[For the Scientific American.] THE ORIGIN OF COLD SNAPS.

One of Agassiz's oft-repeated expressions was: "Facts are stupid things unless they are made to teach some principle." While true Science consists chiefly in the discovery of laws and principles, these can be gained only by an abundant collation and a careful study of undoubted facts. Whether it was Nature's plan to make us study out the laws which govern them, we cannot say; but that a frequent observation of certain facts of meteorology has been forced upon us by the rigors of the past winter, none will deny. And while we are just recovering from the shivering and freezing which these entailed, it may not be uninteresting or unprofitable to consider briefly the meteoric principles upon which cold is produced.

The sun is the cause of all motion, from the wind, the rain fall, and the Niagara cascade to the muscular exertions of beast and man. And anomalous as it may seem, it is also the indirect cause of cold. The very heat that warms us so gratefully during these spring days melts the frozen matter and evaporates the water. Changes from solid to liquid, and from liquid to vapor, require an enormous amount of heat, which, being taken from the sun's rays, leaves the air damp and chilly. Thus the change from cold weather to warm is less sudden and enervating; and by a reversion of the same principle, the cold of fall is more gradual in its approach. Though this principle will produce a greater amount of cold than we are apt to suppose, it will not account for the cold snaps which drive us to the fire and into our furs and wrappings during the winter.

In a recentarticle in the SCIENTIFIC AMERICAN, on laws of storms, it was shown that our storms are monstrous whirlwinds covering half a continent, in which the wind, blowing from all directions towards a central point, escapes by rushing upwards, and thus diminishes atmospheric pressure. To compensate for this rise of air, there must be a descent somewhere else. As the air rises into the upper regions, it gives off into space the heat it abstracted from the earth, and its increased weight causes its return to the surface. Observations, similar to those mentioned in the article above referred to, have enabled Professor Loomis to show that, in regions of high barometer, the winds blow outwards in all directions. High barometer is often constant for days, and a week or more together, in one locality; and there the thermometer is low for about the same length of time. He attributes this to downward currents, at the center of high barometer, from the cold upper regions, and believes they are made up of air from the upward currents of low barometric centers. From this, he concludes that our sudden and long spells of extreme; glass nor iron in their composition, for they are made of cold are not due to currents from a northern latitude, but to these downward currents. There seems one difficulty in his theory here. He has shown that the storm center advances at a rate varying from 228 to 1,280 miles per day; and if air from this came down and produced a region of high barometer, from which the winds diverge in all directions, we would expect the high barometric center to accompany the storm center at about the same velocity; but instead, it sometimes remains stationary for weeks.

The Professor admits that, during the cold spells of December, 1872, and January 1873, northerly winds did prevail; but he considers these as attending high barometer, according to laws already established, and that north winds alone would not be a sufficient cause of the suddenness and magnitude of the thermal depression observed. In substantiation of his views, he cites a storm which came up from the Gulf of Mexico, choosing a southern storm so that he could find observations taken to the north of it. This reached the northern coast of Lake Ontario in three days, and on the last day, in northern Florida, the thermometer was lower than it had been on either of the preceding days at Knoxville, Nashville, Cincinnati, Louisville, and Memphis. This indicates that the cold did not come from the north or northwest, but must have descended from colder regions above. The same phenomenon prevails in the far north, even in the coldest regions ever visited by man. At Melville Island, during a strong wind, the barometer fell to 29 10, and in four days it had risen to 30.75, the highest point reached during the year. During the same time the thermometer fell from -5° to -43° , the lowest temperature observed during the year. At Van Rensselaer Harbor, the same point was illustrated. At Jakutsk, Siberia, latitude 62°, the mean temperature of January is-44° Fah. ; but on January 21,1838, the thermometer fell to -76° Fah. Dove's chart records no place on the earth's surface where the mean temperature of the coldest month is much below that of Jakutsk. And if the temperature suddenly falls 32° below the mean in the

of the increased atmospheric pressure to which it is exposed as it approaches the earth.

The increase of pressure would diminish the air's capacity for heat, and this would be given off to the surrounding air at In crate of one degree for every 320 feet of descent. This objection seems hardly conclusive, for we have no adequate means of measuring the temperature of the air in the regions from which it descends. It may lose one degree of heat for every 325 feet of descent, and still be much colder than air at the earth's surface. Dr. Woeikof gives the hight of thermometer at several places of different elovations, which it as a several places of different elovations, which it and be also and a still be much colder that he goes to show that low places are as cold as high ones. Later he says, cold may be generated on the spot by simple radia tion. This statement seems to weaken the force of his pre-vious observations; for evidently the greatest radiation mould occur in the highest regions, for there is less to obstruct it, and of course this would make the elevated regions cold-snaps are caused—except in a few cases of special local con-ditions, or in thunderstorms—by cold air descending, but rather by winds from the vicinity of the meteoric poles. It has a point of the cause of the act that the Appalachian Moun-tains are not high enough to break off the currents from the meteoric pole to the northwest of these mountains. If this theory is correct, we may conclude that the cold ari from the meteoric pole, somewhere to the west of the son's Bay, sweeping across the unobstructing lakes and prairles, is the cause of the notoriously variable temperature of Chicago. As doctors in the same line of scientific investigation of the cause of the notoriously variable temperature of chicago. As doctors in the same line of scientific investigation of the cause of the notoriously variable temperature of the cause of the notoriously variable temperature of chicago. As doctors in the same line of scientific investigation of the cause of the notoriously variable temperature of t the rate of one degree for every 325 feet of descent. This objection seems hardly conclusive, for we have no adequate ;

of Chicago.

As doctors in the same line of scientific investigation so widely disagree, our only resource is to await future developments for a satisfactory settlement of the question. S. H. T.

New Snow Spectacles.

Mr. William White Cooper, oculist, London, has devised a new kind of spectacles to prevent snow blindness. It is well known that a long exposure to the glare of the intense white of the snow in the polar regions is most harmful to the sight; to meet this difficulty, spectacles of green tinted glass, surrounded by gauze, have been proposed. These will, however, fail in practice, as the glass part of the spectacles is liable to get dim and cloudy, while the gauze and the wire, by means of which the spectacles are fastened behind the ears, will in an arctic climate become so cold that to the human skin they will have the sensation of being made of red-hot wire. Mr. Cooper's snow spectacles have neither ebonite, and are tied on to the head by a velvet cord. They resemble somewhat two half walnut shells fastened over the eyes. Their great peculiarity, however, is that the wearer sees through a simple slit in front of the pupil of the eye. The sides of each eye box are perforated with minute holes, in order that the wearer can get a side view of objects. These glasses will also prove useful to travelers by railway, inasmuch as they keep out the glare of the sun, and prevent the admission of dust into the eye. To engine drivers, therefore, they would be invaluable, especially when exposed during sleet, snowstorms, or very windy weather. They are also very agreeable when reading at night by lamp or gas light.

A New LifeBoat.

There has just been exhibited to the brethren of the Hull Trinity House, and to the principal ship owners of the port, a new patent lifeboat, patented by Messrs. Anderson and Burkinshaw, of Burlington Quay, and it is by them termed the "Reversible Lifeboat." As its name implies, it is top and bottom both alike; and if in launching, before it touches the water, it should, by the rolling of the vessel or any other cause, turn over, there are thwarts and seats running around the side just the same as there would have been had the boat gone in the other way up. Whichever side the lifeboat takes the water, when she is once afloat, a couple of flaps running the whole length will close and form the bottom of the boat, and there is provision for drawing a further flooring out, which will rest upon strong beams. The boat receives its buoyancy from a massive belt of cork, which is encased in canvas, and runs from stem to stern on each side. and forty separate airtight tanks, ten on each side of both the upper and lower parts of the boat. Still further buoyancy is obtained by large tanks at each end of the boat, but it is intended to use these latter compartments as storerooms for provisions, spirits, medicines, etc., the whole supply being protected from danage by either rain or sea water.

DECISIONS OF THE COURTS.

United States Circuit Court---District of Massa-

chusetts. PATENT CAR WHEEL, -- CHANDLER NEEDHAM VS. NATHAN WASHBURN et al

[In equity.—Before Clifford and Lowell, J. J.—Decided October,1874.] Opinion of the Court by Mr. Justice Clifford. Damages are claimed by the complainant for an alleged infringement by

It would not have benedical the complainant, as every part of the process there described is substantially the same as that set forth in the patent granted to Zadoc Washburn, which was lutroduced in evidence, and is of prior date. Two matters are then introduced into the specification of the patent in duestion, which, it is mainted, is the older of the two: 1. That the molten iron is introduced into the mold through a series of openings at the rim of the wheel, just inside the tyre, and that it flows thence to the center, carrying wava from the inner surface of the steel tyre all dirt and dust, if any, which might oncrimise prevent the welding of the parts. 2. Nothing is expressly set forth under the second head as a natter peritaining to the escribed improvement, but the patente points out what he represents as a defect in the process of the other patent, which is that the cast iron instead of lying still in the mold and forming a perfect weld, is agitated and caused to bubble by the gas generated by the molten iron as it comes in contact with the flux used in the process, whereby, as he states, the perfect in the patent to Zadoc Washburn is disclained by him in express terms. What he claims is the described method of introducing the innolen test from into the mold, through a series of holes, directly upon the inner unituxed surface of the cast steel tyre, by which a perfect union and weld of the metals are produced. Car wheels manufactured by first forming a rim of cast steel, and then heating and placing it in a mold previously prepared for the purpose, and by pouring moiten cast iron infor the mold or complete the manufacture can be regarded as the proper subject of a patent. Doubtless it may be true that the mold the iron was form erily poured into the mold at the center of the wheel, by the union or weld between the two, into one solid mass, are certainly old. Nor is that proposition denied. Nothing, therefore, but a new and useful improvement in the method or process of such a manufacture can be regarded

sists merely in comfitting an ingredient often employed in weiging steel and iron, or two pleces of iron, the court is not inclined to rest the decision en-tirely upon that ground. Nor is it at all necessary to do so, as the court, in view of the facts and oircumstances of the case, is of the opinion that it is matter of common knowledge, that iron, or iron and steel, may be success-fully welded with or without the use of flux, and that such knowledge has existed among mechanics accustomed to work at the ordinary forge, for a very long period, whereof the memory of man runneth not to the contrary. Axes, scythes, hoes, and other farming utensils were for merly made on the common avul; and it is believed that mechanics formerly engaged in manufacturing such articles know full well that flux was often omitted in effecting a weld of iron, or iron and steel. Horseshoes were made in the same manner, and many larger articles, such as plowshares and mill cranks. Differences of opinion, it is know, have at times existed among mechanics of that class upon the subject: some maintaining that flux was useful and even necessary, and others maintaining the opinion with equal earnestness and confidence. All of these suggestions, it is be-lieved, are supported by common experience and knowledge, but it is not necessary to go out of the record to dind convincing proof to the same effect. Even the compaintant, in his deposition filed in the Patent Office, testified in his cross examination that he was awater that iron and steel had been so welded, and, when asked if he knew as matter of fact that iron and steel had for a long time been welded with and without flux, stated that, it was said to have been so welded for a long time. Support to that view is also derived from one of the respondent's witnesses, in which he says that, in making four or five car wheels, they used foursprue holes and that some of them were made with flux, and some without; which statement is also confirmed by other witnesses.

(Are made with nux, and some without; which watement is also commend y other withnesses. Having come to the conclusion that the alleged improvement is not new r patentable. It is not necessary to examine the question of infringement. Bill of complainant dismissed with costs. [Jdmes B. Robb for complainant, A. K. P. Joy for defendants.]

United States Circuit Court, Eastern District of Pennsylvania.

PATENT PAPER COLLAR, -- THE UNION PAPER COLLAR COMPANY V8. HENEY J. WHITE.

[In equity.-Before McKennan, Cir. J.-Decided April, 1875.] McKennan, Circuit J.:

[In equity.-Before McKennan, Cir. J.-Decided April, 1875.] McKennan, Circuit J.: The complainants are the owners, by several mesne assignments, of a patent granted to Walter Hunt, on the 25th of July, 1854, for a new article of manufacture, consisting of a collar made out of paper aud musilu, so com-bined, formed, and manipula ted as to adapt it to use as such. This patent was dujv extended for seven years from the date of its expiration, and was reissued on the 22d of October, 1872, No. 5,109. The validity and infringe-ment of this reissued patent are the subjects of this contention. I do not think the legal presumption that Hunt was the first and original inventor of the article of manufacture for which he obtained a patent is at all shaken by the proofs in the cause. It is true that paper and musilin or line cloth were before united, and used as a fabric for maps, etc.; but this was not analogous to the use to which Hunt adapted them, nor was lifn any wise suggestive of his invention. He was the first to discover the adapta-bility of this material to a use not cognate to any to which it had before been applied, and, by appropriate manipulation, to give it a useful and practiceal "orm. He taus not only supplied the public with a new article of manufac-ture, but he demonstrated unknown succeptibilities of the material out of which it was made. This is something more than the mere application of an old thing to a new purpose. It is the production of a new device by giving a new form to an old substance, and, by suitable manipulation, making its precular properties available for a use to which it had not before been applied, thereby distinguishing it from all other fabrics of the class to which it belongs. This seems to use to involve an exercise of the inventive faculty, and, in view of the great practical benefits resulting from it, to invest the product with special patentable mert. The patent in controversy is the seventh releasue of Hunt's orginal patent. The patent in controversy is the seventh rele This practice has been strongly disapproved by the Supreme Court on more than one occasion. In Cariton 28. Boker, 17 Wall., 471, Mr. Justice Bradley remarks: "We think it proper to reiterate our disapprobation of these informations at-tempts to expand a simple invention of a distinct device into an all-embrac-ing claim, calculated by its wide generalizations and ambiguous language to discourage further invention in the same department of industry, and to cover antecedent invention in the same department of industry, and to cover antecedent inventions." Whatever reason there may be to suspect that the motive of the patentee was to give undue elasticity to his patent, still the law presumes that the reissue was granted to correct an inadvertent omission in the original, be-cause it commits to the Commissioner of Patents the conclusive determina-tion of that question, and the only test of the wildity of his action is whether he has allowed a reissue for a different invention from that covered by the original patent, or for what was not therein described, claimed, or indicated.

coldest part of the earth, the conclusion seems almost inevitable that the cold must come from the upper regions. The distinguished investigator concludes: "If this is the true explanation of periods of unusual cold in Siberia, a similar phenomenon in the United States is doubtless to be explained in like manner.'

The suddenness of thermometric changes also points with equal conclusiveness in the same direction. When, in restricted localities, the thermometer falls 18° or 20° in an hour, or, in thunderstorms, 5° or 10° in a few minutes, we are apparently shut up to the conclusion that the cold cannot be borne from the distant north, but must, be due to a down rush of cold air.

Professor Loomis makes his conclusions appear quite clear and reasonable; yet at the late meeting of the Academy of Sciences, at Washington, they excited considerable discussion. Professor Ferrel, of the Coast Survey, who is investigating the laws of cyclones, and Dr. Woeikof, of Russia, announced as their opinion, based on recent researches, that descending air would produce heat instead of cold, because is said to be produced.

On each side of the belt of cork outside the boat there are numerous life lines, which will hang in the water, so that any one falling overboard on leaving a vessel may readily gain the boat and hoist themselves on board.

Burning fron.

A Berlin experimenter has demonstrated the combustibility of iron in a peculiar manner. He takes a straight bar magnet of some power, and sprinkles iron filings on one of its poles. These filings arrange themselves in accordance with the lines of magnetic force; and however closely they may appear to be placed, of course no two of the metallic filaments are parallel, and consequently, a certain amount of air is enclosed as in a metallic sponge. The flame of any or.

dinary spirit lamp or gas burner readily ignites the finely divided iron, and it continues to burn brilliantly for some time, the combustion being, apparently, as natural and easy as that of any ordinary substance. If the experimenter with this operation stands on a slight elevation and waves the imagnet to and fro while burning, a magnificent rain of fire

The claim in the reissue which, it is urged, avoids it is as follows: A shirt collar composed of paper and muslin, or its equivalent, so united that the muslin will counteract the fragile character of the paper. Construing this in connection with the spec floation, its obvious import is that the patentee sought to secure as his invention a shirt collar composed of paper and muslim, or its equivalent, united by paster, click, or other appropriate sizing, by means of which union the fragility of the paper is the defondant infringe this parent? Hunt's invention consists of two clements or parts: First, of a collar, with reference to the materials out of which it is made, and their union, so as to secure certain qualities; and, second, of the subsequent manipula-tion of this collar, by which a smooth surface is given to it, and it is ren-tered impervious to moisture. The defendant infringe this parent? Hunt's invention consists of two clements or parts: First, of a collar, with reference to the materials out of which it is made, and their union, so as to secure certain qualities; and, second, of the subsequent manipula-tion of this collar, by which a smooth surface is given to it, and it is ren-tred impervious to moisture. The defendant manufactures and sells shirt collars made of muslin or line n contradescribed in Hunt's patent, hecause they are composed of muslin for its equivalent and paper, so united as to utilize the same properties con-templated by Hunt in the union of the same elements. But it is sought to differentiate them, for the reases that the defendant attaches a sheet of paper to but one side of the cloth, and that the collar is turned down with the collar state only burnished and exposed to view. The instreason resis upon an undue limitation of the scope of Hunt's in-rotion. In his original patent, in explaining a mode of carrying his inven-tion. It is appropriately claimed in the erissued patent in controversy, the authorized purpose of which was to prote stil tuly. Clearly the terms of tha

identity. Nor is there any better foundation for discrimination in the fact that the defendant's collars are turned down and the cloth surface only is exposed to observation. Hunt's patent is not limited to any particular form of collar, and the polishing of the cloth surface pertains exclusively to the manipula-tion of the collar, after it is made, to it it for use. It does not, in any sense, change the fundamental character of the fabric cut of which it is formed, and therefore does not affect the applicability of the first claim of the refusive.

formed, and therefore does not affect the applicability of the first claim of the refssue. The defendant also manufacturescollars entirely of paper, with patches of muslin pasted around the buttonh oles to give additional strength at these points; and these are claimed to infringe the patent. I do not think so. Munt did not contemplate any such restricted combination of paper and muslin. His collar was composed, throughout its whole body, of paper and muslin. His collar was necessary to secure and embody the properties which he intended to make a valiable. Norecould he successfully claim such a device. He did not invent paper collars, nor the application of cloth to button holes to attenetite ntime. Such re-enforcement had been long be-fore applied to buttonh oles, in leather curtains, sails, and other fabrics. It merely, therefore, the application of an old device to an analogous and well known use, for which no one could obtain a patent. The complainants are entitled to an injunction, to continue in force until the 25th day of July next, when the patent will expire, and to an account, and a decree will be entered accordingly. [George Harding for complainant.]

In Memorlam.

In Memorian. U.S. PATENT OFFICE, Washington, D. C., April 24, 1875. Hon. S. H. Hodges, who died on the 20th of this month, was appointed Commissioner of Patents by President Fillmore in the fail of 152, and re-mained as such until the incoming administration of President Pierce. In 183 he was appointed a member of the Board of Examiners-in-Chief, and remained its senior member of the Board of Examiners-in-Chief, and remany excellent qualifies of the decrased, his eminent learning, his patience, his courtey, and deep sense of justice were the most remarked. Out of respect to his memory the Patent Office was closed at 12 M. the 23d of this month, by order of the Commissioner of Patents. At a meeting of the Examiners and employees of the Office, at which the Commissioner of Patents presided, the following resolutions were rassed, expressive of the high sense entertained of the worth and talents of the dec eaged.

expressive of the highsense entertained of the worth and talents of the de-ceased: *Resolved*, That we recognize in the death of our late associate, Hon, S.H. Hodges, a grievous loss, both to the Office and to ourselves personally. His long connection with the Bureau as Commissioner and Examiner-in-Chief. his large experience in its affairs, hislaborious habits, his accurate and care-ful observation, his just and impartial judkment and unswerving integrity, all combined to make his services invaluable Our personal connection with him has been make pleasant by the kindness of his disposition and by our confidence in bim as a man-upright and beyond reproach. His removal from us by death is no ordinary event. We grieve that we shall enjoy his society and counsels and see his venerable form no more. The memory of his character and example as a true and faithful man we shall cherish as sa-cred, and the best legacy that man can leave to men. *Resolved*. That we deeply sympathise with his family in their affliction, and in testimony of ourrespect and sympathy forward them a copy of these resolutions, and will attend the funeral in a body.

Becent American and Loreign Latents,

Improved Milk Cooler.

Addison P. Myers, Prattsville, N. Y.-This invention relates to improvements in milk coolers, by which a regular flow of cold water around the pan is secured, a better support of the milk pan produced, and a tight faucet connection of pan and vat without leakage obtained. The improvements consist in supporting the vat on a longitudinal rubber-lined partition strip, and a vertical extension of the same at the partition wall between water chamber and vat, compelling the water to enter at one side of the partition and leave through a waste pipe at the other. A rubber sleeve with a top collar fits snugly around the exit pipe of the pan, and into the exit pipe of the vat, and connects the same without leakage of water.

Improved Rock Drill.

William W. Goodwin, National P. O., Iowa.-The mortises in the trimmers are so contrived, in respect of the distance from the tenons, that the lower gib will press down on the lower end wall of the mortise in the blade, while the upper gib presses the trimmers at the upper end of the mortise in them, and thus binds the trimmers firmly endwise by pressing them into the sockets, while the heads of the gibs keep the trimmers against the side of the blade.

Improved Car Brake.

Sebastian Gilzinger, Glasco, assignor to himself and Abel A. Crosby, Kingston, N. Y.-A car frame of the usual construction is provided with the common pin and link coupling. In connection with the coupling is arranged, at each end of the car, on the platform or top, a wheel and lever mechanism that is connected at one end to the coupling pin, while the other end may be placed in connection with the bell rope of the locomotive, which rope has to pass over a pulley below the lever, so as to actuate the same from the locomotive for uncoupling the drawheads whenever required in case of danger or accident. The bell rope has to be applied to the front lever of the last car; but the uncoupler may be operated also directly by the conductor or automatically by the accidental detaching of any car, so that a whole train can be brought wholly within control from any part thereof.

Improved Wagon

Improved Apparatus for Operating and Locking Switch Signals.

Smith H. Finch, care H. Moore, 7 Park Place, New York city. The levers for locking and levers for moving the switches or signals are made to work from one side to the other side of a frame, and lock and unlock the switches and signals thereby, locking bars provided with two shoulders each catching and holding the levers These locking bars have at each end a portion turned at a right angle, and through which portions are pivot bolts, upon which the bars turn. These angular portions have each a slot in their extreme ends, which engage with latches which work in slots through the frame confined by joint pins. The latches are connected together by the bars on the outside of the frame which are parallel therewith. The inner ends of the latches are curved and slotted much like the end of a wrench, and receive a staple on the levers, and thereby hold the lever in a locked position, while the bars are locked by other latches, which are thrown into the slots in the angular portions. When the other lever is unlocked, the switch or signal levers are locked.

Improved Hand Corn Planter.

John W. Cleland, Nevada, Mo.-In using the planter the handle is grasped by the hand, and, by pressing downward with the outer part of the hand, a lever will be operated to force the slide back into the seed box; then, by relaxing the grasp of the hand, the slide will be forced forward by springs, dropping the seeds into the space between the boards. The plates are then forced into the ground, and a lever is again operated, to force the dropping slide to the rearward. This movement separates the plates and allows the seed to drop into the ground. The planter is then raised from the ground, and, as it is being carried forward to the place for the next hill, the hand is again relaxed, and the seed for the next hill is dropped into the space provided. The principal advantage of the device is that but one hand is required for its manipulation.

Improved Horse Collar.

Thomas Cheal, St. Paul, Minn.-This is a wooden horse collar, con sisting of two back pieces hinged at top, front pieces beveled to receive the hames, and a padding secured between the parts. The broader back piece carries the trace away from the shoulder, so as not to bruise the same. The collar is stronger and better fitting than the common kind of collars in use, and may, with suitable iron bindings, be used advantageously for the heaviest work.

Improved Detachable Ash Pan for Stoves,

Albert T. Bleyley, Conception, Mo.-A perforated bottom and drawer extends under the entire stove, in addition to the ordinary stove grate, so that the coals which drop from the stove grate will rest on the bottom, while the ashes will pass through into the ash drawer. When the grated bottom and drawer are intended only for the hearth, the hearth is made on a level with the bottom of the stove.

Improved Insertable Savy Tooth,

Erasmus Smith, Norwich, N. Y .- The saw plate and the tooth wedge are provided with openings, arranged with the joint of wedge and plate diagonally, one portion in the wedge and the other in the plate, so as to allow the said wedge to be tightened against or loos ened from the tooth by keys.

Improved Hay and Grain Elevator.

Thomas Powell, Stockton, Cal.-Two sections of netting are at tached to stretchers of wood. The stretchers connect the sections together by hooks and eyes, also by a revolving hook, which has a crank for turning it by a trip cord, for unlocking the sling. This crank is held fast by a spring catch until it is required to unlock it. The sling is spread upon the bed of the wagon to be loaded, with the ends so disposed that they can be connected to the derrick hook when the load is to be removed. After the load is removed and laid on the stack the two parts of the sling are unlocked by the trip cord, so as to disconnect and pull out from under the load, and leave it when the derrick chain is hoisted.

Improved Preserve Can Holder.

James Henry Winslow, Lynn, Mass.-This invention consists of a pair of rubber-lined clamping jaws, with the contrivance for opening and closing them and holding them closed; also, with clamp screws for detachably connecting the clamping jaws to a table or other support. The whole is contrived and adapted for holding glass fruit jars while screwing the covers on or off, and the holder is arranged so as to hold jars of different sizes.

Improved Carriage Spring.

William F. Dusenbury, New York city.-The wooden part of the side bar is made shorter than the space between the cross springs of the wagon, and to it is secured a steel spring, which is connected with the ends of the cross springs. A rubber block, through which the end of the spring passes, is placed in the hook of the cross spring. The ends of the springs and the rubber blocks are then secured to each other by a bolt. The rubber blocks prevent the springs from coming in contact with each other, and thus prevent wear and rattling.

Improved Bottle.

Lewis F. C. Schmidt, Pittsburgh, Pa.-In the packing of glass bottles for storage or transportation, whether they are filled or empty, it is e sential that they be packed snug, and so that they cannot move about. To facilitate such packing, the bottle is made long and tapering from the bottom upward; and a heavy ring surrounds the bottle at or near the bottom of the neck, which outer surface of the ring is equal to the diameter of the body of the bottle.

Improved Drill for Drilling Metal.

John B. Shaw and Simeon H. Lucas, Chicago, Ill.-This improved drill for drilling holes in metals is so constructed that it may be used for forming a small and a large hole, that it will not clog, and will enable oil to be introduced to the point of the drill without being wasted upon the chips. In the opposite sides of the inner part of the drill are formed two grooves, the outer parts of the sides of

Improved Car Stopper and Starter.

Absalom B. Sharp, Plaquemine, La.-The object of this invention is to utilize the power employed to stop a railway car by using the same to start the car. It consists in a rack which is made to mesh with a pinion upon the axle of the car wheel by means of a hand lever and crank shaft, the said rack being attached to a framework that compresses a spring to form the brake. The framework is provided with pawls which may be made to engage, through a second hand lever, with ratchet wheels upon the car wheels, and the said pawls are located upon the opposite side of the axle from the rack, so that, after the pawls are applied and the rack released from the pinion, the pressure of the spring is shifted to the opposite side of the car axle, and the carurged forward in the same direction in which it was going previous to applying the brake.

Improved Stereoscopic Print Cutter.

Thomas W. Smillie and Albert Siebert, Washington, D. C.-This invention relates to novel means for cutting, by machinery, stereoscopic pictures, which are taken in duplicate and require to be separated, trimmed, and reversed in position. It consists of two pairs of dies, intervaled and operated simultaneously by a treadle mechanism, together with holding springs, gages, and means of adjustment. It is found in practice to do its work rapidly, with great uniformity, and with but little labor to the operator.

Improved Gate Latch.

John L. Giessler, Clinton, Iowa.-This invention relates to an improvement upon the ordinary gate latch which is now so frequently opened by animals, and consists in so arranging two latches that both must be simultaneously operated in order to allow the gate to be opened.

Improved Car Coupling.

John Hardey, East Saginaw, Mich .- This consists of a drawhead which is provided with a suitably guided coupling pin, supported in raised position ready for coupling on a sliding plate operated by a slotted elbow lever, which is pivoted sidewise at suitable hight to the coupling pin, and acted upon by a band spring. The action of the link on the pivoted elbow drops the pin and couples the link, whose horizontal position for coupling is produced by end notches and shoulders of the elbow lever bearing thereon.

Improved Mechanism for Operating the Adjusting Screws of Rolls.

John Sharpless Worth, Coatesville, Pa.-This is an improved spanner, which may be readily reversed and adjusted to work both screws at a time or either singly.

Improved Apparatus for the Manufacture of Coke and Illuminating Gas.

John T. B. Bennett, Birmingham, England.-The ovens in which the coking is to be effected are arranged in connection with gas retorts, so that, by means of stop cocks and dampers or valves, communication between the said coke ovens and gas retorts may be opened and closed and controlled. Around the gas retorts is a channel through which the heated air and products of combustion from the coke ovens may be caused to circulate and heat the said gas retorts. During the first stage of the coking process, the heated air and products of combustion from the coke ovens are made to circulate around the exterior of and heat the gas retorts. When all arc sufficiently heated, air is shut off from the said coke ovens. The heat of the coke ovens and their contents then causes the coking process to be continued, the volatile matters given off now being unburned in consequence of the exclusion of air. The volatilized matters are made to pass through the heated gas retorts, which are charged with gas-producing material, and thus are resolved into permanent illuminating gas, which mixes and passes off with the illuminating gas produced from the materials in the said gas retorts.

Improved Cork Sole for Shoes.

Charles Thackerey, New York city, assignor to Barrows & Boyd, same place.-The cork is secured in a die-cut box by some adhesive substance. The unbroken continuity of the box overcomes the objection to free ends-that they work loose-while, as a middle sole, it can be sewn by a machine with great facility.

Improved Cotton Seed Drill.

Henry Steckler, Jr., New Iberia, La.-This invention relates to an improvement in the class of cotton seed planters whose dropping wheel is operated by a bevel gear with a wheel which travels on the ground either in front or rear of the seed hopper. The dropping wheel is provided with a series of holes near its edge, and the wires inserted therein, and their ends projecting, to serve as teeth to draw the cotton seed out of the hopper. Improved Filter Rack.

Moritz Leiner, New York city .- This is a rack to be placed in funnels for filtering liquids into bottles or other vessels. It is adjustable as to size, and is made in the form of a hollow inverted truncated cone, placed in an ordinary funnel, and used with filtering paper placed on the inner side, which leaves a space equal to the diameter of the wires of the rack between the paper an 2 the inner side of the funnel for the escape of the air contained in the vessel.

Improved Washing Machine.

Thomas J. McWane, Versailles, Ill.—In this invention, the suds box is hung on trunnions and vibrated by means of a vertical lever attached to its side. The rubber does not vibrate, but is made vertically adjustable, to adapt it to rise and fall according to the thickness of the clothes which may be interposed between it and the suds box at any time during the operation of the machine.

Improved Spring Bed Bottom.

George L. Shepard, Columbus, Ohio.-Strips of metal form the top, made of spring material, and arc bent down inside, so as to afford relief by straightening out to some extent whenever a section is sprung down. The invention consists, also, of a mode of connecting the strips so bent down within the volute springs by a ring laid in the bent down portions, and secured by cross pieces of wire passing over it and under the top ceil of the spring, and fastened to the strips which pass over the top coil.

Sebastian Gilzinger, Glasco, assignor to himself and Abel A. Crosby, Kingston, N. Y.-This is an improved spring seat for vehicles which may be readily swung out of the way, if required, for loading, and adjusted to any desired hight above the wagon body. The invention consists of a scat hung by stationary corner braces to the ends of strong spiral spring, which are secured by their middle parts to sliding standards, which are adjustable by links and guide bands on the stationary side standards of the seat.

Improved Dental Articulator.

Charles D. Cheney, Canandaigua, N. Y.-On the lower plate is an extension, the circular edge of which is servated and enters the slotted end of a shaft, where it is confined by the pivot pin, which allows it to be raised and lowered to form any desired angle with the shaft. The shaft is a tube, and a screw works therein, the end of which engages with the serrated edge of the extension, and there by holds the plate in any desired position. A saddle on the shaft allows of the latter sliding and rotating when not held by the set screw. By suitable devices the two parts of the articulator may be placed (after being separated) in the exact position they occupied, and the upper plate may be turned in any position on the pivot rod and fastened wherever desired. The arrangement of the plates (or jaws) is such that they can be moved near each other, and thus diminish the quantity of plaster used in making the mold.

which, for about half the depth of said grooves, are parallel with each other, and with the diameter that passes through their centers. The inner parts of the sides of the grooves incline toward each other and meet at an angle of about eighty degrees. This form of the grooves causes the chips to break in pieces, and thus prevents the drill from becoming choked. Other grooves conduct oil to the point.

Improved Cultivator.

Frederick W. Tolley, Coxsackie, N. Y.-Through the ends of the curved bars of the frame are passed rods, which are kept apart by tubular washers placed upon and interposed between the curved bars. The latter and washers are pressed together, making the whole frame firm and strong by nuts screwed upon the ends of the aid rods. The draft hook is pivoted to the tongue a little in front of the forward rod. To the draft hook is pivoted a link which, when the cultivator is in working position, is hooked upon a hook placed upon the forward rod, and which, when the cultivator is in position for transposition, is hooked upon another hook attached to the tongue. The tongue is pivoted, and, with the frame, is adjustable in slotted guides.

Improved Bee Hive.

George H. Mobley, Nevada, Mo.-The bottom of the honey box is raised and is narrower than the box, to allow the bees to pass therein and up through suitable spaces.

Improved Cut-Off for Shot Boxes.

Herman C. Wey, Hiawatha, Kan.-The discharge valve or cut-off is attached to a perforated hopper bottom, and consists of an outer guide casing with a spout, and an inner turning and sliding recessed tube, adjusted by a lug and guide slot to the open and closed position of the valves.

Improved Vine Rake.

Joseph W. Dunn, Corpus Christi, Tex.—This invention consists of a forward curved fork or double toothed rake, attached by evebolt and braces to a common plow beam. The teeth pass under the vines and tear them loose from the ground, carrying them along until the rake becomes choked or full.

Improved Door Latch.

Jonas H. Crane, Schenectady, N.Y.-This door lock is constructed without the use of springs, and consists of a sliding bolt, which is operated by pivoted and horizontal toggle levers, in connection with a thumb lever acting thereon. The release of the thumb lever carries the toggle levers, by the action of the weight, instantly in a downward direction, and shoots the bolt forward.

Improved Automatic Fan.

Lorenzo D. Stamps, Galveston, Tex.-This consists of powerful clockwork mechanism, arranged in a bracket to be fastened to the ceiling and adapted to oscillate a vertically adjustable fan.