

[We herewith present a series of inquiries embracing a variety of topics of greater or less general interest. The questions are simple, it is true, but we prefer to elicit practical answers from our readers.]

1.—How can I do silver plating on carriage work with foil? -T. R.

2.—How is canvas prepared for painting pictures on ?—J. C. J.

3.—Will some one tell me how horn is cleared or made transparent?—A.J.

4.—Will some one please inform me how shot guns are loaded so as to throw the shot closely?—A. J.

5.—Is there anything that will remove the taste of kerosene from a cask?—Z.

6.—Can you inform me how to take the oil out of cotton waste in the quickest and cheapest manner?—J. C. W.

7.—Can you give a recipe for making paste to stick to bright tin without first roughing the tin; a paste that will not peel off?—B W. & Co.

8.—What is the best size to use for gilding the engraved lines on ornamental walnut work, and also forgilding on pine board?— W. H. C.

9.—What is the best and cheapest process for gilding picture frames, and how can I obtain the high polish or gloss on certain parts of the gllt surface?—H.  $\dot{R}$ .

10.—What is the best means of cutting brass stencil plates with acid, and what is the proper material with which to cover the portions of the plate that are to be protected ?—J. J. C.

11.—Is i possible to take ink stains from dressed stone? One of the fl. ast buildings in our city has been defaced by the use of writing fluid and some kind of syringe, in the hand of some spiteful unknown.—W. D. G.

12.—How is the pearl work put on the many sided part of ornamental handles of boxes, and on heads of canes, whips, etc.? From what is the material obtained, and in what part of the world is it produced, and what is the process ?—C. D.

13.—Will some one tell me how thin, crooked ornamental patterns are made, such as stove patterns, column capitals, etc.? And how are small castings made to have the appearance of bronze or copper, by a cheap process ?—G. W.

14.—I have a lead cistern which leaks; the plumber says it is caused by the action of the water on the lead. It is supplied from a well, and the water is not very hard. Do you know of any cement or paint which will stop the leaks and prevent any further corrosion?—B. F.

15.—Does wood, after it has been thoroughly kiln dried and treated with a non-absorbent of moisture, shrink and swell with variations in temperature, as iron, brass, zinc, and pipe metal do, and to what extent, taking iron as the unit? What is the best non-absorbent to use to give a hard and glossy inish? Would liquid glass answer the purpose?—A. A. D.

16.—I am building a cedar skiff and am desirous of making it as light as possible. Is there any preparation that I can use in the place of paint and oil that will be as good and weigh less?—J. H. R.

17.—What can I use for a light in a dark lantern for night hunting that will enable me to see farther than ordinary kerosene or signal oils ?—J. H. R.

18.—Carthere be telescopic sights adjusted to a rifle barrel that would be of use in night hunting, at a moderate cost?—J. H. R.

19,—I want a substance like glue, mucilage, or varnish with which I can give oak wood one or two coats, to keep it from burning, or else make it burn veryslowly. I want to mix up liquid iron with it. I don't mind if the wood burns, so that it burns slowly.—W. H. P.

20.—How can I make a fireboard for a grate front? I have finished one, but it is wrinkled and full of folds. How can I stretch the cloth on the frame, and how can I paste the paper on the cloth so that it will  $b_g$  stretched smooth?—C. R.

21.—Will some one give a rule for laying out for dovetail ing on a bevel, say for a hopper for a grist mill, or the corners of a carriage seat? I find very few mechanics who understand it.—T.

22.—I have a steam engine, cylinder of  $1\frac{1}{2}$  inches diameter, sinches stroke, which I wish to use for running a sewing machine, and perhaps some other small affairs about the house. How can I build a boiler for it that will be cheap and safe, and will run it at 150 revolutions a minute with 25 pounds pressure? Can I make one to go on a cooking stove, or would it be better to set a boiler into a common cylinder stove, or to make a boiler and furnace separate from any stove? What thickness of iron and how\_large should be the safety valve, and what should be the length of arm and the amount of the weight?—J. E. 8.



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 \$1.50 a line, under the head

will not act as a helix with such a battery. The gas would not be perceptibly affected, and would not explode if it were heated. It requires to be mixed withoxygen in proportion approaching 2 volumes of hydrogen to one of oxygen to make it explosive.

Is metallic antimony a good conductor of electricity for a positive metal in a galvanic battery, and what is its conductivity relative to silver or copper? What number of copper wire would it take for an electro-magnet Sinches long with a core of  $\chi$  inch or 1 inch diameter?— —C. B. Answer: Owing to the action of the acids, antimony would be a very poor material to use in a galvanic battery. In a thermo or dry battery it may be used to advantage. It is a much poorer conductor than silver or copper. As to magnet, make your core a little longer, say 6 inches, for the diameter you mention, and use No. 20 cotton or silk covered copper wire.

M. M. S. asks: Suppose 130 is the larger, and 28 the smaller gear on a lathe, can a screw be cut coarser than said gears will cut on same lathe without larger or small@gears? Is so, how can it be done? Answer: There can no coarser thread be cut with those gears, except by the use of intermediates on a stud.

It is argued that a person travelling, either eastward or westward, around the world—sayat the equator—would find on arriving at his starting point that he had either gained or lost one day of the week. Is this so?—J. R. T., Jr. Answer: Yes. Make a calculation on a terrestrial globe, and you will see for yourself.

S. H. G. says: In the schedule of charges adopted by the Institute of Architects, June 4th, 1866, I find the following: "Drawings as instruments of service are the property of the architect." I wish to know how the architect can recover plans after such service. Answer: In the same manner in which a person may recover any other property of his, which may be improperly detained by another, -by due course of law.

I have in my possession a stone, something similar, I presume, to diamond. Enclosed is a small piece, which I hope you will give a thorough examination. It has been tested by several in this place and they report it a valuable stone of some kind, but do not know for certain whether it is a diamond or not.—J. M. McN. Answer: The fragment sent is from a pure, limpid rock crystal; this it is, and nothing more. Of no value.

E. B. M., of Tenn.—The crystals are sulphuret of iron or pyrites, and are valueless.

J. H., of N. J.—The specimen you send is shell marl, that is, a mixture of clay and lime containing small bivalve shells.

J. A. B.—The mineral you send is chalcedonic quartz, of no special value,

W. S. H. says: How can I arrange the exhaust pipe to my engine, so as to get the greatest degree of heat in the water in the tank? And if I use a coil or worm, do I lose any power from backpressure? Also, what would cause blisters on the bottom of the boiler? And would they be considered dangerous with plenty of water in the boiler? Answer: To get most thorough utilization of the heat of your exhaust steam, lead it into a receiver near the lowest point and carryoff such as remains uncondensed by a pipe from the top. Sprinkleyour feed or other water to be heated, by a rose fixed in the upper portion of the receiver. The feed will thus be heated to the boiling point if properly arranged. Place your pump so low, or the receiver so high, that there will be a good head of water above it, or you will find pumping hot water a difficult matter. If you must draw and force your feed water with a single pump, you will be compelled to use a worm heater. If well proportioned, it ought to do good work without seriously increasing back pressure. Give it plenty of surface, and do not make the pipe too small. Large blisters are always dangerous.

S. W. H. says: Your decision between R. and W., page 394, in the matter of a balance wheel keyed on diagonally to the shaft, as shown in the figure. seems to me unsound. You admit that it will always tend to turn itself until its axis coincides with that of the shaft, and say, "this effort will be a constant one, tending to bend the shaft, but does not necessarily produce unsteadiness in the shaft." Now unless the shaft the unlimited effort to bend it; and if the shaft does yield it becomes crooked, and if crooked a greater weight will be thrown on one side of its axis than the other. In which case I think you will hardly maintain that its steadiness would not be affected under high motion. If machinists may key on their balance wheels at 45 degrees to thin axes and furnish shafts crooked to any degree without affecting the steadiness of the mo-tion, I think that somebody deserves a patent for the discovery. Answer: If our correspondent will try the experiment, even with the extreme case supposed by him, he will find our decision confirmed, provided that his bearings are not left loose, if he experiments with a horizontal shaft. With a vertical shaft, he may even leave his bearings quite loose and still obtain steady motion, unless the driving force act as does gravity in the first ex ample. Cam shafts often illustrate this case, and our correspondent will readily be able to confirm what has been stated. We shall be glad to publish the result of his experiments should be take sufficient interest in the subject to make them.

H. B., page 373, Vol. XXVII., wants the working part of a rammer or scraper, to work in the ground among gravel. Chilled castiron will suit his purpose better than steel, as it is harder than most merchantable steel can be made, and far cheaper. It can be had in almost any car wheel foundery where No.8 cold blast charcoal iron is used. Let H. E. support the working edge if possible with fine cast iron, which need not be chilled. If he wants holes in the chilled part, they should be round or oval, not square, as a square corner affords a fine starting point for a fracture. Those holes should be cored. It is very hard to drill chilled cast iron unless provided with suitable tools.-P. McC., of N. J.

J. W. B., page 362, Vol. XXVII., wishes to know how to make good cider. Take good sound apples (the sweeter the apples, the richer the cider; although apples slightly tart make cider of the best flavor) late in the fall, the later the better, before freezing. Early apples and wind falls may do for vinegar, but will not make cider that will keep any length of time. Fill the barrel full, put in the cellar. take out the plug and let the cider ferment for about ten days, keeping the barrel full with cider made at the same time. In this way most of the pomace is thrown out. This, however, is not very essential. After the cider has worked about ten days, take a long slim bag that, when filled, will go in at the bung hole, put in about one pound of English mustard for every 30 gallons, and drop into the cider, then cork the barrel air tight and let it stand about three weeks, then draw offinto another barrel. Or put back in same barrelafter thoroughly cleansing it; see that the barrel is full. then cork tight. Cider treated in this way will remain unchanged until warm spring weather, when it may be bothed for summer use. Citer will gradually get hard if the barrel is daily drawn from; in that case bottle when the flavor just suits. Sulphite of lime kills the life of cider and renders it as flavorless and worthless as dish water.-E. H. R.

#### **OOMMUNICATIONS RECEIVED.**

The Editor of the SCIENTIFIC AMERICAN acknowledges with much pleasure, the receipt of original papers and contributions upon the following subjects:

On Bursting Strains of Boilers. By T. W. B. and E. E. On a Geometrical Problem. By H. B.

On Vulcanized Rubber and Rubber Belts. By A. E. V. E. On Certain Remarkable Effects of the Solar Rays. By G. R.

On Perpetual Motion. By W. J. A.

On the use of Belts for Machinery. By W. G. B.

On the Action of a Balance Wheel placed out of right Angle on its Shaft.—By H. C. K.

On Scientific and Mechanical Possibilities. By J. E. E. On Steam Presssure. By F. G. W.

### Becent American and Loreign Latents.

Inder this heading we shall publish weekly notes of some of the more promnent home and foreign patents.

SPRING BED BOTTOM.—Henry E. Maker, South Framingham, Mass.—The object of this invention is to furnish a spring bottom for beds; and it consists in slats resting upon pins which pass loosely through holes in cross bars. The ends of the pins rest upon wires which connect pairs of springs. The slats are placed longitudinally or at right angles with the cross bars on the tops of the pins, and are in themselves elastic, so that they give or conform to the tension of the springs and weight on the bed.

SPRING BED BOTTOM.—John Ralston, Mansfield, Ohio.—This invention has forits object to furnish an improved spring bed bottom, and it consists in two sets of slats, upper and lower, held apart by cross bars having between them spiral springs. Said cross bars as well as the slats are elastic and give further spring to the bed.

GABBAGE Box.—Moritz Bacharach, of New York city.—This invention relates to a new garbage box, which is to be placed upon the sidewalks near the gutters of streets in cities and towns, and within which, to some extent, the moisture contained in the offal will be separated from the solid matter and ejected into the gutters. The invention consists in making the garbage box with an opening in the top and with a perforated false bottom, and in arranging on its side a door above the false bottom and an opening beneath the same.

FRED WATER AFFARATUS FOR STRAM BOILERS.—John W. Youman, Mobile, Ala.—This invention relates to a new and improved mode of introducing feed water into steam boilers. The feed water pipe passes through the rear head and extends forward to near the front head of the boiler, and returns back to and through the rear head. This pipe is lecated at or near the waterline, and near the shell of the boiler. The feed water, in passing through and before it reaches the return portion of the pipe, which is perforated, will become heated to near or quite the boiling point, and the sediment contained therein will be deposited in the pipe, and may be blown off from time to time through a small blew off pipe extending through the rear boilerhead. This perforated tube may be larger in diameter than the other part, and may be arranged in the boiler so as to be just submerged. In this position it will serve as a surface blow off by shutting off the feed water.

FENCE.-Edward M. Crandal, Marshalltown, Iowa.-The invention consists in an arrangement of rails, posts, and braces to form a cheap, strong, and durable, yet easily transported, fence. The corner post consists of four uprights, connected together by transverse bars, extending outward laterally in different directions so as to support the braces. The uprights are also connected together by rails, upon which the rails of the fence rest, the ends of the rails being notched and held down by wires. The uprights of the post

. W. H. says: Your decision between R. and W., page 394, in the matter of a balance wheel keyed on diagonally to the shaft, as shown in the figure. seems to me unsound. You admit that it will always, "this effort will be a constant one, tending to bend the shaft, and say, "this effort will be a constant one, tending to bend the shaft, but does not necessarily produce unsteadiness in the shaft." Now unless the shaft be infinitely infiexible (which was not in the proposition) it must yield to be unlimited effort to bend it; and if the shaft does yield it becomes

> BED, SOFA, AND LOUNGE BOTTOM.-Royal Jennings, Racine, Wis., assignor to himself and Wallace H. Jennings, of same place.-This invention relates to a new construction of bed, sofs, and lounge bottom, which is very light, graceful and elastic, and at the same time durable and cheap to make. The invention consists in the arrangement of wire springs, clasps, and a wire or cordbottom. The spiral springs are of suitable number, each having its two ends formed into hooks. The outer ends of these springs are, by the hooks thereon, fastened to screws or pins that project from the upper faces of the end rails. When all the springs have thus been placed, a wire or string is fastened with one end to a pin of an end rail, then carried loosely along the outersides of pins that project from the side rails, laid around a pin on the oppositerail, carried back to the firstend rail, and hooked to the first spring thereon, and so brought back and forth and hooked to the several springs. and finally fastened with its other end substantially as with the first. All the while the string or cord is left quite slack. Subsequently it is drawn tight by small clasps that are hooked over adjoining lengths of the wire at proper intervals.

> SLOP PAIL.—John S. Jennings, Brooklyn, N. Y.—This invention consists of a detachable seat for slop pails, also a cover therefor, detachably connected with it, the seat being detachably connected to facilitate the cleaning of the pails, which can be done much more readily and thoroughly when the seat is detached than when not so, as they have been heretofore made.

> FEEDING CANALS.—James G. Brewer, Lone Tree, Nebraska.—This invention consists in an improved mode of conducting water from rivers which flow over shifting sands or quicksands into canals or races to enable the water to be used as a motive power. The inventor drives piles into the bottom of the river, or into the sand near the river, so close together as to exclude both sand and water, or at least the sand, and inclosing a larger or smaller space, according as more or less water is required. The piles form a close curb all around the inclosed area except an opening for the canal or race. The water rises through the said in the curb, which forms the beginning of the canal, and flows through the said canal or race to the place where it is to be used. Should the sand rise with the water, the sand may be keptback by wire screens, which, in this case, will not choke, as the water

of "Business and Personal." ALL references to back numbers must be by volume and page.

J. B., of N. Y.-Your windmill can, we think, be patented.

What is properly the damper in a stove ? Is the movable plate next the pipe called the damper, or is the sliding plate in the front which shuts off the air properly the damper? I contend the plate which turns the fire under the oven is not the damper proper, but the regulator, and the valve in front is the damper. The dictionaries are not explicit enough to satisfy the understandings of different persons. Answer: We generally designate the movable plate or dish within or near the smoke flue as the damper, and the valve in front as the draft regulator. The plate that sends the fire around the oven might be called the oven damper or the oven regulator. It makes little difference what name you give to mechanical parts provided people understand what you mean when you speak.

Have any experiments been made with a sheet iron cylinder, filled with hydrogen or coal gas for the purpose of making an electromagnetic helix out of it? If not, would you please to give me your opinion, whether such a helix would heat the gas, and cause it to explode, if there were a battery of 36 cells attached to it, or whether it would have no effect on the enclosed gas? The knowledge of whether it would have any effect on the gas would be a step forward to an important invention. -D. M. B. Answer: Experiments have been made. A sheet iron cylinder

To W. S. H., page 362, Vol. XXVII.—I have seen as smoky days in July as ever I saw in the fall, and several in succession. The leaf burning theory will hardly do for July.—E. H. R.

To tin brass pins, etc., the goods are to be cleaned free from oil; then an earthen pot is to be prepared. First a thin sheet of block tin is to be put at the bottom, then a steam pipe is to be introduced nearly down to the same; next put a layer of the goods, then a sheet of tin as before, next more goods, and so tillit is filled. Then fill up with water till all are covered, throw in some cream of tartar and turn on the steam just enough to keep bolling. After whitening, rinsein clearwater, and pass through saw dust. In a small way, I have whitened ordinarytinner's ware by covering with tin foil, and bolling over the fire, filling up the water as iteraporated.—W. A. B.

rising through the clean sand is free from sediment. This invention enables the water of the Platte, Arkansas, and other similar rivers, to be used for water power, which heretofore has been impossible.

MITTENS.—John L. Whitten, Essex Junction, Vt.—This invention relates to the construction of mittens made, either in whole or in part, of leather, and consists in the mode of cutting the leather, and in the pattorns for the parts of the said mittens.

t MEDICAL COMPOUND.—Herman Themel, Esconawba, Mich.—This invention relates to a new medical compound, which is intended for use against stomach diseases in cases of cholera, etc. It is composed of the following ingredients: bog bean, wormwood, juniper berry, valerian, gentian, potash: the remainder, alcohol or alcoholic liquor—such as whisky.

FENOR.—Harrison McMullin, Batesville, Ark.—This invention has for its object to furnish an improved fence. It consists of a number of planks resting above each other and supported by blocks of stone or wood. The low wall thus made is surmounted by crossed stakes and a rider.

dy CAR COUPLINGS.—David Walter, Evansport, Ohio.—This invention consists in a gravitating self-coupling hook, which is raised by the link when it enters the buffer, and engages said link automatically, which said hook is provided with a rolling or oscillating guard, which falls between the link and the point of the hook whenever the end of the link is thrown upward more than is usual in the ordinary working conditions—as, for instance, when a car jumps the track and effects the uncoupling, so that the cars remaining on the track will not be forced off by one already off.

GRANARY .-- Charles T. Moorman, Jr., Jamestown, O .-- This invention has for its object to furnish an improved granary, which shall be so constructed that rats and other vermin cannot get into it, which shall be firmand solid, will not "creel" with weight, will protect the grain better and maybe readily moved without injury to the building. The entire granary is supported upon posts which are set at an angle of about forty degrees, and are arranged in pairs, the upper ends of the posts of each pair being firmly cured to each other. Hanging posts are inclined at an angle of about thirty degrees in the opposite direction from the above mentioned posts. By other and suitable construction the granary is fully protected from rats and other vermin, as the inclination of the exposed parts affords them no chance to stand or sit and gnaw.

EARTH AUGER.-Isaac N. Pyle, Cameron, Mo .- The invention consists of an earth borer in which two jaws are affixed to the lower ends of upright arched plates, which are, respectively, attached to the pendent arms of a shank. This shank is double, its upper or stem parts being held together by means of straps placed around them. A wedge can, from below, be forced in between the parts of the shank to spread the jaws and plates to a suitable extent. The plates arc slotted, and are secured to the pendent parts of the shank. Two other curved plates are placed between the plates and have jaws flexibly attached to their lower ends, and are only used in sand. The jaws serve as valves to let the sand in and prevent its escape, thus constituting a trap in which the sand bored out will be collected convenient for removal.

BAKE PAN.-Richard D. McDonald, Jersev City, N. J.-This invention relates to apparatus to be placed in ovens for baking bread or roasting meats, and all similar purposes; and it consists in the mode of connecting the parts together, or more definitely in a beyeled flange around the edge of the upper part of the pan. The angle of this flange, from a vertical line, is designed to be about the same as that of the sides and ends of the lower part of the pan, and is designed to form, with the lower part, a tight joint, so as to confine the gases or steam generated in the van from the article being roasted or baked.

BURIAL CASE .- Collins C. W. Morgan, of Holly Springs, Miss .- This invention relates to connecting the two parts of a burial casket-made of terra cotta or other suitable material-by means of clips or clasps, and to constructing said clips or clasps with handles, thereby dispensing with the necessity of the handles ordinarily provided for coffins.

SUBSOIL PLOW.-Christian Myers and William Gummow, of Marysville, Cal.-The invention consists in the mode of adjusting the subsoil plow, whereby it can be shifted independently and also arranging it with the common plow in such a manner as to avoid the necessity of the off horse walking over the loosened bottom of the furrow or in a very deep furrow. as in subsoiling in the common way. It also avoids the tramping or packing of the loosened earth in the bottom of the furrow, common to the ordinary way.

BRACELET.-William Edge, of Newark, N. J.-This invention has for its object to improve the construction of chain work bracelets, so as to better adapt them for keeping their form when worn, while at the same time making them more beautiful and elegant in appearance. It consists in a bracelet formed by turning the edges of a piece of chain work down over the edges of a metallic plate.

DRAWERS.-John Bellamy, of New York city.-This invention consists of drawers for men's wear, in which the parts forming the legs are cut by novel patterns, the outlines of which are of such form that with inflexible material the legs may fit the wearer tightly and not draw or bind across the knees, as drawers of inflexible goods now are apt to do unless made uncomfortably large.

FEATHER RENOVATOR.-Theodore J. Adams, of Ansonia, Conn.-This in vention has for its object to furnish an improved apparatus for renovating feathers, moss, hair, etc. In using the machine, the substance to be renovated is placed in an inner cylinder through a door, which is then tightly closed, and steam is admitted through a hollow gudgeon which enters the inner cylinder through the perforations of thewall and a pipe, which insures the substance being throughly acted upon, the steam entering the sub-stance both from the outside and center. When the substance has been sufficiently steamed the steam is shut off and the door opened, allowing the moisture to escape, the heat communicated by the steam being sufficient to evaporate all the moisture and thoroughly dry the substance.

LETTER BOX .- Anna T. Sinclaire, of New York city .- This invention has for its object to construct a letter and newspaper drop box, whose contents will be protected by a false bottom whenever the lid is opened, so that the fraudulent removal of letters or papers is effectually prevented. The invention consists in forming the said false bottom of two hinged plates that are arranged within the box and connected with the lid, or secured in such manner as to overlap each other when the lid is opened, and drop apart when the same is closed.

HAND VISE .- Thomas Overton, of Corpus Christi, Texas .- The object of this invention is to furnish an implement or tool for the use of mechanics, which can not only be used as a hand vise for holding small articles, but which can be attached to bits or augers for gaging the depth of the hole bored, and also countersinking such hole for screws. A slot is provided in the screw head, for convenience in setting saws.

FOLDING BOX BED.-Alfred G. Bayles, of New York city .- This invention has for its object to furnish an improved folding box bed, which, when folded, will occupy but little space, while at the same time furnishing a convenient receptacle for clothing and various other articles, and which, when opened out, will furnish a complete bed. The box or body of the bed is made in two parts which are hinged to each other at one side, and may be opened out. The spaces on which the two parts of the mattress rest are made of such a depth that the edges of said parts may project sufficiently above the mattress to give space for the bed clothes, so that when the bed is made up and the edges of the bed clothes tucked in around the edges of the mattress, the box may be opened and closed without disturbing the make up of the bed. The adjacent cdges of the two parts of the box, upon its hinged side, are cutaway so that they may not inconvenience the sleeper. the mattress, when the bed is opened out, bulging over said recessed edges so as to be continuous. The edges of the part opposite the hinges may be provided with a board, which, when the box is opened, serves as a foot board to the bed. The bolster, when arranged for use, is placed upon a partition, the ends of which rest upon inclined cleats attached to the box, and the inner edge of which is hinged to the edge of the horizontal parti-tion. The part of the box beneath the partitions is divided into three spaces adapted to hold clothing and other purposes.

MACHINE FOR CUTTING NAIL PLATES .- Thomas Searle, Pottstown, Pa.-The invention consists in constructing and combining a feed table, feed tters, so that a pair of tongs may pass freely and convcnicntly nearly up to the cutters, and thereby cause nearly the whole sheet of metal to be utilized. Secondly, it consists in bringing the frame that holds the feeding mechanism so that it may be turned back from the cutters and allow easy access to them. Thirdly, it consists in causing the feed rolls to rotate a little after the sheet has reached one or both of the gages so as to insure that any slight disarrangement which may have taken place will be remedied and the sheet presented to the knives always at exactly the same angle.

COMBINED CHAIR AND BED,-Jonathan H. Green, of Louisville, Ky.-This nvention consists in a chair composed of a supporting frame having legs, a seat frame hinged to said frame, and a back frame having arms attached thereto, and hinged to said seat frame so that the parts of chair may be unfolded to make a bed.

STEAM BOILER AND FURNACE .- George W. Lascell, Syracuse, N. Y., as signor to himself and Hugh Robinson, Jersey City, N. J.-This invention has for its object to furnish an improved boiler and furnace for generating steam and for heating and evaporating purposes, which shall be so constructed as to consume the smoke and combustible gases that may be developed in the combustion of the fuel, and which shall, at the same time, be simple in construction and of greater steam generating, heating, or evaporating power than boilers and furnaces constructed in the ordinary manner. The tops of the fire chambers are left open, and the air to support the combustion passes in through the said open tops and passes down through the dead coal to the live coal in the lower part of said chambers, where the combustion takes place. The smoke and gaseous products of combustion pass through openings or flues in the side of the lower part of the boiler, where they mix with air entering through perforations in the bottom of said boiler and are consumed. The perforations in the bottom of said boiler are regulated by means of a damper. The walls of the boiler are made double to form a water space. The water spaces between the double walls of the fire chambers are connected by pipes, into one of which the water is introduced from the pump or reservoir. The other end of the pipe, that is broken to connect with the pump or reservoir, is connected with the space between the double walls of the boiler, so that the water, before passing into the boiler, circulates around all the fire chambers. The spaces between the double walls upon the opposite sides of each fire chamber are connected by pipes which are colled or zigzagged across the inner ends of said chambers so as to be exposed to the heated products of combustion as they pass from said chambers into the interior of the boiler. The water space between the double walls of the boiler is made wider at the lower than at the upper part to form a contracted well or chamber, into which the smoke and other combustible gaseous products of combustion from the fire chambers are introduced, and in which they are burned by the aid of the air introduced through the openings in the bottom of the boiler, which openings are regulated by the damper to introduce exactly the amount of air required to effect their thorough combustion. The lower part of a water pipe is coiled to form a dome-shaped partition at the top of the contracted part or combustion well, FOR THE WEEK ENDING DECEMBER 3, 1872, AND EACH inwhich the gases are consumed, which dome-shaped coil, in a measure. checks the ascent of the smoke and gases and secures their perfect combus tion. This pipe may pass up into and be combined with the dome or steam chest. The steam is conducted away through the pipe. The incombustible products of combustion pass up, through short pipes inserted in the double walled top of the boiler, into the space between the said top and the bottom of the dome, whence they pass into the space inclosed by the jacket, which incloses the dome and projects down along the sides of the boiler. The lower end of the jacket is left open, and is surrounded by another jacket which incloses the lower part of the boiler and the lower part of the first jacket, and extends up so as to overlap the lower part of the dome. The bottom and the top of the second jacket are closed, and the incombustible products of combustion escape from its upper part into the flue.

CAR COUPLING.-C. S. Flower, of Kickapoo City, Kansas, and C. F. Graves, Hickory, Iowa .- This invention has for its object to furnish an improved car coupling, which shall be so constructed that it will uncouple automatically should one or more cars get off the track, turn over, or drop down be low the level of the other cars. Upon the forward end of the draw bar is formed the humper head, which is attached to the car in the ordinary manner. The forward part of the bar or head becomes gradually wider, and upon the upper side of its forward end is formed a strong upwardly projecting flange, for the lower end of the coupling pin to rest against to sustain the draft, and which is made in the arc of a circle. A block, made of cast iron, is pivoted, toward its rear end, to the bar. Its forward end does not extend quite to the flange; to its side edges are bolted bars or plates made of wrought iron, and the forward ends of which extend forward to the flange, and are notched upon their lower edges to fit upon said flange. To and between the forward ends of the bars is swiveled a short bar through which the coupling pin passes. By this construction should one or more of the cars get off the track or turn over, the block will swing around upon its nivoting bolt, and as soon as the end of the coupling pin has slipped from the end of the flange, the swiveled bar will turn, allowing the coupling link to slip from the coupling pin. By suitable construction, when the cars are in proper position upon the track, a spring holds the block down upon the draw bar; but should one or more of the cars drop below the level of the other cars, the forward end of the block will be raised, compressing the spring and raising the lower end of the coupling pin above the flange, al-lowing the swiveled bar to turn and the coupling link to slip from the coupling pin.

BRICK MACHINE.-Henry B. Ramsey, Rockville, Ind., assignor to A.K. Stark, of same place.-This invention relates to the class of brick machines adapted for a simultaneous and continuous working and discharge of the clay. The lower end of a vertical shaft revolves in the center of the bottom of a tank attached to the frame. The upper part of the shaft revolves in bearings attached to the upper part of the frame, and to its upper end is attached the sweep or lever by means of which the power is applied. To the shaft within the tank, and at different hights, are attached radial knives or arms by which the clay is worked into proper condition for entering the molds. The lowest knife revolves near the bottom of the tank and is so formed as to force the clay through an opening in the forward part of the said bottom, made of the size of a brick. An adjustable frame is secured to the frame below the tank to support the molds. The molds are inserted beneath the middle part of the tank from one side. To a shaft pivoted to the lower part of the frame work are attached arms which project upward and press against the rear side of the mold last inserted and push it forward beneath the openings into position to receive the clay. By suitable mechanism the molds may be moved forward twice at each revolution of the shaft. The rock shaft is drawn back to its place, when the arm is released, by a coiled or equivalent spring, and it may be operated by hand to move the first mold forward beneath the openings before the machine is started. As the filled molds move out upon the frame, they are removed by the off-bear-

CORNHARVESTER.-Jacob Bowers, Iola, Kansas.-This invention has for its object to furnish an improved machine for cutting and shocking corn. The wheels, are securely attached to the axle, so as to carry the said axle with them in their revolution. The forward part of the platform is piv oted at its rear end to the frame, so that the forward end ofithe saidpart may be raised and lowered to cut the corn higher or lower, as may be desired. The forward end of the pivoted part of the platform by suitable means is held in any position into which it may be adjusted. To the forward end of the pivoted part of the platform are attached two stationary knives, the inner edges of the forward parts of which incline from each other, to serve as guides to bring the stalks into proper position to be cut by a vibrating cutter, which is pivoted to the platform. The forward part of the side edges of the cutter are made inclined or curved, to adapt it to serve as guides to conduct the stalks into proper position to be cut, and the rear part of the side edges concaved to give them a better hold upon the stalks while cutting them. The cutter is vibrated by the advance of the machine. To the platform are attached two upright frames, between which the corn stalks, after being cut, are carried back to the rear part of the platdesigned to keep the corn stalks from falling forward while being carried rearward. Proper means are provided to serve as a reel to sweep the top parts of the corn stalks into the space between the upright frames and hold them in, or nearly in, a horizontal position. A further combination of ingenious devices removes the corn shock from the platform and sets it on the

WASHING MACHINE.-John Turner, Oakdale Station, Pa.-This invention has for its object to furnish an improved washing machine, and it consists in the two closely slotted self-adjusting racks and the vibrating lever presser, slotted at right angles with the racks. The clothes to be washed are divided, and part is placed upon each side of the presser. As the press-er is moved in either direction, the clothes in front of said presser are forced against the rack, the pivots of which enable the said racks to adjust themselves so that the clothes may be pressed evenly. As the presser retires, the clothes fall back into the water to be again saturated.

WHEEL FOR VEHICLE.-Walter D. Howell, Newburgh, N. Y.-The main body of the hub is cast with a closed outer end and with a solid ring flange for the outer edges of the inner ends of the spokes to rest against. At the inner side of the fiange is formed a ring groove to receive the inner ends of the spokes, the shoulder at the inner side of said groove being made low. The inner ends of the spokes are made widest at their extreme ends, and a ring plate is made, somewhat dishing so as to press against the edges of the said spokes. Upon the outer side of the plate is formed a circular bead, which fits into a circular groove in the side of the nut, so as when the nut is screwed up to hold the segmental plate securely in place. Putty, with iron filings mixed into it, may be placed between the plate and the edges of the spokes to give the said plate a firmer hold upon the said spokes. Upon the inner surface of the hub is formed an offset or shoulder, and in the inner surface of the inner end of the hub is cut a screw thread into which screws a tubular nut, and when the hub and nut are screwed together it will be impossible for the wheel to work itself loose or off. By this construction a chamber is left between the end of the halved nut and the shoulder, which is designed to be filled with sponge, and thus to serve as an oil reservoir, into which oil may be poured.

#### [OFFICIAL.]

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## For which Letters Patent of the United States were granted.

BEARING THAT DATE.

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IMPROVEMENT IN THE ART OF DENTISTRY .- Robert Arthur, M. D., Baltimore, Md.-The invention consists in a method of separating or spacing form. To the top bars of the upright frames are attached springs which are teeth by means of a thin abrading disk, which is rotated between them, and which completes the operation in greatly less time, with much less pain and annoyance to the patient, and in a far more workmanlike manner.

RAILWAY SNOW PLOW.-Jerome B. Hulbert and James Anderson, of Hermon, N. Y.-The invention consists, first, in making the lower part of the sides of a snow plow vertical, and the upper part of said sides backwardly ground. sloping, so as to cause the snow to rise as it is pushed laterally after passing the point, and the less compacted upper portion thereof to be turned over one side of the track. Secondly, it consists in hinging the sides of a snow plow so as to adapt it to light or heavy snows. Thirdly, it consists in the mode of combining an open front plow and screw with elevations, drive mechanism, and air forcing apparatus for compressing, elevating and discharging snow,

TERRA COTTA GRAVE COVER .- Collins C. W. Morgan, Holly Springs, Miss. -This invention consists of a terra cotta cover for graves, being in the form of an Inverted hollow cover adapted to inclose the mound, with a base resting on the ground around it, the base being a large projecting flange with a groove descending from the head to the foot, and forming a water course for conducting the water shed from the cover into a gutter at the foot to prevent it from washing the earth away around its base

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