An Obscure Phenomenon in Psychology.

A few months ago a writer in this journal gave us a collection of facts illustrating the existence of what he called a "mental atmosphere." Such facts are of much more psychological importance than they are usually deemed. Indeed, most scientific writers fear to speak of them, lest censure for too great credulity be their reward.

This was long the case with mesmerism, until it was investigated by Dr. Carpenter, and then it proved a valuable means of furthering the study of mental phenomena, and led to the discovery, or at least the correct understanding, of the automatic cerebral action. This interesting function of the mind is closely connected with more recondite powers by which the brain, or rather the action of the brain, its rhythmical workings, become in some yet unknown manner in accord with workings of other brains, so as to lead to the rise of the same idea in two minds. If, with Fechner (still the best authority on all psycho-physical questions), we regard thought action as the manifestation of a series of vibrations subject to mathematical laws akin to those which govern the senses of sight and hearing, then the explanation which suggests itself to these instances of persons *en rapport*, or *clairvoyant*, is that the thought vibrations are detected by the consciousness as isochronous with those in a another mind, somewhat as a musical ear will detect concord between the pitch of two sounds, when ordinary persons cannot.

But we care less just now to substantiate this theory than to illustrate the facts for which we are seeking explanations. Two remarkable and well attested instances have been laid before the profession in the last few months, in the pages of the *Chicago Medical Journal*, in the numbers for June and September.

The first is related by Dr. George W. Kittell, of Shabbona, Ill. A young lady cut her head severely with a pane of glass, imbedding a number of small fragments in the wound. It was not attended to properly at first, and in a few months "the pieces of glass actually removed, from the crown of her head to the soles of her feet, were numbered by thousands." This looks very much like one of those aggravated cases of hysterical dementia which, in their love of self-inflicted suffering, have always been the puzzle of the wise and the wonder of the vulgar. In this wretched condition she survived from 1865 to December 1872, when death from exhaustion supervened.

The part of Dr. Kittell's description we wish to call attention to is the following:

"One curious phase in her history should be noticed. I refer to clairvoyance.

"In this case it was not produced by mesmerism, but by chloroform, and she became more and more susceptible to its influence. In the latter stages of the case, this state came on occasionally from over excitement.

"Before the accident which introduced the case, she was given chloroform for the purpose of having a tooth extracted. The doctor who administered it had not always kept that moral rectitude, in some particulars, which becometh a physician. Shortly after the inhalation commenced, she began to upbraid him for his conduct. The doctor was frightened, and accused a man, the only one beside himself who knew the circumstance, of telling. The man protested he was innocent, for he really was. When Miss Low returned to consciousness she knew nothing of what she had said, or of the occurrence she had related.

"My first knowledge of this effect of chloroform on her came in this way: After removing some glass one day, and while she was still under the influence of the anæsthetic, I was called out for a private interview. The weather being pleasant, we stepped into the orchard and sat down under a tree. When I returned she remarked 'you thought yourself very 'cute when you went into the orchard to talk; but I heard it all.' I then asked her to tell what she heard, and she related our conversation correctly. She had not left the bed in my absence, and could not see the orchard, as it was on the other side of the house. In fact, she was apparently unconscious the whole time; and when she had fully recovered from the influence of the chloroform, she knew nothing of what had been done or said. I had known her to say strange things while anæsthetized, but till now had not understood it.

"Sometimes, after having taken chloroform, she would rise in her sleep and go miles, in her night clothes, to find articles that had been lost. She never had any knowledge of these nocturnal expeditions in her waking state, except the proof afforded by the presence of missing articles, and the condition of the bed in the morning.

"Her clairvoyant state was another existence to her. When in this state she would tell anything that had transpired at other times, while in the same condition. I have given her chloroform in enable her to find lost articles, which she could always do. Some little thefts, and sometimes bigger ones, were made known in the same way.

"When very sick she was often delirious, sometimes for hours, which led many people to suppose she was insane, and some said she was possessed of the devil. It was from this fact that the horse thieves escaped punishment; many would take oath in court against her sanity. She was the principal witness; and popular prejudice, backed by some physicians for no laudable purpose, carried the day.

"To relate all that she said and did, while clairvoyant, would make a long and interesting chapter. The most interesting occurrences of this kind must be omitted because of their length. If any doubt is entertained as to the truth of these statements, any further proof desired will be gladly furnished by the author."

An example, not dissimilar in kind, but furnished by a young man in perfect health, is given in the number for September, by Dr. Henry M. Lyman, Professor of Chemistry in Rush Medical College, Chicago. The person was Mr. Brown, known as the "mind reader," twenty-one years of age, sound in body and mind. He exhibited his peculiar power by finding, blindfolded, any object which Dr. Lyman secreted in an adjoining room. To do this, he was obliged to be in physical contact with the person who had secreted it. He did not pass into a condition of trance, but claimed to be guided by a sort of subjective appearance of light. His power varied with the temperature and with his own feelings. It depended also on a distinct knowledge of the whereabouts of the article, on the part of the person who conducted him.

Though neither of these examples present novel features, they are valuable because carefully established by competent observers. The deductions from them clearly include the position that the function of cerebration can be stimulated and directed by other means than those ordinarily considered exhaustive. The thought vibrations are not bounded by the superficies of the body, nor by the peripheral extremities of the nerves, but are continued beyond in space, doubtless under some law of decreasing intensity, until, perhaps, they are metamorphosed into some other form of motion, or else become extinguished.

Certain brains, usually but not always in abnormal conditions, are impressed by these vibrations with sufficient force to cause the cerebral action to rise to the level of conscious thought, and hence this singular power of "reading the thoughts of others." The physiological laws which are here involved are those especially which explain the phenomenon of consciousness; and as these are of very extended bearing in other branches of psychology, we shall defer entering upon them until some future occasion.—*Medical and Surgical Journal.*

The New Daily Newspaper.

Inter Ocean, of Chicago, congratulates itself on its already large daily circulation, having increased 25,000 copies during the past ten months, and adds that its regular edition fills eighty large mail sacks. Our contemporary modestly disclaims the honor of its success and virtually ascribes it to the favor of the people; but it seems to us, at least so far as our own experience extends, that the people are not in the habit of converting journalistic enterprises into success unless there be overwhelming reasons, which in fact prevent their doing anything else. Hence, even at the risk of offending its modesty, we are obliged to take issue with *Inter Ocean*, and to assert that, unless it had been edited and managed in the very admirable manner which has characterized it in the past and at present, its popularity might still be an affair of the future. At all events, we congratulate our contemporary upon its prosperity, and cordially wish it the brilliant career to which, from its excellence as a journal, it is fairly entitled.

DECISIONS OF THE COURTS.

United States Circuit Court---District of Massachusetts.

RUBBER WRINGER PATENT.—JAMES B. FORSYTH *vs.* CHARLES M. CLAPP *et al.*

SHEPLEY, *J.*:

Without at this time stating the conclusions to which the court arrived in relation to several questions presented in this case, it will be sufficient for the disposition of the cause to state the decision of the court upon the question of infringement. For a proper consideration of this question, it is necessary to consider the state of the art at the time of the alleged invention of Forsyth.

Rubber rolls for wringers were first made in the form of tubes or hollow cylinders, and expanded on to a plain shaft. Then attempts were made to secure the roll more firmly to the shaft, first by winding the shaft with wire and afterward with twine. An effort was made to secure a more lasting union to the shaft by forcing the tube upon a heated shaft. Next followed a mode of making the shaft itself of two or more parallel rods. The rubber rolls first made with a number of holes corresponding to the number of rods were forced on to these rods which were then connected at their extremities. Canvas was also interposed between the shaft and the roll and cemented to both. Various other devices appear to have been resorted to for the purpose of fastening more firmly the tube to the shaft. The purpose of all of these inventions was to make a more perfect connection of the elastic roll with the metallic shaft.

The difficulty which Forsyth thought he saw, and which he claimed had not been obviated by any of the other devices, was not so much the separation of the roll from the shaft, at the lines or points of connection, as the tendency of the strain on the rolls when in use to a destruction of the body of the roll itself. His theory was that, while the connection, of the shaft with the homogeneous body of the roll constricted on to the shaft, was sufficient for all practical purposes in the use of a wringing machine, the real difficulty to be overcome was that the particles of rubber in contact with the shaft separate and tear away from the rest of the rubber composing the body of the roll. He acted upon the hypothesis that, while the various connections of the roll with the shaft were sufficient to withstand the strain, a portion of the body of the roll would break away from the portion retaining its connection with the shaft by a process of disruption or rending asunder of the body of the roll itself. He commenced, thereupon, a series of experiments, the object of which was to substitute for the homogeneous rolls in use a roll with a tougher, stronger, and less elastic substance in the interior than in the exterior portion of the roll. After trying various methods to accomplish this result by the addition of fiberous or other non-elastic material to the stock of which the interior of the roll was composed, he finally constructed a roll with fiberous material arranged in the interior portion of the tubular roll in a manner which, in an expression proximately descriptive, he calls radially. A sheet of cloth, with a thin layer of vulcanizable compound on each side of it, is first cut into long strips, "bias" or diagonally across the threads or fibers of the cloth. Several of these long strips are placed upon each other and pressed together until the surfaces of rubber or vulcanizable compound are cemented and permanently united. The sheets thus formed are cut into strips or bands of suitable width to admit of their being easily wound on a mandrel, or the shaft of a roll, in such a manner that the fibers of the cloth will radiate from the mandrel or shaft. As shown by the drawing accompanying his specification, it is obvious that each thread would thus extend from the interior to the exterior of the fiberous portion of the roll in a curved radial line, the threads crossing each other, and such threads being nearer together at the core or axis, and separated further from each other as the distance from the core or axis increases. The roll is then made up to the desired size by winding rubber sheets around it coated with cement, when it is placed in molds and subjected to the vulcanizing process, the rubber in its soft and plastic state filling up all crevices around and between the layers and incorporating the parts together. In this way it is claimed that "*the tenacity of the roll and the degree of adhesion of the parts are much increased*, and the position of the fiber is better adapted to resist any tendency of the roll to become loose and turn on its shaft when subjected to a strain."

Charles McBurney had invented and manufactured at the works of the Boston Belting Company a tube substantially, if not precisely, like the tube of Forsyth. No appreciable material distinction can be discovered between the modes of making the McBurney and the Forsyth tube, or in the tubes themselves when made on a mandrel. McBurney's tubes and their mode of manufacture are represented by exhibits ten to fourteen, inclusive. These tubes were made of all sizes, from three quarters of an inch to an inch and a half thickness of tubing, and sold in tubes to consumers. The purchasers cut them in sections or rings for stuffing boxes. Such a tube constricted on to a shaft would be Forsyth's roll. Forsyth does not describe any particular mode of connecting the tube with the shaft. He leaves that to be effected by any of the old and well known processes in use. All that can with any show of reason be claimed for his roll is the combination of an old tube with an old shaft in a mode which was old to accomplish a new and useful result.

Treating it as a valid patent for this new combination of an old shaft with an old tube by old means of connection, for the purpose of considering the question of infringement in the light of the state of the art as existing when he made his roll, we now proceed to examine the construction of the Moulton roll as actually made and relied upon as an infringing device.

The Moulton roll, as manufactured by the respondents, was made by applying transversely to a sheet, or between two sheets of vulcanized rubber, a layer or range of strands of fiberous material and cutting this sheet into ribbons of the desired width at right angles to the length of the strands. These ribbons are folded in the center, and a metallic wire is inclosed in the fold and wound spirally about the shaft, under great torsion, from end to end between the journals, the wire being fastened to the shaft at each extremity. A cylinder or sleeve of rubber is applied over the surface, and the whole is subjected to a vulcanizing process until the whole mass of the roll is thoroughly compacted together. The wire is so tightly wound under pressure that it, in fact, becomes a part of the shaft. The fiberous threads are, in fact, loops which pass into one orifice and out at another in the metallic shaft, their ends extending strictly radially into the body of the roll.

There is a radical and obvious difference in the function of the fibers in the two rolls. Their similarity consists in the fact that the fibers in one are arranged in curved radial diverging lines, extending in a direction toward the periphery of the roll, and in the other in radial lines extending in the same direction. In both of them the effect of the fibers is more or less to diminish the elasticity of the interior portion of the resilient roll; but in the Moulton roll, as made by the respondents, not to any material or scarcely appreciable extent. Their difference consists in the function they perform. The inner ends of the fibers in the Forsyth tube touch or nearly touch the shaft. They do not fasten the rubber compound to the shaft, or aid in fastening it. The ends of the fibers themselves are not fastened to the shaft except so far as they are cemented by the vulcanizable material. The vulcanizable material holds the ends of the fibers up to the shaft instead of the fibers performing that function for the vulcanizable compound. The inner ends of the fibers in the Forsyth roll were attached to the rigid portion of the roll resting upon the shaft, and the outer ends extended from this rigid portion toward the circumference of the roll, thus tending to secure the "adhesion of the parts" of the roll to each other, at which he aimed, as well as to limit the mobility of the rubber into which they extend. If McBurney's tube, or Forsyth's, be constricted upon a shaft which is too small, or insufficiently cemented or connected to the shaft by any of the then existing modes of connection in an imperfect manner, so that the shaft turns in the tube, that result would not be owing to the fact that the fibers of Forsyth failed to perform perfectly their function of confining the rigid portion of the roll to the more elastic portion of it, and of limiting the mobility of the rubber in which they are buried. So, when the roll is subjected to strain by the passage of the sliver of cloth between the rolls of a wringer, causing the outer surface to be compressed in one place and expanded in others, the fibers in the inner portion of the Forsyth roll do undoubtedly tend to prevent the body of the roll from being separated from the shaft; but they do not effect this result by reason of their attachment to the shaft preserving the connection between the shaft and the rubber, but by reason of their acting at the same time to preserve the form of the inner and more rigid portion of the tube, and keep up the adhesion of such parts with the outer portions where the mobility and resiliency is greater. But perfectly as the fibers may perform this function, a tube imperfectly cemented to the shaft may still, for that reason alone, turn on the shaft in the Forsyth roll. Now, the loops or bows in the Moulton fibers enter the shaft, and the ends of the fibers extend like "staples" (which they resemble in form) into the body of the roll, for the purpose of securing the interior of the resilient body to the shaft. The fiberous loop is to be taken as a whole. The parts of the fibers which extend from the interior toward the exterior of the rubber roll would not operate to confine the rubber to the shaft without the loops. By none of the methods in use at the date of Forsyth's patent, of making the connection between the shaft and the rubber, was the connection made any more tenacious by presenting the ends of the fiber to the surface of the shaft. In some of them the presence of the ends of the fibers lessen the adhesion by as much as it displaced the rubber. The principal function of the fibers in the Forsyth tube, as before stated, is to make the inner portion of the tube more rigid, and to tie the more rigid to the more elastic portion of the tube. Now, in the Moulton roll, as manufactured by the respondents, the principal function of the fiberous loops is to tie the rubber to the shaft, and they do *not create any material rigidity* in the interior portion of the tube. The method of fastening in the Moulton roll is an inseparable part of the roll itself, being necessarily constructed and built up with the roll and constituting the inner portion of the roll. It is not adaptable to Forsyth's tube, nor is Forsyth's tube capable of having Moulton's fastening applied to it. Because Forsyth borrowed from McBurney his method of constructing the interior of a tube with fibers of *cloth* arranged in radial curves, it would be the hight of injustice to allow him to monopolize any use of fibers for any purpose whatever in a wringer roll, if the ends of the fibers extended in a radial direction into the body of the roll. His reissued patent, examined in the light of the invention described in the original patent, if valid, must be limited to such a mode of introducing the fibers of a *woven* texture radially into the tube for the purpose indicated, without regard to the mode of fastening to the shaft.

The court will look beyond the mere form of words in the claim of a reissued patent; and even if, on the face of the reissued patent, it does not embrace anything not described or suggested in the original, nevertheless, the court will ascertain whether there is any substantive invention adequate to support a claim ingeniously worded, not so much for the purpose of describing what the patentee really invented as of grasping within its terms some contrivance not within the knowledge or contemplation of the patentee, and for that reason, not by reason of inadvertency or mistake, not embraced in the claims of the original patent.

Comparing the two rolls, as we have done in some more essential particulars, and without recapitulating other points of difference, enough has already been stated to show that, so radically different is the structure of the rolls, and the function of the fiberous material, and its mode of operation, that the Moulton roll, as manufactured by the respondents, is clearly no infringement upon anything secured to Forsyth by his reissued patent, even giving to the invention claimed in that patent the fullest scope claimed for it in the evidence of Forsyth himself and the expert testimony introduced by him.

Bill dismissed.

[*William Whiting* and *James E. Maynadier*, for complainant.
Benjamin R. Curtis and *George L. Roberts*, for defendants.]

Recent American and Foreign Patents.

Improved Cigarette Machine.

Joseph De S. Ruiseco, Paris, France.—In using this machine, the tobacco is placed in a receiver above a distributing apparatus, which causes a gaged quantity of tobacco required for a cigarette to drop down to a compressor beneath, by the compressing action of which the tobacco, being rolled up is inserted afterward into a paper tube ready to receive it, by means of a peculiar device. The paper sheets are laid into a rectangular box of the like section to the surface of the cigarette paper. A piston is constantly acting on the heap of sheets, and compels them to lean against a plate which is called "a hand," forming one end of the box, and intended to catch them one by one, and carry them to the rolling rod, whereby the same are formed into tubes. The paper sheet is rolled up within a cylindrical tube or mold, split through one of its generating lines, which split one edge of said sheet enters, and is caught by the rolling rod, that is set rotating within the said mold. The lower end of the rolled up sheet is, together with the mold, carried up to the compressor containing a roll of tobacco which is then, by another rod, driven into the paper tube. The mold moves anew and presents the rolled sheet containing its tobacco, and having its lower end folded up, to the action of the upper end folders, when the cigarette is completed, and the mold returned to its starting point, or under the rolling rod. On its entering the mold, the rod drives out the made cigarette, and gets hold of a new sheet, which undergoes the very same operations as the foregoing one. From what has been said, the making of a cigarette consists of three different operations, effected simultaneously with three different molds, so as to obtain a threefold speedy manufacturing action. The first operation consists in taking a sheet, rolling it, and folding the lower end thereof. The second operation consists in introducing the tobacco into the paper tube thus formed, and the third and last operation consists in folding the upper end.

Improved Spring for Chairs.

William T. Doremus, New York city.—This invention has for its object to furnish an improved spring for use upon articles of furniture, which shall be readily adjusted to give it any desired tension. The invention consists in an improved spring, formed by the combination with each other of the two rubber blocks, between which is placed the middle part of a U shaped bar. Another U-shaped bar is passed between the arms of the bar above mentioned, and thus passes around both the rubber blocks. A yoke passes along the upper side of the upper block, and the various parts of the spring are connected and held in place by two bolts which pass through the yoke through notches in the ends of the rubber blocks and through the middle part of the U bar. By this construction, by tightening and loosening the nuts of the bolts, the tension of the spring may be regulated as required. Suitable construction adapts the spring for use in connecting chair seat to its pedestal.

Improved Harrow.

Milas K. Young, Glen Haven, Wis.—This invention consists of a coup of pulverizing bars in front, four, more or less, bars with knives or tee behind them, and a wide pulverizing bar behind the toothed bars, all connected together a few inches apart by chains, to be drawn sidewise over the surface. The toothed bars are arranged obliquely to each other to give side draft to the teeth or cutters, to some extent. The knives incline from the front backward so as to rise upon the clods, etc., and cut them by pressing downward; but they can be made to point forward and downward be used like a colter by reversing the bars.

Improved Means for Propelling Vessels.

John O'Neil, New York city.—This invention relates to improvements the class of propellers formed of oscillating paddles; and it consists, chiefly, in the arrangement of the upper pivot for the slotted stems of the paddles to shift forward or backward of the vertical plane of the crank, so to hold the paddles in such manner that they dip vertically into the water and thus save the loss of power due to beating it obliquely.

Improved Governor for Steam Engines.

Carl Robert Rungvist, Stockholm, Sweden.—This invention consists, more particularly, in the use of an oscillating ring or plate, or of a combination of several parts, which are more or less symmetrically placed around a common center of support and gravity. This plate or ring is kept in continuous oscillation, so that any point on a line drawn from the center of gravity, at right angles with the plane of this plate or ring, will describe a circle in space. Various applications are made of this principle, the following of which appears to be the simplest: The disk is mounted by a universal joint upon a hollow support, through which a shaft carrying the three arms and buttons is fitted, a spring crowding said pins against the plate, and serving as equivalent for a weight. A pinion hung loose upon the shaft, meshes into a toothed segment, that is mounted upon a weighted crank lever from which the connecting rod extends to the valve. When the speed of the engine is increased, the increased friction on the buttons causes the loose pinions to act upon a lever in such manner as to move it to more or less shut the valve.

Improved Trimmings.

Welwood Murray, New York, city.—This inventor has patented three inventions of similar nature. The first consists of a trimming for dresses and other articles of wearing apparel for ladies, composed of a strip of muslin, lace, silk, or any other suitable textile fabric, with cross plaits arranged in groups of, say, four or five (more or less) plaits in a group, and plain portions between the plaits of about the same width as the groups thereof. The second invention consists of a reverse box-plaited and puffed trimming for dresses, etc., in which, by reason of the plaits of one side being made midway between those of the other side, they have the form of an ordinary box plait at one margin of the trimming, separated into two members at the other margin, and merged into the two adjacent box plaits thereat. The machine which is used for making this trimming consists of a pair of plaiting rollers with puffing teeth or formers in one, and sockets or dies in the other, and four plaiting blades for plaiting the cloth and pressing the plaits between the rollers. The third invention consists of a reverse side plaited trimming in which the plaits are folded in opposite directions at the margins, and, when desired, a puff is formed between the plaits at the edge. To make this trimming a pair of intermittingly rotating rollers is used, with puffing cogs or teeth, when the trimming is to be puffed, combined with a pair of folding blades or knives and a feeding guide.

Improved Car Coupling.

Warren B. Snedaker, Syracuse, N. Y.—A coupling hook is pivoted in the drawhead, so that it turns freely on a pivot rod. The long limb of this hook forms the coupling pin, and when the car is uncoupled is in nearly a horizontal position. When the cars come together, the end of the link strikes the center of the hook, which throws the long limb to an upright position. Before reaching this position, its end strikes the underside of a hinged cover and raises it so as to pass a shoulder. The cover drops by its own gravity, and confines the hook, so that the shoulder forms the abutment against which the link pulls. To uncouple the cars, the cover is raised by means of a chain. A forked weight bar is pivoted at its rear end, and its weight is brought to bear upon the short limb of the hook, by means of pins, to keep the hook and bar steady, and in position before coupling, or when the hook is turned down. The forks of this bar also drop upon the end of the link, and hold the link in a horizontal position, so that it is unnecessary to go between the cars to guide the link when coupling the cars together.

Improved Milk Cooler.

James Pearl, Lawrenceville, N. Y.—A water chamber is arranged on a frame by covering it with a layer of sheet metal, painted on both sides to resist the action of the water thereon. The water course is produced by longitudinal partitions, which connect by apertures at alternate ends, so that the water is compelled to take a circuitous course through said chamber. The cold water passes around the partitions, and is conducted off through an exit pipe. Another sheet of metal, painted on both sides, is placed on top of the water chamber, and attached to the main frame. The milk pan is placed on the cover, being cooled as readily as by being directly in contact with the water, zinc especially keeping the water cooler, and preventing the corrosion of the bottom of the milk pan. The milk pans are thereby kept dry, and last a great deal longer than when placed directly on the water. The top cover forms, also, a table, which allows the use of smaller pans, according to the quantity of milk obtained, keeping also butter and other articles cool, as they may be set thereon in any vessel.

Improved Automatic Hatchway Guard.

George E. Berry and Frank C. Pingree, Detroit, Mich.—This invention consists of a gate arranged to slide up and down in the posts or doorway of the elevator, and connected by cords running over guide pulleys with a tilting lever. The latter is moved by a pin on the upper end of the elevator carriage, and caused to raise the gate out of the way when the carriage comes up to the place for unloading and loading. When, by the passage of the carriage to a higher floor, the gate is allowed to fall, the descent is regulated by a pin on the lower end of the carriage, which passes above the lower end of the lever just before the upper pin escapes from the upper end. If the carriage descends without the upper pin passing above the lever, said pin regulates the descent. The gates closed below the carriage are opened by the lower pin on the carriage, and their closing is regulated by the upper pin.

Improved Curling Iron.

Joseph S. Morgan, Brooklyn, N. Y.—The object of this invention is to produce an improved curling iron, which is adapted to be conveniently used on every gas or other flame, keeping its polish and surface uninjured, and perfectly clean for use, and being easily handled with one hand, while the other curls the hair on the iron and manipulates it in the proper manner. This invention consists of a hollow metal tube, with a double elbowed handle applied to its larger conical base, which is provided with air channels for carrying up the flame to the full length of the iron, and also with diametrical side recesses having vertical openings, by which the extinguishment of the flame on the burner is prevented.

Improved Box Clamp for Tobacco Presses.

Thomas I. Robertson, Madison, N. C.—This invention consists of a clamp formed of two blocks, made of hard wood, notched across the grain upon their inner sides, and held together by two or more bolts. The ends of the blocks at their inner edges are rabbeted to form grooves to receive the screw posts. To the outer forward corner of the upper side of the rear part are secured plates, and suitable arrangements are provided so that the rear part will not be pushed back out of place while the clamp is being manipulated. The straps are arranged to prevent the parts from being worn by the heads of the bolts.

Improved Foot Warmer and Improved Artificial Stem for Cut Flowers.

John B. Craig, Perrysville, Pa.—This invention is an improvement in the class of portable heaters consisting of a metal case containing a block of soapstone or other material, which is removed when required to be heated. The invention consists in an arrangement of ribs and pins for supporting the block and holding it in place on the cover of the case. The pins prevent the block moving about in the box when the latter is being handled, and the ribs keep it from coming in contact with the cover, and thus unduly heating the same, thereby causing injury to the floor. The same inventor has also devised an artificial stem for cut flowers. It is the present practice of florists to stem flowers by attaching them to wooden splints by means of wire or thread. The improved device is formed of a wire, shaped spirally into the form of a hollow inverted cone, which is provided with a shank. To attach the device to a flower, the stem is drawn down through the coil until the latter embraces the base of the calyx, when the cone is compressed by slight pressure between the thumb and finger.

Improved Wheel Plow.

Fred Hasbrook, Stokes' Mound, Mo.—This invention has for its object to improve the construction of the wheel plow for which letters patent No. 138,839 were granted April 29, 1873. The invention relates to an arrangement of a rocking bar and pivoted rod in connection with the tongue and beam of the machine, for the purpose of adjusting them at certain angles to each other. By this construction the chain braces, in drawing the sulky, tend to press the forward end of the plow beam downward, and thus cause the plow to run deeper in the ground.

Improved Cutting Attachment for Sewing Machines.

William H. Sample, Albany, N. Y.—The object of this invention is to furnish an improved cutter attachment for sewing machines, by which fabrics of all kinds may be cut simultaneously with the stitching, and at suitable distances from the line of stitches, by the action of the machine. The instrument may, with slight variation, be attached to nearly every sewing machine, and consists of two upright arms, one of which is attached to the guide casing of the needle bar, and the other is connected loosely with the main arm of the sewing machine. The stationary arm carries at its lower end a cutter blade, which, together with a pivoted cutter blade operated by the reciprocating arm, cuts the fabric as the same is fed by the machine to it and the needle.

Improved Propulsion of Vessels.

George N. Jones, Philadelphia, Pa.—This improvement consists in propelling vessels by the alternate action of steam pressure and a vacuum, respectively operating and formed in a cylinder having a single orifice which is in communication with the water wherein the vessel floats, whereby the quantity of water in the cylinder is expelled and the same or an equivalant quantity readmitted in continuous succession through the aforesaid orifice. Thus no supplementary tube or passage is required to supply the steam and vacuum cylinder with the water to be expelled, but the inflow and outflow occur at the same point. The invention further consists in a valve and float mechanism connected with the cylinder, whereby the admission of steam is automatically regulated, as the water is expelled and admitted, thereby securing a proper and efficient action and allowing the steam pressure to be constantly applied.

Improved Automatic Lubricator for Car Axle Journal.

James Edward Bering, Newburgh, N. Y.—This invention consists in a method of automatically supplying the hot journals of a car axle with lubricating material by interposing, between the journal and a superposed lubricant holding-chamber, plugs fusible below that degree of temperature which will generate combustion.

Improved Implement for Capping Cartridges.

Henry M. Bronson, Sandusky, Ohio.—The object of this invention is to provide a convenient little instrument for capping the brass and paper shells used in the Parker and other breechloading shot guns, by which the operation can be performed in a quick, neat, and perfect manner. It consists of a tubular spring clamp, which takes hold of the caps and transfers them to the countersunk base of the shell by striking sharply the knob of a bolt with spiral spring sliding in the clamp.

Improved Accordion, etc.

Frederick Goetze and Donat Müller, New York city.—This invention consists essentially of the application of two "unisono" tuned reeds to every key of both key boards of a wind instrument in which the key boards form the sides of the bellows, as in an accordion, whereby one reed will sound by expanding and the other by contracting the bellows, and thus give the same note continuously as long as may be required. The invention also consists of sliding holders, in combination with the keyboard of such instruments, by which the bellows can be worked by the wrists of the player, thus leaving all the fingers free to work the keys, and allowing the hands to slide along the key boards, the instrument being supported at one end on the knees. The instrument thus improved is called an "aeolodikon."

Improved Slide Valve Mechanism.

Ebenezer E. Gilbert, Montreal, Canada.—The main slide valve has end tubes that slide upon closely fitting guide rods. These guide rods have rear flanges that hold them movably between guide brackets. When the friction between the valve and its seat creates wear, the valve is thus enabled to lower itself and automatically take up the wear. A clapping and disagreeable noise is prevented by the use of an auxiliary valve, peculiarly constructed, and arranged in the steam chest and over the main valve. This valve has two subjacent cavities which alternately connect with the exhaust by a vertical passage, and are separated by a partition. The steam passes through ports into and out of the tubes, to alternately force the main valve in opposite directions, and recesses, over which pass the ends of the valve, to admit steam into chambers and thence to the tubes. The object of this arrangement is to cut off the egress of steam from these cylinders in time to form a cushion to prevent their percussive impact upon the rods. In order to render the valve self-adjusting, to take up its own wear, and also to drop according to the wear that takes place on the main valve below it, an auxillary valve is provided, which becomes automatically adjustable by its own gravity, both as respects its own wear and that of the main valve.

Improved Link Guide for Car Couplings.

William Warinner and William L. D. Johnson, Creelsborough, Ky.—The bumper heads of the cars are constructed in the ordinary manner, except that their cavities are deepened, and have blocks inserted in them. The blocks have stems formed upon their inner ends which enter holes in the inner parts of the bumpers, and around which are coiled the springs by which the blocks are held forward. Upon the forward end of the blocks are formed flanges to support the pin when withdrawn. A curved frame, upon the inner sides of the side bars of which are formed grooves, receives the side bars of an inner frame. The rear end of the curved frame is hinged to the rear part of the bumper head, and its forward part is supported by a yoke, the side bars of which pass through guides attached to the bumper head. The frame can be raised and lowered, according to the hight of the adjacent car, by simply turning a screw. To the outer end of the inner sliding frame is attached a plate which, as the said frame is drawn outward, comes into such a position as to support the link in a horizontal position. A weight and cord of sufficient size are arranged to draw the frame forward as soon as released. The weight is supported by a small coiled spring, arranged to relieve the jar when the cars are run together, and the weight is drawn upward. The sliding frame is held when pushed inward by a lever pawl pivoted to the frame and held to its place by a spring. The forward end of the lever pawl projects at the side of the bumper, so that it can be readily operated to release the frame and allow it to be drawn forward by the weight.

Improved Toy Blocks for Object Teaching.

Nicholas Muller, New York city.—This invention relates to apparatus designed to facilitate the study of geometry, in the formation of geometrical figures, and to familiarize the minds of both the young and old with such figures, and also to afford recreation and amusement; and it consists in two triangular shaped blocks, made of any material and of any size, by the use of which (and no other) various figures are formed by laying them together.

Improved Standard for Stools, Tables, etc.

Samuel H. Newcomb, Port Williams, Nova Scotia.—The invention consists in an improved stand adapted to support different articles of furniture. The supporting stand consists of four curved legs, of which one is firmly connected to the central shaft. The other legs are hinged sidewise to each other, so as to fold nearly parallel to the stationary leg, and they are arranged to close accurately around the shaft. They are also provided with recesses around the shaft, and projecting lugs at their outer top ends. These lugs enter recesses of a round support which rests on the legs and binds them strongly together. A central circular aperture of the support, together with the recesses around the shaft, allow the insertion of the sockets of the different parts which are to be connected to this supporting stand. A hook of the outer folding leg closes into an eye at the lower side of the support, and prevents thereby the lifting off or otherwise disconnecting of the same.

Improved Plow.

Andrews Riviere, Barnesville, Ga.—The standard bars are set into recesses of the beam, pivoted to it by a strong cross bolt, and are connected rigidly at their lower ends so as to form a strong, rounded-off support for the under side of the plowshare. A curved brace is rigidly attached to these bars, passing up between them and through a recess of the beam, above which it is provided with perforations and locked, according to the angle of inclination under which the plowshare is set. An adjusting rod passes between standard bars along the rear of the brace and up through the beam, and is raised or lowered by a crank. Different shares may, in this manner, be attached to the plow, as necessitated by the various requirements of farming, and their angles of elevation and depression be determined by simply adjusting the fore end of the brace.

Improved Slide Valve.

William Stephens, Pittston, Pa.—The valve is truncated and wedge-shaped. The walls between which it is arranged constitute a double seat with double induction ports and exhaust. The steam enters ports at the ends of the valve, which moves far enough to open them in that way. At the lower edge the valve rests on a flat seat, and at the top it may or may not be provided with flanges to bear on the top of the seat. It is fitted on these parts so that it just wedges into the cavity between the seats steam tight. Channels are in the corners of the valve at the lower edges, and in the corners of the seat at the top, to admit steam as a check, which prevents the leaking of the valve to some extent. Such channels can also be employed limit or balance the down pressure. It is believed that the pressure on th top will be governed by the area of the cross section of the ports at the line and it can be reduced to the requisite amount for keeping the valve steam tight by such channels, admitting the steam under it. The double seats afford greater length of ports with a valve and cylinder of a given size than can be had with the ordinary arrangement. The double ports will unite in one passage in any suitable way.

Improved Packages of Powder Charges for Blasting.

Henry M. Boies, Scranton, Pa.—This invention consists in packing the powder, in convenient quantities, in long tubes of paper or any fabric or material of sufficient strength, rendered waterproof if necessary, of a proper shape and size to be used as a cartridge, and of such a length in excess of the powder inside as shall allow of its being folded into a compact form, and divided for use into cartridges of any desired length or weight. Each cartridge tube or package may be easily marked with th size, and quantity, and brand of its contents; and when it comes to the consumer, he can measure off from either end the quantity desired for a blast slide the powder away from this point, divide the tube, fold back the ends and the cartridge is ready for use, proceeding in the same way until the whole package has been used. Thus the danger of preparing the cartridge over the open keg and the liability to damage of the exposed powder are avoided, and the time and labor of making the cartridge, as well as the materials of which it is composed, are saved.

Improved Mold for Fancy Buttons.

Frederick Maass, Newark, N. J.—This invention has for its object to furnish an improved fancy button, the mold of which shall be so formed that the cover may be put on, held in place, and ornamented with cord or thread without sewing. The invention consists in the grooves formed in the outer surface of the molds, and in cords or threads in combination with the grooves of the molds, for securing the cover in place upon said molds.

Improved Drill for Well Boring.

Timothy Phillips and Joseph Golletz, Leavenworth, Kansas.—The drill is made tubular and somewhat flaring, so as to cut a hole a little larger than its body. The lower edge is serrated so as to cut a ring groove into the stratum through which it is boring, the core or central part of the cut passing up through the cavity of the drill. The upper end is rabbeted, and on it is screwed the lower end of a tube, in the sides of which are formed a number of holes to allow the water to flow out, and thus lessen the weight. In the upper end of the tube is screwed a section of pipe, and other sections may be added as the hole increases in depth. To the upper end of the drill is hinged a valve, opening upward into the tube, so as, when the drill is raised, to carry the contents of the tube and pipe with it. With this drill, it is stated, a hole may be sunk by hand to the depth of two hundred feet, and with a lever to any desired depth. This drill also enables the operator to know exactly the kind and depth of stratums through which a hole is being sunk.

Improved End Gate for Wagons.

Joseph C. Baird and Merritt Miller, Heaton, Ill.—This invention is an improvement in devices for securing end boards or gates of wagon boxes and consists, chiefly, in a lever pivoted to the gate by a link or bar, and having, at one end, claws or hooks for taking into notches in one of the side boards, and at the other end a slot to receive a staple which projects from the gate.

Improved Soap Cutting Machine.

Joseph Seibert, New York city.—The object of this invention is to furnish to soap factories and dealers in soap an improved machine for cutting the soap blocks into pieces of any required size. The invention consists of a feeding frame provided with adjustable block carriers for forcing the soap against a suitable cutting frame, on which the cutting wires are rigidly applied by a stretching device, which consists of a supporting piece which carries a crank shaft. The wire is wound upon the shaft by turning it with a small crank, and retained in stretched position by a ratchet and pawl.

Improved Churn Dasher.

George Ridler, Rickardsville, Iowa.—This invention consists in an improved form of churn dasher formed of bars crossing each other, which are made V-shaped with V grooves in their under side. It was fully illustrated and described on page 338 of the current volume of this journal.

Inventions Patented in England by Americans.

[Compiled from the Commissioners of Patents' Journal.]

From November 8 to November 13, 1873, inclusive.

CONDENSING MILK, ETC.—G. Borden, White Plains, N. Y., *et al.*

GAME.—G. S. Lee (of Worcester, Mass.), London, England.

GAS.—G. W. Morris *et al.*, Baltimore, Md.

LOOM.—E. Oldfield, Norwich, Conn.

PAPER BAG MACHINE.—L. C. Crowell, Boston, Mass.

PRESERVING MILK, ETC.—G. Borden, White Plains, N. Y., *et al.*

RAILROAD BRAKE.—W. M. Henderson, Philadelphia, Pa.

SPADE BAYONET, ETC.—F. Chillingworth, Springfield, Mass.

NEW BOOKS AND PUBLICATIONS.

ORIGIN AND METAMORPHOSES OF INSECTS. By Sir John Lubbock, M.P., F.R.S., Vice Chancellor of the University of London. With numerous illustrations. Price $1.25 London and New York: Macmillan & Co.

The author of this book is the head of a large London banking firm, an chairman of the Committee of the Bankers' Clearing House, besides f filling the duties of the positions mentioned in the title; and he yet fin time to pursue, to its uttermost details, one of the most complicated an voluminous branches of natural history. His numerous contributions to the literature of entomology have been read before the Royal Society, the British Association, the Ray Society, and many other learned bodies. This treatise, now issued in an elegant form, with numerous engravings, was originally published in the pages of *Nature*.

HOW TO MAKE MONEY BY PATENTS. By Charles Barlow Third Edition. London: E. Marlborough & Co, 14 Warwick Lane.

It is not necessary to give a detailed description of this excellent little treatise, as we published a resumé of its contents on page 366 of our volume XXVII. The demand for two further editions is an indication of its continued utility.

NOTES OF A METALLURGICAL JOURNEY IN EUROPE. By John A. Church, Engineer of Mines. With Illustrations. New York: D. Van Nostrand, 23 Murray and 27 Warren Streets.

The author here reviews the systems in use in Germany and Italy, especially in the Hartz, at Freiberg, and at Agordo. The notes were first published in the *Engineering and Mining Journal*.

MATHEMATICAL AND PHILOSOPHICAL MANIFESTO, concerning a Lacking Link in the Demonstration of the Pythagorean Problem, Disproving its Absolute Truth, etc. By Theodore Faber. New York: E. S. Dodge & Co., 84 John Street.

We have carefully looked through this pamphlet for the disproof of the Pythagorean argument, and we must admit that this also is still a "lacking link." But as the matter is in the hands of the Royal Society of England, we will await the discussion of the subject by that learned body before venturing a final opinion.