Correspondence

The Patent Beer Question.

MESSRS. EDITORS:—The daily and weekly press have of late been much exercised debating opinions relative to patent beer and claims to public favor. It will suffice to say, that some time ago, a number of leading New York lager-beer brewers obtained licenses to brew under the Hammer patent, and as soon as they brought their new beer in competition with the old they encountered all the reverses incident to the introduction of every new invention. Professional jealousy and a stereotyped prejudice against reform helped wonderfully to debar the road of progress, and compelled the licensees to issue their card and the chemical record.

It is not intended to advert to the various views indulged in, but I propose to expose the more important part of the chemical testimony, *i. e.*, the comparative analyses.

We see by the same, that in comparing the old and new method of brewing an immense amount of extract and starch-sugar is wasted by one and saved by the other, while converting malt into wort, the acknowledged base of either beer or spirit.

The figures of the published analytical report demonstrate that wort made in the usual way contains in one gallon of 282 cubic inches and ounces avoirdupois at 60° Fah.:—

Dry malt extract 19·807 ounces, starch sugar 6·005 ounces, while the new, or Hammer wort, at the same temperature, shows the excess of dry malt extract 32·219 ounces, starch-sugar 11·620.

It is not the object of this communication to enlarge upon the pecuniary proceeds resulting from the working of this improvement, but to call attention to another fact passed over altogether by your cotemporaries. Brewing and distilling are two very nearly related vocations; both branches of industry employing nearly the same material under the same circumstances, although different products are rendered, but both trades consume a quantity of grains, which amount to, if correctly reported, a stupendous figure.

Both professions commence their respective operations by mashing the grain preparatory to converting the starch contained in the malted or raw grain into sugar, to be further transformed by fermentation into alcohol and carbonic acid, and here their common path separates. The brewer has now essentially done his work, but not so the distiller. He now sets to work to separate or distil the alcohol from its connection with the wort by converting the former into vapor, and condensing this vapor, which produces what is called alcohol or spirit. When we left the brewer's wort, it contained all the components of beer, requiring but the separation and settling of the yeast, or, in other words, to become clear, in order to be ready for market. It will now be pertinent to examine two brewer's worts prepared under the methods at issue. The old school wort containing (as per analyses) less starch-sugar and a marked surplus of dextrine, which latter ingredient must be looked upon as detracting from the quality and keeping tendency of the beer; the new school wort, on the other hand, showing a very large excess of starch-sugar, the base of alcohol and carbonic acid, with an entire absence of dextrine—and must, under such circumstances, possess a large proportion of the main features of champagne (alcohol and carbonic acid), which impart to the liquid not only that pleasant taste and flavor, but also insure its keeping quality. The distiller's wort, however, prepared after the old recipe, has other disadvantages, for the absence of so large an amount of starch-sugar, imperatively required for the formation of alcohol, necessarily reduces the yield of alcohol; and the presence of so much dextrine, which this imperfect mode of mashing is not qualified to convert into starch-sugar, only serves to enrich the swill or residue. The defects of the old school mashing are thus clearly shown, and sum up as follows:—The old-school distiller, failing to convert all the starch entirely into sugar, loses, consequently, in the quantity of his alcohol, and also, what he retains as dextrine in his swill; but the old-fashioned brewer fares worse still; he is likewise unable to transform all the starch into sugar, and naturally the dextrine remaining thus unconverted, is not connected with the swill, as in the case of the distiller, but is held inseparable in the beer, the result of his labor, where it forms the radicle for the disintegration of the liquid, it impairs the quality and predisposes acidity of the beer, and, as a matter of course, he is a loser both in quality and quantity.

Now, as the purposes of the brewer and distiller are, as far as mashing is concerned, so nearly related, it is but proper to suppose that a certain saving in one branch must be economy for the other; and if, therefore, a given quantity of barley or corn is saved in brewing, the same quantity of superior beer is produced, why cannot the same rule apply to the producer of whisky or alcohol when the object of economizing an enormous amount of grain, useful for other purposes, is at issue?

The patented process also shows the remarkable facility with which starch-sugar is developed, and thereby that much-sought-for base, for alcohol and carbonic acid, gained, but at a reduced expense; and the obvious fact of a perfect exhaustion of the fundamental grain, added to the list of advantages, must still further lessen the cost of production, and infallibly show that whisky, beer, or alcohol can henceforth be furnished at figures widely in contrast with present rates, and causes, at the same time, a simultaneous saving of grains, reserved to be absorbed by the various channels of the market.

It may be safe to state that 100 lbs. of barley will yield about 60 lbs., and 100 lbs. of corn about 70 lbs. of starch, from which the common plan of brewing and distilling does extract but two-thirds, leaving the balance to become a deleterious component of beer in the form of dextrine, or, as in the case of distilling, the remaining one-third forms part and parcel to increase the bulk of the swill. Aside from the benefits of the process, I will now illustrate by figures an approximate estimate of the saving of malt. Take, for instance, a brewery producing per annum 10,000 barrels; here are used under the old rule 2½ bushels of malt and over, for every barrel of lager beer, making a total of 25,000 bushels for the year's supply; the new process, for the same number of barrels, requires about 1¼ bushels of malt per barrel, but let it even be two bushels, consuming in this way 20,000 bushels in all, showing a difference of nearly 5,000 bushels in favor of the agitated reform.

In order not to overtax the reader's patience, it must be stated, in conclusion, that in 1863 there were in the loyal States about 1,800 breweries, all of which produced then no less than seven millions barrels of ale and lager beer, unconscious, perhaps, that they lost at the same time 5,250,000 bushels of malt; and that same figure will, beyond a reasonable doubt, also represent the loss, from the like cause, on the part of our old school distillers. PROGRESS.

Brooklyn, N Y., Feb. 7, 1866.

Of a Large and a Small Pulley.

MESSRS. EDITORS:—In your usually correct journal of the 16th of January, I observed the following question. "Has a large pulley any more purchase than a small one aside from friction?" Your answer was—"A large pulley has more power than a small one in proportion to the difference in diameter." I need not tell you, after you take a second thought, that there is no difference in the power of a large and a small pulley except the additional friction. I should have written you before, had I not waited to have you or some other person correct it. It being such a popular fallacy that I did not like to have it pass without correction, particularly in a journal we Americans are so justly proud of. C. H.

New Haven, Conn., Feb. 10, 1866.

[A pulley has no power at all, strictly speaking, but it is easier to drive a machine with a large pulley than with a small one. It is easier for a horse to draw a carriage with large wheels than with small ones. A wheel is a continuous lever and the longer the arms of the lever, the easier the work is done. —EDS.

Gears for Screw Cutting.

MESSRS. EDITORS:—Having seen in your valuable paper of Feb. 3d, D. Booth's rule for finding the gear for cutting screws, I would ask him how he would find the ratio in case the ratio of increase is not regular. For instance, commencing with 20, 25, 30, 36, 40, 44, 45, 48, 52, 56, 60, 64, 70. There are not many lathes on which the gear increases by any particular ratio. I would like to have Mr. Booth give an explanation. S. V. EASTMAN, Machinist.

Waterloo, C. E, Feb. 4, 1866.

[Rules for cutting screws of any pitch by gears can be found on page 295, Vol. XI.—EDS.

Cold Iron Floating on Molten.

MESSRS. EDITORS:—If into a ladle of molten cast iron a piece of cold cast iron is dropped, the piece of cold iron will float, although its specific gravity is the greatest, as is evident from this, that in cooling iron always shrinks. Please tell us why this heavier cold iron floats in the lighter melted iron.

A SUBSCRIBER.

Watertown, N. Y., Jan. 30, 1866.

[This matter was discussed a good deal in Vol. XII, but no explanation that was offered was entirely satisfactory. Indeed, we have never seen an account of observations of the phenomena that were thorough. Will our correspondent try the experiment of pushing the cold iron under the surface of the molten, and seeing if it will return to the surface?—EDS.

NEW INVENTIONS.

Paper Socks.—The nature of this invention consists in producing a new article of manufacture, viz: socks made of paper, or paper and muslin combined. It is well known that paper is one of the best materials for keeping in or causing the body to retain its natural heat; in other words, it prevents cold air from reaching such parts of the body as may be enveloped in it. The inventor designs his paper socks particularly for use under or over an ordinary pair of socks or stockings, to be worn in cold weather; but it is obvious that they can be made of a kind of paper which will last as long as an ordinary pair would keep clean, and they can be made so cheaply that their cost will not equal the price of washing. These socks are intended to bear the same relation to knitted or woven socks or stockings that paper collars do to linen or muslin collars. J. W. B. Covington, of 37 Park Row, New York City, is the inventor.

Sugar Cleaning Machine.—This improvement relates to that class of machines in which the sugar is cleaned by centrifugal action. The moistened sugar is thrown into a tub which has its sides perforated with fine apertures. Rapid motion being given to the tub, the moisture and dirt are expelled by centrifugal action, and the dry, clean sugar remains in the tub. The present improvement consists in driving the sugar tub from below, thus giving free access thereto. Prior to this invention, the driving shaft passed up through the tub, and cumbersome framework, gearing, etc., was required around and above the machine, which greatly interfered with convenient operation. These improved machines are now in general use. Hartson & Woolsey, New York City, are the patentees.

Water Wheel.—This invention relates to a new and useful improvement in water wheels of that class which are placed on a vertical shaft, and inclosed within a scroll, commonly termed turbine wheels. The object of the invention is to obtain a simple means for varying the capacity of the wheel according to the power required from it or to the supply of water, so that the wheel may operate and give out any amount of power less than its maximum without consuming any more than a proportionate amount of water. It is well known to millwrights that a turbine water wheel, when running under a diminished supply of water, and consequently giving out less than its maximum power, consumes or draws a proportionately greater amount of water than when giving out its full or maximum power. Hence, there is a great loss of water in running a wheel of this class under a variable head or under a diminished supply of water—a difficulty which is fully obviated by this improvement. John Tyler, of West Lebanon, N. H., is the inventor.

Watch.—This invention relates to a watch which shows on its face or dial, besides the hour, minutes, and seconds, also the day of the month, or the date, which appears through a small aperature in the dial, being marked on a disk, which revolves under the dial, and to which an intermittent motion is imparted

once in twenty-four hours, so that the date changes automatically at the proper time, and a watch is obtained which, with a trifling additional expense, will prove to be of great convenience for business men, clerks, and, in fact, for the public in general. E. Oppenheimer, of 8 Maiden Lane, New York City, is the inventor.

Steam Valve.—This invention relates to a plug valve, which is provided with a steam passage, extending transversely through the plug and bell-shaped at its end, leading to the induction port, in combination with a shell, having three apertures, one of which serves to admit steam to the shell, while the other leads to the exhaust pipe, and the third to the cylinder, in such a manner that the induction port in the aperture leading from the shell to the cylinder is always open, and by turning the plug it is alternately made to communicate with the steam supply pipes, and these with the exhaust pipe, and consequently a [illegible] motion imparted to said plug valve changes the steam instantaneously. Wm. H. Akins, of Dryden, N. Y., is the inventor.

Well-Boring Instrument.—The object of this invention is to produce an instrument by means of which a well may be bored and reamed rapidly, cheaply, and efficiently, without the use of sand pumps or reciprocating drill. A borer, having something of the character of a brace and bit-iron reamer, is provided with three or more curved cutting faces placed at equal distances around its point, and is connected with the base of a hollow cylinder by a socket joint. Its curved cutting faces take a spiral form, and are continued up to the top of the cylinder, thereby forming parallel spiral grooves on the outside thereof. The burr cutters reduce the rock below it and along its sides, while the edges of the spiral grooves act as reamers, the grooves themselves performing the office of elevators, and raising the silt or reduced rock nearly to the top of the cylinder, where the grooves are intersected by openings which admit the silt and reduced rock to the inside of the cylinder, from which they are discharged, when it is full, by raising the instrument from the well and removing the borer. The hollow cylinder may be made long enough to hold all the silt that will accummulate while the burr is being worn dull in boring ordinary rock. The burr and cylinder should be made of a combination of Franklinite or crystalized iron, so called, for the purpose of obtaining a hard and tenacious substance. A water pipe runs centrally through the hollow cylinder and through the burr, branching, however, before reaching its oint, so that a branch issues in each of the sunken aces that occurs between the cutting edges of the urr and as near its point as the strength required bo be given to that part will admit of. A column of water is allowed to descend this tube (the tube being connected with a hollow drill rod) and issue at the end of the burr, so as to clear it of accumulations of reduced rock. The pressure of the water will cause it to ascend around the cylinder and thence to the top of the well, the heavier portion being received into the interior of the cylinder through its lateral openings, and the residue being carried with the current of water to the surface of the ground. Samuel H. Whittlesey, of Appleton, Wis., is the inventor.

Buckle or Belt Clasp.—This invention, by I. N. Plotts, of New York City, consists in certain improvements in buckles or belt clasps, which improvements are particularly applicable to a buckle or belt clasp, for which letters patent were granted to said Plotts on the 7th of November, 1865, in which patent the buckle was shown as being constructed of a rectangular or other shaped frame, and slightly curved or bent transversely, having one or more cross bars, provided with lips on their outer edges to insure a better hold upon the straps, the object being to avoid the use of the tongues or teeth employed in ordinary buckles, which perforate the strap or band and soon weaken it so that it is liable to break, or at least so injure it as to render it useless. The invention, which is the subject of the present patent (the claims may be found in the list published this week) consists in the manner of setting the bars of the buckle so as to produce a sharp bight or bend of the straps; and in attaching lips to the inner edges of the under side of the buckle; and also in milling or serrating the lips as well as the raised or depressed edges of the bars or frame of the buckle—by which improvements the inventor claims that the possibility of the strap slipping is entirely precluded, and this effected without in the least impairing the qualities of the buckle for permitting the strap or band to be quickly and easily tightened up or loosened or released from the buckle. We are informed that Messrs. Wests, Bradley & Cary have adopted the buckle for use on the bands of their Duplex hoop skirts. These buckles are very simple in their construction, and can be manufactured and sold very cheaply. Mr. Plotts may be addressed at 249 Broadway, Room 19, or 97 Chambers street, New York City.

Tubing Oil and other Wells.—This invention consists in surrounding the well tube of an oil or other deep well, through which oil or other liquid is usually raised from the bottom of the well, with an outer, supplementary tube extending downward from above the surface of the earth to a point below the place for applying the usual water packing, and applying such packing around the said outer tube, instead of the well or pump tube. James D. Bryson, Petroleum Center, Pa., is the inventor.

Machine for Treating Peat.—The object of this invention is the preparation of peat for fuel in a condensed state, with or without coal dust or other fine concentrated combustible matter, so that it can be handled with convenience and transported with ease and economy, to be used at a distance from the place where it is dug. It consists in a combination and arrangement of devices, by means of which the peat is reduced to a suitable condition and form for being handled and dried, the crude peat being elevated by mechanical means to the top of the machine and delivered to the action of knives or arms which revolve between fixed knives or arms so as to break it up. This action on the peat is had beneath a hopper, from which is delivered continuously a supply of fine coal dust or other fine concentrated combustible material. It is next passed between smooth cylinders of unequal diameters, or between cylinders which are revolved at unequal velocities, whose action is to destroy the natural organization of the peat and to destroy the tubular character of the undecomposed fibres which are interlaced through it, rubbing and grinding the mass so as to reduce it to a very fine plastic state. From thence the peat descends or is carried against molders, which consist of rollers, upon whose peripheries are formed triangular depressions, which are arranged on one roller conversely to their arrangement on the other, so that when the depressions meet or articulate in the revolution of the rollers, a cavity is formed whose sides are parallel. The peat mass presses by gravity against the faces of the rolls and fills the depressions as fast as they are presented, and is afterward delivered upon the other side of the rollers, on a travelling belt or platform, which carries it to the drying ground or to workmen who remove it to the place where it is to dried. Thomas J. Wells, of 35 Pine street, New York City, is the inventor.

Coloring Meerschaum Pipes.—The object of this invention is to give to smoking pipes, known as meerschaums, the peculiar color which has hitherto been slowly and imperfectly imparted to them only during a long time of constant use in smoking tobacco in them; and it consists in covering the bowl of the pipe with a close fitting cover, penetrated by a tube through which, when the pipe is used, tobacco smoke may pass and enter the pipe on its way to the mouth of the person who is engaged in smoking. The tobacco to be smoked is contained in any ordinary receptacle or bowl placed at the outer end of, or otherwise connected with, the tube, or it may be fixed on the tube itself, according to the mode of using tobacco cartridges, shown in the patent granted to the inventor November 1, 1864. The treatment herein set forth may be applied to other pipes besides meerschaums. Holman J. Hale, of 16 Beekman street, New York City, is the inventor and manufacturer of this unique improvement.

Compression Gage Cock.—One of the objects of this invention is to arrange and construct a gage cock in such a manner that while it is simple, both in construction and operation, its valve may be reground to its seat when it becomes leaky without disturbing the joint connecting it with the boiler, and without the use of tools of any kind or description. Another object is to construct a compression gage cock in such a manner that while its valve is free to move in a longitudinal direction, so that it may at any time be withdrawn, and while it is also free to rotate on its axis, so that it can be reground, yet the said valve will not rotate on its seat in the act of closing. Another object is to construct a compression gage cock provided with a metal valve and valve stem, in such a manner as to dispense with the use of a stuffing box or gland to pack the said stem, at its outer end, and admit of the cock being operated under high pressure without the possibility of scalding the hand of the operator. John Broughton, of 41 Centre street, New York, is the inventor.

American Pirate Beehive.—Important improvements are claimed in this hive, based on the recent discovery, that cera alba is elaborated into hexagonal cells by a law inherent in the substance itself, and not by the mechanical or artistic skill of the bee. The improvements consist in combining walls with air-chambers in such a way as constantly to secure that mediocrity of the temperature necessary to the formation of an amount of comb equal to the working capacity of the swarm. Such is the form of the hive that seams and windows for ventilation are excluded. The top and sides of said hive are, at the will of the operator, rendered air-tight. In the brood chamber, a number of comb guides are so arranged as to secure uniformity and rapidity of growth. The inside improvements consist in making brood chamber and honey box of slats of convenient size, and surrounding said slats with varnished paper, which may be separated at pleasure. To protect the bees against the ravages of the moth, an apparatus, made of tin, and resting on the bottom board, is closely fitted to the inner surface of the hive. This apparatus somewhat resembles the letter U inverted, the interior shank of which is so shortened as to place it out of the reach of worms on the bottom board, while a slight coat of soft grease, on its inner surface, prevents their reaching it by that route. Messrs. Lemuel and Minor Taylor, and Edwin Cox, of Jordan, Wis., are the inventors.

THE NAVAL RACE.

The last scene of all in this vexed question took place on the 13th and 14th inst., culminating in the race previously alluded to in this journal as about to occur. We were not on board either of the vessels but take our account from the daily papers.

The *Winooski* beat the *Algonquin* 70 miles in in 390—a very bad beat. The *Winooski* is a naval vessel, with an ordinary inclined engine; the *Algonquin* is also a naval vessel, with an engine designed by Mr. E. N. Dickerson. The point of dispute was the ability of the *Algonquin* to run further and faster than the *Winooski*, and to tow her back over her course after the latter's coal gave out. This programme was slightly changed in the actual performance, as the *Algonquin* was behind, and not the *Winooski*.

It is impossible to tell the actual performance of the engines from the daily press reporters' accounts, as they print anything told them—as for instance this ludicrous statement:—"About an hour after starting, the main feed pipe, which conveys the condensed water to the boilers, got out of gear, and soon after ceased working altogether; thus obliging the use of the auxiliary engine to supply the boilers with salt water, which was, of course, highly detrimental to the workings of the engine, inasmuch as salt water clods or chokes the flues."

Clods the flues!

The *Algonquin* carries high steam, 65 pounds, and cuts off short. The *Winooski* carries low pressure, and cuts off at $\frac{7}{10}$ths of the stroke in "Engineering Precedents," but at less than half-stroke in practice. The average revolutions in the race of the *Winooski* were $21\frac{1}{2}$; of the *Algonquin* 18. Although the latter vessel was beaten, it is contended that her engines comply with the terms of the contract, and are therefore to be accepted by Government.

A LOCOMOTIVE passed over the Hudson River Bridge at Albany, for the first time, on Thursday, the 15th inst.

MORE than 1,000 farm engines are built annually in England.