the automaton umbrella the stretchers are put so high that the canopy can be brought down close over the bearer's head. The club umbrella, invented only a few years since, was peculiar in having a handle that could be unscrewed, so that on removing the handle and putting it into his pocket the owner might leave the canopy in the hall with an agreeable confidence that he would see it again on leaving his club, as no one would care to "borrow" a handleless umbrella. But this ingenious contrivance failed to find favor in Pall Mall, because it was felt to be an unclubable act for a man to enter his club with an umbrella that implied a distrust of the honesty of the members of his joint-stock home. It is almost needless to say that the perfect umbrella of the future will combine all the features of all the previous umbrellas —that it will be a fishing rod, fowling piece, driving whip, sword stick, bayonet, tobacco pipe, writing desk, and pillar post tent, and have its handle fitted with a fireplace, a repeating watch, and a compass, and will weigh only eight ounces avoirdupois, the weight of the most delicately constructed Paris umbrella.—*Hatters' Gazette.*

Fishing Extraordinary.

There are extraordinary ways of fishing practised by people of uncivilized countries, which are not the result of ignorance, but of that ingenuity which is always rendered fruitful by dire necessity and the instincts of self-support.

A method employed by the Chinese is generally practised at night, and depends upon a peculiar power which a white screen, stretched under the water, seems to possess over the fishes, decoying them to it and making them leap. A man, sitting at the stern of a long narrow boat, steers her with a paddle to the middle of a river, and there stops. Along the right hand side of his boat a narrow sheet of white canvas is stretched; when he leans to that side it dips under the surface, and, if it be a moonlit night, gleams through the water. Along the other side of the boat a net is fastened so as to form a barrier two or three feet high. The boatman keeps perfectly still. If another boat passes by, he will not speak; he is only impatient at the slight breaking of the silence. While he keeps thus without a sound or stir, the fish, attracted by the white canvas, approach and leap, and would go over the narrow boat and be free in their native waters on the other side, but for the screen of netting, which stops them, and throws them down before the man's feet.

Every one must have heard of the fishing cormorant, which is actually trained in China to catch fish. A man takes out ten or twelve of these web-footed birds in a boat, and as soon as the boat stops, at his word they plunge into the water and begin at once searching for and diving after fish. They are most diligent workers, for, if one of them is seen swimming about idly, the Chinaman in the boat strikes the water near the bird with the end of a long bamboo; and, not touched, but recalled to a sense of duty, the cormorant at once turns to business again. As soon as a fish is caught, a word from the man brings the bird swimming towards him. He draws it into the boat, and it drops its prey from its bill. There is always a straw or string tied round the neck, to prevent the fish from being swallowed, and this string requires the nicest adjustment, lest it may choke the bird—a result which would certainly follow if it slipped lower down on the neck. The sagacity and workman-like method of the birds are shown when they get into difficulties. If the fish caught is too large for one beak to secure, another cormorant comes up to the struggle, and the two with united efforts bring their prize to the boat. On the rivers and canals near Ningpo, Shanghae, and Foo-chow-foo, the employment of these birds is by no means an uncommon sight; but they are never to be seen fishing in the summer months, their work being in the winter, beginning always about October and ending in May. The birds have of course to be subjected to a system of training, which is carried on in the cormorant breeding and fishing establishments, one of which is at a distance of thirty or forty miles from Shanghae.

A still more singular practice is to be found amongst the Chonos Indians, who train dogs to help them on their fishing expeditions in much the same way as the shepherd's dog helps the shepherd. The net is held by two men standing in the water, and the dogs, swimming out far and diving after the fish, drive them back towards it. They enjoy their work just as a good horse, though hard pressed, seems to enjoy the hunt; and every time they raise their heads from the water they tell their pleasure by clamorous barking. The Fuegians, one of the most miserable and degraded races on the earth, train their dogs in a similar manner to assist them in catching birds and sea otters. In times of famine, they kill the old women of their tribe rather than sacrifice their dogs, alleging, as Peschel says, that dogs catch otters, and women do not. They have a wonderful contrivance for killing the sharks which abound off their coasts. A log of wood, shaped so as to appear something like a canoe, is set afloat, with a rope and large noose hanging from one end of it. Before long a shark attacks the supposed canoe, swimming after it, and is caught in the noose, hanging from the stern. It closes on him so that he cannot extricate himself, and the weight of the log keeps him swimming slowly without being able to sink. Then the Fuegians in their canoes, generally steered by women, approach at their leisure and finish the shark with their spears.

All these contrivances of savage nations, or of the strangely civilized Chinese, are meant to kill or seize the fish by natural means. It is much nearer home that we have to look to find the element of superstition prevailing, and useless customs invested with the importance of charms. An instance may be found in the case of the Sicilian fishermen, who, when in search of swordfish, chant a jargon of words the meaning of which even they themselves do not know. The song is supposed to be some old Greek verses, which, by time and use among those ignorant of their meaning, have become so altered as to be almost unrecognizable. The fishermen regard the medley as a sure means of attracting the swordfish, which they harpoon from the boat, when the charm, as they suppose, has brought them within reach.

Far away in northern regions there is a novel method of fishing under ice, which shows more ingenuity than the simple lowering and fastening of a net. A small square hole is cut in the ice, and in this is placed an upright stick, supported by a cross pin run through it and resting at each side on the ice: the end of the stick below this cross pin is short, and to it the line is fastened with the bait and hook attached, while at the top of the stick is a piece of colored rag. Now, though we have called the stick upright, it is meant to fall from that position and lie along the ice, until a fish seizing the bait pulls its lower end, when with a jerk it rises. This contrivance is called a tip-up, from the movement which is certain to follow the seizure of the bait. The fluttering of the colored rag, as the stick rises, tells of capture; and a great number of these self-acting fishers and indicators may be placed near together, each having its own hole in the ice; and each, by the fluttering rag, telling its own tale the moment a fish is caught.

The tip-up not only saves the fisher the trouble of holding his line in position and watching with particular care, but also makes the fish itself strike and announce that it is ready to be pulled out!

With bodies blackened by the sun to the color of the seaweed, the Japanese fishermen are incommoded by neither the rain nor the winds. Like the fishermen of all lands, their restless eyes were wandering from the sea to the heavens. With no guides but the stars by night and the blue edge of the land by day, there was need for keen eyesight and watchfulness. In all the Eastern seas there is no more adventurous race than these men.

We could see the floats of burnt wood which buoyed the ends of our fishermen's lines, and to the nearest of these we were sculled. A kind of wood light and buoyant, and with some resemblance to cork, is used for such floats. It grows in the forests thereabouts, and, after being shaped and charred to prevent decay, lasts, without further trouble, for a longer time than bladders or skins. With some impatience the black buoy and the line attached are brought on board. Like an inverted bell-shaped flower pot comes the first earthenware jar, hardly the size of a child's head, attached to the line. Mouth downward, the jar is pulled up from the bottom, and when all the water has been poured out, the fishermen give a look inside. No occupant being found, the jar is once more lowered into the sea by the attached string, which is overrun till the next jar is pulled up, brought on board, and similarly examined. When six or seven are examined, and no occupant is found in any of these, the fishermen show no impatience. But presently from a jar an octopus is jerked upon the floor of the boat, and with some satisfaction the Japanese watch its tentacles wriggle all about the planks and cling round their legs. Changing its hues, the disgusting cephalopod loses its redder blotches for paler patches, and eventually crawls into a darker corner to coil itself away. Pouring the water more carefully from the inverted pots, the fishermen secure a few more of these animals, which crawl and twine about with snakelike contortions. The long string of pots took time to overhaul, but the spoils were reckoned reward for the trouble. When the fishing was completed, and the black floats were again left to mark the spot, our boat was sculled somewhat further down the land.

We had then time to learn something more of this fishing for tako, as the octopus is named by the Japanese fishermen. Through our friends, we learn that the tako needs no bait to entice it to enter the earthen jars used by the fishermen to entrap it; but crawling about on the bottom, or shooting itself through the sea by the expulsion of water, it finds in the dark earthen jar "a comfortable house," and so occupies it until the fisherman finds it and captures it. The tako is largely eaten in Japan, where all the products of the sea are accounted equally wholesome with those of the land; and beneath an ugly skin the flesh of this speckled monster is thought very good, cooked in several ways, and eaten with or without soy or vinegar. Nevertheless, as if to vindicate the dread its constantly changing hues excite, the eating of the octopus is not unattended with danger. Through some poisonous taint, either occasionally or always present, but modified by the process of cooking, people sometimes die from eating this animal. And yet the knowledge of this interferes but to a trifling extent with the use of food having such a questionable reputation—indeed, at certain seasons, it is largely used by the Japanese, when the cuttle fish are far more plentiful and also more wholesome. Caught by trolling a small wooden fish barbed with hooks, they make good sport, chiefly to the older fishermen, who are not active enough to go off to sea.—*Chambers' Journal.*

DECISIONS OF THE COURTS.

Supreme Court of the United States.

CORSET PATENT.—MORITZ COHN, APPELLANT, vs. THE UNITED STATES CORSET COMPANY, JOHN H. LANE, AND WILLIAM LYALL.

[Appeal from the Circuit Court of the United States for the Southern District of New York.—Decided October Term, 1876.]

A patent is invalid if the invention claimed is found to be patented, or described in a printed publication prior to the patentee's invention or discovery thereof; and it is enough if the thing patented is described, and not the steps necessarily antecedent to its production.

Thus, when the invention claimed is an article, it is not necessary, in order to render the patent void, that the prior publication should also contain a description of the process by which such article was made.

Unless the earlier printed and published description does exhibit the later patented invention in such a full and intelligible manner as to enable persons skilled in the art to which the invention is related to comprehend it without assistance from the patent, or to make it, or repeat the process claimed, it is insufficient to invalidate the patent.

Mr. Justice Strong delivered the opinion of the court.

A careful examination of the evidence in this case has convinced us that the invention claimed and patented to the plaintiff was anticipated and described in the English provisional specification of John Henry Johnson, left in the office of the Commissioner of Patents on the 20th of January, A.D. 1854. That specification was printed and published in England officially in 1854, and it is contained in volume second of a printed publication circulated in this country as early as the year 1856. It is, therefore, fatal to the validity of the plaintiff's patent, if, in fact, it does describe sufficiently the manufacture described and claimed in his specification. The plaintiff's application at the Patent Office was made on the 30th of January, 1873. In it he claimed to have invented "a new and useful improvement in corsets." After reciting that previous to his invention it had been customary in the manufacture of corsets to weave the material with pocket-like openings or passages running from edge to edge, and adapted to receive the bones, which are inserted to stay the woven fabric, and which serve as braces to give shape to and support the figure of the wearer, but that it had been necessary, after the insertion of the bones into said pocket-like passages, to secure each one endwise by sewing, he proceeded to mention objections to that mode of making a corset. He specified two only. The first was that it involved much hand labor and consequent expense in sewing in the bones, or securing them endwise in the woven passages; and the second was that the arrangement or placement of the bones in the passages had to be determined by hand manipulation, and that it was therefore variable and irregular, such as frequently to give to the corset an undesirable shape or appearance near its upper edge. These objections he proposed to remove, and to produce a corset in which the location or position endwise of the bones shall be predetermined with the accuracy of the jacquard, in the process of weaving the corset stuffs or material, thereby effecting the saving of labor and expense in the manufacture. He therefore declared his invention to consist in having the pocket-like openings or passages into which the bones are put closed up near one end, and at that point at which it is designed to have the end of each bone located. * * * Amendments were then made until his present patent was at last granted, dated April 15, 1873. In the specification which accompanies it the patentee admits what he admitted at first, that prior to his invention it had been customary in the manufacture of corsets to weave the material with pocket-like openings or passages running through from edge to edge, and he makes the further admission that it had been customary to weave the material with such passages all stopped and finished off at uniform distances from the edge. He therefore disclaims "a woven corset with the pockets stopped and finished off at a uniform distance from the edges," and he disclaims also "a hand-made corset with pockets of varying lengths stitched on," and his claim is: "A corset having the pockets for the reception of the bones formed in the weaving, and varying in length relatively to each other as desired, substantially in the manner and for the purposes set forth."

NEW BOOKS AND PUBLICATIONS.

STRENGTH AND CALCULATIONS OF DIMENSIONS OF IRON AND STEEL CONSTRUCTIONS. Translated from the German of J. J. Weyrauch, Ph.D. New York city: D. Van Nostrand, 23 Murray and 27 Warren streets.

Another translation of this same work has already been briefly noticed in these columns; and we expressed the view that the contents of the volume were not in such practical form as would adapt it to the uses of the working engineer. The present translation seems to us much less open to that objection, and certainly it contains an immense amount of useful data, entirely outside the formulæ, besides examples tending materially to elucidate the latter. The book is rendered much more practical; and its whole arrangement is, to our minds, better and well calculated to render its various topics more accessible to the student. As regards the intrinsic merits of Professor Weyrauch's work, and in our previous strictures on the other translation, we intended no disparaging reflection upon them; they are undoubtedly great, and the volume should be carefully studied by all engineers. It is based on a general view of the results obtained in the extended course of experiments made in Europe and in this country to determine the properties of iron and steel. As these trials have shown the somewhat startling fact that (to quote Professor Weyrauch) "the method hitherto employed in calculating the dimensions of iron and steel constructions have been entirely wrong," it is hardly necessary to point out the importance of any work which deduces a formula which gives all "the requisites for a simple and rational determination of dimensions."

VICK'S HORTICULTURAL PUBLICATIONS.—The enterprising Rochester seedsman, James Vick, has just issued his annual "Illustrated Catalogue" and "Guide Book," which are of interest to every farmer, in fact, to every class of persons living in the country. Mr. Vick's publications have always been signally well printed; but this year they seem to be more handsomely executed than heretofore. They contain useful information for vegetable growers, flower raisers, and amateur farmers. Coming first among the list before us, the largest, handsomest, and most expensively executed is the "Flower Vegetable and Garden," a book of 165 pages, full of engravings, some of which are full-page colored chromos of fruits and flowers. The next in importance is the "Illustrated Catalogue of Seeds and Bulbs," and then the "Floral Guide." These three distinct publications can be had of the publisher for 75 cents; and we know of no other way of obtaining so much practical knowledge and information for so small a sum as is afforded in these publications.

EVERY MAN HIS OWN LAWYER.—A new edition, revised and improved, of Wells' "Lawyer," comprising forms for drawing legal papers of all kinds and embracing a synopsis of the leading statutes existing in each State, has just been issued. The original edition of this work, and the several subsequent ones, have aggregated an enormous sale, and are to be found in a great many offices and households throughout the country. But the lapse of time has wrought such changes in the statutes of various States that the author has found it desirable to revise the whole book. The professional man, the farmer, the mechanic, the manufacturer—in fact, all classes of the community—will find the work useful for reference, and of great assistance in drawing deeds, making transfers of property, granting powers of attorney, or conferring licences, and a handy and reliable adviser, saving lawyers' fees to the possessor and teaching him his legal rights. The book is printed in both English and German. The price for English edition, by mail, is $2.25; for the German edition, $2.50. Sold by the author and publisher, J. G. Wells, No. 1 Great Jones street, New York city.

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 LAST.

Charles E. Cree, Marlborough, Mass., assignor to himself and J. E. Curtis, of same place.—In this last the block is firmly held in place and prevented from slipping back while the shoe or boot is being lasted, so that the shoe or boot will have its full intended size. The block is wholly within the last, having no projecting part to come in contact with the upper while upon the last; and the last and block are kept together, except when being removed from the boot or shoe, so that the block cannot become lost, and no time will be wasted in looking for and sorting out the blocks of the lasts to be used.

IMPROVED WEIGHING SCALES.

Hosea Willard, Vergennes, Vt.—This invention is designed to improve the lever and beam scale for which letters patent have heretofore been granted to the same inventor under date of July 25, 1876, so that the construction of the same is simplified, and the gross or net weight taken in quick and perfect manner. This improved scale is used advantageously for weighing coal from boats, and other purposes, as the scale may be applied to the hoisting apparatus, and go with the bucket to the place of deposit, the indicator regulating the loading of the bucket, and determining thus the weight of a boat load with great facility, and without loss of time or labor.

IMPROVED BRIDLE ATTACHMENT.

Seton S. Cummings, Turner's Point, Tex., assignor of one third his right to Walker C. Stevenson, of same place.—This bridle is intended for training and taming horses; and it consists in the combination of brace and guide reins, neck and crupper straps, surcingle, and collar. A brace rein buckles into the bit rings, and runs through a ring attached to a strap that is secured to the neck strap, and thence it runs through a loop that is attached to the collar strap, and is finally secured to a ring that is attached to the surcingle by means of loops. The martingale is buckled into the bit rings, and passes through a loop in the front and lower part of the collar strap, and is fastened to the lower portion of the surcingle. All of the straps are duplicated, both sides being exactly alike; and they are provided with buckles or other convenient means for lengthening and shortening, to meet the requirements for horses of different sizes, and for the purpose of adjustment for different positions of the same animal.

IMPROVED CORSET.

Mrs. Maggie M. Harriman, Kansas City, Mo.—This improvement relates to the form and manner of cutting the first gores, to the shape of the sides of the body or waist of the corset, and to the conjunction of short bones with a quilted portion on the back of the corset, whereby it is rendered more elastic, easy, and durable in wear, and adapted for use as a dress waist.

IMPROVED APPARATUS FOR PICKLING SHEET IRON.

John D. Grey, Baltimore, Md.—The ordinary or old process of removing the oxide from sheet iron is to lay the sheets in a tank containing dilute sulphuric acid. They are placed vertical, or nearly so, with their sides in contact. By this improved apparatus, the sheets are conveyed slowly through the tank, upon endless chains, thus savingmuch labor in handling, lessening the time required for pickling, and enabling the acid to act upon the sheets more uniformly.

NEW MECHANICAL AND ENGINEERING INVENTIONS.

IMPROVED SAW-FILING MACHINE.

Samuel V. Pattillo, Greenville, Ala., assignor to himself and Frank J. Kohn, of same place.—This is an improved filing machine by which the gin saws may be quickly, uniformly, and effectively sharpened. The machine is operated by adjusting, first, the file vertically to one saw after the other by means of the center screw post and hand wheel, and filing the teeth of each saw at one side. The saw cylinder is next taken out of the centers and reversed, and the machine adjusted for left hand filing when the same operation of sharpening the teeth of each saw is performed as before, and thus a rapidly working and very effective filing machine for gin saws is obtained that accomplishes the work in better, speedier, and more uniform manner than by hand.

IMPROVED DYNAMO-ELECTRIC MACHINE.

Dieudonneé F. J. Lontin, Paris, France.—This invention consists, first, in combining a magneto-electric machine, in which the induced magnets are stationary and the inducing magnets movable, with a dynamo-electric device for producing currents invariable in direction, for the purpose of exciting the aforesaid magneto-electric machine; and, secondly, in increasing the length of cores of the stationary inducing electro-magnets of the device employed for producing currents invariable in direction, so as to permit one or more wires to be placed thereon, from which alternate currents in opposite directions may be taken, by which arrangement currents invariable in direction are obtained from the induced magnets of the wheel, and also alternate currents in opposite directions from the additional coils upon the lengthened inducing magnets, without the use of collectors or commutators.

IMPROVED WRENCH.

James Shepard, Angola, Ind.—This wrench is easily and quickly operated, as the turning of the handle moves both jaws, the same admitting to be opened wider, to be applicable to larger burs, while the length and leverage is increased jointly therewith. It has a handle with exterior and interior screw threads, that move jointly the jaws having intermeshing threads, the outer jaw being guided in an oblong recess of the inner jaw.

IMPROVED WINDMILL.

William T. Burrows, Nashua, Iowa.—The shaft of this wind wheel is so pivoted to the head of the tail vane that, in turning out of the wind under the influence of great force, the wheel will swing up an incline, whereby its own tendency to swing back down the incline is the means of keeping the wheel in the wind; and, in combination with a wheel in this arrangement, it is proposed to arrange a vertical vane behind the wheel on a pivoted bar, and connected to the vibrating wheel frame, to pull the wheel up the incline, in order that it will swing out of the wind more easily, and the lever of this vane will be weighted to regulate its action, to accommodate the wheel in so swinging out of the wind.

IMPROVED ORE FEEDER FOR QUARTZ MILLS.

George A. Church, Nevada City, Cal., assignor to himself and Edward L. Montgomery, of same place.—This is an improved device for feeding ore to the mortars in quartz mills, so constructed as to feed the ore to the mortar only as it is wanted, which will feed dry and wet ore with equal facility, which will not allow soft running stuff to run through and fill the mortar, and which will not impair the effect of the blow of the stamp by which it is operated.

IMPROVED RELIEF AND SAFETY STOP VALVE.

Charles P. Wiggins, St. Louis, Mo.—The object of this invention is to prevent accidents from carelessly closing the feed pipe while the pump is in motion, and it is so constructed as to always leave an open discharge. It consists in a relief or safety stop valve, formed of the shell provided with an inlet, two outlets, and two valve seats, and the double valve, so arranged that it can close only one outlet at a time, to adapt it to be interposed between the boiler and the check valve of the pump discharge pipe.

IMPROVED HOISTING MACHINE.

Daniel H. Merritt, Marquette, Mich.—This is an improved hoisting machine of considerable power, operated by a friction gearing at varying motion, and capable of being stopped at any moment, to support the load to be hoisted, by a superior brake arrangement; and it consists of a hoisting drum which is operated with friction wheels, and whose shaft is adjusted in parallel manner by eccentric sleeves with slotted arms, connecting rods, and a worm and toothed segment gear. The brake is applied by a similar gear to the other end of the drum, capable of adjustment to wear, being taken off by a brake shoe and supporting-arm at the lower end.

IMPROVED CAR COUPLING.

Benning Rowell, West Sparta, N. Y.—This invention is an improvement in the class of car couplings which are automatic in their operation. The improvement relates particularly to a device which acts as a trigger to support the coupling pin in position to engage the link when it enters the drawhead, and also serves to hold the link horizontal, or at any required angle in a vertical or horizontal plane, so that it will enter the drawhead of another car; also to a pawl lever whose function is to operate the coupling pin of the drawhead and to lock or hold the same in position when it has engaged the link.

IMPROVED TREADLE.

William B. Floyd, Kansas City, Mo.—This invention relates to an improvement in that class of sewing machines and other treadles that are worked by the alternating raising and lowering of the feet and legs in place of the forward or backward motion of the feet, so as to remove all strain from the ankles, and give the operator more power with less exertion than with the common treadle. It consists of two treadles, that are arranged in adjustable manner on the laterally swinging treadle bar, that turns by its crosspiece in suitable bearings. The treadles are pivoted longitudinally and laterally, to adapt themselves to the position of the feet. The compound pivots of the treadles renders the motion of the same natural and easy, so as not to fatigue the worker as much as where the feet and ankles alone do the work. The feet do not change their relative positions to the legs by the adjustment of the treadles to their position, so that there is no strain upon the ankle joints, but only upon the knee and thigh joints, which can perform more labor with greater ease, on account of their greater strength.

NEW WOODWORKING AND HOUSE AND CARRIAGE BUILDING INVENTIONS.

IMPROVED AUTOMATIC WAGON BRAKE.

Charles T. Warren, Atlanta, Ga.—This improved brake for vehicles is so constructed that it will be applied to the wheels by the operation of holding back, and at the same time will allow the vehicle to be backed without its being thrown into action. The construction is simple and ingenious, rendering the device excellently adapted to its purpose.

IMPROVED DUMPING WAGON.

Robert A. Reed, Hoboken, N. J.—This is an improved device for attachment to trucks, cars, wagons, carts, and other vehicles, to enable their loads to be readily dumped. By the construction, by turning the shaft in one direction the forward end of the body or box will be raised to dump the load; and by turning it in the other direction, the body or box will be drawn back into a horizontal position.

IMPROVED MITERING MACHINE.

Josiah H. Mosher and John Pennington, Pewamo, Mich.—This improved mitering machine is for use in the manufacture of picture frames, moulded frames, and for the cutting and putting together of frames on any desired angle and length. It consists of a basepiece with graduated guide rails, carrying sliding frame supports with adjustable saw guides secured thereto. The mouldings are first cut at the required miter, and then brought to a perfect joint by running the saw through the joint of the mouldings while they are firmly clamped together. They are then fastened by glue and nails, and thereby two corners of the frame connected in an easy, quick, and effective manner. The mitering and jointing of frames and mouldings is thus accomplished by a simple, accurate, and readily operated device.

IMPROVED SINK.

Benjamin Wallace, New York city.—This is an improvement on the sinks used in kitchens, tenement houses, etc., by which the rotting of the surrounding woodwork by the ruuning or splashing over of the water is prevented, a more effective and readily changed strainer is obtained, and a tight joint between sink spout and conducting pipe, to avoid leakage, is formed. It consists of a sink with side and back guards extended above the horizontal flanges or seats.

IMPROVED CAR SCREEN.

William De Courcy May, Baltimore, Md.—This screen is shaped and folds like a lady's fan. It is attached to the side wall of the car, and may be extended and held open in a vertical plane, at right angles to said wall to prevent air currents from the open windows striking directly upon the passengers occupying the contiguous seats. The fan may be locked, by a catch, in the open or closed position, and constitutes a desirable as well as ornamental appendage of the car.

IMPROVED THILL COUPLING.

Benjamin P. Morrison, Abingdon, Va.—This thill coupling retains the shafts in strong and safe manner on the axle without a detachable bolt, avoids rattling, and allows the ready taking off and replacing of the shafts or poles when the vehicle is placed in the carriage house. It consists of a hook-shaped shaft head, that is locked to a cross bolt, with central flat eccentric part swinging in the ears of the axle clip and entering the recess of its shaft head. The hook-shaped end of the shaft head is first introduced into the ears of the clip while the front end of shaft is resting on the ground, and the flange of cross bolt hanging down. The shaft is then raised as nearly as possible to the perpendicular, so that the shaft head may pass down between ears far enough for the flange of bolt to be swung into the opening or recess in shaft head. The shaft is then lifted in upward direction until the bottom or rear part of recess is brought in contact with flange of bolt, when the shaft may be swung down to the ground. A thin strip of leather is interposed between the flange of bolt and shaft head to form a tight fitting of the parts, and prevent rattling. The shaft cannot become detached when in use, has no nuts to work off or bolts to be taken off in attaching and detaching, and forms a simple and effective device for quickly taking off and applying the shafts or poles.

IMPROVED COMBINED FREIGHT AND STOCK CAR.

Jones R. Maitland, Hot Springs, Ark.—This consists of a freight car, with jointly-sliding upper and lower sections, that either close or open the upper and lower openings of the car. The upper sections are guided by friction rollers on strips, and are moved in division casings with inclined bottom rails, having suitable openings for the shedding of the entering rain. When stock is transported, the sections are thrown open and locked by spring bolts. When freight is to be shipped, the sections are closed in similar manner, providing thus a stock or freight car, as required by the service of the road.

IMPROVED CENTER-DRAFT SIDE THILL.

Conrad H. Matthiessen, Odell, Ill.—The object of this invention is to construct wagons provided with side thills in such a way that there may be no side draft; and it consists in the combination of a lever, wire rope, keeper, pulley, wire rope or rod, and spring, with a side thill, whiffletree, and running gear of a wagon. The effect of the arrangement is to take the draft from the rear axle, the pole being merely used for holdback and steerage purposes. The vehicle is thus made to run more steady, with better guidance, and less side draft.

NEW AGRICULTURAL INVENTIONS.

IMPROVED CORN PLANTER.

George Tatlock and Stanford Newby, New Philadelphia, Ind.—This is an improved machine for planting corn, which opens a furrow to receive the seed, drops the seed at regular distances apart, and covers it, and is so constructed that the planting device can be detached and the rest of the machine used as a plow or cultivator, by detaching the side bars, the wheel the dropping cylinder, and the hopper, and bolting the forward ends of the handles to the plow beam. The seed is received from a dropping cylinder and conducted to the ground by a spout, which passes down through holes in the beam and standard.

IMPROVED ANIMAL POKE.

Benjamin D. Watson, Durant, Miss., assignor to himself and James C. Watson, of same place.—The object of this invention is to provide a yoke that shall prevent animals from jumping over or destroying fences. A saddle is concaved to fit the under side of the body of the horse, and secured in place by a strap that passes over the horse's back. A mortise is made in the saddle to receive an arm which is provided with a slot. A pin passes through the saddle and through the slot. The arm is provided with a point and a perforated spring, the latter acting as a guard for the said point. Another arm is jointed to the arm already mentioned, and is capable of being raised into a horizontal position, but is prevented from rising further by the shoulders of the joint. The former arm is placed between the front legs of the horse, and the latter is connected with a headstall by a strap. When the horse attempts to jump, the raising of the head or striking the second arm into the fence or other object presses the point through the aperture of the spring into the chest of the horse.

IMPROVED SEED PLANTER.

Harvey J. Robinson, Carpenteria, Cal.—This is an improved machine for planting potatoes, corn, and other seeds, so constructed as to plant the seed so deep as to be beneath the dry soil so that it may have sufficient moisture to make it grow, which will prevent the moist and dry soil from becoming mixed, and which will cut off any weeds that may be growing upon the land being or to be planted.

IMPROVED HORSE HAY FORK.

Peter Grant, Clinton, Ontario, assignor to himself and John R. Grant, Brussels, Canada.—This fork is to be used for loading and unloading hay and other similar substances by means of horse power. It consists of a central tubular tine and lateral tines. A tubular plunger fits into the central tine, and is provided at its upper end with an eye or hook, and is plugged at its lower end, and provided with ears, between which barbs are pivoted. A spring is clamped to the tine by a band and screw, and is provided with a catch pin, which passes through a disengaging lever and side of the central tine into a hole in the plunger. The lever rests under the spring, and is held in place by the catch pin. The free end of this lever is bent upward, and provided with a small pulley. A key passes through a mortise in the central tine and through a slot in the plunger, for limiting the motion of the said plunger. The end of the key is bent over the front of the central tine, and is formed into an eye for attaching the disengaging cord which runs over the pulley.

IMPROVED PLOW.

John Preston, Millford, Ky.—This plow is intended to be used for laying off or marking land, and for making hills for tobacco, cabbages, and other kinds of plants to be transplanted, for covering corn, and as a shovel plow. It consists in the combination of a curved beam, provided with a plow plate and a rigid perforated bar, a slotted beam, a standard, provided with the square plow and the roller, and handles. In using the plow for preparing the ground for transplanting plants, the shovel plow opens a furrow, along which the square plow follows, pushing the loose soil before it. At the point where each plant is to be set out the plow handles are raised, which causes the square plow to leave and pass over the soil collected before it. As the square plow is again dropped to the ground, the roller presses upon the little heap of soil left by the square plow and flattens and smooths it, ready to receive the plants. For covering seed, the beam is detached, the square plow is drawn along the furrow, and is raised by the handles at each hill. To adjust the machine for use as a shovel plow, the beam and the square plow are detached, and the shovel plow plate is attached to the standard.

IMPROVED CLEARING ATTACHMENT FOR PLOWS.

Jonathan F. Dock, Elkhart, Ind.—This invention consists of a frame bolted to the plow beam, and carrying a serrated roller, that revolves on a vertical axis above the upper edge of the plowshare, and a jointed hook, that projects diagonally from the said frame, for drawing stubble, weeds, etc., into the furrow as it is turned. The frame is secured to the plow beam by a bolt that passes through a slotted arm projecting from the frame. The advancing end of the lower portion of the frame is pointed, so that it may readily pass through stubble and weeds. The roller is grooved spirally in opposite directions, forming diamond-shaped projections, which engage with the surface of the earth as it is turned up by the plowshare, and insure its rotation. This roller assists in turning the furrow, and also rolls the weeds under. The hook is drawn along upon the surface of the ground, and draws in the stubble and weeds as the furrow is turned. The spring permits it to follow the inequalities of the ground.

IMPROVED SCYTHE SNATH FASTENING.

Miles Smith, Springfield, Vt.—This invention is an improvement upon the patent granted the same inventor January 16, 1877, for a similar invention, in which the tang or toe of the scythe blade was contained in a socket plate arranged to swing so as to give the desired adjustment to the scythe blade, and which socket plate was held to its adjustment by a screw bolt. The object of the present improvement is to provide means for more rigidly holding the socket plate and the scythe blade in their corresponding adjustments, to which end it consists in roughening the under surface of the free end of the socket plate, and combining it with a plate upon the snath having a corresponding roughened upper surface, which plate operates both as a bearing for the clamping bolt and a clutch plate for the swinging socket to hold the latter in rigid position when the clamping bolt is screwed up.

IMPROVED COTTON PICKER.

Orren R. Smith, Raleigh, N. C.—The chief feature of this invention consists of two or more series of pickers formed of flexible spines or toothed rods depending vertically from pivoted bars arranged horizontally, but vibrating in vertical planes, successively. The said pickers strip the cotton from the balls and by their inter-action carry it up and deliver it to a carrier, by which it is conveyed to a receptacle in rear of the pickers.

IMPROVED DITCHING MACHINE.

Silvanus P. Evans, Ash Ridge, O.—This invention consists in providing a ditching machine with an apparatus whereby the shoe which bears the coulter may be quickly and readily lowered or raised, as it is desired, to cut the ditch or trench deeper or shallower. It also consists in extending up from the coulter an inclined plane or mouldboard, the upper edge of which projects over a trough or gutter bearing an endless band moved by side chains and end rollers, so that the slice of earth cut by the coulter and side knives of the machine may be broken up in its fall from said mouldboard and more easily delivered to the chute at the rear of the machine.

NEW TEXTILE INVENTION.

IMPROVED LOOM SHUTTLE.

Ezra W. Marble, Wilkinsonville, Mass.—This improved shuttle is so constructed that the cop may be placed upon the spindle without having its interior snarled, as is the case when the ordinary spindle is used, thus avoiding the great waste of cotton from the snarling. The spindle is held in place by a lever that supports the heel of spindle with an oval end, while it is itself supported at the other end by a spiral spring. The oval end of lever is designed to help in closing up the spindle when raised at the point out of the shuttle box to receive the cop. The socket for the end of spindle is made to fit a round hole with a side groove at the bottom, to accommodate each of its ears. It is inserted within the shuttle by placing the ears lengthwise of the slot that is intended to receive the spindle, and, after being pressed down to bottom of hole, turned around to let the ears into the side groove.

NEW HOUSEHOLD INVENTIONS.

IMPROVED FOLDING CHAIR.

Ernest Smith, London, England.—This folding chair may be easily folded and unfolded, may be adjusted into various positions for use, may be compactly folded for storage or transportation, and forms an easy and comfortable resting place however it may be adjusted. The invention consists in pins, hooks, holes, and pins for connecting the rear legs with the forward legs of the chair frame, and in the chair frame formed of the front legs, the rear legs, the seat bars, and the jointed arms, and their rounds or cross bars, constructed and combined with each other.