

RECENT INVENTIONS.

Electric Coupling for Train Telegraphs.

Mr. Edward D. Parker, of Salina, Kan., has lately received a patent for a new electric coupling for train telegraphs, for signaling from the cars to the engineer.

Beneath the locomotive cab is placed a galvanic battery. The cab contains an electric bell, which is connected with the battery, wires, the electric circuit extending beneath the tender and cars to the rear car where the ends are connected. The wires, A, are incased in a covering of wood by which they are insulated and protected from injury. In the cab of the locomotive is a switch for breaking the circuit when the locomotive is not in use. In each car of the train there are press buttons placed at convenient places. The coupling devices between the cars by which the wires are coupled,

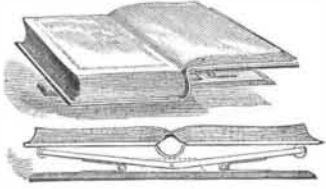


are applied in connection with the wooden covering of the wire, as is clearly shown in the engraving. The tongues, G, and springs are so placed that when the ends of the sections are brought together, the tongues of one section pass between the springs of the other section, thus separating them, and at the same time establishing a metallic connection of the wires, A A. With this arrangement the bell in the engine cab may be operated from either car by movement of the press buttons.

In case the train is separated by the breaking of the car couplings, the couplings of the electric cord will draw apart, and the springs, coming together, will close the circuit and the bell will be operated.

Book Support.

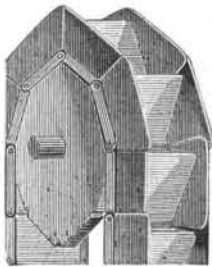
The annexed engraving represents an improved device for supporting a book in such a manner that both surfaces of the opened book will be about level. The invention consists of an angular rod or bar pivoted on a base at its angle, the arms of the bar or rod resting on springs fastened on the base below the arms. The arms have anti-friction wheels or pulleys pivoted in the ends. One end of the book is placed on the support in such a manner that the back of the book is on the



angle of the rod or bar and the covers rest on the ends of the rod or bar. By this means the leaves of the opened book will be held level. This useful device can be used under either end of a book, or if desirable under both ends. It is not only a great convenience to the user of the book, but prevents injury to the covers and back. The invention has been patented by Mr. Ferdinand Schubert, of Higginsport, Ohio.

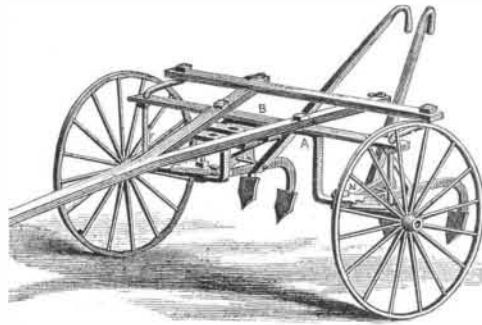
Improved Bucket Elevator.

This is an improvement in bucket elevators, or carriers for elevating crushed ore from the ore breaker or crusher to the bins above for distribution to the stamps, and for carrying grain and for other like purposes. Its construction is such as to prevent fine sand and other hard substances from getting in the joints. The carrier consists of plates having flanges turned over at the edges and connected in an endless chain by pivot rods. The plates are curved at the end, overlapped by the end of the next plate, so that with the lapping of the flanges of the sides of the plates the joints are made sufficiently close to exclude fine gravel or sand getting inside to wear the joints and clog the drums and the carrier thereon. The buckets are attached to the carrier plates, the latter forming the back to the buckets. The carrier is mounted on drums having faces corresponding in length with the length of the plates. For carrying grain the machine may be arranged in horizontal position, or nearly so, and in that case supporting rollers may be arranged at suitable intervals along the carrier to hold it up in line; but the carrier is more especially intended for use in ore crushing mills, for which it is intended to provide a practicable means of elevating ore from the ore breakers to the bins in order that the breakers may be located low down on a solid foundation. This improvement has been patented by Mr. James Boardman, of Hayward, Dakota Ter.

**Cultivator.**

The engraving shows an improved cultivator, which is easily controlled and guided. It is the invention of Mr. Thomas A. Burkett, of Charleston, Kan. The frame of the cultivator is formed of an arched bar, A, and a crossbar, B, attached to the upper horizontal part of the bar, A, and is of such length that its ends will be directly over the ends of

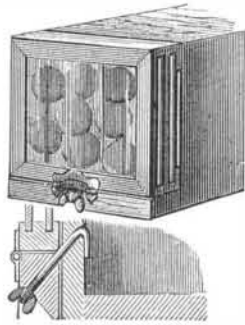
the arched bar. The tongue of the cultivator is forked and its branches are bolted to the frame, the branches projecting in the rear and having hooks attached to the ends to receive and support the plow beams away from the ground when turning around or moving from place to place. The wheels revolve upon the lower crank arms of the axle, F, the upright arms of which work in bearings in the frame. Upon



the upper ends of the upright arms are crank arms that project rearward at right angles to the lower cranks of the axle, and work in bearings in the ends of a crossbar placed on the top of the forks of the tongue. A pair of plow beams, provided with plows and handles in the usual manner, are hinged to a coupling rigidly connected with a bolt, N, that passes through and works in the lower horizontal part of the arched bar, A. To the upper ends of the bolts, N, are rigidly attached segmental gear wheels, the teeth of which mesh into corresponding gears attached to the upright part of the double crank axle, F. With this construction, when the team turns in following a crooked row, the resistance of the plows, communicated through the gear segments, turn the crank axles and cause the wheels to follow the turn of draught, so that the plows will also follow the same line and be easily guided.

Sample Displaying Lid.

The engraving represents a new sample displaying lid, having a front glass and a wooden sliding back, between which and the glass the samples to be displayed are placed.



This device has been patented by William H. and Thomas F. Wheeler, of Cape Girardeau, and John B. Wheeler, and Charles M. Slack, of Jackson, Missouri. When any of the contents of the packing case are to be removed, the display frame is raised and the lid of the box is opened. As soon as the frame is released it will be closed automatically by the spring of the hinge. When the packing case is empty the

frame is removed and placed on another case, and the samples in the lid are changed accordingly. The samples are placed in the lid between the slides, and are visible through the glass slide.

Novel Dinner Pail.

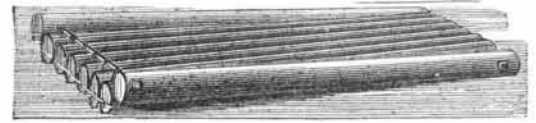
The annexed engraving represents a very compact and convenient dinner pail, provided with apparatus for heating or cooking food of all sorts. It will boil, fry, or toast, and has a frying pan with folding handle, a water heater with a screw top, and other conveniences to adapt it to use. The fuel burnt is kerosene, and the lamp is constructed so that it yields a clear, strong, and smokeless flame. The compartment for food and dishes is entirely separate from that containing the lamp, and the inner surfaces of the pail which are subjected to heat are lined with asbestos, which prevents the heat from radiating, and also prevents the tin of which the device is made from being discolored by heat. The water heater is of convenient form for applying heat to the body, and may be used in case of necessity for that purpose, the water contained by the heater being capable of retaining its heat for a long time. The device will be found very useful for heating food for infants and for other similar uses.

Large sizes are made for camping and excursion purposes. This device is the invention of Mr. Frederick Reichmeire, of 106 West Eighteenth St., New York City.

Novel Timber Raft.

An improved method and apparatus for coupling gangs of logs for timber rafts, so that they may be easily and effectively bound together in a raft, has been patented by Mr. Robert E. Terry, of Bay Minette, Ala. The accompanying engraving shows a raft in which one end of each log is bored through near its end for the passage of an iron rod, that may be of any desired length. It is provided at its ends with nuts for holding the side logs upon the rod. The

opposite ends of the outside logs are then bored (as shown in the engraving) for the passage of a similar rod. This rod when it is placed passes through the ends of the outside logs



and over the ends of the inner logs, and when in this position one end of a small rod or wire is secured to the rod and then wrapped around each log and over the rod, and finally secured to the rod. A raft of logs formed in this manner binds all the logs firmly together, obviating all danger of the loss of logs, and is not expensive, as the rods and wire are not subject to wear, and may be used over and over.

An Army Surgeon on Shoes.

At a recent meeting of the Hygienic Congress at Geneva, Colonel Ziegler, who is chief surgeon of the Federal army, read a paper on the evil effects of badly made shoes, with special reference to the hygiene and the marching power of soldiers. Colonel Ziegler mentioned that the Swiss examining surgeons are compelled to reject every year 800 recruits—the strength of a battalion—for malformation of the feet, resulting from badly fitting shoes. The foot is in reality a bow, so elastic that, at every step, it contracts and expands, lengthens and shortens, and a line drawn through the center of the great toe intersects the heel. But shoemakers, who are generally utterly ignorant of the anatomy of the foot, do not give room enough for the lateral extension of the great toe. They crib, cabin, and confine it until it is forced against the other toes. Hence arise frequent inflammations of the great toe, corns, ulcerations, and sometimes veritable articular inflammation. Another evil, which Colonel Ziegler ascribes in great measure to bad shoeing, is flat-footedness, whereby the arch is converted into a straight line, and prolonged walking and marching rendered impossible. Another cause of this defect is the habit of carrying heavy weights at an early age; but in most instances, Colonel Ziegler contends, perfect shoes would restore the foot to its normal condition. The first obstacle to a reform in the shape of shoes lies in the fact that it would involve a great expense in the shape of new lasts, an expense that shoemakers are naturally loth to incur. Fashion has also its lasts, and shoemakers consider themselves bound to conform to the prevailing mode. A test of a perfect pair of shoes is that, when placed together, they should touch only at the toes and heels; the soles should follow the sinuosities of the feet, and, to give room for their expansion, should exceed them in length by fifteen to twenty millimeters.

Fatal Explosion of Fireworks.

A short time since mention was made of the experiments of Professor Jackson, pyrotechnist, of Philadelphia, demonstrating the highly explosive character of colored fires under favorable conditions.

The warning given seems not to have been heeded; at any rate a frightful accident with colored fires sadly marred the festivities in Fairmount Park, Philadelphia, on the evening of October 24, during a pyrotechnic display forming part of the celebration of the Penn Bicentenary.

From some unexplained cause a large iron mortar, which was used for projecting the bombs filled with colored stars, exploded with terrific force, scattering fragments of iron among the bystanders, killing several persons and wounding others. The mortar was of three-eighths inch iron, and evidently not intended to withstand more than a light charge of powder. The untimely bursting of a bomb in it was followed by much more violent effects than would seem to have been possible with the amount of explosives involved, unless the latter were of more than ordinary explosive force. It is probable that the colored stars were important factors in producing the disaster.

Aerial Photography and Telephony.

The Municipal Council of Paris having voted a grant of 1,000 francs to the Academy of Meteorological Ascension for the purpose of making experiments in aerial photography, an ascent was lately made by members of the Academy from the Carrefour de l'Observatoire. They carried with them an apparatus for taking instantaneous photographs. This had six lenses pointing to different directions, so as to embrace the whole of the horizon and to produce a panoramic photograph. The balloon rose 200 meters. A telephone was afterward fitted up in the car to enable the occupants to communicate with their friends below.

THE dimensions of the Union arch of the Washington aqueduct, it would appear, exceed those of any of the celebrated engineering structures which are most commonly pointed to as wonderful achievements in masonry. The entire span is 220 feet, or twenty in excess of the span of the famous Chester arch across the Dee in England; 68 feet longer than the central arch of London Bridge; 92 feet longer than the noted bridge over the Seine at Neuilly, and 100 feet longer than the arches of the Waterloo Bridge over the Thames. The height of the Washington arch is 101 feet.