

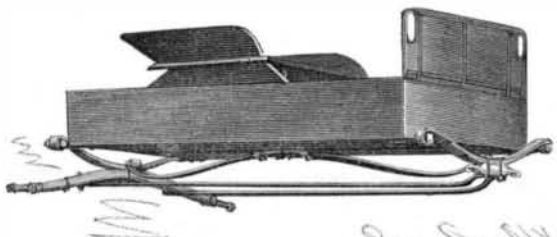
Safety Railway Couplings.

The Amalgamated Society of Railway Servants has invited all owners and inventors of improved safety railway carriage or wagon couplings to communicate with its secretary at the rooms of the Society, 306 City Road, London, E. C., with a view of giving their inventions a practical trial in actual service. The sum of £500 has been set aside by the Society for this purpose. The desirability of such an action is shown by the statistics of the past few years. During the year 1884, 130 persons in Great Britain were killed while shunting cars, and 1,305 were injured. During the seven years preceding 1885, the yearly average of accidents gave 154 killed and 1,322 injured from this cause. In the United States, 459 men were killed in the same manner during 1884.

It is estimated that one man is killed here for each 765,000 freight-train miles, while in England the record is somewhat better, being one man to each 1,010,000 miles. Our readers are familiar with the effort of the Master Car Builders' Association in attempting to decide upon the best coupler among the many good ones of American inventions, and their desire to have it uniformly adopted on all American roads. The problem is somewhat less complicated in England on account of the uniformity of the central drawbar and chain, but it is stated that no satisfactory substitute for the simple hand coupler now in use has yet been invented.

VEHICLE SPRING.

Clips hold the front spring and the front ends of the perches connected with the rear axle to the head block, the nuts of the clips being in recesses in the bottom edges of the block; the rear spring is secured to the center of the axle in the usual manner. The ends of these



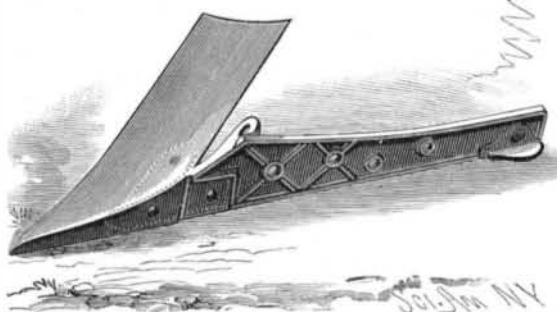
CAIN'S VEHICLE SPRING.

springs are pivotally connected at their outer ends with the four corners of the vehicle body. Longitudinally along the center of the under side of the body is attached a strip or sill, to which the thicker inner ends of brace springs are secured. These springs extend to the ends of the box, and their outer ends are curved and fastened to bolts held on the ends of inwardly and upwardly projecting prongs, held on the head block by the clips and the king bolt, and on the rear axle by clips. The center of the body is thus supported from the front and rear axles. The vehicle rides very easily and gently, as the several springs co-operate, and no side bars, side springs, nor spring bars are required.

This invention has been patented by Mr. Cornelius H. Cain, of 1223 Olive Street, St. Louis, Mo.

IMPROVED PLOW.

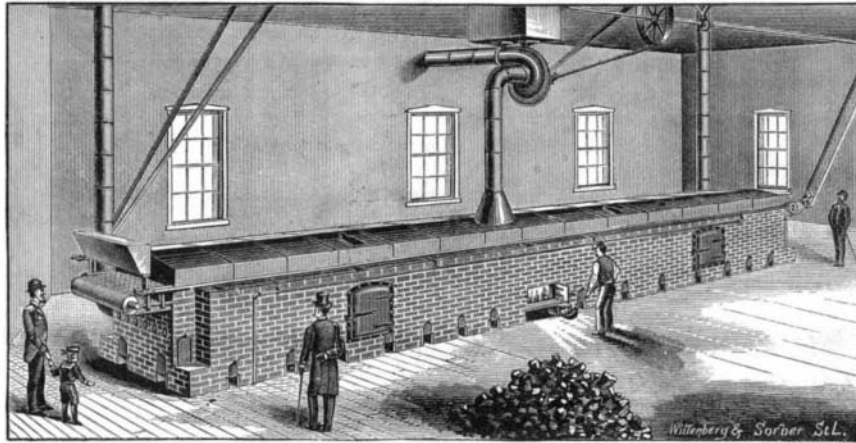
The share is formed solid with the short landside, and fits into a recess in the lower forward part of the extension or long landside. This extension is strengthened and stiffened by flanges and ribs, as shown in the engraving, and is formed with holes that receive the bolts for fastening the landside plate in position; this construction allows the extension to be made lighter than would otherwise be practicable, and at the same time provides a secure and firm support for the plate. Upon



HODGSON'S IMPROVED PLOW.

the inner forward part of the landside are lugs (shown by the full and dotted lines), that receive the bolts holding the share and mouldboard in place; these lugs allow the share and mouldboard to be fitted into place more easily than would be possible if a solid frog or dead lay were used. The lug can be so formed that the same landside can be used with either a single

slim or double shim mouldboard. The heel is secured to the landside by a bolt passing through two parallel lugs projecting upward from the middle part, the landside entering between the lugs. The projecting side parts of the heel are made narrower at their outer ends, and the narrow end of the outside one is placed for-



WORRELL'S "WEB" DRIER.

ward. The outer part of the heel is forced into the soil at the base of the shoulder of the furrow, thereby giving steadiness to the plow. When one side becomes worn, the heel can be detached and reversed. If desired, the lugs can be extended, and connected at their ends to form an open welded or cast frog, to be used instead of a solid frog or dead lay when applied to a steel, cast iron, or wrought iron landside.

This plow is the invention of Mr. W. H. Hodgson, Gen. Mgr. of the Winona Plow Co., of Winona, Minn.

IMPROVED DRIER FOR DAMP GRAIN, GLUCOSE, STARCH, ETC.

We herewith illustrate a new invention for drying starch and glucose refuse, brewers' grains, distillery slops, and substances of a similar character, which, from their glutinous nature, have not heretofore been successfully operated upon by existing drying machines. It is also well adapted for handling damp grain and granulated tobacco. The main feature is an endless web or belt of galvanized wire cloth drawn over two large rollers, one journaled at each end of the machine. The edges of this web are sustained by iron plates, which also prevent the escape of hot air at the sides. A number of "idlers" are also provided for supporting the wire cloth and material being dried. The furnace is underneath the drying belt, the firebox being in the middle, and from each side of this extend a number of cast iron heating pipes, that discharge into a soot box at each end of the drier. The entire heating apparatus is covered by dust shields. The brickwork around the furnace prevents the loss of heat by radiation, and furnishes a substantial support for the running gear. Numerous small gates are placed in the bottom of this wall for regulating the distribution of the air currents. The furnace presents a large amount of heating surfaces, means for producing a regular radiation of heat, and easy access for cleaning purposes. Any kind of fuel can be used.

The top of the machine is a close-fitting sheet iron cover, to which is connected the suction spout of a powerful exhaust fan, seen in the top of the cut, to accelerate the upward movement of the hot air, which is the sole drying agent. Drain pipes are supplied for disposing of the condensed water that collects on the interior of the iron cover. Motion is transmitted to the drying web by worm gearing, shown at the extreme right.

In operation, the damp material is spread to an even thickness across the entire width of the upper wire cloth by a sifting device in the bottom of the hopper, at the left of the cut. This action leaves the substance to be dried in a loose, porous condition, so that the air can freely pass through it. By the movement of the web the material is now carried into the machine, where the heat brings the moisture to the surfaces of the particles, and it is absorbed by the air and carried up and discharged through the blower. This action is continued until the material reaches the opposite end of the machine, where it is discharged in a thoroughly dry condition. A revolving brush under the delivery roller removes any particles that may adhere to the wire cloth.

This invention has been patented by Mr. Stanley E. Worrell, of Hannibal, Mo.

POWDERED rice is said to have a great effect in stopping bleeding from fresh wounds.

Ships' Signals.

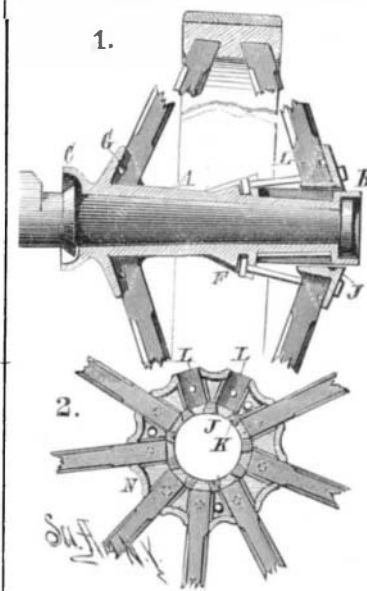
Mr. Donald C. Grant, one of the Forth Bridge staff, according to the *Engineer*, is bringing out a new form of signal for use at sea to indicate to other ships the direction of movement of the helm, so as to avoid collision with ships close up. He does not propose to supersede the side lights at present employed, but only to supplement them. The officer on watch is supplied with a couple of signals small enough to be carried in a breast coat-pocket of ordinary capacity.

Should he wish to indicate that his vessel is on the port tack, he takes a signal—with a round handle and colored red—from his pocket, and fires it by giving it a slight tap. The result is a brilliant red light.

After this light has burned for about 30 seconds, it explodes a small maroon, the report of which can be heard a mile off, and after this the light continues to burn for another 30 seconds. The process of firing the starboard tack signal is, of course, the same, the result being a green light, but in this case the handle is square, this difference of form making it easy in the dark to distinguish the right signal to be employed.

VEHICLE WHEEL.

Fig. 1 is a cross sectional elevation, and Fig. 2 is a front view, of the front ring of a vehicle wheel invented by Mr. Henry B. Weinstock, of Fall Creek, Wis. On the front and rear ends of the tapered hub-thimble,

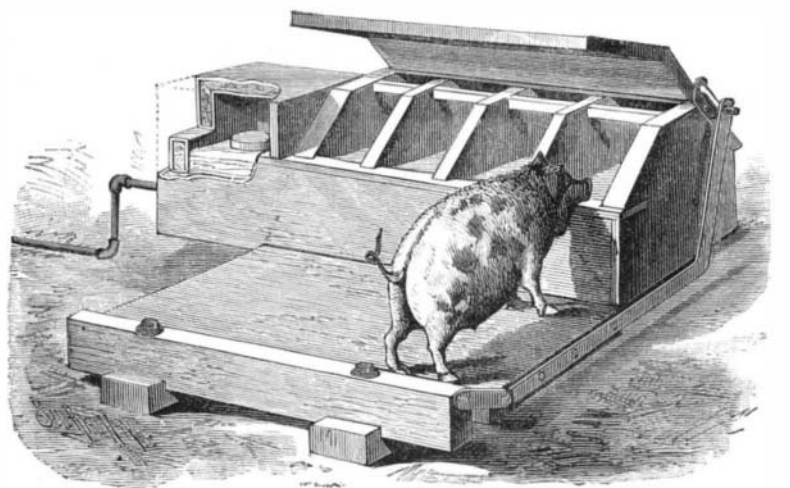


A, are the sand guard flanges, B, C. Cast on the thimble a short distance from the front end is a ring or lug, F; and at the rear end is a ring of pockets, G, provided with pins and open toward the front. Fitting on the front end of the thimble is the ring, J, formed with three longitudinal grooves, K, in its inner side for receiving tapered keys cast on the thimble. This ring has as many

pockets as there are pockets, G, on the thimble. The ends of the rear spokes are placed in the pockets, G, the pins passing into the outer faces of the spokes, and the ends of the front spokes are placed in the pockets in the ring, J, the pins entering their outer edges. The outer ends of the spokes are mortised in a wide felly. The ring, J, is held by bolts, the heads of which are held in recessed lugs on the thimble, as shown clearly in Fig. 1. This construction forms a strong and durable wheel.

AN AUTOMATIC AND NON-FREEZING STOCK WATERING TROUGH.

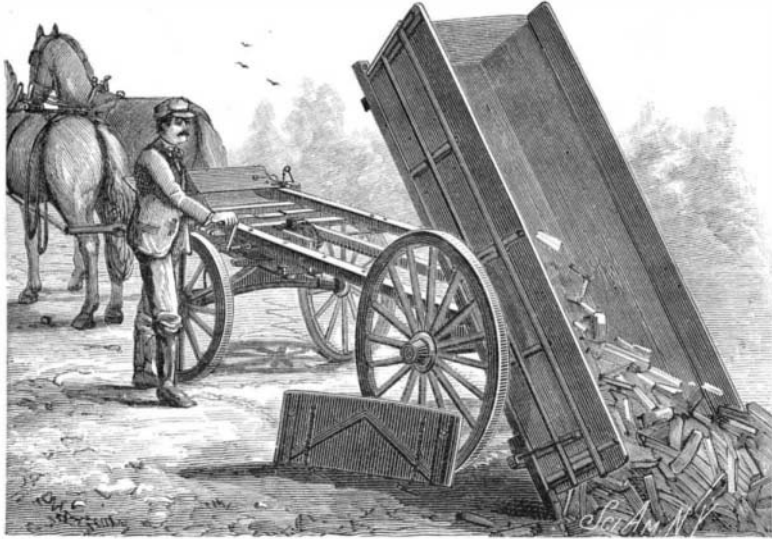
Farmers and stock raisers will find, in the contrivance for watering stock herewith illustrated, a con-



BOIES' STOCK WATERING TROUGH.

struction calculated to save time and trouble, promote cleanliness, prevent waste of water, and yet always perform the service required. The platform in front of the trough is arranged to have an up and down movement, and is so connected by short rods, and a crank rod and crank arms, with the cover that when the hog or other animal steps upon it the cover will be

raised, as seen in the illustration; and when the animal steps off, the platform will return to its normal position, and the cover will automatically close over the trough, the cross bars across the top preventing the stock from putting their feet in the trough, and defiling the water. The trough is made in two compartments, of which the one at the left, in the engraving, receives water direct from a tank or reservoir. This compartment is connected with the other by an opening, so that the water will always stand at the same height in both compartments, but the height of the water in the first division is controlled by a stop cock



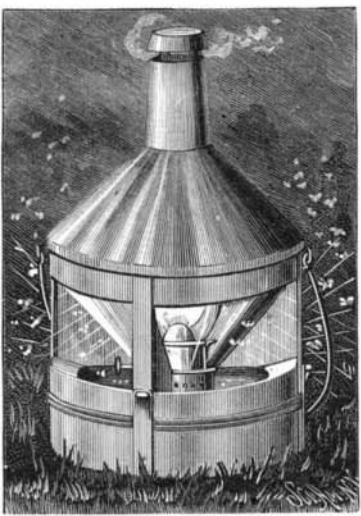
McFARLAND'S DUMPING WAGON.

actuated by a float, which admits water when it falls below a certain level and cuts off the supply as it rises above that level, so that there can be no overflow or waste of water. The sides, ends, and bottoms of the trough, and its covers, are all made with double walls, the space between them being carefully packed with asbestos millboard, as a non-conductor of cold or heat, making a substantial protection against the freezing of the water in cold weather, a difficulty which many of the farmers in some of our Western States, where water is scarce, have found to be a most serious one. The cover has a small aperture with which the interior of the trough may be ventilated, and the interior partitions are so made that they can be readily removed for cleaning.

This invention has been patented by Mr. Thaddeus W. Boies, of Beloit, Kan.

INSECT DESTROYER.

During the past summer the insect destroyer shown in the accompanying engraving gave most satisfactory results during thorough and practical tests by the inventor, Mr. Dudley H. Manning, of Sibley, Iowa. The under surface of the conical top, through the center of which the chimney passes, is bright, as are also the partitions that extend inward from the upright of the frame and carry the socket for receiving the lamp.



Panes of glass are held between the inclined inner edges of these partitions, thus forming an inverted conical glass casing around the lamp. The entire apparatus is placed on top of a vessel partly filled with water. The various mirrors reflect the light upon the water, illuminating it very brightly. Insects of nocturnal habits—moths, beetles, etc.—fly toward the light and into the brightly illuminated water, where they perish, or, striking the cone, are thrown downward into the water. An inverted conical ring placed just above the water prevents their escape. The water in the pail may be poisoned or may be sweetened. The top can be easily detached from the base, and the whole apparatus can be carried from place to place by the bail.

MESSRS. PEARS, the celebrated English soap makers, and remarkable for the extent and novelty of their advertisements, offered some time ago a prize of £100 for the best essay on "The Depression of Trade." The general purport of the essays is to the effect that depressions are periodical, and followed by activity; that the present depression is not worse than others that have preceded it; that a future of prosperity must be close at hand; that the causes of the depression are most complex, and the remedies must be similarly various.

AN IMPROVED DUMPING WAGON.

From the accompanying picture the reader can readily understand the general principles on which this wagon is built, but it has some novel features calculated to attract the attention of makers and users of wagons of this character. The box and its supporting frame are slightly wider at the rear than in front, yet the guide pieces are made to work back and forth in parallel lines, so that the box will readily free the load in dumping, while the gear for moving the box is at the back of the chair of the wagon, where the front wheels will come back of it and not interfere with turning the wagon in short curves. The operation of the shafts and intermeshing gear wheels, in connection with the connecting rod and rack, for moving the box of the wagon back and forward, will be readily understood from the engraving, there being hooked guide plates on the sliding frame of the box that engage pinions on the sills of the wagon to limit the backward movement of the box.

There are also plates on the forward end of the sliding frame of the box, which lock in loops on the sills as the box is moved forward, the locking devices preventing bouncing of the box when the wagon is going over rough roads or pavement.

This invention has been patented by Mr. James McFarland, of 235 Main St., Louisville, Kentucky, and wagons are being made according thereto at the factory of Mr. William Tingley, No. 231 East Main Street, in that city.

HAMMER FOR WELDING LOCOMOTIVE FRAMES.

Near the center of the base plate is mounted a steam hammer, grouped in a circle around which are three furnaces, the one in front being provided with two fires and used for heating the main frame and braces, and the side ones for heating the legs of the pedestals. In the front edges of the standards of the hammer are grooved guides, in which slides the hammer head, provided with removable plates carrying the various dies used in welding the different parts of the frame. The anvil is made with an extension placed between the standards, and fastened by a bolt and nut to the base plate of the hammer. A slot in the extension, through which the bolt passes, makes the anvil adjustable, so as to weld on its center or on its front horn, as desired. On top of the anvil are guide stops, against which rests the rear edge of the pedestal of the frame while being welded, and it is provided on each side with pivoted catches to hold the pedestal in place. At each side of the standards is a davit for lifting and swinging the legs of the pedestal to and from the hammer and side furnaces. The main base plate carries a swinging crane having chains, pulleys, runners, etc., to which the pedestal of the frame is attached near its ends, so as to be easily manipulated under the hammer, and be swung to and from the main furnace. Passing through holes near the lower ends of the side plates are steel pins; on one pin is a bushing for forging the rounded outside part of the pedestal to which the legs are welded, and on the other pin is a die shaped to forge the inclined inside of the pedestal.

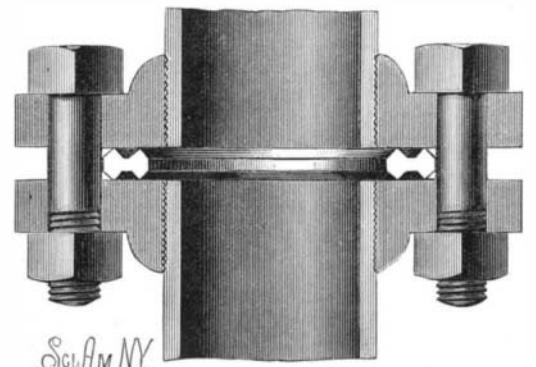
Fastened between the plates by pins is a center bar, Fig. 3, which reaches to and enters a recess in the bottom of the hammer head. The dabs to be welded are placed between the bushing and die, when the hammer head strikes the dab through the center bar and forges it to the leg, as shown by the dotted lines, Fig. 3. The bushing and its pin, and the center bar, are then removed, and the leg of the pedestal is placed between the plates and against the die, when the bushing is replaced. The pedestal of the frame to which the leg is to be welded having been formed under the hammer to the desired shape for the lower end of the leg, the frame is swung from the main furnace to the anvil, and the heated leg set in position on it, as shown by the dotted lines in Fig. 1. The hammer head then strikes the top of the leg and forges it to the pedestal, the bushing, die, and side plates acting as guides for the leg. On the lower end of the outer plate is a

steel cutter that assists in welding, and cuts the sides to the proper size of the pedestals. The leg can be taken from the plates by removing the bushing. Fig. 4 is a front elevation of the hammer block, showing a die for welding the braces to the frame. The braces are heated with the main frame over the front furnace, which is provided with two fires.

The difficulty of obtaining perfectly welded locomotive frames by blows of heavy sledges is well known; but by means of the hammer above described each weld can be perfectly made, and the parts can be easily handled and brought under the hammer. The inventor of this hammer, Mr. John R. James, of Dunkirk, N. Y., is confident that with this hammer and the aid of three men he can do more and far superior work than with seven men in the old way.

PACKING FOR STEAM PIPE JOINT.

The accompanying illustration represents two meeting lengths of pipe, each of which is threaded to engage with an internally threaded coupling flange. The flanges are united by bolts in the ordinary way, but instead of the usual rubber or soft metal packing ring, a steel or iron ring is placed between the flanges. This ring consists essentially of two or more concentric ridges projecting from each side of a central web. The bearing edges of these ridges are V-shaped, and all are of the same height; and, being sharp and preferably made of steel, they will, to a certain extent, cut into the flanges. It will be seen that the packing ring may



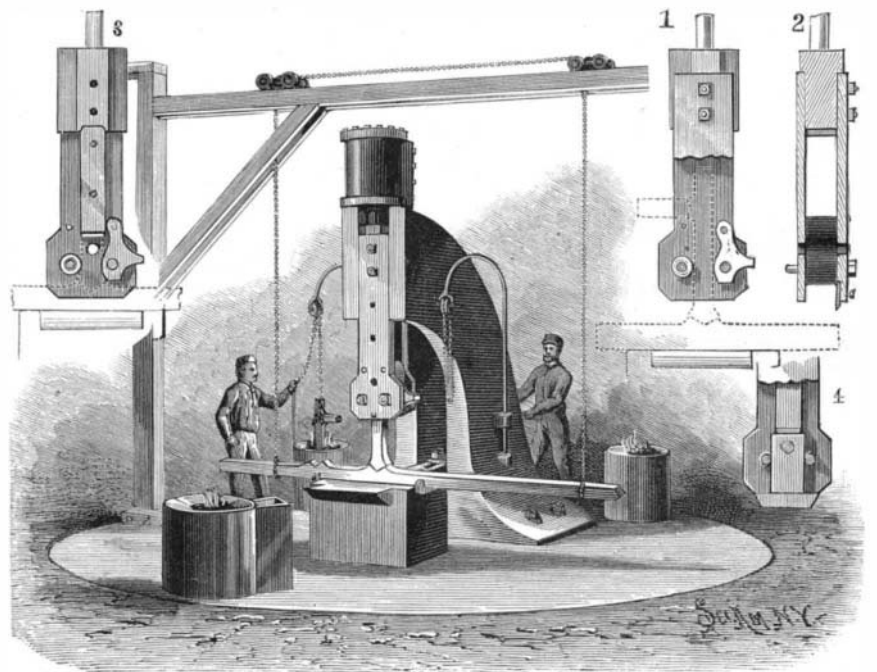
LYONS' PACKING FOR STEAM PIPE JOINT.

be used upon the ordinary form of flanged coupling piece, without the slightest alteration of the coupling. This packing is more particularly designed for use when the joint is subjected to a high degree of heat.

This invention has been patented by Mr. J. B. Lyons; further particulars can be obtained by addressing F. L. Hirschmann, M.D., of Norway, Mich.

Artificial Leather.

Artificial leather is, according to a French invention recently patented, made by a cotton fabric, the warp threads of which are very slightly twisted, and the weft threads of which are finer than usual. This fabric is serrated on both sides, and immersed in a preparation consisting of a decoction of linseed, rabbit skin glue, linseed oil, and coloring matter. When the fabric is impregnated with this preparation, it is stretched upon a polished zinc plate laid upon a steam heated hot



JAMES' HAMMER FOR WELDING LOCOMOTIVE FRAMES.

plate, the drying being continued until the aqueous portion is entirely evaporated. It is claimed that this artificial leather is an excellent imitation of the real thing.

FARADAY proved the magnetic condition of matter, and that magnetism, unlike electricity, cannot be insulated.