Scientific American.

NEW YORK, OCTOBER 23, 1853.

Revolution in Vulcanized Fabrics.

Who has not heard of the "Great India Rubber Case,"—its interminable and apparently unexterminable character. There is a prospect, however, of its annihilation—not by law, that is impossible, but by an opponent in the form of a new discovery, whereby gutta percha is rendered flexible and capable of enduring as great a heat as vulcanized india rubber, adapted to all the same purposes, and made into similar articles. In the Machine Room of the Crystal Palace, various articles of the vulcanized gutta percha are exhibited—such as coats, car springs, packing, &c. They have the appearance of prepared india rubber goods, are said to be more tenacious, not so liable to decompose, and fifty per cent. cheaper. There is a case of Goodyear's prepared india rubber goods, beside those of the gutta percha, and for variety and extent of application far exceed the latter: thus there are india rubber canes, knife handles, coats, shoes, balls, fancy ornaments, and a hundred other things. The manufacturers of gutta percha say they can make similar articles, but have not had time to manufacture such a variety yet. An account of this new discovery will no doubt be interesting to all our readers. The inventor is John Rider of this city; he secured a patent for the process on the first of June last year.

Gutta percha, is a gummy substance discovered only seven years ago in the East Indies, and the first description of it published in our country, appeared in the columns of the "Scientific American." It is obtained from the juice of a tree, and comes here combined with many woody impurities, two rough lumps of which are shown in the Crystal Palace. Its qualities, as known heretofore, were its sensitiveness to heat at 80° or 100° Fah., whereby it was rendered plastic, and could be moulded into any form, and again become hard as a bone at 60° Fah. Mr. Rider's process consists in so treating it that it can still be moulded into any form, spread upon goods to make them water-proof, made elastic, and finally rendered capable of standing a heat of over 300° Fah., without becoming soft.

The process is as follows:—all the solid woody fibre is first removed from the gutta percha, and then it is submitted to heat in a proper vessel to about 400° Fah., for from two to four hours, until all the volatile matters are expelled. When so heated it is in the state of a thin dough. The gutta percha, however, may have this heat applied to it either by hot rollers, hot air, or steam, and it is the expulsion of these volatile matters from it, which forms the basis of the new discovery. To every eight pounds of gutta percha so prepared, three pounds of the hyposulphate of lead or zinc are added and mixed thoroughly by passing them through a series of heated metallic rolls like those for mixing sulphur and caoutchouc, only for gutta percha the rolls need not be so hot by 30° Fah. To make heavier goods, about 4 lbs. of Paris white and one pound of manganese oxyde may be added to the mixture. When thoroughly incorporated, the compound is to be spread upon cloth into sheets, or moulded into any shape, but it is still liable to be affected by solvents and changes of climate, equally as much as native gutta percha. To render it permanently elastic at all temperatures, the goods are submitted to the curing operation. This operation is analogous to that of curing india rubber goods, with some exceptions. The articles are placed in a room or vessel as nearly air-tight as possible, and are then subjected to a heat of 280° or 320° Fah. This is a higher heat than that used for curing india rubber; the time required for curing varies from two to ten hours, according to the massiveness of the articles—the thicker requires the longer time. Articles liable to come in contact with one another during the curing process, should be dusted over with flour or some non-adhering substance. After the curing operation is completed, the goods are withdrawn, washed clean with water, dried, and are then ready for use. If required to be entirely freed from odor, instead of being merely washed with water, they must be boiled in a solution of potash, then well washed in water and dried in the sun. The hyposulphates herein mentioned, as mixed with the gutta percha, are sometimes advantageously employed in combination with metallic sulphurets for metallic thyanizing the gutta percha. In such cases, preference is given to artificial sulphurets resulting from precipitation, on account of the fineness of the precipitates—they mix better in such a state of subdivision.

The preliminary preparation of gutta percha described, for the after processes, would destroy india rubber. As the gutta percha softens before vulcanization at a lower temperature than india rubber, it is more favorable for mixing with the other ingredients, as it does not adhere so readily to the mixing heated rollers. As it requires a higher heat than india rubber in the curing process, so as to render a complete union of vulcanizing materials with it; the goods so made are said to withstand a far higher heat than those of vulcanized india rubber.

That the discovery is a valuable one, no one can doubt who views the goods made by it. If vulcanized gutta percha goods can be made, at one half the price of those made from india rubber, and equally as good, a great benefit has been conferred upon our country by this invention.

Making Hat Bodies—Important Patent Case.

U. S. Circuit Court, New York, before Judge Nelson.—On the 12 inst., Judge Nelson granted an injunction against J. and J. H. Prentiss, W. H. Ames, H. Moulton, and L. E. Hopkins, on the complaint of Burr & Taylor, assignees, for infringing the patent of H. A. Wells, for making hat bodies. The opinion delivered by Judge Nelson went over the whole ground of the invention and the controversy in the case.

On the 25th April, 1846, H. A. Wells took out a patent for an improvement in machinery for manufacturing hat bodies, which consisted in feeding the fur after it is picked to a rotating brush between two endless belts of cloth, one above the other, the lower horizontal, the other inclined, so as to compress the fur, and enable the brush the better to take hold of it, and which, moving with great velocity, throws it into a chamber, or tunnel, which is gradually changed in form toward the outlet at the other end, for the purpose of concentrating the flying fur and directing it on to a cone, which is placed just in front of the delivery aperture of the chamber to receive the fur. The cone is perforated, or made of wires, and the air beneath exhausted by a contrivance fitted to form a partial vacuum. There is also an opening in the chamber to let in the air, which, with that produced by the action of the revolving brush, more readily directs the floating fibres of the fur in the chamber to the exhausted cone, in connection with the draft produced through the wires by the exhaustion of the air below. There is also a contrivance at the end of the chamber or tunnel, where the fur is discharged on the cone, to regulate and adjust the thickness of the bat, corresponding to the parts requiring more or less in the formation of the hat-body.

After the bat is thus formed on the cone, it is removed, a somewhat delicate operation, as the fibres have not sufficient adhesion until subjected to a hardening process; therefore the bat is covered with moist felted cloth before being removed, over which is placed a perforated metallic cone to produce pressure upon the fibres of the hat, and at the same time admit of the circulation of warm water, in which it is immersed, to harden the hat preparatory to the felting; also another metallic cone is placed within the one on which the bat is formed, as that is thin, so as to enable the whole to resist the pressure of the surrounding water in the process of immersion.

The patentee claims, among other things: 1. The chambers into which the fibres of the fur are thrown by the brush, in combination with the perforated cone, placed in front of the aperture of delivery for the purpose and in the manner substantially as described, the said chamber being provided with an aperture below and back of the brush, for the admission of a current of air, to aid in throwing and directing the fibres on to the cone as described. And 2. In the process the patentee claims hardening the bat while on the perforated cone, and preparatory to its removal therefrom by immersing it in hot water as described.

The defendants denied the originality of Wells' invention, saying that the same thing was invented by Thomas Williams, who took out patents in England in 1833 and 1837.—Evidence was adduced, however, to prove that Wells invented his in 1833. It was also shown in defence, that Thomas Blanchard, the ingenious innventor of the machine for turning gun stocks, invented the plan for making woolen and fur batting by using the vacuum process; he deserves the credit of this, but Willis adapted it to form hat bodies, and invented the hardening process. The defendants did not harden felts by hot water, but by jets of steam, and considered that their process was different, but Judge Nelson decided that it was analogous, and every point set up by the defence he considered untenable. This patent of Wells was tried at Common Law in May 1850, and the jury decided in its favor, and a perpetual injunction was then granted for that District. All the parties in this case are men of capital; the patent is a valuable one, and the assignees, we learn, are coining money at a rapid rate.—How much they paid for the patent, or how much they may be *paying* for it, we do not know; we hope they are more generous than the assignees of Chaffee's india rubber patent were; let the children of genius as well as the men of good business qualities have their reward.

Tanning Patents---Kennedy's Process.

The tanning interests of our country being so extensive, every patent issued for shortening the process of making leather, as a consequence, attracts a great deal of attention, and elicits a number of enquiries from our readers. The ablest articles on tanning ever published in our country, appeared in Vol. 5, "Scientific American;" they were furnished by one of the most—if not the most—experienced leather manufacturers in the United States, and who with his practical experience, combines great ability and a fine education. We have also published the specifications of "Hibbard's Process," and that of "Eaton," both of which have caused some excitement among our tanners. Having had a number of enquiries made about the process of David Kennedy, of Reading, Pa., which was patented Nov. 16th, 1852, we present the following abstract of it; nothing being left out that is of the least consequence:—

The process consists in using a mixture of catechu, &c., with nitrate of potassa, or other like nitrates, alum, and borax, along with water, to form a tanning liquor. The following mixture answers very well: 12 lbs. of terra japonica, dissolved in 4 gallons of hot water; 1 lb. of nitre dissolved in one quart of water; ½ lb. of alum dissolved in one quart of water, and ½ lb. of borax dissolved in a like quantity of water. In such proportions, these ingredients may be stored up in casks for use; these mixed together form the tanning liquor for skins and hides, which is to be used like any other tanning liquor, and the skins worked in any known way. Some of these materials may be replaced by others of strong tanning properties.

The claim is simply for the use of the *borax* in combination with the alum, nitre, and solutions of tanning. The property claimed for the borax is that of what is called *raising* the hides without injury for safe tanning. Borax has indeed peculiar qualities, but as it is a salt with the alkali preponderating, its quality in a tanning liquor, we should suppose, was negative and not positive to the action of the tanning ingredient.

Tunnel Railways in Cities.

There has just been issued a prospectus of a new subterranean railway through London, to be carried on beneath the streets. The first portion of this railway is to be commenced at the south end of Westbourne Terrace, for the great Western Railway Terminus, and will proceed under the New Road to Battle Bridge, where it will join another branch, and eventually, it is said, should the undertaking prove remunerative, all the principal thoroughfares will be tunneled for this new species of traffic. The company commence with a capital of £1,500,000 in 15,000 shares of £100 each. The bill for making the railway has passed both Houses of Parliament; a part of the capital is subscribed, and operations will shortly commence.

Such a tunnel railway was proposed some years ago for Broadway, but there does not seem to be any prospect, at present, of it ever being constructed. We call uncle John Bull "a slow fellow," sometimes, but in many things he takes the lead of the world, and leaves others to follow, after long intervals, in his footsteps. This was the case with regular Ocean steam navigation. At present he occupies the advanced and only posts in submarine telegraphs, and iron tubular bridges; and now he has advanced his picquets into subterranean street railways.

Badly Constructed Clipper Ships.

It seems that great complaints have come to the Board of Underwriters in this city, from San Francisco, of the great damage done to cargoes which have been carried in some of our clipper ships. The agent of the Board in San Francisco in his complaint says:—

"A great deal of water is shipped in bad weather, particularly by the clippers, and they are not sufficiently provided with scuppers and ports in bulwarks to carry it off. The companion ways and scuttles are not sufficiently protected to prevent the water entering and passing into between decks.

Side ports and lights between decks are the cause of much damage, and are very dangerous. There should be several more scuppers in the between-decks, and cargoes should be dunnaged up one and a half to two inches, with strips laid crosswise, leaving a chance for the water to run off. Ships, generally speaking, are not properly dunnaged in the lower hold—frequently coal is put in the bottom for dunnage, in which case it should be covered with joist or plank, to prevent iron, machinery, or other heavy goods stowed thereon, working down into it, which, being wet with bilge water by absorption, must needs damage a great portion of the ground tier.

The bowsprits are not sufficiently secured, and most ships leak forward around the belts and masts. Great loss has been sustained by stowing grain in bags and packets between the beams and keels; it frequently gets damp or wet, heats and runs down, damaging ten times as much cargo by its heat and putrid smell as the grain itself is worth.

The iron-work of clippers has not been strong enough—many spars have been carried away by this defect.

There is lack of strength in many ships; the timber is not properly seasoned, being built in haste and badly caulked in cold weather. If clipper ships cannot carry their cargoes dry when new, what can be expected after a few voyages?"

[We publish this list of complaints, in order that our shipbuilders may take warning in time, before they lose their character, and in order that the attention of our underwriters may be more sensibly directed to the proper stowage of cargoes. Two weeks ago, a ship came into Boston from Liverpool with 70 casks of the hypochlorite of lime—bleaching powder—which was so badly stowed away, that it damaged nearly $1,000 of goods. It is not enough that commanders of vessels should be able to navigate them, they should be intelligent in respect to the nature of cargoes, so as to stow them properly to prevent one kind of cargo doing damage to another. We have seen a statement in the English papers respecting the American built clipper ship "Challenge," which has made such excellent passages from China to Liverpool, to the effect that although nearly new, she is so racked as to be in reality not half as good as the Aberdeen built clippers that have made as many voyages. American shipbuilders, this should not be; we know you can build clippers as celebrated for strength as speed, and we are well aware of the contract system of building just according to the price stipulated; but what we want you to do, is to unite, if possible, and agree not to build poor ships at any price. Do not let us lose our national character for building *good*, as well as fast clippers.

Imponderable Agents.

Article No. 4 has been crowded out this week for want of space, on Imponderable Agents, on our going to press, this week.