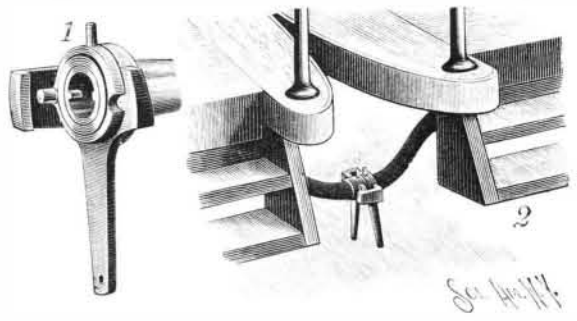
AN IMPROVED PIPE COUPLING.

A pipe coupling designed for use for steam heating purposes, air brakes, water hose, etc., has been patented by Mr. William M. Darrow, of Salem, N. Y., and is illustrated herewith, Fig. 1 showing one of the halves of the coupling. The coupling is formed of two sleeves, each with a recessed flange, and cam levers adapted to embrace the flanged sleeves and interlock. The flanges each have a stud which fits into a notch in the edge of the opposite flange, and each flange also has a stud to limit the turning of the flange and indicate when the two flanges are in position for coupling. In the bottom of the flange recess is a packing ring of soft lead or similar material, upon which is placed a contact ring or annular seat, firmly clamped upon the

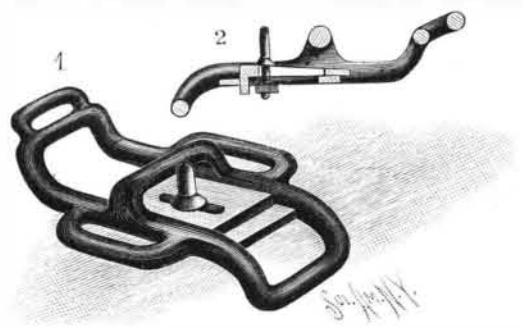


DARROW'S PIPE COUPLING.

packing ring. In arranging this coupling for use between cars, short chains attached to the cars are connected with the ends of the levers, so that when the cars pull apart, the couplings will be released by the turning of the levers by the chains.

AN IMPROVED BUCKLE.

A buckle designed more especially for use on harness, and having an adjustable wedge for clamping the strap or trace beneath a cross bar of the buckle frame, is shown in the accompanying illustration, Fig. 2 being a longitudinal section. This invention has been patented by George P. Cole, of Johnstown, N. Y. The buckle has a web extending across it from one side bar to the other, this web having a slot, and upon this web is placed a wedge also having a correspond-

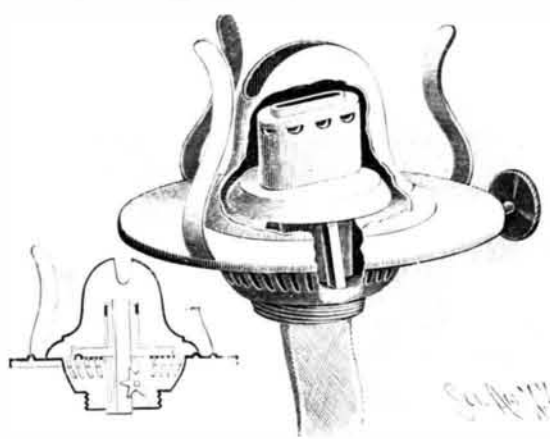


COLE'S BUCKLE.

ing slot. The shank of the buckle tongue extends through the slot of the wedge and that of the web, and is provided with a nut, the tongue being long enough to engage the elevated cross bar and having a shoulder which rests upon the outer face of the wedge. The wedge and the buckle tongue are drawn away as far as possible from the elevated cross bar in inserting a trace, and after the trace has been drawn through, the tongue is pushed back to enter the desired hole in the trace, and until the tongue comes against the cross bar; the wedge is then forced back as far as practicable, and the nut tightened to clamp both tongue and wedge in position.

AN IMPROVED LAMP BURNER.

A lamp burner designed to prevent sparks from



ELLIS' LAMP BURNER.

falling through the air tube, and prevent the tube from becoming clogged, while rendering the lamp non-explosive, is illustrated herewith, and has been patented by Mr. Stephen Ellis, of No. 1036 Grove Street, Jacksonville, Ill. Adjacent to the wick tube, on one side, is an air tube and on the other side is a gas tube, the upper end of each terminating in the perforated plate surrounding the burner, where they are covered by a detachable guard casing, which has openings in its sides near the top for the passage of air. The vertical portion of the guard casing is of such size as to form an air space surrounding the wick tube and permit air and gas to pass out. The lower portion of the burner surrounding the wick tube has side openings, permitting the outside air to enter and pass up through the perforated plate to the interior of the guardcasing and out through the openings near the flame, thus causing the gas generated in the oil chamber to be drawn up through the side tubes and carried off.

Sperrylite.

A new mineral of exceptional chemical interest has been discovered, says *Nature*, by Mr. Sperry, chemist to the Canadian Copper Company, of Sudbury, Ontario, Canada. It is an arsenide of platinum, $PtAs_2$, and is the first mineral yet found containing platinum as an important constituent, other than the natural alloys with various metals of the platinum group. A considerable quantity of the mineral, which takes the form of a heavy, brilliant sand composed of minute well defined crystals, has been thoroughly investigated by Professor Wells, who names it "sperrylite," after its discoverer, and the crystals have also been measured and very completely examined by Prof. Penfield. The sand is generally found to contain fragments of chalcopyrite, pyrrhotite, and silicates, which may be removed by treatment, first with aqua regia to remove sulphides, and afterward with hydrofluoric acid to remove silicates.

After this treatment the sperrylite sand is seen to have remarkably increased in brilliancy, every grain showing extremely brilliant crystal faces, of a tin white color, resembling that of metallic platinum itself. It is very heavy, possessing at 20° a specific gravity of 10·6. Strangely enough, however, although so heavy, the sand shows a marked tendency to float upon water, owing to its not being easily wet by that liquid; even when the grains do sink, they almost invariably carry down bubbles of air along with them.

This peculiar property is retained even after boiling with caustic potash and washing with alcohol and ether, and cannot therefore be attributed to any surface impurities. Sperrylite is only slightly attacked by the strongest aqua regia, even after boiling for days, and it also remains unchanged when heated in a bulb tube to the temperature of melted glass. Heated in an open tube, however, it gives off a portion of its arsenic as a sublimate of the trioxide, the residue then fusing. When dropped upon a piece of red hot platinum foil it melts, evolving white fumes of inodorous arsenious oxide, and forming a porous excrescence in colorresembling metallic platinum upon the surface of the foil.

Analyses show that sperrylite contains 52·5 per cent of platinum, mere traces of rhodium and palladium, in quantity less than 1 per cent, being also present. Prof. Penfield shows that the crystalline form is cubic, the habit being of the pyritohedral type of hemihedrism, very similar to the various members of the pyrites group, in which an atom of iron, nickel, or cobalt is united to two atoms of sulphur, arsenic, or antimony. The forms generally developed are the cube [100], octahedron [111], pyritohedron π [210], and occasionally the rhombic dodecahedron [110]. It is very curious that in the treatment with aqua regia, the cube and octahedron faces remain unattacked, while the acids exert a decided action upon the pyritohedral (pentagonal dodecahedral) faces, entirely destroying their power of reflecting light. The similarity between sperrylite and the pyrites of the iron group is rendered all the more important in view of the fact that the platinum and iron groups both occur in the same vertical row (the eighth) in Mendelejeff's periodic classification.

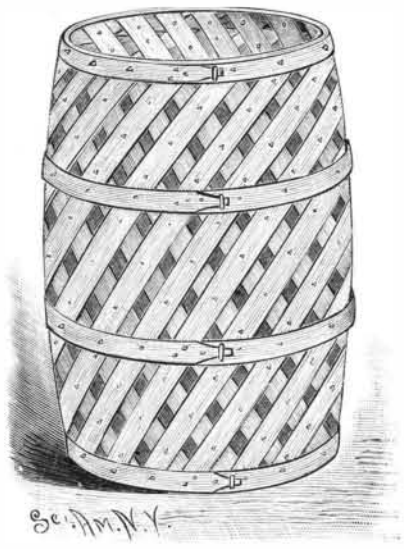
AN IMPROVED POTATO PLANTER.

The accompanying illustration represents a potato planter which forms the subject of a patent issued to Mr. John E. Ohlson, of Rockford, Washington Ter. The plow standard is provided with forwardly projecting frames, at the sides of which are located horizontal strips, held in place by bolts and nuts, so that the lower portion of the frames will be movable vertically. At the top of the standard is located a seed box, with a discharge chute extending downward to the rear of the plow. To adjust the plow for operation at different depths, pivoted links are employed, the handle lever of one of the links adjustably engaging a curved toothed bar mounted on one of the side arms, the frame and standard being mounted on the forked end piece of the pole of the machine.

A GERMAN photographer, Anshuetz, of Lissa, after some years' experiment in photographing the flight of cannon balls, has at last succeeded in obtaining photographs of the trajectory of balls moving at a velocity of 1,300 feet per second, with an exposure of only the ten-thousandth part of a second.

AN IMPROVED BARREL.

A barrel which is light, strong, and durable, and of such construction that the material carried therein will be thoroughly ventilated, is illustrated herewith, and has been patented by Mr. Isaac J. W. Adams, of



ADAMS' BARREL.

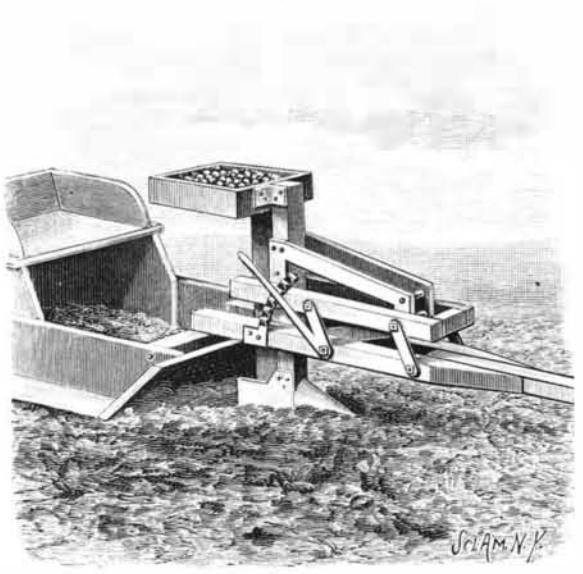
Laurel, Del. The body of the barrel is formed of two or more layers or thicknesses of splints crossing each other diagonally, the splints being nailed to each other and to the supporting hoops, as many hoops being employed as are deemed necessary or desirable. The head and bottom of the barrel may be put in in any desired manner.

AN IMPROVED MUSIC OR BOOK HOLDER.

A simple device for conveniently holding down the leaves of books in open position is illustrated herewith, and has been patented by Mr. Herbert O. Brown, of

BROWN'S MUSIC OR BOOK HOLDER.

Auckland, New Zealand. The small figure shows a side elevation of the holder, whose spring arms are adapted to embrace the edge of a shelf or other support on which the book rests, a finger being pivoted upon a rivet or screw extending into the central part of the clip. The finger has a long arm above the pivot, to bear in front of the lower part of the page of a book or sheet of music, and a short arm, with which a weight is integrally formed, to normally keep the finger in upright position. One or more of these clips may be used as desired. For further information relative to this invention address Mr. J. E. Brown, 28 Merchant Street, Honolulu, Hawaiian Islands.



OHLSON'S POTATO PLANTER.