

Curiosities of the Railway Ticket Manufacture.

Chambers' Journal gives the following interesting account of how railway tickets are made at a celebrated factory in London, that of Waterlow & Sons:

Like many other great establishments, Messrs. Waterlows' has grown from a small affair to gigantic proportions. Beginning with law stationery, then advancing to account book manufacture, then to various kinds of commercial printing, it has gone on, step by step, until at present it gives employment to between three and four thousand persons.

One of the factories, consisting of a lofty building surrounding an open quadrangle, is devoted to ticket making and printing, chiefly railway tickets; and to the process as carried on there, we will now direct our readers' attention.

The paper for tickets is made of a slightly spongy texture, well fitted to take paste. It is known technically as middles, and is the foundation for two external surfaces of paper, white or colored as the case may be. The primitive paste-brush has long been discarded. A cleverly constructed machine pours out a stream of paste on two rollers, under or over which pass two sheets of paper, each of which becomes thoroughly pasted on one side. These are then quickly applied to the surfaces of the middle. The paste caldrons, in a compartment by themselves, have a vigorous appetite for flour, alum, and water, and pour forth volumes of steam. To show what "a bit of paste" may become when multiplied by millions, it will suffice to say that thirteen sacks of flour per week are used in this one factory! After the pasting, each sheet of cardboard, large enough for one hundred and twenty-five railway tickets, is, with others of the same kind, subjected to flat pressure, rolling pressure, and heat, until the surface papers are firmly and smoothly attached to the middle; exposure to a high temperature in heated chambers thoroughly dries them. Cutting machines sever the sheets into single tickets, the well known railway ticket size, all precisely alike in dimensions.

Next comes the printing. Messrs. Waterlow adopt four different commercial systems in the supply of these tickets. In the first system they manufacture the tickets throughout for the railway companies, who issue them ready for use to the booking clerks at the several stations. In the second, they partially print the tickets, leaving the companies to finish them according to the varying exigencies of the traffic. In the third, they sell the blank tickets, properly prepared and cut, to the companies; the printing in this case being wholly carried on by the companies. And in the fourth, they sell the machines to the companies, with a license to use them.

A pile of about five hundred blank tickets is placed in an upright tube or hopper, with just room to sink down readily. The bottom of the tube is open, allowing the lowermost blank to rest upon a flat metal plate. A slider, with a rapid reciprocating horizontal motion, strikes the lowermost blank dexterously aside to a spot where it can be printed on the back with those cautions, instructions, and references to by-laws which most companies deem proper to communicate to the public. Another sharp stroke drives the blank farther on, where the printing and numbering of the front or principal surface are effected. When the blank is printed on both surfaces, it is struck onward again, and comes underneath an exit or delivery tube, just the same height and dimensions as the hopper or feeding tube. Up this it is driven by a series of jerks, until a pile of (say) five hundred is finished. In traveling horizontally from tube to tube, and vertically up the delivery tube, each ticket acts as a kind of cardboard policeman, saying to its predecessor: "Move on, if you please." And they do move on, all undergoing some process or other at each stage of the movement. As the pile in one tube lessens, so does that in the other increase in height, like the two columns of liquid in a syphon. The whole pile can be removed from the delivery tube at once by a dexterous hand; but woe betide the luckless wight who "makes pie" (as the printers call the dropping and disordering of types in composing or distributing); for if a single ticket be disarranged, extra trouble is given in the after checking and correction.

As to the various colors displayed on railway tickets, some depend on the use of colored sheets of paper in the first instance; some on the production of stripes of color in a way bearing a resemblance to the making of colored stripes on earthenware or stoneware in the pottery districts; and some by a process more nearly resembling ordinary printing. One of the companies adopts a particular diagonal red line on all tickets, distinguishing them from other tickets which have to pass through the railway clearing house.

The automatic action of the machine or machines is very beautiful. For numbering each ticket, a peculiarly constructed wheel is used, which changes its particular digit every time a new blank is presented to it; and thus the consecutive numbers are produced on a series of tickets with unerring accuracy. A tell-tale index and a tell-tale bell, both automatically worked, give information as to the number of tickets printed, and the readiness of the machine to take in more food; but it is a matter of practical detail whether and when these tell-tales shall be deemed necessary. To give the reader an idea of how nicely this mechanism is adjusted, it refuses to work unless all the tickets are exactly of equal size, nicely squared, and in perfect order. It strikes one as being almost like a thing of life to see the machine detect a ticket from which a piece has purposely been torn off one end; its language is virtually: "Thus far shalt thou go, and no farther," for its prints as far as the defective ticket, and there stops.

As neither human fingers nor automatic machines are absolutely infallible, errors in numbering may occur in spite of all precautions. These are detected in a singular way. All the tickets in one series are made to pass through a machine with a velocity which the eye can scarcely follow. When stopped, the numbers are tested by two little index plates or wheels; if the same number is denoted on both indexes, all is well; but if any error has crept in, the index notifications differ, and afford means for determining at what part of the series the mishap has occurred.

A sheet of cardboard is certainly not a ponderous substance; but it is surprising how weighty the packages become when large quantities have to be dealt with. The tickets are tied up into small compact rows (string and tying being peculiar), and then packed into cubical masses in tin-lined boxes or cases—so firmly and closely pressed as to be as dense as a mass of wood. About fifty thousand tickets weigh one and a quarter hundredweight. The factory turns out two and a half millions of printed tickets (railway, steamboat, refreshment, etc.) per week, and ten millions of smoothly prepared but unprinted tickets; these numbers multiplied by the fifty-two weeks in a year, give a total annual production of something like six hundred and fifty millions, weighing upwards of sixteen thousand hundredweight! If these tickets be taken at two inches in length, and if they were laid flat, end to end, they would reach— But we leave our junior readers to exercise their arithmetical skill in solving this problem: merely hinting that it would require many voyages from England to America, and back again, to cover a distance equal to the length of this cardboard ribbon. From such small beginnings do great results ensue.

The Niagara Railway Suspension Bridge.

It is said that a curious spectacle is daily presented at the Railway Suspension Bridge, near Niagara Falls, N. Y. Whenever a passenger train arrives, weighing in all, say 150 tons, the passengers are ordered out of the cars and requested to walk over the bridge, on the pretence of better safety; but at the same moment, and while the passengers are on the bridge, the heaviest freight trains and locomotives, weighing 230 tons or more, are passing over the upper floor of the same bridge, directly above the heads of the passengers.

It appears that the Great Western Railway Company is the lessee of the bridge, for which, by agreement, they pay fifty-five thousand dollars a year rental to the Bridge Company. Owing to the fall in the price of materials, the Great Western might now build a new bridge, of their own, at a cost the interest whereof would be considerably less than the present rental. But the only way to escape this rent is to break the lease: which might be done if the bridge should be decided by the referees to be unsafe, not otherwise. The Bridge Company lately caused a most careful examination of the bridge to be made by several of the ablest engineers, whose report, recently published by us, showed that the structure was in splendid condition as to strength and safety. But the Great Western Company still aim to get a decision of the referees, one of whom they have appointed, one has been selected by the Bridge Company, while the third remains to be chosen by the other two. They have not yet been able to agree upon the third referee. In the meantime, it is supposed that the object of the Great Western Company in compelling the unfortunate passengers to bundle out and walk the bridge at every trip is to create a public opinion, in advance, against the safety of the bridge, in the hope of thus influencing in their favor the decision of the third referee, whoever he may be.

Transmitting Photographs by Telegraph.

A French *savant* has proposed some method by which a photograph may be transmitted from one place to another by the agency of the telegraphic wire; but we have not yet been able to learn anything of the means proposed to be adopted for securing so desirable an end.

We are, however, says the *British Journal of Photography*, in a position to give details of a method by which a photograph may be transmitted with the "speed of thought" to any part of the world with which the sender is placed in electrical communication. But this transmission is subject to compliance with certain modifications by which the original character of the picture, as a photograph, must be slightly altered, although this alteration is not necessarily any greater than that to which it has to be subjected before it meets the eye of the public as an engraving in any of our illustrated periodicals.

Rather more than twenty years since, Mr. F. C. Bakewell, the author of a well known treatise on "Electric Science" and other philosophical works, invented what he termed "the copying telegraph." By means of this system the very handwriting of the person who wrote a message could be transmitted in *facsimile* to his correspondent, all errors in transmission being avoided owing to the fact of the message being traced by mechanical agency from the original document. To render clear our description of a method by which a photograph can be telegraphed, it is necessary that we should give a brief account of Mr. Bakewell's clever invention.

Premising that paper can be prepared with certain chemicals (such as a solution of prussiate of potash and hydrochloric acid) which are decomposed by the passage of an electric current, the decomposition resulting in a visible mark at any or every place where a sharp point in the electric circuit is allowed to touch the paper, it will be readily comprehended that to bring such a sharp point in communi-

cation with the paper so prepared is a feat that can very easily be accomplished at a point distant thousands of miles. Mr. Bakewell's invention consisted in causing the communication to be written on tinfoil with an ink which was a non-conductor of electricity. The letters thus written formed on the surface of the metal a number of non-conducting marks. If, now, this sheet of tinfoil, previously trimmed to a definite size, be wrapped round a cylinder which will just suffice to permit of its going once round: if, further, this roller, placed in the electric circuit, be made to rotate at a definite rate of rapidity, and with a spiral or progressive motion from one end to the other in relation to a fixed point: it will be obvious that if this latter point be a needle mounted with sufficient elasticity to rise and fall as it passes over the heights and hollows of the letters which rotate underneath its point (which must be blunted so as not to scratch), a current of electricity will be transmitted to a distance which will be continuous only in the ratio of the immunity enjoyed by the ground, or tinfoil, from the breakages caused by the constant interruption of the non-conducting ink with which the message is written.

The drum or cylinder containing the communication being rotated, spirally, at one end of the telegraph wire, it now remains to be shown how the message is received at the other end. A cylinder, of precisely similar dimensions to that round which the communication is to be sent, must be ready at the receiving end of the wire, and round this must be wrapped a sheet of paper prepared in the way we have indicated. It, too, like the former cylinder, must be pressed upon with a needle-point tracer, and, like the original, it must also be made to rotate at a certain velocity previously determined upon, and, finally, it, too, must be made to move slowly from end to end, so that the point shall pass over it in a continuous line or spiral. It only now remains that, all things being ready, the clockwork be started, when the former roller will rotate under a point which is transmitting electricity subject to the interruptions caused by the letters of the message. As the paper on the receiving roller is traveling both in a circular and lateral direction at the same rate, it is evident that every touch of the tracer on the original communication will be rendered visible on the blank paper at the other end of the wire, the only difference being that, whereas the original communication is dark on a white ground, the message is received in light letters on a dark ground.

To transmit a photograph in accordance with the principle here laid down, it is first of all necessary that it be converted into lines. With our present knowledge of electrical communication, we must not expect the electric current to discriminate between thick and thin non-conductors; and until this has been achieved, if it ever will be, graduated tints must remain in abeyance. To convert a photograph—a portrait, for example—into lines, a print should be made on silver paper in the usual way, and this must be traced over with black ink, using a fine pen. When the tints have in this manner been translated into lines, the photograph is immersed in a diluted solution of bichloride of mercury in hydrochloric acid, by which the photographic image will disappear, leaving the pen-and-ink drawing only visible. If from this a negative be taken and a print in carbon be made upon a sheet of tinfoil, all the electrical conditions requisite for effecting the transmission of this drawing to any distance will have been complied with. The gelatin which forms the blacks, or lines, of the carbon print is a non-conductor; the base, on tinfoil, upon which the print has been developed, or to which it is permanently attached, is a conductor, and nothing else is required in order to effect the transmission of the picture in the manner we have described.

The accuracy of any likeness thus transmitted will depend upon two things: First, the fidelity with which the artist who is employed to make the pen-and-ink tracing effects his work; and, secondly, the adoption of such means as will insure both cylinders (the transmitting and receiving cylinders) rotating with a similar degree of speed—a matter involving no difficulty whatever.

DECISIONS OF THE COURTS.**United States Circuit Court—District of Connecticut.**

FIRE ARMS PATENT.—THE UNITED STATES RIFLE AND CARTRIDGE COMPANY AND E. REMINGTON & SONS vs. THE WHITNEY ARMS COMPANY et al.

[In equity.—Before Shipman, J.]

This was a bill in equity to restrain the defendants from an alleged infringement of letters patent granted to John W. Cochran on May 7, 1872, for improvements in breech loading guns. The plaintiffs are the owners of the patent, and E. Remington & Sons, for whose benefit the suit is brought, are the exclusive licensees thereunder. The answer of the defendants denies infringement upon their part, and also denies novelty of invention upon the part of the patentee, and alleges that the application of the said Cochran for a patent was filed on May 6, 1863, and that for more than two years prior to said date the invention had been in public use and sale with the consent and allowance of said Cochran, and that prior to the said date the invention had been abandoned to the public.

Held by the Court: The provisions of section 35 of the act of 1870, that upon the hearing of the renewed applications therein referred to, abandonment should be considered as a question of fact, does not render delay of itself conclusive evidence of abandonment, but makes the decision of such cases depend upon the peculiar circumstances as a question of fact and not of law.

The decision of the Commissioner in regard to the questions which have been committed to his exclusive jurisdiction is final—such as the sufficiency and competency of the formal acts and proofs which the statute provides shall be a prerequisite to the issuing of a patent; the existence of those facts upon which a reissues to be granted or an extension made; and the sufficiency of the reasons for delay exceeding two years in prosecuting an application made since the act of 1870.

The granting of a patent is *prima facie* but not conclusive evidence that the right to the invention has not been surrendered to the public, and the same is true in regard to abandonment upon renewed applications which were made under the 35th section of the act of 1870.

All the defenses which the statute authorizes may be made as well in respect to patents granted upon applications renewed under the 35th section of the act of 1870, as in respect to those issued upon original applications. Lapse of time, *per se* does not constitute abandonment.

The filing of an application is conclusive evidence that its date the inventor did not intend to give his invention to the public, but it is not conclusive evidence that he did not subsequently do so. Cochran's application was filed January 11, 1859, withdrawn February 20, 1860, and not renewed until after a period of eight years had elapsed. He, in the meantime, made numerous other inventions of a kindred nature, and obtained twenty-two patents thereon, constantly engaged in their development, and though poor, not thereby deterred from prosecuting his other inventions, and could not be said to have obtained a patent on his or at least he had the application alive had he so desired. Meanwhile the invention was

patented by others, and finally introduced in 1867, a year before Cochran filed his second application. Held; that while the new petition did not of itself sever the second application from the first, his acts and conduct show that the proceeding had been abandoned, and there was no continuity in the two applications.

The case distinguished from *Smith vs. Dental Vulcanite Company*, where the first application had never been withdrawn, and the inventor was unremitting in his endeavors to obtain a patent.

Forfeiture or abandonment may be inferred from the acts of an inventor who, without substantial reason or excuse, neglects the use of his invention and sleeps upon his rights for a number of years, while others in the meantime produce the same thing and give the public the benefit thereof; and the same is true whether the device be patented or had gone into use, without a patent.

A use for the mere purpose of competitive examination, experiment, and test, is not a public use.

Bill dismissed.
[Frederick H. Betts and George Gifford, for plaintiffs.
Benjamin F. Thurston and John S. Beach, for defendants.]

Inventions Patented in England by Americans.

From March 31 to April 9, 1877, inclusive.

BOOT MAKING MACHINERY.—S. Henshall, Philadelphia, Pa.
CONTROLLING CRANES, ETC.—T. A. Weston, Stamford, Conn.
EXERCISING APPARATUS.—G. W. Wood, New York city.
EXHAUST NOZZLE.—T. Shaw, Philadelphia, Pa.
FLANGE MACHINE.—C. Miller & Co., Pittsburgh, Pa.
LAMP GLOBE, ETC.—Meriden Glass Company, Meriden, Conn.
MOWER.—J. R. Parsons, Hoosick Falls, N. Y.
RECOVERING TIN FROM SCRAP.—N. S. Keith, Brooklyn, N. Y.
REFINING SUGAR.—F. O. Matthiessen, Irvington, N. Y.
ROVING TWISTER.—J. S. Kirks, Chester, Pa.
SCRAP BOOK, ETC.—B. J. Beck, Brooklyn, N. Y.
SHUTTLE.—D. H. Chamberlain, Boston, Mass.
STENCH TRAP.—J. H. Mackie, Oakland, Cal.
TIME GLOBE.—L. P. Jewet, Glen's Falls, N. Y.
TRIMMING BOOT HEELS.—J. H. Busell, Boston, Mass.
TRUNK, ETC.—W. S. Soule et al., Mass.

Recent American and Foreign Patents.

NEW HOUSEHOLD INVENTIONS.

IMPROVED COFFEE POT.

Richard L. Nelson, Orange Court House, Va.—This invention is an improvement upon that for which letters patent have been lately granted to same party. The objects aimed at in the present improvement are to render the former "drip attachment" more compact, to lessen the number of parts composing it, to reduce the cost of the same, and to lessen the time required for making coffee.

IMPROVED SCRUBBING MACHINE.

Peter Byrne, Jr., Norwalk, Wis.—This machine consists of a wheeled frame, carrying a reciprocating scrubber and mechanism for operating it; also a water holder, which is connected with the scrubber by a flexible tube, and a mop and pan, for taking up the water that has been used in the scrubbing operation. The machine is pushed about on its wheels, so that the floor is both scrubbed and mopped as the machine advances.

IMPROVED MOSQUITO NET FRAME.

Johann F. Volle, Houston, Tex.—This invention consists mainly in vertical posts or rods, swiveled to the head of a bedstead, and having horizontal arms to which the net is attached by means of sliding rings. The invention further consists in connecting the said arms by a crossbar or rod which is adapted to slide thereon, and to which the net is likewise attached in the same manner as to the swinging arms. The invention further relates to the peculiar arrangement of cords for adjusting or operating the swiveled posts and extending or retracting the net.

IMPROVED SPRING BED BOTTOM.

William M. Edmans, Troy, N. Y.—This invention consists in wire springs, bent into forked or branched form, having their ends turned upward, to enter the lower side of the end rails of the bed bottom. The upper outer corners of the end rails are rounded off, and the springs are curved inward above them. The ends of the springs are bent upward at right angles, to enter holes in the spring slats.

IMPROVED LAMP SHADE HOLDER.

Hiram L. Ives, Troy, N. Y., assignor to himself and T. Henry Dutcher, of same place.—This is an improved illuminating shade holder for lamps, by which different sized shades may be used, and a more perfect combustion and brighter light without the use of a chimney produced. The holder is made of inverted conical shape and of transparent glass, the angle of the sides being so arranged that the rays of light are reflected from the shade at the opposite side of the holder. The upper circumference of the shade holder is provided with two flanges, of which the inner flange is supported on an inclined collar, and slightly below the level of the outer flange, so that a shade seated on the inner flange will almost touch the outer flange and form a neater finish therewith.

IMPROVED KNIFE-SCOURING PAN.

David H. Cassel and George W. Zint, Crestline, O.—This is an improved pan for the convenient scouring of knives and forks; and it consists of a sheet metal dish or pan with inclined center plane or rest piece for the knives and forks, and a front partition, providing a receptacle for the scouring powder. The scouring powder is taken up and applied directly to the knife or fork, bringing always a fresh quantity in contact with the same as the spent powder is dropped from the rest piece into the spaces at both sides of the same. The inventor claims that the scouring of knives and forks is by this pan accomplished in a neater and more convenient manner, the pan forming a clean and readily available device for that purpose.

IMPROVED BUTTER DISH.

William H. Fitch, Brooklyn, N. Y.—This butter dish or plate is stamped up of a sheet-metal blank in the customary manner. The sides of the dish are made straight with outward inclination, and connected at the corners by outwardly projecting mouldings, which are thrown beyond the outside edge of the dish by narrow tapering sections, that extend at right angles, or nearly so, from the sides. This outwardly projecting section serves not only to stiffen the sides, but mainly for the purpose of providing for the surplus stock at the corners, and avoiding the creasing or wrinkling of the sides by the too large quantity of stock at the rounded off corners. The throwing or bulging out of the corners has the additional advantage of requiring less power in stamping the dishes, so that two or more may be stamped up by the same blow, and of producing a smooth, stiff, and durable dish of uniform appearance, and without the objectionable folds or creases that are generally found in sheet-metal dishes of this kind.

IMPROVED PROVISION SAFE.

Ezra Webb, Brooklyn, N. Y., assignor to Mrs. S. E. Shutter, New York city.—This invention is intended to be placed in a window when there may be a scarcity of closet-room, to receive cooked and uncooked provisions, and to be so constructed that it may serve also as a refrigerator. A safe has wire cloth in its front and back, so that the air may pass through it freely. The top of the safe is made inclined, so that the rain may run off it freely. The front of the safe may be provided with a single door or with double doors, as may be desired. In the bottom is placed a pan in which may be placed a rack to receive ice, shelves being placed in the upper part of the said compartment. The drip water from the ice chamber may be received in a pan or other receptacle, or may be conducted away by a pipe.

IMPROVED WASHBOARD.

William Serviss, Sidney, O., assignor to W. M. Serviss & Co., of same place.—This invention consists in making a washboard entirely of metal, the object being to provide a washboard that will not warp when subjected

to the action of hot water and soap, and that is light, durable, and easily repaired.

NEW WOODWORKING AND HOUSE AND CARRIAGE BUILDING INVENTIONS.

IMPROVED FELLY.

William A. Wharton, Belle Centre, O., assignor to himself and H. E. Lambert, of same place.—In this invention, a section of felly, is made from malleable iron, or any other suitable metal, so as to present the same exterior form and appearance as the ordinary wooden felly; but from its peripheral or tire side it is chambered out to lighten and cheapen it. Holes are made in it to receive the spokes, and from one of its ends a dowel projects, and in the opposite end a hole is made to receive the dowel of the adjoining felly section. These holes may be provided in both ends of the felly section, and a pin or bolt used to connect the adjoining ends of the felly, if desired. A block, having the same form as the transverse section of the felly, provided with a central opening for receiving the dowel, is placed between the ends of the felly sections when the wheel is made; and when the spokes become worn, so that when it becomes necessary to contract the rim of the wheel, one or more of the said blocks may be removed and the rim contracted, so as to force the spokes farther into the hub when the tire is struck on.

IMPROVED FASTENER FOR MEETING-RAILS OF SASHES.

William T. Doremus, New York city.—This is an improved window sash stop, so constructed as to operate automatically to fasten the sashes when they are closed, so that it is impossible to close the window and leave the sashes unfastened, and which may be also used to lock the sashes, so that they will not shake and rattle with the wind. The invention consists in combining with a stoppivoted to plate, and having a toe, a pivoted lock plate having upwardly projecting inclined flanges and shoulders upon its sides. The stop is so formed that, when left free, its weight will cause its lower forward corner to project, so that when the upper sash is raised into place, or the lower sash is lowered into place in closing the window, the corner of the stop will be over the top rail of the said lower sash, and the window will be securely fastened.

NEW MISCELLANEOUS INVENTIONS.

IMPROVED COIN TRAY.

Albert A. Hyde, Wichita, Kan.—This is an improved tray for the use of bankers and others using large quantities of coin, to enable them to have the coin in a convenient shape, and to facilitate the removal of the coin from the tray when desired. The sides of the tray are attached to the side edges of the bottom, the lower parts of which project below said bottom to serve as feet, and are so formed as to give the bottom a slight forward inclination, to prevent the coin from falling out at the open rear side. The interior of the tray is divided into compartments by vertical partitions, which are attached to the bottom and the front. The partitions are so arranged that the compartments may correspond in width with the diameter of the coins to be placed in them. The bottom of the tray is graduated or made of different thicknesses, so that each pile of coin, when made level with the top of the tray, may contain even dollars, and may thus prove the count or render the counting of the full piles unnecessary. A handle is formed upon or attached to the rear edge of the bottom for convenience in handling the tray. A lifter is used for removing the piles of coin from the compartments of the tray. The forward end of the lifter is concaved to rest against the side of a pile of coin, and to the lower edge of the forward end of said coin-lifter is attached a thin metal plate, to be slipped beneath a pile of coin, so that the whole pile of coin may be removed at once when desired.

IMPROVED STATION INDICATOR.

John Peter Schmitz, San Francisco, Cal.—This apparatus is simple in construction, and operated by the driver of the street car, or brakeman of the steam car, on which it is placed. It indicates the streets or stations passed on the route by the names thereof appearing through a slot in the side of the case containing the endless traveling apron on which the names are printed. The apron passes around suitable rollers.

IMPROVED WATER ELEVATOR.

Abraham Vantrump, West Elkton, O.—The buckets on an endless chain empty into a trough above the platform, with exit-spout to keep up a steady stream. By reversing the motion of the elevator, the buckets are emptied, which is of advantage in summer, as there is no water wasted, and the same is always obtained fresh and cool, while it prevents in the winter season the freezing of the contents of the buckets.

IMPROVED COTTON CHOPPER.

John P. Harrison, Aberdeen, Miss.—This cotton chopper is so constructed as to chop the crop to a stand by being drawn across the field. The hoes may be adjusted wider apart or closer together, according to the number of stalks desired to be left.

IMPROVED LEVEL.

Thomas H. Burk, New York city.—This invention admits of convenient observation from top and side during use; and it consists of a level and plumb having indicators, which are operated by a weight hung to the center shaft of the side indicators, and working at the same time a top indicator by bevel gear connection. A vertically supported shaft, that passes through the top dial, carries an index hand at the upper end, which hand is in line with the side indicators when they are in vertical position, but follows the motions of the side hands in exact manner, so as to instantly indicate whether the rule is in level or plumb position or not. The joint working of the index hands facilitates the use of the implement, as the positions of the hands may be seen at a glance from the side or top without necessitating stooping down to observe the side indicators.

IMPROVED HORSE COLLAR.

Hezekiah W. Whitney and Charles F. Whitney, Oswego, N. Y.—This horse collar is from parts of peculiar form, secured together by means of rivets and stitching, so as to form a durable and comfortable collar. The face of the pad, or part of the collar that comes into contact with the horse's breast, is cut with a convex outer edge and a curved inner edge. The ends of the face part are cut diagonally to fit the other portions of the collar to which it is attached. The threads of the stitching draw the inner and outer surfaces of the collar together, forming one crease for receiving the hames, and another for relieving the pressure on the breast of the horse and preventing galling. A flat surface is formed for relieving the horse's breast from pressure. This surface is quilted to prevent it from becoming convex.

NEW MECHANICAL AND ENGINEERING INVENTIONS.

IMPROVED WINDMILL.

Daniel Nysewander, Springfield, O.—This invention consists in the combination of two segmental gear wheels, two regulating vanes, and an adjustable weight with the turn-table and the main vane; in the combination of the flaring flanges with the edges of the wings of the wind wheel; in the combination of brace bars with the flanges and the wings of the wind wheel; and in the combination of upright bar, cross bar, hinge bar, and the vane. It is too elaborate an invention to be adequately described without engravings.

IMPROVED COTTON PRESS.

James Templeton, Florence, Ga.—The object of this invention is to furnish a hand power cotton press of cheap, simple, and effective construction,

by which the packing and baling of cotton or other material are facilitated and accomplished with less danger from the fulcrum lever. The invention consists of a lint box, filled from the top, and is operated by an upwardly moving follower and sliding top panel. The base frame of the cotton press is supported on cross sills, and provided with uprights that are braced in suitable manner to the base sills, and strengthened by lateral pieces, so as to form a strong and rigid support for the lint box. The lint box extends either through the floor of the building from the lint room down to the ground, or the same is provided, when the press is put up outside of the shed or building, with a platform around the lint box, at suitable height above the base frame or sill.

IMPROVED MACHINE FOR WINDING HAY INTO ROLLS FOR FUEL.

Ebenezer Harding, Delavan, Minn.—This machine winds hay or straw into rolls or twists for the purpose of using the same in a compact and convenient form for fuel; and the invention consists of a flat revolving spindle, in combination with a sliding and lever-acted pressure roller, the hay being wound upon the spindle, which is withdrawn when the roll is finished. After the hay is attached to the spindle by being wound once or twice around the same, the spindle is revolved by one hand, and the roller pressed at the same time tightly, by the lever, with the other hand, against the hay, so as to form a closely wound roll of hay or straw, of any desired size, around the spindle. When the hay has the required size, the spindle is withdrawn, by pulling the crank sideways, and the roll removed. The next roll is then formed in the same manner, and thus any quantity of the surplus hay or straw is worked up quickly into rolls of compact shape, which may be used in convenient manner as fuel, in place of wood, and burned in any stove.

NEW AGRICULTURAL INVENTIONS.

IMPROVED CORN PLANTER.

Harrison Wagoner, Coshocton, O.—This planter is so constructed as to open a channel to receive the seed, drop the seed at uniform distances apart, cover the seed, and mark the rows, so that the planting may be done in accurate check row. By this construction the dropping slides are drawn back to drop the seed with a slow movement, and are pushed forward to again receive seed with a quick movement, so as to jar the seed and insure the filling of their dropping holes.

IMPROVED PLOW.

Robert B. Thomson, Dansville, Mich.—This plow consists of a combination of a mould-board, point, landside, forward standard, rear standard, and beam. The standards are made with bends or offsets near their upper ends, to bring the beam directly over the line of resistance. The upper end of the forward standard has a forward projection or arm formed upon it, through which passes the bolt that secures and pivots the beam to the said standard. Upon the upper end of the rear standard is formed a projection or plate, which is made in the form of a section of a circle. The forward edge of the plate is concaved, and has a flange formed upon its lower side to receive the hook of the hook bolt, which passes up through the rear end of the beam, so that by loosening the nut of the bolt the rear end of the plow beam may be moved from or toward the unplowed land, to adjust the plow to take or leave land, as may be desired. The colter is entirely independent of the beam, and may be adjusted up or down and toward or from the land, as may be desired. The handles are connected by rounds, the lower ends of which are secured to the landside and mouldboard by bolts, the upper bolts passing through slots, so that the rear ends of the handles may be raised and lowered to correspond with the height of the plowman.

IMPROVED CORN PLANTER.

Charles L. Goethals, Los Angeles, Cal.—This machine is so constructed as to open a furrow to receive the seed, drop the seed, and cover it. The new feature consists in the lever which works the dropping slide.

IMPROVED DITCHING MACHINE.

Thomas N. Turner and Sanford Turner, Rushville, Ind.—The sides of the ditch are cut by colters, the lower ends of which are attached to the forward corners of the share. The cutting edge of the share is made V-shaped, and its rear part is inclined upward, so as to deposit the dirt upon the endless belt of the elevator. With this machine a slice about six inches deep may be taken from the bottom of the ditch at each passage, and by passing back and forth a sufficient number of times the ditch may be sunk to any desired depth.

IMPROVED CORN SHELLER.

Herman Neubert, Ironton, O.—The forward part of the shaft is divided into four branches, to the outer ends of which is attached a ring plate. Upon the inner edge of the ring plate are formed four knives, the edges of which are inclined, and which are bent into such a shape that their said edges may rest upon the ear diagonally. To the branches of the shaft, at a little distance from their ends, is attached a ring plate, upon the inner edge of which are formed lugs which are bent forward at right angles to extend along the ear longitudinally. A tube keeps the kernels from scattering as they are removed from the cob by the knives and lugs.

IMPROVED HAND CORN PLANTER.

William E. Seelye, Anoka, Minn.—The lower part of the front of the seed chamber is formed of a spring plate, which will spring inward to close the chamber when a plunger is raised, and is pushed outward to allow the seed to drop into the ground when the said plunger is pushed down. The plunger is attached to the lower end of a bar, that slides up and down upon the inner surface of the back of the chamber and seed box, and is connected with the lower end of a handle which slides upon the outer surface of said back by two bolts. The bolts pass through a longitudinal slot, formed in the back of the planter and through a block or blocks placed in the said slot. The block or blocks keep the bar and handle at the proper distance apart, and also prevent the side edges of the bar from wearing the sides of the chamber.

IMPROVED CORN-GUARD FOR PLOWS.

Edward B. Murphy and Charles D. Bramell, South Point, Mo.—This is an improved device for attachment to the beams of plows to prevent soil and clods from being thrown against the young plants. It is a hollow cylindrical casting, made with its outer end closed, and upon the upper and lower sides of which are formed lugs to receive bolts which pass above and below the plow beam and through the ends of a bar placed upon the other side of the said beam, so as to clamp it between the said casting and bar. A spring holds the guard plate down to the ground and, at the same time, allows it to rise to pass over an obstruction. The device may be attached to the beam of a shovel plow, a turn plow, or any other desired kind of a plow.

IMPROVED CORN PLANTER.

H. William Meyerhoff, Waverly, Iowa.—This invention relates, first, to the means for changing the angle of the tongue to the frame of the planter, for the purpose of varying the depth at which the furrow-openers deposit the seed in the ground; secondly, to the mechanism for reciprocating the seed slides, and the arrangement of a clutch for throwing the same into, and out of gear with one of the transporting wheels; and, thirdly, to making the driver's seat adjustable by a particular construction.

IMPROVED PLOW.

Daniel P. Ferguson, Jonesborough, Ga.—This invention is an improvement in the class of plows having pivoted adjustable standards, and it relates to the employment of a curved or angular notched brace for the plow standard, and a weighted key for confining the brace. The invention further relates to the provision of a slotted stay-piece for preventing the share or shovel turning on the bolt by which it is attached to the standard.