

NEW INVENTIONS.

Improvement in Time Pieces.

Silas B. Terry, of Terryville, Plymouth, Conn., has invented new and useful improvements in Time-pieces, for which he has taken measures to secure a patent. The improvement is more particularly applicable to "Marine Clocks," but is also applicable to all sorts of "time-pieces." It consists in substituting for the spindle of the balance, a straight, thin, flat spring of steel, or other suitable metal, secured at its ends, so that they cannot turn or otherwise move from their position. The balance is fastened to this spring at about the middle of its length; the said spring must be of sufficient length to allow of its twisting by the vibration of the balance. The object of thus hanging the balance is to avoid the friction of the pivots of the ordinary balance, which soon chafe by use, and require to be often lubricated. The improvement also dispenses with the common hair-spring. Another part of the improvement consists in making what is termed the "fork" or "crutch wire," which transmits the motion from the verge to the balance, very flat or thin, or forming it with a joint, so as to be capable of bending or turning with ease in a direction at right angles to the motion of the pallets of the verge, at the part where it is fastened to the verge, or verge-arbor, from which it extends in line with the axis of the balance, and in fitting its point into a collet attached to the balance, whereby, as it gives motion to the balance, it will move in the same direction, and obviate the excessive friction produced by the common lever, whose motion is at right angles to the arbor of the balance.

Improvement in Threshing Machines.

James Robinson of West Hebron, Washington Co., N. Y., has taken measures to secure a patent for an improvement in machines for threshing grain. The object of the improvements are mainly to combine the threshing apparatus in such a manner, with a wagon, that the grain can be threshed on the field while the wagon is moving, without taking it into the barn and housing it. Of course, in carrying out this idea, there must be other peculiar improvements in the arrangement of the machinery, to carry it out so as to render it useful, profitable, and practicable.

Improvements in Pianofortes.

R. E. Letton, of Quincy, Adams Co., Illinois, has taken measures to secure a patent for improvements in Upright Pianofortes. The invention consists in the construction of the frame and the arrangement of the sounding board, metallic plate, and bridges, and also in the action or striking parts. The base or longer strings are placed in a different plane with and oblique to the shorter one, which are vertical.

Dairyman's Assistant.

Miss Lettie A. Smith, of Pineville, Bucks Co., Pa., has taken measures to secure a patent for a good improvement on a new machine for working butter. For large dairies, one man or a dairymaid will be able, by this improved machine, to work as much butter in the same time as five persons by the plans in common use, and do it with more ease. It is a most commendable improvement, and deserves the praise and consideration of our whole agricultural people.

Improvement in Paper Making.

Milner Gibson, M. P., in a recent speech made in the House of Commons, on the subject of taxing paper, stated that he had found by experiment that paper can be manufactured in a fit state for the printer, with a beautiful smooth surface, that could be printed upon without drying, and that printing could be carried to a more advanced state—both letter press and engraving—than can now be attained by drying paper and re-wetting it for printing.

Hydrogen Gas for Singeing Cloth.

In Bradford, England, hydrogen gas, made from water by White's process, has been employed by a Mr. Sister for singeing cloth. This, we believe, is a good improvement, as this gas gives out great heat, and the expense of decomposing carbonic gas, to mix with it,

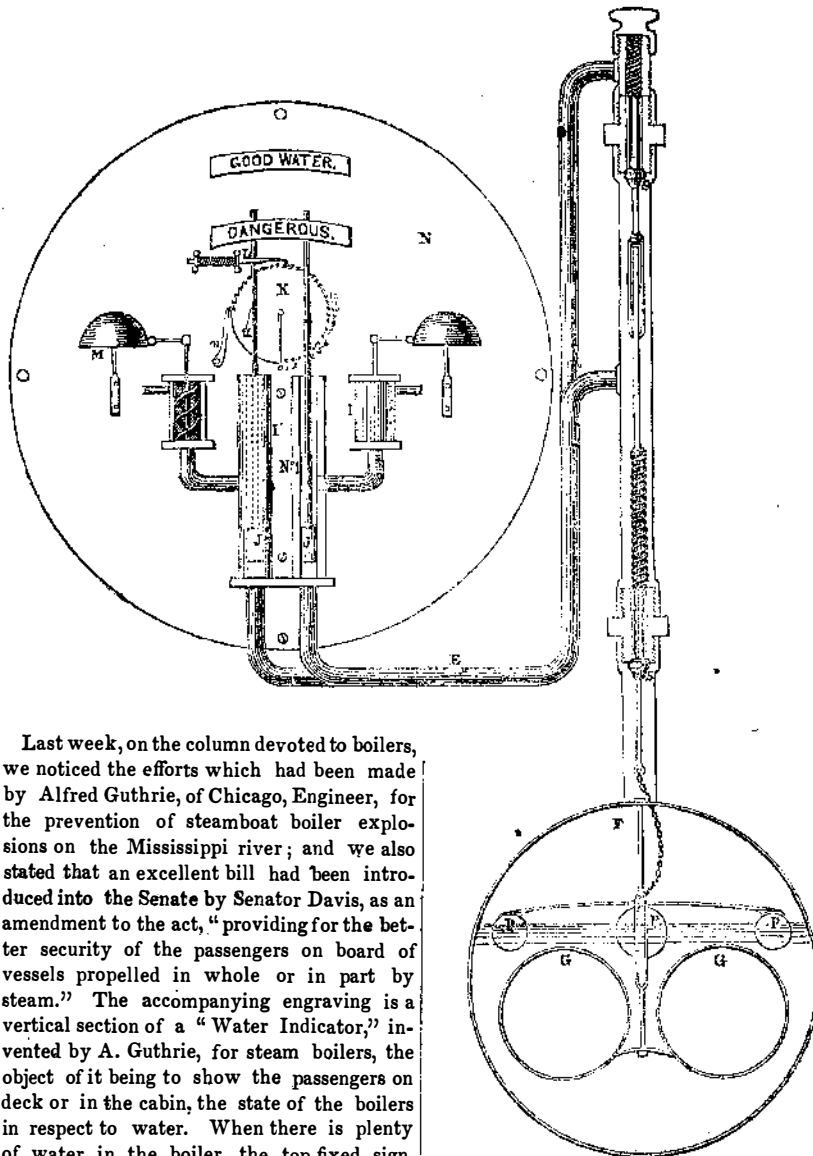
is dispensed with. Some of our cloth manufacturers and bleachers might do worse than try this process.

Improvements in Ventilation.

In Vol. 6 of the Scientific American, we published a description of Ruttan's System of Ventilation; it was illustrated with eight engravings, on pages 299 and 317, said volume. It has been very difficult to get his system in-

duced into our part of the country; there is a spirit of conservatism, even to indifference and useless things, which seems to stand in the way of many good inventions. One man has had the spirit and enterprise to try it; he is John L. Shorey, Principal of the Howard School, Lynn, Mass. A spontaneous certificate from him is now before us; he speaks of it exultingly, and says, "it has given him a new lease of life."

GUTHRIE'S WATER INDICATOR FOR BOILERS.



Last week, on the column devoted to boilers, we noticed the efforts which had been made by Alfred Guthrie, of Chicago, Engineer, for the prevention of steamboat boiler explosions on the Mississippi river; and we also stated that an excellent bill had been introduced into the Senate by Senator Davis, as an amendment to the act, "providing for the better security of the passengers on board of vessels propelled in whole or in part by steam." The accompanying engraving is a vertical section of a "Water Indicator," invented by A. Guthrie, for steam boilers, the object of it being to show the passengers on deck or in the cabin, the state of the boilers in respect to water. When there is plenty of water in the boiler, the top fixed sign, "Good Water" alone is exhibited, when the water falls too low, the card "Dangerous" is pushed up and covers the other, so as to let all know, when there is danger from low water. It is well known that a defective supply of water has been the cause of most explosions, for a defective supply of water leads to the overheating of flues, and as a result they are made soft and weak, and then when fresh water is suddenly ejected on the red hot plates, a sudden increase of steam to a very great pressure is generally the result. This forces the boiler to pieces like gunpowder, for water has nearly the same expansive power when combined with a certain amount of caloric, (steam is the product of water, and caloric or heat.)

In the annexed figure, F is the boiler of a steamboat; G G are the flues; P P P are three floats bound together and separated by a stretcher. These floats are attached by a chain to valves, S S, which on being drawn open by the floats as they descend with the water, admit steam through the pipes, E, to the miniature engine or cylinders, I I, which have pistons, J J, in them, the one set of which raises the card "Dangerous," and the other strikes the bell, M, to give warning both by sound and sight. The pistons, J J, No. 1, are also intended to raise a card above the one "Dangerous," with the words "Water getting low" on it. It will be observed that the small cylinders to strike the bells, have screw pistons, which receive a rotary motion so as to turn round and operate the hammers; K is an index for registering the number of times there has been "Dangerous" or low water in one trip; L is a pall to turn the register; n is a spring to hold the index; m is a cam for throwing back the pall, L; N is the plate of

the indicator, which is secured in a suitable conspicuous place, but kept from being touched by any person on the steamboat. Mr. Guthrie states in his pamphlet that he does not suppose any law can be so framed or administered that evasions and abuses will not creep in, he therefore invented this water indicator, and he has also a steam indicator operated by the pressure of steam, raising a piston which lifts weights, acting thus by expansive pressure, precisely as this water indicator does by gravity. In all parts they are nearly alike. These are for the passengers, their safeguards which warn them of danger. This indicator is to be locked up against all interference of any person but the government inspectors, who are intended to be located on various points on the Mississippi and Western waters. These inspectors are to have the same charge of the indicators that proper persons now have of the keys of the mails. The plan of operations sketched out by the inventor is as follows:—

We will suppose a steamboat at St. Louis, ready to depart for New Orleans. The inspector is notified of the fact, repairs on board, and makes a proper inspection of the boilers, engines, and machinery, and finds they bear the relative proportions, with the proper pumping apparatus, free and unobstructed passages, and all in good order. But he finds the boilers are old and somewhat worn; or perhaps, in the hydrostatic pressure, he finds indications that it will not be safe to run these boilers under a higher pressure than, say fifty-five pounds to the square inch. He then says to the engineer, you may run with this pressure and no more. You may also run, when the water is full, three inches above the flues and no lower. He then repairs to the

cabin, and there adjusts the indicators to the prescribed limits, (which can be done in a moment), locks up the indicators and retains the keys. Between the two indicators he places his permit, and the boat is allowed to depart. We will now suppose that the boat has proceeded on her voyage as far as Memphis, and during this time the engineer has had "dangerous steam" or dangerous water, and none of the passengers are disposed to prosecute him for the penalty in the bond; it will be the duty of the local inspector there to repair immediately on board and unlock the indicators, where he will find a secret register giving the exact number of times that dangerous steam or water has occurred, and exactly to what extent, since the departure from St. Louis; and if he should consider it unsafe to allow the engineer to continue in charge, he substitutes another in his stead.

The steamboat men of St. Louis have held a public meeting, at which they suggested the necessary measures to prevent a recurrence of the terrible steamboat disasters on the Western waters; expressing their candid anxiety for the adoption of restrictive and cogent laws for the better protection of life and property, only asking that they may not be subject to useless and uncalled-for expenditures and restrictions; all of which we agree with, but then the question will arise, "what are useless and uncalled-for expenditures?"—There is a necessity for the most strict and thorough reform, and that promptly. We hope Congress will act on Senator Davis' Bill at an early date.

Nystrom's Calculating Machine.

It may be remembered by our constant readers that, on page 273 of our last volume, there was presented an engraving and description of "Nystrom's Calculating Machine," which is the neatest and most compact of all the calculating machines that have come under our observation. Since that time Mr. Nystrom has made some important improvements, by the addition of two more scales—one on the outside and one on the inside of the "Calculator's" disc. The new inner scale is laid out in points and fractions thereof, by the compass, which correspond with angles, distances, and differences in latitude, longitude, &c., on the outer scales spoken of, so that navigators will be enabled to make quick and correct calculations without reference to any tables.

The new outer scale, which has been added, is divided into degrees and parts of the same, and is for adding and subtracting degrees and minutes, and to turn degrees and minutes into time, &c. Were the engraving before us, we could present the method of solving many problems by it in a simple and expert manner, but without this it would only confuse this notice of the said machine, to present figures of reference. We allude to this machine at present for two reasons; one is, an improvement has been added to it; another is, that we have examined the new machine, and we like it. A calculator is only a disc, not quite 9 inches in diameter, and with two arms placed upon it. The most intricate questions in arithmetic and higher branches of mathematics, can be resolved in a very short period. For calculating angles it is an invaluable instrument, and is therefore of great benefit to engineers, navigators, surveyors and draughtsmen. The Calculator is made of brass, and is silvered. The prices, we believe, are \$10, \$15, and \$20, and can be obtained of the inventor and patentee, J. W. Nystrom, No. 31 Union street, Philadelphia. There are two pamphlets of instructions accompanying the machine, these have to be studied attentively for some time until a perfect acquaintance with working the machine is obtained, after which it will be esteemed a constant friend.

Locks.

Hobb's American Bank Lock has been opened by an ingenious mechanic, on the Surry side of the river, in two hours.

[The above is from the English correspondence of the Quebec Mercury. We have seen no such notice in any of our numerous English exchanges. We question its correctness.

According to Hawksbee, water is condensable by cold one 28th part of the whole from 130° above freezing point.