SCIENTIFIC AMERICAN

A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY, AND MANUFACTURES.

Vol. XVI.---No. 5. [NEW SERIES.] NEW YORK, FEBRUARY 2, 1867. $3 per Annum. [IN ADVANCE.]

Novel Methods of Extinguishing Fires.

The engravings represent an apparatus for extinguishing fires, which was proposed in 1865 by David F. Masnata, a resident of the island of Cuba. They show a vertical section of the device and also one method of its application.

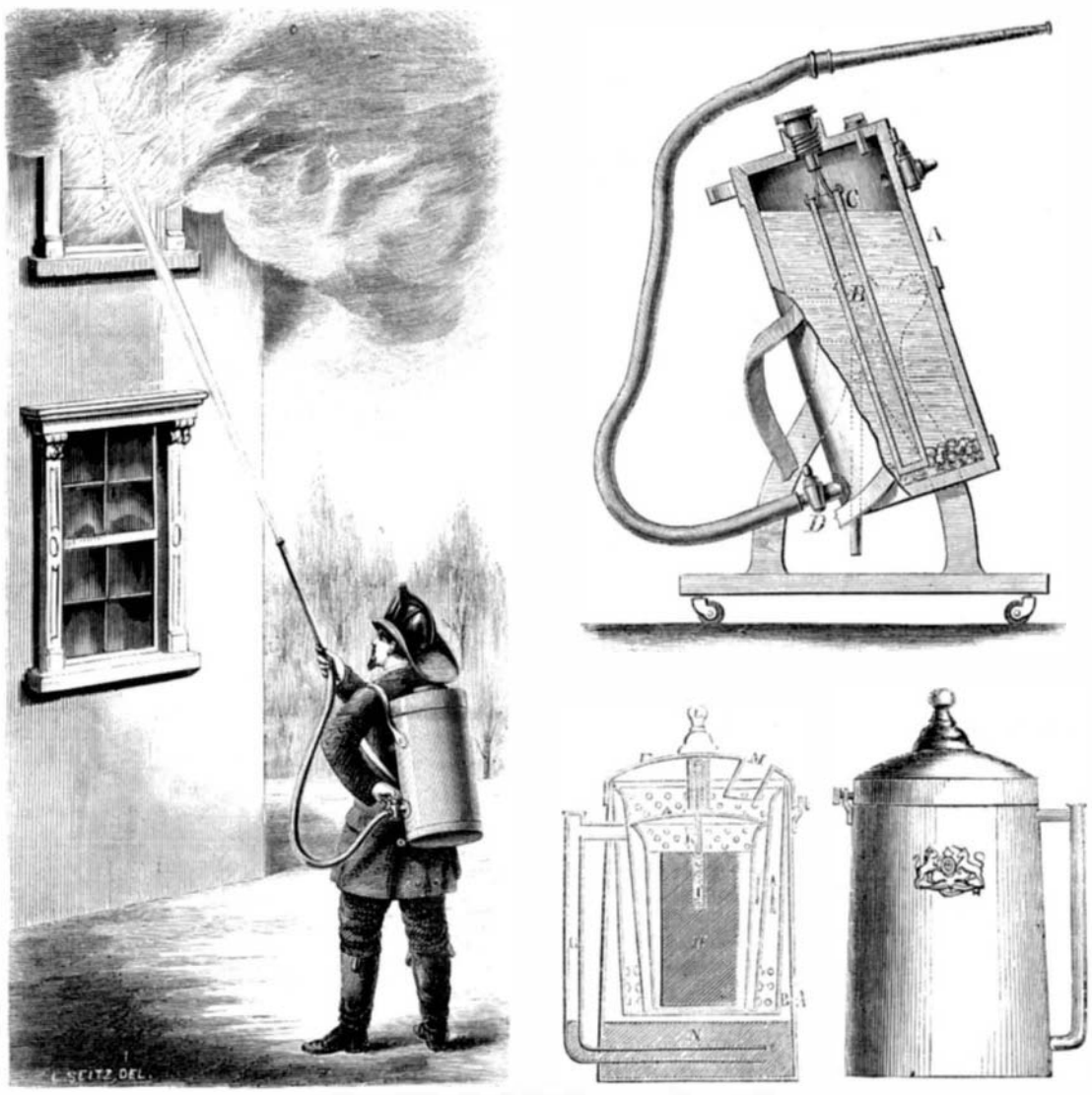
The cylinder, A, is of sheet-metal, in this case provided with trunnions, B, and mounted on a movable frame having wheels or trucks by which it can be moved from place to place. Or it may be slung by straps to a man's shoulders and operated while in this position, as shown in the larger engraving.

The cylinder is furnished with a cover which fits air-tight and may be secured in this position, while danger from over-pressure is obviated by means of a safety valve on its top. Suspended in the center of the cylinder is a tube, C, of lead while D is a lead pipe and stop-cock projecting from near the bottom and having a hose and nozzle attached.

In preparing the apparatus for use the cover is opened and a quantity of marble dust or other cheap carbonate is introduced, when the vessel is nearly filled with water. The cover is then secured and the center plug opened through which a quantity of sulphuric or other acid is poured into the tube. In case of a fire the cylinder is tilted so that a portion of the acid is mingled with the water, and by its action on the carbonate, carbonic acid is evolved and exerts a pressure on the water sufficient to project a small stream to a considerable distance.

Mr. Masnata's address is to the care of the Spanish Consul, No. 29 Broadway, New York City.

An apparatus of a somewhat similar character was severely tested on Monday, the 14th inst., before a committee of the Metropolitan Fire Department at Jones's Wood, this city. The experiments seemed to demonstrate the value of this portable extinguisher as a ready means to subdue a fire in its first stages, and even after it had assumed considerable proportions. The water in the cylinder of this device becomes charged with carbonic acid gas, and in this condition, it is claimed, may be kept for any length of time without deterioration, and yet is ready for use whenever required. Its effects on a fire, whatever the nature of the combustibles, are almost instantly apparent. Burning coal tar, animal, and even kerosene oils were extinguished with the greatest ease. A small building of wood, ten feet square, was erected and set on fire. After the flames had completely enveloped the structure, the operator, with an extinguisher on his back, advanced and begun to play upon the fire. In less than five minutes the flames were subdued.



FIRE-EXTINGUISHING APPARATUS.

The apparatus occupies scarcely more space than a water bucket and is said to be always ready for service although standing unused for years. The Levey Brothers, licensees of Baraguanath & Van Wisker, the patentees, conducted the experiments. Their office is 58 Nassau street, this city, and we presume they are ready to give all information desired by persons interested.

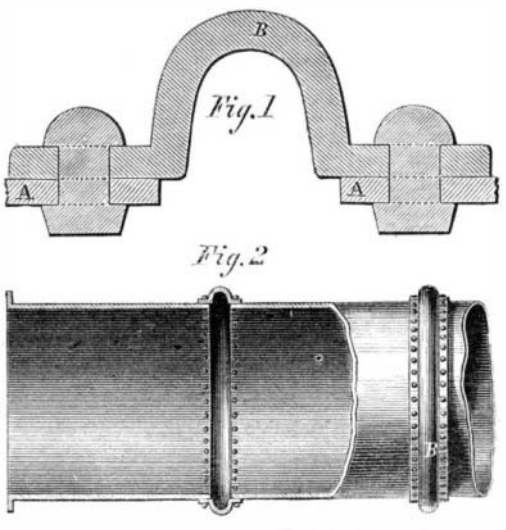
These experiments remind us of the Phillips Fire Annihilator, exhibited in various parts of the country in 1851, and illustrated in the SCIENTIFIC AMERICAN, Vol. VII., No. 1. We reproduce as a curiosity two of the engravings then used which represent the small hand machine. It consisted of two outer cases, A and B, of metal with a chamber, N, containing water. G is the discharge pipe. H is a chemical composed of wood, charcoal, coke, common saltpeter, plaster of Paris, and size, ground fine, mixed, and molded into blocks. I is a glass tube inserted into the charge and containing sulphuric acid. The charge was ignited by the rod, K, which shivered the glass and freed the acid. Vapor or gas was instantly evolved and projected with considerable force on the flames. The apparatus was not, however, very successful.

In No. 6 of the same volume (Oct, 25, 1851), we published an engraving of a steam fire engine a part of the description of which was as follows:—"When the engine is standing in the house, the boiler always contains a sufficient quantity of water to get up steam, and at the same time is charged with carbonic acid gas by suitable apparatus, until it contains sufficient to work the engine forten minutes in which time steam can be raised to take its place, when exhausted." Our firemen now would think such a machine rather old-fogyish, as they consider less than half that time sufficient to get up steam on their engines.

Whether either of these devices or any other by which fires are attempted to be extinguished by chemical mixtures will ever supersede the use of water alone, may be doubtful, but that the attention of inventors is directed to this object is gratifying. In a city so crowded as is the metropolis a handy and efficient means of quenching fires in their incipiency should be attached to every building, and especially to our tenement houses swarming with human life. The Legislature should compel the adoption of some proper apparatus.

IMPROVED JOINT FOR BOILER FLUES.

The internal flues of boilers are sustained only by the ends, with, in some instances, stays to brace them. Their weight exerts an enormous strain upon the boiler heads to which they are attached, and it is well understood by engineers that the flues of horizontal boilers constitute the weakest element in their construction.



We copy from *Engineering* a new joint for boiler flues introduced by the Bowling Iron Company. In the engraving, A is the barrel of the flue, and B, the ring joint. From the section Fig. 1, it will be seen that this form of joint gives extraordinary stiffness, while at the same time it imparts to the flue a certain amount of longitudinal elasticity to allow for expansion, and thus reduces the strain upon the end plates. These hoops are rolled of any required diameter without weld.

MODEL MAKING.

The demands of inventors, in order to conform to the requirements of the Patent Office, have developed, within a few years, a department of mechanics not before separated from the ordinary business of the common machinist. But the business of the model-maker has now become as distinct from that of the machinist and cabinet-worker as theirs are from that of the forger and the carpenter. None but first-class mechanics can hope to become successful model-makers. The work required is generally exact, fine, and perfect. Working models, where practicable, are preferred, and the model-maker must use as much judgment in the construction of the model as the engineer or machinist in building the working machine, while he must almost equal the watchmaker in closeness of work and skill in manipulation.

A fine working model is a thing of beauty, and next to the full-sized working apparatus is a delight to the mechanical eye, while a botched-up job is an eye-sore. We feel a pride in the inspection of a well-made model, and many of them come under our notice in our professional labors. We feel a pride in the art with which we know ourself to be allied by taste and profession. It is pleasant to see the efforts of boys of a mechanical turn, who usually attempt the construction of a miniature machine, sometimes with the poorest tools and of the most unsuitable materials, but not seldom with splendid success.

Model making affords a pleasant branch of occupation to those mechanics who, possessing naturally fine tastes and an acquired dexterity of manipulation, recoil from the heavy, rough work of the engine builder. They not unfrequently make improvements in tools and processes and serve well their day and generation. Their work is at the same time a pleasure, not laborious or necessarily dirty, and affording an agreeable variety. Some specimens of their handiwork are as much monuments to their ingenuity and patience as is the marine engine to the comprehensive genius of the engineer.

A TRULY AMERICAN IDEA.

If any American yet lives in ignorance of the triumph of scientific American skill in the manufacture of watches, he should be advised to provide himself with the information, in the form of a Waltham watch, at his earliest convenience. Meanwhile, a glance at the testimonials presented on one of our advertising pages, will be instructive. Every one knows, of course, that we have no labor in this country, skilled or otherwise, which will consent to compete in cheapness with that of Europe. How then is a watch, almost the whole cost of which is in labor, to be produced here in its perfection at once better and cheaper than it can be imported? The problem was solved, as many another of the same kind has been, by the application of exact science and inventive genius. To make machinery for the production of every piece required, in perfect proportion and finish, was the initial labor, which once done was done always, instead of being to do anew on every watch, as in the hand-made work of European manufacturers. Hence the Waltham watches are precisely alike, after each kind; and since their parts could be interchanged without difficulty, it follows that they must run together as accurately as they are adapted to each other, and may be, as they are, warranted with entire certainty. Nothing was ever more successful, as a scientific or a business effort. The works now cover three acres, and employ a thousand operatives. It is estimated that the American Watch Company, which commenced business ten years ago, make nearly half the watches sold in the United States.