New Inventions.

Reaping Machine Challenge.

Baron Ward has given notice to the Imperial Agricultural Society of Vienna that he challenges all Reaping Machines—European and American—to compete with his, (an improvement on Hussey's, patented in October last in Austria,) for one thousand florins, in cutting seven acres, next harvest. The trial is to take place in the Austrian dominions, and those who accept the challenge have the choice of cutting either wheat, barley, oats or clover, the prize to be awarded to the one which does the work in the shortest time, and in the best manner. This challenge has been published in the London *Times*. The agents of American reaping machines in Europe, we suppose, will take care of it.

Electric Illumination.

A few weeks since, some experiments on electric illumination were made at Paris, surpassing all that had before been done. The success was due to an electric regulator invented by MM. Lacassagne and Thiers, called by them an electro-metric repeater. The inventors placed four of their lamps on the Arc de Triomphe de l'Etoile, and projected the light at night on the Champs Elysees, towards the Place de la Concorde, and a second on the avenues of Neuilly or de l'Imperatrice, the change having been made because of the numerous gas lights of the Champs Elysees. These gas lights were made to look dull and smoky, yet diminished the effect of the electric light; but in the avenues of l'Imperatrice the lights presented intense brilliancy.

Each lamp was sustained by means of sixty of Bunsen's pairs, and furnished with a spherical reflector of metal, or of glass silvered by a battery.

Nautical Telegraph.

In place of the common light used as a beacon and for signals aboard ships, Mr. Treve, of Paris, proposes to substitute a simpler system more easy of execution. It is based on the use of illuminating gas light by a galvanic current of induction. The lamp at the mast head receives the gas through a tube of vulcanized caoutchouc having a spiral of copper wire within, and covered exteriorly by some impermeable material; it terminates on the deck where the gas ometer is placed. By stop-cocks, the gas can be let in at will. A Rühmkorff's apparatus is used for inflaming the gas; two wires covered with gutta percha pass to the upper lamp. These wires branch off and are attached to the shank of each of the other lamps; and are so arranged as to give a spark at the beak of each burner. As the light will take place only at the beaks supplied with gas, the lights may be varied for signals by means of stop-cocks, any or all of the lamps being lighted or extinguished at will.—[*M Jerome Nickles, Paris Correspondent of Silliman's Journal.*

Street Sweeping Machines.

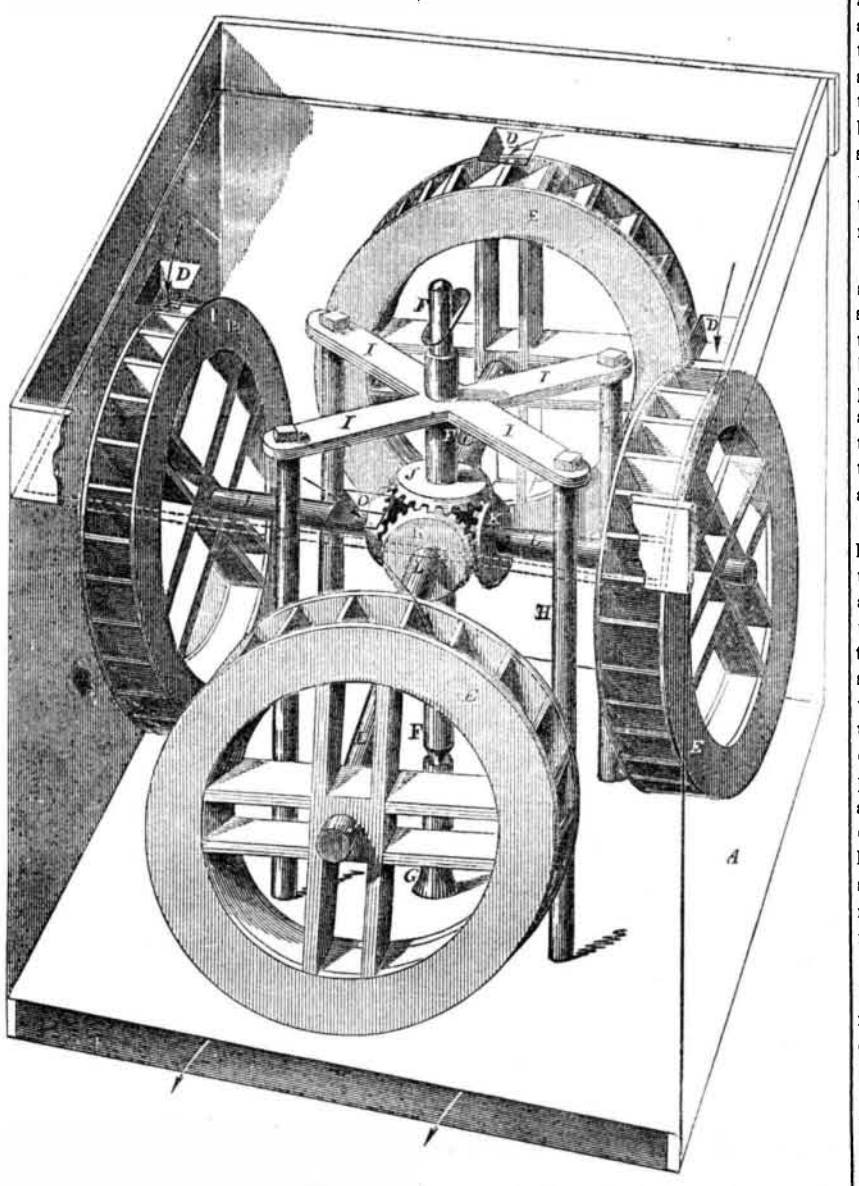
A company in this city undertook to clean the streets by contract, and intended to employ street sweeping machines for this purpose. Some machines were set to work, but, owing to a dispute, as we have been informed, between the makers of the machines and the street contractors, they have ceased to be used. We have no doubt but in a few years from the present date all our large cities will employ machines exclusively for street cleaning. One machine has recently been employed in Philadelphia, and has given satisfaction—doing more work than twenty men. It is nearly ten years since we urged upon the authorities of all our cities to adopt machines for street cleaning, to sweep and repair the streets during night hours, and to lay down the Belgian pavement. These several municipal improvements are gradually coming into general use, but not quite fast enough to please us.

Rifle Percussion Shell.

Capt. Norton, of England, has invented an explosive shell for common rifles, which can be used with safety, and is highly spoken of by our foreign cotemporaries. At some future period we will give a full description of it.

HELLER'S QUADRUPLE WATER WHEEL.

This illustration is a perspective view representing four overshot wheels so combined and arranged as to transmit their united power to one vertical shaft. In a close square flume or box of requisite size are secured the four wheels, E. The water is admitted to each through a gate, D. F is the main central shaft resting upon a step, G. There are four posts or supports, H, which have arms, I I, supporting the central shaft. J is a bevel wheel on shaft, F, gearing with bevel wheels, K, on the horizontal axles, L, of the four

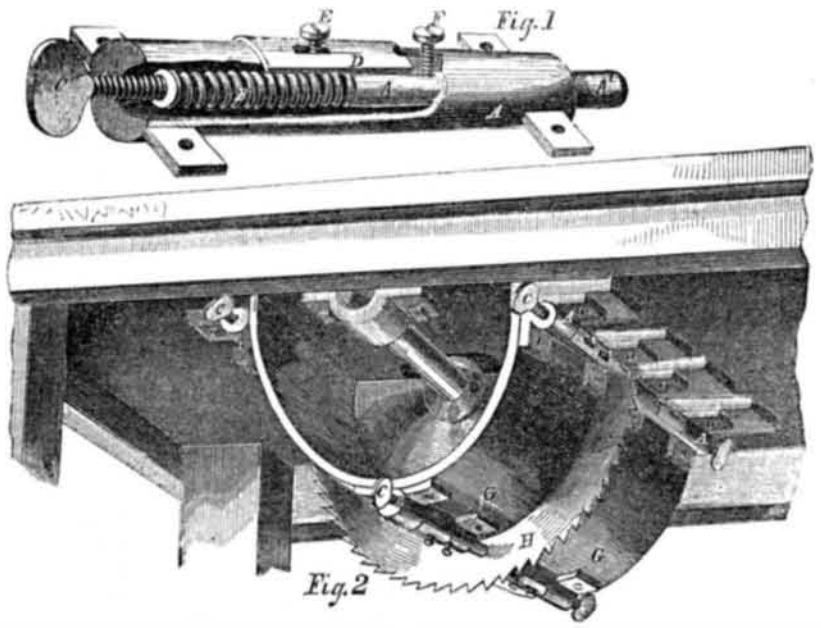


water wheels. The outer ends of these axles run in journals in the sides of the box; at the center they are supported on a framework. The water is discharged from the bottom of the box, or the tail-race, as shown by the lower arrows. The combination of these wheels, as represented in the figure, with a part of the box removed, renders the whole arrangement clear to every person.

A patent was issued for this arrangement and combination of wheels on December 16, 1856, to John Heller, and called a "Quadruple Water Power." The object of the invention is stated in the specification to be "to avoid the friction caused by the pressure against the one side of the shaft, which tends to deflect it from a perpendicular line in the operation of a single wheel."

More information may be obtained by letter addressed to Mr. Heller, Binkley's Bridge, Pa.

GUIDES FOR CIRCULAR AND OTHER SAWS.



On the 8th of July last a patent was granted to Orrin Rice, of Cincinnati, O. for the improvement in guiding circular and other saws, illustrated by the accompanying engravings. The first, fig. 1, is a perspective view of a spring guide peg; the second, (fig. 2,) an under side view of a table and circular saw, showing the application of three pair of guide spring pegs. The nature of the invention consists in the mode of applying a spring peg, or any number of such pegs with screws attached, so as to increase or decrease the pressure on the saw, according to the requirements of the case, to be applied to one or both sides, either single, double, or in pairs, to circular or other saws, in sawing timber of any kind.

A represents a hollow tube, closed at the back end to confine a spring, B, to be operated by the thumb screw, C, for strengthening or weakening the spring pressure, according to circumstances. The front ends open to admit a wooden peg, A′, into which screw pins, E F, are inserted through slots, as shown in fig. 1, to prevent the peg from being pressed by the spring and thumb screw beyond a fixed limit, to keep the saw in line. G G is an arch or bridge constructed according to the size of saw, for placing one, or any number of springs with pegs or bolts of an anti-heating character, near the circumference of the same, as represented in the figure.

The common circular saws employed in sawing logs are made of very thick plate steel, to prevent buckling and springing; they therefore cut a wide kerf, and waste the timber. The application of these guide spring pegs, as shown, supporting and strengthening a thin saw, prevent the waste of from one-third to one-half the kerf of a thick saw, thus effecting a great saving in sawing valuable kinds of timber.

There is also another objection to using large circular saws for sawing logs into square timber or boards. The saw presents so large a surface to the log that the least spring sidewise in the log while the saw is running through knots, knarls, or crooks, is liable to spring and buckle it, unless it can move sidewise, so as to accommodate itself either way to the spring of the log. This improvement obviates this difficulty by placing the spring peg, as shown, on each side of the saw, exactly opposite each other, leaving the mandrel unconfined by shoulders, so as to give lateral or endwise motion; the saw is held steady, and at the same time permitted to move easily either way, more or less, according to the spring of the log.

The saw is also brought easily back in line by the pressure of the peg on the side furthest from the line, and lightly on the other side, directly below where the saw first strikes the log. It will be understood that these guide pegs or bolts are placed on the underside of the table, the upper half of the saw being, as usual, free and unconfined to operate on the log. This improvement appears to be an excellent one in every respect.

More information may be obtained by letter addressed to Mr. Rice, as above.

Perpetual Motion.

The original perpetual motion man—the *bona fide* inventor—E. P. Willis, of New Haven, Ct., has arrived in this city, and put up four of his remarkable machines in the American Museum, where they are now on exhibition as puzzlers to the curious, cute and cunning in such matters. One of the machines is similar in its construction to the one illustrated on page 201 of our last volume. The three others are different. One is a magic clock; the other an electric wheel, and the fourth four revolving brass balls on a glass pedestal. They move apparently as if they possessed the power of motion in themselves. We are no believers in perpetual motion. for such a thing is impossible; but for rare, skillful specimens of mechanism, Mr. Willis has shown him himself to be an original genius, and his machines are well worthy of examination on this account.

The Maynooth Battery.

An inquiry having been made as to the character of the above named galvanic battery mentioned in our last number, we will describe it for the benefit of all those who may wish to construct the cheapest battery yet brought out. It is the invention of Professor Callan:—

Taking advantage of the remarkable passivity of cast-iron, in relation to a mixture of strong nitric and sulphuric acids, he constructed his apparatus with cast-iron cells, in which a porous porcelain cell, with a zinc plate is inserted. The latter contains dilute sulphuric acid; the former a mixture of the two acids just mentioned. This is a powerful galvanic apparatus.