

and at the rate for the past six months it will require but six years and five months. But when the central shaft and well No. 4 are sunk to grade the number of faces to work from will be doubled, and the time of completion thereby greatly diminished. At present drilling machines are employed only at the east end, but in a few weeks they will be used at the west shaft, and also at the central shaft as soon as the buildings and machinery are again in place, and this again will hasten the completion of the work. At the west shaft buildings are already erected for the manufacture of nitro-glycerin, and the use of this powerful explosive will be adopted during the present month. In fine, every means that will hasten the work will be employed, and ere the present generation passes away, and even within from four to seven years, trains loaded with freights and passengers will pass and re-pass through the great heart of the Hoosac Mountain as an hourly occurrence.

A. BEARDSLEY, C. E., Asst. Engineer.  
North Adams, Mass.

#### Horse-hair Snakes--Wonderful Transformation.

MESSEURS EDITORS:—In No. 21, current volume, you referred H. K., of Wis., who had described the horse-hair snake, to page 280, No. 18 current volume, for a reply, which you considered "sufficient." With your kind permission I would like to speak a few words about the "snakes" in question. When I resided in Pennsylvania, I, in company with many other lads, used to tie a bundle of horse hairs into a hard knot and then immerse them in the brook, when the water began to get warm, and in due time we would have just as many animals, with the power of locomotion and appearance of snakes, as there were hairs in the bundle. I have raised them one-eighth of an inch in diameter, with perceptible eyes and mouth on the butt end or root part of the hair. Take such a snake and dip it in an alkaline solution, and the flesh or mucus that formed about the hair will dissolve, and the veritable horse hair is left. They will not generate in limestone water, only in freestone or salt water.

Covington, Ky.

T. W. B.

#### Man Proposes, but God Disposes.

It may not be generally known that but for one of those accidents which seem to be almost a direct interposition of Providence, Prof. Morse, the originator of the magnetic telegraph, might have been now an artist instead of the inventor of the telegraph, and that agent of civilization be either unknown or just discovered. We publish from Tuckerman's "Book of the Artists" just from the press of G. P. Putnam & Son, the following reminiscence of Prof. Morse:

"A striking evidence of the waywardness of destiny is afforded by the experience of this artist, if we pass at once from this early and hopeful moment to a more recent incident. He then aimed at renown through devotion to the beautiful; but it would seem as if the genius of his country, in spite of himself, led him to this object, by the less flowery path of utility. He desired to identify his name with art, but it has become far more widely associated with science. A series of bitter disappointments obliged him to "coin his mind for bread", for a long period, of exclusive attention to portrait painting, although, at rare intervals, he accomplished something more satisfactory. More than thirty years since, on a voyage from Europe, in a conversation with his fellow passengers, the theme of discourse happened to be the electromagnet; and one gentleman present related some experiments he had lately witnessed at Paris, which proved the almost incalculable rapidity of movement with which electricity was disseminated. The idea suggested itself to the active mind of the artist, that this wonderful and but partially explored agent might be rendered subservient to that system of intercommunication which had become so important a principle of modern civilization. He brooded over the subject as he walked the deck, or lay wakeful in his berth, and by the time he arrived at New York, had so far matured his invention as to have decided upon a telegraph of signs, which is essentially that now in use. After having sufficiently demonstrated his discovery to the scientific, a long period of toil, anxiety, and suspense intervened before he obtained the requisite facilities for the establishment of the magnetic telegraph. It is now in daily operation in the United States, and its superiority over all similar inventions abroad was confirmed by the testimony of Arago and the appropriation made for its erection by the French Government.

"By one of those coincidences which would be thought appropriate for romance, but which are more common, in fact, than the unobservant are disposed to confess, these two most brilliant events in the painter's life—his first successful work of art and the triumph of his scientific discovery—were brought together, as it were, in a manner singularly fitted to impress the imagination. Six copies of his "Dying Hercules" had been made in London, and the mold was then destroyed. Four of these were distributed by the artist to academies, one he retained, and the last was given to Mr. Bulfinch, the architect of the Capitol—who was engaged at the time upon that building. After the lapse of many years, an accident ruined Morse's own copy, and a similar fate had overtaken the others, at least in America. After vain endeavors to regain one of these trophies of his youthful career, he at length despaired of seeing again what could not fail to be endeared to his memory by the most interesting associations. One day he was superintending the preparations for the first establishment of his telegraph in the room assigned at the Capitol. His perseverance and self-denying labor had at length met its just reward, and he was taking the first active step to obtain a substantial benefit from his invention. It became necessary in locating the wires, to descend into a vault beneath the apartment, which

had not been opened for a long period. A man preceded the artist with a lamp. As they passed along the subterranean chamber the latter's attention was excited by something white glimmering through the darkness. In approaching the object, what was his surprise to find himself gazing upon his long-lost Hercules, which he had not seen for twenty years. A little reflection explained the apparent miracle. This was undoubtedly the copy given to his deceased friend, the architect, and temporarily deposited in the vault for safety, and undiscovered after his death.

#### Extraordinary Effects of an Earthquake--An American Man-of-War Carried Over the Tops of Warehouses and Stranded.

(OFFICIAL REPORT.)  
UNITED STATES STEAMSHIP "MONONGAHELA,"  
ST. CROIX, Nov. 21, 1867.

SIR:—I have to state, with deep regret, that the United States steamship *Monongahela*, under my command, is now lying on the beach in front of the town of Frederickstadt, St. Croix, where she was thrown by the most fearful earthquake ever known here. The shock occurred at 3 o'clock, P. M., of the 18th inst. Up to that moment the weather was serene, and no indication of a change showed by the barometer, which stood at 30 degrees 15 minutes. The first indication we had of the earthquake was a violent trembling of the ship, resembling the blowing off of steam. This lasted some 30 seconds, and immediately afterward the water was observed to be receding rapidly from the beach. In a moment the current was changed, and bore the ship toward the beach, carrying out the entire cable and drawing the bolts from the keelson, without the slightest effect in checking her terrific speed toward the beach. Another anchor was ordered to be let go, but in a few seconds she was in too shoal water for this to avail. When within a few yards of the beach, the reflux of the water checked her speed for a moment, and a light breeze from the land gave me a momentary hope that the jib and foretopmost staysail might pay her head off shore, so that in the reflux of the wave she might reach waters sufficiently deep to float her, and then be brought up by the other anchor. These sails were immediately set, and she paid off so as to bring her broadside to the beach. When the sea returned, in the form of a wall of water 25 or 30 feet high, it carried us over the warehouses into the first street of the town. This wave in receding took her back toward the beach, and left her nearly perpendicular on the edge of a coral reef, where she has now keeled over to an angle of 15 degrees.

All this was the work of a few moments only, and soon after the waters of the bay subsided into their naturally tranquil state, leaving us high and dry upon the beach. During her progress toward the beach she struck heavily two or three times; the first lurch carried the rifle gun on the fore-castle overboard. Had the ship been carried 10 or 15 feet further out she must inevitably have been forced over on her beam ends, resulting, I fear, in her total destruction, and in the loss of many lives. Providentially only four men were lost; these were in the boats at the time the shock commenced. The boats that were down were all swamped except my gig, which was crushed under the keel, killing my coxswain, a most valuable man. During this terrific scene the officers and men behaved with coolness and subordination. It affords me great pleasure to state, that, after a careful examination of the position and condition of the ship, I am enabled to report that she has sustained no irreparable damage to her hull. The sternpost is bent, and some 20 feet of her keel partially gone; propeller and shaft uninjured. The lower pintle of the rudder is gone, but no other damage is sustained by it. No damage is done to her hull more serious than the loss of several sheets of copper, torn from her starboard bilge and from her keel.

She now lies on the edge of a coral reef, which forms a solid foundation, on which ways may be laid. She can thus be launched in 10 feet of water at 100 feet from the beach. Gentlemen looking at the ship from shore declare that the bottom of the bay was visible where there was before, and is now, 40 fathoms of water.

To extricate the ship from her position I respectfully suggest that Mr. I. Hanscom be sent down with suitable material for ways, ready for laying down, and india-rubber camels to buoy her up. I think there is no insuperable obstacle to her being put afloat, providing a gang of ten or twelve good ship carpenters be sent down with the Naval Constructor, as her boilers and engines appear to have sustained no injury. A valuable ship may thus be saved to the navy, with all her stores and equipments.

S. B. BISSELL, Commodore Commanding.

Rear-Admiral J. S. Palmer, commanding H. A. Squadron,  
St. Thomas.

THE survey of another trans-continental railway route, which shall follow mainly the 35th parallel of latitude, is nearly completed. Its projectors claim this as the most feasible one across the continent and even if the northern and southern roads are constructed, this would still be the favorite popular thoroughfare, and the easiest and cheapest built.

THE CHILIAN GUN now being built at Pittsburgh, is 22½ feet in length, being two feet longer than the famous Rodman gun at Fort Hamilton, this harbor, but of exactly the same bore, twenty inches. Its greatest diameter is 5 feet 4 inches, its least diameter, 2 feet 9 inches. The gun is designed for garrison or naval service.

FROM lack of economy, in reduction of ores, it is estimated that the aggregate loss on the production of bullion in this country for the present year will reach the sum of \$25,000,000.

#### Recent American and Foreign Patents.

Under this heading we shall publish weekly notes of some of the more prominent recent home and foreign patents.

WARDROBE.—Nathan Turner, West Lynn, Mass.—This invention consists in a movable or swinging arrangement of the sides and top and bottom, whereby they are folded upon each other, with grooves or strips in or upon the sides to support shelves when used as a closet or book case, and which shelves may be removed when used as a wardrobe.

AXLE BOX.—Henry B. Pitner, La Porte, Ind.—This invention consists of an iron thimble or sleeve provided on each end in the inside with a screw thread, into which are fitted ends of brass or composition, or other metal softer than iron, in such a way that said metallic ends will not turn in the box, and so that the axle bears only upon the softer metal.

SPRING FORMER.—George S. Long, Bridgeport, Conn.—This invention consists of a vibrating anvil or former, upon which the steel to be worked is placed, said former vibrating under a roller, said roller being hollow, and provided with holes or orifices through which water received in the shaft of said roller is distributed upon the heated steel.

DOOR-FASTENER.—Francis C. Levalley, Warrenville, N. Y.—The present invention relates to a fastener for doors more particularly, which, in the construction and arrangement of its parts, is simple, and most effective, and secure, when fastened.

ROOFING.—Orville Manly, Garrettsville, Ohio.—This invention consists of tiles saturated with raw coal tar, made in the same way as ordinary brick, having all the edges beveled, being thicker at one end, and laid upon the roof with the thicker end towards the eaves, and the spaces between the tiles formed by the beveled sides of the same filled with a cement made of raw coal and clay.

FOLDING BEDSTEAD OR CRIB.—R. S. Titcomb, Gloversville, N. Y.—This invention consists of the parts being attached to each other by pivots and hinges, whereby the same may be folded in upon the bed and clothing, and upon each other.

CAST METAL CASES FOR SPRING BALANCES.—John Chatillon, New York City.—This invention relates to a new manner of arranging the cast metal cases for spring balances, so that they can be made less expensive and simpler than they are now made, and consists in fitting the iron, to which the upper end of the spring is secured, directly through the upper head of the case, instead of using an additional head in the case for that purpose.

TWEERS.—John B. Himberg, Frederick City, Md.—This invention relates to a new tweers, which is so arranged that the center part or ring can be easily taken out, whenever desired, but not accidentally, by a hook or stirrer, and that it can be easily cleaned and taken apart whenever desired, and that it may conduct a strong blast of air to the fire.

PUNCH.—C. D. Flesche, New York City.—This invention consists in arranging a punch in such a manner that it consists of two parts, which are firmly connected together for cutting the metal, while for bending the same, an inner sliding punch will be moved out of the stationary cutting punch, thus making both operations by one instrument, and avoiding the removal of the article from the cutting to the bending punch, which was heretofore necessary.

RAILROAD CHAIR.—Leander Pollock, Matteawan, N. Y.—This invention consists in making the chair of two pieces, each piece consisting of one cheek and of a portion of the case. When the two pieces are connected, the base of one rests upon the base of the other, the line of division between the two bases being inclined so that as the rail presses upon the upper base, it will tend to force the same downward on the incline, whereby the two cheeks will be brought together.

FIRE LADDER.—Johan Blomgren, Galesburg, Ill.—The main feature in this invention is a telescopic tube, expanded or closed by a coil fitting within it, and worked by a toothed wheel.

HARVESTER.—Francis C. Coppage, Terre Haute, Ind.—The object of my invention is to render more simple and effective the machinery for operating and adjusting the cutter bar and the reel of harvesters.

BOAT-DETCHING APPARATUS.—David L. Cohen, Pensacola, Fla.—The object of this invention is to furnish a device by which a ship's boat can be readily shipped or launched at sea, without danger of capsizing or fouling.

DEVICE FOR HITCHING HORSES.—Samuel Galbraith, New Orleans, La.—This invention is a neat, cheap, and durable device, designed to be attached to halters used in hitching horses, mules, etc., to prevent their being thrown, hung, or injured.

HYDROSTATIC MACHINE.—Dr. J. R. Cole, Kenton Station, Tenn.—The object of this invention is to construct a machine which, by the application of but little power, will raise a stream of water to any desired height, to furnish motive power for machinery or for other purposes.

FENCE POST.—Robert Ramsay, New Wilmington, Pa.—In this invention the bottom of the post is supported between two parallel sills a short distance from the ground, the post being dovetailed and held by keys passing across the sills, and being adjusted high or low, or at any inclination, by making the keys larger or smaller, or of different sizes.

SELF-LOADING EXCAVATOR.—Benj. Slusser, Sidney, Ohio.—In this invention a plow, attached to the forward axle is made to elevate the plow, when desired, and at the same instant to unguar and stop the endless apron carrier that conveys the dirt from the plow to the cart. A new method of instantly unloading the cart, and setting it again to receive another load, is shown.

WASHING MACHINE.—J. Q. Leffingwell, Nevada, Iowa.—This invention relates to an improvement in washing machines, and consists of a vibrating semi-cylindrical box operated by a means of a lever handle and gearing.

SCAFFOLD FOR BUILDERS, ETC.—John E. Bliss, Oxford, Ind.—This invention has for its object to furnish an improved scaffold for the use of carpenters, masons, painters, etc., which shall be simple in construction, strong, durable and easily adjusted to any desired height.

PLOW.—Harvey Briggs, Smithland, Ky.—This invention has for its object to furnish an improved plow for breaking up sod or prairie land, which shall be strong and durable in construction and effective in operation.

CORN PLOW.—John Snyder, Williamsfield, Ohio.—This invention has for its object to furnish an improved plow for plowing and hoeing corn, which shall be simple and strong in construction and will do its work well.

SELF-RAKING ATTACHMENT FOR REAPERS.—James H. Glass and Albert J. Glass, McGregor, Iowa.—This invention has for its object to furnish an improved attachment for reapers of that class in which the rakes act as beaters, in the place of a reel, and are made to descend occasionally to sweep the bundle from the platform, so that the third, fourth, sixth, or any other desired rake may sweep the platform and deliver the bundle.

SKY ROCKET.—John W. Hadfield, Newtown, N. Y.—This invention relates to a modification of an improvement in sky rockets for which letters patent were granted to this inventor bearing date Nov. 28, 1865. The original improvement consisted in a novel application of wings to the body or "carcass" of the rocket, whereby the use of the ordinary guide stick was rendered unnecessary and the rockets rendered capable of being packed for transportation much more compactly than when provided with sticks. The present invention also consists in a novel manner of attaching the wings to the body or "carcass" of the rocket, whereby the same advantage is obtained as hitherto, at a less cost of manufacture.

TAILPIECE FOR VIOLINS.—James Thoms, South Boston, Mass.—This invention relates to a new and improved manner of attaching the E-string to the tail piece of a violin, whereby a comparatively small portion of said string is wasted in case of breakage.

HAME TUG.—James E. Covert, Townsendville, N. Y.—This hame tug, according to the present invention, is made of a strip of malleable iron or other suitable material, perforated or provided with V-shaped holes or slots having a center tongue piece, for the reception of a V-shaped block fixed at one end of the trace, by means of which block the trace is engaged with the hame tug, where through a suitably arranged spring slot that strikes against the end of the tongue to the said V-slots, the block is held firmly in place, and consequently the trace fastened to the hame tug.

CENTER BOARD.—F. J. McFarland, San Francisco, Cal.—This invention relates to the location of the center boards of boats and sailing craft of all kinds, but is designed more particularly for freight-carrying vessels. It consists simply in employing two center boards and locating the same at the extreme ends of the hull.

MUSICAL INSTRUMENT.—George W. Van Dusen, Williamsburgh, N. Y.—This invention consists in a novel connection and arrangement of levers and valves between the plane of movement of the perforated surface or surfaces, and an alar chest or chests, and the keys or levers for opening the valves to the reeds or for operating any other mechanism suitable for producing tones, whereby through such perforated surface or surfaces the mechanism forming the connection between it and the sounding mechanism will be operated through the perforations to produce the sound or note or notes desired, of whatever length such notes or sounds are to be.

COMBINED SEAT AND DESK.—Rev. Allen H. Burn, May's Landing, N. J.—The present invention relates to the combination of a desk or lid with a seat or bench, such lid or desk being hinged to the back of the seat in such a manner as to be raised or lowered at pleasure, and when raised, supported in position by means of supporting bars properly applied thereto.

MACHINE FOR REFITTING CONICAL VALVES.—Charles F. Hall, Brooklyn, N. Y.—This invention relates to a device by which the conical stop valves of gas, steam, and water works may be refitted or repaired when from any cause they are rendered leaky and unfit for use.

GRAIN-BAND CUTTER AND FORK.—E. G. Bullis, Manchester, Iowa.—This invention has for its object to furnish an improved instrument by means of which the bands of the grain bundles may be cut at the same time that the bundles are pitched to the person who feeds them to the threshing machine, and by the same operation.

PROPELLING VESSELS, ETC.—Robert R. Spedden and Daniel F. Stafford, Astoria, Oregon.—This invention has for its object to furnish an improved means by which the motion of the waves may be used for propelling vessels or working pumps or other machinery.

MAILBAG FASTENER.—S. Denson, Portlandville, N. Y.—This invention has for its object to furnish an improved mailbag fastening by the use of which the mouth of the bag will be closed securely, and which may be operated, in closing and opening the bag, in less time and with less labor, than the fastenings now in use.

KNIFE AND FORK CLEANER.—John Merritt, New York city.—This invention has for its object to furnish an improved machine by means of which knives and forks may be quickly and thoroughly cleaned.

CHURN.—Thomas Bisbing, Buckstown, Penn.—This invention has for its object to furnish an improved churn conveniently and easily operated, and which will do its work quickly and thoroughly.

SAW BACK.—Henry J. Dill, Cummings, Mass.—This invention relates to the manner in which a stick of firewood, or cord wood, is held fast or secured in the saw back for the purpose of sawing it into suitable lengths, and it consists in arranging adjustable toothed clamps for holding the stick, which clamps are brought in contact with it by bearing upon a treddle with the foot.

PLATFORM SCALES.—D. Hazard, Milton, Del.—This invention relates to a new and improved method of constructing scales of the platform kind, and it consists in attaching a spiral spring to a spindle, to the top end of which spindle the platform is secured, and to the bottom end of which a rod and index finger is attached, so that when an article, to be weighed, is placed on the platform, the weight of the article will act upon the spring and be indicated by the finger.

WASHING MACHINE.—S. W. Curtiss, Sugar Grove, Pa.—This invention relates to a new and improved method of constructing washing machines, and consists in the arrangement of three fluted revolving rollers in a suitable washing box or vessel.

COMBINED TRY SQUARE AND BEVEL.—Samuel N. Batchelder, Prairie du Chien, Wis.—This invention consists in attaching the blade of a try square to the stock in such a manner that it can be set and fastened at any desired angle by operating a hook slide and set screws.

STEAM ENGINE.—J. F. Troxel, Bloomsville, Ohio.—This invention relates to a new and improved method of constructing steam engines, whereby the same are greatly increased in power and effectiveness, and consists in operating a number of pistons in one cylinder.

STOVE.—T. W. Wisner, Kowell, Mich.—This invention relates to a new and improved method of constructing those stoves which are used for drying purposes, or for heating water, or steaming vegetables, and for all other purposes of a similar nature, and the invention consists in rendering the stove portable by providing for supporting the same on truck wheels, which allows of its being transported from place to place, as may be required.

FURNACE HOT-AIR BLAST.—Richard Long, Chillicothe, Ohio.—This invention relates to a new and improved method of constructing and arranging the air pipes for heating the air blast for furnaces for smelting and reducing the ores in the manufacture of iron, having particular reference to the materials of which the air pipe is formed, the method of its construction, and also to the materials and method of construction of the supporting walls.

PRINTING POINTERS.—R. W. Macgowan, New York city.—This invention relates to a new and improved application of pointers to printing presses for registering the sheets of paper as they are fed to the press. Hitherto these pointers have been operated automatically, from the running parts of the press, allowed to remain in an elevated or nearly upright position, and through the sheet until the fingers or nippers of the cylinder arrive in proper position to grasp the sheet, at which time the pointers are drawn down and the sheet released, so that it may be connected with the cylinder, and related with the same in order to receive the impression. This improvement consists in applying a spring or an equivalent weight to the pointers, the latter being pivoted at their lower ends, or attached to axes and all constructed and arranged in such a manner that the pointers will hold the sheets properly in position on the feed board, and the nippers of the cylinder allowed to draw the sheet off from the points on account of the latter yielding or being allowed to be drawn down under the slight pull of the sheet, the springs or weights throwing the points back to their original position as soon as the sheet is withdrawn.

CLEANER FOR LAMP CHIMNEYS, ETC.—R. B. Musson, Champaign, Ill.—This invention relates to an improved cleaner for lamp chimneys, bottles, and other hollow ware.

SAWYER'S RULE.—Thomas Carter, Louisville, Ky.—This invention relates to an improved sawyer's rule, and consists of a rule on which is a scale showing at a glance the number of boards or planks, of any desired thickness, which can be sawn from a log of any given diameter.

WINDOW SCREEN.—A. W. Griffith, Roxbury, Mass.—This invention relates to an improvement in window screens, and consists in a screen wound round a spring roller at foot of a window, and attached to the bottom of the lower sash so that on opening the window the screen opens with it, admitting the air but excluding insects, and on closing the sash the screen winds up itself.

SHOVEL PLOW, CULTIVATOR, ETC.—P. Atkinson Ross, Harveys, Pa.—This invention has for its object to improve the construction of single and double shovel plows, cultivators, etc., to enable them to be readily adjusted for use upon sidehills or level ground, so that the handles may be secured in nearly a level position, while the plow is held in the best position for doing the work properly.

SKY ROCKETS.—John W. Hadfield, East Williamsburgh, N. Y.—This invention consists in dispensing with the long stick or guide which is now attached to sky rockets in order to insure a straight upward flight of the same in the air, and using instead a plurality of short guides, whereby several important advantages are obtained, to wit: the packing of the rockets in a small space, so as to economize in transportation, the forming of a stand or support for the rocket, so that no fixture of any kind will be required when they are to be fired or "set off," and lastly, the obtaining of an efficient guide to insure the straight flight of the rockets upward in the air.

CATCHING THE OXYDE OF ZINC.—G. C. Hall, Brooklyn, N. Y.—This invention relates to an improved means for catching the oxyde of zinc, as it escapes with the fumes and gases from roasting zinc, or zinc ore. Hitherto the oxyde of zinc has been caught and retained by forcing the fumes and gases from the

roasting ore into a large bag or receptacle composed of cotton cloth or other porous material, which will admit of the gases and air passing it, but not the oxyde, the latter being retained within the bag, and, by its superior gravity, falling to the bottom thereof and settling in teats or pendant receptacles at the bottom of the bag, from which it is removed from time to time. This invention has for its object the dispensing with the large bag, which is very expensive—the gases from the ore affecting the same so that it rots in a very short time, and soon becomes ruptured under the blows which are given it to cause the oxyde which adheres to the sides of the bag to drop into the teats or receptacles made to receive it. The invention consists in having the fumes and gases from the roasting zinc or zinc ore forced into a close building, provided with openings or apertures, over which screens are placed, constructed in such a manner and of such materials as to admit of the air and gases passing through them, but not the oxyde.

FERRULE.—Archibald Shaw, Philadelphia, Pa.—This invention relates to a new and improved ferrule, for the handles of tools and other implements, and it consists in providing the interior of the ferrule with oblique spurs or projections, disposed or arranged in such a manner as to admit of the ferrule being driven on the handle and at the same time prevent it from casually slipping off therefrom. The object of the invention is to obviate the necessity of tacks or screws being used to secure the ferrule on the handle, as well as the pinching of the same externally to form a burr to sink into the handle to effect the same end.

SUCTION OR VACUUM PUMP AND BLOWER.—John Doyle and Timothy A. Martin, New York City.—This invention consists in arranging valves and air passages with a hollow cylinder or drum, having an oscillating movement, and provided with a chamber or chambers to receive water, mercury or other fluid, whereby an exceedingly simple and compact pump or blower is obtained, one not liable to get out of repair or become deranged by use.

MACHINE FOR REGISTERING NUMBERS FOR ODOMETERS.—Henry F. Hart, New York city.—This invention relates to an improved machine or apparatus for registering numbers applicable to odometers or measurements of quantities of all kinds, such as the numbers of barrels of flour, bushels of grain or any other commodity that requires a tally or record of the quantity packed, stored, weighed, or handled in any manner.

DITCHING MACHINE.—A. H. and P. S. Whitacre, Morrow, Ohio.—This invention relates to an improvement in the construction of a machine for cutting ditches suitable for laying tile for draining lands, or pipe of any kind, and consists in a sled worked by tackle and supporting a frame carrying the machinery, in such manner that the frame can be raised and lowered to cut the ditch to any required depth.

WINDOW SHADE RACK AND PULLEY FASTENING.—Wm. H. Woods, Philadelphia, Pa.—This invention relates to an improvement in constructing a fastening for window shades and consists in a metal rack to be attached vertically as usual to the side of the window frame for holding the cord connected with the shade by means of a lever dog that works in a longitudinal slot in the rack and is engaged and disengaged with the teeth thereof by moving the lever in and out of the slot to be secured in places when engaged by a swivel knob on which is a pulley that covers the cord of the shade.

FENCE POST.—Warren H. Shay, Sylvania, Ohio.—This invention relates to an improved method of constructing fence posts and consists in forming them of plank uprights supported by braces and held together by cross ties and keys.

CLOTHES-WASHING MACHINE.—John D. Swartz, Milton, Pa.—This invention relates to a new and improved clothes-washing machine of that class which are provided with an oscillating rubber and a concave of rollers.

RAILROAD RAILS AND CHAIRS.—John H. Downing, Salem, Mass.—This invention relates to an improvement in railroad rails and chairs, and consists in forming the rails in two parts, to lie side by side, with lap-joints combined with narrow chairs, having single heads placed on each side of the rail to clamp the two parts together at the joints, and fasten them to the ties.

MACHINE FOR STRETCHING CLOTH.—A. C. Corpe, Stafford, Conn.—This invention relates to a new and improved machine for stretching cloth, with a view of rendering the same smooth and unfolding such portion of the selvages which may have been rolled over in the manipulations to which it was subjected after being taken from the loom.

MACHINE FOR SHARPENING SAWS.—E. B. Rich, South Boston, Mass.—This invention relates to a machine for the sharpening of saw blades, whether straight or circular, and consists in the combination of a revolving or rotating grinding wheel, made of any suitable material, and a holder for the saw-blade, so arranged together that as the grinding wheel revolves the saw will be presented to the same, or the wheel to the saw-blade, in such a manner as to produce the desired sharpening of the teeth, in regular order and succession.

DOOR SPRING.—Rudolph Schrader, Indianapolis, Ind.—The present invention relates to a spring for doors, that being properly connected with the door will operate to close, whether when opened it swings inside or outside through the casing to the door, the spring being especially applicable to doors hung to swing through their casing, or inside and outside.

PORTABLE DERRICK.—D. J. McDonald, Gold Hill, Nevada.—This invention relates to a new and improved derrick, and it consists in a novel construction and arrangement of parts, whereby the device may be readily drawn from place to place, the crane or derrick frame adjusted in any desired position within the scope of its movement, friction avoided, and the whole apparatus manipulated with the greatest facility.

Answers to Correspondents.

CORRESPONDENTS who expect to receive answers to their letters must, in all cases, sign their names. We have a right to know those who seek information from us; besides, as sometimes happens, we may prefer to address the correspondent by mail.

SPECIAL NOTE.—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisements at 50 cents a line, under the head of "Business and Personal."

All reference to back numbers should be by volume and page.

J. F. McK., of Md.—"What kind of silk is used for balloons, what is the varnish which covers them, and what amount of common illuminating gas will support one pound weight?" Silk for large balloons is now rarely used, stout cotton cloth being substituted. Ordinary boiled linseed oil makes a good varnish. Any elastic varnish will do, however. The specific gravity of ordinary illuminating gas ranges from 0.540 to 0.700, air being 1.000. Its weight may be called one-thirty-second of a pound to the cubic foot and atmospheric air about three-fourths of a pound.

R. B. C., of Pa., says: "Here is a proposition in geometry which I would like to see demonstrated theoretically by one of your correspondents. The side of a regular heptagon is equal to half the side of an equilateral triangle inscribed in the same circle. The mechanical construction is very simple and will be found useful. I discovered it some years ago, and am not aware of its ever having been in print."

F. H., of Mich., asks "if sal-soda will scale a boiler?" H. N. Winans, 11 Wall street, N. Y., replies that in some waters it is partially effective; but at the expense of the boiler, with a certainty of foaming and corrosion. The most reliable and positively uninjurious remedy for incrustations is his anti-incrustation powder—in successful use for 12 years past.

T., of R. I., speaks of the famous mechanical horse shown at the Paris Exposition which is said to have accomplished 1 with its rider a little over an English mile in fifty seconds, and asks what is the motive power. As it is said that the French Government took possession of the machine and preserves its mechanical construction a secret, we know no more about it than about the much vaunted Napoleon cannon.

S. S., of N. Y.—"Please give the ingredients of the composition used for tipping matches." Different manufacturers employ different materials and in varying proportions; the mixture of phosphorus melted and stirred up with this zinc is sufficient, although some add a quantity of powdered glass, niter, chlorate of potash, sulphur, etc. The phosphorus, however, is the light-producing material.

R. S. B., of N. Y., alluding to the inquiry of S. W. P., in No. 23, for a water-proof paste: "Calico printers when they wish to leave white figures on a dark ground use what they term a 'resist paste' to cover such places as are designed to be unaffected by the dye. If the ingredients of this paste were known it might be what S. W. P., desires." This "resist paste" is 1 lb. of bicarbonate of copper (distilled verdigris), 3 lbs. sulphate of copper dissolved in 1 gal. water. This solution to be thickened with 2 lbs. gum senegal, 1 lb. British gum and 4 lbs. pipe clay; adding afterward, 2 oz. nitrate of copper as a deliquescent.

M. A. H., of Vt.—"I have a surplus of water power and desire to know the probable cost of the apparatus for producing the electric light, with a view of employing my surplus power in that direction." A serviceable magneto-electrical machine for giving light is quite expensive.

Business and Personal.

The charge for insertion under this head is 50 cents a line.

Parties in want of Fine Tools or Machinists' Supplies send for price list to Goodnow & Wightman, 23 Cornhill, Boston, Mass.

Pattern Letters and Figures for inventors, etc., to put on patterns for castings, are made by Knight Brothers, Seneca Falls, N. Y.

Allen & Needles, 41 South Water street, Philadelphia, Manufacturers of Allen's Patent Anti-Lamina, for removing and preventing Scale in steam boilers.

All Parties having any article to sell through an agent, address, with circular, etc., Box 499 Oil City, Pa.

Manufacturers of Tag Holders will please send address to Box 1019, St. Paul, Minn.

Manufacturers of Presses for making Castor Oil, address or send circular to F. M. Peck, P. O. Box 150, Montgomery, Ala.

Manufacturers of Cotton-Spinning and Knitting Machinery send circular and price list to W. L. Jones, Holly Springs, Miss.

Dr. W. Spillman, Marion Station, Miss., wishes to correspond with manufacturers of buckshot or bullets, either conical or spherical.

Toy Makers—One-half of Patent Right of Toy Wind Wheel given away! Address Dr. W. H. Benson, Norfolk, Va.

Milton Darling, East Macdonough, Chenango Co., N. Y., wishes the address of those that want broom handles for the year 1868.

A. B. Woodbury, Winchester, N. H., wants to sell two valuable patents—Jack-Spinning Improvements.

E. C. Tainter, Worcester, Mass., wants to sell a good set of Sash and Door Machinery, used only six months.

Parties desiring any of their new ideas put into practical form, or wanting any new apparatus invented for manufacturing purposes, etc., address, with confidence, A. E. W., Inventor and Draftsman, 114 Fulton street, N. Y. References given.

MANUFACTURING, MINING, AND RAILROAD ITEMS.

For the benefit of the Union Pacific railroad, the base of the Rocky Mountains has been fixed at the base of the Black Hills, a distance of 6-637 miles west of Cheyenne, and, according to the railway surveys 525-073 miles from Omaha.

The Pittsburg, Fort Wayne and Chicago railway have just re-built in the most permanent manner an iron bridge over the Alleghany river, to replace the old wooden Howe truss bridge, which had become inadequate to the increasing traffic. The new bridge opens like a fan towards the freight yard at Pittsburg being at the narrowest part, next to the main span 55 feet wide. The river is crossed with spans averaging 153 1/2 feet in the clear, with a bearing of five feet on each pier. The principle of the construction is known as the lattice girder plan, with vertical stiffening. The work was executed under the superintendence of its designer, the engineer and architect of the company Felician Stataper.

The production of precious metals in the United States from 1819 to 1867 inclusive, has amounted in value to \$1,174,000,000.

The president of one of the New Jersey railroads proposes a plan to avoid the danger to life and limb from the series of trains that run into and out of Jersey city. The new project is to elevate the present tracks fifteen feet above the streets, and by safe machinery to lower at once an entire train in the depot at the river.

A mining company at Newton, Nev., are making preparations to work their claims by means of a steam engine which will be used to throw a stream of water instead of the ordinary hydraulic pressure. They estimate that with a ten or twelve horse power engine, then can throw 100 inches of water with a force equal to at least 150 feet fall. The result of this experiment is looked upon with a good deal of interest, as there is a vast amount of good hydraulic ground in the adjoining countries, which, as in this case, can not be worked by the ordinary process for want of water fall, but which, if the expedient in this case proves successful, will soon be worked by steam engines.

By an oversight in the article on the trans-continental railroad, published in our last issue, the Western or California section of the road was styled the Union Pacific, instead of the Central railroad. In the race to reach Salt Lake the California company have 400 miles more to build, while the Union company have only 323 miles. But the country to be traversed by the former is comparatively level, and favorable for winter work, while that on the other side crosses four distinct mountain ranges, and winter storms must interrupt work for several months in the year.

PATENT OFFICE DECISIONS ON APPEAL.

USEFUL COMPOUNDS ARE PATENTABLE—THE APPLICANT NOT REQUIRED TO PROVE THE FUNCTION OF EACH INGREDIENT.

S. H. Hodges for the Board of Examiners-in-Chief.

Application of Rev for a Patent for Preventing and Curing Scurvy Chelera.—The applicant's specific is composed of a number of medical articles, the nature of which is not important upon the present occasion, and it is unnecessary to enumerate them. But it is objected that "a medical prescription" "should contain some recognition of the medicinal properties of the several ingredients" "and the part they perform in the compound;" or, as it is elsewhere expressed, such a mixture should not receive the sanction of this department "unless perhaps a satisfactory rationale should be given for the use of each of the ingredients in the proportions named." If the medical faculty were always satisfied themselves as to the operation of the various remedies they employ, there might be more reason in the objection. But it is well known that different schools disagree widely on this subject, and there are remedies employed with success the effect of which the most intelligent are unable to account for. So long as there is a single one of this character to be found, and while the operations of the vital functions are so concealed from us that we are unable fully to comprehend the process by which any specific operates, so long it is impossible to prescribe as a condition of patentability, a full explanation of the mode in which any one acts that is brought forward. It would be still less justifiable to require such an explanation as would content any particular class of medical men. Every year new therapeutics are introduced into practice, and not unfrequently some whose beneficial results are not understood. And as long as one such may be found, it is not just to make it a condition of its being protected by a patent, that the discoverer should bring the scientific world to agree with him in his theory respecting it, nor even that he should have one "The man who stumbles upon a new and useful article is just as much entitled to the exclusive use of it as if he had elaborated it by the most profound and painful study. It is true that there is danger upon this principle of commencing mere nostrums, and giving them undue prestige. This can only be guarded against by the exercise of great caution and requiring convincing proof of utility. Such has been furnished in this case, in abundance. The application cannot be rejected except upon such grounds as would insure the rejection of nearly all medicine whatever. Nor is the Office responsible for the false importance which the public may attach to its proceedings, so long as they are confined to its legitimate province. Its duties certainly must not be neglected, and meritorious petitions refused, in order to obviate such misapprehensions. The decision of the Primary Examiner is reversed.