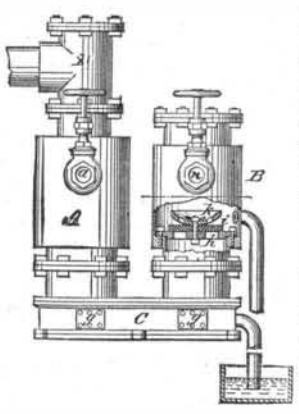
ENGINEERING INVENTIONS.

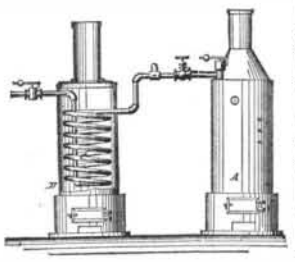
Condenser for Steam Engines.

The device illustrated by the accompanying engraving is an improved condenser for steam engines, in which the vacuum is maintained and is so constructed as to be easy of access to the interior fer cleaning. A is the water chamber, and B the air chamber, both of cylindrical form, and are both secured in an upright position on the hollow base, C. The water cylinder is provided with a pipe for supply of cold water, the pipe having a valve for regulating the supply, and the upper end of the cylinder is formed with a short tube having flanges, to which is bolted a T coupling for connecting the exhaust pipe of the engine. On the upper end of the cylinder is attached a cap. The object of this construction is to save stopping the engine for any length of time when the condenser requires cleaning or repairs. In that case the cap will be removed, a pipe secured in its place, and a plate placed between the T and the tube on top of the cylinder, and the engine then may be run by high pressure. From the end of the base, C, a discharge pipe extends into a tank that contains water to prevent air entering the base, and on the sides of the base are manholes for cleaning it out. In the air chamber, B, is fixed a perforated plate on which is secured a disk valve of flexible material, and above it is a guard that limits the movements of the valve in opening. The cylinder has a discharge pipe for air, and a removable cap is placed on the cylinder to allow access to the valve. When the exhaust steam enters the condenser the shock will raise the valve, and the air will pass out of the pipe, thereby insuring an instantaneous vacuum, the closure of the valve on its seat preventing any return of air This condenser is patented by Mr. Richard E. Williams, of Grass Valley, Nevada county, Cal.



Superheater for Steam.

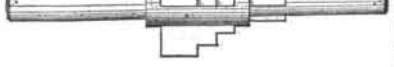
Mr. John Fish, of Summit, Union county, N. J., has patented a new and useful combined steam generator and superheater, that is shown in the accompanying engraving. A is a steam generator, from the steam space of which a pipe leads to a coiled pipe within the furnace, D, forming the superheater, and from the coiled pipe a pipe leads to the place where the steam is to be used. The generator is provided with a safety valve placed in the ordinary manner, and the pipe leading from the generator has a stop valve for preventing the escape of steam from the generator when desired. This pipe is also provided with a check valve opening toward the superheater. The discharge pipe of the superheater has a throttle valve so that the superheated steam may be detained in the heater until raised to the desired temperature, and between the throttle valve and the heater is a safety valve to prevent the pressure of the steam in the heater from rising to a dangerous point. When thus constructed and the throttle valve is closed, the steam can be superheated until its pressure reaches the point at which the safety valve is set, and drawn off when desired through the throttle valve, and the check valve prevents any back pressure on the generator from the superheated steam, so that a generator of ordinary strength can be used.



MECHANICAL INVENTIONS.

Expanding Mandrel.

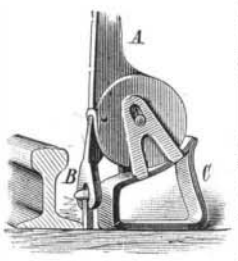
An improvement in expanding mandrels for use in the manufacture of eccentrics, nuts, bands, etc., is patented by Mr. William H. Nicholson, of Wilkesbarre, Luzerne county, Pa., and is shown in the annexed cut. A plain tapered arbor or mandrel adapted to be held between the centers of a lathe has placed upon it a straight sleeve, that is of greater internal diameter than the external diameter of the arbor, and is formed with longitudinal slots. Notched arms are fitted in the slots, and are projected therefrom by the arbor which bears upon them, their outward projection being limited by lugs at their ends, taking hold beneath the sleeve. The arms are tapered on their inner edges to correspond with the taper of the arbor, so that their outer edges shall be parallel with its axis. The outer edges are formed so as to be adapted to the work they are to hold, and by forcing the tapering arbor, endwise, the arms are projected so as to take frictional hold of the work, and by forcing it in the opposite direction the work is released. This mandrel is peculiarly adapted to holding the various kinds of work for which expanding mandrels are used.



Railroad Spike Extractor.

Messrs. William B. Turner, of Long Island City, Queens county, N. Y., and Albert P. Prout, of Woodhaven, same county and State, have patented a new and improved claw-bar for drawing railroad spikes, which is shown in the annexed engraving.

A is a lever whose lower end is enlarged eccentrically, and is slotted edgewise or from front to rear to permit the claw, B, to swing freely, and to afford lateral bearings to the side arms or supports of the swinging fulcrum, C. On a transverse pin on one side of the eccentric the claw, B, is pivoted so as to hang in a perpendicular line with the handle of the lever. Through the center of the eccentric is passed a rod from whose outer ends is suspended the swinging fulcrum, C, by means of side hangers or supports whose eyes are slotted so that the fulcrum may adjust itself in suitable position as a bearing for the lever, A. The claw-bar may be applied to spikes between contiguous rails, where great difficulty is experienced in applying an ordinary claw-bar, by resting the lower edge of the eccentric on the top of the rail; with the bar, A, inclined slightly rearward, the claw may easily grasp the spike, and by motion of the lever drawn, the swinging fulcrum resting unused on the outside of the rail.



Sash Fastener and Holder.

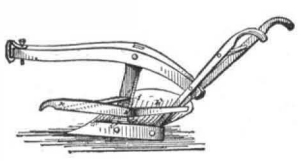
We find among recent inventions a new sash fastener and holder that is automatic, and so constructed that it is not necessary to hold back the latch with one hand while raising and lowering the sash. It is shown in the annexed cut, and is patented by Mr. Harry Greenfield, of Harrison, Hudson county, N. J. The device consists of a locking catch, A, a holding catch, B, and holders, C, of which there may be two or more secured to the frame of the window for holding the window at different heights.

The locking catch is formed with a cam projection, and is loosely pivoted to a lug formed on a plate screwed to the window frame. The holding catch, B, is formed at its lower end with a rounded nose and a finger lift, and is loosely pivoted to a plate secured to the sash by suitable means, and the holder, C, is formed with an overhanging deflector, under which is a detent to receive the nose of the catch. The plate of the holding catch is secured to the sash is such position that the nose of the catch will ride on the window frame, and when the sash is lowered it will ride over the projector of the locking catch and drop under it and lock the window, and when the sash is raised will drop into the detent of the holder and support the window.

AGRICULTURAL INVENTION.

A New Plow Attachment.

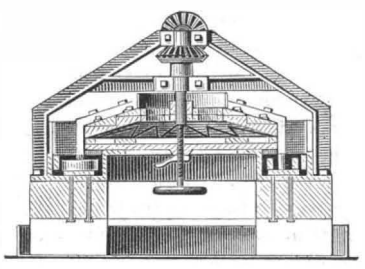
Mr. Thomas P. Wise, of Gravel Hill, Buckingham county, Va., has patented a new and improved attachment to be secured to the land side of a plow, which will cut away a slice of surface of the soil, between the plow and the plants to be cultivated, removing the grass and weeds and carrying them into the furrow in the rear of the plow. The standard of the plow is of ordinary construction, and is provided with a series of recesses and holes, to which an inclined horizontal cutting blade provided with a shoulder on its inner end and a threaded screw may be attached by a corresponding nut, and may be adjusted up or down as desired. The blade may be cast so as to be slightly elevated at its outer end when attached to the standard. The cutting edge of the blade projects out forward beyond the upper edge of the mould board and in line therewith. A wing is firmly secured to the outer end of the blade at right angles to it and parallel to the land side of the plow, and at its rear end is bent inwardly. The front end of the wing is provided with a downwardly projecting hook, adapted to run under vines and cause them to ride over the upper edge of the wing, the rear bent end carrying them into the furrow. The invention is shown by the annexed cut.



METALLURGICAL INVENTION.

Ore Grinding Mill.

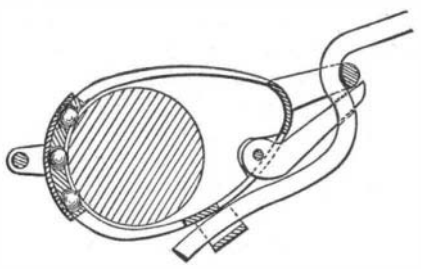
Mr. William E. Harris, of New York city, has invented and patented an improved ore grinding mill, by which the grinding and preparation of ores of all kinds is greatly facilitated. The accompanying engraving shows the construction of the mill. To the upper part of the frame of the machine is attached bearings, in which revolves a horizontal shaft, having upon its outer end a fast and a loose pulley. To the inner end of this shaft is secured a bevel gear wheel, which meshes into the teeth of a bevel gear wheel placed upon the vertical shaft, and connected with it by a slot and feather so that the gear wheel will carry the shaft and also allow it to move up and down freely. The bevel gear wheel is kept to its place by the collar attached to the frame. To the lower end of the shaft is secured the upper grinding plate, which is strengthened by a plate bolted to its upper side and to which is attached the hopper to receive the ore. The lower face of the upper grinding plate is made conical, and has V-shaped grooves dressed in it to facilitate breaking the ore. The face of the lower grinding plate has radial grooves formed to operate in connection with the V shaped grooves in the upper grinding plate. The lower plate is bolted to a strengthening plate which is bolted to a ring flange formed around the upper inner edge of the ring trough. To the upper side of the strengthening plate are bolted angular arms, the lower ends of which project into the trough and have their lower ends rounded to serve as journals for the ring plates placed within the trough and resting upon a lining plate attached to the bottom of said trough. To the inner surface of the outer sides of the trough are also bolted lining plates, against which the outer sides of the ring plates work. The lining plates of the trough are dressed with grooves. Through a screw hole in the strengthening plate passes a hand screw upon which rests the lower end of the upright shaft. With this screw the upper grinding plate may be adjusted at any desired distance from the lower plate, as the character of the ore may require. As the ore is fed into the hopper it passes between the grinding plates and is crushed, and fed outward by centrifugal force, and escapes into the trough, where it is further ground, the pulverized ore escaping through a screen into a receiver.



MISCELLANEOUS INVENTIONS.

Shaft Loop for Harness.

Among the recently patented novelties is a new shaft loop for harness saddles, that is so constructed that the shafts of the wagon can slide through it very easily, and at the same time is more durable than those in use heretofore. It is clearly shown in the engraving. A buckle frame is rigidly formed to the upper end of the shaft loop of a harness saddle, and the tongue of the buckle is rigidly pivoted to the side of the loop. The lower part of the loop is provided with a series of recesses in which balls are placed, which are held in the recesses by a plate fastened on the under outer side of the shaft loop, and they project slightly from the inner surface of the loop, so that the shaft will rest on them and they will revolve as the shaft passes backward and forward through the loop. By providing the shaft loop with an anti-friction bearing for the shafts the defects of the ordinary shaft loop are avoided, for if there is no friction between the shaft and the loop to move the latter, there will be no chafing of harness or animal. With this bearing for the shafts the buckle of the loop need not be pivoted, but may be made rigid, and will be stronger than the ordinary method. This device is patented by Mr. Peter Casey, of Providence, Providence county, R. I.



Improved Cotton Whipper.

A new and improved device for whipping and cleaning cotton was recently patented by Rose H. Goldsmith, of Charleston, Charleston county, S. C., and is illustrated by the accompanying engraving. A is a box of oblong form and has an inclined bottom formed of wire cloth. At its upper end is a feed spout, in which is placed the cotton to be whipped, and a shaft, B, carrying whipper arms that are arranged spirally around it and extend nearly in contact with the rounder wire bottom of the box. On the upper end of the shaft, B, and within the spout are arranged arms that carry the cotton from the spout into the box, and at the lower end of the shaft is a delivery opening and spout. Parallel to the shaft, B, and above it is a shaft, on which is a roller provided with longitudinal blades, and the shafts are connected by a belt and pulleys, while the shaft, B, is provided with a bevel pinion, which