

## CENTENNIAL NOTES.

## THE FRENCH POTTERY DISPLAY.

France, in her section in the Main Building, makes a marvelous display of pottery, which must be studied piece by piece before any idea can be obtained either of its extent or value. Indeed some of the vases exhibited, made in the Sévres factory during the first years of its existence, are of immense value, especially in these times, when all old china, owing to the taste for making collections of the same, fetches prices out of all proportion to the intrinsic value of the objects.

Porcelain is of two kinds, "hard and soft paste," distinguished from each other by their relative density, a quality governed by the comparative proportion of siliceous matter entering into their composition. The first porcelain of French manufacture was "pâte tendre," or soft paste, and this was principally made at Sévres. In 1761 the secret of making hard porcelain was discovered, and the manufacture of "pâte tendre" was thereupon discontinued. Hard porcelain is produced from kaolin and other materials, and usually goes through three processes in its manufacture. The first process, which is the most commonly used for pieces of average size, consists in the placing of the paste in a lump upon a mold, which, in the case of a plate, for instance, would represent the bottom half. The mold and paste are then put on a rapidly revolving brass cylinder in front of the workman, who, by a quick movement of the hand and mistening with a sponge, causes the paste to assume the desired form for the upper half, as by its pressure against the mold it assumes that of the lower half. So also in the case of the cups; the mold is merely for the exterior portion, the interior being shaped by hand. The second process is used for large pieces, such as vases, soup tureens, etc. The paste is placed on the revolving brass plate in a lump, and the workman, by means of steel tools, causes it to assume the shape sought for. The third process, which admits of the production of the most minute latticed or diagonal figure work upon the body of the piece, to which it also gives an almost paper-like thinness, is one in which the paste, reduced to a liquid form, is run into molds. Some of the French vases are so magnificently painted as to possess a high value as works of pictorial art alone. There is a toilet set on which the color was melted on the glaze, so that the appearance is of polished *lapis lazuli*, on which the most curious effects of light and shade are produced. In the basins, where the pigment in burning has dropped to the bottom, there seem to be several inches of water, so deep is the color; while on the base of other pieces, where the color has dropped off, the ware is mottled blue and white. One Paris firm makes a specialty of porcelain with a mother-of-pearl glaze produced by the use of uranium salts; another exhibits *majolica*, where the portions in relief are produced by pressure applied to the back of the object, just as *repoussé* work is done in silver. Ordinarily such decorations are made separately and attached to the article.

## THE LARGEST GLASS PLATES EVER IMPORTED

into the United States are exhibited in the French section. They are two immense sheets measuring 22 feet in height by 10 in breadth, mounted in maroon colored frames.

## THE FAMOUS TAPESTRY,

exhibited in the French department, consists mainly of the fabric known as *haute lisse*, or high loom. This, as its name implies, is made on high looms of considerable size. At the top and bottom of the framework composing the loom are horizontal cylinders. Around the upper one, the threads composing the warp are rolled, and around the lower one the tapestry, as it is completed yard by yard, winds itself. Between these two cylinders is stretched the warp, upon the threads of which the artist marks in white chalk the outlines of his picture. To these he adds, for the purpose of fixing the light and shades, tracings from his pattern. Then, with this latter conveniently placed for reference, he stations himself against the back of his tapestry, and, with his many-colored worsteds and silks, commences the weaving of his picture. The vertical threads of his warp are divided by a heddle or cross stitch, which keeps half of them in advance of the rest; but those behind can be brought forward by means of small cords or *lisses*, one of which is attached to each warp thread. Between the two sets of threads the workman introduces his left hand and takes up as many of them as is necessary. Through these he passes his curiously shaped wooden needle from left to right, and with its point piles the stretched thread, which in turn is passed back in the contrary direction through the space opened by shifting the front and back threads. The manipulation of the threads, the combination and proper use of the many colors and shades of worsted and silk, and the working out of the design require a skill and delicacy only attained by long practice.

## FRENCH SCIENTIFIC APPARATUS.

France, long celebrated for the products of her opticians and scientific instrument makers, is well represented in this line of goods.

Of opera glasses there is an extensive exhibit, embracing the largest and smallest in cost as well as in size. The finest glasses shown are, perhaps, those mounted in aluminum, a metal admitting of a polish equal to that of silver, and of extreme lightness. This metal, however, though considerably lessening the weight of the glass, adds almost 200 per cent to its cost.

Derogy, Paris, shows a large collection of photographic apparatus, noticeable among which are a set of extra large object lenses, some very powerful condensing lenses, and specimens of the Derogy system for photographers' use.

This system, which combines in one instrument the power of making, at a given point and with a single objective lens, six pictures of different dimensions, consists, in the addition to ordinary apparatus, of two extra lenses: one convergent, for making the object smaller, and the other divergent, for making the object larger. With these lenses, placed singly, as the occasion demands, in the position assigned to them, the necessity of changing the object glass to produce different sizes of pictures is obviated.

A telescope, valued at \$6,000, with an object glass 12½ inches in diameter, is shown by Secretan, Paris. Its magnifying power is 600 times. In this exhibit is an admirably designed camera lucida, or, as it is here called, *megalographie*. For microscopic drawing and pattern drawing for industrial purposes, this instrument possesses many advantages. It differs from the ordinary camera lucida, inasmuch as it admits of drawing directly from objects under the microscope, or from designs produced by the turning of the kaleidoscope. It is provided with three tubes, one microscopic, the second kaleidoscopic, and the third simple. A prism on a detached tube of its own is adjustable to either of these, and by means of mechanical contrivances the point of view may be changed as occasion demands.

## WEIGHTS AND MEASURES.

An automatic balance, in use in the Paris Mint since 1874, is a most ingenious machine. Its object is to determine the weight of twenty franc pieces, and to divide them into classes, according as they are standard, light, or heavy weight. At one end of it is an inclined trough, in which the pieces are placed; and, as one by one they reach the end of the incline, they slide upon the weigh pan of a small scale, having at the other end of its beam a counter weight of precisely the standard weight for a twenty franc piece. Beneath the weight pan is a hopper, and in front of this latter the mouths of three tubes, terminating in boxes destined for the reception of light, heavy, and standard weight pieces. Should the piece, after reaching the scale, prove heavy, the weigh pan would be borne down by it, and this, acting upon the balancing needle indicator, causes it to move towards the piece. This movement acts upon the hopper; and when the piece is thrown off the scale, it passes directly into the tube leading into the box for heavy pieces. Light and standard weight coins cause the needle to go towards the counter weight, or to remain within the limits allowed to the standard weight; and these movements act upon the hopper as above described, and send the coins into their appropriate boxes.

## THE AWARDS FOR THE LYALL LOOMS.

The positive motion loom, which was one of the most important American inventions exhibited at the Centennial, has deservedly received from the expert judges the highest commendation. The report states that the reasons for the award are "variety, extent, and importance of the looms exhibited; invention of the positive motion, its wide range of applicability, fitness for the purpose intended, and excellence of design, construction, and working utility and economy." The Messrs. Lyall, whose exhibit, it will be remembered, we described and illustrated recently, have also received another award for a lock-stitch shuttle machine: in which the vertical needle bar is reciprocated from a rotating shaft by an epicycloidal movement: on account of the apparatus being, in the judges' opinion, "the most rapidly running sewing machine." This is the machine which we saw binding corsets at the rate of 2,500 stitches per minute by the counter.

## THE CLOSING CEREMONIES OF THE EXPOSITION.

At sunrise on November 10, the thunders of salutes from a battery on George's Hill in the Exposition grounds, and from the United States ship Plymouth, announced to the people of Philadelphia and the hundred or so thousand visitors there gathered that the last day of the Centennial had arrived. By ten o'clock the Exhibition buildings were thronged; but at that hour, to the disgust of those who had secured commanding positions whence to view the ceremonies on the grand platform at the end of the Main Building, a steady cold drizzle of rain began, which by noon became a continuous pour. With characteristic promptitude the authorities at once prepared the interior of the judges' edifice; an army of carpenters put up a new platform in a twinkling. Theodore Thomas, his orchestra, and his chorus, were packed in the galleries; and when the procession of dignitaries, headed by the President of the United States, entered the structure, everything was in good order, and the confusion which had seemed imminent was happily arrested.

The triumphant strains of Wagner's Inauguration March were followed by a brief prayer; and then, after one of Bach's grand choral fugues had been rendered, Mr. Morrell, the chairman of the Centennial Executive Committee, made the opening address, in which he briefly reviewed the general advantages of the Exposition. The *Te Deum* by the chorus preceded a speech by President Walsh, of the Centennial Board of Finance. Speaking of what the Centennial has accomplished, he said: It has afforded an opportunity to show that the administration of an exhibition on a grand scale may be liberal in its expenditure without useless extravagance; that its laws may be strictly enforced with impartiality, and without harshness; that its regulations may secure the efficiency of its departments and uniformity in their action; that its whole course has been free from financial embarrassment, or even a payment deferred; and that notwithstanding every part of its machinery was in constant motion, no one of the immense throng within the limits of the Exhibition was sensible of its restraint.

Director General Goshorn's address was in about the same

strain. Finally General Hawley, the President of the Centennial Commission, came forward, and, in a few appropriate words, acknowledged our national gratitude to our foreign visitors, and thanked the city of Philadelphia and the general government. As, at the conclusion, the audience joined in the hymn "America," the original flag of the American Union, displayed by Paul Jones on the ship *Bon Homme Richard*, was unfurled, and national salutes of forty-one guns were fired from the land battery and the war vessel. After the burst of cheering which the display of the historical banner elicited had subsided, President Grant advanced to the front of the platform, and in a low voice said: "Mr. President and Gentlemen of the Centennial Commission, I now declare the International Exhibition of 1876 closed." Then as he waved his hand, a telegraph operator behind him touched the key of an instrument, the signal rang forth from all the gongs and bells, and at that instant the great Corliss engine slackened its motion, became slower and slower, and then stopped. The great audience reverently sang the Doxology and dispersed. As they left the grounds, the huge English road engine came puffing out of the gates, dragging two cars loaded with filled packing boxes. The Exposition was indeed over.

## New York Academy of Sciences.

A special meeting of the biological section of this society was held on Monday evening, October 30, at the library of the New York Aquarium.

Professor A. E. Foote, of Philadelphia, exhibited a specimen of rutile in quartz, said to be the finest in the world. The crystals were about 5 inches long, thicker than a knitting needle, and doubly terminated. This specimen was found at Hanover, N. H., and formerly belonged to Dr. Chilton. The professor also exhibited a large and beautiful emerald from Mungo, New Granada, and a fine specimen of rubellite (a variety of tourmaline) both from the same collection, now the property of Dr. Foote.

Professor Hubbard exhibited a fossil tooth of an elephant, weighing 13 lbs., from near Rochester, N. Y.

Some seeds and nuts of tropical sources were also presented, and referred to Professor Martin to determine their species.

## THOUGHTS ON EVOLUTION.

Professor E. C. H. Day, chairman of the section, made a brief address on evolution. The speaker first declaimed any dependence of evolutionism on Darwinism; the latter may prove false, and yet that does not disprove the former. The idea of evolution has been generally accepted in physical matters, in astronomy, in geology, etc., and it is only when applied to life that it meets with opposition. He then explained that the doctrine of evolution is not atheistical, but implies greater wisdom on the part of the Creator than does special creation. He drew comparisons between the length of the life of man, three score years and ten, and the supposed age of the world, representing the former as  $\frac{1}{10}$  inch on a line from 120 feet to ten blocks long. He attempted to explain how the honey ant, although a neuter, could be the result of natural selection; also the disappearance of large and powerful animals before smaller ones of more intelligence. The disappearance of hair on the back, in passing from ape to man, was explained on the supposition that animals that walk upright and rest in a perpendicular position do not need its protection, while it is a positive injury as a refuge for insects and as affording a better hold to an adversary in a hand-to-hand conflict.

Dr. Newberry replied with some well put remarks on our inability to argue the question with our present limited knowledge, and advanced the usual objection persistence of species.

## FISH CULTURE

was the subject of some very practical remarks by Mr. Frederick Mather. He stated that the Chinese had been credited with practising fish culture for a long time, but it had only amounted to the transfer of unhatched eggs to ponds that they wished to stock. Fish culture was introduced here twelve years ago, and now America is ahead of the world. Some of the advantages of the artificial over the natural are that far more eggs are impregnated in the former operation, that, the young being protected, more of them live to maturity, and that we are able to transport them safely over long distances, a lot of salmon eggs having recently been received in good order from California. There are some fish, however, the eggs of which, forming a slimy mass, require different treatment; others do better when left to Nature. The speaker exhibited some of the eggs and young fish just hatching out, and stated that light was very injurious to them at this stage, as the eyes are very large and sensitive, being plainly visible before the fish leaves the egg.

He also exhibited a most remarkable

## PAIR OF SIAMESE TWINS,

two tiny salmon hatched from one egg and bound together in a manner quite like the human twins recently deceased. Although quite lively, he predicted for them a short life because they hatched head first, which is a bad omen for the vitality of the fish.

At the conclusion Mr. Coup invited the members present to visit the Aquarium, where an opportunity was offered them to see millions of these little fish in the very act of leaving the egg, as well as the other curiosities, of interest to ichthyologists.

ONE tenth of one per cent of the whole atmosphere contains oxygen enough for the supply of the whole population of the world for 10,000 years.

**Bank Clerks.**

The Boston *Commercial Bulletin* says that the bank clerks of Boston are as capable, industrious, and faithful a set of bank officers as can be found in any city in the world. But after all, it states, the place to find an extensive army of well trained bank clerks is in the Bank of England. This institution, with its capital of ninety millions of dollars and dating back to 1694, today employs 900 clerks. The building in which these clerks do their work covers five acres of ground. It has not a single window upon the street, the light of day being admitted only through open courts. It has a clock in the center of the bank with fifty dials. The Bank of England is situated in the center of London; but it has one branch at the west end of the city, and many branches in the provinces. Though the Bank of England employs a very heavy force of clerks, it would seem, from a glance at its business, that it ought to keep them well employed and fairly remunerate them. Its sole work in its issue department is to give out notes to the public. The profit the bank derives from its issue department is the interest received upon the \$70,000,000 government debt and securities, which, at the rate of 3 per cent, is \$2,100,000 a year. By its dealing in coin and bullion, it has the reputation of making \$150,000 a year. The amount of Bank of England notes afloat generally averages about \$100,000,000, and has lately reached \$165,000,000. The deposits in the Bank of England, out of which it of course makes a great deal of money, range from \$60,000,000 to nearly twice that sum.

**The Adulteration of Oils.**

We subjoin some extracts from the "Report on Adulterations and Sophistications" presented to the American Pharmaceutical Association at its meeting in Boston, last autumn. Three signatures were attached to the report, namely, Adolph W. Miller, chairman, James R. Mercein, and M. L. M. Peixotto; but Mr. Mercein stated that the whole of the work had been performed by the chairman.

Oil of almonds. We are informed on most excellent authority that the so-called French oils of almond, both fixed and essential, are obtained exclusively from peach kernels.

Oil of bergamot. We were shown a highly complex formula, said to be used by the manipulators in Germany for skillfully reducing this oil. Almost three fourths of the compound consisted of the oils of orange, copaiba, lemon, a little neroli, and several others. We were informed that large quantities of this sophisticated oil are disposed of in Europe.

Oil of Ceylon cinnamon. Albert P. Brown found this oil to be adulterated with sassafras and cloves. The oil of the leaves of the Ceylon cinnamon is also frequently sold in place of the true oil of the bark. The former is a brown, viscid, essential oil of clove-like odor; it is sometimes called heavy oil of Ceylon cinnamon.

Oil of erigeron. A specimen of this oil was sent to the writer by Mr. Joseph L. Lemberger, which was so largely adulterated that the true odor was entirely overpowered by that of turpentine.

Oil of juniper berries was offered to the writer by a highly respectable firm of wholesale liquor dealers, who, in their desire to have a really pure and superior article, had themselves imported it direct from Holland, having ordered the very best that was obtainable. As a very much greater quantity had been sent than their order called for, they were anxious to dispose of a portion of it. The gentlemen were so very sure about the absolute purity of their oil, for which they had paid a liberal price, that they were loath to believe their own eyes when, after agitation with an equal quantity of water, only 20 per cent of their so-called oil was left, the remainder being alcohol.

Oil of lemon, put up in original cans and genuine imported cases, branded "E. B. Co.," was found by the writer to contain 25 per cent alcohol. There is every probability that both seals were counterfeit, as the letters composing them were slightly different from those found on the top of genuine cans from Brehmer & Sanderson. The metal on which the seals had been impressed also presented a dull and tarnished appearance, while it is usually perfectly bright and clean.

Oil of melissa. The oil of lemon grass, obtained in the East from *andropogon citratus*, is very frequently substituted for the true oil of melissa, which is distilled in Germany from *melissa officinalis*.

Oil of origanum rarely reaches this country. A few pounds imported by the writer cost about \$5 per pound. The so-called commercial oil of origanum is obtained in France from *thymus vulgaris*. The original packages are even distinctly marked *essence de thym rouge*. As has been already stated, this oil is very frequently mixed with turpentine in large proportion. Its chief consumption is among the manufacturers of patent liniments, who are totally indifferent as to quality, if they only obtain an original package.

Oil of peppermint was met with also largely with castor oil and alcohol. Twenty-six lbs. of this adulterated oil yielded, when distilled by the writer, 8½ lbs., of pure oil, about a gallon of castor oil remaining in the still. The proportion of alcohol, which had been present, is represented in the loss.

Oil of rose geranium is now so frequently substituted by the ginger grass or palma rosa oil, obtained from *andropogon schenanthus*, that it is somewhat difficult to procure the true oil of *pelargonium odoratissimum* or *radula* in commerce.

Oil of sassafras was purchased by the writer from a party who represented that he had personally distilled it, and it was found on evaporation to leave a residue of 14 per cent of rosin.

Oil of verbena is almost out of the market, being everywhere substituted by the oil of lemon grass, *andropogon citratus*.

Oil of wintergreen was offered to the writer by a tall Jersey man, who professed to have distilled every drop of it himself, and who therefore claimed to be able to guarantee its absolute purity: and it proved to contain just two thirds of its volume of alcohol. It is somewhat remarkable that even this large proportion of alcohol could scarcely be recognized by the senses, and that, as far as could be judged by the taste and smell, this was an unusually fine specimen of oil of wintergreen. Several other lots have been met with containing various proportions of oil of sassafras.

Oil of wormseed. Joseph L. Lemberger has favored us with a specimen of the oil, smelling very strongly of rancid turpentine.

Oil of wormwood has been met with, extensively mixed with turpentine.

Olive oil is largely substituted by some of the cheaper fixed oils found in this market. Very little of that which is sold by grocers is even imported from Europe. A New York merchant, who is extensively engaged in bottling this article in imitation of the imported style, informed us that for the cheapest grade he is in the habit of putting up refined cotton seed oil, and for a somewhat better brand the oil of benne. The expressed oil of mustard, a by-product in the manufacture of table mustard, is also applied to the same purpose. Our French friend, whom we have before alluded to, also kindly informed us that in his country the ground nut oil (*arachis hypogaea*) is used to an enormous extent for admixture with olive oil, so that but very little of the latter is exported strictly pure.—*Chemist and Druggist.*

**Microscopic Detection--Wool and Hair.**

The *American Naturalist* furnishes some interesting facts on this subject. The United States Treasury Department has admitted calf hair goods free from the duties levied on those composed in part of wool; and evidence having been furnished that some fabrics, claimed as made of hair, contained more or less wool, a commission was appointed, in which Dr. J. G. Hunt, the well known microscopist, was associated, for the examination of these fabrics. The possibility of distinguishing in manufactured mixture the hair of the cow and calf and that of the sheep has been denied by some microscopists, especially as these fabrics vary on different parts of the same animal. The commission has, however, been able to classify and distinguish them. Woolly hairs have no pith, and no perceptible taper. Their mean diameter varies from a five-hundredth to the thousandth part of an inch. At irregular intervals they have one-sided spiral thickenings, causing the wool to curl. They occur on sheep, camels, goats, and llamas; and many other animals have a portion of these woolly hairs. On the other hand, straight hairs are shorter, thicker at base, and tapering. The pith is a large part. The scales on the outside, of which there are twenty to forty in a hundredth part of an inch, lie smoothly. In wool they project more or less, and are from fifteen to thirty to the hundredth part of an inch. With these and other distinctions before them, the commission found, by first bleaching the colored fibers in mineral acids, and then mounting them in glycerin, and by using high powers, that in a few samples there was no wool; in a larger proportion there was a small quantity; in a very large number of samples there was from five to ten per cent, as well as a much larger proportion; and in one case it was difficult to find five per cent of genuine cow hair.

A BLOCK of iron about 2½ inches long by 1½ inches square, flat at the bottom and drawn out for a handle with a wooden end, like a soldering iron, is an excellent implement for removing old and hard putty from sashes. When hot (not red hot) the iron is placed against and passed slowly over the putty, which becomes softened by the heat and is rendered easily detachable from the wood.

A VERY small quantity of oleic acid dropped upon a sample of gum copal, and but slightly warmed, will dissolve that gum completely.

**Recent American and Foreign Patents.****NEW WOODWORKING AND HOUSE AND CARRIAGE BUILDING INVENTIONS.****IMPROVED FREIGHT CAR.**

Edward D. Shaffer, Moncton, New Brunswick, Canada.—This invention consists in the arrangement of a vertical partition dividing the car into two parts, also openings in the top and bottom of the car for admitting and discharging grain, and inclined partitions, forming, with said vertical partition, two hoppers for the grain to be transported.

**IMPROVEMENT IN GRAIN CAR DOORS.**

James M. Duncan, Covington, Ind.—The door is made in two parts, each part being pivoted at its upper and outer corner to one of the door posts, and capable of swinging in a vertical plane. The separating line of the door is an arc described from the pivot of one of the doors, making the edge of one door convex, and that of the other concave. It also consists in a hinged bar for sustaining the door when closed, which rests in recesses in the door posts, and in brackets for supporting the bar and doors when opened. The advantages claimed are that the door closes tightly, that it avoids the necessity of nailing the doors when loading, and also makes them lighter.

**IMPROVED DRAIN TRAP AND VENTILATING COWL.**

Edward G. Banner, London, Eng.—The first device is a balanced lever trap for preventing inflow of noxious gases from drains through the pipes leading from water closets in dwelling houses. The construction is such that the greater the pressure of the returning sewage against the trap, the more tightly is the trap closed, so that no flood water, sewage, or sewage gas can be forced

past it. The same inventor has also contrived a new ventilating cowl. In order to withdraw a current of air from soil pipes etc., the shaft is carried up from the soil pipe; and upon the top of the shaft is mounted a revolving cowl, provided with a valve of peculiar construction, for preventing any down draft.

**IMPROVED MACHINE FOR SAWING STAVES.**

George W. Richardson, Arlington, Ky., assignor to himself and W. T. Davis, same place.—This consists of a stationary circular track, around which the saw runs. The saw is turned by a friction pulley, opposite to which is a friction roller, in a notch of the track, which presses the saw against the driving pulley. The table for the work is arranged at another notch in said track, for the passage of the staves and other objects sawn off.

**IMPROVED SHINGLING BRACKET.**

David M. Moore, Windsor, Vt., assignor to himself and James H. Cook, same place.—This is an adjustable bracket for staging, elevated seats, or other purposes; and consists of pivoted braces with prongs or teeth at the lower ends, and connected by pivot rods, that may be adjusted to greater or less width of the bracket by suitable bolts.

**NEW AGRICULTURAL INVENTIONS.****IMPROVED CULTIVATOR.**

Charles R. Hartman, Allison, Ill.—This cultivator may be used for cultivating tall plants, will not be broken by the plows striking an obstruction, and will not be turned to one or the other side by one or the other horse getting a little in advance.

**IMPROVED FENCE.**

William Stacy, Cottage, Iowa.—This fence is portable and yet not liable to be blown down or pushed over. Each panel is formed of two or more horizontal boards, having a cross bar attached to each end, and a cross bar attached to their middle parts. To one end of each panel is secured an arm, which projects to enter the end of the adjacent panel, where it is secured in place by a pin. The fence is held erect by a brace formed of two inclined bars, which cross each other near their upper ends, and the lower parts of which are connected by a cross bar. The lower parts of the panels are kept in place by a key.

**IMPROVED COTTON SEED DRILL.**

Henry Steckler, Jr., New Iberia, assignor to himself and Richard Frotcher, New Orleans, La.—This consists of a dropping wheel that is provided with a series of holes at some distance from its periphery. Through a perforated rim, V-shaped wires are passed, that serve to stir up the seed in connection with radial stirrers, dropping the same on an oscillating fork, pivoted below the opening of the seed receptacle, to be conducted by the funnel-shaped opener or plow to the ground.

**IMPROVED HARVESTER DROPPER.**

William H. Akens, Pennline, Pa.—This is an improved device for delivering the cut grain from the platform of a reaper, and in neat gavels at the side of the reaper, and out of its way in making the next round.

**IMPROVED PLOW.**

Adam Schuetz, Carondelet, Mo.—This is an improved plow for forming ridges for planting sweet potatoes, and which may be easily adjusted to adapt it for any of the uses of an ordinary plow.

**NEW MECHANICAL AND ENGINEERING INVENTIONS.****IMPROVED COTTON PRESS.**

James H. Davis and William White, Winnsborough, Tex.—This consists of a contrivance for driving the screw, which works the follower by a worm when doing the work, and a toothed wheel when returning the follower: also, of a removable case which receives the pressed bale and carries it away on a truck to be tied, while another box takes its place to receive the next bale.

**IMPROVED WRENCH.**

Andrew M. Mortimer, Salt Lake City, Utah Ter.—The stationary jaw is attached to a shank. A movable jaw slides upon the shank, and to it is rigidly attached a bar, in such a position as to be opposite the edge of the said shank. Upon the adjacent edges of the shank and bar are formed ratchet teeth, which engage with each other to hold the movable jaw in place while the wrench is being used. To the bar is attached a loop, through which the shank passes, and through the bend of which passes a set screw, which rests against the spring. When the wrench is being used, the strain upon the jaws holds the teeth of a bar in gear with the teeth of the shank, a spring keeping the movable jaw from getting out of place while shifting the wrench upon the work.

**NEW MISCELLANEOUS INVENTIONS.****IMPROVED HOSE SPANNER.**

John E. Taber, Fall River, Mass.—In this spanner, the end that embraces the hose coupling is enlarged and provided with a groove that is of sufficient width to take in a lug pin, and of sufficient length at each side of the handle to insure a good bearing on the surface of the coupling, so that the spanner draws laterally on the lug pin when applied. Apertures are cut in the sides of the groove thus formed for permitting the escape of snow or mud.

**IMPROVED PAINT BRUSH BINDER.**

Lewis Tanney, Beaver Falls, Pa.—This is a metallic binder for paint brushes, formed of two semi-cylindrical plates, having semi-circular disks attached to their upper ends, and having eyes formed upon their side edges. The cross plate has eyes formed in its end edges, and there are suitable fastening wires.

**IMPROVED ELECTRO-MAGNETIC LOCK.**

Hilborne L. Roosevelt, New York city.—This relates to an improved electric lock for office doors and other purposes; and it consists in the armature of an electro-magnet that retains a swinging arm with two sliding and spring-acted bolts, of which one is withdrawn for opening the door, when the arm is released, by the attraction of the armature, and by the action of the spring of the second bolt, which is actuated and set by the closing of the door, ready for throwing open the first bolt on the action of the magnet.

**NEW HOUSEHOLD INVENTIONS.****IMPROVED STOVE PIPE ATTACHMENT.**

George H. Hancock, Richmond Factory, Ga.—This consists of a standard secured to the stove, with an adjustable clothes-drying fork or rack, and an adjustable lamp support. The attachment forms a convenient clothes-drying and lamp-supporting device, which may be placed on any stove and set to any position required.

**IMPROVED BASIN FAUCET.**

Edwin S. Rich, New York city.—The novel features in this invention consist, first, of a flange extension of the interior collar into nozzle of the faucet; and, secondly, of an additional stem valve and seat arranged above the compression valve, so as to close the water passage when the compression valve is removed.