The Probable Distance of the Sun.

A particularly good opportunity of determining the distance of the sun, by observations of the planet Mars at its opposition, occurs in August and September of the present year, the planet being about that time in perihelion, or nearest the sun in its eccentrically elliptic orbit, within a fortnight of its being in opposition to him from the earth. The result of this is that in the early days of September, Mars approaches us to within a distance of about thirty-five millions of miles. Advantage will be taken of this near approach to obtain a value of the solar parallax and distance; and all astronomers wish good-speed to Mr. David Gill, who is now proceeding to the Island of Ascension for that purpose, taking with him an excellent heliometer belonging to Lord Lindsay, and made use of by him in observing at Mauritius the transit of Venus over the sun's disk, in December, 1874. With this instrument, Mr. Gill proposes to make observations of Mars and neighboring stars for comparison, when east and west of the meridian, so as to deduce the parallax of Mars from its parallactic change of position in the interval, owing to the diurnal rotation of the earth. This method has been suggested before, and partially carried out (but not sufficiently to obtain a reliable determination by it) at the last favorable opposition of Mars, in 1862. That opposition, however, was utilized very fully in another way, by making a large number of meridian observations of the planet at stations in both the northern and southern hemispheres, so as to give parallactic displacement at different places, instead of different times. The most complete discussion of all these observations was made by Professor Newcomb, of the United States Navy, and published by him as an appendix to the Washington Observations for 1865. The final result he arrived at from them was the value 8″·855 for the solar parallax. We will compare this with that obtained by the transit of Venus. The observations made of the transit in 1874 have not yet been fully reduced, and it would be premature to make use of them till the reductions are completed. The last preceding transit of Venus was that of 1769, about some of the observations of which there was, for a considerable period of time, a misunderstanding, which led to their being supposed to give a much smaller parallax and larger distance than was fairly deducible from them. This was particularly the case with regard to the observations made at Otaheite (or Tahiti) by Captain Cook and Mr. Green, as was satisfactorily pointed out in 1868 by Mr. Stone, now Astronomer-Royal at the Cape of Good Hope. His improved reduction of all the observations of duration of transit in 1769 gave 8″ ·91 for the solar parallax; and we may reasonably give this a weight of half, in combining it with the result obtained by the opposition of Mars in 1862, to conclude what may now be considered the most probable value of the sun's parallax and distance. Such combination gives for the parallax the value 8″ ·873; and as sun's distance = earth's equatorial semi-diameter (*i.e.*, 3962·5 miles) × cotangent equatorial horizontal parallax, we thus obtain 92,113,600 miles for the present most probable mean distance of the sun. It will be interesting to see how this agrees with the value to be derived from the last transit of Venus and the forthcoming opposition of Mars, when the reductions of both are completed.—*King's College Magazine.*

Japanese Fans.

The folding fan is a Japanese invention. Even to this day the fan forms an integral portion of the national costume of Japan, and plays a large part in the every day life of that country.

An almost fabulous number of fans are exported from Japan to all parts of the world; no fewer than 3,000,000 fans, valued at $90,000, were shipped from Hiogo and Osaka in 1875. Osaka is the principal city for the manufacture of the "ogi," or folding fans, which are almost exclusively those exported, all descriptions of the bamboo kind being made there, the figures, writing, etc., being executed in Kiyoto. The principle of division of labor is carried out a long way in this branch of industry. The bamboo ribs of the fans are made by private people in their own houses, and combinations of the various notches cut in the lower part are left to one of the finishing workmen, who forms the various patterns of the handles according to plans prepared by the designer. In like manner the designer gives out to the engravers the patterns which he thinks will be saleable, and, when the blocks have been cut, decides what colors are to used for each part of the design, and what different sheets are to be used for the opposite sides of each fan.

When these sheets, with the sets of bamboo slips which are to form the ribs, have been handed over to the workman, he, in the first instance, folds them so that they will retain the crease. This is done by putting them between two pieces of heavily oiled paper, which are properly creased. The fans are then folded up together, and placed under pressure. When sufficient time has elapsed, the sheets are taken out, and the mould used again, the released sheets having been packed up for at least twenty-four hours in their folds. The ribs, which are temporarily arranged in order on a wire, are then taken and set in their places on one of the sheets, after it has been spread out on a block and pasted. A dash of paste then gives the woodwork adhesive powers, and that part of the process is finished by affixing the remaining piece of paper. The fan is folded up and opened three or four times before the folds get into proper shape, and by the time it is put by to dry, it has received an amount of handling which Japanese paper alone would endure. When the insides are dry, the riveting of the pieces together—including the outer covering—is rapidly done, and a dash of varnish quickly finishes the fan.

The sale of fans in the olden time in Japan seldom exceeded 10,000 for the whole country; times have changed however, for the foreigner has set foot there, and the old days of seclusion and limited trade are over. The number of fans ordered for the Philadelphia Exhibition alone amounted to over 800,000, at a cost of about $50,000.

The designs for the mounts of Japanese fans are sometimes of a very interesting description, and always strikingly unlike the productions of European art. One peculiarity of the art of Japan has been pointed out by a recent critic. If a Japanese artist has any space to adorn, he does not seek out the center and place his ornament there, for although that would be the obvious means of securing proportion, it would not satisfy a taste directly derived from a study of nature, where proportion is rather suggested than expressed. We find, therefore, that the Japanese artist, imitating the ways of nature, throws his design a little out of the precise balance and trusts to the spectator to judge of the result by an association of impressions similarly derived.—*Harper's.*

Resistance of Wires.

This is a subject on which several series of researches have been made, but the results have been discordant. Thus MM. Becquerel, Siemens, and Matthiessen, with comparatively good agreement, have found in the case of copper, silver, gold, iron, and platinum, a diminution of resistance through annealing. M. Mousson, on the other hand, in the case of steel wires hardened by extinction, also obtained a decrease of resistance through the softening; but in steel wires, which were hardened by drawing, as also in copper wires, he got an increase of resistance through annealing.

With a view to explain this discordance, and to examine the behavior of a large number of metals, M. Chwolson, of the St. Petersburgh Academy, has investigated the action of softening through annealing (either by means of a strong electric current or a gas flame) on the galvanic resistance of hard-drawn wires of 15 different metals—namely, platinum, platinum-iridium, palladium, aluminum, aluminum-bronze, iron, steel, copper, brass, German silver, zinc, silver, lead, magnesium, and cadmium. The last of these gave no distinct results, whereas, in the case of all the others, the question was answered unequivocally. We will not here further describe M. Chwolson's method, but merely give the results of the measurements in the following table, in which under A is represented the maximum of the observed change of the resistance in consequence of the first glow; under B the maximum of the resistance-change at a strong glow; and under C the greatest change of the resistance at extinction, all explained in percentage of the original existence of the hard drawn wires:

Wire.	A.	B.	C.
Steel	−4·8 p.c.	+8·6 p.c.	+0·6 p.c.
Iron	−0·4	+5·3	+0·7
Brass	−8·3	+0·8	+1·0
Copper	−2·9	+1·4	+0·4
Platinum	−5·3	+5·8	+0·7
German silver	−1·1	+2·0	−1·8
Aluminum bronze	−8·0	——	+2·7
Palladium	−0·4	——	+0·1
Platinum-iridium	−3·2	——	+0·3
Silver copper alloy	−11·3	——	+1·7
Zinc	−1·8	——	——
Aluminum	−1·9	——	——
Lead	+0·5	——	——

We see from this table that, in the case of twelve out of thirteen metals, the galvanic resistance is diminished in the softening of the wires in consequence of the first not very strong glow; only lead forms an exception, showing a slight increase. On increased and strong glow, six metals showed a distinct increase of the resistance; consequently an effect opposite to that of the softening. This double action of glow, in the case of some wires—for example, iron—where the decrease through softening is slight, and the increase through increased glow is strong, can only be observed by very careful measurements. That the second action is not simply to be attributed to an oxidation of the wire, is shown clearly by the high value obtained for platinum (with strong glow the resistance again rose above its original amount), and the comparatively very small value found for brass and copper. In extinction of the wires in water, lastly, nine out of ten metals showed an increase of the resistance, and only brass (German silver?) showed a considerable diminution of it.

The double action of annealing here demonstrated sufficiently explains the contradictions in the results of previous investigators.—*Der Naturforscher.*

Inventions Patented in England by Americans.

July 19 to July 30, 1877, inclusive.

BOOTS AND SHOES.—C. Edwards, Jamaica, N. Y.
CARDING ENGINE.—R. F. Barker (of Boston, Mass.). Manchester, Eng.
DRYING FRUITS, ETC.—A. J. Reynolds, Chicago, Ill.
ELECTRICAL MACHINE.—T. A. Edison, Menlo Park, N. J.
EYELET.—James Whitehead *et al.*, Cranston, R. I.
FILE HOLDER.—Nicholson File Company, Providence, R. I.
FURNACE.—W. Stewart *et al.* Paterson, N. J.
HOP PICKING MACHINE.—H. G. Locke, Waterville, N. Y.
LOOM.—E. J. Bicknall, Providence, R. I.
RAILWAY CARRIAGES.—E. P. Kellogg, New York city.
ROCK DRILL.—A. A. Goubert *et al.*, New York city.
SEPARATING PRECIOUS METALS.—A. K. Eaton, Brooklyn, N. Y.
SIGNALLING.—J. L. Plimpton (of New York city), London, Eng.
SPINNING RINGS.—F. Rabeth, Providence, R. I.
SPINNING MACHINERY.—John Good, Brooklyn, N. Y.
SPRING MATTRESS.—T. L. Snyder, Montclair, N. J.
STOP NOTCHES.—H. A. Lugrin *et al.*, New York city.
TYPE-DISTRIBUTING MACHINE.—D. Reynolds, Albany, N. Y.
WHEELS.—James Bowson *et al.*, South Pittsbury, Tenn.

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 MECHANICAL AND ENGINEERING INVENTIONS.

IMPROVED PIPE COUPLING.

Rufus H. Moss, Salem, Oregon.—The object of this invention is to provide a coupling for uniting pipes used in conveying hot air for heating cars, that may be quickly coupled and readily uncoupled. It consists of a cylinder attached to the end of the pipe that conveys the heated air. In this cylinder a tube is placed which is provided with a flange or collar which fits the cylinder, and is packed to insure an airtight joint. A spring presses against a collar and throws out a tube provided with catches, which seize and retain the collar of the coupling to be united. The parts of the coupling are alike on each end of the car, and when the parts on adjacent cars are united, the catches of one parts engage the flange of the other. The tube and flange move longitudinally in the cylinders, as the cars move toward or from each other in running, and when the couplings are detached the valve closes automatically, preventing the escape of air.

IMPROVED PROCESS AND APPARATUS FOR COATING METAL ROLLERS.

Henry Wilde, Manchester, Eng.—This invention consists in a method of securing a sufficient amount of adhesion between the iron and deposited copper surfaces to enable the roller to withstand the various engraving and other operations without the separation of the metals. For this purpose the iron roller, before receiving a coating of copper from a hot cyanide solution of copper, is heated to a temperature ranging from 150° to 212° Fah. by plunging it into boiling water, or by other means. The roller, after receiving a film deposit of copper from the cyanide solution, is then transferred to the bath containing a sulphate solution of copper, where it receives one or more thin coatings of copper. These coatings are subjected to considerable pressure by the action of a burnishing roller of hardened steel, for the double purpose of forcing the deposited copper into closer contact with the iron, and detecting any want of adhesion between the two metals. The burnished coppered roller is then replaced in the bath of sulphate of copper solution, and subjected to the action of the electric current until the desired thickness of copper deposit is obtained. Attempts have been made from time to time to substitute iron rollers covered with a thin layer of copper by means of electricity for the solid copper rollers used in calico printing, and in other processes; but, owing to the expense of the battery power and the slow rate at which the copper was deposited in the reguline state, such attempts have not hitherto been commercially successful.

IMPROVED FOLDING GRATING FOR WINDOWS.

Calvin T. Steckel, Brooklyn, N. Y.—This invention is intended as a substitute for the fixed iron gratings or bars in basement, store, and other windows, so as to provide a shutter that may be folded and turned, making the room more cheerful, and facilitating the cleaning of the windows, etc., while combining, when locked, the same degree of safety as the bars, and is a combination of a folding lazy-tong shutter with a fixed and slotted hinge of the window casing, to fold and turn the shutter. The folding shutter is burglar-proof, furnishing the same protection as the fixed grating, but giving, in addition thereto, the great convenience of opening them during the day, and presenting a neater appearance without the objectionable features of the rigid bars.

IMPROVED CANAL LOCOMOTIVE.

Gabrielle De Nottbeck, New York city.—This invention has for its object the construction of a locomotive which will practically run in a canal, the rails or track being laid upon the bed of the canal, and the body of the locomotive raised above the water and mounted upon standards, to which the driving and transporting wheels are applied. Canal boats have been propelled by means of locomotives or traction engines which run on the sides of the canals; but the power in such instances was oblique to the length of the boats, and the resistance was very great; but this locomotive is designed to run in a canal, and in a direct line with the boat which it draws. In practice the body of the locomotive will be entirely out of the water, and it will be provided with a hook at each end for the attachment of a boat.

IMPROVED LEATHER CRIMPING MACHINE.

Jason Smith, Charlestown, Mass.—This invention consists in the arrangement, in a suitable frame, of a tree or form rigidly supported by standards attached to a crossbar of the frame, and in plates that slide in grooves in the standards, one upon either side of the tree, and carry wedge-shaped or beveled pieces having the same curvature as the tree or form. It also consists in a clamping device for clamping the leather, and carrying it down over the tree, and in smoothing plates for pressing the leather smoothly upon the tree, and in levers and screws for operating the various parts.

IMPROVED BALANCED VALVE.

William Hardwick, Erie, Pa.—This invention relates to certain improvements in balanced valves of that class in which the two parts of the valve are made adjustable toward or from each other. Said improvements consist mainly in the arrangement of a stuffing box through which the bolt connecting the parts of the valve passes, and the arrangement of springs in connection with the bolt and the two parts of the valve for the purpose of holding the latter in proper position.

NEW MISCELLANEOUS INVENTIONS.

IMPROVED CURRYCOMB.

Thomas D. Bennett and Horace B. Moody, Harrisonville, Mo.—This invention relates to an improved currycomb for horses, and consists of rotary combs, and an arc-shaped stationary comb, attached to a suitable handle. The crossbar may be plain or provided with teeth on upper side, to serve as a mane and tail comb. The rotary combs raise the hair and admit the stationary comb to enter with great facility, so as to effectually clean the skin.

IMPROVED TOY BUZZ.

James B. Wells, Cincinnati, O.—This invention has relation to a toy known as a "whirligig;" and it consists in a thin circular plate or disk surrounded by leaves or semi-circles so shaped and arranged that when rapid rotation is given to the disk a whistling sound is produced. This toy will be struck out of very thin sheet metal, and scraps of tin may be utilized for the purpose.

IMPROVED BRUSH.

Randall Bisbee, New York city.—The object of this invention is to improve the construction of metallic brushes, so as to enable them to be made lighter and neater, and adapt them to receive any desired kind of a back. Wires take the place of ordinary bristles, and are placed through a rubber plate, with their heads resting against the inner side of the plate. A leather plate is placed over the heads of the wires, and between them

and the back, which is a metal plate, through which, around its edge, is formed a row of holes, punched from the outer ide in such a way that the burrs of the holes may be passed into or through the rubber plate, so as when the edge of the back is turned down upon the rubber plate they may hold it securely.

IMPROVED ARTIST'S APPLIANCE.

William H. Brownell, Brooklyn, N. Y.—This invention relates to a novel and useful improvement on cases or boxes which are designed for containing artists' brushes, paints, etc., and especially designed for outdoor sketching. The nature of this invention and improvement consists in combining with a portable paint box or artist's case an easel adjustment, which will firmly clamp and safely hold the tablet or material to be painted on in a convenient position for the painter.

IMPROVED MEMORANDUM BOOK.

William A. Cooke, New York city.—This improved memorandum book is so constructed that the inside book or the stubs of the inside book may be removed and replaced with a new book, which may be made of any desired size and thickness, and will open flat and close flat. The invention consists in a metal plate, provided with the loops and fastening wire, in combination with a cover and the inside book, and in the inside book, formed of an odd number of sections, to furnish a positive center to receive the fastening. The inside book is made of three, five, seven, or any other desired uneven number of sections, and each section may have any desired number of leaves, so as to make a book of any desired thickness. The sections are sewed together, and may be still further secured by a paper pasted upon their rear edges. The object of always having a section in the center is to have a firm hold for the fastening that connects the inside book to the cover.

IMPROVED OPEN-FRONT HEATING STOVE.

Francis E. Thompson and Daniel Knappenberger, Belknap, Pa.—This invention provides an improved heating stove that combines the cheerfulness and advantages of the open grate with the economical features of the common heating stoves, and which provides, also, a continuous and conveniently regulated supply of pure heated air, acting as a ventilator and dustescape in all the seasons. The stove rests on the floor and against the wall with or without feet, the outer shell never becoming heated to such an extent as to be dangerous. If feet are used, they may be made of cylindrical form, and wide enough to correspond with the bottom apertures, so as to conduct the air. The stove economizes heat and fuel, ventilates without introducing cold air, draws off the dust, so as to provide a purer air in the room, and admits a quick fire at any time, without blowers, by the folding shield. The stove can be made ornamental in appearance by attaching a fender and hinged side brackets, the whole forming a heating stove of superior qualities.

IMPROVED BALLOON.

Washington Beckley, Louisa, Ky., assignor to himself, David W. Garred, and Millard F. Garred.—The object of this invention is to furnish balloons which shall be so constructed that they may be made to ascend and descend an indefinite number of times without varying the amount of gas in said balloons, and without the use of sand or other ballast, adapting them for use in aerial navigation, in raising stone and brick in erecting high buildings, and for various other purposes. The invention consists in the mode of controlling the descent and ascent of balloons and other vessels floating in the air by the buoyancy of gas, by the compression and expansion of the gas contained within balloons or vessels, and in the combination of the cylinders, one or more, provided with the valves opening inward, and the valves opening outward, and the condenser provided with the valve opening inward, with each other, to adapt them to be applied to a balloon for regulating the volume of gas contained in said balloon to control its buoyancy. With this construction the balloon is filled with sufficient gas to raise and carry the desired weight. When the balloonist wishes to descend he operates the mechanism and compresses the gas into the condenser until the specific gravity of the balloon is greater than that of the air in which it floats, and it descends. Should the balloonist wish to check or stop his descent he opens a valve and allows enough gas to escape from the condenser into the balloon to effect his purpose, so that he can ascend or descend any desired number of times without losing any gas, and without throwing out any ballast.

IMPROVED PEN AND PENCIL CASE.

James B. Smith, New York city.—This invention relates to cases designed either for pencils or toothpicks; and the nature of this invention consists in an arrangement of tubes within the stock or outside barrel, whereby the exposed part of the pencil holder will be perfectly rigid, and strongly supported by an interior immovably fixed tube, and this is made without slotting or perforating the exposed parts of the case. Great strength and rigidity is afforded to the pencil nib when it is projected. At the same time it is a solid pencil case—that is to say, its outer shells are not slotted nor perforated. It is obvious that a toothpick may be fixed to the pencil tube or stem, and rendered rigid and strong by this improvement.

IMPROVED SAW-SET AND FILE GUIDE.

Henry C. Root, Virginia City, Nev.—This invention furnishes a simple and reliable device by which the teeth of a saw may be set and filed in convenient manner, the device being readily adjusted on a bench or other support for either operation, and used for either purpose, as required. The invention consists in adjustable clamping jaws pivoted to and secured by a clamp piece to the bench or table, and the combination of parts necessary to the adaptation of the device to the purpose of setting a saw or filing it.

IMPROVED OVERALL.

Jacob Wallach, New York city.—The object of this invention is to furnish for the use of workingmen overalls of strong and durable construction, made with a view to sustain the strongest wear without ripping of seams and tearing of pockets; and the invention consists of a pair of overalls having flat seams, and exterior strengthening stays running over the seams, and stitched at both sides of the same. The exterior seam covering stays may be made of leather, canvas, or other material suitable for the purpose, they imparting a high degree of strength at the seams, and preventing the ripping or tearing open of the overalls along the seams so covered. A better and more durable make of overalls is thereby produced, which resists in superior manner the wear and strain to which overalls are exposed, and which strengthens them at the points most liable to wear.

IMPROVED REED FOR MUSICAL INSTRUMENTS.

William Spethmann, New York city, assignor to himself and Elias Durlach.—The object of this invention is to furnish an improved reed for toy trumpets and other reed musical instruments; and the invention consists in a musical reed, in which the reed or reeds are cut out of the body of the plate, so as to be in one piece therewith, and having corrugation in the plate.

IMPROVED CLOTHESPIN.

Edwin F. Clearwater, Carmel, N. Y.—In this clothespin the jaws that are connected together near their centers by staples, which are driven into them at each side, and form pivots upon which the jaws move. The jaws are concave from their rounded ends to the staples, making them sufficiently elastic to clasp clothes of any thickness without breaking. The manner of using this improved clothespin is as follows: The pin is placed over the clothes upon the line, and the cam lever is turned upon its pivot, bringing the cam into contact with the opposite jaw of the pin. The motion is continued until the end of the cam lever is above the line of its pivot, when the jaws are securely locked. By this improvement springs are dispensed with, and a clothespin is furnished which is inexpensive, durable, and efficient.

IMPROVED COMBINED OVERALLS AND JUMPER.

Samuel H. Emanuel, Gloucester, Mass.—This invention relates to an improvement in combined overalls and jumper, and has for its object to increase the strength and durability, improve the fit and appearance, and lessen the cost of such garments. The great advantage secured by this improvement is that the seams most liable to rip in garments of ordinary manufacture are avoided, and a stronger and better fitting garment is produced. In this combined overalls and jumper the sections are united by seams at the back, and have the leg portions united by seams on the inner side of the leg, the whole being made without seams at the sides or around the waist, and provided with pockets and pocket openings.

NEW AGRICULTURAL INVENTIONS.

IMPROVED HOE HANDLE.

William R. Littleton, Valley Mills, Texas.—This invention is designed to furnish a device for tightening handles in the eyes of hoes, axes, etc. The handle has a hole, grooves, and a longitudinal slot in combination with a collared bolt having thereon two screws of different diameter, and with threads running in different directions. For the various uses to which it may be applied it is simple in construction, easily and quickly operated, effective and reliable in operation.

IMPROVED MACHINE FOR PRESSING HAY, ETC., FOR FUEL.

John E. Hackett, Caledonia, Minn.—The object of this invention is designed to furnish an improved machine for pressing hay, straw, etc., for fuel. In the construction of the machine by bearing down upon the outer end of a lever, a roller will be raised against a shaft, so as to compress the hay as it is being rolled upon this shaft sufficiently to adapt it to be used for fuel. The shaft is so formed that it may be drawn longitudinally from its bearings, to withdraw it from the roll of hay.

IMPROVED MILK COOLER.

Edward F. Prescott, Charlotte, Mich.—This invention relates to an improved milk cooler and aerator, by which the milk is conducted over a series of cooling channels, so as to be thoroughly cooled and aired; and it consists of a tank with a pan having at one end a milk receiver, from which the milk is conducted through an exit opening and gate over a series of inclined channels, divided by raised longitudinal partitions, or rid ges extending alternately from one end to a short distance from the other end of the pan. The hollow partitions admit the cooling water to act on both sides of the channels and increase the size of the cooling surface, while the fall in the channels imparts a revolving motion to the milk from the sides and bottom of the cooling channels to the center and surface of the milk, thus bringing the globules of milk to the air in rapid succession, and the warm milk to the bottom, so as to air and cool the milk thereby in quick and effective manner during the passage over the channels, which are all in contact with the water in the tank, that is filled up to the level of the highest channel.

IMPROVED MOWER.

Isaac N. Hall, Garden Grove, Iowa.—The object of this invention is to improve the construction of the mechanism for driving the sickle bars of mowers and reapers, so as to simplify its construction and lessen the jar and strain which accompanies the use of the crank wheel and pitman, and thus enable the machines to be made lighter, and to be run with less power than is necessary with the ordinary constructions. The invention consists in the combination of a large gear wheel, a small gear wheel, a shaft, and a diagonally flanged cylinder with the inner ends of two sickle bars, cutter bar, and drive wheel. The sickle bars are placed the one above the other in seats in the cutter bar, and in the guards attached to said cutter bar. The inner ends of the sickle bars may be directly opposite each other upon the opposite sides of the cylinder, so as to come to a rest and change their motion at the same time, or one may be a little higher than the other, so that one may come to a rest and change its motion a little in advance of the other.

IMPROVED COTTON CLEANER.

Charles O. Thomas and Thomas Robertson, Murfreesborough, Tenn.—The object of this invention is to furnish an improved machine for removing dust, sand, and dirt from seed cotton before it is ginned, and which shall be simple in construction, convenient in use, and effective in operation, producing a much better sample of lint cotton than when ginned without being cleaned. It consists in the combination of a cylinder, provided with an inner circle of longitudinal rods and a central rotary shaft, having spirally arranged pins, the latter beating the cotton against the rods and carrying it round and round the cylinder until the discharge is reached.

IMPROVED GATE.

Daniel Barrett and James F. Quinn, Wilmington, Ill., assignors to said Quinn.—This invention belongs to that class of gates that are operated from the vehicle or from horseback without dismounting; and it consists of a gate guided by rollers and moved by a windlass having long shafts, which are provided with cranks that may be operated from a carriage or from horseback.

NEW TEXTILE INVENTIONS.

IMPROVEMENT IN DYEING YARNS AND FABRICS IN ANILINE BLACK.

William J. S. Grawitz, Paris, France.—The novel chemical reactions of this invention consist in the concurrent action on aniline oil or on its salts, of certain metallic salts and soluble chromates or bichromates of chlorates, without the necessity of exposure to air. The action of the metallic salts may either precede or follow that of chromates or bichromates, and both may be performed with or without the aid of heat.

IMPROVED CLOTH FINISHING MACHINE.

Herman Springborn and Christian H. Baush, Holyoke, Mass.—This invention relates to machines for finishing woolen cloth; and it consists in the combination of a perforated steam pipe for directing jets of steam against the surface of the cloth as it enters the machine; a rotating brush and a plush roller for brushing and finishing the surface of the cloth; a heated stationary bed and a roller fitted to the same, for hot-pressing the cloth; a hollow roller, through which passes a current of cold air or water for cold pressing; a device for rolling, and also a device for folding, the cloth. The object of this invention is to provide a machine that will at one operation dampen, brush, hot and cold press, and roll or fold the cloth, or perform a part only of these operations, as may be required.

NEW HOUSEHOLD INVENTIONS.

IMPROVED HOUSEHOLD PRESS.

Henry W. Clum, Greenpoint, N. Y.—This invention relates to portable presses for expressing juices from fruits and for other similar purposes; and it consists of a standard or base piece, which is provided with a clamp for attaching it to the table, and upon the upper end of which a disk is formed, that is surrounded by a trough or channel that terminates in a spout. A yoke is jointed to ears at the sides of the said disk, and is provided with a screw, by which the power is applied The advantages claimed for this improvement are that the press is compact, simple, and easily manipulated. The base piece elevates it so that a receptacle may be placed under the spout for receiving the liquid flowing from the press. The perforated bottom, supported by the internal rib in the hoop, affords means for the escape of liquid from the mass under pressure, and at the same time keeps the hoop down to its place.

IMPROVED DOOR CHECK.

John Francis, Waco, Texas.—This invention relates to a device for holding the door in open position, is readily applied to the door and worked without noise or jamming. The invention consists of a holder or knob, with recessed front end, attached to the base board, and of a countersunk door plate or case provided with a rubber block, that binds on the recessed parts of the holder to retain the door in open position. When the door is opened the block passes readily over the knob, and is retained by the recess of the same, so as to hold thereby the door in position. In closing the door the elastic block clears readily the recess of the knob by taking hold of the door, without requiring a special effort, forming thus a neat, simple, and reliable door-holding device.

IMPROVED STOVE.

Charles Lyman, Clarinda, Iowa.—The sheet iron body of this stove, together with the end pieces, form an elliptical drum, in which, between the end pieces, is placed a sheet of iron that is bent into a semi-elliptical form, between which and the body there is a flue. A firepot is arranged in the semi-elliptical part upon a plate that extends from one end piece of the stove to the other. The gate is provided with a number of tubular projections, which stir the fire and break up the clinker as the grate is moved. The stove may be filled either at the side or top, and the fire may be adjusted by poking it above the grate, between the fingers at the lower side of the pieces at the end of the firepot.

IMPROVED LAMP.

Nicholas F. Rigby, Winfield, Kan.—This invention consists in an open oil cup or chamber, attached underneath the font, being connected thereto by a descending tube with valve opened from the top of the font, the valve being so arranged as to close the exit tube when the font is filled, and open the same when the font is closed. The invention is based on the same general principles of the vacuum font as the German student's lamp, but is capable of being used as a bracket or stand lamp, chandelier, etc., supplying as many burners as desired with oil in regular and reliable manner.

IMPROVED ADJUSTABLE ROCKING CHAIR.

James R. Brumby, Marietta, Ga.—The object of this invention is to produce a chair which is strong and durable, and which may be readily adjusted to different positions, and folded together for storage or shipment. The chair is put into position for use by holding down the back end of the rockers and taking hold of the top of the back and raising it into the desired position. To place it in a reclining position the bottom is raised, which, by means of a cord, also raises a ratchet bar, and the back pressed down until it is in position.

IMPROVED IRONING APPARATUS.

Henry Monk, Troy, N. Y.—This invention relates to an improvement in the class of machines in which the article to be ironed is attached to a table that is adapted to slide beneath a heated roll or rolls. It also consists in a novel method of fastening the shirts to be ironed, and in an arrangement of gearing for driving the rolls and tables. The shirt is arranged at the opposite end of the machine, so that when the first one is discharged from the rolls, the second one is ready to be operated upon, and is introduced under the rolls while the machine is running in the reverse direction. Shirts are thus introduced into the machine first at one end and then at the other, in alternation.

IMPROVED ROTARY CHURN.

Lars Budahl, Spring Grove (Riceford P. O), Minn.—This invention consists in the combination of a rod, a bar or plate, a lever, and a slotted catch with the churn body and the cover; in the combination of a hook with the detachable dasher, and with the dasher shaft, and in the frame made in two parts to adapt it to receive and hold the pivots and dasher shaft of the churn. The object of this invention is to furnish an improved apparatus, which shall be so constructed as to enable the churning to be done easily and quickly, and which shall be convenient in use.

IMPROVED FAN ATTACHMENT FOR ROCKING CHAIRS, ETC.

Charles Krauss, Chicago, Ill.—The object of this invention is to furnish an improved fan attachment for chairs, rocking-chairs, cradles, and tables, which shall be so constructed as to be operated by the movement of the said chair or cradle while being rocked. A step and clamp, adjustable with each other, adapt the apparatus to be attached to a chair or cradle; and a combination of parts with a supporting bar enables the apparatus to be attached adjustably to a chair, rocking-chair, cradle, or table.

IMPROVED CLOTHES LINE HOLDER.

Richard Raby, Jr., Loudonville, O.—The object of this invention is to provide a clothes line holder which is capable of supporting a great length of line, which may be folded compactly together, and which is strong and durable. The advantages claimed for this holder are that it is simple and inexpensive, and is capable of spreading a great length of line.

IMPROVED LOCK FOR DOORS.

Elam Wike, Dayton, O.—This invention has reference to an improved burglar-proof door lock which locks the latch on throwing the key bolt, and the latch key and key bolt on throwing the night bolt, forming thus a superior safety door lock that cannot be tampered with from the outside, as the key cannot be pushed in, or a skeleton key inserted, or any one of the bolts opened. The night bolt cannot be thrown except when the key bolt is thrown, which forms a useful feature, as it prevents children from using the night bolt and locking the door when the same is not required to be locked. Thus a safety lock of simple construction is furnished, which is capable of producing a number of checks or safeguards by only two motions, namely, by the throwing of the key and of the night bolt.

IMPROVED FIRE ESCAPE.

Isaac H. Allen, Black Creek, Ontario, Canada.—This invention has relation to ladders which are especially designed for enabling persons to escape from the upper stories of burning buildings; and the nature of the invention consists in a flexible or folding ladder in which the rounds or foot rests are secured to strips of webbing woven in such manner that it affords proper strength and durability at points where the rounds pass through it. Studs or arms are fixed into the ends of the rounds for the purpose of enabling them to stand off from the wall far enough to afford a good foothold to a person ascending or descending.

IMPROVED KNOB FASTENER.

Oscar Mayo, Evanston, Ill.—This invention consists in a latch that is pivoted to the door, and is provided with a perforated ear that engages a a screw that projects from the socket of the knob and prevents the knob from being turned. The device is quickly and easily applied, it being only necessary to remove the screw that ordinarily holds the knob in the spindle and replace it by a screw having an elongated head, and to screw the latch to the door in the proper position.

IMPROVED STEAM DISH CLEANER.

Gen. Don C. Buell, Paradise, Ky.—This apparatus is designed for use in hotels and large restaurants, etc., and consists of a large zinc-lined case or box provided with revolving and removable racks for receiving or holding various kinds of articles of tableware, such as plates, soup-tureens, cups, saucers, spoons, knives, forks, etc. Pipes connect with the case and with perforated tubes arranged within the case in such manner that steam, hot water, or air may be impelled with great force, in the form of jets, upon the articles to be cleaned, while the latter are being revolved. The steam and hot water quickly remove the grease and other adhering foreign matter, and the blast of hot air subsequently admitted as quickly dries the articles. The racks holding the latter are then detached and the articles removed to make room for others requiring to be cleansed.