

plano and forte pedal organ. It is stated that in absolute power and compass this instrument ranks among the four greatest of the kind ever built, and in the perfection of its parts and its whole arrangement it challenges comparison with any other in the world. The wood of which it is constructed is beautiful black walnut covered with carved figures in relief. A richly ornamented central arch contains the key-board and stops, the pediment above is surmounted by a bust of Johann Sebastian Bach. Behind this rises the lofty central division containing pipes; and crowning it is a beautiful statue of St. Cecilia holding her lyre. On each side of her is a griffin sitting as a guardian. The center is connected by harp shaped compartments filled with pipes to the two grand towers at the sides, each containing three colossal pipes. These towers are stately, and produce a commanding effect. This organ is placed upon a low platform; its whole height is sixty feet, its breadth forty feet, and depth twenty-four. It is a majestic, beautiful, and wonderful piece of art, and before it stands Crawford's noble bronze statue of Beethoven. The Boston Music Hall is of ample dimensions to give play to the waves of harmony that will proceed from this majestic instrument. It is one hundred and thirty feet in length, seventy-eight in breadth, and sixty-five in height. Its dimensions are all multiples of the number thirteen, the length being ten, the breadth six, and the height five times this number. This is in accordance with Scott Russell's recommendation, and has been explained by the fact that vibrating solids divide into harmonic lengths separated by nodal points of rests, and these last are equally distributed at aliquot parts of its whole length. This hall is therefore a great sounding board constructed according to the principles of acoustics. Boston is indebted to the President—Dr. J. Baxter Upham—of the Music Hall Association, for this great instrument. It was built at Ludwigsburg, Germany, by Mr. Walcker; the architectural frame with its elegant carvings was completed in New York, by Mr. Herter; the most important figures being executed at Stuttgart, Germany. This instrument will be one of the great attractions of the city of Boston, creditable to the musical taste and cultivated feelings of her citizens.

NEW BOOKS AND PUBLICATIONS.

APPLETON'S UNITED STATES POSTAL GUIDE. Published Quarterly by authority of the Postmaster General.

All persons engaged in extensive business transactions must have felt the inconvenience entailed upon them by careless correspondents, who date their letters sometimes with the name of the town and no county, or else omit both, expecting that all the world must know just where their important communications originate from. When funds accompany such documents it is particularly embarrassing, as no disposition can be made of them until the correspondent writes again, and more carefully. This evil is remedied by the little volume which we have made the subject of this notice. It contains a full and complete record of all post towns and stations in this country; said list being revised frequently, so that it shall be found correct. In addition to the above, there are full directions for mailing foreign letters, postage on them, time of arrival of the mails at different towns and cities in the Union, time occupied in the transmission of letters from different points to New York city, date of sailing of foreign steamers and other information of a miscellaneous character, highly interesting and important not only to business men, but to every one who writes fifty letters a year. The "Guide" is afforded at a low price (25 cents), and will be a valuable auxiliary in the transaction of business.

CATECHISM OF THE STEAM ENGINE, by John Bourne. D. Appleton, 443 Broadway, New York.

The familiar title of this work will strike many persons, and they will be apt to turn away from this notice under the impression that it is nothing new. Hasty judgement is always censurable, but specially in works of this character, and the engineering student, the mechanic, or even the superintendent, will each and all find information in this new edition of the Catechism, which will be unvaluable to them. The general scope and character of the original book

is well known, and in this—the fourth edition—Mr. Bourne says that he has not only corrected the few errors which the first work contained, but added new and interesting matter to bring the information up to the advance made in engineering science. This is a very great improvement, as the chief fault with the first Catechism was its conventionalism, or adherence to old-fashioned plans of construction. English and American engineering practice is widely different both in detail, management, and construction, and to render the work popular in this respect the American edition has been altered in some parts to suit our own practice. The table of contents embraces a wide range of information; among the different subjects are to be found heat, combustion, and steam, expansion of steam and action of the valves. Modes of estimating the power and performance of boilers; proportions of the same; also of engines. Manufacture and management of engines, &c. The book is well printed, and handsomely bound, and the illustrations of American steam fire, stationary and other engines, confer additional value upon it as a work for reference and study. No mechanic, or indeed any person, whether engaged in manufacture or not, should fail to procure a copy.

THE REJECTED WIFE; By Mrs. Ann S. Stephens. Published by T. B. Peterson, Philadelphia; for sale by H. Dexter, Hamilton & Co., 113 Nassau street, New York.

Although works of fiction are in many cases injurious in their tendency, we do not condemn all of this class as pernicious, in a moral sense, or a waste of time to read and of money to buy. In the "Rejected Wife" there are a great many clever bits of description, extremely felicitous. Mrs. Stephens is always happy in delineations of this character. The mechanical execution is highly praiseworthy, the publisher having put the matter into large clear type, as easy to read as a merchant's sign.

COMBE'S MORAL PHILOSOPHY. Fowler & Wells, 308 Broadway, New York.

We have received a work under this title, which considers the duty of man in his moral, individual, and social capacities. We have not read the work attentively, but it doubtless affords instruction and edification to the careful reader. The small type and solid matter in the pages is rather forbidding than inviting to closer acquaintance, otherwise the book is well printed and neatly bound.

Preservation of Fruit by Cold.

On two previous occasions recently, we have described modes of preserving fruits by boiling them and then closing them air-tight in suitable vessels. Our attention has just been directed to another mode of preserving fruit upon a different principle, which is thus described in the *Philadelphia Ledger* of the 17th inst. :—

"A new way of preserving fruit has begun to be practised in Greensburg, Ind., which will probably do much to render the best fruits attainable at all seasons of the year in our large cities; and this at but a trifling increase of expense for storage above the usual cost for them while in season. They can be preserved in this method from one season to another without the expense of sugar, or boiling, or cans; and preserved more perfectly in their natural state and flavor. The process, as detailed at length by the *Agriculturalist*, is in substance as follows :—

"The new plan proposed, and tried apparently with success, is to reduce the temperature below 40°, without, however, allowing it to reach 32°, the freezing point; while within those 8° fermentation cannot go on. This done, with proper care as to one or two points, the fruit sustains no injury. . . . The first and chief thing is to get a room or storehouse constructed in such a manner that one can have complete command over the temperature, so far that it shall never rise above 40° or sink below 32° from one year's end to another. To those who are accustomed to build ice-houses this will present no formidable difficulty. By surrounding almost any apartment with charcoal and saw-dust, or any other non-conducting substance, and with the aid of ice on the one hand and a little furnace heat on the other, the conditions of non-fermentation are easily thus secured. Excessive moisture of the atmosphere is averted by the use of chloride of calcium. This, and

some attention to the action of light, seems to be all that is necessary to preserve even the most delicate fruits in their natural state. Apples and grapes keep perfectly and with the greatest ease. With care, strawberries, and all of those fruits most difficult to preserve in their full flavor, can, it is believed, be regularly kept from season to season."

The advantages of this system of preserving fruit are pointed out at still greater length, and it is intimated, that wherever fruits and vegetables are kept in large quantities in stores arrangements should be adopted to carry out this system. It affords us pleasure thus to hear of the application of this mode of preserving fruits on a large scale by dealers in such articles. This system was illustrated and described on page 356, Vol. X. (old series) of the *SCIENTIFIC AMERICAN*, and was patented by W. D. Parker, of this city, who gave a very extended account of the best mode of gathering fruit and preserving it on pages 43 and 50, Vol. XI. (old series) of the *SCIENTIFIC AMERICAN*. By consulting these volumes our readers will obtain full and accurate information respecting the mode of constructing such rooms for preserving fruit.

Immense Trade in Small Hardware.

There are an infinite number of household articles in use at the present time made entirely from cast-iron, and the saving in time and labor resulting from their introduction is very great. Not only this, but the taste of the people is improved, and a love for the beautiful in art fostered, by the use of graceful, and even elegant, forms in the most simple and humble utensils employed in domestic life; as, for instance, stands for sad-irons, fender-guards, foot-scrappers, clothes-racks and other things which belong to the furniture and gariture of our dwellings. In the ancient days, when the axe was the only tool at hand, our forefathers were pardonable for the clumsy furniture which cumbered their houses; but at the present time there is no excuse for badly-designed or poorly-made iron furniture, when so many skillful mechanics and enterprising manufacturers are busy in designing new and beautiful patterns, and affording the same at low prices. The statistics of the whole number of tons of iron annually made up into iron furniture in this country would be something enormous, if procurable; but as there are a large number of factories in different parts of the country at work on this kind of merchandise, it would be a difficult matter to obtain the exact figures. The New England Butt and Hinge Company, in Providence, R. I., use upwards of one thousand tons of iron per annum, and about six hundred tons of coal in making hinges, sad-irons, iron-scrappers, &c., and they employ a large number of mechanics the year round in the production of these small, but very necessary articles.

The cast-iron hinge commonly used on doors involves much more labor before it is completed than an uninitiated observer would think necessary. Some three weeks elapse before the hinges arrive in the packing room from the foundery, having been all that time in the various stages of manufacture; no foreign hinges have been imported for many years. In the item of sad-irons alone about two hundred tons of iron are consumed; or counting each iron at 7 pounds, the usual size, nearly 60,000 smoothing irons are yearly turned out at this establishment—enough, one would think, to polish all the shirts and collars in christendom. The braiding machines at these works are used in hoop-skirt manufactories, and also for general braiding purposes; as for making veins, &c., and they are so constructed that the breakage of the thread, in the larger sizes, causes the stoppage of the machine before it can go more than three inches. The English sixteen-carrier braider costs \$50, but the American one is furnished at \$12. In the former there is a great deal of wrought-iron, while in the latter there is more cast-iron, which accounts, in part, for the vast difference in the prices; the American tool, however, is fully equal to the English one in point of durability and efficiency. Some idea may thus be formed from this short article of the immense trade carried on in small wares of the kind alluded to; where they all go is a mystery to us. 18,000 butts per day is a goodly number, and would hang a good many doors, and 50,000 sad-irons in the course of a year would

seem to keep the country supplied for awhile; but year after year the manufactories continue in active operation; the supply, like the demand, being seemingly inexhaustible.

"TRIAL OF KETCHUM'S HAND GRENADES."

NAVY ORDNANCE YARD, }
Washington City, Oct. 6, 1863. }

COMMANDER H. A. WISE, *Chief of Bureau of Ordnance.*

SIR:—In obedience to Bureau Order, I have examined and tried Ketchum's Hand Grenades, and have to report as follows:—

This Grenade is a hollow projectile ellipsoidal in shape, with an opening at each end of the longer axis. At one end is a hollow cylinder, at the lower end of which is a nipple for a percussion cap, which communicates with the charge:—This cap is exploded by the plunger which fits the cylinder. On the other end of the plunger is a concave iron disc:—a steel spring is also attached to the plunger to prevent its resting upon the cap; a short stick with paper fans attached is inserted in one end of the Grenade to ensure the disc end striking first and thereby exploding the projectile.

The projectiles, 1, 3, and 5-pounders, held 1, 3, and 5 ounces of musket powder respectively.

The trial began on a level piece of ground at Pencote Battery, and each grenade was thrown by the agent, who, however, declined to fire the 3 and 5-pounders without shelter.

Two of the 4-pounders were thrown by the agent (he being the only person exposed) 44 yards,—both of which exploded. A fragment of the second grenade fell 25 yards behind him at an angle of 10° with the line of flight.

Three ineffectual attempts were made to explode some of them in a barrel; the agent being near the point of explosion, but covered by a tree. At the fourth attempt a 5-pounder exploded in a strong iron hooped barrel, bursting the hoops and tearing the barrel to pieces; some of the fragments of the projectiles going through the staves: A 5-pounder was then exploded in another barrel not so strongly made with corresponding results.

Two of the 1-pounders were then thrown by the agent from the wooden wharf into the water, both of which exploded.

These Grenades appear to be as safe as projectiles of so dangerous a character can be devised.

Respectfully submitted,

(Signed) W. MITCHELL,
Lieutenant Commander and Executive Officer.

The frigate "Niagara."

The Boston *Commercial Bulletin* says of the *Niagara*: "This splendid vessel is now at anchor in the stream and looks well; but she is altogether too deep, as she draws nearly 26 feet of water,—two feet more than the *Great Eastern* and one foot more than the famous British iron-clad *Warrior*. Her main deck ports do not seem to be more than five feet from the water, and consequently, in a seaway, could not be opened with safety to use her best battery. We have heard that she has not room enough to contain more than two and a half months' stores for her crew, in consequence of the blunders of those sages in Washington, who designed the alterations in her. She was so deep when she had all the stores on board that some of her coal had to be taken out to lighten her. We have heard that she is bound to the Mediterranean, where she will be of as much use as if she was lying where she is—perhaps less, for here she might be used to protect the city. In the Mediterranean we require swift sloops of war and a gun-boat or two, not a ship like the *Niagara*."

GUNS FOR MASSACHUSETTS.—The Putnam machine company, of Fitchburg town, have contracted for the manufacture of the heavy guns for the coast defense of this State; and are erecting buildings and machinery. A portion of the guns will be of the Blakeley pattern, weighing from twenty to thirty tons each, and all of them will be rifled, and are designed to throw a projectile weighing from three to six hundred pounds. This company will also manufacture for the State a new pattern cast-steel rifle gun, designed by C. Burleigh, one of the Putnam machine company.

RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week. The claims may be found in the official list:—

Shoe pegging Machine.—This invention relates to a new and improved machine for pegging boots and shoes by hand. The invention consists in the employment of an awl, peg-driver and cutter, attached to a spindle provided with a spring and fitted within a tube, and all arranged in connection with a feed mechanism, in such a manner that, by a simple blow on the spindle, a hole will be made in the sole of the boot or shoe to receive a peg, while a peg will be driven in a hole made at the previous descent of the spindle, and a peg cut from the peg-wood to be driven at the succeeding descent of the spindle, the device being fed along the sole for the succeeding operation as the spindle is forced upward by the spring. William Miller, of No. 3 Harrison avenue, Boston, Mass., is the inventor of this machine.

Restoring Bone-black.—This invention relates to certain improvements in the internal arrangement of the furnace, whereby the heat is equally distributed all round the retorts and throughout their entire length, and consequently an ever and uniform heating of the bone-black or other substance contained in the retorts is insured. The invention also relates to a peculiar-shaped retort; whereby a large quantity of bone-black or other material can be exposed simultaneously to the heat of the fire, in a stratum of uniform and small thickness, and the whole mass can be heated evenly and uniformly with a comparatively small quantity of fuel. Gottfried Bühlmaier, of No. 165 West 24th street, New York city, is the inventor of this improvement.

Sawing Machine.—The object of this invention is to arrange the feed rollers of a sawing machine, so that they can be readily adjusted to cut a log or timber in two or more equal parts, and that the feed rollers will adjust themselves to the thickness of the log or timber. The invention consists in combining with the feed rollers two reciprocating slides which are operated by double crank shafts, connected by a rod in such a manner that the feed rollers will arrange themselves automatically at such a distance from the plane of the saw as may be desired, either both at equal distances or one at a proportionally larger or smaller distance from said plane. S. W. Northrop is the inventor of this improvement, and Winne & Northrop, of Albany, N. Y., may be addressed in relation to it.

Skirt Wire.—This invention consists in the covering of skirt wire by weaving instead of by plaiting or braiding, as his heretofore been the common practice, thereby effecting great economy in the covering process by a great saving in the quantity of yarn required to produce a good covering, and in the power required to drive the necessary machinery, and making as good if not a superior article. William Darker, Jr., of Philadelphia, is the inventor of this improvement, and further information may be obtained of the assignee, J. B. Thompson, No. 29 North 20th street, Philadelphia, Pa.

Stretching Hat Bodies.—This invention relates to a new and useful machine for stretching hat bodies preparatory to blocking them, such hat bodies as are filled or felted after being formed on machines contrived for the purpose. These hat bodies, after being filled or felted, are very much contracted in dimensions, and require to be stretched previously to being blocked and brought to the desired form; this stretching operation has hitherto been performed by hand at a considerable expense; and this invention is designed to supersede the manual operation. To this end it consists of two blocks attached to arms, the upper ends of which are suspended on a pivot and operated by means of a cam and spring, or their equivalents, in such a manner that the two blocks will be moved simultaneously toward and from each other, and the hat bodies, which are placed on the blocks, properly stretched. T. G. Oakley and W. R. Finch, of Brooklyn, N. Y., are the inventors of this improvement.

Fire Extinguisher.—The liability to fire in bins for cotton and other fibrous materials has been so great that, in all modern bins, it is customary to place a train of perforated water pipes, and connect such

pipes by a cock or valve with a tank of water, so that in case of fire, water may be let into the bin by opening the cock or valve by hand; but there is often so much loss of time before opening the valve that the fire makes considerable headway before the water reaches it. The object of this invention is to make such cock or valve self-acting, and to this end it consists in the attachment to such cock or valve, of a weight which, until fire occurs in the bin, is supported in a cup or seat, in which is placed a small quantity of gunpowder, gun-cotton, or other explosive material, from which a fuze leads in serpentine or other form through various parts of the bin. When fire takes place in the bin, it must soon reach this fuze, by which it is almost instantaneously transmitted to the gunpowder or other explosive material in the cup or seat, by the consequent explosion of which the weight is blown out and caused to open the cock or valve and admit the water into the bin. William Kitson, of Lowell, Mass., is the inventor of this improvement.

Paddle Wheel.—This invention consists in constructing the floats of the wheel of two parts, to wit, one part consisting of a flat board having its lower edge rounded, and the other part consisting of a series of blocks attached parallel to the first-mentioned part and at right-angles therewith; the blocks being wedge-shape in their transverse section, and rounded at their outer and inner ends, whereby the floats or blades are made to operate without the concussions and jars which attend the operation of the ordinary paddle wheels, and the "lift," as it is commonly termed, produced by the resistance the water offers to the buckets as the latter leave it, avoided, and, at the same time a strong, durable and economical paddle wheel obtained. Leonard Ames, of Wanbeck, Wis., and Melville Miles, of Pepin, Minn., are the inventors of this improvement.

Breast Pump.—This invention relates to certain improvements in that class of breast pumps in which the rarification of the air is effected by the action of a flexible elastic globe or diaphragm. The invention consists in the employment of an elastic hemisphere placed on a flanged disk which is provided with a valve and secured to the top of the breast cup in such a manner that said hemisphere can be readily placed on the flanged disk without requiring any fastening, and the air in the cup can be rarified by repeated action of the thumb or one of the fingers on the hemispherical diaphragm. The invention consists also in the application of a small strip of oil silk or other suitable flexible material tied across the aperture leading to the interior of the cup, in such a manner that on depressing the hemispheres, said strip is pressed down upon the aperture and caused to close the same, and on releasing the hemisphere the strip is drawn off from the aperture and the air in the cup is rarified. It consists, finally, in the arrangement of a recess in the middle of the flanged disk which supports the hemisphere, to receive the valve and a small quantity of loose cotton or other suitable material saturated with oil, in such a manner that the valve is protected against injury whenever the hemisphere is removed, and that by the action of the grease the valve is prevented from sticking. John N. Beadle, of New York city, is the inventor of this improvement.

Slide for Extension Tables.—The object of this invention is to construct the slides for extension tables, in such a manner as to obviate all difficulties attending the swelling of the wood and the consequent sticking or bending of the slides, which causes a great deal of embarrassment in extending and closing or contracting the table. The invention also has for its object strength and durability, together with a greater degree of extension with a given length of slides than hitherto. J. T. Birchard, of Milwaukee, Wis., is the inventor of this improvement.

NEVER SULK.—Better draw the cork of your indignation, and let it foam and fume, than wire it down to turn sour and acrid within. Sulks affect the liver, and are still worse for the heart and soul. Wrath driven in is as dangerous to the moral health as suppressed small-pox is to the animal system. Dissipate it by reflecting on the mildness, humility and serenity of better men than yourself, suffering under greater wrongs than you have ever been called upon to bear.