

This substance is not rare. Brongniart assures us that it is found, in a layer of a centimetre in thickness, on the lower or lateral surfaces of beds of coarse carbonate of lime. It is frequently found in the environs of Paris, but more particularly in the quarries of Nantz. This earth is white, as light as cotton, and is reduced to powder by the least pressure.

The various experiments made on these sheets of stone-paper, or artificial slates, have proved:—1st. That by a continued steeping in cold water for four months successively, they did not in the least change, nor increase in weight. 2dly. That on being exposed to a violent heat for five minutes, they were scarcely altered in form; but were converted into black and very hard plates: they merely appeared blackened, and somewhat scorched. They constructed a house of wood at Carlsroon, which was entirely covered and lined with these articles; they then filled it with combustibles, and set fire to it: the house resisted the action of the flames.—The experiment was repeated at Berlin, and with the same success.

The materials fit for making this stone-paper are to be found in all parts of the globe. The process is simple, and it requires only very facile manipulations: it may be used, with economy, for covering houses, instead of slates; and for which purpose its lightness renders it far preferable. In this case, it is secured, in large leaves, by copper nails, and the joints filled with cement. The whole being coated with an oil-colour, forms the lightest covering, and one the least penetrable by water.

The cement which we recommend for filling the joints between these sheets after being nailed on, is composed of linseed-oil rendered drying, white-lead and chalk, intimately mixed, and used in a nearly fluid state, in order that the composition may the better insinuate itself amongst the joints and interstices, and cover the heads of the nails.

We have seen, in the Exhibition at the Louvre, in the year 1819, the *stone-paper* invented by *M. Hirsch*, which is white, and possessed of all the properties of the composition described in No. 4. This artist kept his process secret; but we believe it to be the same as is employed in Sweden—as that discovered by *M. Géorgi*, and which we have here described.

L.

ENGLISH PATENTS.

To *JAMES ROWBOTHAM*, of the County of Surrey, and *ROBERT LLOYD*, of the County of Middlesex, Hatters, for their having Invented a certain Method of Preparing, or Putting together, certain Materials, Substances, or Things, for the purpose of being made into Hats, Caps, Bonnets, Cloaks, Coats, Trowsers, and for Wearing Apparel in general, and various other purposes.

THE material proposed by the patentees, to be employed for the foundations of hats, and for various other purposes, is cork; which is

to be sliced into thin sheets, by means of a machine similar to those used for splitting leather; or it may be prepared by an ordinary knife, or by various other means, to which processes the patentees lay no claim.

The cork to be employed for the above purposes, is to be reduced into very thin sheets, from about an eighth of an inch to a sixteenth of an inch in substance, and out of these sheets of cork, the shapes, that is, the foundations of the crowns and tips of hats, caps, &c. are to be made; which after being properly connected at the joints are to be covered with shaggy or plush silks, such as are commonly employed for the covering of hats.

The advantages of these cork foundations, are, that the hats made of them are extremely light and flexible, are perfectly water-proof, and from the porosity of the cork, allow the vapour arising from the perspiration of the head to escape through the hat; which will be found to afford great relief to the wearer when walking, and in warm weather.

The patentees propose, not only to employ cork in the thin sheets described above, but also to cut it into narrow strips, and unite the strips together by weaving it in a loom. These strips must be reduced very thin in substance, but may be cut to any breadth that may be deemed desirable or convenient. A warp of flax, cotton or other threads or yarns, is then to be laid in a loom, in the way practised in ordinary weaving; and the warp being opened by headles or otherwise as usual, the strips of cork are to be successively introduced as weft or shoot, in the manner that wires are introduced in weaving pile, and such kind of fabrics; the beating up being performed also in the common manner by the batten.

The materials thus woven, form a sort of cork cloth, which it is intended to cut out into the forms of parts of garments, and to attach these portions of the cloth together in any convenient way, for making them into cloaks, trowsers, and other things, which the patentees state, will be water-proof, warm, and light; and consider that these cork garments will be particularly desirable for sea-faring people, as they will effectually prevent the wearer from sinking in water.

Cork prepared by slicing into thin sheets, may be employed for a variety of other purposes, beside those above stated, particularly for coating damp walls, previously to papering them, and also for the sheathing of ships' bottoms; which objects come within the contemplation of the patentees, and are therefore claimed by them as their invention. — Enrolled October, 1826. [*Newton's Journal.*]

To JOSEPH CLISELD DANIELL, of Stoke, in the County of Wills, Clothier, for his Invention of certain Improvements in Machinery, applicable to the weaving of Woollen Cloth.

THE improvements proposed by the patentee apply to what are usually denominated power-looms, that is, looms which are actuated

by the power of steam or water. There are two objects intended to be accomplished by these improvements; first, a more powerful beating up of the weft or shoot in weaving woollen cloths, than has hitherto been effected in power looms; and secondly, a mode of lifting the warp, or chain as it is called, so as to throw a much greater portion than usual of the weft, or shoot, on to the face of the cloth; for the purpose of increasing the quantity of pile, and thereby improving the appearance of the cloth when finished.

The beating up of the weft, which in ordinary looms is produced by the hand of the weaver, who brings the lay forward with two smart strokes, which strike the reed against the weft thread, is, in the present improved loom, effected by means of a spring or springs attached to the breast beam, and to the lower bar of the lay.

The movements of the loom are produced by rotatory wheels with cams or tappets acting upon the different parts of the machinery, as may be seen by reference to several patent power-looms. The present patentee, however, does not claim the modes of moving the operative parts of the loom, but simply under this head, the spring or springs, for drawing the lay forward, with considerable force.

In order however, to explain this invention, it is necessary to say, that immediately beneath the lay, there is a rotatory cam, which as it revolves, acts against a piece extending from the under part of the lay, and by that means, forces the lay back, and retains it in that position while the shuttle is passing across, between the threads of the warp. As soon as the shuttle has passed, the cam escapes from the lay, and allows the spring connected to the lay, and to the breast beam, to pull the lay forward with considerable force, which causes the reed to beat up the weft as above said.

Various kinds of springs may be employed for this purpose, provided they are so placed as to draw the lay toward the breast beam.

A long blade spring is proposed, which is made fast to the breast beam at one end, and is attached to the lay near the middle, by a swivel joint; or, instead of being immediately attached to the lay, two other blade springs may be affixed to the lower bar of the lay, and these attached to the acting end of the former, which it is considered would soften the beating up stroke, and yet give all the required force. Or instead of these blade springs, helical wire springs might be employed, one end of the spring being secured to the breast beam, and the other to the lay.

The improved mode of lifting the warp, is by the employment of three headles as the harness, one third of the warp threads being tied up by each headle, and these being made to rise one at a time in succession by the movements of the machinery, previously to every throw of the shuttle, cause only one third of the warp threads to be above the weft, while two thirds are always below it. By this arrangement a greater portion of the weft is thrown on to the surface of the cloth on the right side, and the means afforded of drawing out a larger quantity of pile, which greatly improves the face of the cloth, when the gigning, shearing, and dressing, have been completed.

—Enrolled April, 1826.

[*ib.*

To JOHN FREDERICK SMITH, Esq. of Dunstan Hall, Chesterfield, in the County of Derby, for his Invention of certain Improvements in Machinery, for Drawing, Roving, Spinning, and Doubling Cotton, Wool, and other fibrous substances.

THE subjects described in this specification, are a can with two moveable ends, and a bobbin composed of several pieces which take apart.

As respects the can, it is a cylindrical vessel of tin, of the kind usually employed for receiving the rovings of cotton, &c. from the machines: and the peculiar novel feature is, that both the ends of the can are made capable of being removed, instead of one end only as usual, by the ends having rims which fit into the cylinder, like the lid of a tin saucepan. These ends the patentee calls false bottoms.

The bobbins are made by sliding one tube of metal within another, similarly to the tubes of a telescope, the outer tube forming the barrel of the bobbin, and one of the ends sliding on, and off, in the same way.

These are the improvements in machinery for drawing, roving, spinning, &c. which constitute the subjects of the present patent, and the claims of the patentee to novelty of invention are—"1st. A can for drawing and roving with two false bottoms fitting equally into each end; one of the said bottoms being removed during the process of roving the fibrous substances in the can." The ingenuity of this part of the invention being shown, the reader is left to discover its utility by the exercise of his own imagination. The second claim is "a bobbin made of several parts, in such manner as to be capable of being taken to pieces, after any fibrous substance has been wound upon it, and entirely withdrawn from the said fibrous substance without disturbing the arrangement which was given to such fibrous substances upon the bobbin."—Enrolled December, 1825. [16.]

To EDWARD SHEPPARD, of Uley, in the County of Gloucester, Clothier, and ALFRED FLINT, of the same place, Engineer, for their new Invented series of Improvements in Machinery, for Raising the Wool, or Pile, on Woollen or other Cloths, by Points; by which the process is much facilitated, and a great saving effected; and part of which Improvements are also applicable to Brushing, Smoothing, and Dressing such Cloths, to the great benefit of the Public.

THE first object of the patentee, is to economize the use of teasels, employed in raising the pile of cloth, as they consider that by the ordinary mode of using teasels, they are worn out and destroyed, much sooner than they ought to be, and consequently increase the expenses of the manufacturer. Instead, therefore, of setting the teasels in flat frames, and fixing these frames on to the peripheries

of large cylinders, as in all the gigging machines hitherto used, (and by which the teasels become crusted or worn on one side,) it is proposed to set the teasels in cylinders of small diameter, so that their rotation shall approximate nearer to the figure of the teasel, and consequently bring a greater portion of the surface of the teasel into operation.

There are various modes suggested, of setting the teasels in their frames, one of which is, by means of parallel plates, perforated with holes, through which holes, portions of the teasels are intended to protrude. When one part of each teasel has become worn by use, the confining plate is to be removed, and the positions of all the teasels changed, by the finger and thumb, so as to bring other parts into operation. Small pegs may be set into the periphery of the gig cylinder, and a teasel stuck upon each; or small spindles may be disposed over the surface of the cylinders, their ends being confined between parallel plates, upon which spindles, as axles, the teasels may be respectively mounted, and enabled to turn round. The teasels, must, in that case, be set in oblique rows, in order that they may be turned by the transversing of the cloth, which will prevent the cloth from being streaked, by bringing all parts of the teasels into action.

Another object proposed by the patentees, is to enable the teasels which have become spent by use, to be removed from the gig cylinder, and fresh ones introduced in their place, without suspending the operations of the machine. For this purpose, it is intended to adapt several gig cylinders to one machine, and to mount them upon arms extending from a common centre, or in rings, or by any other contrivance, so as to bring one cylinder at a time into action, and when that has worked long enough to have exhausted its teasels, then bring the next cylinder into action, by turning the frame; the former cylinder being in a situation to have its teasels replenished ready for future use, without having stopped the movements of the machine.

Between the several cylinders, breast boards, or rollers are to be introduced, for the purpose of regulating the pressure of the cloth upon the gig cylinders, and these are to be made adjustable; they are to have oblique ridges and grooves cut in them, for the purpose of keeping the cloth extended.

Brushing cylinders made with hairs or bristles, are to be placed within the machine, for cleaning the teasels; and other brushing cylinders are also to be adapted to the machine, for laying the pile of the cloth. Heated metal cylinders are to be employed, in connexion with the gig machine, for fixing the nap, and these are to be heated by steam admitted through hollow axles to their interior. Steam boxes are likewise to be employed, for drying the spent teasels.

There are no drawings attached to this specification, by which the intended constructions of the above described apparatus might be pointed out, which is the more to be regretted, as we perceive several features mentioned as claimed which have been embraced by

former patentees, or commonly practised by cloth manufacturers.—
Enrolled May, 1825. [16.]

Some further account of Ledsam's new Method, of Purifying Coal Gas.

THE new mode of purifying coal gas, for illumination, mentioned in our last as the invention of Mr. Ledsam, appearing to possess considerable claims upon public attention, we have endeavoured to obtain some further information relative to the process, and in the absence of the specification, which is not yet enrolled, we beg to lay before our readers a few remarks connected with the subject, and a brief statement of the general features of the process, as well as we have been able to collect them.

Nearly thirty years have elapsed since the practical introduction of gas-lights, and it must be admitted that many ingenious and most important improvements have been suggested and adopted, in its production, from time to time, in proportion as it has been brought into more extensive use; but whilst the astonishing discoveries in chemistry, during the same period, have been successfully applied to so many operations connected with manufactures and the arts, it is a very singular fact that the purification of coal gas, which is obviously a chemical process, is at present conducted, nearly, as it was fifteen years ago.

In the infancy of its application to useful purposes, the simple passage of the gas through water, was considered a sufficient purification. In 1810, Mr. B. Cook, of Birmingham, recommended the use of lime-water; and although many patents have since been granted for newer methods, several of the largest gas companies have actually returned either to this old plan, or to some modification of it. Indeed, lime, in different states of humidity, or in solution, is universally employed. It is found, however, generally to be inconvenient for the purpose, as well on account of the large quantities required, as of the expense and labour attending its application, and not less on account of the nuisance and bulk of the refuse lime. In the largest works ten tons per day are thus consumed, and even the aid of a steam-engine, is necessary to agitate the solution.

As the efficacy of lime as a purifier depends chiefly on its alkaline properties, attempts have been made to introduce as substitutes for it, potash and soda; both of which are decidedly superior to lime; but the expense attending their use has hitherto prevented their adoption. This objection, however, cannot be urged against the volatile alkali, ammonia, which may be readily procured in ample quantity in all gas works, from the liquor deposited in the hydraulic main; and, when properly prepared, which may be done at a trifling expense, it becomes not only a better purifier, but is also very considerably cheaper than lime.

The following is a brief sketch of Mr. Ledsam's process:—In the first place, a quantity of the ammoniacal liquor is saturated with muriatic acid. It is then reduced by evaporation, until it will crystallize on cooling. A portion of the crude muriate of ammonia thus obtained, is mixed with about two-thirds its weight of quick-lime, and put into a retort, over a moderate fire. From this retort a copious stream of ammoniacal gas is given out, and is brought into contact and mixture with the coal gas, which is chemically acted upon and deprived of its impurities; after which it is passed through a vessel of water wherein the ammonia is retained, and whence *it may be re-produced for future use*. The muriate of lime, remaining in the retort after each operation, will serve instead of muriatic acid, to convert fresh quantities of ammoniacal liquor, to the state of muriate of ammonia.

The apparatus is simple and not expensive, and the principle may be immediately applied where the wet-lime system is in use. The materials are two-thirds less expensive, and not one hundredth part of the bulk of lime. The attendance on the largest work will not employ more than one man. The quantity of gas is greater than usual. The operation may be conducted in the open air, and the cost of purifying may be estimated at about three half-pence per thousand feet, exclusive of the patent right. [Ib.]

Account of a New Phenomenon observed in the emission of Steam, and one which affects the ordinary Safety Valve. By M. CLEMENT.

M. CLEMENT has communicated to the Royal Academy of Science in Paris, some singular results observed by him, connected with steam. When steam is greatly compressed in a boiler, so that a strong current is made to blow out through a small orifice, a metal plate, or disc, being presented at a little distance from the orifice, is forcibly repulsed; but if it be brought near, and pressed, so as nearly to close the orifice, and cause the steam to escape in a star form, or radiant direction, round the outside of the disc, an external pressure will be found to act upon the disc, and it can only be set at liberty by forcibly raising it.

If the aperture of the steam vessel be directed towards the earth, the disc, notwithstanding the downward pressure of the steam is added to its own gravity, will not fall, but remain suspended; and force must be employed to make it quit its position. The same result takes place, if the experiment be made with the strong wind of the bellows of a smith's forge.

In the first experiment, M. Clement ascertained that valves of ordinary strength, which are true discs, placed upon the orifices of boilers, present danger inherent in their form. When they are only lifted just enough to let a thin sheet of vapour escape from the aperture, it becomes impossible to raise them any more by the force of the steam; and if the production of steam be too rapid to be discharged

by this small opening, and the strength of the copper be unequal to resist its force, an explosion will take place, though the valves are partially open. This, though it has been thought incredible, is what has really happened.

M. Clement says, that time does not permit him to explain the discovery he has made of these singular phenomena; it is only known that he attributes them to a vacuum, which is formed in the steam at very high pressure, in consequence of the great swiftness of its molecules; and by the conical form of the tube, through which the vapour is passed, causing it to dilate itself towards the edge, much below the atmospheric pressure; the force of the atmosphere is thus enabled to act with sufficient strength on the moveable disc, to enable it to resist the vapour.

Security against danger, in this experiment, depends on taking care that there should be a sufficient distance between the openings and the edges of the disc. It is necessary that the first should be large, and the other small, otherwise the employment of a conical tube to the valve, would diminish the effect of the atmospheric pressure.

M. Clement is of opinion, that some length of experience will be necessary to become acquainted with the best mode of making secure valves, capable of preventing the danger to which he has alluded; and he strongly recommends that experiments should be made, keeping in mind the hints which he has given. [Ib.]

NATURAL HISTORY.

THE BEAVER.

From vol. 2 of "American Natural History."* By John D. Godman, M. D.
Professor of Anatomy in Rutgers College, N. Y. &c. &c.

Castor Fiber: L. ERXL. &c.

Le Castor, ou le Bièvre: BRISS. Regn. An. p. 133.

Le Castor: BUFF. viii. pl. 36.

Castor Fiber: SABINE, App. p. 659. SAY, Long's Exped. to the Rocky Mountains, vi. p. 464.

TRUTH, alike the object, and reward, of all rational inquiry, is too delicate and unobtrusive to be advantageously approached or estimated, unless the mental vision be entirely free from prejudice, and her votaries, for the sake of her unostentatious, though unfading charms, forego the pride of worshipping the fantastic creatures of their own imaginations. Accessible to all, who in the proper disposition seek her presence, how many ages have elapsed, during which fiction has been pursued in her stead, till at length opinion gains

* Just Published by Carey, Lea and Carey, of this city.