the ocean. It seems as if Nature had provided against the inroads of the ocean by seating the earth's upheaving forces just where they are wanted."

KEHOE'S IMPROVED STRIKING BAG.

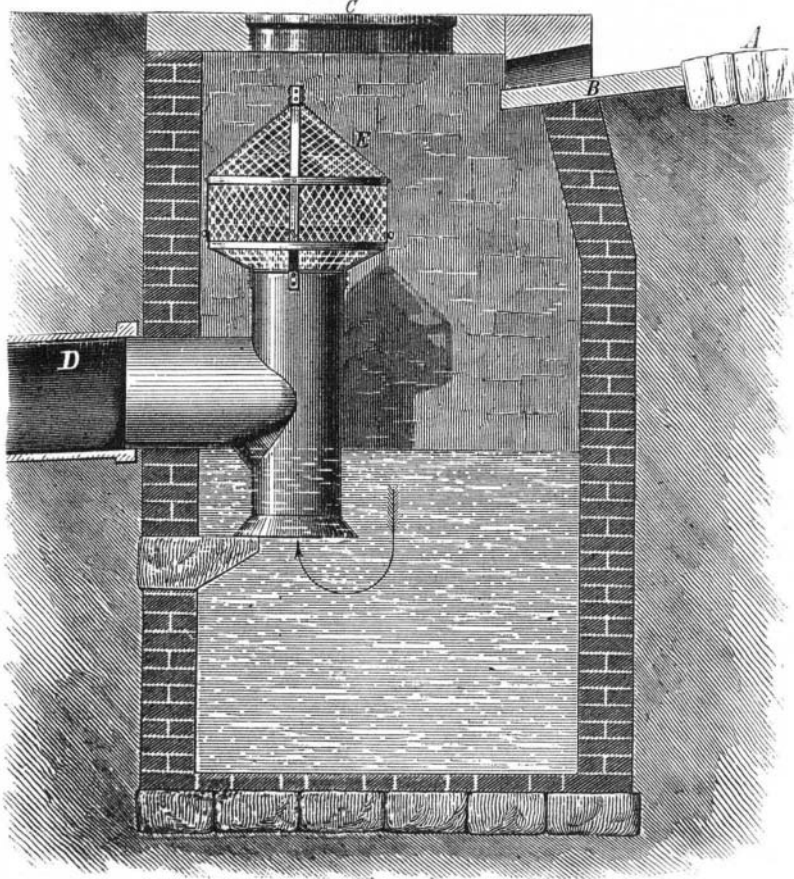
The name of Kehoe is familiar to every athlete in Ameri-



ca. The Indian clubs of his manufacture have long been held to be the best in market. Those of sedentary habits have received much benefit from the use of the apparatus

made by him, which consists not only of the clubs and the striking bag herewith illustrated, but of wooden and iron dumb bells, wands, rings, etc., etc.

The latest of these contrivances to secure healthful exercise and muscular development is the striking bag, illustrated herewith and patented March 12, 1872. It is intended to be a substitute for the flimsy and unsatisfactory ones hitherto in use. It is constructed scientifically, with a view to avoid all possible injury to the hand, and yet to enable the full exertion of the muscles of the hands, wrists, arms, shoulders, back, loins, legs, and particularly of the abdomen, to be put forth in the act of striking. It is covered with buff leather, or



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English buck, and is accompanied with the necessary rope and hook for its suspension. It consists of an inner bag filled with sand, to give the proper weight, which is inclosed in an outer bag containing cork shavings, sponge, or other soft elastic material, and which, surrounding the hard sand bag, prevents any injury to the hands. Gentlemen of sedentary habits will find this exercise particularly beneficial. A few minutes sparring in the morning will quicken the circulation and equalize it for the day, giving a warm and healthy glow to the whole body. These bags may be obtained of Mr. Sim. D. Kehoe, 100 William street, New York.

Structure of the Albuminous Substances.

It has long been known that urea is capable of undergoing transformation into carbonate of ammonia, under the influence of alkalis and water; and I have indeed recently, in these pages, proposed a ready method of estimating urea by the quantity of ammonia which it furnishes on being maintained at a temperature of 150° C. in contact with alkali. If however, instead of being heated with caustic alkali alone, the urea be boiled with strongly alkaline solution of permanganate of potash, it yields no ammonia, but undergoes oxidation to the state of nitrogen gas, or nitric acid, according to circumstances. No other substance is known which gives up all its nitrogen in the form of ammonia when acted on by alkali, and gives no ammonia on treatment with alkaline permanganate of potash.

In investigating the albuminous substances, I have observed the following facts: If caseine be heated to 150° C. with alkali, it yields about 3 per cent of ammonia; and if the residue be afterwards boiled with permanganate, some 7 per cent of ammonia is then obtained. Now, if caseine be at once boiled with permanganate of potash, it yields only 7 per cent of ammonia.

Albumen, if heated with potash to 150° C., gives 3 per cent of ammonia, and on subsequent boiling with permanganate, about 12 per cent of ammonia. If it be at once boiled with permanganate, it yields only 12 per cent of ammonia.

Creatine (which contains urea conjugated with sarcosine) behaves in a parallel manner. The two thirds of its nitrogen, existing in the condition of urea, are evolvable as ammonia by proper treatment with alkali, but only the other one third of its nitrogen is evolvable as ammonia by the action of permanganate of potash.

The structure of creatine is known; but the structure of caseine and albumen is unknown. Let a similar explanation be applied to caseine and albumen as to creatine. In caseine, about one sixth of its total nitrogen exists in the form of urea, being transformable into ammonia by alkalis, and oxidisable to nitrogen or nitric acid by permanganate of potash.

In albumen, too, about one sixth of the entire nitrogen exists as urea.

On extending my experiments to gelatin, I was much interested in observing that no ammonia is evolved when that substance is heated with alkali to 150° C., but that abundance

of ammonia—some 9 per cent—is formed by the action of the permanganate. Gelatin, therefore, differs totally from the protein substances—it contains no conjugate urea.—*J. A. Wanklyn, in 'Mechanics' Magazine.*

Photo-Intensifying Process.

A new process, by M. Merget, is as follows:

The negative, no matter how feeble, provided all the details are indicated, is fixed with hyposulphite of soda, and washed thoroughly; a solution, more or less strong as the case may require, of corrosive sublimate ("mercuric chloride," as it is now called) is then poured over it. This at first blackens and then whitens the image. If but little intensification be required, the solution should be very weak, and it should be washed off as soon as the negative has been blackened by it, and before the white stage is reached: but if the negative be very feeble, the solution should be strong, and should be left upon the film until the whitening process has reached its maximum effect. The film is then to be thoroughly washed, and the image is to be blackened by pouring over it a solution of pyrogallol—strength, three grains to the ounce of water—to which has been added an alkali in sufficient quantity to impart to the mixture its maximum of reducing power. The alkali may be either potash or soda, caustic or carbonated, or it may be ammonia; in fact, the old discolored alkaline developer, strengthened with a little more ammonia or carbonate of soda, will answer the purpose, although a fresh solution is better. The application of this alkaline pyrogallol (as pyrogallol acid is now called) immediately blackens the negative and intensifies it to the required degree—that degree depending upon the extent to which the previous action of the mercuric chloride has been carried. The negative is now to be well washed, dried, and varnished in the usual way.

New Type Foundry.

We learn, by a letter which we have seen from London, that the advertising agents, G. P. Rowell & Co., and S. M. Pettengill & Co., of New York, have been offered one of the large type foundries of London at a great sacrifice, and the writer proposes that the whole machinery and equipment shall be removed to New York, and put up and operated.—*Milwaukee paper.*

CURRIER'S TEA AND COFFEE POT STAND.

Our engraving illustrates a new and ornamental tea and coffee pot stand, patented November 14, 1871, by Thomas D. Currier, of Waldoborough, Me. The pedestal may be formed in any desired style to suit the taste. From it arise two standards, as shown, to the tops of which is connected a bail or handle for convenience in carrying.

The pot is supported in a ring which is pivoted to the standards in such a way that it hangs perpendicularly when not tilted. From one of the pivots projects, upward and forward, a handle, as shown, by which the pot is turned so as to deliver its contents from the spout.

By these means, the pot may be carried and used without burning the hands, so that the advantages of the coffee urn are secured without the expense of a faucet, the latter being likely to get out of repair and difficult to clean.

From the ring, which supports the pot, descends an arm or brace, which engages the bottom of the pot, as shown, and assists in supporting the vessel. In the pedestal is deftly con-



cealed a call bell, which is operated by the knob shown at the front. The whole is susceptible of tasteful ornamentation, and the device is fast winning popular favor. Address the patentee, as above, for rights to manufacture, etc.