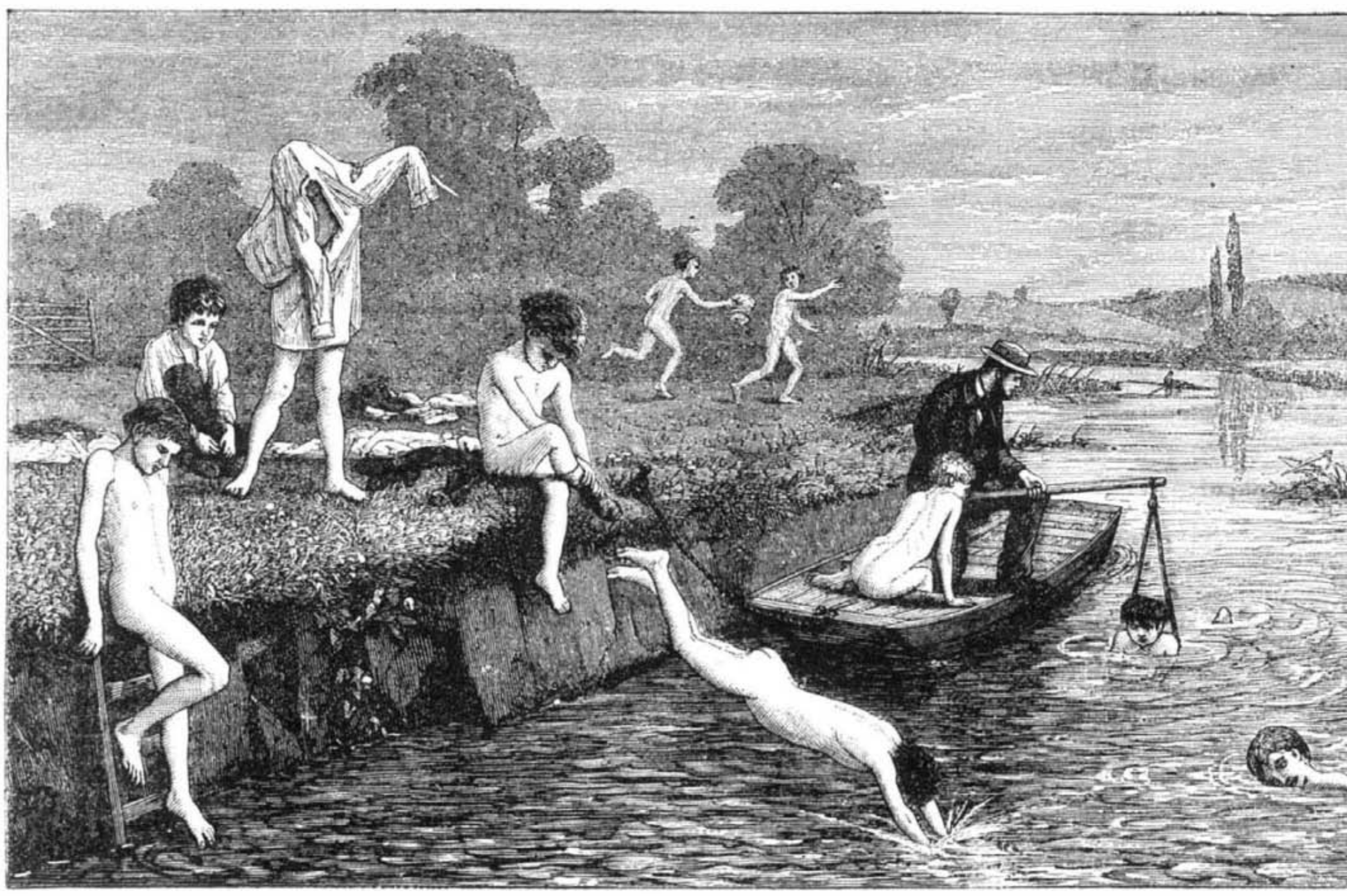
SWIMMING.

Mr. Paul Boyton's feat of crossing the English Channel by the aid of a life-preserving dress tends to prove the value of a knowledge of how to swim almost as much as it does the efficacy of the invention tested. While the dress afforded buoyancy to his person, the wearer, through his expertness as a swimmer, knew just how to use his members so as to aid in his propulsion, with the least expenditure of power. The season is now at hand when the water becomes sufficiently warm to allow of bathing at almost any hour of the day, and hence the present is an excellent time, for those who contemplate acquiring this very necessary part of the knowledge of self-protection, to begin.

The manner of swimming properly is as follows: Supposing the bather to be in the water, he throws himself forward on his stomach, his whole body being only just covered by the water and no more; his hands are brought up under the chin, knuckles upward and with the first fingers touching each other: the whole palm is slightly contracted so as to form a concave surface, and the fingers are pressed closely together. The legs are drawn up as short and as near the body as possible; the breath is fully inhaled; then the stroke is made; the hands and feet are both darted forth to their fullest stretch at the same moment; the former are still kept close to each other, and the balls of the toes are made to touch, in which position they remain unmoved till the whole stroke is finished. The hands, fully extended, are then separated and moved round, each describing part of a circle till they are opposite the shoulders, and then the stroke is finished. But observe that which is of most consequence; the exhalation of the breath begins with the stroke, and is slowly continued as long as the striking lasts; indeed, the quantity of breath determines how long the stroke will be, for it is taken only once at every stroke. It is very measuredly given out by a good swimmer, and all the time he is breathing forth he brings his hands round, making the lungs and the hands work and cease working together. The legs all the while, after the first rapid kick, remain stretched out rigidly, with the heels quite close to the water surface; thus a flat position is secured, which greatly conduces to speed.



BOYS LEARNING TO SWIM.

The hands are only slightly propulsive; their chief use is to act as a cutwater, cleaving the way for the body, but, much more, to prolong the impetus given by the legs, and to eke it out to the utmost. The breath acts as a float to the whole, and cannot be too carefully husbanded and proportioned to the long sweep of the arms. A swimming stroke resembles that of an oar in its perfection; for it is quick forward, evenly pulled out, and the recovery for a new stroke is rapid; and on these two things, namely, lying truly horizontal just under the surface of the water, and proper treatment of the breath, the art of swimming depends.

In entering the water head foremost, or "taking a header," as it is called, the water should be struck by the forehead bone, just below the hair—the hands having first cloven the water, as shown in the illustration. The angle which the body should form with the water should be less than half a right angle, or from thirty-five to forty degrees, as shown in the diving figure in the annexed engraving, selected from the *Art Journal*. Then recovery upwards is rapid, and the appearance of the whole graceful. Adepts have brought this branch of the art to such perfection that they can jump into less than two feet of water without touching the bottom.

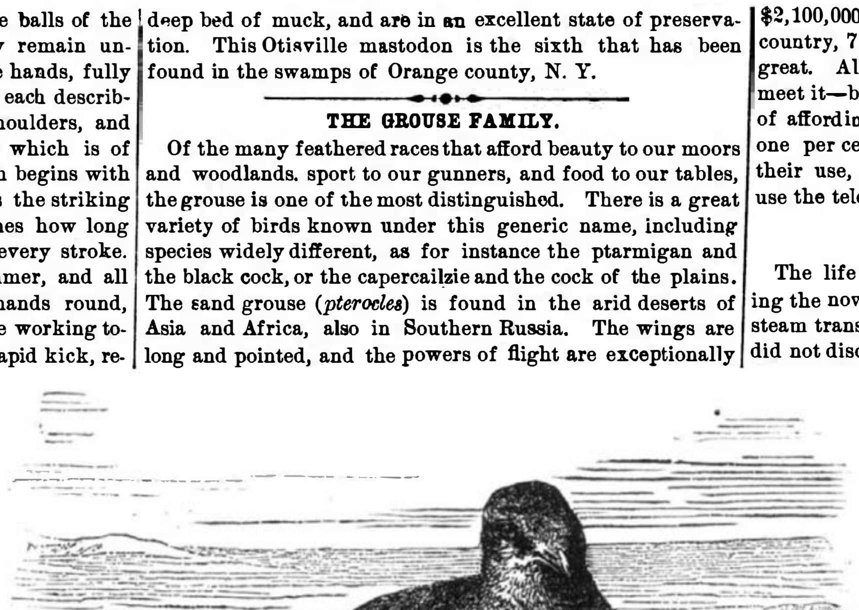
In fresh water a strong swimmer will move fully five feet and a half at every stroke without great exertion. How many strokes he will make in a minute must depend on his breathing capacity; twenty-five to twenty-six would probably be the average. This will give fifty-eight yards per minute, or just two miles an hour; and we should think, to accomplish that pace without distress would be a fair criterion of a good swimmer. At racing pace the strokes are much more rapid, exceeding fifty per minute; and the highest speed that seems attainable is thus eighty-eight yards, or exactly three miles an hour.

Mastodon for Yale College.

Professor Marsh has secured, for the Peabody Museum of Yale College, the skeleton of a large mastodon, exhumed by Mr. A. Mitchell on his grounds at Otisville, seventy-five miles from New York and within a mile and a half of the Erie railroad. The bones were found on and in clay, beneath a deep bed of muck, and are in an excellent state of preservation. This Otisville mastodon is the sixth that has been found in the swamps of Orange county, N. Y.

THE GROUSE FAMILY.

Of the many feathered races that afford beauty to our moors and woodlands, sport to our gunners, and food to our tables, the grouse is one of the most distinguished. There is a great variety of birds known under this generic name, including species widely different, as for instance the ptarmigan and the black cock, or the capercailzie and the cock of the plains. The sand grouse (*pterocles*) is found in the arid deserts of Asia and Africa, also in Southern Russia. The wings are long and pointed, and the powers of flight are exceptionally great; and the toes are connected by a membrane, enabling the birds to run rapidly on loose sand. Their plumage is variegated, brown, gray, and ocherous yellow being predominant. Though the birds associate in pairs, they are often met with in flocks, and they are striking objects on the wing, being beautifully marked. Their flesh is, strange to say, coarse and flavorless.



THE SAND GROUSE.

The hen lays her eggs in a hole in the sand, and hatches out her young, which are soon able to obtain their own living, being strong and hardy.

The British Telegraphs.

From the annual report of the Post Office Department of Great Britain, just rendered to Parliament, we gather that the total receipts for telegraph service for the year ending March 31,1875, was $5,600,000, and the expenditures for the same, $5,965,300, showing a net loss of $365,300. The Chancellor of the Exchequer, referring to the telegraphs, in his speech on the budget, took a rather gloomy view of what he termed a remarkable experiment, and held the results up before the House as a warning not to enter into any other kind of business which could better be carried on by private enterprise. He said: "Undoubtedly the telegraph service has not yet been brought into a remunerative condition. We are not as yet paying our way, and are contributing very little toward the interest on the debt incurred for the purchase."

The telegraphs of Great Britain have already cost that government about $60,000,000, and there are claims still pending which will amount to several millions more. Every year the deficiency has been enormous, to say nothing of the loss of interest upon so vast a sum. This latter item alone, at the low rate of 3½ per cent, amounts to $2,100,000 yearly. At the prevailing rate of interest in this country, 7 per cent, this loss would, of course, be twice as great. All of this has to be met, and there is but one way to meet it—by increased taxation. In this manner the burden of affording telegraphic facilities at less than cost, to the one per cent of the population whose business necessitates their use, falls upon the ninety-nine per cent who do not use the telegraph at all.—*Journal of the Telegraph.*

How Inventions are Made.

The life of George Stephenson proves that, notwithstanding the novelty and great importance of his improvements in steam transit, he did not discover these improvements. He did not discover that a floating embankment would carry a railway across Chat Moss, neither did he discover that the friction between the wheels of a locomotive and the rails would enable a train to be drawn by tractive power alone. Everything connected with his history shows that all his improvements were founded on a method of reasoning from principles, and generally inductively; to say that he "discovered" our railway system, according to the ordinary construction of the term, would be to detract from his hard and well earned reputation, and place him among a class of fortunate schemers who can claim no place in the history of legitimate engineering.

Count Rumford did not by chance develope the philosophy of forces upon which we may say the whole science of dynamics now rests; he set out, upon a methodical plan, to demonstrate conceptions that were already matured in his mind, and to verify principles which he had assumed by inductive reasoning.

The greater part of really great and substantial improvements which have performed any considerable part in developing modern mechanical engineering have come through this course of first dealing with primary principles, instead of groping about blindly after mechanical expedients; and present circumstances point to a time not far distant when chance discovery will quite disappear. —*Engineering.*

Mastic for Iron and other Materials.

The following is the composition invented by M. I. Machabee, which is said to preserve iron from rust, and also to be applicable to other materials, such as stone or wood, used in conjunction with iron or other metal, in the formation of reservoirs or other works: Virgin wax,100 parts; Gallipoli,125; Norwegian pitch, 200; grease, 100; bitumen of Judea, 100; gutta percha, 235; red lead, 120; and white lead, 20, all of which, says the inventor, have their special value. The materials are mixed in a boiler in the order in which they are given, the gutta percha being cut up in small pieces, or rasped. The mixture must be well stirred at each addition, and, when homogeneous, is poured into molds, and looks like chocolate. When used for preserving iron from rust, it is melted and laid on with a brush; but for stopping holes, etc., it must be in a pasty state. It may also be used as a glue to fix a piece of metal over a hole. For certain purposes, such as stopping holes in large vertical metal surfaces, the composition is slightly varied, the Gallipoli being reduced to 115, the bitumen to 90, and the red lead to 100, while 40 parts of gum copal are added next to the gutta percha.

Tasmanian Devils.

The United States steamer Swatara lately arrived at this port from Australia, with the instruments and apparatus used by the American astronomers during the late transit of Venus observations.

Among the curious animals brought home by the officers are a *sarcophilus ursinus*, or Tasmanian devil. This hideous creature is said to be the only living specimen in this country, and it will probably be sent to Central Park for exhibition. In appearance it has some resemblance to the American raccoon. It is carnivorous, and in its wild state principally lives upon birds, rats, and other smaller animals. Although partially tamed, it is deemed necessary to keep the creature confined on deck.

There is also on board a wombat or Tasmanian hog, which lives upon vegetable matter. Several kangaroos, with a walloly and two beautiful Gordon setters, were also noticed playing upon the deck of the Swatara; while a number of love birds and parrots, and a Sultana bird, were caged in different portions of the vessel. A fine collection of Australian ferns has been made by several officers connected with the expedition.

DECISIONS OF THE COURTS.

United States Circuit Court---Southern District of Ohio.

PATENT FEED WATER FILTER.—THE STILWELL AND BIERCE MANUFACTURING COMPANY *vs.* THE CINCINNATI GAS LIGHT AND COKE COMPANY, THE ARMSTRONG HEATER AND MANUFACTURING COMPANY, JAMES A. ARMSTRONG, AND STEPHEN H. STARR.

[In equity.—Before SWING, J.—Decided January, 1875.]

The first claim in reissued patent for feed water heater and filter, granted to E. R. Stilwell, August 24, 1869, which is for "filtering material F, between a series of shelves and outlet, substantially as described," held valid notwithstanding the fact that filters had been used for freeing the feed water for boilers from the matter held in mechanical suspension therein, and the further fact that heaters composed of a series of shelves had been used for a similar purpose to remove from the water the matter held in solution and a portion of that held in suspension.

Although the operation of neither the shelves nor the filter is affected by the union of the two in the same machine, a new result is produced, inasmuch as the water is passed into the boiler in a condition different from that which would have been produced by either of the devices separately.

The Stilwell patent is not invalidated by the earlier English patent of Wagner, since it is doubtful whether the Wagner device could be practically used with success.

There is no force in the objection that the Stilwell patent does not specify what filtering material is to be used. The patent permits the use of any suitable filtering material, and persons skilled in the art could at once use the invention without experiment or additional invention.

The mere making of a model of an invention held not to constitute invention, as against a patent subsequently granted to another for the same thing.

The alleged anticipation of the Stilwell invention by James A. Armstrong discussed.

It was decided by the court that the respondents infringe the first and second claims of the second patent, namely, the filtering material between the shelves and the outlet, and the arrangement of steam inlet and shelves; and that they do not infringe the first and third patents, as alleged in complainants' bill.

[*Wood & Boyd*, for complainant.
Fisher & Duncan and *John E. Hatch*, for defendants.]

Supreme Court of the United States.

PATENT LOOM.—WILLIAM MASON, APPELLANT, *vs.* E. H. GRAHAM AND W. ROUSE.

[In equity.—Appeal from the Circuit Court of the United States for the District of Massachusetts.—October term, 1874.]

[This was a suit in equity under letters patent relating to an improved picker staff motion in looms, granted to E. H. Graham, October 16, 1860, and reissued May 28, 1867, to the inventor and Wanton Rouse, a half owner in the patent.

The case as decided in the circuit court will be found fully reported in 5 Fisher, 1.

It was appealed by the defendant.]

STRONG, J.

The patent of E. H. Graham, of October 15, 1860, reissued May 28, 1867, for "picker staff motion in looms," has no relation to the mere form of a journal-bearing arm, nor does it consist in arranging a journal-bearing arm in a slot in the rocker. It embraces every combination of a rocker with a bed and loose journal-bearing arms, arranged so as to produce the result described in the specification as effected by the combination.

Inasmuch as defendant employs a combination of a rocker with a bed by loose journals projecting on each side the picker staff, and the combination is effected by means of a journal-bearing arm, it is immaterial that the form of his journal-bearing arm is unlike that of complainant's, or that its mode of attachment is different, so long as it performs the same function in substantially the same way.

Where defendant had been in the habit of selling the infringing picker staff motion both separately and attached to looms, in ascertaining his profits upon those sold with the looms, regard should be had to his profits upon those sold separately, rather than to the aggregate profits made by him upon the loom and attachment combined.

If defendant has cheapened the cost of producing the infringing device by an improvement of his own, he is entitled to a corresponding credit in the ascertainment of the profits which complainants are entitled to recover.

[*Benjamin Dean*, for appellant.
J. E. Maynadier, for appellees.]

NEW BOOKS AND PUBLICATIONS.

THE MOSAIC ACCOUNT OF CREATION, THE MIRACLE OF TO-DAY: or New Witnesses to the Oneness of Genesis and Science. By Charles B. Warring. New York city: J. B. Schermerhorn & Co., 14 Broad street.

Scientific students who attempt the task which Mr. Warring has imposed upon himself must be careful not to underrate its magnitude, and must prepare for vigorous attacks from both classes of polemics. The author, in the work now before us, has assembled a large number of coincidental similarities between the Genesitical account and the revelations of research; and although his zeal has induced him to claim as proofs some points which are rather fanciful and far-fetched, the book will repay any one who will read it attentively; for it contains much laborious thought and many evidences of careful study, and shows that the author has not too hastily thrown himself into the arena of combat. But the battle is not likely to be ended for some time; and we are not yet able to pronounce whether either side, the theologians or the sceptics, or the "harmonists" (to coin a word to describe the most recent writers), are likely to secure even a temporary victory.

HISTORY OF THE UNITED STATES OF AMERICA. Illustrated. Supplied to subscribers only, in parts at 25 cents each. New York city: Cassell, Petter, and Galpin, 596 Broadway.

This is another of the many series of finely illustrated standard works which have gained for the above named publishers an enviable reputation, both in this country and in England. The history begins with Sir Walter Raleigh's attempted colonization of North Carolina in 1584-5; and it will embrace all subsequent events up to the present time. The illustrations are excellent specimens of the wood engraver's art, and are lavishly interspersed throughout the text. Many of them are of especial interest as *facsimiles* of old pictures, documents, etc. The work is written in a clear and graphic style, and seems to fulfil all the requisites of a popular descriptive history.

THE ARTIZAN'S GUIDE AND EVERYBODY'S ASSISTANT, embracing nearly Four Thousand New and Valuable Receipts, Tables, etc. By R. Moore. Price, in cloth binding, $2.00; morocco, $3.00. Rouse's Point, N. Y.: John Lovell & Sons. Montreal, P. Q.: The Lovell Printing and Publishing Company. New York city: John Wiley & Son, 15 Astor Place.

A copious selection of instructions for using various industrial and domestic processes, well arranged and edited. The articles are classified by the trades for use in which they are designed, and so form, in many cases, complete treatises on the subjects.

DIGEST OF THE UNITED STATES PATENTS FOR PAVING AND ROOFING Compositions to January 1, 1875, and English Paving Compositions to January 1, 1874. By L. W. Sinsabaugh, United States Patent Office, Washington, D. C. Price $10.

Mr. Sinsabaugh adds another to a very valuable series, which we hope will be continued till every class of patents has been summarized. To any one engaged in operations involving the use of patented articles, whether as inventors, manufacturers, or merchants, such books are indispensable; and the high price necessitated by the labor of compiling them and their limited circulation is more than repaid by the handiness and facility of reference which they afford.

THE JOURNAL OF EDUCATION, devoted to Educational Interests, Science, Literature, and Art. Yearly Subscription, $2.50: single copies, 25 cents each. Brooklyn, N. Y.: 185 Montague street.

There has been a great opportunity for establishing a high class periodical devoted to educational subjects. The lavishness with which provision for education has been made by all our States has long been matter for congratulation and pride; while the illiterateness of many of the senior pupils causes us to wonder how so much money can be spent to produce so poor a result. The failure is undoubtedly due to imperfect and unmethodical teaching; and the science of imparting instruction needs to be carefully and studiously learnt. To this end, a literature of the whole subject is needed; and the magazine now before us is a long step towards supplying it. It is well written and edited, and is altogether a creditable publication.

NEW YORK CITY DIRECTORY. Volume LXXXIX, for the Year ending May 1, 1876. Price $6. New York city: The Trow City Directory Company, 11 University place.

The organization for compiling this indispensable book should, after 89 years' labor, be tolerably complete; and we are already (June 11) in receipt of a handsomely printed volume, containing a correct list of all persons doing business or occupying houses in New York city, including the many changes which took place as usual early in the month of May. The names in the Directory are 4,468 more in number than those of last year, and the increase of the population within the 12 months may be estimated at 22,000. The whole value of such a work consists in its accuracy; and we feel bound to testify to the care bestowed on its compilation and its consequent value as a thoroughly trustworthy book of reference.

WILSON'S BUSINESS DIRECTORY OF NEW YORK CITY. Volume XXVIII. Price $2.50. New York city: The Trow City Directory Company, 11 University place.

We have here a very compendious classification of the firms and business men of our city, arranged under the heads of their respective professions and trades. Commercial travelers, advertisers, and others wishing to obtain complete lists of persons occupied in any particular calling, will find this directory complete.

A NEW TABLE OF EXTENDED MULTIPLICATION. Devised by George A. McLane, of Chicago, Ill.

This is something of a mathematical curiosity. It is intended to take the place of Crelle's "Tables of Calculation," now generally used in life insurance offices for adjusting premiums, etc. The new table enables an accountant to divine a result involving figures up to 10,000 almost at a glance. For insurance companies, railway clerks, and others, it will save much time and greatly lighten labor. The author may be addressed, care of American Express Company, Chicago, Ill.

TARIFF REVISION, a Reply to the Proceedings of the Philadelphia Drug Exchange on the Proposed Revision of Tariff. By Daniel C. Robbins. New York city: Thitchener and Gastaeter, 14 and 16 Vesey street.

An able and convincing argument against a grinding and unjust monopoly.

ON THE DUPLICITY OF THE PRINCIPAL STAR OF *Nu* SCORPIONIS. By S. W. Burnham. Reprinted from the Royal Astronomical Society's Monthly Notices.

Mr. Burnham is continuing his valuable labors on the double stars, and the paper now before us is a report of an interesting investigation of one of the most remarkable of the binary heavenly bodies.

SKEW ARCHES: Advantages and Disadvantages of Different Methods of Construction. By G. W. Hyde, C. E. Price 50 cents. New York city: D. Van Nostrand, 23 Murray and 27 Warren streets.

A valuable treatise on an interesting and somewhat difficult branch of engineering science. It is issued in Mr. Van Nostrand's excellent Science Series.

Recent American and Foreign Patents.

Improved Earth Auger.

Andrew M. Hanna, Kosciusko, Miss.—A cylinder, made of heavy sheet metal, carries a cross bar, to which are bolted blades which are curved into spiral form, and each of which makes about half a turn. To the rear edge of each blade is hinged a valve, which shuts down against the other cutter, so that the earth contained in the cylinder may be raised by and with it. To the upper end of the cylinder is rigidly attached a bail. The shaft is attached to the bail and to the cross bar, and is made in sections, the lower end of each upper section having a square socket formed in it to receive and fit upon the squared upper end of each lower section. The interlocked ends of the shaft sections are secured together by a bolt, pin, or key, so that the cylinder can be raised and lowered by the shaft.

Improved Ironing Board.

Henry Clay Green, Oshkosh, Wis., assignor of one half his right to John H. Gettman, of same place.—This ironing board has, at its upper end, a self-adjusting neck wire, and at the lower end a spring cross bar, and a groove for the bead on the bar. When the bar is turned back, it gives the side of the shirt or other garment a strain, and draws it tight over the board in a proper position for ironing. The shirt or garment being confined at the top of the board by the spring, which adjusts itself to the neck, any required degree of tension may be given.

Improved Hot Air Furnace.

William O. Crocker, Turner's Falls, Mass.—The cover of the base is provided with two rows of holes, communicating, respectively, with the space between the outer casing and a jacket, and the space between said jacket and the combustion chamber. The jacket is perforated by means of a conical punch, so that conical cape project over the opening, which receives the air and cuts it up into numerous jets, and throws it in contact with the radiating combustion chamber. The air which enters inside the jacket passes directly upward in contact with the combustion chamber. The top rim of the fire pot is provided with a series of perforations, so as to enable an indirect draft to take place by causing the products of combustion to pass through the top rim, down the rear side of the fire pot, under the partition plates, up the front side of the fire pot, and through the lower exit. The object of this arrangement is to cause the heated gases to pass over the entire surface of the combustion chamber.

Improved Harvester.

Frederic F. White, Stacyville, Iowa.—To the shaft are attached two chain wheels, around which pass two endless chains, which pass down along the upper sides of inclined bars, around chain wheels pivoted at the lower ends of said inclined bars and around pulleys pivoted to hangers connected with the framework of the machine. To the endless chains are attached cross bars, to the inner ends of which are pivoted the ends of the rakes. By suitable construction, as the rack bars are moved rearward, the rakes will be raised into a position at right angles with the cross bars; and as the rack bars are moved forward the rakes will be lowered into line with the cross bars. The rakes are lowered at the proper time to sweep the grain from the platform up an inclined apron and into a receiver, and raised and held up while moving back to the outer end of the platform by guides attached to the inclined bars.

Improved Single Rail Railway Car.

Chandler McWayne, Colfax, Cal.—Upon the upper ends of posts are crossheads running longitudinally with the track, and having deep longitudinal grooves in their upper sides to receive the base of the rails. The rails are supported midway between the posts by arched braces. To the sides of the posts are attached flat bars for the horizontal wheels to bear against. The car body is made with a deep longitudinal recess extending up from the middle part of the bottom of the car, so that the main weight of the car and load may be below the rail. The trucks, to which the wheels are pivoted, are pivoted in the upper part of the recess in the car body. The passengers and load of the car occupy the compartments in the sides, below the level of the rails. In the upper part of the car body, directly above the rail, is formed another compartment, the floor of which slides transversely in ways in the frame work of the car, so that, by moving the said floor toward one side or the other, the weight of the passengers or load in said compartment may serve as a counterpoise for balancing the car.

Improved Automatic Gate.

Hiram Krom, Dartford, Wis.—This improved gate is constructed in duplicate and aligned parts, rigidly connected to and turning upon a central pivot post, to which weighted cords are attached. The latches are so connected together as to operate simultaneously.

Improved Stirrup.

Joseph B. Waggoner, Athens, Ill.—The bottom turns horizontally on its ends in a yoke, which is pivoted to a suspending yoke which is swiveled to a suspending strap, so that it can turn in a vertical axis. The combined movements thus afforded cause the stirrup to adjust itself to the foot, so as to allow the latter to slip out without the possibility of being caught.

Automatic Car Brake.

F. L. Kirtley, Cleburne, Texas.—This invention consists in improving automatic car brakes by connecting the brake lever with a sliding drawbar, so that, as soon as the engine slows up, the drawbar is forced back by contact with that of the next adjacent car, and the brake shoes applied to the wheels. The drawbar or buffer is jointed so that the shoes may remain aloof from the wheels whenever the cars are backed.

Improved Extensible Safety Bridge.

William Campbell, Floyd C. H., Va.—This invention consists of a series of bars arranged crosswise of the car loosely on rods, which project from and slide forward and backward in another bar connected to the car for supporting them. The loose bars are linked together at the ends to limit the extent to which they may be separated; and the outermost bar of each platform is contrived to couple with the corresponding bar of another car. A practical platform is thus formed whereon persons may walk with safety from one car to the other when the cars are in motion, or the platform may be permanently connected at the middle in one part only for two cars, and be connected and disconnected with a car at one or both ends.

Improved Compound for Scouring White Goods.

Moritz Mayer, 271 East 10th Street, New York city.—This invention is an improved compound for cleaning and dressing white kid gloves and shoes of morocco, sheep, satin, cloth, and similar white fabrics, so as to restore their original glaze and whiteness. The compound consists of a mixture of French chalk and salts of sorrel in water, under an addition of a small quantity of oxalic acid and bicarbonate of soda. The compound is applied by a small sponge to the articles to be cleaned, giving them one or more coats, as required, each coat being exposed to the open air for drying. The inventor claims that any soiled or discolored parts, ink spots, etc., will be completely cleaned without hardening or injuring the fabric, which retains its original pliability, and is restored by the dressing to its former whiteness and luster.

Improved Excavator.

John S. Whitescarver and William C. Whitescarver, Pontiac, Ill.—By suitable construction, by operating a lever, the point of the plow may be raised and lowered, to cause it to run shallower or deeper in the ground. By other devices, a frame may be moved out and in to tighten or slacken an endless apron. The machine may be adjusted to carry the earth up a high grade, or even discharge it into a wagon, and the inner end of the carrier may be readily adjusted to, and held securely at, any desired hight from the ground to receive the earth from the plow.

Improved Railway Track Closer.

Isaac N. Haines, Pomeroy, Pa.—This invention consists of blocks of suitable size, which extend with their top parts over the rails, and slide in base shoes by the action of lever and double crank connections, so as to put the blocks simultaneously on or off the track.

Improved Extensible Ladder.

Edward Clark, New York city.—To the lower part of the side bars of the upper section are pivoted bars, which, when the said upper section is extended, overlap the upper parts of the side bars of the lower section, and are secured by bolts and nuts. This construction makes the joints between the sections the strongest part of the ladder. The novel features in this invention, which is composed of sliding sections, are as follows: To the side bars of the lower section are pivoted two buttons, the lower ends of which are notched to fit upon the rear upper corners of the steps to support the sections. This construction allows a pawl to be thrown back, and cords to be detached from pulleys, allowing the pulley shaft to be used for hoisting purposes.

Improved Refrigerator Car.

Richard Armiger, Baltimore, Md.—This invention consists in making the ice and provision chambers entirely distinct and airtight, so that the moisture from the provisions and in the provision chamber will be condensed at the top and held there in troughs, the provisions being perfectly dry as well as cold. In this state they keep their freshness and flavor during a travel over great distances.

Improved Ore Concentrator.

James V. Pomeroy, Boulder, Col. Ter.—This invention consists of a series of ore pans or troughs, which are placed in detachable manner in a supporting frame, to which reciprocating motion is imparted by concussions with suitable actuating mechanism. The pans are connected by one of the sides being of suitable inclination, and overlapping the edge of the adjoining pan, for facilitating the wave motion of the water, and the separation of light particles on the motion of the frame.