# New Inventions.

### Flue and Tubular Marine Boilers.

A correspondent of the *Franklin Journal* gives the results of the use of the above named different boilers in the U. S. steamer Susquehanna. Taking the estimate of a period extending a few hours over 337 days with the old rising flue boilers, the Susquehanna averaged a speed of 7·25 knots an hour, and consumed 3,362 lbs. of coal hourly. With the new boilers (Martin's patent) in use for 44 days, the vessel averaged 8·3 knots per hour, and consumed only 2,752 lbs. of coal. The gain by the new boilers, he states, has been 45 per cent.

### A California Circular Saw.

A friend writing to us from Oroville, Cal., states that a mill in that place has a circular saw driven by steam power that cuts daily, in ten hours, from 13,000 to 16,000 feet of 1-inch boards. The mechanic who constructed the mill will undertake to cut 30,000 feet of 1-4 inch boards with it every twenty-four hours for a whole week. The timber is what is called sugar pine, which is similar to our white pine. The saw mill belongs to A. S. Hart & Bro., and contains planing and tongueing and grooving machines. California is certainly a fast country, not even excepting *saws*.

### The Martien or Bessemer Process Applied to Copper.

William Keates, of Liverpool, has patented an invention, the object of which is to desulphurise copper by blowing a hot or cold blast through or upon the molteu metal. The regulus being introduced into the furnace by any of the usual modes, the apertures are closed, and it is subjected to the action of the fire until near fusing point. The blast is thenturnedon, and the heat increased to effect perfect fusion of the regulus whilst subject to the blast. This process is continued (occasionally removing the slag) until the copper becomes entirely metallic, when it is lapped out into molds. By preference, he laps out when the contents are only partially desulphurized, and again submits it to this or the ordinary refining process.

### Improved Mowing and Reaping Machine.

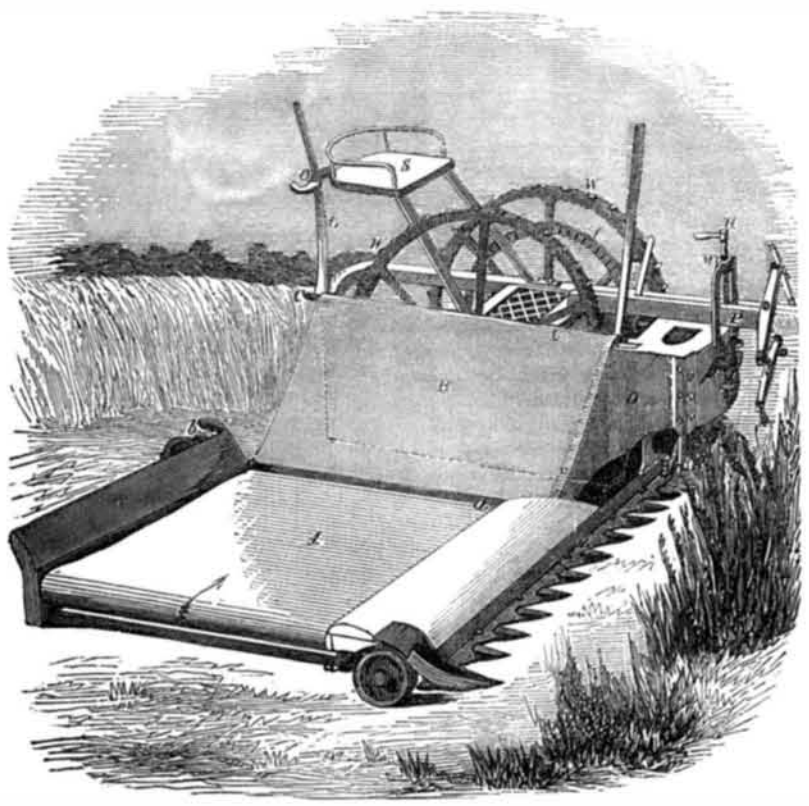
The accompanying figure is a perspective view of the combined mowing and reaping machine for which two patents for improvements have been granted to David Watson, of Newark, N. J ,—one issued on the 13th of last January, and the other subsequently—on the 3d of March.

The improvement in the first patent embraces the use of an adjustable curved plate spring applied to the upper surface of the finger bar when attached to the stirrup that is secured to the main frame. The finger bar rises and falls to accommodate the cutters to inequalities of the ground; the curved spring prevents the cutter bar from rising casually. The second patent, which is fully illustrated in the figure, embraces an endless revolving apron, on which the cut grain falls, and is carried in the direction of the arrow to an inclined tilting gate, where it is gathered until a full gavel or sheafhas accumulated, when it is tilted gently on the ground, ready for binding.

A is an endless apron or platform revolving around a long narrow roller, *a a*, at each side. A bevel pinion, *b*, on the back wheel of the apron frame gears into another bevel pinion on the end of the inside roller, *a*, moving the platform, A, towards the inclined gate or sheaf board, B. This latter is secured at the top to a vibrating bar, C, but is free and unattached at the bottom. At its sides it is secured to leather or flexible flaps, D, connected to the main frame. The bar, C, is attached to a lever, L, which is represented as held in its catch, *c*, at the right hand of S, the driver's seat. W W are the two traction wheels; Z are the cutters. The cutter bar has a crank end, which receives motion in the usual manner, through a rod and bevel gearing connected with the main axle. The pole, P, to which the whiffletrees are attached, is held in place by a screw bolt working in an arched socket, which forms a nut to the bolt. The screw of the pole is operated by the handle, R, which can release the pole, and allow it to be taken out in a second, and it is as convenient for securing it in place. Other parts of the machine are similar to those in common use.

*Operation.*—If we suppose the machine to be now drawn along, and a full sheaf or gavel of cut grain to be accumulated against, and on, the gate, B, by the revolving platform, A, the driver then detaches the spring lever, L, from its catch, and throws it outward at the top, when its lower end falls back to the

## WATSON'S REAPING AND MOWING MACHINE.

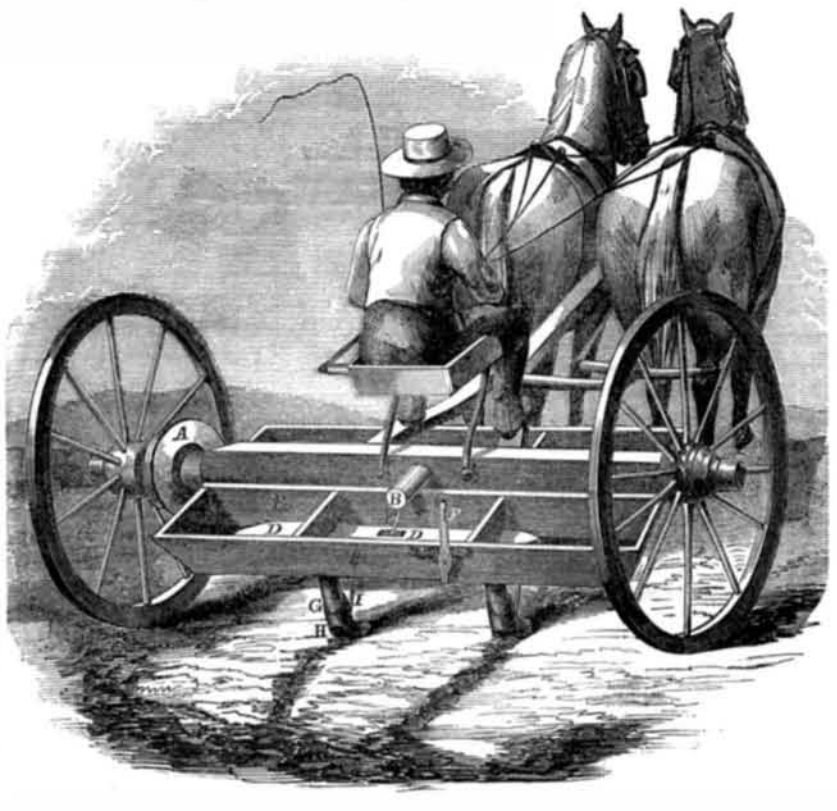


position shown by the dotted lines, leaving an open space between it and the revolving platform, and the gavel of grain then drops gently down on the ground. The lever, L, is then brought back into its catch, *c*, and the gate is set to receive another gavel, and so on continually. In cutting grass, the sheaf or gavel gate is not required to be used; the revolving platform lays the cut grass in rows on the ground.

Very complicated devices have been and are now employed on some reaping machines for raking and delivering cut grain in gavels. The revolving platform, A, and the tilting gate, B, in this machine, appear to be the most simple devices we have seen for accomplishing these objects, and they appear to be as efficient as they are simple.

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

## GASTON'S PLANTER AND FERTILIZER.



The accompanying engraving is a perspective view of a machine patented February 3d, of the present year, by Mr. J. C. Gaston, of Oxford, Ohio.

The machine is designed to sow in drills by the aid of one or more animals, and to accompany the seed, if desired, by a quantity of compost, guano, plaster, or any similar fine fertilizer. The novel feature of the invention lies chiefly in the arrangement of reciprocating feed bars for the purpose of regulating the quantity of grain or compost supplied to the escape valves, so that it may always be the same, and in arranging on the under side of such feed bars, cut-offs or agitators to regulate the discharge of grain or fertilizer being sown, or permit a continuous supply to pass through the apertures if desired.

The reciprocating motion is obtained from the rotation of one of the wheels by means of an obliquely mounted disk or cam, A, fixed on the hub. The periphery of this disk runs in a notch, or between suitable pins or rollers, on a horizontal bar, not visible, which plays transversely across the carriage parallel to and under the axle, and by connecting to an arm, not visible, on the rock shaft, B, imparts thereto a suitable semi-rotatory or rocking motion. This by means of arms, C, gives a regular reciprocating motion to bars, D, which latter are mounted and guided in the boxes or hoppers, E. It must be premised that there are two of these hoppers, E, one forward and the other behind the axle, each fitted with a reciprocating bar. There are two or more holes in the bottom of each of these hoppers according to the number of drills or rows to be planted at one operation, or if it is desired to distribute the seed broadcast, a large number of such holes, each of small size is provided. The seed being placed in one hopper, and the fertilizing material (if any is employed) in the other, both tend to flow through their respective holes, either to be scattered on the surface or to be led through the tubes, G, into the scores or furrows excavated by the shoe, H, which is maintained in position by the rod or spring, I.

The bars, D, do not lie upon and over the holes, but are supported upon metallic feet of greater or less breadth, which are projected from their under surfaces. These feet serve as agitators to keep the loose material in active motion so as to ensure a flow through the holes whenever such holes are open, but if it is not desired to make the flow continuous they are constructed of such area on their lower faces as entirely to cover the holes and prevent the flow during some portions of each motion.

Below the bottom of the hoppers, E, are valves or slides, not actively reciprocating, but capable of being set more or less open by means of the hand lever, F. The latter may be almost closed in sowing small seeds, or may be set wide open for sowing larger ones, and by providing separate means of moving each slide the quantity of fertilizer may be uniform whatever the variations in the quantity of seed, or the flow through either or both may be increased or diminished in various parts of the field, according to the strength of the land or the fancy of the operator. These valves also afford very convenient means for shutting off the flow altogether in traversing the highway, or the like.

For further information the inventor may be addressed as above.

### The Flickering of Gas Light.

One of the most useful inventions positively wanted by the gas light using community, is some method of positively preventing the gas jets from flickering. Gas regulators have been invented to graduate the quantity passing through the tubes under varying pressures of the gas, but none that we have seen provides for a steady flow to the burners. Those who read and write much by gas light soon injure their eyes. Many persons have spoken to us on this subject, and their testimony is uniform in reference to the evil effects of flickering gas lights. The vibrations of the gas light produce similar vibrations in the retina of the eye, and thereby unduly excite it. According to the computations of Dr. Young, there are as many as 535,000,000 of undulations in yellow light—the ray which prevails in gas jets—produced in a single second. It is very evident, therefore, that the disturbed vibrations by flickering gas lights must effect the eye injuriously. It has been found that a person can study and write a great deal longer, and with greater ease, by the light of a sperm candle or an oil lamp than with gas; but this would not be the case were gas lights remedied of the evil of flickering. Here is a field for invention. We are positive that a remedy can be provided for this evil, and it will be one of no small importance and benefit.

The Emperor of Austria has conferred on Mr. Paul Pretsh, the inventor of photo-galvanography, the grand gold medal for arts and sciences.

A correspondent of the London *Family Herald* states, that when glycerine is applied to boils in an incipient stage, it soon brings them to a favorable condition, and heals them.