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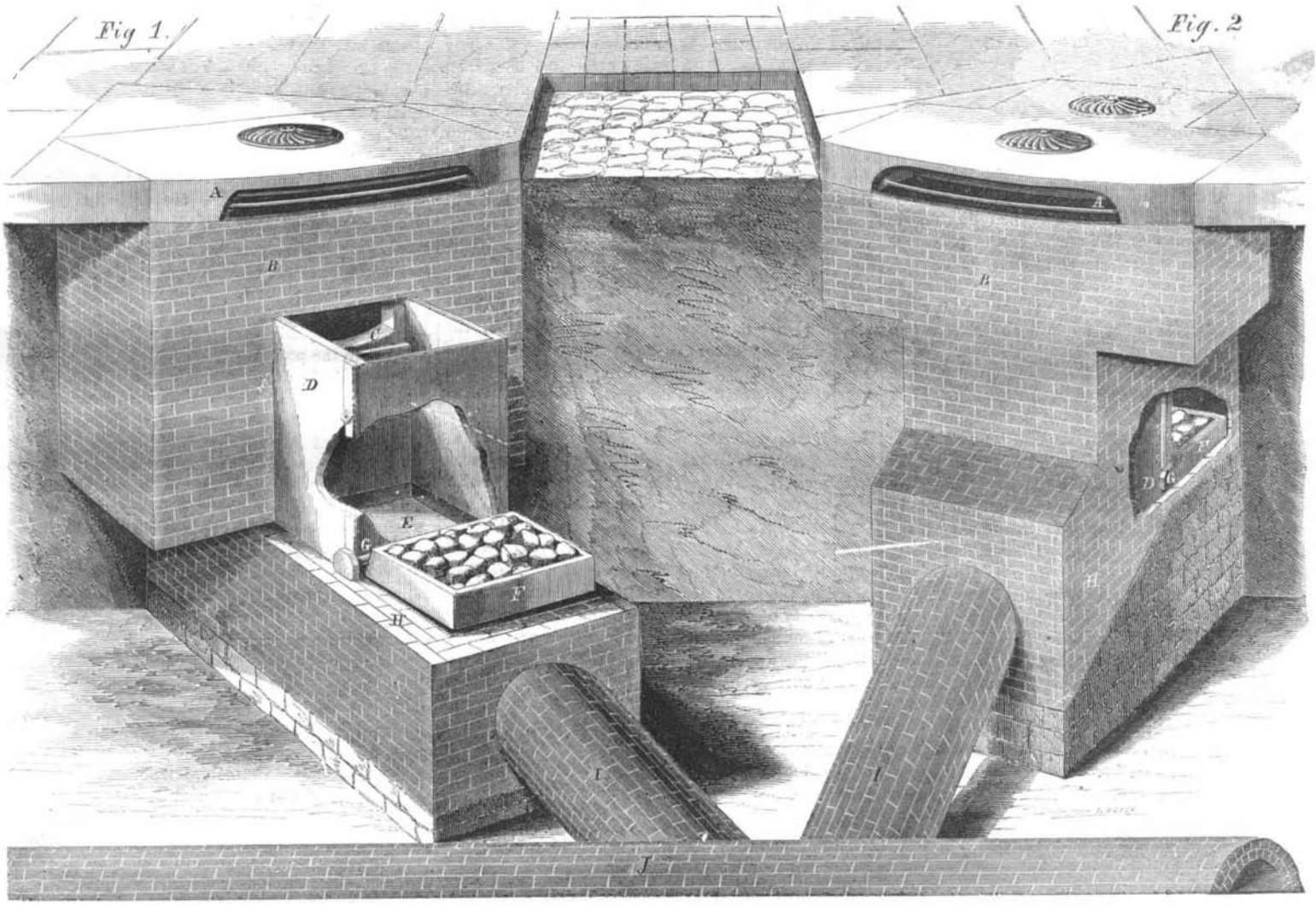
Improved Patent Stench Trap.

The public health in cities is a question of interest to all citizens alike, be they the proprietors of palatial residences or the denizens of hovels. "It has been observed," says Noah Webster, in his work on epidemics, "that pestilence has always been the curse of populous cities. Of about two hundred general plagues recorded in history a few only have been so violent as to spread over countries into villages and farm-houses. Almost all have have been limited to large towns, evidently demonstrating that they would never have effected mankind without the impure air generated in those places." Men of science in London, Paris and other European cities have found by a long series of interesting experiments that the alarming increase of mortality in those cities was the result, mainly, of imperfect drainage and sewerage. Sewer gases are now known to be terribly destructive to human life. It has been, comparatively, within a recent period that scientific and public attention has been turned, in this country, to the health of cities; but investigation has developed startling facts that are enough to alarm the most careless in our business-engrossed community. Statistics show the United States to be the most healthy country in the world, but the city of New York is the most unhealthy city, excepting New Orleans, in America or Europe. There is doubtless no reason, aside from the sewers, why New York should not be the most healthy city in the world, as it is washed on either side by two noble rivers and the Croton has been made to flow through our streets and houses.

Eminent physicians in this country, in accounting for the causes that produced these facts, consider that the respiration of sewer gases, arising from imperfections in our drainage and sewerage, to be the most deleterious and dangerous. Our engraving represents a patent stench trap which prevents any of the evils specified. It shows the intersection of two streets. Exposed to view on either corner (as if by excavation) are the public drains or receiving-basins and culverts, as they are commonly named; the one on the left hand of the engraving (Fig. 1) exhibits a basin and culvert, so altered and improved as to admit of the attachment of the stench trap at the side of the basin. Fig. 2 is a new form of basin and culvert, with the attachment to the bottom of the basin, both arrangements permit the water and street washings to pass into the sewer with facility and prevent the rising of malarious gases and vermin. The essential difference in the operation of the two consists in this—Fig. 1 prevents the filling up of the sewers with large and heavy substances, such as long sticks, cobble-stones, &c., by arresting their passage and retaining them in the basin, therefore this arrangement is peculiarly adapted to places where the descent of the sewer is slight and the flow through it sluggish; Fig. 2 allows every thing to pass, and is adapted to localities where the descent of the sewer is great and the flow through it is consequently rapid.



VOORHEES' PATENT STENCH TRAP.

The patent water-lute may be constructed of cast iron or any kind of metal. Its operation is as follows:—In Fig. 1 the street-wash passes through the opening, A, into the basin, B, thence through the opening, C, into the chamber or water-box, D. In Fig. 2 the street-wash passes through the opening, A, directly into the chamber, filling the chamber to a certain altitude or water-mark (indicated by a dotted line), whereupon the bottom of the chamber or valve, E, opens downward, thereby discharging about two-thirds of the water; the valve then closes, retaining and trapping about one-third of the water in the chamber. The reason of the closing is that the valve, E, being one arm of a lever—the other extremity supports a balance plate of any required weight. In the engraving, instead of a metallic balance plate, it supports a box, F, containing stones. The fulcrum or shaft on which it works fits closely into a groove on the back of the chamber to the depth of a third of the diameter of the shaft. The

two ends of the shaft play freely on its journals in the ends of the bearings, G, that are secured to the chamber by screws or bolts. The valve, shaft and balance-plate may be cast in one piece. India-rubber is nicely fitted around the edges of the valve and bottom of the chamber at the points of contact, so as to make it absolutely air-tight. If we suppose the weight of the stones on the balance-plate in the box to be 150 pounds, causing the arm of the lever supporting it to gravitate downwards, the waste water when it reaches the water-mark equals the weight of 150 pounds; thus is produced an equipoise or balance of both arms of the lever. When the water rushing in the chamber ascends above the water-mark, the equilibrium is destroyed and the valve opens and discharges about two-thirds of the water, such discharge causing the stone or balance-plate end of the lever to become, in turn, the heavier and to press downward and the valve end of the lever to close, thus trapping a portion of the water. The water so trapped acts as a lute or seal and prevents foul air, sewer gases, &c., from ascending. During heavy rains or showers the valve opens or closes with more or less rapidity, according to the supply, always discharging and trapping the same proportions of water. Should, however, the supply cease and hot weather ensue, dispelling by evaporation the whole or portion of the trapped water, still the valve fitting the chamber air-tight as well as water-tight, effectually precludes the ascension of the gases, &c. The discharged water passes into the culvert, H, and thence through the duct or pipe, I, into the public sewer, J.

A patent has been ordered to issue for this invention through the Scientific American Patent Agency, and it is claimed that it will effect the following objects:—It will prevent the escape of the poisonous sewer gases into the streets through the receiving-basins and culverts and into houses when attached to private drains, sewers and sinks; it also prevents sewer rats from coming up into the streets and houses. When it is attached to the side of a basin (as in Fig. 1) it prevents the filling-up of a basin with large sticks and stones, and that it provides against the overflow at the street corners (so often seen in cities), occasioned by the sediment collecting in, and stopping up, the basin. In low situations near the rivers, when at times the flood tide rises high, it frequently causes the accumulations in the sewers to be forced up into the streets by the back water; this trap renders it an impossibility. Another of its advantages is its non-liability of becoming stopped-up. Should it by any chance become so, a man upon the side-walk, with a long pole thrust through the man-hole, can set it agoing in a few seconds, instead of cleaning it out by the cart-load as is now done in the old ones. The saving effected in the cleaning-out of the basins will amount to thousands of dollars annually. For further information address T. B. Voorhees, 60 Wall street, New York. Models of this invention can be seen by applying to C. W. Baker, 29 Beekman street, New York.

Glycerine in Surgery.

In a communication in the London *Lancet*, by Dr. E. J. Tilt, it is stated that glycerine is now very extensively used in the Paris hospitals—the annual consumption being 3,000 pounds. It is used for skin diseases and for foul wounds. It possesses antiseptic properties and is used pure in lotions and also in ointments mixed with starch. A good ointment is made by boiling 80 grains of starch in 1 fluid ounce of glycerine. This ointment never becomes rancid; it is inodorous and does not change. Corn starch has been found best suited for the purpose. A stiff plaster can also be made with 150 grains of starch boiled in 1 ounce of glycerine. A sedative plaster is made with sulphate of atrophia, 3 grains; veratria, 3 grains; sulphate of morphia, 8 grains; otto of roses, 1 drop; hard glycerine ointment, 1 ounce.

A Milwaukee (Wis.) paper states that the wheat trade of that city, as reported by the Chamber of Commerce, is greater than that of Chicago. The total wheat trade of Milwaukee for 1862 was no less than 17,834,926 bushels. This amount would make it the greatest primary wheat market in the world. Wisconsin wheat is of a very excellent quality.

The Cost of Horses employed upon City Railroads.

The *Ledger* publishes (from the auditor's report of the city of Philadelphia) the following information relative to the cost of horses on the railroads of that city. There are 18 passenger railroads, employing 2,300 horses; the feed, shoeing and harness of these animals cost per annum, the sum of $182,181. In addition to this expense, the cost for stables, &c., amounts to a sum total of $232,204, not including expense for wages for hostlers, and the loss upon the animals that die during the year. Taking this great expense into consideration the *Ledger* advocates the adoption of steam engines for city railroads. It says:—"By the use of dummy engines the railroad companies get rid of the expense of keeping large stables, of the attendance and the expense of keeping from 100 to 300 horses each, the cost of which would double the figures above given. Each car having the motive within itself can be driven, we are told, with a consumption of a couple of bushels of coal per day; giving the liberal allowance of four bushels, and we have a consumption of coal of but a tun a week for each car, or fifty-two tuns a year, which at a cost of $6 per tun, would be $312, annual cost. There are 470 cars in use on all the roads, which, at the above cost to run with steam, would make a total of $136 640 for keeping eighteen roads in working operation, against $232 204, the annual expense of merely feeding, shoeing and harnessing, &c, the horses on the lines of but ten of the railroad companies. Adding the other incidental expenses, it gives a sum probably double the amount. These figures show what would be saved to the public by the use of dummy engines, and how much capital is actually thrown away in using a power more expensive and not nearly so safe and reliable."

The Snows and Seas of Mars.

Mars has lately presented a favorable opportunity for the examination of its surface. The constitution of this planet more nearly approaches that of the earth than any other in the system. Snow can be detected at both poles, the white circle increasing in winter and decreasing in summer. It has been found that the center of this region of snow does not coincide exactly with the poles of the planet. And in this respect it is like the earth, whose greatest cold is not exactly at the pole. A greenish belt with deep bays and inlets near the equator, which is suspected to be a sea, has recently been detected. The termination of the snowy region is very sharp and abrupt, giving the idea of a lofty cliff. A reddish island in the above sea has also been detected. The probability of Mars being inhabited is greater than that of any other planet. Its density is very nearly that of the earth. The heat and light of the sun would only be half of that enjoyed on our globe; but then this may be compensated by an atmosphere which may form a warmer wrapping than ours and by a more sensitive eye. A great part of the surface of the globe is covered with snow for half of the year; the people in Mars would not be worse off than we are in Canada, and life is tolerable here. People emigrating from this planet to Mars would find that they were only half as heavy as they are here, which some would not regard as a disadvantage.—*Leitch.*

Manufacture of a Great Iron Plate.

The London *Times* contains a description of a visit paid by the Lords of the Admiralty to Messrs. Brown's works at Sheffield, England, where the rolled plates for the armor-clad frigates are manufactured. The rollers for making the plates are 32 inches in diameter, 8 feet in width, and are driven by an engine of 400 horse-power. One plate, manufactured on the occasion, was 19 feet long, 4 feet wide, 12 inches in thickness, and weighed 20 tuns—the largest ever fabricated. Several other plates of lesser size were made; one was 17 feet long, 4 feet broad, and 5½ inches in thickness. Bessemer steel was also manufactured in the presence of those naval dignitaries. In twenty minutes from the time of putting the charge of cast iron into the furnace, it was poured out into the mold as tough steel, and formed an ingot weighing three tuns. The manufacture of steel from cast-iron, by what is called "the Bessemer process," is now practiced very generally in all the large European iron-works; that kind of steel is beginning to be used extensively in making rails.

THE WHITWORTH PROJECTILE.

We frequently have occasion to refer to the adoption in foreign countries of American inventions, either in principle or in detail. The Whitworth projectile, now so famous, which, it is said, inflicted the principal damage to our *Monitors* and iron clads in the late attack on Charleston, if not exactly a case in point, illustrates the often-noted fact, that inventors, though widely separated, often catch the same inspiration.

On page 165, current volume of the Scientific American, will be found an illustration and description of this projectile. It will be remembered that it is hexagonal in its section and mechanically fitted to the bore of the gun, which is also hexagonal in its section. The angles or corners made by the junction of the sides of the hexagons, are the equivalent of spiral grooves in the gun, and of projections or flanges on the projectiles themselves, which give the rotary motion to the latter. This plan differs radically from those of Armstrong (which seems to have been abandoned) and others, which depend upon forcing or expanding soft metal into the grooves to give the desired rotation. Capt. Dalghren, in his late report to the Secretary of the Navy, says that no little trouble has been experienced in the stripping of soft metal. Whitworth apprehended this difficulty, and has obviated it by his plan; but whether the future will develop difficulties attending it equally as objectionable as that mentioned by Capt. Dalghren remains to be seen.

By reference to the Scientific American of July 6, 1861, page 5, there will be found an illustration and description of a projectile, the invention of Mr. Sigourney, of Watertown, N. Y., and it will be observed that the leading features of it are precisely similar to that of Mr. Whitworth's, although it is evident that Sigourney's plan, of both gun and projectile, is much the simpler and cheapest. Both depend upon fixed projections, or their equivalents, to give rotation to the projectile (the first requisite); both are mechanically fitted to the bore and grooves, requiring special machinery for the purpose, and neither of these inventors employ soft metal to secure the rotation of the shot.

We do not propose to discuss the merits of the two inventions, as compared with each other, with all the various constructions and exterior configurations of which both are capable, or as compared with others constructed upon entirely different principles. We will, however, venture an opinion upon the operation of the Whitworth projectile, when fired from a muzzle-loader, with which we observe he has lately been experimenting; the practical difficulties attending the use of breech loaders having led him to this; but we do not know whether he used the same projectiles we have described, and gave them the necessary windage, or what results he obtained. Now, the Whitworth projectiles, for breech-loaders, may fit the bore very closely, but for muzzle-loaders a certain amount of windage must be allowed. This being nearly one-sixteenth of an inch, the axis of the projectile and bore will, of course, be eccentric to each other. When the projectile passes out of the gun, the angles of the projectile, only, that are in contact with the angles of the bore, will have a bearing and receive the impulse of rotation. It would seem, therefore, that the result would be a one-sided impulsion, alike destructive of the proper rotation, regularity and accuracy of flight.

The chief value of rifled guns lies in their ability to project an elongated missile with great force and accuracy to a long distance; and, if our criticisms have any weight, the Whitworth gun is equalled, if not excelled, by many guns of home production that depart widely from the features observed by Mr. Whitworth.

The shell that destroyed the *Queen of the West* was fired from the distance of a mile and a quarter. It was one of those lucky hits which sometimes happen in war, and which show how destructive a thing firing could be made if it was well made.

The head gunner on the pirate *Alabama* is one of the most accomplished artillerists that was ever in the British navy. He was paid off and got his discharge a few weeks before the *Alabama* sailed.