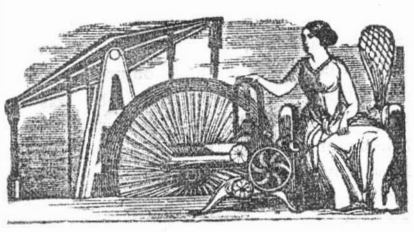


New Inventions.

Improvements in Steam Boilers.

Messrs. W. N. and Alinzor Clark, of Chester, Ct., have taken measures to secure a patent, for an improvement made by them in steam boilers, which consists in increasing the heating surface of the boiler inversely by decreasing the quantity of water in the boiler but keeping up the same surface of exposure to the heat. This is done by an interior dividing log, which answers at the same time to prevent incrustations. The boiler on which the improvement has been made, is stated to have been in use for some time, and given the most satisfactory results.

New Railroad Car Coupling.

Messrs. Crawford & Grew, of the North Western Railroad Line, (Eng.) have invented a new coupling which consists of nothing more than two links or hooks, connected by what is termed a rig t and left-handed screw, the peculiarity of which is, that by turning it in one direction the links are drawn close together, and by turning it in the other, the links are extended. he " cramp," when being used, is hooked to the side chains of the carriages, and by its action the buffers are compressed, the carriages drawn nearer together, and the connecting link removed or attached with remarkable ease and a considerable saving of time.

New Rotary Engine.

By the London Patent Journal (Barlow and Payne,) we learn that in the office of the London Times a rotary engine has recently been erected for driving the printing machines, and which, by the way, is a compact piece of workmanship, but we leave time and experience to pronounce on its real merits—its working economy. It only occupies a space of about 7 feet long and 4 feet wide—and the highest part of the engine is only 3 feet above the floor of the room. It gives direct motion to a crank on the engine shaft, and exerts a perfectly uniform force on it throughout the revolution: and when driven by gearing without a flywheel, there is no ' back lash' in the wheels; the steam can be cut off at a very early part of the stroke without materially affecting the regularity of the driving force; and, although the speed of the piston (that is, of the disc rings) is only 200 feet per minute, the engine makes three times as many revolutions per minute as the common engine.

New Fire Arms.

A new species of fire arms is coming into use in the Prussian service. The invention is described by the Berlin correspondent of the Daily News:—" The greater part of the Prussian infantry are armed with a heavy long barrelled musket, which loads at the breech and which they call Zundnadel Gewehr.—With this musket half a dozen shots may be fired in the same time as one with a common musket. It kills as far and carries with the same precision as a rifle; as the recent practice at Potsdam, witnessed by the King and Gen. Wrangle, proves. Military men here pretend that light batteries will not be usable in the face of infantry so armed, for the Zundnadel Gewehr men will be able to pick down the gunners at their cannon within common range. I have heard Prussian officers express the wish that, if there is to be a war, it may come as soon as possible, while the Prussians are the only infantry armed with the Zundnadel Gewehr."

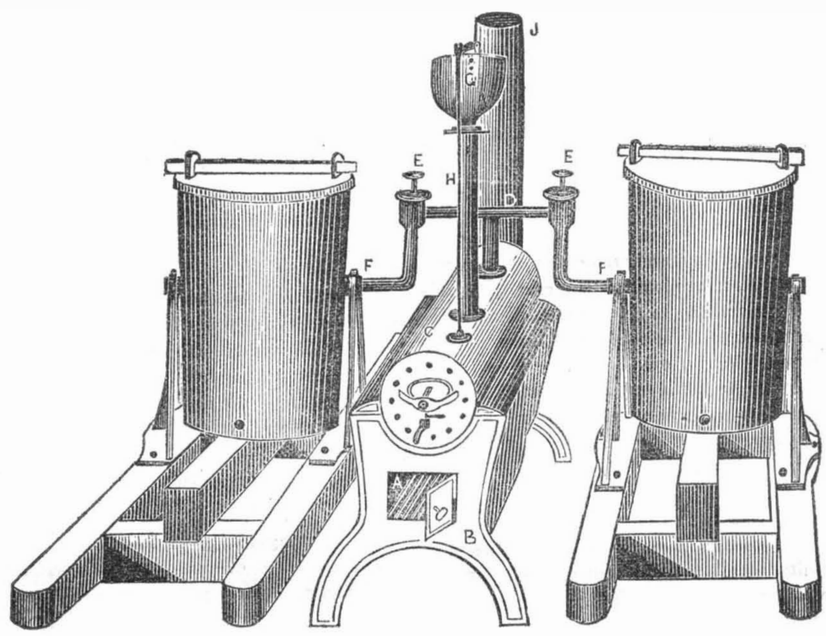
[This kind of gun is well known in the United States, and has been for ten years past.

A solution of salt and borax, is an excellent dentrifice for washing the teeth. It keeps them white and clean, and is not unpleasant to use

Machine for Making the Copper Type.

The machine which has been exhibiting in London to make type out of hard metal, is the invention of a Mr. Pettit, (a Frenchman no doubt,) which is thus described. The object of the invention is to perfect, by means of self acting machinery, printing type of a durability almost infinite. This is effected by the use of hard metals, copper being the material ultimately adopted by the inventor after many experiments. The new process in type making, as shown by this invention, brings the most important and intellectual department of industry into harmony with the mechanical genius and improvements of the age. Instead of the old and complicated processes by which types were formerly founded, a strip of copper wire, upon a revolving wheel, passes through a series of wheels, levers, pulleys and cranks, of the simplest description in reality; the type is struck or punched at the same moment that its size is mathematically determined; and after passing two other simple machines, is ready for use. By means of a small steam engine, applied to the type making machine sixty per minute can be struck, or thirty six thousand per diem. The clearness and beauty of the impression of the types thus produced delight all connoisseurs. In the new process, instead of fusing the metals, and pouring into moulds to give the necessary form, the inventor of the apyrotype machine effects this by a mechanical operation at ordinary temperatures, chiefly by means of powerful pressure and the use of steel dies and matrices. The type thus produced possesses the utmost sharpness of outline and hardness, in consequence of the superiority of the metal employed, and the pressure to which it has been subjected.

FARMERS' APPARATUS FOR STEAMING CATTLE FEED.



This is a horizontal steam boiler connected with two Feed Kettles, the whole being made portable and convenient for use. A, is the furnace of the steam boiler. It is enclosed between two iron side plates which are attached before and behind to back and front standards B B. The boiler C, rests in the curved bearings of the standards and the plates with the standards form the flues, which should be plastered inside with fire clay. J, is the smoke pipe. The boiler has a feed cistern G, which has a valve in the bottom that is opened and closed by the rising and falling of a float in the steam boiler. The rod H, connects the float and feed valves together. D, is a pipe from the steam boiler with branches F F, to steam the feed in the two kettles at the side. E E, are two screw valves to shut off and let on the steam to one or both kettles as may be desired. The feed kettles may have small pieces of pipe to screw on to the elbow F F, and in that case the kettles can be lifted off at pleasure. The branch pipes may also be let in at the bottom as well as any other part. The kettles should have tight covers; we would advise farmers who might have such an apparatus made, to get metal covers to screw down tight, and with a small safety valve on them. This would affect a great saving and would be far better than without a steam tight cover, as it has lately been discovered, that bones become soft when submitted for some time to the action of steam.—Our farmers who are at great expense to feed their cattle during our long winters, would find this apparatus of great benefit—a great saving of food, the cattle kept in better condition, and the yield of milk from milk cows, nearly as large as during the summer months.

Apparatus for raising water from deep Mines.

In a late number of the London Mining Journal, there is the following description of a pump recently invented and patented by Messrs. Clark and Varley, which is very highly praised, as being an ingenious and novel arrangement for raising water from mines, or other deep places.

The plan is on the principle of atmospheric pressure, but unconfined by the law of hydraulic forces, by which the pressure of the atmosphere can only support a column of water 33 feet high; whereas, in Messrs. Clarke and Varley's plan, the depth may be 300 or 400 fathoms, and the effect will be the same, except as to the time in which a certain quantity of fluid is raised. The apparatus merely consists of plate iron, galvanized or coated with zinc to prevent corrosion. One-eigth of an inch would be sufficient to strengthen; and it might be two feet in diameter, extending to the bottom of the shaft. The tube is rivetted together in lengths of 30 feet, and then bolted by flange joints, the joints between the several lengths being carefully made so as to be air-tight. The top of this tube terminates in an air-tight cistern, communicating with an air pump, worked by a steam engine, or other power; at the bottom of this cistern is a valve, to allow the water to escape when raised. The bottom of the tube extends nearly to the surface of the water in the pump, and is furnished with a piston or diaphragm, sufficiently heavy to fall to the bottom by its own weight. From the bottom of this main tube and beneath the piston, a smaller tube bends upward of sufficient length to be out of reach of the water, and provided with a valve, and from a point just above the piston, another pipe descends some feet into the water, which completes the arrangements. The *rationale* of the plan is this: On exhausting the air from the cistern and tube, the water will flow in above the piston to a height corresponding with the state of exhaustion, or which may be regulated by the periods of opening the valve in the air-pipe. Suppose a column of 20 feet high, has flowed in, when the valve in the air pipe below being opened, the atmospheric pressure immediately forces up the piston with its load of water above; and as the exhaustion continues, it quickly arrives at the top, overflows in the cistern, and the exit valve being then opened, runs off through the channel prepared for it. The equilibrium being now restored, the piston falls to the bottom by its own gravity, such fall being regulated by the admission of air at the top of the cistern; the cistern valve and the air valve are now closed, when the operation is repeated, and goes on, *ad infinitum*, while the air pump is kept at work. It will be seen that after the first rise of water from the pump, due to the exhaustion, which we have taken at a 20 feet column, the hydraulic principle is at an end; and, on admitting air below the piston, the water is lifted the same as any other heavy body might be in the tube; it becomes a close atmospheric railway tube, with its load inside. A tube, 2 feet diameter, presents an area of 452 square inches; and supposing one exhaustion in a deep mine could be made per minute, a 20 feet column would give about 440 gallons per minute, which is above the average work of the largest Cornish engines. By increasing the area of the tube, any amount of water may be raised in a given time; if the pipe was 3 feet in diameter, then 880 gallons would be raised at each exhaustion. One important feature of this invention is that the water may be raised with any velocity, as its speed is never checked from the time it is set in motion till it is emptied into the cistern at the top.

[The above apparatus is constructed on the same principle as Winder's Hydraulic Engine, an engraving of which will be found on page 1 vol. 3, Sci. Am. Let any of our readers who have that number, compare the two descriptions and the conclusions of the comparison we have no doubt, will be about the same as the one we have arrived at. There is a little difference in the construction of the machinery, but that is all.

Labor Saving Soap.

We have received a number of communications lately respecting *labor saving* soap, two especially within two weeks, requesting our advice about securing patents and one employing us to act as agent and apply for a patent. We could not conscientiously act in this capacity, as we believe, that if a patent might be secured for the particular composition, it would be all lost money to the patentee, for the least variation in the component parts of the composition would obviate all liability of infringement. We have seen various receipts for making labor saving soap, to save the ladies, dear souls, from pounding and scrubbing; but we have not seen a single receipt, that was not made up of those substances well known and long used by bleachers, dyers and shawl washers, for removing dirt and grease from goods. It would be well, if a little more of the workshop science, was infused into domestic economy.

The black dirty oily wool is cleaned of its grease for dyeing without soap, that is, manufactured soap, for soda is used, which combines with the grease in the wool at a certain heat, and forms it into soap, making a substance soluble in water, and easily washed out of the wool. Fine goods are washed with soap first, then rinsed and then put through a weak solution of ammonia. If clothes were steeped in warm water, made soft, between the fingers with some soda dissolved in it, the night before they are to be washed, our women folk would find much labor saved.

To Sweeten Bread without Sugar.

It is not generally known that pure starch added to the flour and made into dough, will be partially converted into a species of sugar during the process of fermentation and baking and produces sweet wholesome board. From the experiments of Dr. Colquhoun, it appears that starch, arrowroot, farina of potatoes, or any similar amylaceous substances, made into jelly, with hot water, may be employed for this purpose with advantage. It is only necessary to mix the flour up with the jelly, instead of mere water, to add yeast and salt, and to bake it in the common way. Dr. Percival has recommended the addition of salep for this purpose. 1 oz. of salep dissolved in 1 quart of water, 2 lbs. of flour, 80 grains of salt, and 2 oz. of yeast, gave 3lbs. 2 oz. of good bread; but the same weight of materials, without the salep, gave only 2 3-4 lbs. If too much salep, however, be added, it will give its flavor to the bread.

If wood pulleys are boiled for seven or eight minutes in olive oil, they become nearly as hard as copper.