Researches on Ethers.

I. Formation of the Compound Ethers by Means of Ether and Acids.—Can ether, formed at the expense of alcohol by elimination of water, reproduce the alcohol whence it has arisen, or at least the combinations of which this alcohol forms an integral part? This question has been proposed more than once; and in spite of certain facts repeatedly announced, it is not, I think, regarded as settled, nevertheless it is not perhaps without some importance. In fact, in a theory widely received, the compound ethers are represented by an anhydrous acid combined with oxyd of ethyle, a substance isomerous or identical with ether. The direct production of the compound ethers by means of ether and the acids, has a tendency to support this view, although it is also susceptible of other explanations.

This production is effected by heating the acid and ether, enclosed in very strong tubes, to about 680° to 752° F.

The author has procured benzoic ether in this manner from ether and benzoic acid. It possessed the odor and specific properties of of benzoic ether, boiled at 416° F., and gave on analysis—

	Formula.
Carbon . . . 72-2	. . . 72-2
Hydrogen . . 6-7	. . . 6-7

Treated with potash and water, it produces the benzoic acid; and in place of the ether, a volatile inflammable liquid, soluble in water, which, when touched with a drop of a mixture of sulphuric and butyric acids, evolves the odor of butyric ether. These characters belong to alcohol.

The ether employed in the preceding experiment had been shaken five times with its volume of water, so as gradually to dissolve the half; it was then dried upon chloride of calcium, and rectified. After nine hours' contact with the benzoic acid at 680° F., it furnished 30 per cent. of benzoic ether (16 grms. produced 5 grms.). The formation of the benzoic ether commenced at 572° F.; but at this temperature, even after long contact, there was but little of it.

With the view of acquiring greater certainty with regard to the purity of the ether employed, the author rectified the ether purified by the above method, distilling only the half of it at a fixed temperature; the distillation was then repeated upon this portion, only collecting the half of the product. The ether thus obtained furnished 25 per cent. of benzoic ether after three hours' contact with the acid at 680°.

Ether and butyric acid, kept for six hours at 680 F., produced butyric ether. The liquid in the tubes, submitted to distillation, only furnished ether, water, butyric ether and butyric acid. No gas was evolved.

At the same temperature, ether and palmitic acid produced palmitic ether, fusible at 72°.

In these instances neither the acid nor the ether was entirely combined, whatever might be the excess of one or other of them.

Ether and water, heated to the limit of decomposition (842° F.?), do not combine.

II. Direct Fomation of the Ethers of Alcohol and Acids.—The union of acid and alcohol to form ether is effected either directly or by the intervention of a mineral acid. The direct combination is generally easy with the energetic acids; but with the organic acids, such as acetic acid, becomes very slow and incomplete. But with the aid of sulphuric acid, the combination is immediately and almost completely effected.

The author has arrived at the following results by employing close vessels, and the assistance of long exposure to heat, in the direct preparation of the ethers:—

At 392° to 482° F., the combination of the alcohols with the fatty acids is effected with rapidity. In this manner the author produced at 482° F. the following ethers:—

Methylopalmitic ether, a crystalline substance, fusible at 82° F., solidifying at 72° F.;

Ethylopalmitic ether, fusible at 70°·7 F., solidifying at 64°·4 F., and reproducing by the action of potash, palmitic acid, fusible at 142° F.; and.

Amylopalmitic ether, a waxy substance, fusible at 48° F.; with potash it reproduces palmitic acid, fusible at 142° F.

The combination of the alcohols with the fatty acids is never complete, either for the alcohol or the acid. But these three ethers are most abundantly formed in the presence of an excess of acid, which is afterwards separated by lime and ether. When heated afresh to 500°. for fourteen hours, with eight or ten times their weight of palmitic acid, they are found, after the operation, to have undergone no change whatever.

With thirty hours, contact at 212° F., benzoic, acetic, and butyric ethers were produced in great abundance, especially the latter.—Stearic ether even begins to be formed in 102 hours, but in very small quantity. The addition of acetic acid to the mixture, in the latter case, causes the stearic acid to become completely etherified in 102 hours. This corresponds with the known action of sulphuric and muriatic acids, only differing in the comparative weakness of the acetic acid. It appears especially in this case, that the combination of the stearic acid with the alcohol is induced by that which takes place between the acetic acid and the same alcohol. It is a pretty clear instance of the propagation of molecular movement.

The ready etherification of the fatty acids in an alcoholic liquid, rendered acid even by acetic acid, appears to the author often to render the purification of these bodies very delicate.

III. On the Decomposition of the Ethers.—The ethers are split by the same agents which cause their formation. Thus—

Water heated to 212° F., for 102 hours, with stearic and oleic ethers, begins to split them, with regeneration of stearic and oleic acids.—Under these conditions it does not act at all upon benzoic ethers.

Acetic acid, diluted with 2 or 3 vols. of water, when in contact with stearic ether for 1060 hours at 212°, distinctly acidifies the stearic ether without producing acetic ether; it partially decomposes butyric and benzoic ethers, with formation of butyric and benzoic acids.

Fuming muriatic acid, in 106 hours, at 212°, produces double decomposition with acetic, butyric, benzoic and stearic ethers. The acids are set free, and muriatic ether is formed. The decomposition is never complete, unless in the case of stearic ether.

Thus a weak acid may be etherified or its ether decomposed at will under the influence of muriatic, or even of acetic acid. This difference in the action of the same substance results from the presence of excess of water in the one case, of alcohol in the other. The mass and relative energy of the acids are also to be taken into account.—M. Berthelet, "Comptes Rendus."

[For the Scientific American.]

Wind Mills in the South.

It having been necessary for some time for me to use wind mills for different purposes, I have been struck with the fact that while every other motive power has received great attention from our most skillful machinists, to simplify and make them useful to man, the application of wind as a motor (except to sail vessels) remains in the same bungling condition now as it was centuries ago in the fens of Holland. It is yet more singular that, in this country, with such an extended sea-coast, and such widespread prairies, where the wind blows with force three-fourths of the year, that the subject should not receive more attention. I do not wish to advance the idea, by any means, that wind can in any way compete with water or steam power where uniform and steady results are to be obtained, yet there are hundreds of minor but useful purposes that wind power could be put to by the planter, farmer, and mechanic, especially on our prairies and seaboard, to great advantage; provided our mechanics will hit upon some cheap, simple, and efficient method of constructing the windmill, and communicating its power.

I take it for granted that the common vertical wind mill, with inclined sails, is much more powerful than any horizontal mill yet invented, with like spread of sails. In fact, horizontal wind mills are powerless things unless of very large diameter, from the fact that in one of small diameter the wind acts at and near a tangent, a shorter space of time than in case of one of large diameter.

But the difficulty with a vertical wind millis to gear off with simplicity and effect, from the necessity of always keeping the sails to the wind. This is perhaps the greatest difficulty for constructors and machinists to overcome; another thing they should do is to construct the different parts ready to put on, and in the tower, something after the manner of the different kinds of horse-powers now in use, so that they can be taken apart, and snugly packed for transport to any part of the country.

They should be built of different sizes and for different purposes, such as turning the smaller kinds of grinding mills, sawing wood or lumber with either a circular or reciprocating saw, pumping water, &c. That wind mills are now applied to many of those purposes is certain, for I have seen in Texas a little vertical mill not more than six or seven feet in diameter, busily at work grinding hominy, in a common hand steel mill. And I have seen a larger one of about twenty feet in diameter, with six sails, doing a very fair business in sawing lumber, the power being conveyed to the saw by a crank in the center of the wind sail shaft. I have no doubt but that an enterprising man who would make the improvements I have suggested, and show to the world that his wind mills were efficient and durable, could sell thousands of them in Texas and on the western prairies, not to mention the seaboard, especially if he so built them that the purchaser had little else to do than to put up the tower, to set them into operation. They should be relatively as cheap as the different kinds of horse powers that are now made so compact and useful.

As I have given some thought to the method of simplifying the construction of the smaller kinds of wind mills above suggested, perhaps some constructor in that line may gather useful ideas by reading what I have to say, but I fear it will not be easily understood.

I think that, for the purposes named, wind sails from fifteen to twenty-five feet in diameter would be amply large, especially if six instead of four sails are put on them, and in order to get strength, compactness, and lightness, the different parts should be made of iron.

The shaft of the wind-wheel proper should be made of wought iron, with collars or flanches at each end of the bearings or journals for reasons that will be obvious hereafter, and the bearings for the journals of the above shaft should be made in iron chucks connected with an iron circle, say of from five to eight feet in diameter, which is made to revolve on a fixed iron railway circle, which railway should have projecting flanches on each side to grasp corresponding flanches on the chucks of the revolving circle, to keep said circle from lifting. There should be four of these chucks to the revolving circle, and in the case of a wind mill for pumping, &c., which requires a crank on the shaft in the center between the bearings, the bearing of the wind-wheel shaft should be made on two opposite chucks of the revolving circle. But in case of one required to communicate a revolving motion, by banding off from a perpendicular shaft, the outer bearing of the wind wheel shaft should be on one of the chucks and the other in the center of the circle—where it can be made by connecting the opposite chucks of the revolving circle by an iron bar at right angles to the wind-wheel shaft, to which bar the bearing of the inner end of the wind-wheel shaft can be attached near the center of the revolving circle, and by the same arrangement, a bearing can be formed in the precise center of the said circle, for the journal of the upright shaft, to the upper end of which, and to the inner end of the wind wheel shaft, there can be fitted either bevel or miter wheels, as the case may require. The chucks to the revolving circle I have named should have rollers in them. These can be arranged by an obvious method, so that the revolving circle shall move easily over the fixed railway circle; there should likewise be stops to the chucks, so that the wind wheel can be fixed firm to its place when brought to the wind. To a mechanic the further arrangement of these parts will be obvious without further waste of words. Flanches should be fitted to the outer end of the wind wheelshaft, to fasten on the wind sail frame with bands and screws, which frame should be made of sheet iron, bent and molded to the right form for strength with wire. This frame can either be covered with canvas or boards.

As far as my experience goes the wind sails should incline with the plane of motion about 18° or 20°, or in other words should incline with the axis of motion 70° and 110° respectively.

It has been my intention in the above only to furnish hints, and it is for the mechanic and constructor to arrange and complete the details, but I will further add, that if the parts of wind mills above named, and likewise such as are there shadowed forth—strong, simple, compact, and cheap—could be got up by an enterprising man, who would persevere in introducing them, hundreds, yes thousands of them could be sold on our western prairies and in Texas, to say nothing of the sea-board. W. C. D.

Key West, Fla.

(For the Scientific American.)

Light and the Eyes.

As several articles have been published in the Scientific American, in relation to the care of the eyes, I have a word to say on the subject, which may be useful. My eyes are weak, and though they see far and distinctly when not fatigued, they become dim, blood-shot, and painful whenever made to undergo exertion during candle light, even for half an hour. For years this infirmity prevented me from reading and writing after sun-down, until I happened one night, while traveling on a steamboat, to have in my hand a book which greatly interested me, and which I continued to read by the light of a chandelier which hung from the roof of the cabin, and which threw its light upon a table, beside which I was sitting. I expected that, as usual, I would soon be obliged to close the book; but to my surprise no dimness or pain occurred to my eyes, and I continued to read without the least pain or inconvenience till past one in the morning. The next day my eyes were as well as usual. I attributed this to the fact that the light was above my head, and fell upon the paper in the same manner as the light of day—from on high. Was I right in this? I leave you to answer. Certain it is, I have had a large lamp, with three branches, hung up in my office, several feet over my desk, and find that I can now read and write for hours by its light, without difficulty or suffering.

Yankee Creole.

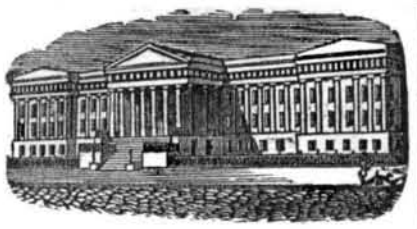
The Darien Ship Canal Expeditions.

Reports from both the Atlantic and Pacific expeditions across the Isthmus of Darien, to explore the country for a ship canal, have been received. The result of these observations is, that the proposed route is a continuous chain of mountains, with summits of four thousand feet. One portion of the Atlantic party is still on the way to the Pacific. The construction of the canal, according to these reports, is utterly impracticable; but whether the explorations were as thorough as they might have been, does not yet appear. Mr. Kennish, one of the canal engineers on the Pacific side of the expedition, says:

"I refrain from expressing my opinion as to the practicability of this route for a canal, because I do not consider our data sufficient to allow me to arrive at any conlcusion worthy of public confidence, even though I believe that the expedition I had the honor to accompany explored further and with more detail than any other individual or party before the present time."

The expedition was composed of a detachment of engineers sent out by the governments, of the United States, France, and England.—The construction of a ship canal, through the Isthmus, seems to be impracticable; the expedition has been successful in settling this point—a very important one.

The next meeting of the American Association for the Advancement of Science, will be held in Washington City, commencing on the 30th of April.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING MARCH 7, 1854.

ARRANGEMENT OF FUSIBLE PLUGS, OR DISKS, FOR STEAM BOILERS—William Burnett, of Boston, Mass: I do not claim to have invented the application of fusible plates of steam boilers for the purpose of permitting the steam to escape, when it has reached any assigned limit; nor do I claim the method described of preventing the plate, which is remote from the boiler, from being fused by the heat of the boiler.

I claim the application to steam boilers of two plates or plugs of fusible alloy, arranged as described, one of said plates being remote from the boiler, and the other in the interior thereof, by which arrangement the pressure of the steam is admitted on both sides of the interior plate, as specified.

MACHINES FOR PLASTERING—Isaac Hussey, of Harveysburgh, Ohio: I claim the arrangement of the several parts of the machine as and for the purpose described.

[See engraving of this machine on page 164, Vol. 8.]

VALVE MOTION FOR LOCOMOTIVE ENGINES—Caleb Cook, of Nashville, N. H.: I do not claim, for operating the valves, an arrangement wherein a link is employed, and has attached to it the valve rod and the eccentric rod, the central pin of the link working in the eye of a horizontal arm attached to a rocker shaft; nor do I claim a modification of such, wherein would be the same link with the eccentric rod and valve rod attached, and having the center pin of the link moving in vertical or curved guides attached to the rocker shaft, as such modifications do not admit of the reversing the engine without the removing both the link and the eccentric rod; whereas, with my improvement such can be effected by moving the eccentric rod only.

I therefore limit my claim to my particular arrangement or construction of the open lever, as provided with two recesses, and connected to a rocker shaft, and applied to and made to operate with respect to the eccentric and valve rods, as described.

THE GAUGE OF STRAW CUTTERS—Warren Gale, of Louisville, Ky.: I claim the arrangement of the adjustable gauge, as described.

[An engraving of this machine is published on page 136, of this volume.]

OPENING AND CLOSING GATES—W. G. Philips, of Newport, Del.: I claim the double span rotating gate, opening and closing continually forward, by means of levers and inclined planes, as well as by pulleys and cords, combined and arranged as set forth.

ROUNDING AND BEVELING THE HEADS OF BARRELS—J. P. Heacock, of Marlboro', Ohio: I claim rounding and beveling a barrel head at one operation, in a very true and perfect manner, by the employment of a double edged adjustable cutter secured in a swinging frame, or forked lever, and moved from a vertical to a horizontal position, and vice versa, back and forth from one end of the stuff to the other, in combination with the clamping jaws for holding the stuff in a proper position while being operated upon, as set forth.

[See notice of this invention on page 60, Vol. 9.]

COTTON SEED PLANTERS—G. W. Cooper, of Palmyra, Ga.: I claim the combination of the saws and feeders, the said saws having a reciprocating rectilinear motion, and the said feeders having a reciprocating rotary motion, the above parts being constructed and arranged as set forth.

[See notice of this invention on page 380, Vol. 8.]

SASH FASTENERS—H. B. Kimble, of Rochester, N. Y.: I claim the combination of the peculiar form of the bolt having a locking notch, with a weighted lever, formed and operating as described.

SEWING MACHINES—Wm. H. Johnson, of Granville, Mass.: I claim, first, the making of a seam with a single thread, by the combination of a single needle, forked hook, and expanding lever, as specified.

Second, the forming or making of a seam from a single thread, by the running of a loop of the thread through the material to be sewed: the running of a second loop through the material, and putting the first loop through the second; the running of a third loop through the material and through the first-named loop; the carrying of a fourth loop through the material, and putting the third through it, and so on; putting the first loop through the second and around the third, the third loop through the fourth and around the fifth, and so on.—forming the belaying double loop stitch, as set forth.

Third, the feeding of the material to be sewn by means of a vibrating needle, by which the material is moved along as required for the stitch, as specified.

SASH SUSTAINERS—G. C. Hinman, of New Haven, Ct.: I claim the described sash sustainer, consisting of an arched rod attached to the horizontal part of the window, in such a manner that the weight of the sash shall cause the clogged ends of the rod to bear equally on both sides.

Also, as described, the lever thumb piece for increasing the arch of the rod, and relieving the pressure, so as to allow the window to be lowered, as described.

REELING MACHINES—George Sevan, of West Earl Township, Pa.: I claim the double disc, as constructed, with hinged wings, for the purpose of keeping the threads regularly stretched, and operating the sliding rail when one of the threads is broken, in the manner described.

SECTIONAL DRY DOCKS.—Samuel Loveland, of Astoria, N. Y.: I claim the transversely placed tank, trunk, or water chamber, of each section of the dock, forming not only a central water ballast in the float, directly under the keel of the vessel to be raised; but when empty, a dry tank for the purpose of giving access to the keel in repairs.

I also claim the tank, trunk, or chamber, in combination with the buoyant chambers, or floats, hollow guards or chambers, or when combined with chambers or floats attached to the ends of the trunk or float, in the manner set forth.

TAIL STOCKS FOR TURNING LATHES.—L. B. Tyng, of Lowell, Mass.: I claim constructing and applying guide boxes, substantially as described, to the tail stocks of lathes, which make a better, cheaper, and far more durable bearing than those made heretofore for such purposes.

BORING AND MORTISING CARRIAGE HUBS.—R. J. R. Stone, of Berlin, Ohio.—I claim the combination and arrangement of the chisel and quadrant lever, in the manner specified, for the purpose of boring out the mortise at any desired angle, as indicated by the index. I claim this in connection with the sliding frame in the manner and for the purpose set forth.

CARRIAGE BRAKES.—Joseph Sollenberger, of Higginsport, Ohio: I claim the mode of applying the fore and hind wheel rubbers, by means of the connections M and N, applied to the fore rubbers as described, and in connection therewith the connection, J, applied to the hind rubbers, as described, so that the fore wheels may be acted on in the rear, and the rear wheels in front, substantially as described.

APPARATUS FOR PAYING THE SEAMS OF VESSELS.—James W. Stoakes, of Milan, Ohio: I claim the construction of a rotary mop, by the combination of the two sectional disks, provided with hollow arms or axles, through which passes a bolt having a nut, by which the disks are secured together, and the mop retained in place at the periphery between the inside edges, or by any other means, substantially as set forth.

SUSPENDING EAVES TROUGHS.—Chauncy D. Woodruff, of Toledo, Ohio: I claim the mode of suspending and fastening eaves troughs as described.

SEED PLANTERS.—L. B. Fisher, of Coldwater, Mich.: I claim constructing the driving wheels of planters with cut rims and divided hubs, substantially as described, said hubs being made to traverse the driving shaft by means of forked levers operated by a screw or its equivalent, for regulating the alignment of the hills in a cross direction, as set forth.

I also claim the scraper in combination with the two pins and the two levers, arranged and operating substantially as described, for preserving a given space between the edge of the scraper and outer surface of the rim of the wheel, as specified.

SEED PLANTERS.—Jeremiah C. Gaston, of Reading, Ohio: I claim the reciprocating agitator, as set forth.

SEWING MACHINES.—Charles Miller, of St. Louis, Mo.: I claim giving the cloth or material being sewed, a movement laterally to the direction of the seam, between the successive stitchings or interlacings of the needle and shuttle threads, substantially as set forth, for the purpose of receiving different kinds of stitches or seams.

[See notice of this invention on page 268, Vol. 8.]

OPERATING HYDRAULIC RAMS.—Clark Polley, of May's Landing, N. J.: I claim the air tight box or chamber, having within it and in combination therewith, and with each other, as set forth, the hydraulic ram and pump, and having suitable pipes attached in such a manner as that when the apparatus is submerged, and the pump worked from above, the ram will be free to operate by the pressure and momentum of the water resting above it.

ARTIFICIAL LEGS.—David B. Marks, of New York City: I claim the combination of the rod which is attached to the foot, and moves upwards and downwards within the leg or lower part of the limb, the spring applied to the rod, and the curved bar, plate or way, attached to the thigh or upper part of the limb, the whole operating substantially as described, to lock the knee stiff, and control the position of the foot, until the ankle is bent, on throwing the body forward, and retain the foot in its bent position at the ankle, until the knee is again straightened, as set forth.

[This ingenious invention is illustrated in number 48, Vol. 8.]

BRICK MACHINES.—Seaman C. Ripley, of New York City: I do not claim broadly the use of a gauge for guiding the molds in entering under the grating, as such a gauge, provided with a weighted lever for throwing it back to its place on the backward movement of the fore bar, has been used in the machine of Collins B. Baker, patented March 22, 1850.

I claim throwing the gauge back to its place by means of a tail, or cam, or equivalent, upon which the fore bar acts on its backward movement, as described.

MACHINES FOR SPLITTING RATTANS—Joseph Sawyer, of South Royalston, Mass.: I claim the combination of the feed rollers with the cutter, constructed and operating as described.

MACHINES FOR SPLITTING RATTANS—A. M. Sawyer, of Templeton, Mass.: I claim the employment of a tubular spurred cutter, or its equivalent, in combination with a guide for holding and guiding the stick thereto, as described.

SEWING MACHINE—Wm. Wickersham, of Boston, Mass. I do not claim the mere duplication of a sewing machine or the placing of one of such machines by the side of or near to another, and similar machine, so as to perform two rows of stitches by the operation of both machines.

But I claim more properly in so combining with one sewing machine, having a thread carrier, or their mechanical equivalents, another or second needle, and a second hole in the thread carrier, or equivalents therefor, that by the action of the same needle-moving machinery, two needles are made to operate simultaneously, so as to perform at one and the same time, two parallel rows of stitches, with separate threads, substantially as specified.

BRITANNIA TEA AND COFFEE POTS—Robert W. Andrews, of Staffordsville, Conn.:—I claim a tea pot, coffee pot, or other vessel, composed of a supporting ledge, or base of iron, (or other metal which is not melted by ordinary degrees of fire heat) combined with a body of britannia metal, as set forth.

CONNECTING JOINTS OF AIR HEATING PIPES.—J. Young, of Franklin Furnace, Ohio: I claim forming a perfectly tight joint for air heating pipes, by boring out recesses in the ends of the pipes, the recesses being sufficiently large to receive a thimble, which is made of a more expensive metal than the pipes, and which thimble, upon being heated, will, in consequence of expanding more than the pipes, bind tight against the recesses in which it is fitted, and form a perfect tight joint, as described.

[This is a good improvement, and is noticed on page 140 of the present volume.]

MACHINES FOR DRILLING STONES—William C. Wright, of Boston, Mass.: I claim the combination of mechanism herein described, for operating the drill bar, consisting of two pairs of grippers, attached to rods, having slotted heads, which receive the wrists of two cranks, the said cranks being arranged diametrically opposite to each other, on a common axis, and the slots in the heads of the gripper rods being of such form as described, so as to cause one set of grippers to be always rising while the other pair are descending; but to cause a cessation of motion before every descent, in order to give time for the drill bar to fall, as herein set forth.

[A notice of this invention is published on page 108 of the present volume.]

HANGING GATES—Ashley Hotchkin, of Schenevus, N. Y.: I claim hanging a gate by means of two lower turning pivots, or pintles, working on separate step projections of a box, or frame, the upper end of the gate being steadied and carried by suitable rollers, (any number) or their equivalent, working or travelling in fixed grooves, channels, or spaces, so as to admit the gate opening either way,—the several parts being constructed, arranged, and operating, as described.

[This is a good improvement, and we hope the inventor will realize a proper remuneration for it.]

WATER CLOSETS.—Daniel Ryan & John Flanagan, of New York City,: We claim, first, dividing the chest or penstock, into two compartments, communicating with each other,—the division being made by means of a flanch, or its equivalent, by which a sufficiency of water is reserved within said chest, or penstock, after the supply has been stopped, to cover the opening, or mouth of the pipe, at the bottom of the bowl seat, and effectually prevents the escaping of effluvia into the apartments.

Second, we claim the sliding tube within the trunk, or cylinder, said tube being constructed, arranged, and operated as shown,—by which a direct communication is at all times cut off between the bowl seat and exit pipe, and at the same time the excrement allowed to pass into the exit pipe at the proper time.

SELFACTING RAILROAD SWITCHES—Joseph Wilson, of Hartford, Conn.: I do not claim the connection of a switch and a bar, by a jointed lever, so that the motion of one gives a corresponding motion to the other; nor do I claim to operate the switch by means of a bar forming part of one of the main track rails; nor do I claim to return the switch to its position by means of a spring and catch after it has been displaced by the pressure of the flange of the car wheel; but I limit my claim to the precise arrangement of the parts for operating the switch by means of the lateral pressure of the wheel flanges on the inner sides of the movable and fixed rails, when the cars are on the rails.

SEWING MACHINES—Christopher Hodgkins, of Boston-Mass. (assignor to Nehemiah Hunt): I claim constructing the horizontal needle of the angular form, as described; and making it to operate with respect to the vertical needle, and its eye, as explained.

WIRE HEDDLE EYES FOR LOOMS—Thomas Clegg, of North Andover, Mass. (assignor to himself and Nathaniel Stevens, of Andover, Mass): I do not claim a loom harness metallic eye, or eyelet, made by being stamped out of a piece of metal;—Nor do I claim a metallic eye, or heddle, formed by round wire, or wires twisted together:

But I do claim a loom harness metallic eye, made of round wire, or wires, twisted together and compressed and flattened in the twist of its wires, and directly at the top and bottom of its warp thread opening, as described.

APPARATUS FOR OPENING AND CLOSING GATES—Samuel G Dugdale, of Richmond, Ia. Additional to reissued letters, Jan 31, 1854: the nature of my improvement consists in hanging a pendulous lever provided with a notch, by which I cause the weight of the gate to be the means of holding the bottom to the point to which it is drawn, and at the same time holding the vertical lever down until the carriage has passed over it, thereby preventing any appendages that might be attached to said carriage, or vehicle, from catching said lever.

The application of a pendulous lever provided with a notch, or its equivalent, as set forth.

RE-ISSUE.

SHINGLE MACHINES—E. R. Morrison, of Troy, Pa. Originally Patented Nov. 22, 1853: I claim riving and carrying forward of the riven shingle, by the intermittently reciprocating movement of the riving knife stock, or frame, so as to be operated upon successively by the shaving and edging knives, said motion being imparted by the movement of the riving knife stock, through the intervention of the spring hooks, stops, or dogs, or their equivalents, as described.

NOTE.—In the above list of patents, eleven of the applications were prepared at the Scientific American Patent Agency. We think it is the largest list ever issued to our clients at one time. We congratulate them upon their favorable prospects, and urge them to use diligence in bringing out their inventions before the public. Now they are fresh and can be more easily disposed of if they possses value.

Explosion of a Steamboat Boiler.--The New Law.

On the 17th ult., the steamboat "Kate Kearney" exploded one of her boilers while lying at the dock in St. Louis, Mo., by which catastrophe four persons were instantly killed, and twenty severely scalded, some of whom have since died. We have seen it stated that this explosion was caused by gross carelessness. The St. Louis "Republican" states that the U. S. District Attorney, Thomas C. Reynolds, has entered into a vigorous prosecution of the parties to whose carelessness and recklessness the deplorable catastrophe is attributed. The Captain has been arrested and required to enter into bonds of $5,000 for his appearance at trial. One of the Deputy Marshals was subsequently sent to Alton with a warrant for the arrest of the engineer, Albert Hardy. Both of these officers of the "Kearney" will be prosecuted for manslaughter under the Steamboat Law. The affidavit of carelessness was made by the Inspectors, and is levelled exclusively against the Captain and Engineer.

It appears to us that the steamboat Inspectors under the New Law for that District are also blamable, and their conduct should likewise be subjected to a rigid examination. The "Kate Kearney" was an old boat, and the Louisville "Evening News" states that part of the boiler which was blown on the Levee exhibited an old fracture, and was much incrusted inside. The same boiler had collapsed once before, in 1851, and was merely mended, as testified to by the Captain and one of the owners, and it had been in use altogether for six years. How the Inspectors ever came to test this boiler, as it is stated they did, and allow it to pass, is something that requires explanation. It makes no matter how many good laws may be enacted for the preservation of life from explosions; they will all be no better than blanks on the statute book, if the officers appointed to carry them out, neglect to do their duty. The constant tendency of our institutions has been to appoint men to all offices from political party motives, not for personal merit. This party policy should be abolished with respect to such offices as those of Inspectors under the Steamboat Law.

One great cause of explosions on our western boats, we see, has been brought to light by the investigation of the local Inspectors of Cincinnati into the causes of the collapse of a flue in a boiler of the steamer "Zach. Taylor," by which three lives were lost and several persons injured. Among other things, the testimony which has been laid before them shows that the iron of which the flues were made, instead of being uniformly one-fourth of an inch in thickness, had the appearance of piled iron, not welded in rolling, and it varied in thickness as much as thirty per cent.—being in some places little more than one-eighth of an inch thick.

Now, as a boiler can only be of the strength of the weakest part of it, every boiler should be inspected with great exactness and care. If the Inspectors do not do this, they, above all other persons, deserve to be severely punished.

Another Terrible Steam Boiler Explosion.

On the 2nd inst. a steam boiler exploded with terrific violence at the car factory of Messrs. Fales & Gray, Hartford, Conn., by which nine persons were instantly killed, and about twenty others severely wounded. The building containing it was destroyed, and much other damage done. The boiler which exploded was nearly new, made of the best materials, was five feet in diameter, and twenty-four feet long. From the evidence presented before the Coroner's Jury, we are of the opinion that the cause of the explosion was allowing the water in the boiler to get below the fire line of the flue, whereby it—the boiler—became red hot, and weak at the fire line, and when cold water was let in, the steam began to generate so rapidly that the metal gave way—exploded—scattering death and destruction around. It seems that the boiler had five flues, which were carried pretty high, thereby increasing the danger, and requiring greater attention.

It has been suggested to us that government should offer a suitable reward for some invention that will be a perfect preventive of steam boiler explosions. We must say that the cause of steam boiler explosions is not a mystery; it is well known, and such catastrophies can all be prevented if men are only cautions, careful, and attentive. We seldom hear of a steam boiler exploding in France. We believe that no more than two boilers have exploded in that country in twenty years. This has not been owing to any wonderful application of apparatus, or a superior mode of constructing French boilers, but simply because low pressure steam is generally used, and a good and rigid system of steam boiler inspection enforced. The most perfect means to prevent explosions is at the command of all, but they are not applied. The pressure of the steam on the exploded boiler was 80 lbs. to the square inch, or equal to something more than five tons and a half on every square foot. However strong the iron of the boiler might have been when cold, it became very weak when highly heated.

Professor Agassiz

In his lectures before the Lowell Institute, in Boston, says that the human race existed on the globe a hundred and fifty thousand years ago. This he proves to his own satisfaction.—He points ont differences in the physical structures of the different races of men, greater than those existing between the orang-outang and the chimpanzee—animals which naturalists regard as different species. He concludes, therefore, that men sprang from different stocks.—[Exchange.

[We have seen many such opinions accredited to Prof. Agassiz, but have never been able to see a correct and certified report of his opinions.

Remedy for Chilblains.

Take a sufficient quantity of hot water in a tub to bathe the feet in, and add a lye made of wood ashes or potash, until the water feels quite soft and slippery. Soak the feet which are troubled with chilblains thoroughly in this, then rub them with a towel until they are perfectly dry. After this rub them over lightly with the spirits of turpentine, and it will at once stay the disagreeable sensations arising from the chilblains. Follow up this operation for a few evenings, and a cure will assuredly be effected, as I have proved by experience.

J. M. T.

Irvine, Pa.

Reaping Machines.

We have in our possession some very rare and valuable information in regard to the progress of this class of agricultural implements, and shall present it in a series of articles, together with illustrations, as soon as we can find pace for them.

Hobb's Lock Picked.

The famous American Lock, known in England by the above name, has, it is stated by the London papers, been picked at last by a Cockney. We have not yet received an account of the particulars connected with this affair.

The locomotive "Manchester" exploded at Hudson, on the Hudson River Railroad, on the 10th inst. The engineer was instantly killed.

A Bill is now before the Legislature of this State, making it obligatory on all ferry steamboats to carry life preservers and other safety apparatus.