

STEAM PAVEMENT RAMMER.

In a great city a solid, durable, and even pavement is very desirable, but it is seldom that a pavement is so well rammed by hand that it remains in good condition more than three years. The machine shown in the annexed engraving is designed to accomplish this kind of work by the power of steam. It is the invention of Mr. Samuel Johnson, of Philadelphia, Pa., and has been adopted by the Highway Department of that city and extensively used in ramming the pavements, which are, it is said, as smooth as a floor, and the stones are so firmly set in the earth that the pavement will remain in good condition under heavy traffic for many years. The squares laid with this machine in the streets of Philadelphia present a striking contrast with the jagged and irregular pavements pounded by hand. The steam-rammed pavement is much smoother to travel over, and its noise is greatly diminished. Belgian blocks rammed by this machine form a solid floor of unyielding firmness.

The machine, as will be seen by reference to the engraving, is self-propelling. The crane, which projects forward, carries a steam cylinder containing a reciprocating piston, the rod of which is attached to the rammer. The piston reciprocates in much the same way as a steam hammer, and its movements are controlled by the attendant, who also moves the crane from one side to the other.

Only two persons are required to work the machine, and it has a power to strike from one to twenty-two hundred pounds, while a man's labor cannot exert a force of much more than two hundred pounds. Then again the machine makes one hundred and sixty strokes per minute, while the strokes made by hand do not exceed twenty per minute. It will, further, do the work of ten men in the same space of time. This difference speaks volumes in favor of the steam rammer, throwing out of consideration the superiority of its work. Further particulars may be obtained from Johnson & Co., 726 Sansom street, Philadelphia.

A MAMMOTH PLOW.

We present to our readers an engraving of the large plow made by Deere & Co., Moline, Ill., for the St. Louis Iron Mountain and Southern Railroad. It is calculated to cut a ditch 30 inches wide and 2 feet deep, and is attached to a platform car of a construction train by means of timbers framed and extending out, so that the plow cuts its ditch a sufficient distance from the track. It requires the full power of the locomotive to draw it through the soil, which is a black muck surface and hard clay subsoil.

Three furrows, of 8 inches each in depth, are required to complete the ditch. One mile of ditch, 2 feet deep and 3 feet wide, is made every four hours. The plow weighs 1,700 lbs. and thus does the work of 1,000 men. The beam is made of swamp oak, the toughest kind of timber, and is 14 by 8 inches in its dimensions and of proportionate length. No handles are used, the plow being regulated in the manner already named. The landside is a piece of bar iron 8 inches wide and 1½ inches thick. It is larger than merchant iron is made, and was especially forged for this job. The share is of the best cast steel, ½ inch thick by 9 inches in width. This is also of extra large size, and was rolled to order in Pittsburg. The top of the mould-board stands 36 inches from the ground, or the base of the plow. It is made of the best cast steel, with iron lining securely bolted to the back. The plow is rigged out with an immense gauge wheel and standing cutter, and as it stands is undoubtedly the largest and strongest plow ever made. It is said that its performance is entirely satisfactory to the railroad company.

In view of the success of this plow it seems safe to predict that before long ditching by traction engine or horse power will be accomplished so cheaply and effectually that millions of acres of rich Western lands too level to be self-draining will be reclaimed by this means at small expense.

MISCELLANEOUS INVENTIONS.

Mr. Augustus M. Coburn, of Watkins, N. Y., has patented an exhibitor, by means of which a large number of samples of paper hangings, oil cloth, carpets, and like materials can be readily and clearly exhibited without handling them and without occupying much space. The invention consists in an arrangement of a rotating drum containing a number of sections, to which the samples of paper, oil cloth, etc., are fastened, and a small wheel, covered with or made of rubber, leather, or sandpaper, or like material which rotates on an axis above the drum, so that when the small wheel is turned it pushes down one sheet after the other of the material that is to be exhibited.

Mr. Farnham M. Lyte, of Savile Row, county of Middlesex, England, has patented an improvement in the process of separating metals from ores containing lead, zinc, silver, and copper. It is designed to effect the neutralization of the soluble bases, to economize acid, and to carry

to screen the dust and dirt out of the potatoes or other vegetables at the time they are delivered.

An improvement in latches, patented by Mr. Joseph R. Payson, of Chicago, Ill., consists in a lever having a curved shoulder, in combination with a rose having a square orifice, and in combining with the latch bolt a latch lever having a curved shoulder, pivoted in the rose, and provided with a handle.

Messrs. Julian A. Chase and Preserved W. Arnold, of Pawtucket, R. I., have patented a coffee urn with several compartments, and having a reversible stand, by which it can be held in position for use on the table, or adapted to sit directly on the stove or fire, as may be desired. It has a reversible stand pivoted to the urn, and adapted to secure the urn in position for use on the table, and to be held up in a reversed position when the urn is placed on the stove or over the fire.

An improved milk pan has been patented by Mr. John G. Cherry, of Walker, Iowa. It consists of a pan adapted to be submerged in a vat of water, and provided with a cooling tube for cooling the milk from the center as well as from outside of pan.

Mr. Nathaniel Sleeman, of Birmingham, Conn., has patented a gas burner provided with a governor for regulating and cutting off the flow of gas. This device is especially applicable to street lights or lamps; for by its use all the lights of a city may be almost simultaneously extinguished by simply removing for a few minutes the pressure of the gas at the gas works. The same inventor has also patented another form of regulator adapted to gas supply pipes.

Mr. Charles Wm. Rice, of Columbus, Ohio, has invented an improvement in hot water heating apparatus, the object of which is to utilize the waste heat from open fireplaces in houses, for the purpose of heating other parts of the building. It consists in a fireplace having a grate, a water box, a flue, and a coil

of pipes, the box being connected with radiators by circulating pipes.

Mr. Nathan F. Carter, of Quechee, Vt., has invented an improvement in rotary library reference tables for students and others, for holding reference books and other articles required for frequent use. The invention cannot be described without engravings.

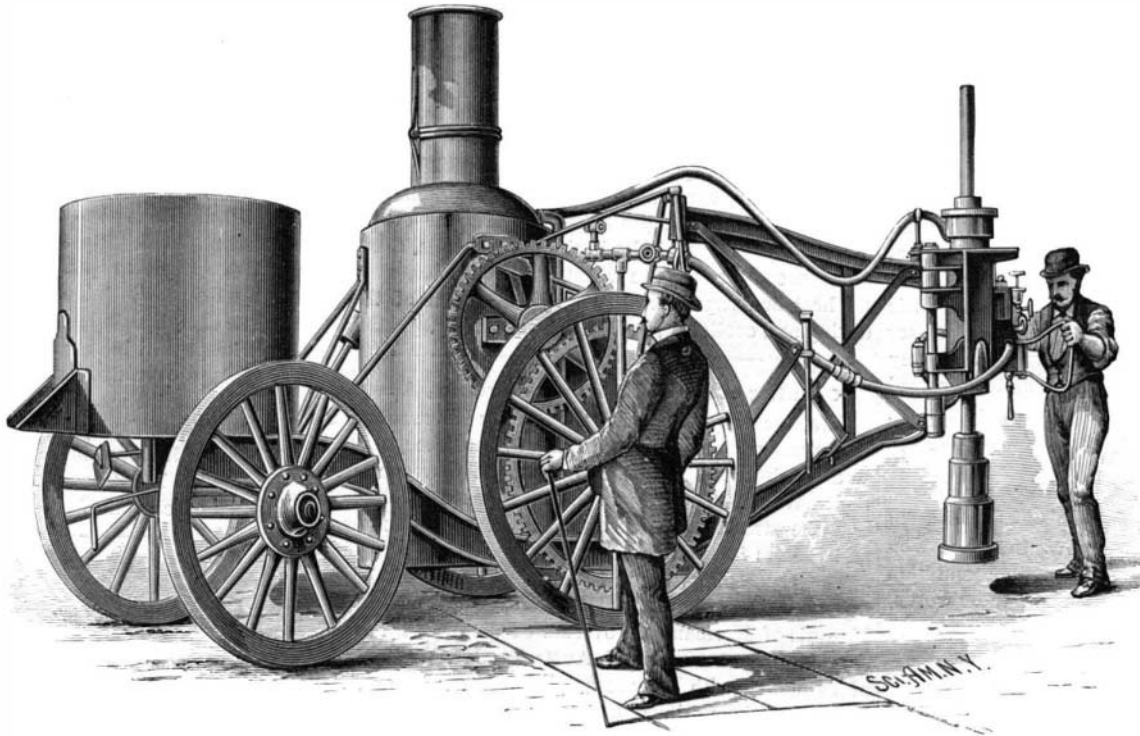
An improved combined boiler and stove has been patented by Mr. David P. Allen and John A. Allen, of Briar Bluff, Ill. The object of this invention is to provide a boiler for supplying hot water or steam for heating and other domestic purposes, and combining with it, so as to utilize the heat from the water and from the furnace fire, baking ovens, and the ordinary parts of a cooking stove or range.

An improvement in weft-stop motions for looms has been patented by Mr. William Nuttall, of Westerly, R. I. This invention consists of a comb of wires combined with devices for raising it under the weft thread in front of the reed, and while the lathe is moving toward the cloth after the shuttle has passed, and while it is passing from one box to the other, and allowing it to drop down, so as not to interfere with the beating up of the weft by the reed. It also consists in a novel arrangement of devices by which, in case the weft thread is absent or broken, the loom will be stopped.

A simple and efficient apparatus for steaming dry or frozen wheat previous to grinding, has been patented by Mr. Jeremiah W. Champion, of Rocheport, Mo. It consists in the combination, with a pipe or tube through which the grain is passed, of an outer pipe or shell forming a steam space and screw

plugs, whereby more or less steam may be admitted in contact with the wheat.

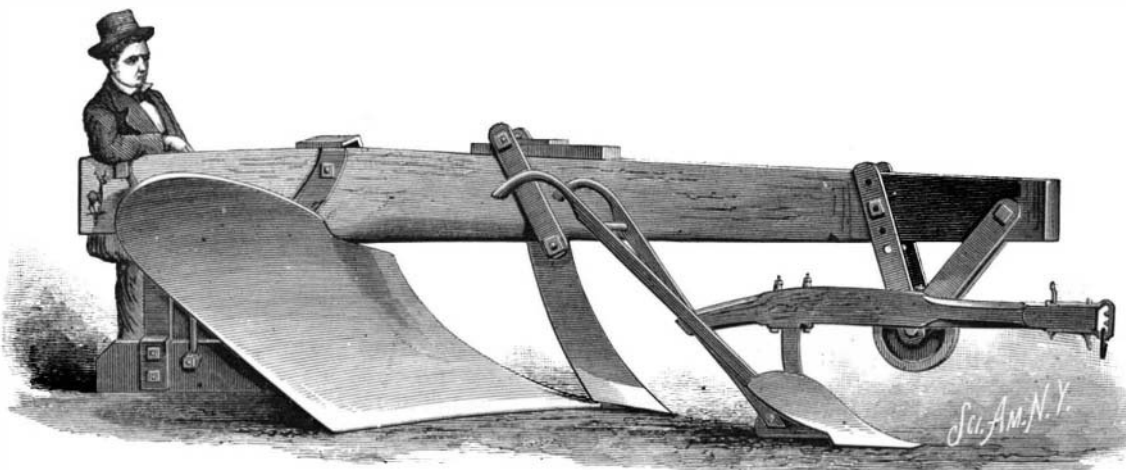
Mr. William J. Marble, of Wilmington, O., has invented a book case made in sections, and so constructed that the sections may be taken apart for convenience in moving and again put together without removing the books from their places.

**JOHNSON'S STEAM PAVEMENT RAMMER.**

over the least possible quantity of silver and lead. The improvement consists in treating the raw ores with an acid solution partially saturated by previous attack on the ores, and treating the partially exhausted ore with acid before the latter is admitted to the raw ore, these steps being conducted in a continuous, alternate, and methodical manner.

Mr. Hermann A. J. Rieckert, of New York city, has patented an article of furniture combining a dressing case and bedstead in such form that the bed may be folded and concealed when not required for use, and so that when turned down as a bed the use of the drawers and other conveniences of the dressing case is not prevented.

Mr. Tyree Rodes, of Wales Station, Tenn., has patented an improved gate which is claimed to be more simple in construction and of greater strength and durability than others now in use. It consists in a gate provided with an X-brace at its rear end to avoid the disadvantages of a mortised post.

**MAMMOTH PLOW.**

Messrs. Richard C. Clark and Jacob A. Pearce, of Frankfort, Ind., have invented an improved bin for potatoes, apples, coal, and other articles usually kept in bulk and removed for use or sale by scoops or shovels, or by hand. The object of the invention is to save the waste and trouble resulting from the use of bins or other receptacles that require the use of shovels to remove the contents, and also