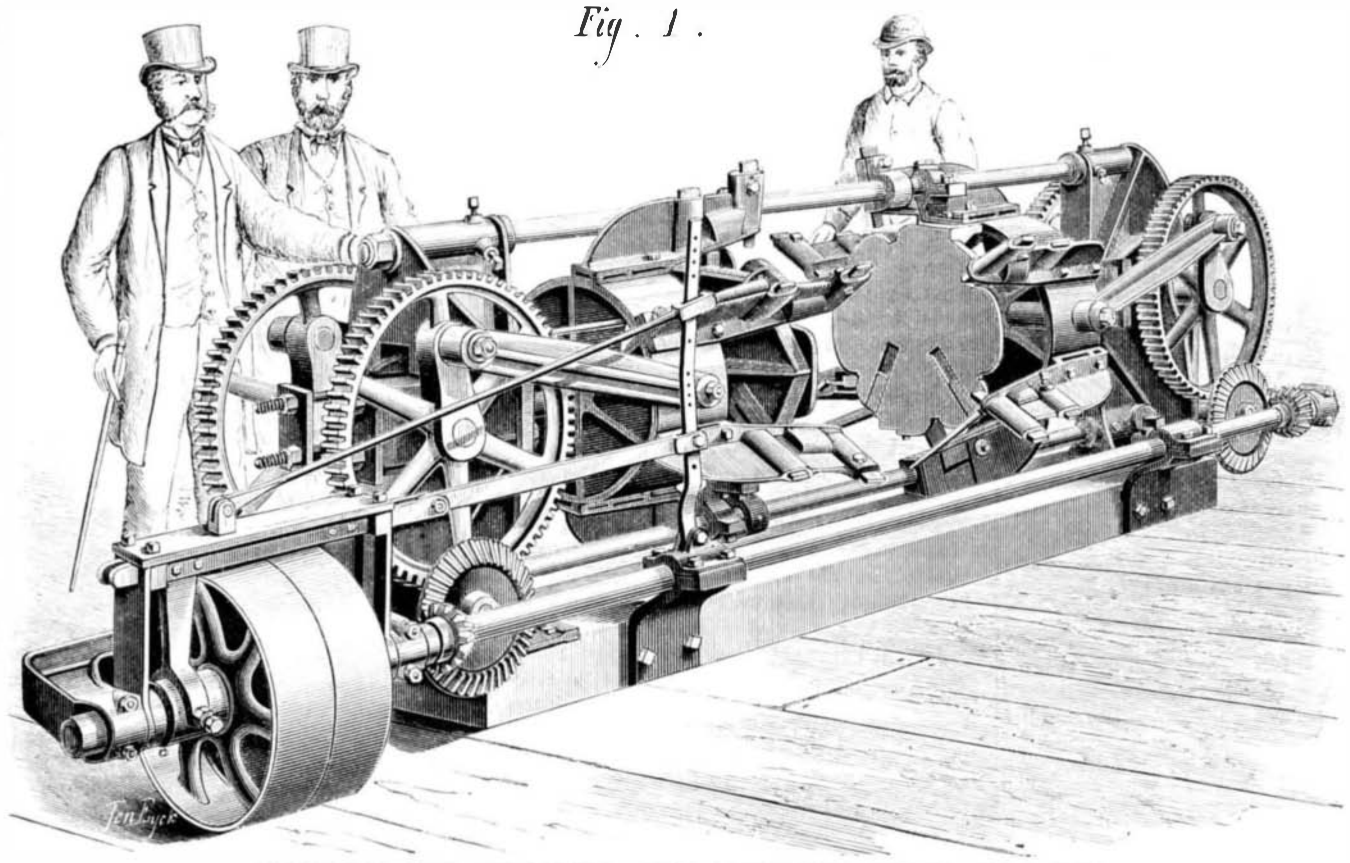
IMPROVED KEG AND BARREL MACHINERY.

In our issues of March 8, 1874, and February 6, 1875, we published several illustrations, together with detailed descriptions, of new coopering machinery, patented and manufactured by Messrs. E. & B. Holmes, of 59 Chicago street, Buffalo, N.Y. The devices then referred to, which, as we stated, worked a practical revolution in the cooper's trade, related mainly to the manufacture of barrels by machinery, said mechanism in many instances being the first ever invented for performing operations hitherto done by hand labor. To this valuable category of apparatus, the manufacturers have now added a new series of machines designed for the production of kegs and small casks of all kinds and sizes less than barrels, besides a number of novel devices devoted, as before, to improved barrel manufacture.

Fig. 1.

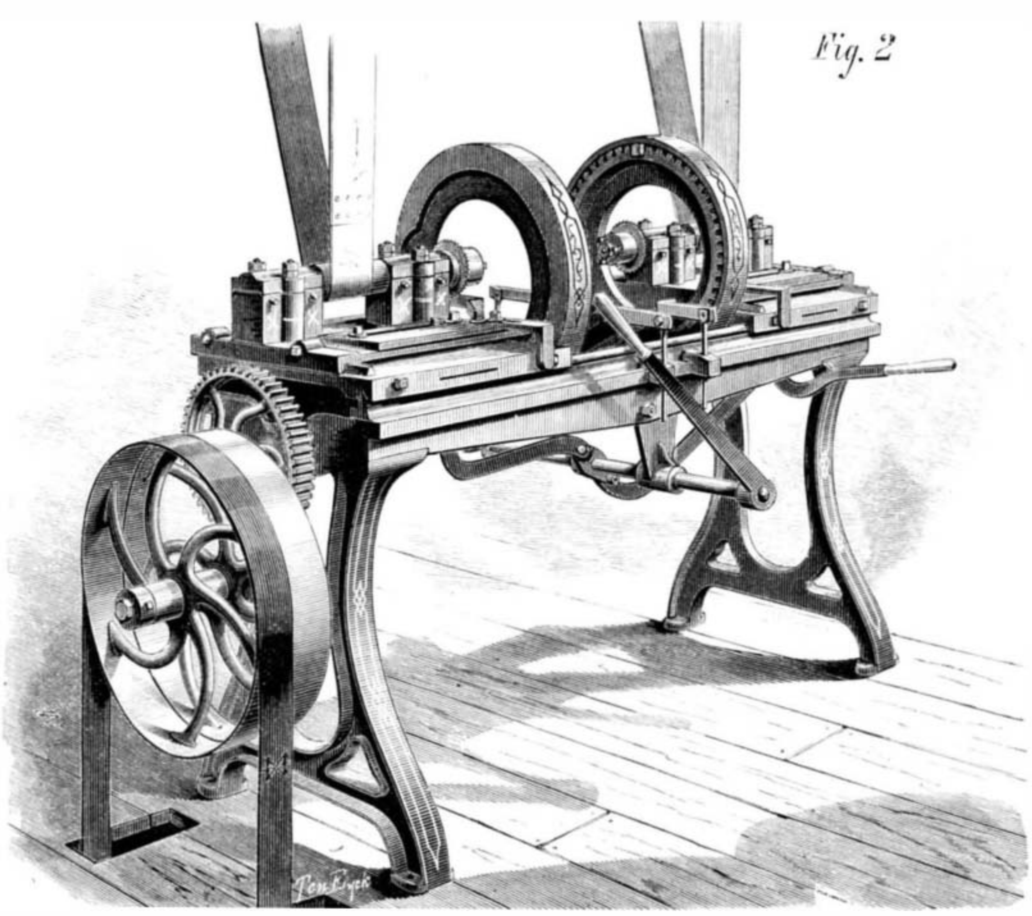


MACHINE FOR LEVELING AND TRUSSING SLACK BARRELS.

In Fig. 1 is represented an entirely new machine for leveling and then trussing slack barrels. It is constructed with an iron frame upon which are placed two leveling plates upon slides or guides, which plates are operated by cams. There are also two other plates placed upon slides, and operated at each end by cranks. Upon these plates are hoop drivers, for driving all the truss hoops upon a barrel at one and the same time. The leveling plates are first moved toward each other and against the ends of the barrel by cams. The barrel is thus leveled and held in position while the hoop drivers force all the truss hoops to their places. The leveling plates and drivers then recede, and one barrel is discharged from the machine by the introduction of an other. The apparatus is so rapid in its operation that, by the help of one man, from 4,000 to 5,000 barrels can be trussed per day.

Fig. 2 is a machine for chamfering, howeling, and crozing kegs and small casks. It is adapted for finishing the ends of kegs or small casks of all sizes, from small kegs to half barrels, ready to receive the heads. It finishes both ends of the keg at the same time with great accuracy. The keg is placed on the machine and forced into chuck rings, which are caused to revolve by teeth, upon their outer edge, engaging with pinions upon a common rotating shaft. Rotary cutters are brought in contact with the ends of the keg, which are finished by a single revolution. The machine is easily altered from one size to another by changing the chuck rings. Its capacity is from 2,000 to 3,000 kegs per day.

Fig. 2



BARREL CHAMFERING, HOWELING, AND CROZING MACHINE.

In Fig. 3 (see next page) is represented a machine for rounding heads of all sizes for kegs and barrels. This is so constructed that every size of heads for kegs, small casks, and barrels can be made upon it for both tight and slack work, and the change from one size to another is easily and quickly accomplished. The saw and cutters are brought in contact and passed through the wood on such lines as to prevent the tearing, splitting, and slivering of the material used, and to give a smooth finish to the work done. No more set is required in the saw than is necessary in a common circular saw. The machine is made with a strong iron frame, on which is placed a clamp for holding the head. There are, besides, a swing frame, carrying a concave saw and cutters for rounding and chamfering the head, and an automatic apparatus for discharging it when finished.

In operating the machine, the blank is placed between the clamps, and at the same time the foot treadle is pressed. This clamps the blanks, and also brings the concave saw and cutters in contact with it, and holds them there until the head is finished, when the latter is released through the automatic action..

In the following engraving, Fig. 4, is exhibited a power windlass for kegs and slack barrels. This is for drawing up or together the ends of staves of a keg or barrel, ready to receive the head truss hoop, after they have been set up in the setting-up form with their other ends in the other head truss hoop. The machine is constructed with a frame upon which is planted a windlass supplied with a rope, which windlass is operated by friction wheels.

After the barrel or keg has been set up with the ends of the staves in one head truss hoop, it is placed in the machine, and the rope is placed around the flaring ends of the staves. The friction wheels are then brought in contact with each other, when the windlass is set in motion, drawing up the staves, by the aid of the rope, ready to receive the other end or head truss hoop. This apparatus is very rapid in its operation, and will windlass from 2,000 to 2,500 kegs or barrels per day.

Fig. 5 is a machine for leveling and trussing kegs and small casks, from the smallest kegs to half barrels, and can be easily and quickly adjusted. The truss hoop drivers are attached to two plates, one of which is stationary and adjustable, and the other is moved to and from it perpendicularly by cranks and pitmans. The drivers move automatically in and out, to allow the reception and discharge of the keg into and from the machine. The plates level and the drivers drive the truss hoops at one and the same operation upon the keg, by the movable plate being brought in contact with the upper end of the keg by the action of the cranks and pitmans, the two cranks being on the same shaft. The machine works rapidly, and will level and drive the truss hoops upon from 4,000 to 5,000 kegs per day.

This subject will be resumed in our next issue

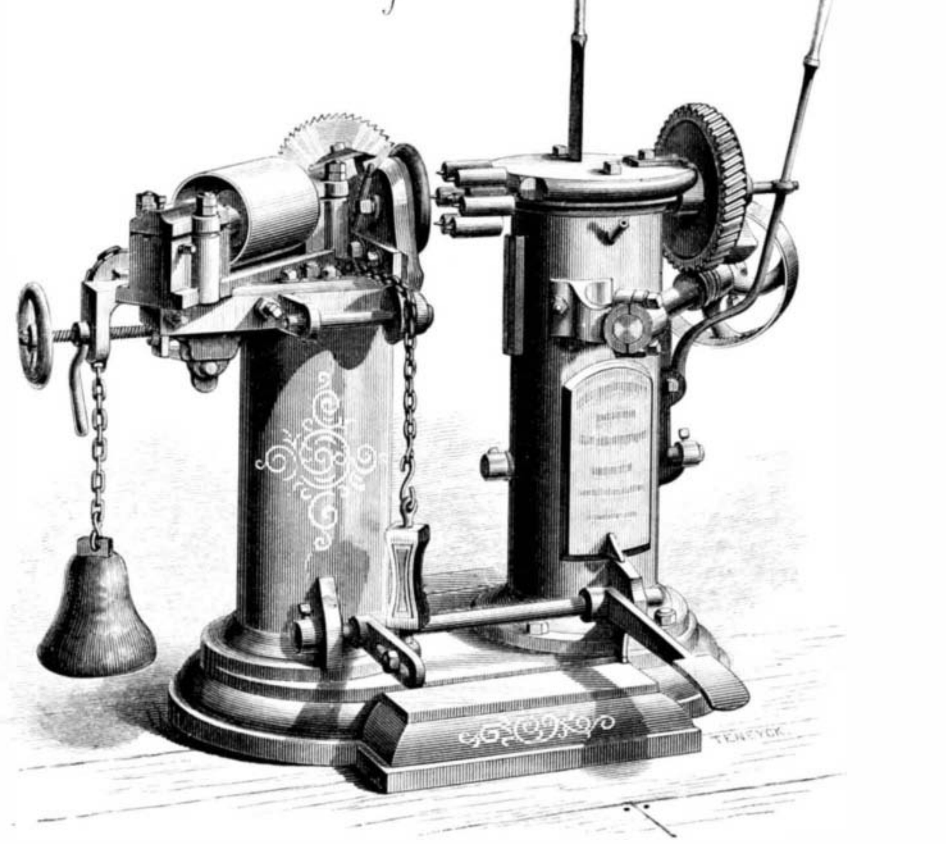
Iron Freight Cars.

The La Mothe Manufacturing Company, of Providence, R. I., is building iron freight platform cars, which are thus described : Six sills, 30 feet in length, each being composed of three 2-inch boiler tubes, are placed one above the other. These are three inches apart, but are secured to each other by bands or tie blocks of the best charcoal iron, forming a single sill, which is, from its nature, of great strength. These sills are placed under the car 20 inches apart, and are connected and held in place by forty-five ⅞ inch soft steel rods, running through the tie blocks and riveted at each end, by which means the entire structure is rendered perfectly compact, and becomes a unit. Transom beams are placed at each end at the proper point, to connect with the trucks. These consist of four boiler tubes of like size with the sills, and are securely fastened to each other. Large rods are employed to strengthen the center of the car, and are fixed to the sides by improved and patent couplings. This arrangement is actually stronger than the sills themselves. The usual truss rods are also used, the best ⅞ inch steel for the purpose being employed. The only wood used is the planking of the platform, which is secured to the sills by means of staples. The entire mechanism is void of welding, nuts, joints, or mortises. The actual weight of the car without the trucks is not over 40 per cent of that of the ordinary car. The carrying capacity of this car is set at 20 tuns. The ordinary platform car weighs about 6 tuns, and is considered heavily loaded with 12 tuns, a fair burden being from 8 to 10. The ordinary car, capable of carrying but 10 tuns, must carry a dead weight of 6 tuns; while this new invention will, it is claimed, with absolute safety carry 20 tuns, with a dead weight of but 3 tuns. The same principle is to be applied in building box cars. Greater safety in case of collision or fire is claimed for these cars. A platform car of this kind has been in use on the Providence and Worcester Railroad since September for transporting stone. Its weight is 3,560 lbs. less than their ordinary platform cars, and in strength and durability it gives great satisfaction.

Condensed Eggs.

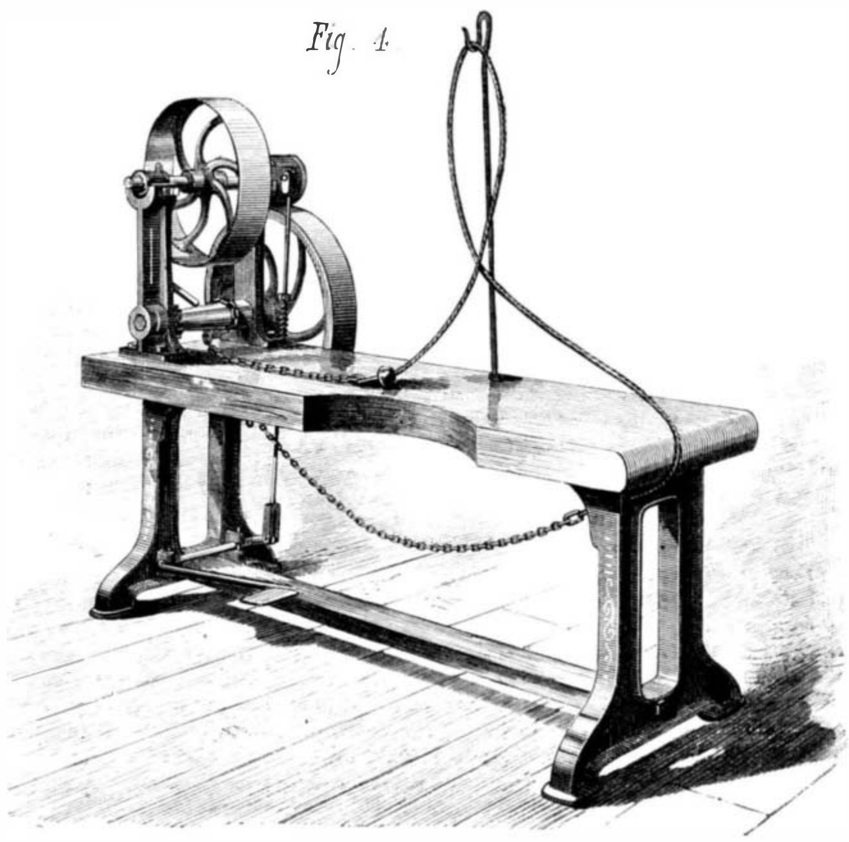
It is astonishing, says the British *Trade Journal*, what progress has been made during the past few years in the art of preserving aliments generally, and that a great boon has thereby been conferred all round we have daily evidence. The superfluous herds of Australasia and South America are now potted, or, we should perhaps say, "tinned," for the English and other markets, thus affording comparatively cheap animal food for the less opulent classes. America sends us in large quantities the products of her waters, which but for preservative processes would be lost to the old world; Switzerland is fast ruining the milkman's business in this country; from across the Channel come supplies of vegetables in a form qualified to journey round the world without deterioration: and Denmark exports her delicious butter in ever-increasing quantities, well protected from the effects of keeping and climatic change. In fact, preserved provisions now include a vast variety of substances hailing from all parts of the world. Although more the recipients than the producers of such goods, there are many articles of the kind which we are able to send abroad, and the productions of the Scotch provision factories are especially esteemed in certain parts. Only recently a new product has been brought into notice which bids fair to gladden the hearts of our colonists who swear by the virtues of British beer. We see no reason why condensed beer should not be as good in its way, and prove as great a success, as condensed milk. But we have strayed somewhat from our immediate object, which is to call attention to condensed egg, a sample tin of of which, prepared in Bavaria, has reached us. This article is prepared from fresh raw eggs by a process of desiccation, which, while effectual in removing all traces of moisture, leaves the natural properties of the egg unimpaired. It is only necessary to add a due proportion of water to the egg powder to render it fit for culinary purposes, the active constituents of one egg being contained in about a teaspoonful of the powder. That this is a valuable addition to the line

Fig. 3



MACHINE FOR ROUNDING BARREL HEADS.

Fig. 4



WINDLASS FOR DRAWING BARREL STAVES TOGETHER.

of concentrated natural aliments will be admitted, we think, by those who, getting the better of a perhaps not altogether inexcusable prejudice, venture on a trial. The contents of a small sized tin are about equal to twelve eggs.

Action of Different Solutions on Metals.

Professor A. Wagner, of Munich, has recently made a series of careful experiments to determine the action of different solutions on copper, zinc, lead, tin, Britannia metal, brass, and German silver, first in air free from carbonic acid, then in the presence of carbonic acid and air. These metals and alloys were in the form of foil, of equal surface, namely two square inches, and of as nearly equal thickness as possible. The copper foil was as good as chemically pure; the zinc was common sheet zinc with 0·68 per cent of lead; the lead was cut from commercial sheet lead; the tin was the pure cast metal. The Britannia metal was a piece of new sheet metal intended for the drums of gas meters, and consisted of 90 per cent tin and 10 per cent antimony. The brass was composed of 64½ per cent copper and 35½ per cent zinc. The German silver was 70·2 per cent copper, and 29·8 zinc and nickel. These pieces of sheet metal were placed vertically in glass vessels, each holding 6·1 cubic inches of the solution to be tested, the metal being completely covered with the solution. In the experiments they were left in the solution for a week. The results of these experiments, as given in the Bavarian *Industrie und Gewerbeblatt*, were as follows

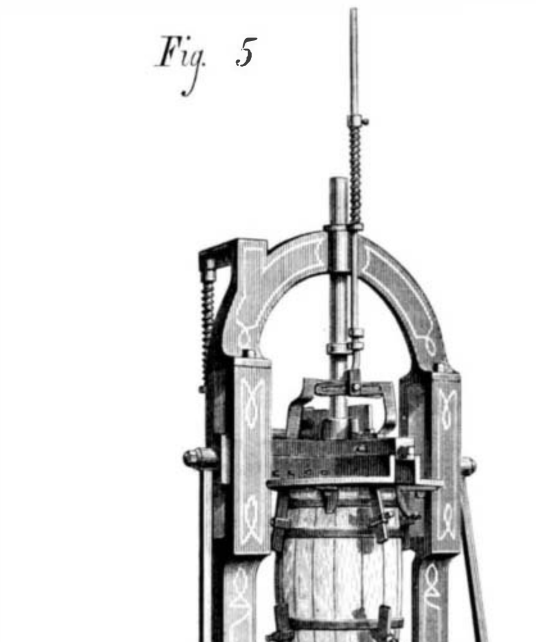
In freshly boiled distilled water, zinc suffered the most change of all the metals tested; tin and Britannia metal suffered no change. With access of air and carbonic acid, the action upon lead, copper, zinc, brass, and German silver was much more energetic than in the presence of air free from carbonic acid. In the latter case only traces of copper, zinc, and lead were dissolved; tin, Britannia metal, brass, and German silver were not attacked at all. In the presence of carbonic acid and air, tin and Britannia metal were the only metals not attacked; all the other metals were perceptibly dissolved.

In chloride of sodium and chloride of potassium solutions, with access of air and carbonic acid, copper, brass, German silver, and zinc were violently attacked, while in the absence of carbonic acid they underwent comparatively little change. The contrary was the case with lead, tin, and Britannia ware, they being attacked more violently when exposed to air free from carbonic acid than in air and carbonic acid. In the latter case, lead was only half as much affected as in former, tin not at all, and Britannia metal very little. With access of air free from carbonic acid, not a trace of any of the metals was dissolved; with access of air and carbonic acid, considerable quantities of copper, brass, German silver, zinc, and lead were converted into soluble compounds, only a trace of Britannia metal went into solution, and no tin was dissolved.

In sal ammoniac solutions, with access of air free from carbonic acid, copper was attacked prodigiously, also brass, German silver, and zinc; Britannia metal, tin, and lead comparatively little. In the presence of both air and carbonic acid, strangely enough, all the metals, with the single exception of German silver, were less attacked than when the carbonic acid was absent; namely, copper only about one sixth; lead, only about one half as much; tin and Britannia metal not at all. With access of air, with or without carbonic acid, a considerable quantity of each metal went into solution, with the exception of tin and Britannia metal, of which, in both cases, not a trace was dissolved.

The action of copper, and in a less degree of brass and German silver, towards sal ammoniac solution is worthy of attention. Within a week, a large quantity of copper was dissolved, the liquid became dark blue, and contained a perceptible quantity of ammonia. By allowing the sal ammoniac to act upon the copper for a long time, at ordinary temperature, a compound of ammonio-cuprous chloride with ammonio-cupric chloride was formed. The action of sal ammoniac solutions on copper seemed, however, to be essentially dependent upon the unrestricted access of the

Fig. 5



MACHINE FOR LEVELING AND TRUSSING KEGS.

atmospheric oxygen. The loss of weight of one square inch of copper foil, in the experiment, in which air free from carbonic acid was passed through the solution, was 13·56 grains in a week; while one square inch of copper foil, standing vertically in a solution containing 15 grains sal ammoniac to 8·1 cubic inches of water, in an open glass covered with paper, lost only 3·68 grains. If copper is boiled in a solution of sal ammoniac, with or without access of air, ammonia is continually liberated, even for hours.

In water containing chloride of magnesium, in the presence of air free from carbonic acid, lead and zinc were most strongly attacked, tin and Britannia were only very slightly. The action upon lead and copper is about the same as that of the alkaline chlorides; zinc, brass, and German silver are more strongly affected. In the presence of carbonic acid and air, chloride of magnesium has about the same effect upon copper and German silver as the alkaline chlorides, and a much stronger one on lead, zinc, and brass. In this case, tin is perfectly protected from corrosion. When carbonic acid is absent, perceptible quantities of zinc alone go into solution, as well from sheet zinc as from brass and German silver. In the presence of air and carbonic acid, considerable quantities of all the metals are dissolved, except tin, of which none is dissolved, and Britannia metal, of which traces only are dissolved.

In solutions of sulphate of potassa, copper, lead, brass, and German silver were perfectly protected from loss of weight in the presence of air free from carbonic acid, the loss of weight of zinc was considerable, of tin and Britannia metal inconsiderable. With access of air and carbonic acid, lead, tin, and Britannia ware suffered no loss of weight; copper, brass, and German silver lost equally and slightly in weight, zinc considerably. None of the metals were dissolved in the absence of carbonic acid; but in its presence, copper, zinc, brass, and German silver were dissolved in perceptible quantities; lead, tin, and Britannia metal were not dissolved.

In water containing saltpeter and air free from carbonic acid, lead and zinc were attacked most violently; tin and Britannia ware a little; copper, brass, and German silver not at all. With air and carbonic acid present, zinc and lead were attacked most; copper, German silver, and brass were not more acted upon than by distilled water; tin and Britannia metal were acted upon somewhat. None of the metals were dissolved when carbonic acid was absent; when it was present, perceptible quantities were dissolved.

In carbonate of soda, and air free from carbonic acid, lead, copper, brass, and German silver lost nothing in weight; but zinc, tin, and Britannia metal were sensibly affected. Perceptible quantities of tin and Britannia ware were dissolved; none of the other metals went into solution. It was not possible to pass carbonic acid into the solution, as this would convert the carbonate of soda into bicarbonate of soda.

In water containing caustic soda, and air free from carbonic acid, lead, tin, Britannia metal, and zinc suffered a very considerable loss; brass and German silver an inconsiderable loss; copper, none. A good deal of lead, tin, Britannia metal, and zinc were dissolved; only a little brass and German silver, and no copper. It was impossible to pass carbonic acid and air into the solution, because it would convert the caustic soda into carbonate of soda.

In lime water, with air free from carbonic acid passed into it, lead lost considerably in weight; zinc and brass an inconsiderable quantity: copper, tin, Britannia metal, and German silver, none at all. A perceptible quantity of lead was dissolved, but only traces of zinc and brass. It was, as before, impossible to perform the experiment in the presence of carbonic acid, as this would form carbonate of lime.

Reviewing these results, and classifying them according to the metal, we find that they are affected as follows:

Copper, in the presence of air free from carbonic acid, is very energetically attacked by a solution of sal ammoniac (loss of weight, 13 56 grains) only slightly by chloride of magnesium (0·075 grain), and alkaline chlorides (0·06 grain), extremely little by distilled water (0·015 grain), not at all by sulphate of potassa, saltpeter, carbonate of soda, caustic soda, or lime water. Quite a considerable amount of copper was dissolved by sal ammoniac, only traces of it by distilled water; none of the other solutions were able to convert any copper into soluble compounds. In the presence of carbonic acid, the copper was attacked by all the solutions, most violently again by sal ammoniac (loss, 2·14 grains), the action being only about one sixth of that without carbonic acid. The alkaline chlorides dissolved 1·76 grains, chloride of magnesium, 1·72 grains, being nearly as strong as sal ammoniac. Sulphate of potassa acted feebly (0·060 grain). and so did saltpeter (0 045 grain) in distilled water (0·045 grain). All these solutions dissolved perceptible quantities of copper.

Zinc, in the absence of carbonic acid, was attacked by every solution, most violently by caustic soda (loss 0·90 grain) and sal ammoniac (0 76 grain), considerably by sulphate of potassa (0 045 grain), less by chloride of magnesium, distilled water, and carbonate of soda (0·195 grain), quite feebly by saltpeter (0 135 grain) and alkaline chlorides (0·105 grain), inconsiderably by lime water (0 045 grain). Perceptible quantities of soluble zinc compounds are produced by the action of caustic soda, sal ammoniac, and chloride of magnesium; traces only by distilled water and lime water. None of the other solutions produced soluble zinc compounds. In the presence of air and carbonic acid, all solutions act upon zinc; chloride of magnesium acts the strongest (loss 0·810 grain); next to it, sulphate of potassa (0 795 grain). The alkaline chlorides act considerably (loss 0·57 grain), and almost equally with saltpeter (0 555 grain) and sal ammoniac (0·54 grain); distilled water less (0·285 grain). Perceptible quantities of zinc were dissolved by each solution.

Lead, in air free from carbonic acid, was very strongly attacked by caustic soda (loss, 6 45 grains); considerably by lime water (2·055 grains); less by alkaline chlorides (0·315 grain); chloride of magnesium (0·3 grain); saltpeter (0 21 grain), and sal ammoniac (0·18 grain); still less by distilled water (0·045 grain); and not at all by sulphate of potassa and carbonate of soda. Caustic soda, lime water, and sal ammoniac converted perceptible quantities of lead into soluble compounds, chloride of magnesium and distilled water only traces of it; while sulphate of potassa, carbonate of soda, saltpeter, and alkaline chlorides dissolved no lead. With access of carbonic acid and air, the chloride of magnesium acted most strongly (loss, 0·525 grain); next saltpeter (0 31 grain) and alkaline chlorides (0·18 grain); still less distilled water (0·12 grain) and sal ammoniac (0·075 grain) Sulphate of potassa was again powerless to affect the lead, and did not dissolve a trace of it, while all the other solutions dissolved perceptible quantities of it.

Tin, in the absence of carbonic acid, was energetically attacked only by carbonic soda (loss, 0·33 grain). Of the other solutions, it lost, in carbonate of soda, 0 105 grain; in alkaline chlorides, 0 90 grain; in sal ammoniac, 0·075 grain; in saltpeter, 0 045 grain; in sulphate of potassa, 0 03 grain; and in chloride of magnesium, 0·015 grain: while it was unaffected by distilled water and lime water. Only caustic soda and carbonate of soda were able to dissolve perceptible quantities of tin. Carbonic acid and air hinder, in a remarkable manner, the action of these solutions upon tin, with the single exception of saltpeter, which acts very faintly (loss, 0 015 grain).

Britannia metal acts quite analogous to tin. In air free from carbonic acid, caustic soda acts most violently (loss of weight, 1·41 grains); the others act inconsiderably. The loss of weight in alkaline chlorides was only 0·135 grain; in carbonate of soda, 0·09 grain; in sal ammoniac, 0·045 grain; in sulphate of potash, chloride of magnesium, and saltpeter, each only 0·015 grain; and in distilled water and lime water, it was unacted upon. Caustic soda and carbonate of soda alone dissolved perceptible quantities of the metal. In the presence of carbonic acid and air, as in the case of tin, distilled water, sal ammoniac, and sulphate of potassa do not act at all; the alkaline chlorides, chloride of magnesium, and saltpeter act very feebly (loss, 0·015 grain); and saltpeter alone dissolves enough metal to be detected.

Brass acts, on the whole, in a manner analogous to copper. With access of air free from carbonic acid, it is strongly attacked by sal ammoniac (loss of weight, 4·035 grains), only slightly by chloride of magnesium (loss, 0·6 grain), alkaline chlorides, caustic soda, and lime water (each 0 03 grain), and not at all by distilled water, sulphate of potassa, saltpeter, and carbonate of soda. Perceptible quantities of metal are dissolved by sal ammoniac and chloride of magnesium, and traces of it by caustic soda and lime water. In the presence of carbonic acid and air, it is acted on most violently by sal ammoniac (loss, 2·505 grains) very strongly; by chloride of magnesium (loss, 1·38 grains), and alkaline chlorides (loss, 1·2 grains); less by distilled water and carbonate of potassa (each 0·06 grain), and saltpeter (loss, 0·045 grain). All the solutions dissolved perceptible quantities of the metal.

German silver acts like brass, but on the average is less energetically attacked. In air free from carbonic acid, it is less strongly attacked than brass, although quite strongly by sal ammoniac (loss of weight, 0·129 grain), less by chloride of magnesium (loss, 0·045 grain), alkaline chlorides (0·015 grain), and caustic soda (0 15 grain), not at all by distilled water, sulphate of potassa, saltpeter, carbonate of soda, and lime water. Perceptible quantities of metal were dissolved by sal ammoniac and chloride of magnesium; traces only by caustic soda. In carbonic acid and air, the sal ammoniac acts the strongest (loss, 1·74 grains), next to this are chloride of magnesium (1 005 grains), and alkaline chlorides (0·915 grain), still less distilled water, sulphate of potassa, and saltpeter (each 0 015 grain). Perceptible quantities of metal are dissolved by all these solutions.

Copyrights.

Mr. Rowland Cox, says: In the case of Lawrence *vs.* Cupples, Judge Shepley has announced it as his opinion that, in an action for the infringement of a copyright, where the resemblances are accidental or arise from the nature of the subject treated in the two books, there can be no recovery. To constitute an infringement of a copyright, the learned judge says, there must be piracy; the defendant must have used the plaintiff's book as his model. Although the defendant's work cover the same ground as the plaintiff's, and answers the same purpose *in toto*, it will be no infringement if it is not an appropriation of plaintiff's particular method Hence, where the plaintiff had compiled a book bearing the title "The Advertiser and Collector's Chart," containing certain lists and names, and defendant issued a book entitled "The New England Mercantile Guide," which contained the same lists, it was held that there was no infringement.

There can be no doubt that a copyright which purports inferentially to cover anything akin to a subject is of no avail. It is idle to attempt to make a copyright effect, directly or indirectly, the functions of a patent or a trademark. The three are possibly of the same genus, but, as species, are widely separated; and to confound them inevitably leads to illogical conclusions.

The Comacho Electric Machine.

The Comacho magnetic machine, with its concentric iron tubular magnets, may be seen at 171 Queen Victoria street. There can be no doubt of the advantage of this form of magnet; but experiment on the resistance of the circuit, weight lifted, electro-motive force, and consumption of zinc, etc., would form an interesting subject. The machine, with five cells of a bichromate battery, works three or four sewing machines. Attempts to work it with the thermopile have hitherto failed. This is very likely, because the elements of the thermopile are coupled up in considerable series, so that, considering the resistance of each element, the whole resistance must be great compared with the resistance of the wire round the magnets. A thermopile should be made of low resistance by coupling a number of elements together in parallel circuit, and then taking some ten or twelve, or more, of such series coupled in succession. It is no doubt worth considerable experiment to attain a successful result from the thermopile, as in that case, by merely turning on the gas, a lathe or sewing machine be made to work.—*Telegraphic Journal.*

Rotary Engines.

According to the invention of Mr. Urbain Chauveau, of Paris, a cylinder is arranged with a piston which may be actuated by steam, compressed air, or gas, so as to move round an axis passing through a center. If a point of the piston rod is forced to move in the space of a fixed circle having for its center a given point, so that the distance is equal to one half of the stroke of the piston, it will be readily understood that the alternate motion of the piston in the cylinder will produce a continuous rotary motion of the said cylinder round the axis. Different arrangements of mechanical parts may be employed to carry out the principle abovementioned, and the construction of rotary engines of this character may be varied to a great extent, and yet in accordance with the same principle. The admission of steam may be made in any ordinary manner.

Drilling and Boring.

An invention by Mr. J. Dodge, of Manchester, England, consists in an improved compound machine, by which four or other convenient number of holes can be drilled or bored at the same time, and by which the spindles of the drilling or boring tools at opposite sides of the machine are set simultaneously, and in unison with each other. His improved machinery consists of a foundation plate, and of four standards, which are connected by crossslides supporting the boring headstocks; the cross slidesare raised or lowered, and the boring headstocks are traversed to and fro on the cross slides by screws, all of which are connected together.

Large Lap-Welded Tubes.

The National Tube Works Company have just completed, at their works at McKeesport, Pa., a sample pipe for exhibition at the Centennial. It is 14 feet in length and of 14 inches outside diameter and 10 inches inside, the iron of which it is made being 2 inches in thickness. This is said to be the heaviest piece of lap-welded pipe ever made in this or any other country, and it is stated that such heavy work has never been attempted by any other establishment.

The Hell Gate Obstructions.

The drilling of the chief obstruction at Hell Gate is finished, and the machines have been transferred to Flood Rock. The *débris* have been cleared away from the shaft, and the caves formed by the deep headings are now in a good condition to be explored. Experiments are being made daily in explosive material. to ascertain the safest. The mine will be sprung next July or August. There are 172 pillars which support the rocky roof; 8,000 borings have been made for inserting explosive matter. Those in charge of the work apprehend more danger from the surging of the water than from the shock at the time the rock is shattered. The work at Flood Rock is carried on day and night.

A New Electric Battery.

M. Cerpaux proposes a battery made of a certain number of plates of copper and of zinc separated by a wooden lath. The plates are plunged in sand or moist earth, and an electric current is at once produced. If on the earth chloride of sodium be poured, a very intense current is generated.

Steam Street Cars in Philadelphia.

Steam street cars are now in operation on one of the railroad lines in Philadelphia. The local papers state that the objection that horses will be frightened by the exhaust has not been realized, as no runaways have occurred, nor do the animals seem at all alarmed by the proximity of the machines.

DECISIONS OF THE COURTS.

United States Circuit Court---District of Massachusetts.

PATENT SHADE FIXTURES.—STEWART HARTSHORN *vs.* JOHN SHOREY *et al.*

[In equity.—Before SHEPLEY, J.—Decided October term, 1875; to wit, February 17, 1876.]

SHEPLEY, J.:

This bill is for an alleged infringement of letters patent No. 2,756, dated August 27, 1867, granted to Stewart Hartshorn for improvement in spring fixtures for shades. These are the same letters patent which were the subject matter of litigation in Hartshorn *vs.* Almy, and Hartshorn *vs.* Tripp *et al.*

Defendants rely upon two grounds of defense:

First, that the alleged invention of Hartshorn was not new and patentable at the date of his original letters patent.

Second, that the devices made use of by the defendants are no infringement of the plaintiff's invention.

To sustain the defense of want of novelty, the defendants rely upon evidence of the prior existence of what is well known as the coach fixture, in which a cord is used to lift the pawl and disengage it from the ratchet when it is desirable to allow the curtain to roll up under the action of the spring. This defense is fully met and answered in the two cases above cited, to which it is only necessary to refer to dispose of this branch of the defense.

The fixture manufactured by the defendants has a spindle which rests in the bracket, and is extended for a short distance into one end of the curtain roller, which end revolves around that portion of the fixed spindle which is projected into the roller, while the other end of the roller is provided with a journal, upon which it revolves freely in the supporting bracket. This spindle is provided with a cam-shaped recess on one side of it, within the roller, and a chamber of sufficient size to receive a small sphere or buckshot in such a position as to be directly over the recess in the spindle when the roller is revolved. The small ball or buckshot is introduced into this chamber. One edge of the recess in the spindle is so constructed that when the ball falls into the recess it will be forced against the side of the chamber, and operate as a detent to stop the revolution of the roller when it is turning one way. The other edge of the recess is so formed that when the roller is turned in the opposite direction the ball is thrown up into the chamber, where, when the roller is rapidly revolved, the ball is held by centrifugal force.

It will be seen, by a comparison of this contrivance with the one described in the Hartshorn patent, that it effects the same result by means of the ball operating as a detent as is effected in the Hartshorn contrivance by the pawl and ratchet In Hartshorn's, the pawl has a tendency to fall by gravitation into the notches made in the periphery of the hub, or when fixed below the hub, in one of the modes described in the patent, it is actuated by a spring which tends to engage it in the notch. The ball operates as a detent, catch, or pawl, to engage with the notch or ratchet whenever the rotation of the roller, and the upward movement of the curtain under the influence of the spring, are checked by the manipulation of the curtain or shade itself. In Hartshorn's, when the roller is revolved rapidly, the ratchet has not time to fall by gravitation into the notch while the ratchet notch is passing under the toe of the pawl. In Shorey's, while the roller is being rapidly revolved, the ball is kept by centrifugal force from engaging as a detent between the side of the chamber in the roller, and the edge of the recess in the spindle.

The construction of the claim in the Hartshorn patent was fully given in the case of Hartshorn and Almy. It was there shown to embrace, in combination with a spring roller, such an arrangement of pawl and ratchet, with the varying speed of the revolution of the roller mutually acting with each other through the manipulation of the roller, that the pawl would engage with the ratchet by checking the rotation of the roller and the upward movement of the curtain by the simple manipulation of the shade, merely varying the speed of the rotation of the roller. It is equally within the scope of this invention, whether the force which determines the fact of engagement or non-engagement of the pawl or detent with the notch or ratchet be that of a spring, or force of gravity, or centrifugal force.

Improvements may be made in the spring or the roller, the shade, or the form of the pawl or detent, and these improvements may be patentable; but so long as the combination embraces, as in the case of the device of these defendants, every element of Hartshorn's invention, operating substantially in the same manner to produce the same result, it must be treated as an infringement.

Decree for complainant, for injunction and account.

[*S. D. Law*, for complainant.

A. K. P. Joy, for defendant.

Inventions Patented in England by Americans.

[Compiled from the Commissioners of Patents' Journal.]

From February 29 to March 27, 1876 inclusive

APPLYING MOTIVE POWER.—J. Doubler, Philadelphia, Pa.
BAKING POWDER.—Dodge *et al.*, New York city.
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BOILER.—D. L. M. Moore (of New York city), London, England.
BOILER TUBE APPARATUS.—J. H. Faxon, New York city.
BOOT-SCREWING MACHINE.—American Cable Screw Wire Co., Boston, Ms.
BOOT-SEWING MACHINE.—D. Mills (of Brooklyn, N. Y.), Aston, England.
BRICK KILN, ETC.—G. S. Redfield, Chicago, Ill.
BRICK MACHINERY.—C. S. Bigler, Harrisburgh, Pa.
BRICK MACHINE.—W. A. Graham, Carlisle, Pa.
BURNING LIME, ETC.—A. Smith, Buffalo, N. Y.
CARDING MACHINE.—J. F. Foss, Lowell, Mass.
CLEANSING WHEAT.—D. M. Richardson, Detroit, Mich.
COVERING UMBRELLAS.—J. P. Onderdonk, Philadelphia, Pa.
CUTLERY.—J. Pedder *et al.*, Beaver Falls, Pa.
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FARE REGISTER.—J. Sangster *et al.*, Buffalo, N. Y.
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FLUID METER.—J. C. Guerrant, Danville, Va., *et al.*
GASELIER.—C. Deavs, New York city.
HAY KNIFE, ETC.—H. Holt, East Wilton, Me.
HEAT RADIATOR.—E. C. Angell, New York city.
HORSESHOE MACHINE.—J. A. Burden, Troy, N. Y.
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MAKING GAS.—M. H. Strong, Brooklyn, N. Y.
MAKING LEATHER.—C. L. Royer, San Francisco, Cal.
MAKING PIG IRON.—C. Hinrod, Youngstown, Ohio.
MAKING STEEL.—W. Fields, Wilmington, Del.
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WASHING MACHINERY.—C. W. Littlefield, Boston, Mass.
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WRINGER.—C. W. Littlefield, Boston, Mass.