reference of all crystalline substances back to six primitive forms. The science of crystals soon commanded the attention of chemists, and an instrument was invented, called the goniometer, for measuring the angles, and for deciding to what class each mineral belonged.

Later researches seem to point out that there is an intimate relation existing between the crystalline form and the composition of a body, and we may some day discover the law by which we can arrive at the composition of a mineral or other salt, by measuring its angles, and without the necessity of subjecting it to analysis. But this is at present mere spec-

The peculiar luster, cleavage, hardness, and other physical properties of minerals, have been studied, and something like an independent science has been established, founded upon these external properties. As our knowledge of chemistry has increased, and better methods of analysis have been invented, we are ceasing to lay so much stress upon the outward forms of minerals, and have commenced arranging them with reference to the bases and acids they may contain. Chemists have found that all minerals are composed of wellknown elements combined according to the laws of atomic weights, and that they are in every sense chemical salts. For example, feldspar is a double silicate of potash and alumina, and can be made in the blast furnace and porcelain oven as readily as chloride of sodium or saltpeter in the laboratory. Calc spar and arragonite can be made, the one from artificial manufacture of minerals, and there is a fair prospect of our ultimately being able to make every stone there is on

The time does not appear to be very far distant when we shall make even the precious stones, the diamond, the ruby or the emerald, as readily as we now do glass and porcelain. from the depths of poverty, and by their wonderful discov-Professor Dana, in his unsurpassed book on mineralogy, gives the formula of all minerals so far as is known, and classifies them according to their chemical constitution, and thus virtually hands the science over to the chemist. It was not until minerals were made artificially that we were able to form a rational theory of their probable origin in the rocks. Nature's laboratory does not differ from man's inferior imitation, and as the laws of combination are constant, it is safe to infer that the same agencies were employed in producing the native minerals that we pursue in making them artificially. It is only when we treat minerals as true chemical salts that we can assign them their proper place in the universe.

In a recent German work on chemistry, by Professor Geuther, of Jena, we find a tolerably full list of chemical \$9; Three copies, \$25. compounds, and among them a large number that occur native, and are known as minerals; for example, under magnesium, potassium-magnesium chloride is described as carnallite; calcium-magnesium chloride as tachhydrite; calcium- of \$10. magnesium carbonate, as dolomite; calcium-magnesium silicate, as augite, and so on through a long catalogue of substances. The crystalline form, solubility, hardness, specific gravity, general properties, and formulas of all salts are given with the occasional observation that this or that compound is found in nature as a mineral, but without any break in the order of discussion on account of that fact.

In this way mineralogy becomes incorporated with chemisoccur ready made in nature, just as carbonaceous substances for 1871. are traced back to living organisms, and are treated of under the head of organic chemistry. It would not occur to any one to bottle up gases and to regard them as entitled to found a separate science, or to speak of metals, gases, or liquids as we do of chemistry and physics. Gases are a part of chemistry, and so are metals and minerals.

We have called attention to this subject in order to afford our readers some knowledge of the great progress made in the extent of our acquaintance with the crust of the earth, and of the formation of minerals, since chemistry was impressed into the service of explaining the nature of the forces that must have been at work to produce what we see around us. It was not until the acid character of silica was anade known by Berzelius that we were able to manufacture glass in a rational and scientific manner, and glass is in fact an artificial mineral very much like what we find ready made in volcanic craters.

The manufacture of porcelain, of soluble glass, of saltpeter, and of many other useful compounds, is conducted in imitation of what is going on in nature, and is now founded upon strictly scientific principles. The total number of minerals thus far described does not exceed 700, while the different salts of potash alone amount to nearly as many, so that the study of potash in all of its relations involves nearly as much labor as the examination of all the minerals that have thus far been found. It will thus appear that the relation of mineralogy to chemistry is of the most intimate character, and that minerals can only be studied philosophically when regarded as chemical salts.

AGRICULTURAL pursuits are beginning to absorb the attention and energies of the population of Colorado, which is favorable to the development of the resources of the territory. That prosperity which depends upon the hazards and uncertainties of mining is at best but spasmodic, and it is only where agriculture is made the fundamental interest that the population assumes a settled character and industry is attend. been published. ed by permanent rewards.

SUBSCRIBERS whose term expires with the year will take note that this is the last number, and will oblige the publish ers by remitting for the new year immediately.

## SCIENTIFIC AMERICAN.

## 1871.

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This large and splendid Steel Plate Engraving is one of the finest art works of the day, possessing a rare and peculiar value over ordinary pictures, by reason of the life-like accuracy of the personages it represents. The scene of the picture is laid in the great hall of the Patent Office, at Washington. The grouping is spirited and artistic. Among the persons represented are the following eminent inventors:

		Inventor of Electric Telegraph.
•	CYRUS H. McCORMICK,	Inventor of Reaper.
;	THOS. BLANCHARD,	Inventor of Lathe for Irregular Forms.
	WILLIAM T. G. MORTON,	Inventor of Chloroform,
	SAMUEL COLT,	Inventor of Revolving Fire-Arms.
L	CHARLES GOODYEAR,	Inventor of Rubber Fabrics.
ì	FREDERICK E. SICKLES,	Inventor of Steam Cut-Off,
	HENRY BURDEN,	Inventor of Horse-Shoe Machine.
	JOHN ERICSSON,	Inventor of the first Monitor.
١.	JAMES BOGARDUS,	Inventor of Iron Buildings.
:	JOSEPH SAXTON,	Inventor of Watch Machinery.
;	PETER COOPER,	Inventor of Iron-Rolling Machinery.
	JOSEPH HENRY,	.Inventor of Electro-Magnetic Machine.
•	ISAIAH JENNINGS,	Inventor of Friction Matches.
ı	RICHARD M. HOE,	Inventor of Fast Printing-Presses

These noble men, by their own efforts, raised themselves eries, conferred incalculable benefits upon the human race, entitling them to rank among its greatest benefactors. It is but fitting that the remembrance of their achievements, and the honored forms of their persons, as they lived and walked among us, should be perpetuated by the highest skill of art. The picture, which is three feet long and two feet high, forms an enduring and desirable object for the adornment of the parlor. It was engraved by the celebrated JOHN SARTAIN. from a large painting by SCHUSSELE, and all the porwaits were taken from life. Every lover of Science and Progress should enjoy its possession. Single copies of the Engraving

One copy of the SCIENTIFIC AMERICAN for one year, and a copy of the Engraving, will be sent to any address on receipt MUNN & CO.,

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fore subscribing, tell him to write to the publishers and they will cheerfully mail them. If any one wishes an illuminated Calendar for 1871, to

hang in his office or shop, he can have it sent free on sending request to this office. If handsome illuminated posters and prospectuses are

wanted to assist in obtaining subscribers, send to the publishers of this paper. It is the intention of the publishers of the Scientific

AMERICAN to make the paper next year better and handsomer than any previous year during the last quarter century it has

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### NEW BOOKS AND PUBLICATIONS.

THE CABIN ON THE PRAIRIE. By Rev. C. H. Pearson, Author of "Scenes in the West," etc. Illustrated. Boston: Lee & Shepard.

This is one of a series of stories called the "Frontier Series," now issuing by the above-named firm. It is a graphic picture of prairie life, full of varied stories, and to those unfamiliar with the scenes it delineates, unique incident. As a specimen of good healthy reading for youths of both sexes, it is unexcelled, while adults may peruse its instructive pages with pleasure and profit. The book is one calculated to secure a wide popularity.

MANUAL OF SOCIAL SCIENCE: Being a Condensation of the Principles of Social Science of H. C. Carey, LL.D. By Kate McKean. Philadelphia: Henry Carey Baird, 406 Walnut street.

We shall in a future issuereview his book editorially.

WE are indebted to the Hon. Horace Capron, U. S. Commissioner of Agriculture for a copy of his report for 1869. It contains a large mass of carefully compiled and valuable statistics, and many important papers on various subjects relating to American agriculture.

#### Sensible Holiday Presents,

No present can be more acceptable to a wife, mother, sister, or lady friend, than a Dott Washing Machine, price \$14, and a Universal Wringer, \$9, which are warranted to give entire satisfaction. Mr. R. C. Browning, Gen'l Ag't, 32 Cortlandt street, N. Y., will, on receipt of the price, send either or both Machines, free of freight, to places where no one is selling; and, atter using them a month, according to directions, if not entirely satisfactory, they may be returned, free of freight, and the money will be refunded. Can anything be more fair?

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# Recent American and Loreign Latents.

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

COMBINED LOCK AND LATCH .- F. M. Ranous, Yreka City, Cal. - This invention has for its object to improve the construction of an improved gate latch, patented October 26, 1869, and numbered 96,147, so as to make it more convenient in use, and more effective in operation, enabling it to be used as a lock without interfering with its operation as a latch.

SAFETY VALVE.-J. Armstrong, Brookfield, Missouri.-This invention relates to a new and useful improvement in safety valves for locomotive and other steam boilers.

ANIMAL TRAP. - Ebenezer Oliver, New York city. - This invention has for its object to improve the construction of the wire traps, known as round or bee-hive traps, so as to make them better adapted for usc.

Mode of Securing Ships' Anchors.-William Henry Barker, Windsor, Nova Scotia. - The object of this invention is the construction of some simple apparatus, by which the anchor can be hung to the catheads and instantaneously let go when necessary, and avoiding all the principal objections to any of the machinery now in use for that purpose.

METHOD OF COUPLING PIPES. - George C. Germain, Cuyahoga Falls, Ohio. The object of this invention is to so connect gas and water pipes, made of asphaltum or other suitable material, that the joints will be entirely water or gas proof, and readily applied.

CHAIR.-C. R. Long, Louisville, Ky.-This invention relates to a new and useful improvement in chairs, and consists in the mode of securing the seat to the legs, whereby the ordinary upper rounds and stretchers of the chairs are dispensed with, while the scat is made detachable, and the chair strong

WATER WHEEL.-Daniel W. Case, Garden City, Minn.-This invention relates to improvements in water wheels, and consists in the construction and arrangement of the bearing for the shaft, and adjusting apparatus therefor in the top of the case of the wheel; also, in certain improvements in the construction and arrangement of the chutes leading the water to the wheel It is no more trouble to remit \$6 for two subscribers than and the gates therefor, and also in an arrangement for discharging the water from the wheel, partly through central and partly through vertical dis-| charges.

CULTIVATOR .- Freeman C. Jewell, Rahway, N. J.-This invention has for its object to furnish an improved cultivator, simple in construction, easily it can be readily and quickly adjusted, as circumstances may require.

EXHAUST VALVE.-W. A. Carns, Malden, Mass.-The object of this invention is to prevent sparks and cinders from entering or being drawn into the cylinders of locomotive engines, when the motion is reversed.

WASHING MACHINE.-D. C. Harlow, Hannibal, Mo.-The object of this invention is to provide a simple and cheap apparatus to be used in connection with the common wash-tub for washing clothes, and consists in revolving a spring cylinder above a concave formed of rollers.

DRESSING AND FURROWING MILL-STONES.—James Lee Norton, London, England.—This invention has for its object improvements in apparatus for dressing and furrowing mill-stones.

CAR-COUPLING. -A. F. Street. Zanesville, Ohio. - This invention relates to a new and useful improvement in couplings for railroad cars, whereby strength, durability, and certainty of operation are secured.

SHOVEL PLOW.—Isaac A. Benedict, West Springfield, Pa.—This invention relates to a new and useful improvement in winged shovel plows, and consists in attaching the wings to adjustable arms and making the wings adjustable on the arms.

CLOOK-ALARM.-J. H. Davis, Chillicothe, Mo.-This invention has for its object to provide means whereby alarm attachments can, whenever desired, be secured to or connected with clocks of suitable construction. At present some clocks are provided with alarm attachments and others not. Those which have no attachments cannot, at present, be changed into alarm clocks. By the aid of this invention clocks of all kinds can be readily converted into alarm clocks, without the aid of experts.

MILE CARRIER.—Lewis Morris, Havre de Grace, Md.—The object of this i nvention is to provide for public use a can in which milk may be transported from the farm to the city without deterioration in quality, from air or warmth, by the way. The can is constructed of material, which is a non conductor of heat, with a lining of sheet metal, and is provided with a cover having a peculiar but simple and convenient device which admits of being sealed or locked, and also otherwise secured, without loss of time.

ANTI-FRICTION BOX FOR AXLES, SHAFTING, ETC.-William O. Reid Vienna, N. C.-This invention consists in such an arrangement of frictio balls with circumferential grooves in the internal surface of a pipe-box, that both the vertical and the longitudinal pressure (as between the axle journal and box) is received or borne by said balls, and the friction, and also the draft strain upon the team, thereby greatly lessened.

MACHINE FOR BENDING PLOW HANDLES .- Jacob Woodburn and S. F. Smith, Indianapolis, Ind.—This invention consists in an improved device for holding plow handles in the shape it is desired they shall have when attached to the plow, and in the peculiar construction of detaching parts, whereby the holding device may be quickly and easily attached to or disconnected from the machine for bending the handles. The whole apparatus is efficient without being expensive or cumbrous.

MACHINE FOR FINISHING PLOW HANDLES. -S. F. Smith, Indianapolis. Ind.-This invention consists in the arrangement of an ordinary sand polishing belt on two conical or round-faced pulleys-one larger than the otherso that said belt shall be caused to present a similar rounded surface, and in certain novel means of adjusting the tension of the belt and the angle of the smaller pulley thereto.

FAUCET.-Franz Wiesenhofer, Fremont, Ohio,-The object of this invention is to prevent flies and other insects from entering the lower ends of the hollow spigots used in certain kinds of faucets, and the consequent injury to the liquor drawn through such faucets.

BASE-BURNING STOVES .- Israel Snyder and Peter C. Garrett, Grand Rapids, Iowa. -This invention relates to improvements in base-burning stoves, and consists in making the fire-pot open at the sides from the grate up to the bottom of the reservoir with which it is connected; the said open fire-pot being used, and the draft being arranged to cause the flame and caloric currents to impinge against the outer shell of the cylinder as low down, and as directly as possible, the said arrangement provides a space between the cylinder and the fire-pot to the bottom of the stove for heating purposes.

BELT SPLICE POINT FINISHER .- John C. McLaren, Montreal, Canada .-This invention relates to an improved machine for cutting the ends of pieces of leather to be spliced for making belts, and it consists in a clamping apparatus for holding the strap and a cutter for cutting the end, both of peculiar construction, the object of which is to make a clean and smooth cut at the point reduced to a thin edge, which, as heretofore formed by the skarfing machine is left stringy and uneven.

CANCELING STAMP.-E. [8. Goodman, New Orleans, La.-This invention relates to improvements in canceling stamps, and consists in providing the die with one or more plates having a number of sharp edges for cutting the articles to be stamped, and providing a thick leather bed on which the die strikes for the protection of the cutters. The said plates on which the cutters are formed, serve for guides for the ink-ribbon. comprises a novel arrangement of the type and the holding devices therefor to facilitate the chang ng of the type; also an arrangement of the type die for having the name and address of the inventor, maker, or other person sunk into the face alongside of the type for the date, so that an impression thereof will be given to the thing stamped at the same time.

VELOCIPEDE.-Henry A. Malthy. Brownsville. Texas.-This invention relates to improvements in velocipedes, and consists in a novel combination of foot and hand-propelling apparatus, also guiding apparatus, whereby the operators may employ both foot and hand simultaneously, and at the sam time guide the machine by movements of the body actuating the guiding apparatus through the medium of the seat.

CHURN.-John W. Jordan, Lexington, Va.-This invention relates to improvements in churns, and consists in a vertically moving dasher, composed of one or more lazy-tongs frames, jointed at one end to the bottom of the churn case, and at the upper end to a vertically reciprocating rod worked by a lever or otherwise, so as to expand and contract the said frames, which have perforated boards so attached as to move up and down in the cream in a way to cause intense agitation.

Weaving certain kinds of fabrics.-Wm. Sam'l Laycock, Sheffield, England.-This improvement consists in fixing on each end of a shuttle a pair of nippers or other apparatus, one of which takes hold of the end of a single hair selected out of a bunch of hair on that side of the loom from which the shuttle commences to work. The shuttle is then driven through the shed by friction or otherwise, from under the shed, and when it reaches the opposite shuttle box it quits its hold of the hair it has drawn into the shed, and the nippers on the other side of the shuttle takes hold of another single hair selected out of a bunch from that side of the loom, so that in traversing back it deposits that hair in the shed, and the opposite nippers again seize another hair and proceed with it as before stated in the formation of the fabric.

CHAIN CLUTCH .- Hiram Pitcher, Fon du Lac, Wis .- This invention relate to a new and useful improvement in clutches for chain pulleys or wheels and windlasses, and for all purposes to which it is applicable, and it consists in a series of self-adjusting blocks, each with a recessfor receiving and holding a chain, arranged in a groove around a wheel, drum, or windlass.

SPRINGS FOR CARRIAGES.-D. S. Abbott, Ischua, N. Y.-This invention re lates to a new and useful improvement in springs for carriages, wagons, sulkies, and seats, and consists in a bar or spring so arranged that while the bar receives the weight or power, it is made to compress or operate upon an elastic spring, by means of which the required degree of elasticity is imparted to the carriage or wagon body or seat.

OILER FOR THE INTERIOR PARTS OF STEAM ENGINES. - Milan Hinman, West Stockbridge, Mass.—This invention has for its object to furnish an improved apparatus for introducing oil into the interior parts of an engine, oiling the throttle valve, governor valve, steam chest, cylinder, and other parts not usually oiled, preventing the wear of such parts, and which shall be simple in construction, easily applied, and effective in operation.

ANTI-FRICTION JOURNAL BOX OR BEARING.-James Wardrobe, C. D. B. Fisk, J. F. Curtis, and George Fetley, Carlin, Nevada.—This invention has for its object to furnish an improved anti-friction bearing for the journals of steam cars, horse cars, and other journals or shafts, which shall be simple in construction and effective in operation, being so constructed as to run for any required length of time without heating.

TYPE-SETTING MACHINE.-W. S. Shipley, Jersey City, N. J.-This invention relates to a new machine for setting type into rows and columns ready for the printing press, and consists chiefly in the application of an air blast whereby the types are conveyed from the receiver to the form in which they arc set up. The invention consists also in the use of sectional grooved re ceivers for holding the type in proper position for the blast. These receivers arc rotating blocks operated by means of levers or pawls from a keyboard so that each block can be turned at will to carry its type to the blast channel, which is formed by the grooves of the said blocks.

IMPROVEMENT IN THE MANUFACTURE OF ALUM AND IN OBTAINING BY SUCH MANUFACTURE PRODUCTS APPLICABLE TO CERTAIN USEFUL PURPOSES.—Peter Spence, Newton Heath, Manchester, Great Britain.— This invention consists in the use of certain compounds of alumina and phosphoric acid, particularly, or such compounds of alumina, iron, and phosphoric acid at present obtained in the island of Rodondos, near Antigua, in the West Indies, and known under the name of Rodondo phosphate and of minerals of similar composition obtained in other West India islands and other places.

TOOL CHEST .- G. F. Card, Piper City, Ill .- This invention relates to improvements in tool chests, and consists in an application to the cover of a chest of a seat and clamp, such as used by leather workers, in such a way that when the cover is raised and the chest opened, the whole constitutes a seat and bench of a convenient kind for such workers, and when closed, the tools being in the same places as when the Workman is at work, will be packed ready for storage or transportation.

relates to improvements in piston rod packing, and consists in an arrangement of sectional metallic rings and binding screws in a hollow cylinder attached to the piston head, through which the rod works, the said arrangement being such that the rings will be caused to bear upon the piston and against the ends of the cylinder, to which they are neatly fitted and make steam-tight joints, while allowing the piston to vibrate laterally as much as may be necessary for any inaccuracy in the working of the rod.

# Official List of Latents.

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1	MUNN & CO.,	
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	<del></del>	
	109,993.—CARRIAGE SPRING.—David S. Abbott, Ischua, N.	Υ.
	109,994.—Pump Piston.—J. D. Alvord (assignor to Jam	es
١.	Wilson Dridgenest Conn	

Wilson), Bridgeport, Conn.
109,995.—Holder For Silk, ETC.—B. A. Armstrong, Jersey Ctr. N. J., assignor to himself, J. P. Brainard, New Haven, Conn., and L. U. Smith, Philadelphia, Pa.
109,976.—SAFETY VALVE.—Jasper Armstrong, Brookfield,

109,997.—Brick Machine.—J. M. Austin (assignor to Isaac

Turner, Georgetown, Mo. 109,998.—CAT-HEAD ANCHOR STOPPER.—William H. Barker, Windsor, Nova Scotia. 109,999.—SHOVEL PLOW.—I. A. Benedict, West Springfield,

110,000.—Let-off and Tension Mechanism for Power-Leoms.—E. B. Bigelow, Boston, Mass. 110,001.—CARPENTERS' VISE.—George F. Bissell, Oneonta,

110,002.—Self-Lubricating Axle.—G. P. Blaisdell, North Easton, Mass. 110,003.—STEAM HEATER.—Edward Bourne, Pittsburgh,

110,004.—CLEANER AND GRINDER FOR CARDING MACHINES.

110,004.—CLEANER AND GRINDER FOR CARDING MACHINES.

L. W. Boynton, Hartford, Conn.
110,005.—GAS LAMP.—J. H. Brown, New York, assignor to himselfand c. E. Ball, Jamaica, N. Y.
110,006.—ADJUSTABLE SHACKLE FOR CARRIAGE SPRINGS.—John Bullard, North Hyde Park, Vt.
110,007.—TOOL-CHEST.—George F. Card, Piper City, Ill.
110,008.—EXHAUST VALVE.—William A. Carns, Malden, Mass.

Mass. 110,009.—WATER WREEL.—Daniel W. Case, Garden City, Minn.
110,010.—STAMPING MILL OR CRUSHER.—George F. Case
(assignor to himself and Milan C. Bullock), Windsor, Vt.
110,011.—HAY AND COTTON PRESS.—Nathan Chapman, Hopedale, Mass.
110,012.—WOVEN FRINGED FABRIC.—Peter Cocker (assignor

to himself and W. I. McBride), Philadelphia, Pa. 110,013.—TABLE.—George J. Congle, Chipewa Falls, Wis. 110,014.—CORN CUTTER.—H. V. Corbett (assignor to George W. Amigh), Allendale, Mich.
110,015.—FEED REGULATOR.—Wm. T. H. Daniels, Belville,

110,016.—ALARM ATTACHMENT FOR CLOCKS.—J. H. Davis,

Chillicothe, Mo.

110,017.—COFFEE ROASTER.—Noah Davis, Boston, Mass.

110,018.—INKING APPARATUS FOR PRINTING PRESSES.—Fred.
Otto Degener, Brooklyn, E. D., N. Y.

110,019.—LAND ROLLER.—George C. Dolph, West Andover,

110,020.—HINGE.—Rudolf Drahota, Philadelphia, Pa. 110,021.—TRUMPET FOR SPINNING MACHINES.—Geo. Draper,

Hopedale, Mass.
110,022.—ROTARY ENGINE.—Richard Dudgeon, New York

city.
110,023.—MACHINE FOR MIXING THE MATERIALS TO FORM
ARTIFICIAL STONE, ETC.—J. S. Elliott (assignor to "The Union Stone
Company"), Boston, Mass.
110,024.—BREECH-LOADING FIRE-ARMS.—W. H. Elliot, New York city. 110,025.—Medical Compounds and Apparatus for Making

110,020.—MEDICAL COMPOUNDS AND APPARATUS FOR MAKING THE SAME.—Peter Fahrney, Chicago, III.
110,026.—Door-Stop.—Wm. H. Fahrney (assignor to himself and John Donaldson), Rockford, III.
110,027.—MANUFACTURE OF PAINTS.—F. W. Gerdes, Allegheay City, Pa.
110,028.—PIPE COUPLING.—G. C. Germain, Cuyahoga Falls,

110,034.—Device for Driving Sewing Machines.—A. W. Harris, Providence, R. I. 110,035.—PISTON-ROD PACKING.—William Hartley, Rockford,

110,036.—Nautical A arm.—John F. Haskins, Fitchurg,

110,037.—Mode of Attaching Composition Heels to Boors and Shors.—C. H. Helms, Poughkeepste, N. Y. 110,038.—Core for Castings.—John Herald, Unadilla, 110,039.—Culinary Vessel.—R. M. Hermance, Troy, N. Y.

110,034—CULINARY VESSEL.—R. M. Hermance, 170y, N. 1.
Antedated December 1, 1870.
110,040.—LUBRICATOR.— Milan Hinman, West Stockbridge,
Mass., assignor to himself and Robert M. Stone, Des Moines, Iowa.
110,041.—SEMI-ROYARY VALVE.—Josephus F. Holloway, Cleveland, Ohio.

110,042.—REFINING AND DECOLORIZING SIRUPS AND OTHER Liquids, and in Material for the Same.—Duane Hull, Brooklyn, N. Y. 110,043.—Burglar-Alarm.—Marshall J. Hunt, Rising Sun, 110,044.—Steam-Jet Boiler-Tube Cleaner.—Roland C.

Hussey, Milford, assignor to himself and Augustus O. Corbett, Boston, 110,045.—Tuck-Creasing Attachment for Sewing-Ma-CHINES.—John C. Jenson, Chicago, Ill. 110,046.—CULTIVATOR.—Freeman C. Jewell, Rahway, N. J. 110,047.—CHURN.—John W. Jordan, Lexin ton, Va.

PISTON ROD PACKING.-William Hartley, Rockford, Ill.-This invention 110,048.-PRINTING-INK.-Julius Kircher, Cannstadt, near

Stuttgart, Wurtemburg.
110,049.—Glasseware AND METAL STEM-CONNECTION.—Charles Louis Knecht, St. Clair, and Thomas Adams, Stow township, Pa. 110,050.—Loom.—William Samuel Laycock, Sheffield, Eng-

land. 110,051.—Buhl-Saw.—Thomas Leavitt, Everett, assignor to "Sonnents Wood-Carving Company, Boston, Mass.
110,052.—CARTRIDGE - CAP EXTRACTOR.—John Logan and Daniel W. Eldredge, Boston, Mass.
110,053.—CHAIR.—Charles R. Long, Louisville, Ky.
110,054.—PURIFYING BENZINE.—George Lupton, Indianapo-

110,055.—LAMP-BURNER.—George Lupton, Indianapolis, Ind. Antedated November 26, 1870.

110,056.—MOLD FOR MAKING GLASSWARE.—James B. Lyon,

Pittsburgh, Pa. 110,057.—Velocifede.—Henry A. Maltby, Brownsville, Tex-

110,058.—HAIR-RESTORATIVE.—Allen C. Maxfield, Biddeford, 110.059.—Life-Raft.—David McFarland, New York, assign-

or to A. M. Ingersoll, Brooklyn, N. Y. 110,060.—Belt-Splice Point-Finisher.—John Cummings

110,060.—Belt-Splice Point-Finisher.—John Cummings McLaren, Montreal, Canada.
110,061.—Field Corn-Picking and Husking-Machine.—. George Meader and Charles Meader, Prairie Center, Ill.
110,062.—Liquid Meter.—Charles Moore (assignor to Jose F. De Navarro), New York city.
110,063.—'Truss.—Charles Morrill, New York city.
110,064.—Apparatus for Dressing and Furrowing Mill-strows.—Length Length London Feedend.

STONES. James Lee Norton, London, England.

110,065.—ANIMAL-TRAP.—Ebenezer Oliver, New York city.

110,066.—HITCHING-POST.—Wilson S. Owings, Pan Handle

Postoffice, West Va.

110,007.—BORBIN-WINDER FOR SEWING-MACHINES.—John L.
Patch, Charlestown, assignor to himself and E. F. Tilden, Boston, Mass.

110,068.—ELASTIC MANE-TURNER.—Chamberlayne Phelps,

Clayton, N. Y. 110,069.—CHAIN-CLUTCH.—Hiram Pitcher (assignor to himself

and H. & G. O. Trowbridge), Fond Du Lac, Wis. Antedated Do 9,1870. 110,070.—Device for attaching the Shank to Mineral

AND COMPOSITION BUTTONS.—Charles L. Potter, Providence, R. I. 110,071.—COMBINED LOCK AND LATCH.—Francis M. Ranous,

110,071.—COMBINED LOCK AND LATCH.—Francis M. Ranous, Yreks City, Cal.
110,072.—BASKET FOR TILE-GRINDERS.—Peter C. Reniers, Pittsburg, Pa. Antedated December 10, 1870.
110 073.—DEVICE FOR TRIMMING CYLINDRICAL BRUSHES.—Arthur G. Risley, Utica, N. Y.
110,074.—LEATHER FOR NECK-YOKE FOR CARRIAGES.—Henry Sanders, Utica, N. Y.
110,075.—MACHINE FOR CUTTING CORKS.—Eillert O. Schartan, Philadelphia Pa. Antedated December 8, 1870.

Philadelphia, Pa. Antedated December 9, 1870. 110,076.—CORK-MACHINE.—Eilert O. Schartan, Philadelphia,

110,077. — Type-Setting Machine. — William Stephenson

Shipley, Jersey City, N. J. 110,078.—Sash-Lock.—Christian Sholl, Mount Joy, Pa. 110,079.—Mortising-Machine.—William H. Sible, Harrisburg, Pa. 110,080.—PLOW-CLEVIS ATTACHMENT.—Henr C. Sieverling,

Carrolton, III.

110,081.—PROCESS OF REMOVING EARTHY MATTERS FROM
BRONZE AND OTHER CASTINGS.—Michael Smith, Somerville, Mass., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn.
110,082.—SAFETY-VALVE.—Henry F. Snyder, Williamsport,

110,083.—Base-Burning Stove.—Israel Snyder and Peter C. Garrett, Cedar Rapids, Iowa.

1,084.—MANUFACTURE OF ALUM AND FERTILIZERS FROM MINERAL PHOSPHATES.—Peter Spence, Newton Heath, Manchester, Great Britain. 110.084.-

10,085.—HEAD-BLOCK FOR SAW-MILLS.—Franklin J. Staley
(assignor to Long, Joseph & Carter), Indianapolis, Ind. Antedated December 9, 1870.

cember 9, 1870. 110,086.—JOURNAL-BOX.—Edward H. Stearns, Erie, Pa. 110,087.—STENCH-TRAP.—Daniel C. Stillson, Charlestown, 110,088.—CAR COUPLING.—Augustus F. Street, Zanesville, O.

110,089.—METHOD OF UNITING WOOD.—John A. Thompson, Auburn, N.Y. Antedated November 26, 1870.
110,090.—TELEGRAPHIC RELAY.—Benjamin Birdwood Toye, onto, Canada. 11.—TREE PROTECTOR.—Charles Henry Trumbull, Ma-

Toronto, Canada.

110,091.—TREE PROTECTOR.—Charles Henry Trumbull, Marion, N.Y.

110,092.—ALARM TILL.—Cyrus Tucker and William H. Tucker, Indianapolis, Ind. Antedated Dec. 9, 1870.

110,093.—RAILWAY AXLE.—James Wardrobe, Charles D. B. Fisk, John F. Curtis, and George Fettey, Carlin, Nevada.

110,094.—EXTENSION LADDER.—Thomas Watson and Charles Perry, Brooklyn, N.Y.

110,095.—DOUBLE-TREE FASTENER.—Decatur Werst (assignor to himself and Joshua Laffilin), South Bend, Ind.

110,096.—BARREL.—James W. Weston, New York city.

110,097.—PATTERN FOR MEASURING AND LAYING OUT GARMENTS.—Fannie Wetmore, Chicago, Ill.

110,098.—ROLLER-SHAFT FOR WRINGERS.—Levi H. Whitney, Washington, D. C. Antedatad Nov. 26, 1870.

110,098.—ROLLER-SHAFT FOR WRINGERS.—Levi H. Whitney, Washington, D.C. Antedated Nov. 26,1870.
110,099.—FAUCET.—Franz Wiesenhofer, Fremont, Ohio.
110,100.—WEIGHING WAGON.—Geo. A. Wilcox, Chicago, Ill. 110,101.—SCHOOL DESK.—Elijah Wilson, New Brighton, Pa. 110,102.—MANUFACTURE OF EMERY WHEELS.—John F. Wood (assignor to "The Union Stone Company"), Boston, Mass.
110,103.—FRICTION BLOCK FOR ATTACHING CULTIVATOR AND OTHER TEETS.—William Workman and Jason Hitchcock, Ripon, Wis. 110,104.—HEATING STOVE.—Thomas Young (assignor to Ives & Allen), Montreal, Canada.
110,105.—CHEESE PRESS.—Robert Allen, Cleveland, Ohio.

110,103.—CHEESE PRESS.—RODERT Aften, Cleveland, Onto.
110,106.—Barrel Chamfering and Crozing Machine.—
Truman M. Annis and Thomas B. Luce, Linden, Mich.
110,107.—Wagon.—Ephraim Ball, Jr., Canton, Ohio.
110,108.—Presserving Sweet Potatoes.—Hedgemon T.

THE SAME.—Peter Fahrney, Chloago, Ill.

110,026.—DOOR-STOP.—Wm. H. Fahrney (assignor to himself and John Donaldson), Rockford, Ill.

110,027.—MANUFACTURE OF PAINTS.—F. W. Gerdes, Allegheay City, Pa.

110,028.—PIPE COUPLING.—G. C. Germain, Cuyahoga Falls, Ohio.

110,029.—MACHINE FOR MIXING "BATCH" FOR GLASS.—W. T. Gillinder, Philadelphia, Pa.

110,030.—MODE OF ATTACHING BOOT AND SHOE HEELS.—Benjamin Giroux, Chicago, Ill.

110,031.—HAND STAMP.—Edward S. Goodman, New Orleans, La.

110,032.—Tympan Sheet for Printing Presses.—John Gorman, Portland, Me.

110,033.—WASHING MACHINE.—Dewitt C. Harlow, Hannibal; Moo.

110,034.—Device for Driving Sewing Machines.—A. W. Harls, Providence, R. I. 110.118.—FURNACE FOR BURNING SHAVINGS.—Lucius Cran-

dal, New York city.

110,119.—HEAD BLOCK.—Perley M. Cummings, Cincinnati, Ohio, assignor to thimself and Joseph D. Clark, Eris, Pa.

110,120.—PIANOFORTE ACTION.—Willard G. Day, Baltimore,

Md. 110,121,—ASPHALT ROAD AND PAVEMENT.—Edward J. Desmedt (assignor to Grahamte Asphait Company), New York city. 110,122.—OAT CLEANER.—Simon Dickens, Jr., Milwaukee,

Wis. 110,123.—¶ ROOVING TOOL.—Joseph Dill, Grand Rapids, Mich.

110,125.—WACHINE FOR SEPARATING COCKLE FROM WHEAT.
William G. Douglas and Hugh Thomas Douglas, Warrenton, Va., and
John Milton Reed, Omaha, Nebrasks.
110,125.—COFFEE, TEA, AND SPICE CAN.—James M. Earle,
Springfield, Mass.
110,126.—HOE.—James Fairley and Alfred Fairley, Birming-

ham, England. 110.127.—Bung Elevator.—David F. Fetter, New York city. 110,128.—Cut-off for Cisterns.—Frank Fischer, Quincy, Ill.

110,129—NOTES, CHECKS, ETC., TO PREVENT ALTERATION.— Charles Folsom, New York city. 110,130.—Coal Barge.—Lawrence F. Frazee, Jersey City,

110,131.—Grain Thrasher and Separator.—Henry Gill