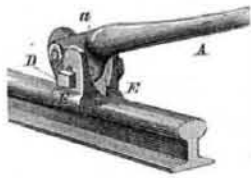


longitudinal grooves in the bolt, A, and at the same time pressing the lock upward on the bolt to lock the hasp on the staple, as shown.

**Car Starter.**

Mr. Charles B. Underhill, of Lancaster, Erie county, N. Y., has patented a very ingenious improvement in that class of devices that are designed to start and move cars on the rails, and is nicely illustrated by the annexed engraving.

A is a lever having in its slotted end a roller fixed on a transverse pin, the roller being designed to apply to a wheel of the car to be started. At a the lever is wedge-shaped in cross section, the point of the wedge being downward, and just above the end of the wedge the lever is transversely perforated to receive the fulcrum bolt, D. E E are like halves of the clamps of the starter, the lower parts of which are cut away on their insides to fit the rail. The inner faces of these halves slope upward and outward to their tips, and on their outer faces they are straight to the tops of their slotted holes, f, and thence to their tips are inclined outward. The fulcrum bolt passes through the holes, f, of the clamp, and a hole in the lever, the head of the bolt being in contact with one-half of the clamp, E, and the nut with the other. By throwing up the lever, A, to apply the starter, the broad part of the wedge is raised from between the halves of the clamp, E, and the fulcrum, D, is also raised to its utmost extent, thereby the clamp is loosened from the rail, and when thus loosened may be moved along the rail or wherever may be desired. When the starter is applied to move a car the lever is brought gradually down with its wedge portion between the clamp sections, the fulcrum bolt being at the same time pressed down in the holes, f, and thereby the clamps, E, are pressed outward and their jaws inward to grasp the rail, and the greater the pressure the more firmly the rail is grasped.

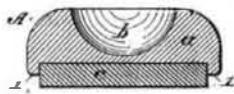


This starter is cheap, strong, durable, easily applied, and very effective.

**A New Furniture Socket.**

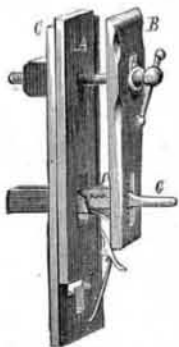
Casters placed upon the legs of furniture, by which it may be easily moved from place to place, are a great convenience, and they are sometimes also a source of annoyance, as they allow the furniture to move when it should remain stationary. This annoyance may be easily overcome by placing under each caster a device that has been lately patented by Charles Haring, of Watkins, Schuyler county, N. Y., and is illustrated by the annexed cut.

The device is a padded socket, composed of the body, that is made in circular form, with a recess in its upper surface, and a disk of rubber or other soft or elastic material, attached to the bottom by cement or other suitable means. The body is made of any durable material—such as wood, metal, or hard rubber—but iron is preferable, on account of cheapness and the weight assisting in holding the pad in place. The under side of the body is recessed to receive the disk, the annular shoulder of the recess setting down over the disk, protecting its edges and retaining it in place. The disk is made thick enough to prevent the contact of the body with the floor or carpet. In use the socket is placed beneath the furniture leg, with the caster wheel or end of the leg resting in the recess of the body. The recess prevents the leg from slipping from the socket, and the furniture is held from being accidentally moved.



**An Improved Bench Vice.**

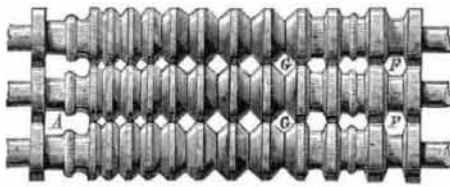
A cheap, convenient, and easily operated bench vice for carpenters' use has been lately patented by Mr. Jesse L. Parker, of Fountain City, Wayne Co., Ind. In the accompanying engraving, which illustrates the invention, A and B are the jaws of a vice, and C is a bench leg provided with a slot, to permit the up and down travel of the vise. A tenoned screw block is mortised into the jaw, B, its tenons moving in the bench leg, and its shoulders bearing against the inside of the leg. The upper screw passes into the block through the jaws, A, B, and draws them together. The screw block also serves to guide the vise up and down in the leg, C, and is held at any desired elevation by a lever, catch, and spring, upon the side of the leg. A notched treadle, G, designed for holding the lower ends of the jaws in any desired position, passes through and is pivoted to a longitudinally slotted block, F, which extends rearward through a corresponding opening in the jaw, B. The treadle extends outward from the jaw, A, for the convenience of the foot of the operator and is held in its desired position by a spring on its underside, and a catch plate on its upper side. It will be readily seen that this vise may be adjusted to any height and to any size with very little trouble to the operator.



**A New Machine for Rolling Rectangular Bars from Old Rails.**

Mr. John J. Thomas, of Zanesville, Muskingum county, O., has patented new and improved machinery for rolling

old railroad rails into merchantable bars. This work is accomplished by a set of grooved rollers, forming passes in the shape of a pear-head rail with a thickened base, and a series of decreasing regular and irregular hexagon passes, and flat hexagon passes having recesses in the flat side, and



also a series of square reducing passes gradually decreasing in size. The accompanying engraving illustrates the series of rollers.

The rail, being thoroughly and uniformly heated, is passed through the passes, A, B, and F, and is formed into a billet, which can be passed through the grooves, G, which gradually reduce its cross-section to such an extent as may be desired.

By this means the pieces of rail are converted into bars at a single heat, as the decrease and change in cross-section takes place in such a manner and so rapidly that the iron or steel cannot cool before it has passed through the machine.

**ELECTRICAL INVENTIONS.**

**A New System of Electrical Lighting.**

An ingeniously devised combination of a voltaic arc electric lamp with an air exhauster, arranged so that a vacuum may be continually maintained about the carbons, has been patented by Mr. Amedee M. G. Sebillot, of Denver, Arapahoe county, Colorado, of which the annexed cut is an illustration.

The carbons, A A', which are attached to carbon holders are contained in a globe, B, and are attached to pistons, D D', fitting in the cylinders, E E', between which the globe, B, is held, the ends of the cylinders fitting so closely against the globe as to form an airtight joint. The carbon-holding rods pass through packing boxes in the inner ends of the cylinders, E E'. Screwrods provided with milled buttons at the outer ends pass into threaded apertures in the pistons, D D'. By turning these screwrods the carbons may be adjusted. The screw rods are locked by screws, a a'. An air channel leads down through the wall of the cylinder, E', to a tube provided with a stopcock which connects to the main chamber, M', of the compound air pump, from which the air is continually pumped, so that when the globe and the tank are in communication there will be a vacuum in the globe, which will be maintained as the pumps operate continuously.



The lamp is contained within a parabolic mirror by which the rays of light are thrown horizontally and downward. This mirror is arranged in the form of an overhanging circular cornice on the top of a high tower, and a ring of the above described lamps is arranged within it and below the overhanging part. The globe of every lamp must be connected with the main tank of the air pump.

The compound air pump is composed of a series of air pumps which regularly and gradually decrease in size, so that the tank in which there is the most perfect vacuum will be the largest.

The carbon holders are connected to the poles of an electric generator of any suitable kind, and a derrick is provided for raising and lowering the device.

**New Electric Arc Lamp.**

We give an engraving of an improved electric arc lamp, lately patented by Mr. Henry B. Sheridan, of Cleveland, O. This lamp employs two or four carbon rods converging toward the point of combustion, and allowed to gravitate toward each other, by a friction escapement, controlled by a differential magnet placed in a shunt circuit, and affected by the fluctuations of the current.

The carbon rods are suspended by chains from drums of different diameters, the positive carbon being connected with the chain from the larger drum, and the negative carbon being connected with the chain from the smaller drum, so that notwithstanding the difference in the rate of the consumption of the two carbons, they always maintain the arc at the same point.

The construction is such that a strong current holds the carbons apart, and by means of a pawl and ratchet arrangement the feeding device separates them more or less, when the current is very strong; as, for example, when the carbons touch previous to lighting. In this case it separates them to form the arc, after which the regulation is accomplished for the greater part by releasing the arms as the current weakens, allowing the carbons to approach sufficiently to maintain the standard length of the arc.

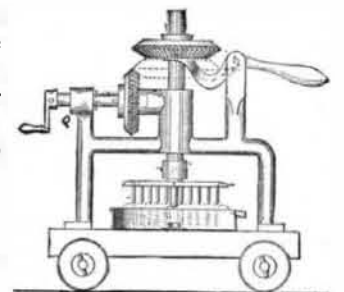


**METALLURGICAL INVENTION.**

**An Improved Amalgamator.**

A novel machine for amalgamating ores for the separation of the precious metals from the waste mineral matter has been patented by Mr. Angus McKellar, of Fort Douglass, Utah, and is illustrated by the annexed engraving.

Upon a platform mounted on wheels, so that the machine may be moved about, is a double vertical standard, Q, supporting a central sleeve, Through this sleeve passes an upright vertically adjustable shaft, on the top of which is keyed a bevel gear wheel, and on the bottom of which is held by a set screw a rake consisting of cross bars having downward projecting teeth. In an upright arm of the standard is pivoted a lever, whose forked end embraces the upright shaft just below its bevel gear wheel, whereby the shaft and rake can be elevated and lowered. Into the upper portion of the standard, Q, is journaled a horizontal shaft, to the inner end of which is attached a bevel gear wheel, and to its outer a crank, through which power is applied for operating the rake. Set loosely upon the platform is a settling and amalgamating pan, having in its center a step to receive the lower end of the rake shaft when the rake is in operation. At the upper edge of the pan is a discharge spout, for the purpose of carrying off the muddy water and smaller particles, and having a screen at its inner end to prevent the escape of the sand and metal. In the bottom of the pan is from one-fourth to one-eighth of an inch of quicksilver, when ready for work, and to this chemicals may be added if desired. Powdered mineral earth then being delivered into the pan, a small jet of water is also introduced at the center, and the rake being lowered by the forked lever, so that the gear wheel of the crank shaft shall mesh with the gear wheel of its shaft, the crank is turned, and the rake is rotated until the material is mixed to the consistence of mud, when the supply of earth is shut off and a larger supply of water added, and the rake is rotated in the opposite direction until muddy water ceases to flow. The operator then skims off the upper layer of sand and ore that is free from gold. The washing and skimming are repeated several times, when the pan is removed and its contents submitted to the usual operations for separating the gold and quicksilver.



**MISCELLANEOUS INVENTIONS.**

**New Picture Exhibitor.**

An invention for exhibiting ornamental cards, and which gives more ornamental effect than is ordinarily furnished, has been lately patented by Mr. Augustus Lueckel, of Brooklyn, N. Y.

This is a combination of a folding card with a supporting frame or easel. The supporting frame is a sheet of cardboard having a portion cut out, to form a supporting leg, which holds the frame at a proper inclination.

The folding card consists of a main portion attached to the cardboard, and leaf portions attached to the main portions by flexible connection, so that they may be folded down upon the main portion, or opened out, as shown in the engraving.



On the face of the main card is a picture, and both sides of the hinged portions are similarly ornamented, so that five separate pictures are given.

Around the edges of the body card is a bordering of ruffled or plain material, and fringe is added as a finish. The cards mounted in this way are highly ornamental, and are displayed to the best advantage.

**A Novel Spinning Top.**

Mr. Johnathan Hill, of New York city, has patented a novel spinning top, of which the accompanying engraving is a good illustration.

The top, A, is made of any suitable material, and is provided with the ordinary point, upon which it spins. In the center, at the top, is formed a screw hole, fitting loosely upon the screw-thread on the lower end of a spindle which passes through and runs freely in a hole formed in a slot at one end of the handle, E, and is retained in its place by a head formed above the handle, and a collar which fits tightly on the spindle under the handle.

The top is screwed to the spindle, and the spindle turned still further to wind a cord which is fastened to it in the recess of the handle. When the cord is drawn the spindle is turned in the direction to screw it into the top, and when it is wholly unwound it stops the spindle, and the momentum of the top causes it to run off the spindle and spin upon the surface, over which it is held until its momentum is exhausted.

