

RECENT INVENTIONS.

Safety Plug and Valve for Boiler Fittings.

The object of the invention shown in Fig. 5 in the accompanying cut is to prevent injury and loss of life from the breaking off of cocks, valves, or pipes that are used in connection with steam boilers, and is a safety plug and valve for cutting off the steam automatically in case the valves or cocks become broken. A is a tubular plug, formed with an external thread at one end, for tapping into a boiler plate in the usual manner, and it has also an external thread at its outer end, for the attachment of a valve or cock. The aperture of the plug is tapered at its inner end to form a valve seat. B is a valve of tapering form, and provided with a stem that extends through an aperture in a guide yoke, as shown in the engraving; the yoke serving to retain the valve central, and is attached to a ring that is fitted in a recess in the end of the plug. To the inner end of the valve is attached a wire that extends to near the outer end of the plug, where the wire is formed with an eye, and is secured by a screw-pin fitted crosswise of the plug and passing through the eye. The valve and wire are so adjusted that the pin retains the valve off its seat at the inner end of the plug, and the valve being held open, the ordinary use of the valve attached to the plug is not interfered with. In case the outer valve is knocked off or broken, the projecting end of the plug, A, will also be broken, and the wire will be released, and the steam pressure will close the valve, B, on its seat. The safety-valve can be conveniently used to close the plug when it is desired to remove the fitting. The invention has been patented by Mr. John J. Mackedon, of Omaha, Neb.

A New Lifting and Force Pump.

A pump adapted to be used in either open or driven wells for all ordinary purposes, also for extinguishing fires, sprinkling streets, etc., is shown in the annexed cut in Figure 1. It is the invention of Mr. Moses Gayman, of Canal Winchester, Ohio. The water chamber may be made of iron or wood. If made of wood the side openings will be faced with flanged and internally threaded metallic thimbles, and the central opening will be faced with an externally threaded collar, which is provided with an annular screw-cap, which, with the collar, forms the stuffing box of the valve rod. In the thimble, at one side of the box, is screwed an air chamber, and at the other side is screwed the discharge tube. In the opening on the under side of the chamber, and which registers with the opening for the valve rod, is secured by braces, as shown, a large pipe in which the bucket on the end of the valve rod works. To the lower end of this pipe is secured the bottom pipe, and on the upper end of this pipe is placed a flap valve. The lower end rests on the bottom of the well and supports the pump. If the pump is to be double-acting, an inverted, elongated, cupped sleeve, E, is placed on the valve rod, and moves with it, and diminishes the space in the water-chamber, and forces the water through the discharge pipe.

Bag Fastener.

The device represented in Fig. 6 of the accompanying cut is a bag fastener that is easily applied, well adapted for outdoor work, and will securely fasten a bag, even if it has no hem, without the risk of slipping. A, B, are two bag receiving arms or jaws, made of malleable iron, that are hinged at one end with a joint pin, arranged to pass through a slightly inclined slot in the jaw, B, to provide for a longitudinal movement of the jaws. Either or both of the jaws may be corrugated, on their inner sides, to give a better hold upon the bag. The jaw, B, when closed upon the bag, enters at its opening end, between the cheeks of the corresponding end of the jaw, A, and has at this end a locking projection that engages with a locking lever that is fulcrumed on the end of the jaw, A; the arrangement of the locking projection and locking lever being such that the lever is prevented from flying back from the pressure against the inner edges of the jaws (when the bag is closed). The bag is opened by simply raising the lever and moving it back. This device, which securely locks the bag, may be applied to a bag without a hem, or to any part of it, and is not liable to slip. This fastener is patented by Mr. Charles W. Bradford, of Belfast, Me.

Wedge Driver.

The object of the invention shown in Fig. 7 of the accompanying cut is to provide a new and improved apparatus for driving wedges, especially adapted to be operated by horse power. The device is patented by Mr. Otto Mossberger, of Guttenberg, N. J. The invention consists in a vertically reciprocated hammer, connected by adjustable connecting rods and cranks, with a collar loosely mounted on a shaft, provided with a fixed cog-wheel, and rotated by means of an intermediate train of gear-wheels that engage with a circular rack, mounted on a wagon frame, and adapted to be rotated by horse power. The loose collar is provided with an automatically operating clutch device, which engages it

with a fixed cog-wheel on a rotating shaft. By this means the hammer is raised and then released automatically, when it has reached its greatest height. The machine is especially adapted for driving wedges into stumps, for the purpose of splitting them, but it can be used also to drive drills, or to drive posts or spiles.

Seed Planter, Coverer, and Fertilizer.

We find among recent patents a new combined seed planting, covering, and fertilizing machine, invented by Mr. Lewis S. Hefner, of Sparkling Catawba Springs, N. C. The machine is shown in Fig. 4, in the annexed cut, in which is a plow of the usual construction of beam, standard and handles. Near the outer end of the beam, between its lower face and the upper face of a block bolted to its under side, is journaled an axle that is cylindrical in its middle and has squared ends. One of these squared ends passes through a square hole in a wheel which rests on the ground, supporting the plow beam and revolving the axle, to the opposite end of which is attached a band pulley; the wheel, axle, and band pulley all revolving with the forward movement of the plow. A band passes over this pulley, and its upper portion passes thence around a pulley on the axle of the dropping wheel, K, from which it passes over a guide pulley back to the driving pulley, revolving the shaft of the dropping wheel and dropping the seed. By using band pulleys of different diameters the distance apart of the seed can be regulated. The dropping wheel is directly under the bopper, and has a recess on its circumference, having one edge cut away. In this recess is inserted a plug, leaving a space between it and the cutaway surface, the size of the opening being graduated by the size of the plug, thus regulating the quantity of seed dropped. The seed is covered by two coverers, one provided with a right and the other with a left share, secured to their ends, and may be readily adjusted, so as to cover deep or shallow as may be desired.

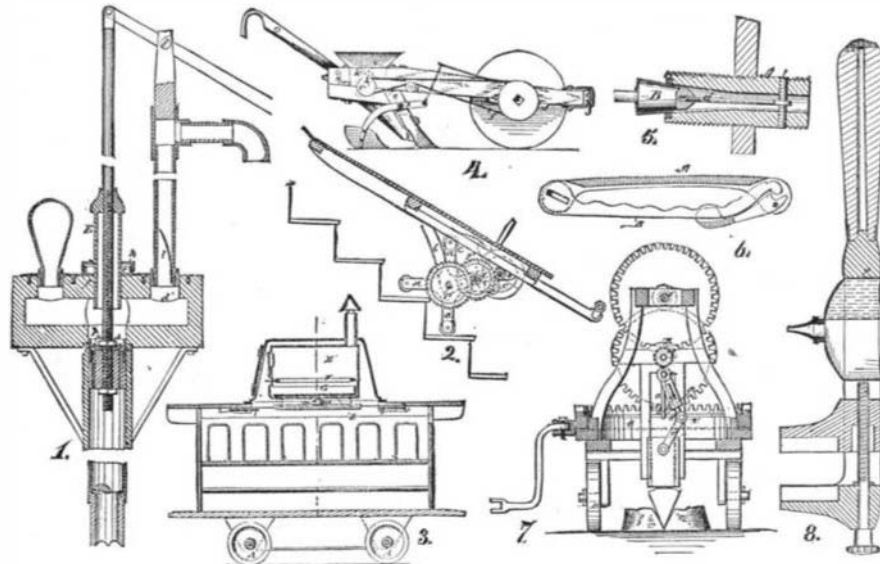


Fig. 1. Gayman's Lifting and Force Pump.—Fig. 2. Tauber's Stair Truck.—Fig. 3. Kirkpatrick's Car Heater.—Fig. 4. Hefner's Seed Planter.—Fig. 5. Mackedon's Safety Plug.—Fig. 6. Bradford's Bag Fastener.—Fig. 7. Mossberger's Wedge Driver.—Fig. 8. Kinsman & Merrill's Wrench and Oiler.

Improved Stair Truck.

Among the late inventions we find an improved stair truck, by means of which heavy burdens may be easily carried up or down stairways, without danger of marring or in any manner injuring the stairs, and without the necessity of providing tracks or tackle of any kind. The invention consists principally of a wheel provided with extensions or arms, adapted to be revolved by suitable gearing or mechanism attached to the truck, for elevating or lowering the truck and burden from stair to stair. The wheels may have four or more arms, and at the ends of the arms casters can be attached if desired. The wheels are secured upon an axle that is journaled in downward extensions of the truck body. Near the center of the axle is a fixed cog wheel, that meshes into, and is operated by a train of gearing driven by a crank shaft. By this means the wheels of the truck are revolved, their arms reaching from stair to stair, and causing the truck, with its load, to ascend the stairway. In descending the stairs with a load, to prevent its going too rapidly, the side-bar of the truck is provided with a pivoted brake, which bears against the crank-wheel. When the truck and load are to be moved over a level surface, the caster wheels permit the load to be easily moved. This device, shown in Fig. 2 of the annexed cut, is the invention of Mr. Johann C. Tauber, of Plain City, O.

Combined Carriage Wrench and Oiler.

This invention is patented by Messrs. Prescott B. Kinsman and Josiah Merrill, both of Great Falls, N. H., and is shown in the annexed cut at Fig. 8. The stock of the wrench is flattened in width and formed with a circular opening near its handle end, and also with a longitudinal slot extending from the circular opening to the fixed jaw at the head of the wrench. The walls of this serve to support and guide the movable jaw of the wrench, which is adjusted to or from the fixed jaw, by means of a screw that passes through the fixed jaw, and is held to it so that its shank is free to turn, by a head on the outside, and a fixed washer on the inner side of the jaw. The threaded portion fits into a cor-

responding threaded perforation in the movable jaw. The oiler is of ordinary construction, with a spring bottom for ejecting the oil by the pressure of the thumb, and is placed in the circular opening near the handle, and secured in any suitable manner. The wrench and oiler will be found a useful appendage to any carriage, and occupy but little room, and will be always at hand.

Heater for Cars.

A new heater for cars has lately been patented by Mr. David M. Kirkpatrick, of Kansas City, Mo. This heater is especially adapted to warming street cars, but may be applied to all kinds, and provides for heating them without obstructing the seat space or floor of the car. The device is shown in the annexed cut, in Fig. 3. The middle part of the roof of a street car is cut away, and in the opening thus formed is secured a bed plate that is attached at its four corners to the roof and supports the heater. The sides and ends of this plate are recessed to allow the heated air to come into the car. E is a stove of ordinary construction, and has formed on its bottom plate a conical pivot, made broad, to serve as a foot to rest upon the bed plate, to which it is secured by a two part collar, the inner surface of which is made conical to fit the pivot. The stove is further supported by two studs attached to the forward and rear part of the stove bottom, the lower ends of which rest in grooves formed in the bed plate. The stove may be turned on its pivot when the horses are changed from one end of the car to the other, to keep its forward end toward the forward end of the car, so that the draught will operate properly. The stove and the opening in the roof of the car are covered with an arched cover, that is attached to the bottom of the stove, so that it will be carried around with it when it is turned on its pivot. When the stove is in line with the car the edge of the cover rests in a packed groove, making the joint between the cover and the roof tight. The heated air from the stove presses down and circulates through the interior of the car, and should the car be thrown from the track and overturned the stove will be thrown from the car and the danger from fire be avoided.

Effects of Too Much Brain Work for Children.

On April 28, Dr. Richardson, F.R.S., delivering a lecture on "National Necessities as the Bases of Natural Education," before the Society of Arts, brought forward, writes F. C. S., the following extract, which happened to be a report of the chairman of the evening, Mr. Edwin Chadwick, C.B., to the British Association in 1860, to show what an evil effect too much brain work, without a proportional amount of industrial occupation to support it, has upon young children:

"In one large establishment, containing about six hundred children, half girls and half boys, the means of industrial occupation were gained for the girls before any were obtained for the boys. The girls were therefore put upon half time tuitions; that is to say, their time of book instruction was reduced from thirty-six hours to eighteen per week, given on the three alternate days of their industrial occupation, the boys remaining at full school time of thirty-six hours per week, the teaching being the same, on the same system, and by the same teachers, the same school attendance in weeks and years in both cases. On the periodical examination of the school, surprise was expressed by the inspectors at finding how much more alert, mentally, the girls were than the boys, and in advance in book attainments. Subsequently industrial occupation was found for the boys, when their time of book instruction was reduced from thirty-six hours a week to eighteen; and after a while, the boys were proved, upon examination, to have obtained their previous relative position, which was in advance of the girls."

A New Use for Old Tin Cans and Scrap Tin.

According to the *Berg- und Huettewannische Zeitung*, a better method for utilizing old tin cans than simply to melt off the solder has been devised. E. Rousset first heats the tin, old or new, in an oxidizing flame, which burns up all the pure tin and that combined with iron. When this is stopped the scraps of iron are seen to be covered with a brown and brittle crust, the upper layer consisting of oxide of tin, the lower of magnetic oxide of iron. It is passed through rollers and then forms a powder that contains both oxides. The iron that remains after sifting out the powder makes good wrought iron or cast iron, but is particularly fitted for precipitating copper. The oxide of tin, although mixed with oxide of iron, can be easily worked into tin, and the metal obtained from it is free from sulphur and arsenic. But will it not contain traces of lead?

\$350 a Square Foot.

The building and lot at the southwest corner of Wall and Broad streets has changed hands at \$168,000. The property has a frontage of 16 feet on Broad street, and a depth on Wall street of a trifle over 29 feet, and the building upon it is a plain five-story brick building.