

north than Venus. Mars rises on the 31st at 5h. 16m. A. M., and sets at 7h. 31m. P. M.; it cannot at that time be seen at all.

Jupiter.

On July 1, Jupiter rises at 3h. 45m. P. M., and sets at 1h. 35m. the next morning. On July 31, Jupiter rises at 1h. 47m. A. M., and sets at 11h. 35m. P. M.

Jupiter is so well situated in the first half of the month that observers who have small telescopes (say with two inch object glasses) can very well observe the many changes in the relative positions of its four moons. As the first satellite, or the one nearest to Jupiter, makes a revolution around the planet in less than ten days, it goes through all the changes, passing from east to west behind the planet, and in front of the planet from west to east (as seen in a telescope), becoming invisible by transit, by occultation, and by eclipse in that space of time. This satellite will show these changes of position between 7h. 30m. P. M., and midnight on July 7, 8, 9, 14, 15, 16, 22, 23, 24, 30, and 31.

On July 10 the third satellite (which is the largest, but third in the order of distance) will not be seen until near 10 P. M. (Washington time), being in front of the planet; on the 28th it will disappear at 10h. 14m. by going into the shadow of the planet. Young observers may learn much of this system of bodies by watching their movements, and may determine periods for themselves.

Saturn.

On July 1, Saturn rises at 10h. 35m. P. M., and sets at 9h. 21m. the next morning. On July 31, Saturn rises at 8h. 34m. P. M., and sets at 7h. 16m. the next morning.

Saturn can be recognized on July 10 by its nearness to the moon; and by reference to the *American Nautical Almanac* it will be found that the moon occults (hides by seeming to pass over it) the planet Saturn on August 6, and again on September 2.

Uranus.

Uranus is too nearly in range with the sun to be seen. It sets at 9h. 41m. P. M., on July 1, and at 7h. 48m. P. M. on the 31st.

Sun Spots.

We are evidently passing through a minimum period of sun spots; as from May 26 to the present date, June 19, a period of 23 days, with a telescope whose object glass measures two and a half inches, no spots have been found.

NEW BOOKS AND PUBLICATIONS.

TROW'S NEW YORK CITY DIRECTORY, VOL. XC., for the year ending May 1, 1877. H. Wilson, Compiler. Price \$5. New York city: The Trow City Directory Company, 11 University Place.

WILSON'S BUSINESS DIRECTORY, 1876-7. Price \$2.50. New York city: The Trow City Directory Company, 11 University Place.

The peculiarity which distinguishes directories from other books is that everybody wants to consult them, yet few wish to buy them. In fact, there seems to be a kind of popular idea that directories are only magnified sign posts, to be used as freely as the signs on the street corners. This is one disadvantage with which directory publishers are obliged to contend, and which prevents the care and elaboration with which their onerous tasks are performed from being recompensed as highly as they merit. The two volumes above named are the oldest and best known works of their class, and possess a degree of accuracy which none other in this, or any other city, to our knowledge, possesses. In the city directory, there are 241,167 names, and there are seven items (business, number, etc.) to each name; yet we are told there is but one error to every 8,400 items. The number of names above given shows an increase over last year of 7,196, and also proves that the population of New York is steadily growing, notwithstanding the assertion to the contrary by some despondent croakers. Allowing that each name represents five persons—for generally it is only the name of the head of the family that is given—the increase since last year is 35,980 souls. Not only for the counting room and business man is a directory useful, but in the household such a book of reference is very convenient.

THEORY OF SIMULTANEOUS IGNITIONS. By Brevet Brigadier General H. L. Abbot, Major U. S. Engineers. Printed on the Battalion Press.

This is a treatise on the best method of securing the simultaneous ignition of many fuses distributed throughout the charge of one long mine. The theory is mathematically demonstrated at length, and a portable machine, requiring only about four horse power, is described, which will supply an magneto-electric current ample to meet nearly any demand in submarine blasting on the most extensive scale. The paper has already been referred to in these columns, in our abstract of essays read at the last session of the American Academy of Sciences.

POCKET BOOK OF USEFUL FORMULÆ AND MEMORANDA FOR CIVIL AND MECHANICAL ENGINEERS. By Guilford L. Molesworth. New York city: E. & F. N. Spon, 446 Broome street.

This is the eighteenth edition of the most convenient engineer's pocket book extant. It differs from the works of Haswell and Nyström in containing very much less information; but its contents embody just those useful suggestions and formulæ with which every engineer fills up the leaves of his private note book. It is of the right size, and contains just the facts which will be convenient to the engineer when called to examine machinery, and to make rough calculations; and not knowing exactly what the requirements are, he feels safer if he has his rules and tables handy.

A TREATISE ON UNITED STATES PATENTS. Edited by H. & C. Howson. Philadelphia, Pa.: Porter & Coates.

This is a neatly bound book of 160 pages, and contains more information of value to patentees than any work of its size that has come to our knowledge. It not only defines the nature and scope of patents, but it states what constitutes an invention, and tells the reader to whom patents are granted, how an acquired interest may be lost, etc. But the most important feature of the book is its citations in brief from decisions in the United States Supreme Court on important and peculiar cases, which gives the book a considerable value to the owners and workers of patents, as such information cannot be had except by laborious search through elaborate law reports.

HINTS TO YOUNG ENGINEERS UPON ENTERING THE PROFESSION. By Joseph W. Wilson, A. I. C. E. New York city: E. & F. N. Spon, 446 Broome street.

The author, in this little pamphlet of 22 duodecimo pages, has combined a good many sound practical hints, and plenty of just the advice which an engineering student requires at the threshold of his profession. It is written in a pleasant half amusing style, does not abound in moral reflections, and, altogether, is an agreeable and sensible little work. More of the same kind would be welcomed by students in other professions and trades.

OUR ROADWAYS. By "Vistor." New York city: E. & F. N. Spon, 446 Broome street.

Authors who append anonymous names to their productions can hardly

expect much deference paid to their opinions. The present pamphlet has some useful information on pavements in general, but appears to be strongly devoted to the interests of an English wood-paving concern.

THE CLERK OF WORKS' VADE MECUM. By George Gordon Hoskins, F. R. I. B. A. New York city: E. & F. N. Spon, 446 Broome Street.

A useful volume of practical suggestions for the architect charged with the supervision of a building. It is of course mainly in accordance with English practice and customs, which detract from its practical usefulness to our architects; but it possesses hints which may be found of interest and some benefit.

DECISIONS OF THE COURTS.

United States Circuit Court—Eastern District of New York.

THE PATENT DRIVE WELL.—WILLIAM D. ANDREWS *et al.* vs. THEODORE A. CARMAN.

(In Equity.—Before Benedict, J.—Decided April 24, 1876.)

This is a suit in equity brought by the owners of a patent issued to Nelson W. Green, on May 9, 1871, designated as reissue No. 4,372, against Theodore A. Carman, for an injunction and damages, because of an infringement of their patent.

The language of the claim may be first considered. It is as follows: "What I claim as my invention, and desire to secure by letters patent, is: The process of constructing wells by driving or forcing an instrument into the ground until it is projected into the water, without removing the earth upward, as it is in boring, substantially as herein described." "I understand this patent to be a patent for a process, and that the element of novelty in this process consists in the driving of a tube tightly into the earth, without removing the earth upward, to serve as a well pit, and attaching thereto a pump, which process puts to practical use the new principle of forcing the water in the water-bearing strata of the earth into a well pit, by the use of artificial power applied to create a vacuum in the manner described."

A somewhat different reading of the patent may be adopted, and supported by authority high in this court upon such a question.

But the view I have expressed is so firmly impressed upon my mind that I shall rest my decision upon it, and leave the more learned judges before whom the patent must shortly come to detect my error, and to uphold or destroy the patent as being for a method of sinking a well pit by puncturing instead of excavating.

The interpretation I have thus given to the patent renders it unnecessary to pass upon the evidence in the case, given to show that, prior to the time when Green claims to have made his invention, well pits had been made by puncturing the earth.

Green is entitled to secure the invention which his patent describes? The evidence is convincing that Green first conceived the idea, explained his idea to others, and caused the feasibility of his process to be tested by actual experiment. Comment has been made upon the fact that the particular tools and devices used in constructing the first wells made were not pointed out by Green. But such comment loses its force when it is considered that the tools and devices employed in sinking the shaft form no part of the invention claimed by Green.

The invention consists in the method of putting to practical use the new idea or principle of increasing the productive capacity of a well by forcing water directly from the earth into the well pit, artificial power being employed to create, by the operation of a pump attached to a tube driven tightly into the earth, a vacuum in the tube and the water-bearing stratum into which it is forced, whence follows an increased pressure upon the water in the earth toward the well pit, and an abundant supply of water is afforded to the pump. This conception was of such a character that when described there was left nothing to be done but to test its correctness by an experiment so simple, and involving the means in such common use that it could be tested by any one upon the mere statement of the idea. In the present instance the process was at the outset put to the test of an experiment conducted near Green's house, in his presence, and under his directions. His idea, and his process of putting it into practical use, then became part of the property of the public, available for the purposes intended, unless it be secured by the patent in question.

Subsequent experiments are spoken of in the evidence, which may properly be claimed by Green as his experiments, for they were conducted in pursuance of his idea, and under his order, and in the presence of the witnesses. Furthermore, it should be remarked in this connection that, when Green first stated his idea and described his process there, were two points of doubt, one whether force could be called into operation by the creation of the vacuum sufficient to overcome the resistance of the soil, and afford a supply of water to the pump; the other, whether practically a tube could be driven into the earth, and not break, under various conditions of soil, always excluding, of course, rock formations.

The general utility of the invention depended principally upon the result of tests applied to the latter of these points of doubt. A wide range of subsequent experiment might, therefore, well be allowed for such an invention, notwithstanding the circumstance that the first experiment proved that the principle was sound, and could be usefully applied in some circumstances.

Upon this branch of the case, the contention has been whether Green was the inventor, or Byron Mudge, the person who, under the direction of Green, conducted the early experiments; and a patent issued to Mudge, October 24, 1865, is set up in the answer. The defendant does not, however, claim under Mudge's patent, or under any patent. In fact, there is no patent in issue, as his original patent was surrendered; and upon his application for a reissue, a case of interference between him and Green was declared, which, after a severe contest upon a large amount of testimony, and after careful argument, was decided in favor of Green. No patent to Mudge is therefore in this case, nor is Mudge called as a witness.

But the defendant contends, as he may rightfully do, that the evidence shows it to be the right to the invention which he claims, and that the evidence that this defense is sustained; on the contrary, it appears quite clearly that the inventor was Green.

A patent to James Suggitt is also set up. That, however, is not a patent for a process, but a combination which does not involve the use of Green's process, and to which Green makes no claim.

The whole question of priority may at this place be dismissed of. It is of course true, and prior to Green's invention, water had been pumped from a hole in the ground, and from a small hole. Doubtless, it is also true that, in some such case, where a pump had been inserted in a small hole, for the purpose of raising therefrom the water found therein, the principle of Green's invention may at times have been called into operation. No such case is hereby shown; and if such fact were proved, Green's patent would not thereby be defeated. A chance operation of a principle unrecognized by any one at the time, and from which no information of its existence, and no knowledge of a method of its employment is derived by any one, if proved to have occurred, will not be sufficient to defeat the claim of him who first discovers the principle, and, by putting it to a practical and intelligent use, first makes it available to man.

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My conclusion upon this branch of the case, therefore, is that the invention of Green has not been shown to have been anticipated, and is properly claimed by Green as a new and useful invention made by him.

I come now to consider the question of dedication and abandonment, which is presented by the evidence here, and is a question as important as any raised in the case.

It is contended that Green, at the time of his invention, dedicated it to the public, and also that he abandoned it as not worthy to be patented.

HISTORY OF THE DRIVE WELL AND ITS INVENTOR.

The law pertinent to this branch of the inquiry is the law in force prior to January, 1868. By the patent act of 1870, as well as by the Revised Statutes, all rights previously acquired were preserved. The law governing here is to be found, therefore, in the act of 1856 and of 1859, as those statutes have been interpreted and amplified by the courts. The facts relied upon as showing a dedication of his invention by Green are that he permitted a well made by his process at the fair grounds in Cortland, where the Seventy-sixth New York Regiment, of which he was colonel, was then stationed, to be there publicly used, and that he arranged for providing the water to be taken with his regiment when it should move, in order to supply it with water when in hostile locations. These facts are admitted to be true.

I think it plain. The occasion which called forth this invention was the rumor that the rebels were intending to poison the wells in places where the Union army might come, and the report that some part of the Union army had been compelled to surrender for want of water. There was supposed to be a necessity for some form of well that would be right, to prevent the possibility of poison, and that could be constructed quickly, cheaply, and easily, so as to be available for a moving army. Under the pressure of this supposed necessity, Green conceived the idea of his well, and also devised the method by which that idea could be put to practical use.

Once conceived, a very simple experiment would test the soundness of the position he had taken and maintained, in discussions had respecting his plan, that he was capable of driving water from the earth into the pit of a well by using a tube driven tightly into the earth for a well pit, and creating a vacuum therein by a pump attached.

This experiment, as the evidence shows, was made under the direction of Green, and in pursuance of the directions he had given, at or near his house in Cortland. The first experiment was a success in this, that it proved the possibility of obtaining a supply of water by this process; but of course it could not prove that a tube could be driven down to a water-bearing stratum in all localities with the cheapness and dispatch necessary to render the process one of general utility. It was natural, therefore, to suppose that, before the process could be declared to be satisfactory, other experiments in other and different localities should be made. He could, however, use his invention in the way now permitted to be used for two years without forfeiting his right to a patent.

Under such circumstances, it would be going far to say that his act of permitting the use of his process at the camp in Cortland, where his regiment was then in camp, and of providing material wherewith to construct such wells for his regiment when it should move into hostile territory, amounted to a dedication of his invention to public use, and worked a forfeiture of his right to it.

But it is said the patent is invalid under the provisions of the act of 1859. The act of 1859, as has repeatedly been held, has no effect to invalidate a patent, unless there be proof of a use of the invention more than two years prior to the application for the patent, and that such use was with the knowledge and allowance of the inventor. Here there is no evidence of any use or sale of the invention by Green, prior to his application for a patent, nor is there any direct proof of knowledge on his part of any such use or sale by others, during that period. There is, however, evidence that within two years prior to Green's application, some wells called driven wells were sunk in Cortland, and, as is claimed, under such circumstances of publicity and locality, as to compel the inference that Green knew of the use of his process in their construction.

It cannot be denied that knowledge of the putting down of some of these wells on the part of Green seems highly probable. Still there is no direct evidence of such knowledge, and Green denies the knowledge under oath. Furthermore, two witnesses produced by the defense, who also reside in Cortland, and one of whom was a justice of the peace, being asked as to these wells, say that no knowledge of such wells came to them. It seems necessary, therefore, to conclude that the existence of those wells was not so notorious as to compel the inference that they were known to Green.

Here it may be noticed, also, that wells put down by James Suggitt were under a patent issued to him March 9, 1864, which patent was for a combination of three instruments—an iron perforated tube, a pointed plug to use as a drill, and a pump. (Haselden *vs.* Ogden, 3 Fish. Pat. Cas., 378.) and which it is a mistake to suppose necessarily involved the use of the process claimed by Green. It does not, therefore, follow that knowledge of the fact that Suggitt had put down wells in Cortland necessarily amounts to notice that the process of Green was being employed by Suggitt. The rule of law being that "proof of knowledge and acquiescence must be beyond all reasonable doubt, as every presumption is the other way." (Jones *vs.* Sewall, 6 Fish. Pat. Cas., 387, Clifford, J.) I am of the opinion that Green is entitled to the benefit of the doubt raised by his own oath, and the testimony of the two Hunters.

Again, it is contended that the acknowledged fact that Green made no application for a patent till January, 1866, between four and five years after the date of his invention, shows an abandonment of the invention. But, says Woodruff, J., "lapse of time does not, *per se*, constitute abandonment. It may be a circumstance to be considered. The circumstances of the case, other than mere lapse of time, almost always give complexion to delay and either excuse it or give it conclusive effect. The statute has made contemporaneous public use, with the knowledge and allowance of the inventor, a bar when it exceeds two years, but in the absence of that and of any other colorable circumstances we know of no mere period of time which ought, *per se*, to deprive an inventor of his patent." (Russell and Erwin *vs.* McJory, 5 Fish. Pat. Cas., 641.)

In the present instance the circumstances attending the delay are unusual; and as I consider them sufficient to excuse a delay which certainly must be deemed extraordinary, a statement of these circumstances seems necessary.

Premise the statement by repeating that upon the evidence there is no room to doubt the fact that Green at the time of his invention claimed to have made a valuable discovery, and to have invented a new process. Furthermore, that he then declared an intention to secure his process by patent, and expressed his belief that large profits would accrue to him therefrom. At that time, Green, who had been partly educated at West Point, was engaged in organizing a regiment at Cortland, his residence, and was expected soon to take part in the war of the rebellion. Within a few days after his invention, in the discharge of what seemed to him to be his duty, he felt compelled to shoot one of the captains of his regiment named McNett. The shot was not mortal but inflicted serious injury. In the then state of the public mind this occasion gave rise to intense public excitement, out of which sprang a controversy of extraordinary bitterness, involving numerous persons and covering several years. The effect upon Green was disastrous in the extreme. He was suspended from his command, then tried by a court of inquiry at Albany, and reinstated in command. His regiment, after having, it is said, required the protection of a battery to save it from violence at the hands of evil-disposed people of the county, removed to Washington, where Green was relieved from his command, and then dismissed the service and subjected to military charges.

He was, in addition, harassed by civil suits brought to charge him with personal liability for articles used by his regiment. He was also arrested, and then indicted for the shooting of McNett, and after repeated postponements of the trial, effected because of the excited state of the public mind, was tried in 1866, and, the jury having disagreed, was discharged.

During this period he also became involved in church difficulties arising out of the shooting of McNett, was expelled from the church, and compelled to appeal to the Bishop, and also became involved in litigation with the pastor of his church. His efforts during this period to secure a reversal of the order dismissing him from the service were constant and absorbing, and were attended with such anxiety of mind as to give rise to the charge that he was insane. This state of things continued up to 1866, during which period he was of necessity often absent from Cortland, at Albany and at Washington; and he devoted his entire time to the controversy in which he had become involved, abandoning all other occupation, and exhausting all his means. The pressure of these circumstances was such that he became discouraged and despondent, and, in fact, driven near to madness. The extraordinary nature of the circumstances in which the man was placed during these years is fully proved by many witnesses of character.

These circumstances certainly give complexion to his omission to secure his invention by patent, and serve to furnish a proper excuse for such omission.

In regard to a man so circumstanced, it would hardly be safe, in face of his positive oath to the contrary, to infer an intention to abandon an invention which evidently he always considered of great importance. This conclusion is strengthened by the uncontroverted fact that when in November, 1865, Green saw by an advertisement in the paper that driven wells were being put down, although he was advised by counsel defending him on the indictment, not to apply for a patent, as he would thereby increase the number of his enemies and prejudice him on the trial of the indictment, then about to come on, nevertheless he did then, and in opposition to the advice of his counsel, file his application and assert his right to the invention.

I conclude, therefore, that, upon the facts of this case, it must be held that the defendant has not produced that full measure of actual proof which is necessary to sustain the defense of abandonment.

As to the question of infringement, I do not understand that it is disputed; at any rate, it is clearly proved. There must therefore be a decree for the complainant in accordance with the prayer of the bill.

(George Gifford, Milo Goodrich, B. F. Tracy, and J. C. Clayton, for complainants.)

W. D. Shipman, S. L. Warner, and S. A. Robinson, for defendant.]

United States Circuit Court—District of Massachusetts.

PATENT SHEEP-SHEARING MACHINE.—WILLIAM EARLE, JR., *et al.* vs. CHARLES F. HARLOW *et al.*

(In Equity.—Before Shepley, J.—Decided October term, 1875, to wit: April 4, 1876.)

The question presented in this case is mainly one of infringement. The complainants are the owners of the patent reissued to them as assignees of Adoniram I. Fullam, December 23, 1873, for a new and useful improvement in devices for shearing sheep.

In a sheep-shearing device where power is employed to operate the cutters, it is immaterial what kind of power is employed when the two separate devices are operated in the same way to produce substantially the same effect.

The patent of Fullam, December 23, 1873, is not limited to an engine operated by the expansive force of steam, by any fair construction of the specification or claims. In this patent, as well as in the Hamilton and Harlow patent of September 1, 1864 (employed by defendants), a power is generated at a source of supply at a desired point, and is transmitted through a flexible tube, so as to be available to actuate and operate in the portable handle, which converts that power at any other point at the will of the operator.

Decree for complainant. (George E. Belton, for complainants. James E. Maynard, for defendant.)

Recent American and Foreign Patents.

NEW CHEMICAL AND MISCELLANEOUS INVENTIONS.

IMPROVED DOLL HEAD.

Carl Wiegand, New York city.—This consists of a doll head that is molded of sections made of interior layers of paper or paste-board and outer layers of muslin, that are joined by a paste of suitable consistence.

IMPROVED PAINTERS' SCAFFOLD CHAIR.

John R. Crockett, Flatonia, Tex.—The invention consists of a scaffold made in the shape of a chair, with mechanism to raise and lower by a suspension rope that is carried over suitable friction pulleys of the chair frame.

IMPROVED BEAM SCALE.

Jacob J. Hopper, New York city.—This is an improved beam scale for weigh masters, ice wagons, and other purposes, by which the weight is not required to be placed upon and detached from the beam for each weighing. It consists of a beam scale, in which the beam is made of U shape, with the suspension fulcrum at the upper shorter leg, the weight being hung below the fulcrum and sliding along the lower extended leg.

IMPROVED SHOE LAST.

Robert Taylor, New York city.—This consists of an oblique joint in the last at the shank and under the instep piece, so contrived that the heel can be detached from the ball portion and taken out readily. The last can thus be removed from the shoe without stretching the heel of the latter over the heel of the last, by which the heel is often torn, and the shank is frequently broken.

GREASE CONDENSER FOR PURIFYING EXHAUST STEAM.

Samuel N. Hartwell, Wollaston Hights, Mass.—This invention consists of a grease condenser, into which the exhaust steam is conveyed by an entrance pipe, and brought into contact with a condensing fluid, or with a suitable filtering material, to be mechanically purified by the impact of the oil globules with said fluid or material.

IMPROVED PROCESS OF PRESERVING FOOD.

Kennard Knott, Chicago, Ill.—No efficient and economical method of preserving fresh meat, on shipboard, has been heretofore devised and come into use. The patentee has, however, discovered that it may be preserved indefinitely, under the conditions of temperature and moisture to which a ship's cargo is ordinarily subjected. The meat to be preserved is first deprived of its animal heat in a temperature considerably above the freezing point, and then subjected to a temperature below that point, until it is frozen solid. In this condition it is placed in a case which is then closely sealed, both these operations of packing and sealing being performed in the same temperature to which the meat was last subjected. The meat case is placed in the center of the outer case, made sufficiently large to leave a considerable space between them on all sides. This space is filled with densely packed, fine, wheaten flour and the cover of the outer case then applied and secured. The flour is a most excellent non-conductor, and, after serving as such so long as the meat is required to be preserved, is in condition to be utilized in making bread, etc., the same as if it had been packed separately from the meat.

IMPROVED GLOVE FASTENING.

Frank G. Farnham, Hawley, Pa.—This relates to the hasp-staple and spring-key contrivance for fastening gloves on which a patent was granted to same inventor February 8, 1876. It consists in a cam-shaped arrangement whereby the key is maintained in the position for keeping the fastening intact; also of a device to make the pivot of a couple of points of the foundation plate of the staple, and a simple method of fastening the two prongs of the spring key together at the open end. There is also a stretching plate attached to the inside of the glove by the rivets which attach the staples.

IMPROVED METHOD OF MAKING ICE.

Bernard Hoppenyan, Hancock, Mich.—This inventor suggests a novel plan for making ice in solid blocks. During very cold weather he sprinkles water on sheets of paper prepared with resin and tallow, in order to prevent their adherence to the ice. These sheets are used as partitions, and the ice is thus formed and packed in between them.

IMPROVED CAR TRUCK BOX.

John M. Brosius, Richmond, Va.—This invention consists in extending out the lower end of the upper section of the axle box and making this extension detachable so as to furnish convenient access to the space within and allow the brass to be replaced. An inclined spout is also applied to one side of the box, and an excision made in the side face of the brass, to allow the lubricant to be poured into the box, so as easily to reach the packing. Shouldered standards are also employed in the corners of the box to support the brass above the bottom and allow ample space for the packing. There are other improvements, all calculated to render the box better adapted to its purpose.

IMPROVED BURIAL CASE.

Joseph B. Morray and Robert J. Morray, New Burnside, Ill., executors of James B. Morray, deceased.—The top portion of this burial case is formed of glass and the lower part of cement, the two being hermetically joined by tongue and groove and cement joints, also flanges and bolts. The case is particularly designed for use within a monumental cement case, and the body of the deceased can be seen through the glass top of the inner case.

IMPROVED POCKETBOOK FASTENINGS.

Louis Prahar, New York city.—Two inventions. The first consists in the combination of a flanged plate, having a notch formed in the flange at its rear end, and a latch provided with a neck at its rear end to fit into the said notch to pivot the said latch in place. The object of the second device is to lessen the cost of manufacture of pocketbook fasteners, and at the same time furnish a fastener not liable to get out of order. The rear part of the baseplate has a recess to receive an arm on the upper plate. The flange of the base plate also has an arm which passes through a short slot formed in the first arm, and thus hinges the two plates together.

IMPROVED ADDING PENCIL.

John J. White, Philadelphia, Pa.—In this adding pencil a pointer is made to turn a grooved revolving cylinder, and move an index along a scale on the case containing the cylinder. This records thereon the number to be added by pressing the pointer upward in the case a distance corresponding to the number to be added to the record. The invention includes several novel and ingenious devices.

IMPROVED LIFE BOAT.

James F. Cosgro, Santa Clara, Cal.—This consists of decks contrived in half-circular form, and fitted so that they can be readily closed over the cabins of the boat, to protect the occupants from storms and the boat from filling. There is also a hollow keel, of sheet metal, which fills with water and materially assists in keeping the boat upright.

IMPROVED BRICK KILN.

Jerome Bronkar, Zanesville, O.—This invention consists in the improvement of brick kilns by a peculiar mode of combining furnaces and chimneys with long, short, and cross flues, so that the operation of the kiln can be regulated and controlled better than as commonly arranged.

IMPROVED PORTFOLIO.

John Quenzer, New York city, and Charles Quenzer, Brooklyn, N. Y.—This portfolio is so constructed as to enable school children to carry their books, slates, etc., in a safe and convenient manner, and may be opened out for use as a writing desk without its being necessary to remove the books and other articles.

IMPROVED CAMP LOUNGE.

Anson Tottingham, Pittsfield, Mass.—This is a knock-down frame with a canvas web stretched from head to foot, over bars of different heights, to elevate the head for a pillow. The web is fastened to the cross bars by two straps attached to the canvas.

IMPROVED FOOT MEASURE.

Francis B. Smith, New York city.—This consists of a vertically adjustable heel rest, in combination with a foot plate, in which is a sliding measure and tape measure to take the measures of the foot, the said elevating heel rest being to adjust the foot more nearly in the position it occupies in the shoe. Tapes for taking the transverse measure are connected to turning studs to enable them to be shifted readily to measure over any part of the foot. The studs have a detachable pin, to be employed for fastening a sheet of paper under the sole of the foot, to be used as a record of the measures, and a kind of chart by which to gage the measures to the last.

IMPROVED PEN RACK.

William E. Thomas, Ford's Store, Md.—This device includes a pen rack and pen safe. The pen rack is supported upon a bracket formed of a bent metal rod, and constituting a fixed attachment of the desk; and the pen safe is an open-ended tube, hinged to said rod, in such manner as adapts it to be turned thereon to expose its ends for the insertion or removal of a pen. The rack receives and supports the pen while the owner or occupant of the desk frequently requires it for use; but at other times, as when leaving his desk at the end of the day, it is placed in the tube for safety.

IMPROVED ENVELOPE.

Lewis P. Hays, Donegal, Pa.—This inventor makes a margin on the right hand of the envelope to receive the stamp and enable it to be cancelled by pencilling without injury to the letter, the two thicknesses of paper forming the margin being pasted together so as to prevent the contents of the letter from entering between them. The extended margin is also designed to facilitate the opening of the letter by tearing off the end.

IMPROVED ASPERSORIUM.

Rev. James J. Dunn, Meadville, Pa.—This is an improved aspersorium or sprinkler, for holy water in Catholic churches, which may also be applied to bottles containing holy water. The sprinkler is always ready for use during service, and does not require a separate vessel containing the holy water, and a special attendant for the same. It consists of a reservoir, which is attached to the handle of the aspersorium, and provided with a neck, tube, and perforated head for sprinkling.

IMPROVED BOOT TREE.

James H. Sampson, Paris, Canada.—This consists of a lever and an adjusting screw on the wedge piece, to be used in combination with the front piece and a series of back pieces of different sizes, contrived for treeing the ankle or center and foot piece.

NEW TEXTILE MACHINERY.

IMPROVED HOSE GOODS.

Henry G. Hubbard, Middletown, Conn., assignor to Russell Manufacturing Company, of same place.—This consists in an improved hose goods, of three or more plies, in which one or more of the inner plies are without warp threads. This is claimed to give the warp threads of all the plies to resist the expansion strain upon the hose, producing a fabric lighter than when made in the usual way.

IMPROVED CLOTH-NAPPING MACHINE.

Mariene H. Whitcomb, Holyoke, Mass.—This is a machine for napping cloth, combining on one frame the wire or card napper and the teasel cylinder. The object is to have the strength of the wire or card clothing for breaking or tearing up the fibers of strong, heavy goods, for which the power of the teasel is not sufficient, and to have the teasels for finishing the nap, for which they are superior to the card.

NEW AGRICULTURAL INVENTIONS.

IMPROVED CHURN.

Alonzo L. Starkey, Elwood, Ind., assignor to himself and George M. Overshimer, of same place.—The novel feature consists of two sets of paddles revolving in opposite directions, the faces of one set being inclined so as to gather the liquid toward the center, and those of the other set to throw it back, thus producing conflicting currents.

IMPROVED COMBINED HARROW AND CULTIVATOR.

Harlin Butner, Duncan's Bridge, Mo.—This machine is adapted for cultivating corn or other crops planted in rows or drills. It is so constructed as to loosen and pulverise the soil and destroy the grass and weeds, and at the same time to open a furrow between the rows to drain off the water.

IMPROVED REAPER AND HARVESTER.

William Clawater, Liberty Pole, Wis.—The object of this invention is to furnish reapers and harvesters so constructed that they may be used either side forward, so that they may be drawn across the field, making a right-hand cut, and drawn back, making a left hand cut, without detaching the horses.

IMPROVED FENCE-BUILDING MACHINE.

Thomas J. Tally, Rockford, Texas.—This is a portable machine comprising a pile-driving apparatus, with an attachment for making the holes and driving in the posts, also a boring attachment for deep holes, and wire drums for carrying and delivering wires for the wire fence or telegraph wires.

IMPROVED CHEESE VAT.

Solomon Howe and Andrew Hill, Wegatchie, N. Y.—This consists in a lever and roller attached to the legs and front end of a cheese vat for raising and lowering the end by turning the lever, so as to bring the rollers down and lift the vat off the legs. The vats have to be raised in this manner for wheying off, and other purposes.

IMPROVED DITCHING MACHINE.

Charles Skinner and William B. McClure, Eau Claire, Wis.—This invention consists of a kind of adjustable scoop at the forward part of the framework of a two-wheeled truck, to be drawn along for cutting the ditch. It has an endless elevator at the rear of the scoop to receive the slice of earth and raise it up to a platform on which there is a kind of moldboard so arranged as to shoot the slice off obliquely upon the bank at one end of the ditch. The machine is worked by a rope and capstan.

IMPROVED GRAIN BAG.

Henry Redden, New York city, assignor to himself and John E. Walsh, of same place.—In order to secure the mouths of grain and other bags in such a way that the mouths cannot gape or leak, and which will avoid the necessity of sewing every time they are filled, this inventor proposes a novel combination of strings with the mouth of the bag and with a funnel-shaped tube.

IMPROVED MOTH TRAP.

John R. Stephens, Lone Star, Miss.—The moths pass through entrance tubes into a vessel with lid or cap. They are then attracted into a lighted box of the cap. They are thus caged and removed with the box for being killed.

IMPROVED COMBINED FORK AND RAKE.

Ernest L. Gebhardt, Milford, Pa.—The mechanical construction of this device is such that it may be readily adjusted for use as a hay fork, a manure fork, and a rake. It is strong and serviceable in either capacity.

IMPROVED FERTILIZER.

Alexander W. Rowland, Wilson, N. C.—This invention consists of an improved chemical fertilizer, designed to be used in the place of guano. It is composed of wood ashes (3 bushels), cotton seed (3 bushels), rich surface earth (20 bushels), stable manure (20 bushels), sulphate of ammonia (5 lbs.), sulphate of ammonia (30 lbs.), nitrate of soda (40 lbs.), ground plaster (75 lbs.), pure dissolved bone (118 lbs.), prepared in the manner set forth in the specification and in or about the proportions indicated, the amount thus prescribed being applicable to about five acres of land.

IMPROVED HARVESTER.

Andrew T. Nord, Fremont, Nebraska.—The object of this invention is to provide a new and improved construction of harvester, designed to adapt the implement to a more general and extended use. It consists in the peculiar construction of the framework and adjustments of the operating mechanism whereby the machine is adapted to be used either as a header for cutting off the heads of the grain, or as a harvester for cutting off both heads and stalks and for these different uses is readily convertible at will.

IMPROVED CORN AND COTTON CUTTER AND SCRAPE.

Isaac F. Harrison, Rodney, Miss.—This invention is an improvement in implements designed for scraping or cutting away the sides of corn and cotton rows or ridges, and consists in a curved or bent blade adapted to be applied to an ordinary plow and to be adjusted in position to cut away more or less of the ridge, and to be detached when required, in order to allow the plow to be used for other purposes.

IMPROVED HULLER AND CLEANER.

Jacob F. Gibson, Bryansville, Pa.—This invention consists in rotating a shaft provided with rows of tritulators, shaped like saw blades, within a perforated or slotted cylinder that is inclined and has a reciprocating or movable bottom as well as a sliding grate; also in providing the huller spout with a fan that throws a cross blast to complete the cleaning of the grain as it is discharged and passes into a receptacle prepared for it.

IMPROVED PLOW.

William I. Gossett and James P. Stark, Liberty, Tenn.—A bull-tongue plow is here adapted for use as a turn plow in gravelly land and upon hill sides. By moving the lever, either moldboard may be projected, and, by suitable devices, may be held in any position into which they may be adjusted.

IMPROVED RUSH-CUTTING IMPLEMENT.

Oliver Pickering, Needham, Mass.—This is an implement for cutting bushes, which is so constructed that it will not slip over the bushes without cutting them. It may be used as a hoe or as a scythe, and will allow the knives to be readily removed and sharpened, when required.

IMPROVED DEVICE FOR FEEDING SALT TO CATTLE.

Mathias Winterscheid and Bernard Schultes, Mendota, Ill.—This invention consists of a table with stationary top receptacle for the salt, and a conical revolving salt distributor that is adjustable to greater or less distance from the bottom rim of the receptacle, and provided with radial feed channels.

IMPROVED FARM GATE.

Andrew J. Grady, Pecatonica, Ill.—The bars are pivoted to end posts, to allow them to swing up and down. A latch is pivoted at one end to the lowest rail of the gate, while the other end works in notches on the post. This latch is provided with a side stud on which works a lever, thus enabling the gate to be raised in front and unlatched simultaneously by lifting the free end of the lever. In order that the gate may be held at varying height, the top strap is pivoted to the upper end of the posts, and to a stud working in slots of the second rail. The bottom strap is attached to an eye that slides on a pintle, the two straps being connected by the pivoted bar.

NEW MECHANICAL AND ENGINEERING INVENTIONS.

IMPROVED MILLSTONE DRESSER.

Augustine Defor, Etna, Minn.—This is a contrivance for working the pick by a crank mechanism, and feeding it along at the same time in the line of the crack being made by the pick. There is also a device for shifting the pick along from crack to crack, and one for adjusting the pick handle to regulate the force of the blows.

IMPROVED WATCHMEN'S TIME RECORDER.

Augustus A. Cone, Staunton, Va.—This invention consists of the connection of one or more spurs of the main pinion of a clock train, of a forked spring and rod that govern a sliding cylinder, which communicates by a side aperture with the mouths of an entrance and exit tube. Through this a ball, thrown in by the watchman at the proper time, is conveyed to a receptacle in the clock case. The device may be attached to any clock at small cost.

IMPROVED DUMPING BOX.

Joel W. Hiatt, Iowa Falls, Iowa.—The box is rocked from its horizontal to a dumping position, for discharging the coal by a hand lever that is rigidly attached to a cog wheel which gears with a rack. Suitable stop springs lock on pins of the box to retain the same in horizontal position for filling.

IMPROVED PADDLE WHEEL.

Edward Brast and John Boger, Powhatan, Ohio.—This invention proposes to connect the buckets and arms of a water wheel centrally by a yoke, angle plate, and double angle block. This affords a strong construction.

IMPROVED FLUE CAP.

Henry McMillen and William L. Rydman, Lima, Ohio.—This invention consists of a plaster of Paris flue cap, provided with loop-shaped wire springs to retain it in the flue thimble. The ends of the wire composing each spring are fixed in a block of wood embedded in the plaster of Paris, while the point of the loop bends outward and rests against the inner surface of the thimble, where it is held firmly in place by the wire being coiled on each side of the bend. A flange around the cap rests against the outer surface of the wall.

IMPROVED GRINDING MILL.

Lewis B. McDonald, Wytheville, Va.—This invention is an improvement in the class of mills whose burrs or grinding staves are placed vertical upon horizontal shafts. The mill is adapted for grinding shelled corn or corn in the ear, for cracking or grinding wheat and other grains, and also for crushing and grinding plaster and canes. The improvements relate particularly to the construction of the breaking or crushing devices, in connection with vertical burrs; to the manner of securing the conical crusher to the runner; to the means of adjusting the bed stave, and at the same time preventing its rotation; also to the form and manner of vibrating the shoe.

IMPROVED MILL FEEDER.

John D. Mines, Moffatt's Creek, Va.—The funnel, by which the grain is discharged immediately into the eye of the runner, passes through a leather holder, so that it is protected from injury by contact with the balance iron of the stone. The holder is made adjustable on the balance iron, to enable the funnel to be set at a greater or less inclination to the axis of the runner. The improvement also relates to connecting the funnel to the mechanism for rotating it by means of a knuckle joint.

IMPROVED PRINTING PRESS.

Edward T. Dockum, New York city, assignor to himself and Thomas Dockum, of same place.—This invention consists in a lever bent at right angles, pivoted to the frame by a single bolt, and having four arms, projecting in the form of the letter X, formed upon its upper end to receive the set screws for adjusting the plates.