The Achievements of Science.

Dr. Oliver Holmes, the poet, author, scientist, inventor of the popular stereoscope instrument, recently delivered an address before the Boston Microscopical Society. It was mainly an illustration of the progress of microscopy—in the construction of the instruments and in the discoveries by their aid. "To those of my generation," he began, "this modern world which most of you take as a matter of course, it being the only condition of things of which you have had experience, is a perpetual source of wonder—a standing miracle. Science and art have in our time so changed the aspect of every-day life that one of a certain age might well believe himself on another planet or in another stage of existence. The wand of Prometheus is in our matchboxes; the rock of Horeb gushes forth in our dressing rooms; the carpet of Arabian story is spread in our Pullman car; our words flash from continent to continent; our very accents are transmitted from city to city; the elements of forming worlds are analyzed in our laboratories; and, most wonderful and significant of all, the despotic reign of tradition received its deathblow when the angel of anæsthesia lifted from womanhood the worst terrors of the primal malediction."

Mind and Health.

The *Science of Health* says on this subject: "The mental condition has more influence upon the bodily health than is generally supposed. It is no doubt true that ailments of the body cause a depressing and morbid condition of the mind; but it is no less true that sorrowful and disagreeable emotions produce disease in persons who, uninfluenced by them, would be in sound health—or, if disease is not produced, the functions are disordered. Not even physicians always consider the importance of this fact. Agreeable emotions set in motion nervous currents, which stimulate blood, brain, and every part of the system into healthful activity; while grief, disappointment of feeling, and brooding over present sorrows or past mistakes, depress all the vital forces. To be physically well one must, in general, be happy. The reverse is not always true; one may be happy and cheerful, and yet be a constant sufferer in body."

Curious Electrical Experiment.

If an ebonite electrophorus be whipped with a fox tail, it is negatively excited, and the condenser gives positive sparks. If, again, the electrophorus be rubbed with leather on which is some mosaic gold, the ebonite disk is positively excited, and the condenser gives negative sparks. It is stated by M. Schlosser, however (*Poggendorff's Annalen*), that if the same ebonite disk be excited on one side with the fox tail, on the other with mosaic gold on leather, one may at any moment obtain from the same disk positive or negative electricity, according as the one or the other surface of the electrophorus is used as the source. The most important point in this double excitation is the very much greater length of spark, as is readily observed by the eye. On the other hand, considerably shorter sparks are obtained from the same electrophorus when both sides are similarly excited, for example, whipped with the fox tail.

NEW YORK ACADEMY OF SCIENCES.

A regular meeting of the Academy was held in its rooms, at 64 Madison Avenue, on Monday evening, May 1, 1877, Dr. J. S. Newberry, President, in the chair. The audience, drawn together by the announcement of an exceedingly important paper on a new and interesting subject by one of our leading chemists, was unusually large and intelligent, and included several ladies.

After the transaction of some routine business, Dr. H. Carrington Bolton read a paper on the

ACTION OF ORGANIC ACIDS ON MINERALS.

The speaker at first described the use of organic acids in quantitative analysis to prevent the precipitation of certain metals, and the use of tartaric acid in Fehling's sugar test, and to dissolve antimony, etc. The use of organic acids for decomposing minerals is, however, a novel one. While on a mineralogical tour in North Carolina, he had frequently felt the inconvenience and danger of carrying a bottle of mineral acid for recognizing the carbonates; and he determined, on his return, to try to substitute for it some crystalline organic acid To his surprise, the results were very satisfactory; and he extended his investigations to a dozen different carbonates, eighteen sulphides, twelve oxides, twenty-four silicates, and several miscellaneous minerals, in all 120 specimens, embracing 90 different species. The action of citric, tartaric, oxalic, malic, pyrogallic, benzoic, and other acids was studied. The following are a few of the points noticed: Organic acids act more slowly than mineral acids, and frequently some time elapses before effervescence begins. Citric acid acts most rapidly and satisfactorily; next to this is tartaric acid; oxalic acid acts in a similar manner, but more frequently forms insoluble compounds, which are sometimes characteristic of the mineral. Acetic acid does not have any effect on the carbonates; and when heated to boiling, the acid distils off, whereas the other acids are concentrated by boiling. Glacial acetic acid does not act unless somewhat diluted. Formic acid is more active than acetic. Propylic acid decomposes several carbonates; pyrogallic acid decomposes calcite. A few experiments were made with metals. Citric and tartaric acids dissolve iron; and citric acid, with zinc, can be employed to generate arsenuretted hydrogen.

When sulphides are subjected to the action of citric acid, sulphuretted hydrogen (H_2S) is evolved; carbonates yield carbonic acid, CO_2.

In the case of minerals not attacked by an organic acid alone, the experiment was tried of mixing citric acid with saltpeter (KNO_3), whereby nitric acid is generated on boiling. Chlorate of potassium was also mixed with the citric acid, but with less satisfactory results.

When silicates are boiled in a solution of citric acid, silicic acid ($Si O_2$), either pulverulent or gelatinous, separates.

By mixing citric acid with fluoride of ammonia (NH_4F) hydrofluoric acid is evolved, which is able to attack most of the silicates not otherwise decomposed, including all the constituents of our common rocks. The following table shows at a glance the

MINERALS DECOMPOSED BY CITRIC ACID ALONE AND WITH REAGENTS.

The mineral tested is to be in a fine powder.

In the cold.

A. Without evolution of gas.	B. With liberation of CO_2.	C. With liberation of H_2S.
Brucite.	Calcite.	Stibnite.
Anglesite.	Dolomite.*	Galenite.
Pyromorphite.*	Ankerite.*	Sphalerite.
Vivianite.	Gurhofite.	Pyrrhotite.
	Rhodochrosite.*	
	Smithsonite.*	
	Witherite.	
	Strontianite.	
	Barytocalcite.	
	Cerussite.	
	Malachite.	
	Azurite.*	

On boiling.

D. Without evolution of gas.	E. With liberation of CO_2.	F. With liberation of H_2S.
Zincite.	Magnesite.	Bornite.
Gypsum.*	Siderite.	Bournonite.*
Apatite.*	Pyrolusite.†	And those in C.
Cuprite.	Wad.†	
Limonite.*	Hausmannite.†	
And those in A.	Manganite.†	
	Psilomelane.†	
	And those in B.	

G. With formation of a jelly (SiO_2).	H. With separation of SiO_2.	
Willemite.	Wollastonite.	Analcite.
Datolite.	Chrysolite.	Chabazite.
Pectolite.	Chondrodite.*	Stilbite.
Calamine.	Chrysocolla.	Serpentine.
Natrolite.	Prehnite.*	Chrysotile.*
	Apophyllite.*	Retinalite.
	Rhodonite.	Deweylite.

I. Decomposed by boiling with citric acid + KNO_3.	K. Decomposed by heating with citric acid + NH_4Fl.	L. Minerals not decomposed by the above reagents.
Argentite.	Olivine.	Molybdenite.
Chalcocite.	Wernerite.	Cinnabar.
Pyrite.	Orthoclase.	Magnetite.
Marcasite.	Albite.	Hematite.
Niccolite.	Labradorite.	Chromite.
Smaltite.	Augite.	Franklinite.
Chalcopyrite.	Diopside.	Cryolite.
Ullmannite.	Hornblende.	Fluorite.
Arsenopyrite.	Kyanite.	Samarskite.
Tetrahedrite.	Talc.*	Muscovite.
Uraninite.	Spodumene.*	Biotite.
And those in F. and C.	Almandite.	Ripidolite.
	Epidote.	Tourmaline.
	And those in G. and H.	

The gases evolved are examined with acetate of lead test paper; the solutions with appropriate reagents.

The next chemical meeting of the Academy is to be held on May 14, 1877.

NEW BOOKS AND PUBLICATIONS.

DRAUGHTSMAN'S ALPHABETS. Price $2.00. New York city: A. J. Bicknell & Co., 27 Warren street.

An excellent collection of alphabets suitable for titles, etc., to drawings and maps. Many of the old styles of letters given are rarely found in books of this description, and in their quaintness and beauty form pleasing variety as compared with the fancy alphabets now conventionally employed. Modes of shading charts, and the various signs for meadows, woods, gardens, etc., used in chart drawing, are added.

AN OUTLINE OF THE STRUCTURE OF THE PIPE ORGAN. By William H. Clarke. Illustrated. Price $1.50. Boston, Mass: Oliver Ditson & Co.

There is very little literature on the organ suitable for conveying to organists, church committees, and musical students, a clear, simple, and comprehensive view of the instrument. Such, however, is the aim of the present work; and the author has accomplished his task with much success. To the student of the organ, the book can be especially commended, as it abounds in useful practical hints, and contains a valuable list of the best classical music for the instrument.

MESSRS. GEORGE P. ROWELL'S "AMERICAN NEWSPAPER DIRECTORY" for 1877 has been issued, and forms as usual a huge volume of over a thousand pages. The brief history of newspapers for the year, contained in the preface, is not a particularly agreeable record for publishers, since, instead of the steady increase in the number of journals which has taken place hitherto from year to year, during 1876 there has been a falling off of one hundred and ninety. This is one result of the unsettled state of public affairs due to the election difficulties, and of the general retrenchment and economy practised by all classes. It should not be supposed that there is any lack of newspapers, despite this diminution, as the total still aggregates 8,427; so that newspaper readers need not fear any lack of their favorite literature. The only question is, and we confess the problem puzzles us as much as any one, where the material all comes from to fill so many sheets. Perhaps statistics, showing how many times a given article is published in them by the 8,427 editors, would throw some light on the matter. The present "Newspaper Directory" is fully as good as its predecessors, possibly better, as, in addition to the facts relating to newspapers, the editor has added useful information concerning the population, etc., of the localities where they are published. Of course the volume is invaluable to advertisers. Messrs. Rowell & Co. have removed from 41 Park Row to 10 Spruce street, New York city.

MESSRS. S. M. PETTENGILL & CO.'S "NEWSPAPER DIRECTORY AND ADVERTISERS' HANDBOOK" for 1877 tells in compact and trustworthy manner about everything advertisers want to know concerning newspapers which they had best select for advertising their business. The work contains a complete list of newspapers and periodicals published in the United States and British Provinces, with the frequency and days of issue, the politics and other distinctive features, and in most cases a statement of the amount of circulation. For advertisers desiring to reach certain sections of the country, there is a carefully prepared list of periodicals arranged by counties. Catalogues of daily, weekly, religious, and agricultural papers are appended. To this is added much valuable information as to the peculiar advantages which each periodical offers to the subscriber or advertiser. The volume is handsomely printed and bound, and is embellished by portraits on steel of leading journalists. It is sent to any address for one dollar. Messrs. S. M. Pettengill & Co. have been our neighbors for several years, occupying offices in the same building with the SCIENTIFIC AMERICAN. We can speak well of their integrity and good ability in conducting their business with both advertisers and publishers.

* Feebly attacked. † The CO_2 evolved is derived from the citric acid.

Inventions Patented in England by Americans.

From April 10 to April 23, 1877, inclusive.

BREECH-LOADING GUN.—B. Fasoldt *et al.*, Albany, N. Y.
CARTRIDGE SHELL.—C. D. Leet *et al.*, Springfield, Mass.
CIGAR LIGHTER, ETC.—R. R. Moffatt, Brooklyn, N. Y.
CIGAR LIGHTER, ETC.—G. Selden, Erie, Pa.
COAL OIL STOVE.—J. A. Frey, New York city.
FIRE EXTINGUISHER.—H. S. Maxim, New York city.
FLUTING MACHINE, ETC.—C. M. Meserole, New York city.
FRUIT JAR.—A. Dickey, Middletown, Ohio.
HORSE CAR POLE, ETC.—S. A. Otis, Boston, Mass.
LIGHTING GAS, ETC.—E. Lindsley, Cleveland, Ohio.
PRINTING PRESS.—W. M. Clark *et al.*, Philadelphia, Pa.
LOOM.—J. V. D. Reed, New York city.
METALLIC PACKING.—W. H. Floyd, Boston, Mass.
PULLEY, ETC.—G. G. Lobdell *et al.*, Wilmington, Del.
PUMPING ENGINE.—G. F. Blake, Boston, Mass.
PUTTING UP POWDERS, ETC.—C. R. Doane, Brooklyn, N. Y.
REFRIGERATOR, ETC.—J. C. Mack, Brooklyn, N. Y.
REFRIGERATOR CAR.—W. H. Klapp *et al.*, New York city.
ROCK DRILL.—W. W. Dunn (of San Francisco, Cal.), London, England.
SHEET METAL.—C. D. Leet *et al.*, Springfield, Mass.
SUGAR MACHINERY.—F. O. Matthiessen *et al.*, Irvington, N. Y.
WINDING THREAD.—A. C. Carey, Malden, Mass.

Recent American and Foreign Patents.

Notice to Patentees.

Inventors who are desirous of disposing of their patents would find it greatly to their advantage to have them illustrated in the SCIENTIFIC AMERICAN. We are prepared to get up first-class WOOD ENGRAVINGS of inventions of merit, and publish them in the SCIENTIFIC AMERICAN on very reasonable terms.

We shall be pleased to make estimates as to cost of engravings on receipt of photographs, sketches, or copies of patents. After publication, the cuts become the property of the person ordering them, and will be found of value for circulars and for publication in other papers.

NEW MISCELLANEOUS INVENTIONS.

IMPROVED DIE FOR CUTTING LEATHER.

Albert Warren, Jefferson, O.—This die, which is made of steel, of the shape of the article to be cut, and a little smaller at its cutting end than at the other, so that the pieces cut may pass through it freely, is fitted into a hole in a block of wood, so that its rear edge may be flush with the lower surface of the said block. A block of wood having a hole formed through it of the same shape as the cutter serves as a base support for the die. In using the device, it is laid upon a table or counter, over a hole in said table or counter, for the pieces to drop through. The material to be cut is then laid upon the edge of the die and is struck with a wooden mallet. With this construction the whole force of the blow is expended in making the cut, as the die does not have to be moved by the force of the blow.

IMPROVED HARNESS PAD.

Miron V. Longsworth, Delphos, O.—The object of this invention is to improve the construction of the harness pad for which letters patent were granted to same inventor July 18, 1876, so as to make it stronger and more durable, and less liable to get out of order. The device consists in the crossbars upon the upper ends of the flanged pad plates to receive and hold the saddle strap.

IMPROVED ICE AX.

William H. Coleman, Salisbury Mills, N. Y.—This tool combines in a single instrument an ax for cutting ice, a pike for pushing it from place to place, and a hook for drawing it from the water.

IMPROVED CRAYON FOR MARKING ON GLASS.

Bernard J. Clarke, New York city.—This crayon is adapted for marking on porcelain, glass, or other smooth surface; and it consists in a composition formed by mixing a pigment with melted beeswax, suet, and oil of cedar. The marks made may be readily erased by rubbing.

IMPROVED PHOTOGRAPHIC BURNISHER.

James H. Ferguson, Leavenworth, Kan.—This consists in the combination of a bedplate, to which a burnisher is attached, a feed roll, and an adjustable frame for supporting the feed roll over the burnisher. The object of the invention is to provide apparatus for burnishing photographs, in which the burnisher may be heated without the common and annoying difficulty of the roll becoming moist from the condensation of the vapor from the lamp used.

IMPROVED STEAM TANK FOR COOKING FISH AND MEAT IN CANS.

Francis M. Warren, Portland, Oregon.—One end of this tank, which is of boiler iron, is left open, and around its edge is formed a rim having a groove to receive the edges of the door, and to it are pivoted a number of cams, which, when the door is in place, may be turned to press the said door to its seat steam tight. In the bottom of the tank is coiled a steam pipe, which is perforated with numerous small holes, to allow the steam to escape into the said tank freely. To the bottom of the tank is attached a track for the hand cars, upon which the cans are piled, to be run in and out upon.

IMPROVED TEN PIN BALL.

William Woods, Brooklyn, E. D., N. Y.—The object here is to improve the construction of ten pin balls, to prevent the balls from being chipped off or splintered around the finger holes, and to accurately balance the balls, so that they will roll perfectly true. To this end, metallic bushes are inserted in their finger holes.

IMPROVED APPARATUS FOR DRYING HIDES.

James N. Duffy, Newark, N. J.—This invention furnishes an improved means for drying and stretching hides. It is so constructed that the hide may be stretched in any desired direction and to any desired extent, and thus dried without fold or wrinkle.

IMPROVED CAST IRON EXTERIOR COFFIN OR VAULT.

Robert Beachman, Lyons, N. Y.—This is an improved individual vault or grave which shall be airtight, so as to keep the coffin and body from the air, and thus preserve them. It protects the body and enables the vault and body to be removed.

IMPROVED BUTTON.

Benjamin Bailey, Yale, British Columbia.—This consists of a button with recess for attaching a spring steel hook of the suspenders, the button being secured by a hook-shaped shank, nickel plate, and concaved spring plate, to the waistband of the pants.

IMPROVED VALVE NOZZLE FOR BOTTLE STOPPER.

Charles Cristadoro, New York city.—This relates to improvements on the valved nozzle for bottle stoppers; and it consists in forming on the upper side of the valve a spindle, which extends through the nozzle, and is provided with a head outside of the nozzle that retains the valve when the nozzle is removed from the stopper.

IMPROVED TOBACCO PACKAGE.

Pierre Cauhapé, New York city, assignor to himself and Ernest Greenfield, of same place.—The object here is to pack chewing and other tobacco in such a manner that the moisture is preserved, the deleterious influence of the humid sea air in ocean shipment prevented, and a waterproof protective package obtained. The package is covered by a layer of elastic gelatinous substance.

IMPROVED CORSET.

Elizabeth S. Weldon, New York city.—The part which supports the breast consists of a triangular tongue, attached at its apex to the body of the corset by means of a strip, through which two steel stays run. Stays diverge from a point near the apex of the triangular tongue, and run nearly parallel with the sides of said tongue to its upper edge. Transverse stays are also attached to the inner surface of the tongue, and are drawn in and confined at their ends, so that they cause the said tongue to assume a convex form. Curved gores connect the strip and the adjoining portions of the corset, and give a graceful form. To said gores triangular wings are attached, having their widest ends uppermost. These flaps overlap the tongue, and are provided with eyelets at intervals along their free edges for receiving a lacing.

IMPROVED ANTI-CROUP AMULET.

Noah W. Caughy, Baltimore, Md.—This invention relates to curative means for croup and other affections of the throat, and consists in a silken band with loops of the same material movable by the natural changes in the position of the head and neck, it being made to encircle the latter with the loops arranged in front. The gentle friction thus produced seems to promote a natural and healthy circulation in this delicate portion of the person, joining as it does the head to the trunk or body, and exposed as it is to currents of air and sudden changes of temperature. It is not only curative but preventive as well.

IMPROVED ICE MACHINE.

Daniel L. Holden, Carrington, Ky.—This invention relates to a novel form of ice machine, constructed upon the general principle of the employment of a non-congealable liquid as a vehicle for conveying the cold, produced in a refrigerator, to a case where the temperature of the cooled liquid is transmitted to atmospheric air, and the latter thence directed into a congealing case where it produces the freezing effect upon the water contained in the pans. The invention consists in the construction of the refrigerator for facilitating evaporation to effect the cooling of the non-congealable liquid; the construction and arrangement of the case for imparting the temperature of the non-congealable liquid to the air circulating in the congealing case; the construction and arrangement of the congealing case and its adjuncts; a receiver and "purger" for containing the condensed volatile gas and removing the air from the gas circulating apparatus; and an automatic valve for feeding the condensed volatile liquid back to the refrigerator.

IMPROVED EAVE-TROUGH FASTENER.

Albert J. Gilbert, Honeoye, N. Y.—This invention is claimed to hold the troughs so securely that they will not be liable to be blown down by the wind, or forced down by the weight of snow or ice, or by snow sliding from the roof. It is formed of wire, bent to form a curve to receive the eave trough, the eyes to receive the spike or bolt, the shoulder, the hook points, and the eyes to receive nails, screws, or stables, whether the eye formed upon the shoulder and the offset to receive the roll of the eave trough be used or not.

IMPROVED BALE TIE.

James M. Pollard, New Orleans, La.—Cotton baled on the plantation is usually compressed or repressed, and thus reduced in size before being stored or shipped for distant or foreign ports. The bands used on the plantation bales are again used on the compressed or reduced bales, but the "button" or cleat buckle, forming part of the ties used on plantation bales, is not used, a plain slotted buckle being substituted for it. The ends of the bands are also slotted for four (4) feet of their length, but some two (2) feet thereof are cut off when the bands are used on the compressed bales. The chief results attained by the present invention are these: 1st, the buckle is so constructed as to adapt it for use on both the plantation bales and the compressed bales, so that the labor and expense of detaching the buckle and substituting a new one is avoided. 2d, the bands require to be slotted but two (2) feet instead of four, and is hence neither weakened nor unduly reduced in weight as heretofore.

IMPROVED PLAITING BOARD.

Samuel G. Otis, Springfield, Mass.—This apparatus is for forming different styles of plaits for trimmings; and it consists in the combination of hinged round and flat wires with a board grooved upon one side and plain upon the other, and in certain other features. The operation is as follows: The goods to be plaited are laid upon the board, and one of the wires is brought down into a slot of a bar; this presses the goods into one of the grooves. One of the wires is then passed under the goods and over the other wire, carrying the goods with it, and its inner end is placed in a recess. The outer end of the wire is then placed in the slot opposite the recess, bringing the two wires parallel to each other. The wires are withdrawn when the board is full, and the goods are pressed. The wires are now removed, leaving the goods on the board as pressed. The goods are now removed, and the operation can be repeated.

IMPROVED SKIRT SUPPORTER.

Charles V. Richards, Garland, Me., assignor to himself and Frank W. Swan, of same place.—This is a device for attachment to shoulder straps for supporting skirts; and it consists of a rectangular plate of metal, to one end of which an oblong loop is attached, and to the other end is attached a wire loop, upon which a pin is formed, that is engaged by a slide on the rectangular plate. The advantages claimed for the invention are, that it will not accidentally become loosened, that it will not wear holes in garments placed over it, and that it is simple and easily applied.

IMPROVED VAPOR BURNER.

Jonas G. Hobert, Syracuse, N. Y.—This is an improved vapor burner for gasoline and other light hydrocarbons, which gives an effective light, is readily cleaned and adjusted, and very economical in use. It is arranged with a notched or grooved stem of the supply valve, that may be readily removed for being cleaned of gummy sediments; also of a heating tube with regulating valve, a detachable shield or inclosing tube for admitting the cleaning of the heating and main tubes, and of an alcohol dish, secured vertically below and centrally to, the axis of the shield.

IMPROVED FEATHER RENOVATOR.

Joseph C. Divers, New Haven, Mo.—This is an improved machine for renovating feathers; and it consists in the combination of the flanged pipe and the adjustable holder with the hollow perforated shaft of the double walled wheel; and in the combination of the rod, provided with the head and the packings, with the hollow perforated shaft of the double walled wheel. In using the machine, the feathers are introduced through a door, and the screen and door are again secured in place. The steam is then admitted, and the wheel is slowly revolved. The dirt from the feathers is sifted through the screens, and is driven through them by the steam into the space between the screens and doors. When the feathers have been sufficiently steamed a plug is removed and a rod inserted, shutting off the steam from the interior of the wheel, and allowing it to pass only through the compartments of the double walls of said wheel. At the same time the doors are opened, so that cold air may be allowed to pass through the wheel, while the moisture is driven off by its heated walls. When this process has been continued a sufficient time the steam is cut off, and a few more turns of the wheel makes the feathers perfectly dry.

IMPROVED MIDDLINGS SEPARATOR.

Edward Dolman, Westville, Ind.—By this construction of this machine, the air enters tubes through the spaces between plates, passes through the middlings, and out between valves in numerous thin sheets. The upper sides of the valves serve for the second grade middlings that may be carried out from the tubes to slide down upon. At the upper ends of the tubes are formed small hoppers, into some of which the middlings are introduced from the bolts by spouts. The other hoppers are reserved to receive the second-grade middlings from the four tubes that receive middlings from the bolts. The purified middlings drop through small openings at the lower ends of the tubes into a receiver. The second grade middlings that slide down the valves drop into small chambers at the lower ends of the tubes, press down small cloths placed in the bottoms of said chambers, and escape through small openings into spouts, by which they are conducted into the well of an elevator.

IMPROVED HORSE BRUSH.

Charles W. Beiser, New York city.—This invention consists of a mitten woven from heavy cords made of horsehair, so as to present a rough exterior surface. The horsehair is twisted into heavy cords or threads, and then, by a process of hand weaving, formed into a mitten either with or without a thumb piece. Any style of weaving may be employed that will produce a knotty or rough exterior. The cleaner is placed upon the hand and used in the same manner as brushes. When the cleaner becomes filled and dirty it may be cleansed by washing it with water and soap.

NEW MECHANICAL AND ENGINEERING INVENTIONS.

IMPROVED LOCK FOR FIREARM.

Ira Robbins, Hughesville, Pa.—This invention consists of a hammer that is alternately thrown forward on the release of the trigger by a spring and notched and studded disk, and thrown backward again by a spring-acted return lever that revolves at the same time the cylinder. A sliding and spring-acted bolt is released by the trigger and thrown forward so as to unlock the lock pawl of the spring disk, which has as many projecting studs as notches, which throw, at every unlocking of the disk, the hammer forward and the spring bolt backward, so as to relock the spring disk and reset the trigger. A separate trigger, back of the releasing trigger, bears on the spring-acted return lever, so as to admit the drawing back of the hammer when the repeating mechanism should fail to work.

IMPROVED CIRCULAR VALVE FOR STEAM ENGINES.

Hiram L. Tumy, Cincinnati, O.—This consists in the arrangement of steam engines in a circular valve by which the steam is taken directly through the passages in the valve; the object being to dispense with the steam room of the ordinary steam chest, and furnish a balanced valve.

IMPROVED VALVE FOR STEAM PUMPS.

James W. Mathieson, Brooklyn, N. Y.—The valves and valve seats extend from side to side of a chamber, and are made of V shape. Devices are provided whereby the valves may readily be kept tight. The general construction is such that the valves offer a minimum obstruction to the water.

HEATING AND FEEDING AIR AND STEAM TO FURNACES.

William Woolcock, Newburg, O., assignor of two thirds his right to Alfred Atkinson and John Woolcock, of same place.—The air and steam are first thoroughly heated in chambers preparatory to being mingled in the hollow fire bridges with which the chambers are connected by side openings. The intense heat in the firebox produces the decomposition of the heated steam and air, and throws the mingled gases through the issuing top holes into the fire gases, so as to produce a more complete and quick combustion of the same.

IMPROVED RAILROAD JOINT.

Charles Palm and John Fitzgerald, Cerro Gordo, Ill.—The object of this invention is to furnish a rail joint which shall be so formed as to prevent the wheels of the trains of cars from hammering, wearing, and splintering the ends of the rails, and to prevent noise when the wheels pass over the joints. The invention consists in the hard rubber block, made in the form of a short section of a rail, interposed between the adjacent ends of two rails, and kept in place by the fishplates.

IMPROVED PIPE WRENCH.

William Eberhard, Akron, O.—The shank of the stationary jaw is slotted longitudinally to receive the movable jaw, and has a number of holes formed through it to receive a pin, by which the said movable jaw is pivoted to it, so that the jaw may be adjusted as the size of the object to be held may require. The face of the jaw is made cam-shaped, and has teeth formed upon it, which teeth gradually increase in fineness toward the outer end. The upper prong of a forked lever passes up through the rear part of the slot in the shank of the stationary jaw, and is pivoted in place by a pin. The handle of the lever extends back along the handle of the wrench, so that it may be operated by the fingers to move the stationary jaw to or from the object to be held. By a suitable construction, by detaching the jaw and lever and attaching another lever, the instrument may be used for cutting off pipes.

IMPROVED HYDRAULIC PRESS.

Francis S. Kinney, New York city.—When the force pump is started, and as the water rises in one cylinder, the air contained in said cylinder is driven into a second cylinder. When the first cylinder is filled with water, valves are opened and the water is allowed to flow back into the water tank and the cylinder to be again filled with air. The stopcocks and valves are then adjusted as first described, and the air in the cylinder is forced by the water into the second cylinder, and so on until the air in the cylinder is put under the desired pressure. When the substance to be pressed has been arranged in the press box, the elastic force of the air in the upper parts of the cylinders forces the water in the lower parts of said cylinders into the press cylinder, which forces the follower down into the press box, instantaneously compressing the substance that may be in it.

IMPROVED CAR COUPLING.

Jacob Lips, Louisville, Ky.—This belongs to the class in which the entering link pushes to the rear a block which supports the coupling pin. The pin has a head on its lower portion which prevents its being removed from the upper hole in the drawhead.

IMPROVED MACHINE FOR PUNCHING SHEET METAL.

Thomas Rowan, Haverstraw, N. Y.—This consists of a vertically sliding bar, having a number of punching pins, which are forced into the dies by a swinging hammer block, whose arms raise automatically, by suitable lever connections, the punching bar out of the dies. An adjustable gauge and fixed end gauges admit the punching of any size of sheet metal.

IMPROVED SMOKEPIPE COUPLING.

Anson W. Decrow, Bangor, Me.—This is a coupling joint for smokepipes, to conduct the smoke of locomotive to the rear of the train over the cars, the said joint being tubes on the ends of the pipes, sliding together over flanges of the pipes, and fastening by spring catches. Packing at the lower half rests on the tubes, and rises and falls as the tubes work up and down. The upper half is packed by the tubes resting on the flanges of the pipes.

IMPROVED ADJUSTABLE ELASTIC BUCKET FOR CHAIN PUMPS.

Thomas Kenyon, Hamilton, O.—This bucket is so constructed that it can be expanded and contracted to fit the pump tube. It was fully illustrated and described on page 310, current volume.

IMPROVED MACHINE FOR TWISTING WHIP LASHES.

George A. Martin, Myerstown, Pa.—This is a simple little device somewhat similar to the ropemakers' winch, by which lashes of any number of strands may be quickly and neatly twisted.

IMPROVED CAR PUSHER.

Henry La Tourette, Shellsburg, Iowa.—This is an improved machine for the use of shippers and others for moving cars from side tracks; and it consists in the combination of a base bar, roller, U bar, lever, shoe, spring, two rods, and two double cranks with each other. The base bar is of wood, about eighteen inches long, to the opposite sides of the forward end of which are attached two plates, the forward ends of which project, and to and between them is pivoted a small roller. The U bar is curved edgewise, and the ends of which are pivoted to the journals of the roller. To and within the upper part of the U bar is pivoted the lever, which is curved to one side, so that it may be operated from the side of the track. To the forward end of the lever is pivoted a shoe, to fit upon the tread of the wheel. A spring is attached to the lever, the free end of which rests against the lower part of the shoe to hold its lower end forward in proper position to slip beneath the lower rear part of the wheel, when the machine is moved forward for another stroke.

IMPROVED SPARK ARRESTER.

William T. Urie, Warrensburgh, Mo.—In this spark arrester a hood, or wire net cover, is dispensed with, and free escape or exit provided for the draft. The sparks or cinders are arrested and collected in an annular space or chamber surrounding a cone forming the bottom of the two-part funnel-shaped hopper, and thence conducted away by tubes leading out through the sides of the stack.

IMPROVED CHUCK.

Henry H. Siler and Thomas A. Brooks, St. Lawrence, N. C.—This invention relates to certain improvements in chucks, centering tools, etc.; and it consists in the particular construction of a rotary adjustable face plate combined with a series of triangular slides, the sum of whose central angles is equal 360°, the said slides being arranged to move tangentially from the action of the face plate, so as to have always a common center with solid boundaries or perfectly inclosed sides, whereby is secured a variable central aperture of corresponding sides dependent for shape upon the number and dimensions of the said slides.

NEW TEXTILE INVENTION.

IMPROVED APPARATUS FOR STEAMING AND AGING PRINTED FABRICS.

William Mather, Salford, England.—This invention consists, first, in aging printed fabrics, in order to fix the colors, by the alternate application of heat and moisture; and, secondly, in an improved apparatus or arrangement of heated and other rollers in a closed steaming chamber, whereby the processes of steaming and aging printed fabrics are performed continuously. The fabric is dried and heated by passing over warm rollers. On leaving one roller it is thus prepared to absorb the steam in the chamber before it reaches the next heated roller, where the same drying and heating action takes place, and these operations are repeated as many times as may be required to fix the colors on the fabrics. The operation of the apparatus, being continuous, effects a great saving of time, and produces good results. It also economizes steam and labor.

NEW HOUSEHOLD INVENTIONS.

IMPROVED LAMP CHIMNEY.

Hiram L. Ives, Troy, N. Y., assignor to himself and T. Henry Dutcher, of same place.—This invention consists of a lamp chimney having an interior glass section, extending upward, around, and above the burner. The lower part of the chimney below the collar is scalloped and perforated to draw up the air to the flame.

IMPROVED EXTENSION FOR SEWING MACHINE TABLES.

Hannan G. Crawford, Peabody, Kan.—This consists of a central table extension and lap board for the table of the sewing machine, having hinged and folding side leaves fitted to and locked by fixed fastening pins, entering a recess and socket hole at opposite sides of the table. The sewing machine table is, by this attachment, enlarged, so as to be used with greater convenience for the different articles to be sewed, while, by turning the hinged leaves down at each side of the person holding the board upon the lap, it can be used for the same purposes as any other lap board.

IMPROVED DISH WARMER.

James H. Wright, New York city.—This invention consists in the combination of an inner case and the asbestos packing with an outer case or body and an iron heating block. In using the device, the iron block is heated, and is then placed in the cavity of the inner case, and the platter or dish to be kept warm is placed upon it.

IMPROVED PORTABLE OVEN.

Edward B. Van De Mark, New York city.—This is a portable oven which may be heated by one or more distinct fires. The smokepipe extends from the upper firepot or chamber down and around the oven, up to the point of exit. A second or upper firepot not only serves to heat the oven, but also affords a means whereby articles may be cooked on top of the oven.

IMPROVED BROOM AND BRUSH RACK.

James B. Clark, Jr., Vineland, N. J.—This is a simple and convenient rack for holding and displaying brooms, dust brushes, scrub brushes, whisk brooms, etc. Bars in which are half round or square notches are arranged in a movable frame to receive the broom handles and keep them erect.

IMPROVED IRONING TABLE.

Edgar B. Smith, Nyack, New York.—The new feature in this table consists in V-shaped brace rods, and have an eye formed in them at their angle. The eyes of the rods are passed over studs attached the one to the under side of the top, and the other to the crossbar. To the ends of the studs are pivoted buttons which, when turned across the eyes of the rods, keep said rods from being accidently jarred out of place. The rods hold the legs securely in place when adjusted for use.

IMPROVED WASHING MACHINE.

David C. Croushorn and William McBee, Panther Springs, Tenn.—This is an improved washing machine in which white and colored clothes may be washed at the same time, and also some of the clothes be exposed to a greater and some to a less degree of pounding or washing action. Intermittently rotating washtubs are connected with alternating and vertically reciprocating pounders, which are made of concentric rims that decrease in height from the outside to the inside, and so arranged that the center of the tubs will be within the outer circumference of the pounders.

IMPROVED PORTABLE WASHSTAND.

Nathan O. Bond, Fairfax Court House, Va., assignor to Henry Augustus Richardson, New York city.—This invention relates to the construction and arrangement of parts for supporting and adjusting the washbowl, facilitating siphonic action, and supporting the waste water bowl within the stand, and yet providing for its convenient displacement and removal.