

New Inventions.

Bad Barometers.

There is no instrument more useful than a good barometer. It indicates changes of the weather before the eye can discern the signs of their approach in the heavens, and on this account it is a premonitor of atmospheric changes. It has saved many ships from being engulfed in the ocean by its warnings of the coming tempest when the sky was clear, thus enabling the sails to be reefed and made snug in due season.

The barometer consists of a column of mercury about 33 inches long supported in a glass tube, with a cup at its foot, by the pressure of the atmosphere. According as the pressure of the atmosphere varies, by winds, moisture, &c., the column of mercury rises and falls in its tube. The instrument, however, may be so poorly made as to be no better than a defective watch, which cannot be trusted in keeping record of "passing time," and we suppose such instruments are often sold for reliable barometers.

A correspondent writing to us from Indiana, states that he purchased a barometer last spring, for the purpose of warning him of approaching changes of weather, but he has been completely deceived by it. The tube of it is 33 inches long; at 31 1-2 inches it is marked "very dry," at 31 "very fine weather," at 30 1-2 "fine weather," at 30 "changeable weather," and at 28 1-2 "stormy." Instead of this instrument indicating such changes, the mercury in the very finest and driest weather only stood at "fine weather," and in the worst storms it only fell to "changeable weather." And as if joking with disaster, it indicated only "changeable weather" during a storm that blew off part of the roof of his house, swept off the roofs of several barns, and prostrated many huge trees. The range of his barometer in all these changes was only half an inch.

We bring these facts before our readers for the purpose of warning all those who intend to purchase barometers to be careful, and to purchase only from reliable parties. Every instrument should be tested thoroughly by its makers before it is sold, as scarcely two are exactly alike in their operations. If the bore of the tube is rough, it causes friction, and the mercury adheres to its sides, and does not indicate the correct pressure of the atmosphere; and this may be the reason why our correspondent's instrument fails to operate properly. The mercury of some instruments may also be much adulterated, and thus contain another source of error; but it is not possible to detect these defects in examining an instrument when about to purchase one; hence the necessity of being careful in purchasing such instruments of reliable manufacturers.

Inspector's Report of the Explosion on the Empire State.

Increase C. Hill and Andrew Burnham, Local Inspectors of steam vessels for the District of Boston and Charlestown, have reported on the causes of the explosion on board the *Empire State*—already noticed in our columns. They exculpate the engineers, Woolson Brockway, and Alfred S. Beebe, in causing the accident. The cause of it they attribute to the steam chimney getting red hot—something which engineers have hitherto held to be impossible—while the engine was working, and for ignorance of which the engineers were not blameable.

The report says: "We believe the smoke pipes were heated to redness by the heat which escaped from the steam chimneys."

With this opinion of the Inspectors we cannot agree. We do not believe that the explosion was caused in the manner set forth by them. Evidence was furnished that the boiler was not good, and a boiler-maker engaged on board, who was killed, stated to his wife before he started, he was afraid to go on the trip, on account of the dangerous state of the boiler. Such evidence appears to have been ignored by the Inspectors; they have adopted views respecting the cause of the explosion which will not be sustained, we believe, by respectable engineers in general.

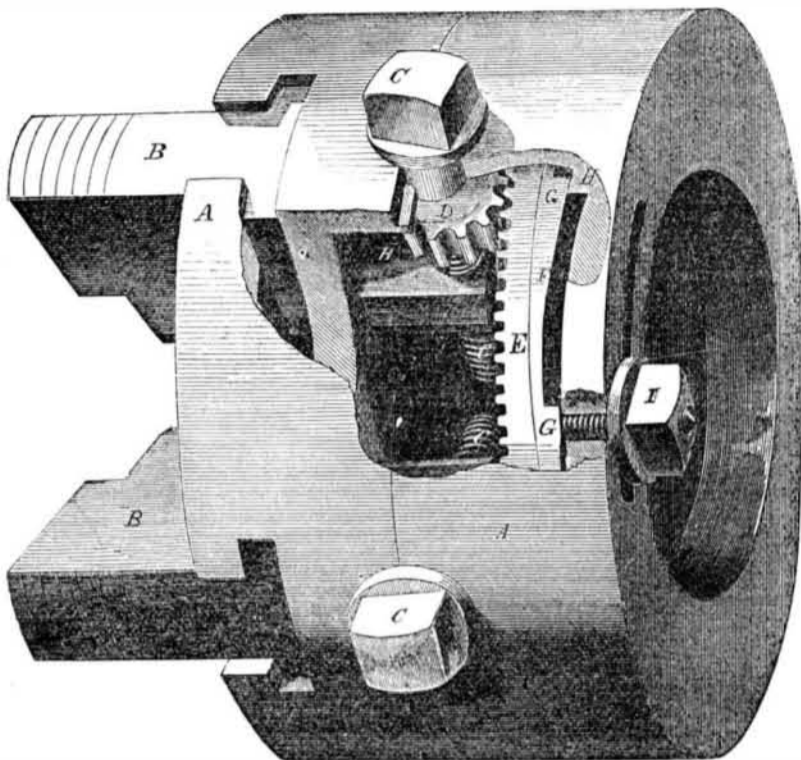
Cheap Disinfectants.

For all we have said on this subject, we have frequent inquiries respecting the best and cheapest substances for removing offensive odors in sinks, &c., during hot weather. Half a pound of sulphate of iron (copperas) dissolved in a pailful of hot water and thrown into a sink, will remove the offensive effluvia. Chloride of zinc and chloride of lime are bet-

ter, but much more expensive. Three cents worth of copperas applied every week in the manner described, will keep down offensive odors in a pretty large sink.

We say it with all seriousness, that there are thousands of persons in our cities who should be hung up by the ears for being ignorant of, or neglectful in not applying this cheap disinfectant.

IMPROVED UNIVERSAL CHUCK.



New Lathe Chuck.

Our engraving illustrates an invention for which letters patent were granted to Michael Neckermann, of Lawrenceville, Alleghany Co., Pa., April 8, 1856.

The jaws of this clutch are so arranged that they may all be moved in and out from the center simultaneously, or singly, as desired; they may also be set at different distances from the center, and then moved simultaneously or separately. There are many chucks capable of being applied in the same manner, but when a change is required, they generally have to be unscrewed and taken apart, thus involving a loss of time and labor. But this is not the case with the present improvement. The arrangement is such that the different applications mentioned only require the movement of a single set screw, upon the outside. Nothing can be more simple and convenient.

A is the hollow shell which forms a case for the parts. B are the jaws moving in and out from the center of the face of the chuck. C are screws, which give motion to the jaws, B; the screws pass through nuts in the inner ends of the jaws. Upon each of the screws, C, there is a cogged pinion, D, which gears with the cogged ring, E. When the pinions, D, and ring, E, are in gear, all of the screws, C, will be turned when one of them is moved, and thus all of the jaws will be simultaneously moved. But when the ring and pinions are thrown out of gear, then each jaw can be separately moved by turning its respective screw, C.

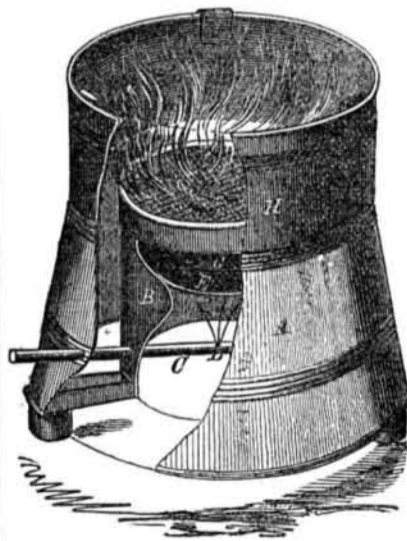
The principal feature of novelty consists in the method of throwing the ring, E, and pinions, D, in and out of gear. It is done as follows:—Behind ring E is a washer, F, which moves independent of E. This washer, F, is furnished with cam or wedge-shaped projections, G. There are similarly shaped projections, H, on the interior of the shell A. When the washer is turned so as to bring the projections, G, H, opposite each other, as in the cut, the ring, E, will be pushed forward into gear with pinions, D. But when the washer, F, is moved in a contrary direction, so that its projections, G, come opposite the cavities formed by the space between projections, H, then ring E will fall back, out of gear with the pinions, D. The movement of the washer, F, just described, is effected from the outside of the chuck by means of the screw, I, which passes through a slot in the shell, A, into the washer, F, as seen. Screw I also serves to hold the

washer fast, in any given position, thus securing ring E, in gear, or out of gear, as desired.

This is a very simple and practically effective chuck. It enables the machinist to center any piece of work, whether it is round or not, with rapidity and convenience. It prevents the employment of all or only a portion of the jaws, as desired. If necessary, jaws of different form, externally, to suit special cases, may be used without interfering with the inside parts. The jaws may be taken out for repair with ease. Chucks of this kind cost no more in their manufacture than the universal chucks commonly employed. For further information address the inventor as above.

Improved Gas Stove.

By Starrett & Weir, Lowell, Mass.—This is a small portable apparatus, for family use, in which gas is economically and conveniently employed for fuel. In our engraving, a portion of the sides are taken away, in order to exhibit the construction.



The stove consists of two round bands of sheet metal, A and B, placed one within the other. C is a small pipe, receiving gas from any burner in the apartment by means of an elastic tube. The gas rises from the aperture at D, which is in the center of band B, and strikes against the deflecting disk, E, which spreads it, and causes it to escape up between the edges of the disk, E, and the sides of B to the gauze, F, where combustion ensues. Disk E is perforated in its center, said perforation being partly covered by another disk, G. A

portion of the gas rises between disks E and G.

Bands B and C are both open at the bottom. When the gas escapes at D it mixes with the air. The object of the disks is to spread out the gas evenly, so that when it reaches the gauze an even and steady combustion will take place. We have tried this stove, and found it to operate well. When lighted, the surface of gauze, F, is covered by an even mass of blue flame, and a most intense heat is generated. H is a temporary rim resting on A, for supporting a tea-kettle. This stove is useful for a variety of purposes. When desirable, a baker may be placed upon it, and bread cooked in the most approved manner. Roasting, broiling, heating flat irons, &c., may be done with the utmost facility. Address the patentees for further information. Patented May 13th, 1856.

Highly Important.

Take notice, subscribers, that the present is No. 51 of the *SCIENTIFIC AMERICAN*, and that the next issue completes the volume. Please remit at once if you desire the paper to be continued, otherwise your names will be crossed from our books. This rule is invariable, and has received the approbation of our subscribers for the past eleven years.

The Charter Oak Down.

The famous old Charter Oak of Hartford, Conn., which has been such an object of veneration with the people of Connecticut, was blown down during a storm on the 21st inst.

In 1686, it concealed the Charter of Connecticut, granted by Charles II, when it was demanded by the minions of James II, in order to annex that Colony to Massachusetts. From this it received its name. It was 33 feet in circumference and hollow inside.—When the white men came to the valley the Indians said it had been venerated by their fathers as the monarch of the forest, for centuries. This brave old oak will wave in the gale no more.

Blisters in Texas.

MESSRS EDITORS—In a recent number of the *SCIENTIFIC AMERICAN* there is an account respecting the damages committed by insects on the potato crop of Wilson Co., Tenn. The same insects have been observed in our country for several years; it is a kind of *Lytta*, and results from experiments made by druggists here prove it can as well be used for blisters as *Lytta Vesicatoria*; it is of a light brown color, with two yellow stripes on each wing-shell; the head, which is very small, is of a red color, with two black points. It comes regularly early in July or end of June, and lasts till August—sometimes only two or three weeks. The only remedy I can counsel, against this depredatory insect, is to catch them, where they come in large troops, and sell them to the druggists, who will soon find it to their advantage to use an article produced in the country, which is much cheaper and will do the same service as the *Cantharides* imported from foreign countries.

A. D. P. BANDELIER.

Highland, Madison Co., Tenn., 1856.

Photograph of the Moon.

According to a Milan newspaper, Rev. Father Secchi, Director of the Observatory at Rome, has succeeded in taking photographs of the moon, and among them one in which the mouth of a volcano of Copernicus is distinctly represented.—[Exchange.]

[Photographs of the moon, showing the same volcano, were taken by Mr. Whipple, of Boston, four years ago, and sent to this office.]

Saving Fuel.

The Amsterdam (N. Y.) *Recorder* states that John Case and Isaac Soule, of that place have invented a furnace which consumes all the smoke and sparks of wood fuel, and that saves a vast amount of the heat which is, in general, allowed to escape.

A Tall Chimney.

The chimney of a vitriol factory, in Providence, R. I., now building, is to be 214 feet high, 20 feet in diameter at the base, and 10 at the top, with the expectation of carrying off all poisonous fumes.