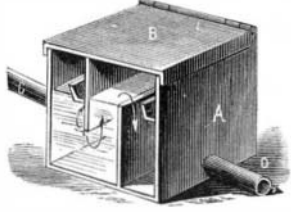


RECENT INVENTIONS.
Sewer Gas Trap.

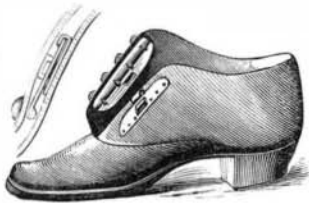
The object of this invention is to guard against sewer gas entering a building through the sewer pipe connections.

The trap is constructed with a separable cover provided with inlet and outlet pipes, divided into three compartments by upper and lower partitions, and provided with disinfectant vessels within the first and third compartments, whereby sewer gas passing through or generated in the trap will be prevented from entering the building. A is the body of the trap, provided with a cover, B, which is hung at one side to the body, so that it can be conveniently opened. With an opening in the middle or upper part of one side of the trap, A, is connected the inlet pipe, C, and with an opening in the lower part of the opposite side is connected the outlet pipe; the interior of the trap is divided into three nearly equal compartments by two partitions, one extending from the top of the trap about two thirds of the distance to its bottom, and the other extending from the bottom of the trap about two-thirds of the distance to its top. With this construction the first and second compartments of the trap will be always full to the level of the upper edge of the lower partition, and all the sewage that enters the trap must pass beneath the lower edge of the upper partition, and over the upper edge of the lower partition, into the third compartment of the trap, whence it flows out through the outlet pipe. Further information may be obtained by addressing Mr. Moses T. Williams, care Jesse West, 109 W. 11th St., New York City.



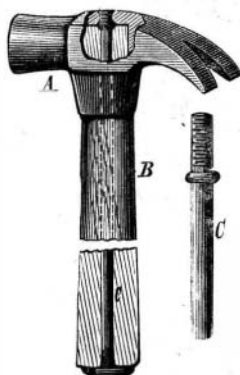
New Button Fastening.

This device is designed to be employed for fastening shoes of the kind for which buttons are employed, the object being to avoid the wear and tear of the buttons and holes and avoid much of the labor and loss of time required to fasten button shoes; and it is contrived for the application of buttons, also to give the appearance of button shoes when required, but may be used without the buttons, if desired. It is a neat, substantial, and easily operated fastening, which preserves all the appearance of a button shoe, but it is equally as effective without buttons, the latter being only ornaments. A plate of this metal is attached to the side of the upper covered by the fly. The inner edge of this plate has a flange turned upward and over toward the outer edge, and near the middle of the plate there is a catch which is raised slightly above the surface for engagement with a plate on the button fly. This plate is attached to the button fly by a wire to which the buttons are fastened. When it is to be applied to low shoes having only three or four buttons, one set or pair of plates will be used; but for higher shoes two or more pairs of plates may be employed, because the shape of the ankle will not allow of the use of plates longer than about the range of four buttons. This invention has been patented by Mr. William Wiggins, 103 B Street, South Boston, Mass.



Improved Hammer.

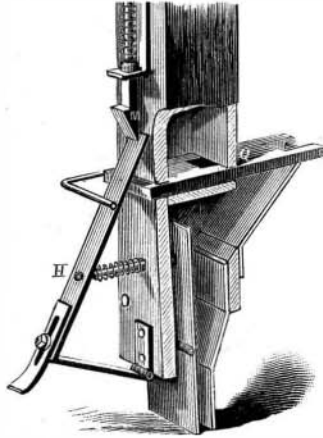
The engraving shows a novel device for securing the handle to a hammer and for strengthening the handle. The invention consists essentially in a hammer having the outer end of its eye closed and provided with a threaded hole, a longitudinally bored wooden handle being inserted in the eye, and an iron rod passing through the handle and having one end threaded for engagement with the hole in the eye, and the other end threaded for engagement with a nut at the free end of the handle. A represents a hammer head having the outer end of the eye closed, and in the center of the closed portion there is a threaded hole. The handle, B, is of wood, and is bored centrally throughout its entire length, and has one end formed to exactly fit the eye of the hammer. C is an iron rod of the same diameter as the bore in the handle, and it has one end threaded to fit the hole in the eye, and the other end threaded for receiving the nut at the end of the handle. If desirable, the rod, C, may be welded to the hammer head. The advantages of this invention are that the handle is securely fastened to the hammer and prevented from coming off, without the necessity for driving wedges in the eye portion. The handle is made stronger by the rod running through it, so that the hammer can be used to pull nails without danger of breaking the handle. By removing the nut the handle can be taken off when desired;



and by having the end of the rod smoothed and finished off even with the surface of the head, the hammer can be used in close places, such as in boxes, or in corners of a wall or ceiling, where it could not be used if the nut were outside of the hammer head. This invention has been patented by Mr. Thomas B. Bailey, of Columbus, Miss.

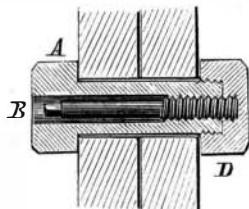
Hand Corn Planter.

This corn planter is constructed with a seed box having a seed dropping slide operated by a hinged bar, with which is also connected by a bolt and spring the hinged jaw for dropping the seed. The seed box is provided with a spring catch for holding the hinged bar, and which is operated to release the hinged bar by a cord connected with the pivoted handle of the planter. In using the planter the jaws, when closed together, are forced into the soil to the proper depth. As the foot comes in contact with the soil the upper end of the planter is forced forward, which forces the upper end of the bar, H, inward until it is caught and held by the catch, M. The inward movement of the upper end of the bar, H, opens the jaws, and allows the seed to drop out into the opening made in the soil by the opening of the jaws. As the planter is being raised from the ground, the jaws are held open by the bar, H, and catch, M, so that all the seed will be left in the ground. As the planter is raised from the ground the operator turns the handle, which raises the catch, M, releases the bar, H, draws the slide, Q, forward to again receive seed, and closes the jaws ready to be again thrust into the soil to plant another hill. Two hills can be planted at a time by connecting two planters together at the proper distance apart by one or more cross bars. This invention has been patented by Mr. Orlando T. Grattan, of Ivanhoe P. O., D. T.



Improved Nut Lock.

The bolt, A, is made with a central bore, B, through it longitudinally, which is internally screw-threaded partly or wholly throughout its length, the threads being pitched reversely to the threads, C, on which the socket of the nut is to screw for drawing up the bolt on the plates. The nut has another and smaller socket or bore, threaded to receive the end of a binding screw, which is screwed in from the head of the bolt by a wrench or screw driver, after nut is screwed on. For long bolts the socket in the nut is extended to form a bore entirely through the nut, and the bore of the bolt extends inward but a short distance, forming a socket into which, through the nut, the locking screw is inserted. It will be seen that any tendency of the nut or bolt to work loose will be resisted by the tightening of the binding screw, which will thus effectually keep the nut tight on the bolt. This invention has been patented by Mr. Charles E. Bell, of Greenfield, O.



Valuable Tin Discoveries in Alabama.

From a late number of the *Ashland Banner*, Clay County, Alabama, we learn of the discovery of large and valuable lodes of tin bearing rocks, at the Broad Arrow Mines, near that place. Within the last year Mr. G. W. Gæstner, of this city, having secured proprietary rights to the above lands, has erected machinery for crushing, stamping, and washing the ores, and is now engaged in working them on an extensive scale. The ore has hitherto been found chiefly as a finely disseminated oxide in gneiss, as in Germany and other localities, but indications strongly point to the existence of the compact oxide, cassiterite, somewhere in the lode. As the locality is readily accessible by railroad to Talladega, Alabama, and thence about twenty-five miles to Ashland, it is confidently expected that this discovery and enterprise will be the means of attracting attention to a section hitherto little known. The country is well wooded and watered, of a mountainous character, and eminently adapted for mining pursuits. It is worthy of mention that this is the first attempt in the United States to work tin ore on the spot where found.

The Deepest Coal Mine in America.

Pottsville, Penn., claims the deepest coal mine in America. The shaft is 1,576 feet in depth. The cars, holding four tons each, are run upon a platform, and the whole weight of six tons is lifted in a little more than a minute by machinery that works as smoothly as a hotel elevator. The output is 200 car loads a day.

Correspondence.

The Tides on the Bay of Fundy.

To the Editor of the *Scientific American* :

Referring to the article in your paper of December 9, 1882, headed "Blomidon": These high tides, and the still higher stories we often hear of them, having perplexed me from youth, I set out last summer to study their reputed phenomena, before venturing to take a party of my friends in the steam yacht. The following course was sailed over: From this city to Halifax, N. S., standing well out to sea; thence coastwise to Cape Sable and Yarmouth; across the inner mouth of the bay to Grand Manan Island; up the coast of New Brunswick to St. John and Truro, at the head of the bay; down the coast of Nova Scotia to Annapolis, which river and several others I ascended, thus circumnavigating the entire sheet of water, which is about 180 miles long by an average width of 40 miles. Soundings and deep sea and surface temperatures were taken during the cruise. A week was spent at Kingsfort, N. S., on the beautiful Basin of Minas, a few miles from Cape Blomidon and Cape Split.

These tides are, as you say, one of the wonders of the world. They are caused, as are also the dense fogs of this region and of the North Atlantic, by the cold Gulf Stream, pouring from the Arctic Ocean by Smith Sound, Baffin's Bay, and Davis Strait, along the coast of Labrador, and through the Strait of Belleisle, which discharges into the Gulf of St. Lawrence. These cold, heavy currents hug the coast line as they run.

On doubling the southeast corner of Nova Scotia, at Cape Sable, they strike for the first time the warm and lighter waters from the south, and drive the latter before them toward the point of least resistance, which is up the Bay of Fundy. At its mouth, opposite Cape Sable, the tide rises 6 feet; opposite Digby, 28 feet; at St. John, 38 feet; off Windsor, 45 feet, and when ebb, a bucket could not be filled with water in the harbor; at Truro, 60 feet, and at ebb the red clay bottom is exposed for a distance of 25 miles. These measurements refer to spring tides, which are highest. But the belief which so generally prevails, that the tide assumes, as it rushes onward with loud roar and great velocity, a high, almost vertical wave, or "bore," as it is termed, which even draws into its vortex such animals as may stray near the beach, is wholly erroneous. *There is no bore or tidal wave on the Bay of Fundy.* Navigation there is neither dangerous nor difficult, unless it be from fog or ice. In the absence of storms, the tides, ebb and flood, are accompanied by scarcely a ripple. Even at Cape Split, where the bay suddenly contracts to a width of about 3½ miles, the "wave" will not measure one inch in height. What can have been the origin of this fable, which has not only obtained general credence, among many, but is even accepted by men of science without question, and is yet chimerical as a madman's dream? Probably the very trifling bore which does really exist on two small tributaries of the bay, the Petitcodiac and Shubenacadie. The bore on the former river I measured at Moncton, N. B., 89 miles E.N.E. of St. John, and found it just 3½ feet high, with a travel up-stream of 6 miles per hour. It is caused by the last of the ebb tides being met and repelled by the flood tide in a narrow stream confined by almost vertical banks.

I cannot close this hastily written sketch without adding that the British people of the lower provinces are reasonably courteous, and quite as honest and honorable as any among whom I have ever traveled.

P. J. McCOURT, M.D.

New York, Dec. 9, 1882.

Aztec Remains in La Plata County, Colorado.

At the Denver Exposition there were exhibited some Aztec remains from Farmington, La Plata County, Colo., of intense interest to the student. They were found in the ruins of a building several stories high, which had been erected in the form of a terraced pyramid, near the mouth of the Animas River.

Nearly all the bones of the human body were discovered in a good state of preservation. Among them were three skulls, two of men and one of a woman. The latter was also young, as the distinctness of the suture joints testifies; one of the male skulls was of a middle aged person, and the other evidently of an old man, as the several parts had grown almost solid. All were very thick, showing characteristics of the semi-barbaric races. The teeth remaining were mostly sound, though one showed marks of an ulceration, and there were several empty sockets.

Besides, there were some fine specimens of Aztec pottery of perfect color, parchment, stone implements, etc., from the same vicinity. This section of Colorado has been as yet little explored, but enough has been found to demonstrate that it is a region of great value to archaeology.—*P. E. S., in Kansas City Review.*

Height of Ocean Waves.

It is stated that in the North Atlantic record waves have been observed of 24 and 30 feet high, highest being 43, mean 18, in westerly gales. In the Pacific, 32 feet is recorded; South Atlantic, 22; Cape Horn, 32; Mediterranean, 14½; German Ocean, 13½; and French sailors mention 36 feet in the Bay of Biscay.