test tube with a small quantity of iodine and several drops of caustic soda on potash, and gently heated. If there is any alcohol present a characteristic yellow crystalline precipitate of iodide of formyle is produced. According to Lieben, the presence of one part of alcohol in 2,000 parts of water can be recognized in this way.

EMPLOYMENT OF PHOSPHATES AS MORDANTS.

M. Collas proposes to employ phosphates as substitutes for alum. The goods to be dyed are immersed in a bath of acid phosphate of lime or magnesia, afterwards in a bath of coloring matter, and finally into an alkaline solution. The process is said to be particularly applicable to aniline colors, more especially to aniline purple. Lakes can also be prepared by use of phosphates, preferably phosphate of lime. Thus to prepare a lake of cochineal an infusion of the color is first made ready and a gelatinous precipitate of phosphate is added, the mixture is powerfully agitated for some time. The coloring matter will be found to be as completely precipitated as it is with alumina. Insoluble coloring matters can be used for dyeing by employing gelatin in combination with the phosphate of lime.

COBALT AND MANGANESE.

M. Valenciennes recently presented to the Academy of Sciences, Paris, specimens of pure cobalt and manganese—prepared by reduction in magnesia crucibles. The cobalt had the appearance of polished iron, and when turned in the lathe yielded chips similar to those produced from iron of best quality.

The manganese can be easily broken with a hammer, and exhibits on a fresh fracture a perfectly white color. It alters rapidly in the air, changing into an intermediate red oxide. Cobalt combines more readily with copper than with iron; the alloy melts at the temperature of fusion of copper, and is malleable and ductile if properly annealed. Manganese has great affinity for copper, and five samples were made, containing 3, 5, 8, 12, and 15 per cent of manganese—all of them resembled bronze, are hard, sonorous, and easily fused. The alloy containing 15 per cent of manganese was white like steel, and unaltered after long exposure, and was very hard.

The alloys of 3, 5, and 8 per cent are ductile, and can be reduced to as thin leaves as tin. According to M. Valenciennes the alloys of manganese and copper are capable of extensive uses in the arts if they can be prepared in an economical way.

ZINC REFUSE FROM GALVANIZING IRON.

The zinc refuse contains chlorides, oxychlorides, and oxide of zinc, together with some sal ammoniac. Pattinson fuses it with an equivalent proportion of lime by which the ammonia can be saved and the zinc obtained as an oxide.

The Hartford Steam Boiler Inspection and Insurance Company.

The Hartford Steam Boiler Inspection and Insurance Company make the following report of their inspections for the month of March, 1870:

During the month, 458 visits of inspection have been made; 784 boilers examined, 731 externally and 224 internally; while 69 have been tested by hydraulic pressure. The number of defects in all discovered, 482; of which 60 are regarded as as dangerous. The defects in detail are as follows:

Furnaces out of shape, 7—1 dangerous; fractures in all, 30—7 dangerous; burned plates, 26—5 dangerous; blistered plates, 73—15 dangerous; cases of incrustation and scale, 81—12 dangerous; cases of sediment and deposit, 5; cases of external corrosion, 34—4 dangerous; internal corrosion, 6—5 dangerous; cases of internal grooving, 7—1 dangerous; water gages out of order, 25; blow-out apparatus out of order, 7—1 dangerous; safety valves overloaded 24—1 dangerous; pressure gages out of order, 92—2 dangerous. These varied from—10 to +25. Tubes corroded off near tube sheet, 1—1 dangerous; boilers malconstructed, 1—regarded as dangerous; boilers condemned as unsafe and beyond repair, 4. A large number of leaky boilers were reported, some had become so from blowing down and immediately filling up with cold water—this practice will ruin the best boiler in a short time. Before refilling, the boiler should be allowed to become quite cool. The accumulation of sediment about the tubes, keeping the water therefrom, is a source of evil; tubes become burned and corroded, and leaks will of necessity follow.

Steam gages, it will be noticed, have been found out of order in numerous instances. There is no way of ascertaining these variations except by frequent tests, and although they may be light in many instances, in some they are positively dangerous; for instance, if a boiler is being run by the gage at a pressure of 85 pounds, and the gage is 20 pounds "heavy or slow," the actual pressure used is 105 pounds, which may be far beyond the safe limit, hence it is important that these indicators should be often examined.

We had not room for further comment, but the intelligent engineer will see that the boilers under his care are free from the defects and dangers enumerated above.

Earthquake in Guayaquil.

In Guayaquil, between Point Pasado and Point Venado a peculiar volcanic movement has taken place. In a space of two leagues the surface of the earth undulated slowly, and great chasms and deep circular excavations were opened. A new lagoon was formed, and between the shore and the sea there appeared a large sized hill.

During all this fearful commotion, the hills along the coast were observed to be in a state of unrest, and large land slides took place, carrying with them rocks and trees.

For four days this agitation continued, the undulation being from west to east. These phenomena took place early in the month of March. It would seem from this that the throes of the earth which, a year or two ago, sent desolation and death through some of the most populous districts of South America, are not wholly spent.

Some Hints about Screws.

Where screws are driven into soft wood and subjected to considerable strain, they are very likely to work loose; and it is often difficult to make them hold. In such cases, says the Canadian *Builder*, we have always found the use of glue profitable. Prepare the glue thick; immerse a stick about half the size of the screw and put it into the hole; then immerse the screw, and drive it home as quickly as possible. When there is an article of furniture to be hastily repaired, and no glue is to be had handily, insert the stick, fill the rest of the cavity with pulverized resin, then heat the screw sufficient to melt the resin as it is driven in. Chairs, tables, lounges, etc., are continually getting out of order in every house; and the proper time to prepare them is when first noticed. If neglected the matter grows still worse, and finally results in laying by the article of furniture as worthless. Where screws are driven into wood for temporary purposes they can be removed much easier by dipping them in oil before inserting.

When buying screws notice what you are getting; for there are poor as well as good kinds. See that the heads are sound and well cut; that there are no flaws in the body or thread part, and that they have gimlet points. A screw of good make will drive into oak as easy as others into pine, and will endure having twice the force brought against it.

Safety House Lamp.

The article of a safety kerosene lamp is one of importance to nearly every person. It is a subject of vital interest to every household. From the number of inquiries at this office for information as to lamps possessing safety qualities, we conclude that the public are not satisfied with what the manufacturers generally supply.

A few days ago a circular, advertising Perkins & House's safety lamp, was put into our hands, containing references to a number of distinguished gentlemen whose testimonials were appended. We took occasion to interview one of them—the president of one of our prominent New England colleges—as to the merits of this lamp, and asked if on further use he was satisfied that he had not expressed too much in its praise in his testimonial. His reply was, "No; it has given perfect satisfaction, and I think the lamp superior in respect to safety, perfect combustion, freedom from odor, and amount of light given, to any lamp."

From the high and direct source this testimony comes, we think there is no doubt but that the Perkins & House lamp, advertised in another page by Votaw, Montgomery & Co. possesses all the qualities that the advertisers state.

Iceland Spar.

Joseph D. Price and Benjamin Shunk, of Harrisburgh, Rockingham Co., Va., have discovered in that town large deposits of calcite (carbonate of lime) of the Iceland spar variety. We have received some specimens of the crystals (rhombohedrons), which are clear and excellent. A quarry has been opened and the deposit examined to an extent exceeding eighty acres. The deposit is six feet deep, and promises to be valuable; but the manner of mining and working the mineral is not very well understood in that region.

Steam Omnibuses.

It is said that a company has been organized in Montreal to introduce into that city Thompson's road steamers for passenger traffic. Our readers will recollect one of these vehicles was tried not long since in Edinburgh, Scotland, where its inventor resides, and was stated to have behaved very satisfactorily. The traction wheels are fitted with broad and thick rubber rims, which enable them to conform to the uneven surfaces of common roads, and prevent slipping.

THE EAST RIVER BRIDGE.—The great caisson for the Brooklyn side of the East River Bridge, the successful launching of which we recently announced, has since our last issue been towed out to its final resting place, and will probably be sunk before this paragraph meets the eyes of our readers. The most perfect success has thus far attended every step in this great work, and everything shows that engineering skill of the highest order is guiding its progress.

UNITED STATES DISTRICT COURT---SOUTHERN DISTRICT. BEFORE JUDGE BLATCHFORD. PATENT FOR MAKING VENEERS.

Carmi Hart vs. *Jeryleman Shaw and Salathiel E. Nickerson.*—This was a bill filed by the complainant to restrain the infringement of a patent issued to him on April 4, 1854, and renewed March 16, 1868, for an improved machine for cutting veneers.

The substance of the invention was placing the log upon a table so that it could be brought against the knife to cut off the veneer at different angles, according to the requirements of the material, and suspending it by clamps, so that when it was being carried back to meet the knife again, it would not bear upon the edge of the knife.

The defendants set up a want of novelty in the invention, and denied any infringement on their part.

Held by the Court.—That on the evidence the defense of want of novelty in the invention fails. That in the defendant's machine the same results claimed by the plaintiff are produced by devices which are mechanical equivalents for those of the plaintiff. Decree for plaintiff.

For plaintiff, E. Y. Bell; for defendants, T. M. Wyatt.

APPLICATIONS FOR EXTENSION OF PATENTS.

PEGGING JACKS.—Alfred Bailey, Amesbury, Mass., has petitioned for the extension of the above patent. Day of hearing July 13, 1870.

MACHINE FOR MANUFACTURING SPOOLS.—A. D. Waymoth, Fitchburg, Mass., has petitioned for an extension of the above patent. Day of hearing July 13, 1870.

MACHINERY FOR FORMING HAT BODIES.—Alva B. Taylor, Newark, N. J., has petitioned for an extension of the above patent. Day of hearing July 13, 1870.

WATER CLOSETS.—William S. Carr, New York city, has applied for an extension of the above patent. Day of hearing July 20, 1870.

ROTARY KNITTING MACHINES.—Sidney W. Park, Albany, N. Y., and Edgar S. Ells, Fremont, N. Y., have applied for an extension of the above patent. Day of hearing July 20, 1870.

LIGHTNING ROD.—David Munson, Indianapolis, Ind., has applied for an extension of the above patent. Day of hearing July 20, 1870.

CART SADDLES.—Henry A. Rains, Bloomfield, N. J., has petitioned for an extension of the above patent. Day of hearing August 3, 1870.

Recent American and Foreign Patents.

Under this heading we shall publish weekly notes of some of the more prominent home and foreign patents.

WASHING MACHINE.—Charles Bean and Suel Logee, East Douglass, Mass—This invention has for its object to furnish an improved washing machine which shall be simple in construction and effective in operation, washing the clothes quickly and thoroughly, and without injuring them.

EARTH CHAMBERS.—William H. Bliss, Newport, R. I.—This invention has for its object to furnish an improved earth chamber or portable earth closet which shall be simple in construction and effective in operation, wholly preventing the escape of any offensive odor into the room.

EXCAVATING APPARATUS.—Philo W. Clark, Oblong, N. Y.—This invention has for its object to furnish an improved excavating apparatus designed for use in transferring the soil from the place of excavation, and loading it upon a cart, or throwing it upon an embankment.

HOISTING APPARATUS.—H. A. Schneekoth, N. Y. city.—This invention has for its object to so construct the hoisting apparatus, which is operated by men, that power may be applied to it by means of the lower extremities and not by the arms, as usually.

LAP BOARDS.—William F. Gammel, Elizabeth, N. J.—This invention has for its object to improve the construction of lap boards, so as to make them more convenient and effective in use.

BOILER FURNACE.—J. A. T. Overend, San Francisco, Ca.—This invention consists in the application to the furnaces of metallic fire-backs and bridge walls, arranged for ready removal for the substitution of others, when worn out, and, in a manner, calculated to resist the heat to the best advantage, and to provide an air chamber behind the bridge wall to facilitate the combustion of the gases.

ORE SEPARATOR.—T. Bates, Pinos Altos, New Mexico.—The object of this invention is to provide a simple and efficient arrangement of means for receiving the tailings of gold, and other ores, from the battery, pulverizing, burnishing, and separating the same. The invention comprises an arrangement of grinding mills and amalgamating apparatus together, and, with a battery.

WASHING MACHINE.—Wm. Badger, Hastings-on-the-Hudson, N. Y.—This invention relates to improvements in washing machines, and consists in a simple and inexpensive attachment to ordinary wash tubs, for converting them into washing machines, with oscillating beaters, the same being suspended on a cover arranged for detachable connection to the tub by means of keys wedging into the holes of the handles, and dumping the cover down on the top of the tub.

STUMP PUPPER.—J. M. Eason, Charleston, S. C.—This invention relates to improvements in machinery for pulling stumps, and consists in suspending the chain hook from any suitable portable frame, by two pairs of arms, toggle-jointed to nuts, on a right-and-left-threaded horizontal screw, which is provided with a hand lever ratchet and pawl at the center for applying the power for raising the stumps by screwing the nuts away from each other, and with short levers at one end for turning it rapidly to force the nuts together to let the weight or chain hook down.

NURSING BOTTLE.—Edward Jones Mallett, Jr., and Wm. S. Ward, New York city.—This invention relates to improvements in nursing bottles and other vessels, for containing liquids, and from which they are to be drawn through faucets, cocks, or bungs, and it consists in a novel arrangement of automatic vent valves, in connection with the bungs or plugs, by suspending the valve by a spring secured in the vent passage, or at the top of the plug, and extending through to the lower side, and holding the valve up against a flexible seat of India-rubber, or other like substance.

HUB-BORING AND BOX-SETTING MACHINE.—Abraham Troup, Louisberry, Pa.—This invention consists of a pair of clamps for embracing the sides of a hub provided with feet for resting on the top of the same; and combined with an instrument for boring a recess in the end of the hub suitable to receive a box, in such manner that said instrument may be accurately adjusted to the center of any hub.

TOBACCO ROLLER.—C. A. Jackson, Petersburgh, Va.—This invention consists of a wheel, whose rim is provided with any desired number of circumferential flanges, said wheel working in connection with a belt, whose inner surface is furnished with an equal number of longitudinal grooves into which the tobacco is pressed by the flanges of the wheel; these two devices being combined with scrapers that take the strips of tobacco out of the grooves in the belt, and also with a knife, operated by the wheel, that cuts the strips into plugs.

CORN PLANTER.—James W. Magers, Reinersville, Ohio.—This invention consists of divers improvements in the corn planter, all tending either to simplify its construction or render it more efficient in operation.

ATTACHING POLE OR SHAFTS TO WHEELED VEHICLES.—James McMillin, Ripley, Ohio.—This invention has for its object to enable the occupant of a carriage to detach the pole or thills when the horses become unmanageable, and thus allow the animals to go on their way dragging the pole with them, and leave the carriage in safety.

CAR COUPLER.—John Coleman, Lynchburgh, Va.—This invention consists in the combination, with a bumper open at the sides of a hinged detent arranged within the bumper, so as to allow the head of the coupling bar to pass under it and then to fall by its own weight upon the body of the bar and retain it, and of a coupling link having bevelled heads which pass easily under the detents, against the inner sides of which heads the free ends of the detents bear, which inner sides of the heads are rounded off at the corners so as to allow them to slip out at the open sides of the bumpers and uncouple when one car runs off the track so as not to draw the next car off; the coupling being automatic, and universal in its application.

PAPER WEIGHT.—Max Patzauer, New York city.—This invention relates to a new paper weight, which is so constructed that it can be used as an insect catcher or paper file.

MACHINE FOR COVERING WIRE.—A. Giraudat, New York city.—This invention relates to a novel spool carrier and holder attachment to a machine for covering wire with cotton, silk, or other thread. The object of the invention is to so construct the apparatus that the spool can be readily removed and put on, and that the thread will be applied to the gummed wire and pressed to firmly adhere to the same.

FRUIT BASKET.—Lauren Carpenter, St. Joseph, Mich.—This invention has for its object so to construct fruit baskets, that the same will be strong and simple and that they can be placed one upon another without injuring their contents.

CARVING KNIFE.—Owen W. Taft, New York city.—This invention has for its object to so provide carving knives that they can be used to extract skewers from the meat. The invention consists in forming a hook or aperture on the blade of the knife, whereby a clamp for holding and withdrawing the skewer is obtained. The removal of skewers from meat is at present a process connected with considerable difficulty and annoyance, and although many instruments may be used, it is evident that only the carving knife is appropriate and handy for that purpose.

SHOE LACE.—Rufus Wright, Brooklyn, N. Y.—This invention relates to a new and useful improvement in mode of lacing or fastening and unfastening shoes, whereby that practice is greatly simplified, and much more expeditiously and perfectly performed than it has hitherto been, and the invention consists in an arrangement whereby the shoe is fastened around the instep or ankle by simply drawing upward the lacing, and is loosened by the same movement downwards toward the toe.