

The Scientific American.

MUNN & COMPANY, Editors and Proprietors.

PUBLISHED WEEKLY

No. 37 Park Row (Park Building), New York

O. D. MUNN, S. H. WALES, A. E. BEACH.

TERMS—Three Dollars per annum—One Dollar in advance, for our months. Single copies of the paper are on sale at the office of publication, and all periodical stores in the United States and Canada. Sampson Low, Son & Co., the American Booksellers, No. 47 Ludgate Hill, London, England, are the British Agents to receive subscriptions for the SCIENTIFIC AMERICAN.
See Prospectus on last page. No traveling agents employed.

VOL. IX, NO. 26... [NEW SERIES.]... Nineteenth Year

NEW YORK, SATURDAY, DECEMBER 26, 1863.

1864.

We shall mail to each of our subscribers a copy of our annual prospectus for 1864, and would remind them that we furnish the SCIENTIFIC AMERICAN to clubs at greatly reduced rates.

For 20 names sent in a club the subscription price is \$2 per annum. If it is found impracticable to get up a large club, we would remind each and all of our generous patrons that if they can each add a single name to our list, the mathematical fact is made perfectly plain that our list will be doubled. We have no claim upon any one of our subscribers. We furnish them the paper and they pay for it according to our terms. Nevertheless it would gratify us exceedingly if they would stir about a little and induce some of their clever neighbors to join with them in taking the SCIENTIFIC AMERICAN for 1864.

Go and remind your neighbor that the long winter evenings ought not to be wasted away by unprofitable dozing in the chimney corner, and that while he is toasting his toes around the blazing hearth, he ought to be storing his mind with useful knowledge, such as is always found in the SCIENTIFIC AMERICAN. Show him one of your numbers and tell him that he can get fifty-two of them for only \$3, of equal size, each containing a varied assortment of the most interesting information; and we will guarantee that unless he is a miserable miser he will pull out the old suet-skin and hand over the appropriate greenbacks.

We tried this the other day in Norwalk, Conn., and got an honest carpenter to chalk over his \$3; and he growled considerable because some one had not got him to do the same thing before. Certainly there is no harm in trying what can be done by thus coaxing him.

ANOTHER YEAR CLOSED.

Like the weaver's shuttle speeding along in the loom, so our days and years sweep rapidly past, and thus our web of life is woven. During periods of great excitement, when mighty events crowd swiftly upon each other, the mind fails to take cognizance of the fleeting moments. We can scarcely realize the fact that another year in the life of the SCIENTIFIC AMERICAN has been measured out, and that this number completes volume nine of our new series. For about three years now our nation has been engaged in the most momentous civil war on record, and the struggle has been increasing in magnitude and importance. Originating in the unreasonable disaffection of ambitious and selfish men, it was forced upon the legal rulers and loyal people of the land, who accepted it with hesitation and sorrow in view of the afflictions which would naturally attend it. But amid the grief of thousands whose homes and hearts have been made desolate, the nation has cause for being devoutly thankful at its unexpected

and surprising prosperity. Civil war usually crushes out useful industry, and in every such case the people become impoverished. But every attempt to carry the conflict into the loyal States has been frustrated, and the armies of the Government have pushed back the insurgents, and have also been successful in reducing extensive territories to legal authority. Such results are very encouraging, auguring well for future success in ultimately subduing the rebellion and conquering obedience to law and order.

Amid this great war the people of the loyal States have been permitted to pursue their usual avocations in peace. No better evidence of material national prosperity can be adduced than the general and active employment of the people in useful industry, which is the true "Wealth of Nations." There has been plenty of employment for all, and the wheels of commerce have rolled on with unexampled speed and success. New sources of industry have been developed, and old branches have received a marked impetus, so that our industrial products have exceeded in quantity those of any similar period in the history of our commonwealth. Herein lies the great strength of our country, for the productive power of a nation is the true measure of its strength.

No better proof can be adduced of our progress and improvement in the industrial arts than the achievements of inventors. The number of patents issued in our country during the year closing with this number, is 3,746, against 3,220 for the same period in the previous year—being an increase of no less than five hundred and twenty-six! Every department of industry has been benefitted by these improvements, and the numerous illustrations of new inventions which have appeared in the columns of the SCIENTIFIC AMERICAN afford cheering evidence of great progress made in the useful arts during the past year. A great scarcity of labor has necessitated a demand for new inventions to abridge human toil, and inventors have been more than usually successful. The demand for labor, however, is still urgent, and inventors never had a more favorable prospect for obtaining lucrative employment in devising new labor-saving mechanism. In conclusion, we can heartily join the President in the introductory lines of his late message:—"Another year of health and of sufficiently abundant harvests has passed. For this, and especially for the improved condition of our national affairs, our renewed and profoundest gratitude is due."

THE PEOPLE'S COLLEGE.

The Trustees of the People's College have issued an address respecting its present condition. It is located at Havana, N. Y., but the main edifice is not quite completed. It is 216 feet long, 52 feet wide, five stories high above the basement, and there is a rearward projection from the center erected, 70 feet long by 64 feet wide, which will soon be ready for the students. The college farm consists of 200 acres, and upon this and the edifice about \$100,000 have already been expended. In 1862, the State of New York gave to this college an annuity of \$10,000 for two years, chiefly for the support of the Professors, defraying the expenses of indigent students, &c.; and in July 1862, Congress granted 99,000 acres to the State for the establishment and maintenance of such an institution; similar grants for like objects having been made to other States. The edifice when completed will cost \$175,000; it will have a chapel, 220 rooms for students, a culinary department, and rooms for the steward. The first term of the college will commence on Tuesday, April 7, 1864, and will continue to the 15th of July. The terms of admission are as follows:—

CLASSICAL COURSE.—Candidates for admission to this course must sustain a satisfactory examination in English grammar, geography, and arithmetic; in the Latin grammar; Caesar's commentaries, six books of Sallust; Virgil's *Æneid*, six books; Cicero's Select Oration; in the Greek grammar and Greek reader, or in an equivalent amount of classical Greek.

SCIENTIFIC COURSE.—Candidates for admission to this course must sustain a critical examination in English grammar, geography, and arithmetic.

PROVISIONAL OR SELECT COURSE.—For admission to this course, the candidate must be prepared to pur-

sue, with profit to himself and without hindrance to others, the studies of his choice.

Candidates for admission to either of the above courses must be more than fourteen years of age, and must furnish satisfactory evidence of good moral character.

No less than twenty-two different branches of education are to be taught at this college; comprehending natural and revealed theology, intellectual and moral philosophy, jurisprudence and political economy, logic, history, rhetoric, anatomy, physiology, geology, chemistry, languages, agriculture, engineering, military science and tactics, &c. The course of the college to be pursued, to entitle students to the degrees of Bachelor of Arts and Bachelor of Sciences, will be four years; but a student may enter the college with the intention of pursuing a select course of study, and when this is completed and he passes a good examination he will be entitled to a diploma. The expenses of a student for tuition, board, and room rent, will be \$120 per annum, paid in semi-annual instalments in advance. Students will be allowed compensation for labor, which they may apply to the reduction of their expenses.

This institution embraces the object of useful labor combined with a superior education. Those students who intend to pursue an agricultural course, will labor on the farm; those intended for a mechanical trade will labor in some of the workshops. It is provided in the charter of the college that its students shall labor on the farm or in one of the shops from two to four hours daily, during five days of the week—a rule that should never be relaxed.

The institution was projected about sixteen years ago, by members belonging to the Mechanics Mutual Protection, an order which has ceased to exist; but we still recognize the names of two of its old members in the Board of twenty-four Trustees. The objects of this college are good, but the educational branches laid down in the programme are too numerous, and there are too many lawyers and too few farmers on the Board of Trustees. At first it was intended for the practical education of young farmers and mechanics.

The President is Amos Brown, LL D., and the Governor and Lieutenant-General of the State, with the Speaker of the Assembly and Superintendent of Public Instruction are *ex officio* Trustees. The Treasurer is T. L. Minier, Esq., Havana, N. Y. Eight professors have been elected to the different chairs, and we suppose they will enter upon their duties at the first term next spring.

CONCERNING STEAM BOILERS.

We have in previous numbers of the SCIENTIFIC AMERICAN frequently called the attention of engineers and manufacturers to the condition of their steam boilers; for we have felt, and still feel, that in too many cases they are neglected and overlooked. If there is any department where false economy is out of place it is certainly about a steam boiler; and by this we mean a disposition to let repairs go until a more convenient season, or as a person once said in our hearing, "till it gets so that it is worth mending;" this is false economy. The tailor's proverb about "the stitch in time" is eminently true of steam and the apparatus driven by, or the vessels containing it. All the leaky rivets (if any) should be driven tight, slack braces set up to their duty, seams calked where they require it, ashes kept away from water-drip when it falls on the sheets, clinkers prevented from forming on grate bars (where anything like decent coal is provided, no excuse should be received by manufacturers for this neglect), safety valves overhauled and put in working condition (too many of them are mere percussion caps, so to speak), flues swept at least once a week, ashes and soot kept out of the smoke box; every ounce of it is a non-conductor that robs the boiler of its rightful heat. In short, every detail and appurtenance of a steam boiler requires conscientious, thorough, and continual supervision; then there will be fewer lives lost, less property destroyed, and a better class of engineers and manufacturers generally. That is the true way to raise the wages of engineers and make business pay; elevate the standard of the services rendered, and, our word for it, manufacturers will accede to all reasonable requests,

The terrible effects of carelessness are too apparent when steam boilers explode, and blow to the four winds of heaven all that a man has been able to accumulate in a lifetime of hard labor. See to it, then, you manufacturers, and you, engineers! that there are no half-way measures adopted; that no "penny wise and pound foolish" policy prevails; keep the boilers in the best possible repair and condition; buy none but the best fuel; hire only capable, conscientious, and sober men to oversee them; and the rate of insurance will be lower, higher profits will accrue, and steam power be rendered what in fact it is—an energetic, easily-managed, and economical servant.

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:—

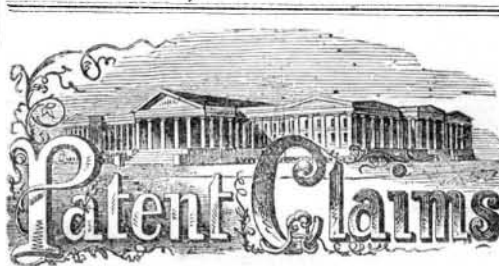
Port Stopper.—The immense weight of which it is necessary to make the port stoppers of iron clad, turreted, or other vessels intended to be invulnerable, to give them the requisite power of resistance to projectiles, has rendered them, as hitherto applied, extremely difficult of operation, owing to the great amount of power required to move them: and the methods of applying them hitherto adopted have rendered them liable to be so bound or disarranged by the blow of a shot as to render it impossible to operate them. The object of this invention is to obtain for a port stopper the requisite power of resistance, and yet enable it to be worked by the application of a very small amount of power, and to prevent its being seriously bound or obstructed in its action by any displacement or disarrangement which is likely to be produced by the blow of a projectile. With a view to accomplish the above object, this invention consists in the construction of the stopper in the form of a crank; also its arrangement to turn about an upright or nearly upright axis situated some distance within or behind and opposite, or nearly so, to the center of the port or embrasure; and further in the attachment of the bearings in which the journals or pivots of the port stopper turn, to supports which are detached from the wall of the turret or other defensive structure in the immediate neighborhood of the port. John Ericsson, of New York city, is the inventor of this improvement.

Registering Marine Log.—The object of this invention is to register the direction of the distances run by a ship or other vessel, as well as the distances themselves; and to this end it consists in the combination with an apparatus substantially like what has been heretofore known as the registering marine log, or "patent log" of a compass of peculiar construction, and an apparatus connected with the registering mechanism for dropping pellets into a compartment of the said compass whenever a certain distance has been made by the vessel to which the log is applied. Alexander Gordon, of New York city, is the inventor of this improvement.

Machine for Exercising the Human Body.—The object of this invention is to obtain a simple and efficient machine for exercising certain portions or members of the human body, designed more especially for the benefit of persons afflicted with dyspepsia, liver complaint, &c. The invention consists in the employment or use of a lounge provided with an adjustable section for the purpose of adjusting the patient in the proper and desired position, and using in connection with said lounge a pair of reciprocating pads arranged and operated in such a manner as to effect the desired end. Dr. Charles F. Taylor, of No. 153 Fifth Avenue, New York, is the inventor of this improvement.

Brewing With Malt.—It is understood by persons that in order to effect the dissolution and saccharification of barley-malt, a temperature of about 160° to 168° Fah. is required, and that when the temperature exceeds 170° the saccharifying property of the malt is killed and the malt is rendered useless. The starch of Indian corn or maize, however, cannot be perfectly dissolved at a temperature lower than that of boiling water, and the attempts heretofore made to treat barley malt and maize mixed together in the same mash tub have failed, because the temperature

required for the saccharification of the malt is not high enough to dissolve the starch of the corn, and very little benefit is derived from the use of the corn; or if the temperature is raised high enough to dissolve the starch of the corn, the barley malt is killed and the whole process a failure. These difficulties are overcome by the present invention, which consists in disclosing the starch of Indian corn and preparing the saccharified extract from corn mixed with barley malt, all in one and the same vessel, simply by sacrificing a small quantity of barley malt, or if desired the process may be executed in different vessels, and from 40 to 50 per cent of corn can there by be mixed with barley malt, and great economy effected in brewing malt liquors. Ludwig Haecker, of Altenburg, in the Kingdom of Hungary, is the inventor of this improvement, and further information may be obtained of Escher & Co., 9 Murray street, New York.



ISSUED FROM THE UNITED STATES PATENT OFFICE

FOR THE WEEK ENDING DECEMBER 8, 1863.

Reported Officially for the Scientific American.

* * Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

49,803.—Composition for Covering Hams.—Henry A. Amelung, New York City:

I claim a covering for ham or other meat, consisting of paper or cloth soaked in a solution made of the ingredients herein specified and mixed together in about the proportion and substantially in the manner described.

[This invention consists in the application to ham or other meats, of tissue paper or cloth soaked in a suitable solution in such a manner that all parts of the ham or other piece of meat are perfectly covered and protected against the injurious and decomposing influence of the atmosphere. This covering is much cheaper than that generally used, and by its use a great saving in the weight of the hams is effected.]

49,804.—Generating Gases for Heating and Illumination.—Jacques Arbos, Barcelona, Spain:

I claim, first, The formation of a gaseous compound, as hereinbefore described, and the mixing of the same with gas, arising from the distillation of coal, or from the decomposition of oils, resins, tars, or fatty bodies to manufacture gas suitable for lighting and heating.

Second, The apparatus for generating the gaseous compound, constructed and acting substantially as herein before described and illustrated in the accompanying drawings.

49,805.—Gas for Motive Power.—Jacques Arbos, Barcelona, Spain:

I claim, first, The production of a gaseous mixture composed of oxide of carbon of hydride of azote and of a small proportion of carbonic hydrogen, said compound being combined with air and used as motive power, in the manner hereinbefore set forth.

Second, The apparatus for generating the gaseous mixture to be used in the manner substantially as hereinbefore described and illustrated in the accompanying drawings.

Third, The generation of steam by the heating of water in the jacket of the cylinder of the said gas engine and in a boiler surrounding the furnace of the said gas generating apparatus, substantially as hereinbefore described.

49,806.—Snap Hook.—Samuel Babcock, Middletown, Conn.:

I claim the improved manufacture of a snap hook as made not only with its eye in one piece with its hook and with its tongue not only provided with lips to embrace the shank of the hook and form a joint therewith, but with a recess arranged substantially as described, and for the purpose of carrying a straight or leaf spring disposed within such recess, in manner as hereinbefore explained.

49,807.—Skate.—Wm. Bailey, Utica, N. Y.:

I claim, first, The construction of the clamps with the pendant lips, connected and arranged as I have described, and the mode of operating them which I have described.

Second, I claim the construction and use of the skate runner of the flattened form with the elevated edges spread apart for greater base, and for other purposes as described, in combination with the deep wooden stock with bearing sheaves as described, and for the purposes as described.

Third, I claim the mode of fastening the runner to the wooden stock, by means of the dove-tail device at the toe, as described; and the heel pin passing directly through the runner at the heel, with head countersunk, in the manner described and for the purposes described.

Fourth, The whole being constructed, combined, and arranged substantially in the manner herein set forth.

49,808.—Telescope.—Wm. H. Baker, Marathon, N. Y.:

I claim supporting the lenses or their settings and diaphragm which compose the eye-piece of the telescope by means of a spring or springs, thereby making a fastening that may be more readily removed, and rendering the lenses less liable to work loose or be broken by the jaw or concussion to which they are exposed in use.

I claim the notch, C, in the setting of the object lens, in combination with the beam on the tube which holds the setting in and prevents it from working out by the recoil of the gun when it is fired.

I claim the spring clasp for holding the fore end of the telescope to the barrel of the gun.

I claim securing the disk, P, to the adjusting screw by turning the edge of the socket over the edge of the disk as described.

I claim fastening the telescope to the disk, P, by means of the ears, T, strap, S, and pin, R, in combination with the spring or springs, between the disk and telescope and between the telescope and strap, S.

49,809.—Lock for Fire-arms.—Wm. H. Baker, Marathon, N. Y.:

I claim in combination with a cock or hammer, having its main

pring rigidly attached to it as described, the swivel or link, L, provided with notches for the sear to hold the hammer at full or half cock.

I claim in a lock constructed as described, extending the arm of the sear or link through the lock plate, to make a connection between the sear and the cock.

60,810.—Railroad Journal Box.—O. Beecher & R. E. Rogers, Philadelphia, Pa.:

We claim, first, The oiling roller, K, frame, J, and weighted lever, M, or its equivalent, the whole being constructed and arranged within a journal-box and operating substantially as and for the purpose herein set forth.

Second, The partition, I, oil chamber, L, frame, J, and oiling roller, K, the whole being arranged substantially as set forth for the purpose specified.

Third, The annular flange, G, or its equivalent secured to or forming part of the wheel or axle, and arranged to project into the interior of the box, substantially as and for the purpose described.

Fourth, The annular flange, H, secured to or forming part of the wheel or axle and arranged in respect to the annular flange, E, of the box, substantially as and for the purpose herein set forth.

60,811.—Soda Water Apparatus.—J. H. Blaisdell, Boston, Mass.:

I claim in a soda apparatus the arrangement of one outlet for soda within another, substantially as described.

Also the arrangement around or adjacent to the soda outlet or outlets of the various outlets for sirups and other fluids, substantially as described.

Also the arrangement in a soda apparatus of a diaphragm, n, and disk, q, or the equivalent thereto, so as to act under pressure as described, to admit into two or more passages, and to shut off therefrom the soda supplied from a common source.

Also the formation of a chamber in a soda discharge pipe, so as to operate to check the velocity of the discharge under pressure, and to supersede the employment of the condensing bottle, substantially as set forth.

Also the condensed arrangement of outlets, so that while each is separate from the others, they are all within the compass of and admit of being discharged into an ordinary drinking glass, without removal thereof, from a fixed position.

60,812.—Harvester.—Virgil W. Blanchard, Bridport, Vt.:

I claim, first, The employment or use of a sliding shaft, E, one or two, provided with arms, H, in combination with two concentric circles of cogs, b, attached to the driving wheel, D, or to a wheel connected therewith for the purpose of varying the speed of the shaft, and throwing the same in and out of gear, substantially as set forth.

Second, The employment or use of springs, G, G, applied to or connected with the shaft or shafts, E, in the manner shown, or in any equal manner for the purpose of equalizing the motion of the sickle, or causing it to operate smoothly without jars or concussions as herein set forth.

Third, The curved stay bar, T, attached to the bar, O, and shoe, P, substantially as shown; in combination with the roller, C, connected to the finger bar, S, as shown, and the cylindrical pin, w, by which the finger bar is attached to the shoe; all arranged as shown, to admit of the finger bar or sickle being raised and lowered, and to the same time serve to hold or retain the same in a proper working position.

Fourth, The connecting of the cylindrical pin, w, to the lever, U, by means of the chain, C, passing over and around the pulleys, F, in the bar, O, and around the pulleys, H, on the frame, A, and attached to the lever, U, for the purpose of raising the finger bar and sickle as set forth.

Fifth, Securing the bar, O, or staying the same in proper position by means of the roller, v, placed in the arm, Q, and fitted in the pendant frame, K, attached to the frame, A, substantially as herein described.

[The object of this invention is to obtain a grain and grass harvester which will be of light draught, admit of having a more or less rapid movement communicated to its sickle as occasion may require, be durable, free from all unnecessary friction in the operation of its working parts, and admit of having its finger bar adjusted with the greatest facility so as to clear obstructions which may lie in its path.]

60,813.—Railway Carriage.—Nahum Franklin Bryant, East Boston, Mass.:

I claim the combination of the sliding box, e, made either with or without the oil chamber and either a stationary or a moveable bearing, the housing f, and the axle, c.

And I also claim the combination of such parts and the check, H, arranged and applied to them so as to operate with them substantially as specified.

I also claim the combination of the moveable stopper, a, with the housing, f, and its check, H, the said stopper being for the purposes or to operate as specified.

I also claim the housing as made and provided with the packing groove, t, and packing, w, to encompass the sliding box, in manner and for the purposes specified.

I also claim the combination of the centralizer or lip, s, with the housing or truck frame, or carriage thereof, when the latter has its wheels so applied as to be capable of being adjusted by means of a wheel changing track to either of two tracks of different gages.

60,814.—Channeling Tool.—Albert Bottum, Bridgeport, Conn.:

I claim the combination of the straight cutter, A, and the arc-formed cutter, B, for cutting a score and a channel within it of the form substantially as herein specified.

[This invention consists in the combination of a straight cutter and an arc-formed cutter so arranged relatively to each other, that while the first cuts a score in the sole or other article the other cuts from within the said score a strip whose transverse section is of semi-circular or segmental form, thus producing a semi-circular or segment shaped covered channel.]

60,815.—Machine for making Nuts.—Orin C. Burdick, New Haven, Conn.:

I claim, first, A die constructed as described in two parts, a and b, and the said two parts combined with a moveable punch, L, and a fixed punch, N, to operate in the manner and for the purpose specified.

Second, The combination of the sleeve, i, punches, L and N, when the same are arranged in the manner described and combined with a die constructed as and for the purpose specified.

60,816.—Feeding Device for Saw Mills.—Victor H. Buschmann, Baltimore, Md.:

I claim, first, Applying the required pressure to the feed and guide rollers, by means of a single force acting equally upon opposite sides of both roller carrying frames, by mechanism constructed and operating substantially as described.

Second, Hanging or supporting the roller carrying frames constructed as described in such manner that while they will always preserve their parallelism to each other they are allowed to yield equally on each side of a central line and accommodate themselves to boards of different thicknesses, substantially as described.

Third, The use of adjustable bearings, i, or their equivalents, in combination with the roller frames, b, b, and pressure plates, g, constructed and operating substantially as and for the purposes described.

Fourth, A central weight or other similar force in combination with a guide applied and operating substantially as and for the purposes described.

60,817.—Construction of Buggies.—Jonathan H. Bye, Sterling, Ill.:

I claim, first, The combination of the thills, a, a, with the springs, b, b and c, c, for the purpose and in the manner herein described.

Second, The combination of the coupling, m, m, with the rear springs, s and r, the curved continuation, n, n, of the coupling, m, m, the beam, i, with its guides formed by l and f, and the flexible bar, h, substantially as set forth.

60,818.—Filter.—Anthony Chabot, San Francisco, Cal.:

I claim, first, Combining one or more porous tubes with a pipe, B, by means of a flange, a, on the pipe for the reception of one end of each tube, a cap, C, for the reception of the other end and a bolt, D, substantially as herein described.

Second, In a filtering apparatus constructed substantially as specified, I claim the herein described arrangement of chambers and passages for conveying the water to and from them, operating as explained to provide for the cleaning of the filters by reversing the flow of water through them without reversing or changing the position of the filter or filters.