

well-united paste; add to it, baked plaster (gypsum), and ceruse; and by a more exact grinding with water, réduce the whole to the thickness of soup, rather more thick, than thinner; finally, dilute it with common water, at the moment of laying it on, which is usually performed with a varnisher's brush.

It may be perceived, after all the foregoing details, how much there still remains to be done, to obtain exact facts relative to lime stones, their calcination, the goodness and applications of the different species of limes, and, finally, with respect to the composition of mortars, betons, cements, stuccos, and badigeons. We shall find ourselves well rewarded, if this work should excite architects, and men of science, to occupy themselves with these objects, and if their researches should successfully lead them to useful discoveries.

ENGLISH PATENTS.

Specification of the Patent granted to JEAN LE GRAND, of Lemon street, Goodman's-fields, Middlesex, Vinegar manufacturer, for certain improvements in fermented liquors and the various products to be obtained therefrom. Partly communicated by a foreigner.
Dated January 15, 1824.

THE said improvements in the said fermented liquors, and the various products to be obtained therefrom, are as follows. In order to give those wines, and vinegars, which are not obtained from grapes, the qualities which distinguish those made from grapes, I employ the following substances; namely, the tartaric, citric, and oxalic acids, and which I add, either separately, or together, and either in the crystallized state, or diluted with water, to all kinds of fermented worts, wash, or liquors; and either before, during, or after the vinous or acetous fermentations, I likewise mix the said vegetable acids, either singly or together, with all sorts of spirituous liquors, either pure, or diluted with water, or other liquids, with the design of converting those spirits, by acidification, into vinegar, similar to that made from the wine of grapes; or, by distillation or rectification, to convert them into brandy, analogous to that obtained from grapes. I likewise employ the same vegetable acids, by mixing one or more of them with acetic acid, or any kind of vinegar, to increase the strength of those liquids, or to impart to them the qualities of the vinegars obtained from grapes or other fruit.

In witness whereof, &c.

[*Rep. Pat. Inventions.*]

Patent granted to JOHN PARKER, of Knightsbridge, Middlesex, Iron and Wire Fence Manufacturer, for improvements, or additions, to park, or other gates. Dated May 23, 1826.

THE object of Mr. Parker's "additions" to gates, is to cause them to open on the approach of a carriage, and to close again as soon as

it has passed, without any person being required to assist, directly, in the operation.

The power that produces this effect, is the weight of the carriage, which is made to operate by pressing down, on its passage, an inclined plane, beneath which a bent lever, or crank is placed in a vertical position, on whose inclined arm, an upright piece, connected with the inclined plane, is supported; while the top of its vertical arm is connected by a long bar, with the circumference of a horizontal wheel placed near the gate, the farther side of which, being toothed, turns a horizontal pinion, that is fastened to the bottom of the pivot on which the gate revolves; on the side of the crank next the gate, there is a third arm, in a horizontal position, to the end of which a weight is attached, sufficiently heavy to push the long bar back against the wheel, in the contrary direction to that mentioned, and thereby to shut the gate, after the carriage has passed.

This is the outline of the contrivance, but to carry it into effect, it is also necessary that the gate should be kept open for a certain time, after it is thrown back by the machinery mentioned; that previous to this, it should be freed from the catch which holds it to the gate-post; and lastly, that the parts which hold it open should be removed as soon as the carriage passes, so as to permit the counter-weight to operate in closing the gate again, as at first.

These secondary operations are performed by apparatus of the same kind as that mentioned. Of which that, which raises the catch on the gate-post from the latch, is at the opposite side of the way from the machinery that opens and shuts the gate; while that, which keeps it open and removes the impediments to its being closed, is at the same side. The whole of the parts, that communicate the motion from the moveable inclined planes, to the gate and catches, are placed in long cases or troughs under ground, so that nothing appears above the surface but the inclined planes, the ledges or guides, which confine the wheels of the carriage to the tracks, in which they must encounter these inclined planes, and the thick wires which work the catches.

To hold the gate open, when it is thrown back by the means before explained, there are posts placed at each side of it, in a line with the hinge post, at the same distance from the latter, as the main catch-post; and to each of these posts, catches are attached, of the same nature as the main-catch on the gate post, which catches lay hold of the latch of the gate, and retain it until the wheel of the carriage passes over the inclined plane that works the cranks, which draw down the wires that act on one side of the catches, and elevate them on the other, by turning them round upwards on the hinges that attach them to the posts, out of the way of the latch, (which is of the upright spring kind,) immediately after which, the counterweight operates in closing the gate, and pressing the latch into the main catch on the gate post; which catch, is raised from it, in a similar manner to that described, by inclined planes at the other side of the way, on which the wheel of the carriage acts, a little before it arrives at the principal inclined plane, which opens and shuts the gate.

The cranks by which the catches are moved, have counter-weights to them, as well as those which turn the gate, to bring them to their first positions, and to raise the inclined planes connected with them, so as to be operated on by the pressure of the carriage wheels in passing over them. The gate opens at both sides; and as the apparatus must operate, whichever way the carriage approaches to the gate, in order to be complete, all the parts described are double; or, in other words, a similar apparatus is placed at each side of the gate both for opening and shutting it, and for holding it open and lifting the catches; the inclined planes of which are at sufficient distances from the gate at each side, to allow ample space for the horses in front, so that they shall be entirely out of the way of the movements of the gate.

Lastly, it is mentioned in the specification, that a small vertical roller is placed beneath the rim of the horizontal wheel that acts on the pinion on the pivot of the gate, in order to support it better there against the weight of the ends of the long horizontal bars that connect it with the inclined planes, and thereby enable it to be turned round with more facility.

[*ib.*]

To EDMUND LLOYD, of North End, Fulham, in the County of Middlesex, Gentleman, for his Invention of a new apparatus, from which he purposes to feed Fires with coal and other fuel.

THIS apparatus may be adapted to almost every kind of fire place; it consists of a box or recess, formed behind the grate, a little above the top of the fire, which box or recess is to receive a sufficient quantity of coal or other fuel, to supply the consumption of the fire for a considerable time. The box is to be closed in front by a sliding door, supported by chains passed over pulleys, which door being balanced may be readily slid up, by applying the hand to a small nob, or button, and when the door has been thus raised, the coal may be drawn forward on to the fire.

The weight of the door is proposed to be counterpoised by a logger-head, or iron ball attached to the end of a lever above, which in its descent draws up the suspending chains, and thereby raises the door with very little labour.

The apparatus may be slightly varied in several ways, still adhering to the principle, which is so simple and obvious, that a representation of the contrivance is not necessary, and indeed its plan of arrangement would require some degree of variation under every change of situation, or circumstance.—Enrolled April, 1825.

[*Newton's Journal.*]

To JOHN PHIPPS of *Upper Thames Street, in the City of London, Stationer,* and CHRISTOPHER PHIPPS, of the *Parish of River, in the County of Kent, Paper-maker,* for their *Invention of an Improvement or Improvements in Machines for Making Paper.*

THIS improvement applies to a certain apparatus, which has been many years in use, denominated "Fourdrinier's patent machine for making paper, of an infinite, or any required length." This machine is so constructed, that the pulp, of which the paper is to be made, flows freely from the vat, on to an endless web of wire-gause, and being there agitated, is caused to settle into a compact consistency. The paper thus made, is then progressively carried forward, by the traversing of the endless web, and passed between squeezing rollers, for the purpose of expressing the water, and is thence conducted, by an endless felt, to the reel, where it is taken up as fast as it becomes formed upon the gause web.

This machine has been heretofore capable of producing only that description of paper, called wove, that is, without lines or water marks: it is therefore the object of the patentees, by their present improvement, to enable the same machine to make what is called laid paper, that is, with lines or water marks.

In order to effect this, they propose to construct a cylinder, the periphery of which shall be made of wire-gause, or the same material that flat paper moulds are usually made of. This cylinder is to be formed by wooden ends, and a series of concentric rings or hoops, having an iron axle through the whole, and the wire-gause to be bound round the periphery of the cylinder, and so neatly joined at the seam, that no junction shall be perceptible. This cylinder is then to be mounted upon the machine, by its pivots falling loosely into slots, or openings, in brass carriages, placed on the side frames of the machine, and the cylinder bearing with considerable weight upon the new formed paper lying upon the endless web, (as described above,) will, by the traversing of the paper, and the web under it, be made to revolve, and the wires upon the periphery of the cylinder, to impress the required lines or water marks into the new formed paper.—Enrolled July, 1825. [ib.]

To BENJAMIN FARROW, of *Great Tower Street, in the City of London, Ironmonger,* for his *Invention of an Improvement, or Improvements in Buildings, calculated to render them less likely to be Destroyed or Injured by Fire, than heretofore, which he conceives will be of public utility.*

THIS improvement consists in the employment of wrought iron joists, for supporting the floors and ceilings of houses, instead of wood, as usual, and which joists, by their peculiar form, afford the

means of filling up the interstices between them, with bricks, stones, or other incombustible substances, so as to render the partitions between each floor, perfectly fire-proof.

The joists are each to be made of two flat bars of iron; the edge of one, is to be fastened by means of screws, or rivets, to the middle of the flat side of the other, so that its section will appear in this form. The ends of the lower bar, are to be turned down, in order to fix it the more securely into the wall.

When the joists have been thus laid at suitable distances apart, and firmly fixed into the walls of the building, the stone slabs, bricks, tiles, or other materials, of which the floor is to be formed, are placed upon the ledges or rebates of the joists, and are then fastened together with mortar, or Roman cement, which forms a perfectly incombustible partition, between the upper, and lower story.

This contrivance, is designed to supersede the necessity of arching the rafters, which is sometimes practised in constructing fire proof buildings. The stones being made rough on the under side, by pecking, are fit to receive the plaster for ceiling the lower apartment, and the wooden flooring is laid down, on the upper side, by screws passed through the wood into the iron.

Roofs of buildings may be constructed in the same way, by laying the rafters upon a slight inclination, for the purpose of allowing rain water to run off into the gutters.

The rafters have been described as made of two bars of wrought iron, screwed or pinned together, but when employed for small houses, they may be made in one piece, by rolling, in the way bars and rods of iron are commonly formed at the iron works.—Enrolled August, 1825.

[*Rep. Pat. Inventions.*]

Patent granted to WILLIAM HIRST, of Leeds, County of York, Cloth Manufacturer, for improvements in spinning, and stubbing machines. Dated Jan. 11, 1825.

MR. HIRST'S improvements, (which, though intended for machines for spinning wool, may be extended to those for cotton, and other fibrous substances,) consist in having a double number of spindles in each machine, by placing a second row behind the first, so that each spindle in it shall be opposite to the interval between two of those in the first row, and by making the following alterations in and additions to some other parts of the machines, which this change renders necessary. First, as the number of threads is twice as great as before, the number of robings must be increased in the same proportion, which is effected by adding two more "creels," or rows of robings, one above and the other below the two rows of the original machine. Secondly, the fluted rollers, which in the common machines are divided into separate bosses for each thread, with vacant spaces between them, are in Mr. Hirst's machines made continuous without any separations; to enable them to act on the double number of threads, which are to pass over them. And, lastly, the additional

bands necessary for the increased number of spindles, are made to fall in on the vertical drums by which they are turned in the machines, by fixing on them the "warls," or whirls, of the new spindles at elevations different from those of the primary row, so that the bands may move in separate horizontal planes, in such a manner as to avoid all contact and interference with each other.

These improvements of Mr. Hirst's are of that simple species, the advantage of which is so very apparent, as to create some degree of surprise, that they have not been before adopted. They appear to us to be particularly beneficial, in such places where rents of buildings are high, as they cause the new machines to do twice the quantity of work, without occupying any more space than the old machines; and, moreover, have the farther advantage of requiring no additional expense in mill machinery, framing, or the wheel work of the separate machines, than is necessary for the original machines, which only performed half the work.

It seems probable, that the principle adopted on this occasion may be farther extended, by using three or more rows of spindles, in such machines, in place of the original single row; the only limits to this plan appearing to be the number of threads, that can be made to lie on the fluted rollers, without becoming entangled by their projecting fibres. It is true that even these limits seem capable of being enlarged, by having a second row of fluted rollers; but we doubt very much whether the difficulty of piecing the broken threads, and the other embarrassments, which the crowded state of the work, caused by this latter arrangement, might occasion, would not more than counterbalance any benefit, that might be obtained by its adoption.

[*ib.*]

The Marquis of Worcester, and the 'CENTURY OF INVENTIONS.'

It has been suggested to us, that a republication of the Marquis of Worcester's Century of Inventions, would be generally acceptable. With a view to comply with this suggestion, we applied for the copy of the work in the Philadelphia Library, and were gratified by finding one of the first impressions of the book, published in the year 1663.

The first edition of the "Century," is very rare, and it may well be so, if the account given by Desaguliers be correct. He states that captain Savary, to conceal the fact of his having derived from this book, the information which led to the construction of his steam engine, purchased up all the copies he could find, and burned them.

The circumstance which has given to this work its greatest celebrity, is the generally acknowledged fact, that it contains, in article 68, the first account of the application of steam, to the raising of water in large quantity, and to a considerable height. Some, it is true, have attempted to deprive the author of this honour, and have cited the contrivances of De Caus, Branca, and some others; these, however, were but ingenious toys, and will scarcely be admitted to interfere with the claims of the marquis of Worcester.