

heet from which the threads are cut; much time is also lost in examining the threads, to see that none but perfect ones are used, and much labor is expended in the frequent sharpening required by the cutters. The threads produced by the machine are placed in a stretched state at a short distance apart between the cemented surfaces of two sheets of cambric or other cloth, and the whole is then passed through rollers, which cause the two sheets of cloth to adhere together in the spaces between the threads of rubber; but there is little or no adhesion of the rubber and the cloth, and the consequence is, that the durability of the goods is much less than it would be if all the parts of the rubber adhered to the cloth.

This invention consists in a process whereby the inventor is enabled to produce shirred goods with a sheet of india rubber lining the entire surface of the cloth, thereby obviating waste, and employing a much less weight of rubber to produce a fabric of greater strength, elasticity, and durability. This object has long been sought after, but all attempts to make every part of a sheet of rubber adhere between two sheets of woven fabric have failed.

The improved process is as follows: In the first place both sides of the sheet of rubber are roughened in its manufacture, by placing it between two coarse cloths and then passing them through calender or spreading rollers between the coarse cloths after it leaves the rollers; or by passing the sheet, before it becomes hard or set, between the surfaces of two rough rollers or any other surfaces suitable to produce a roughness or a series of minute cavities all over both surfaces of the sheet. It is next vulcanized, and afterwards boiled in a solution of potash to remove the sulphur which is precipitated on the surface after vulcanization, and which would prevent adhesion. After this the cement is spread over both surfaces of the rubber, and the cloth is applied in the usual way, while the rubber is kept at such a tension as is necessary to give the goods the degree of elasticity required, and the whole is passed between rollers which have plain smooth surfaces. Plain smooth rollers are the best for this purpose, as they ensure better adhesion of all parts of the surface of the rubber and cloth; but a rib or figure may, if desired, be produced on the surface of the goods by grooving, embossing, engraving, indenting, or otherwise ornamenting the periphery of one of the rollers and covering the other roller with felt or some yielding substance. This rolling operation completes the process.

Self-Regulating Wind Wheel.—By A. Lempecke, of Mount Pleasant, Pa.—Consists in the employment of a spiral spring and weighted levers applied to the wings or sails, whereby the windmill is rendered self-regulating. The wings may be set so as to resist a given force of the wind. When the wind increases and presses harder upon the wings they open, and the current passes by. A windmill of this description may be exposed to a hurricane but its speed will not be increased beyond the measure or standard to which the machine is set.

New Method of Securing Corks in Bottles.—By Henry N. De Graw, of Piermont, N. Y.—The corks of wine, soda water, and other bottles, require to be fastened in with wire or cord, otherwise they are likely to fly out, in consequence of the pressure of gas within. Mechanism is employed to fill the bottles, and also to shove in the corks; but the wiring and tying operations are done by hand, a slow and tedious business. Mr. De Graw's improvement consists in placing a metallic ring around the neck of the bottle, to which ring a couple of hooked fingers or claws are hinged. When the cork is put in, the claws turn up and project over the top of the cork, one on each side, thus rendering it impossible for the cork to escape. To remove the cork it is only necessary to open or turn the claws one side. This contrivance is intended as a permanent fixture to the bottle; the expense is trifling. By its use bottles may be filled, corked, and secured before removal from the filling machine. It is an ingenious little invention.

Horse Shoeing Apparatus.—By W. P. Thomas, of Hillsboro', Ind.—Consists of a series of

windlasses and harness bands, whereby the horse may be so fettered as to render it impossible for him to kick or get loose during the shoeing operation.

Mortising Tool.—By Hitchcock and Amidon, of Greenfield, Mass.—This is an improvement on the hollow square mortising chisel and auger. The novelty consists in employing a burr cutter instead of the auger, which latter, the inventors allege, allows the mortise to become filled up and choked with shavings, thus impeding the action of the implement. The burr cutter grinds the wood to dust, and permits the chisel to go through the stuff at a less expenditure of power. There are also other special advantages.

Attaching Horses to Vehicles.—By James H. Wilson, of Nashville, Tenn.—The object of this invention is to prevent accidents from vicious horses. The inventor dispenses with the use of tugs in the harness, and makes a connection, for drawing the vehicle, at the forward ends of the shafts. This connection is of such a nature that it may be discharged by the mere pull of a cord; when, therefore, the horse becomes vicious, and begins to run, the driver pulls the cord, whereby the vehicle becomes instantly separated from the animal, and stops.

Improvement in Stoves.—By Merritt Peckham, of Utica, N. Y.—The novelty is in the construction of the barrel part of the stove, in which the fire is contained. It is made by combining together a number of plates or spokes, all radiating from a common center, like the spokes of a carriage wheel. Indeed, take a carriage wheel and cut off the fellys, leaving the spokes projecting out from the hub, and we have a good idea of the exterior appearance and construction of this improvement. The plates or spokes serve as radiators for the heat, preventing the stove from becoming red-hot, &c.

Passenger Register for Cars and Omnibuses.—By James Rodgers, of New York City.—This is a contrivance to be carried by our stages and passenger cars, for the purpose of keeping an account of the number of persons who ride. It is already in use on some of the small passenger cars in this city. The register is placed within the car in plain sight; is a clock-like contrivance, having a pointer and dial, and numbers running from 1 up to 100. When a passenger enters, the conductor pulls a strap, which strikes a gong in the register, and at the same time moves the pointer along one figure. At the end of the trip the pointer indicates the correct number of persons who have ridden.

Recent Foreign Inventions.

Locomotives Ascending Steep Inclines.—A. Regazzoli, an Italian, has taken out a patent in England for a new method of impelling railway trains up steep ascents. A cylinder having on its circumference two helices forming a double-threaded screw, is placed under and parallel to the axis of the boiler. This screw cylinder is set in motion by the engine, and it gears with a series of horizontal pulleys placed between the line of rails, which pulleys act as a left-handed screw, and thus the train is wormed up the incline.

Preparing Sisal Hemp, &c.—F. Burke, London, Eng., has obtained a patent for preparing the fibers of plantain, banana, and aloe, and other such plants, for making fibrous materials for textile fabrics. The invention consists in submitting the plants to the action of beaters fixed upon the periphery of a revolving drum, or roller, so that the fibers may be separated from the other vegetable matters with which they are combined. The platform upon which the plants are placed to be operated upon by the beaters, is covered with leather, and forms a sort of cushion. This is similar to the old method of beating fine sea island cotton preparatory to the carding process for making fine yarn. It is applicable, it seems, to preparing the aloe, from which sisal hemp is made, as described, in the two preceding numbers of the SCIENTIFIC AMERICAN.

Looms for Weaving Pile Fabrics.—C. Toye, of England, patentee.—This invention consists in applying to such looms two frames, one of which carries an adjusting bar, and has placed in it a series of wires or dents with blanks or

stops between them, while the other has placed in it a carrier heddle. These frames are placed between the reed and the ordinary heddles, to regulate the distance between the foundations of double woven fabrics, and thus to regulate the length of the piles or terries of such fabrics. Also in adding to such a loom a terry wire or wires, and apparatus for working the same, by which two looped or terry fabrics may be simultaneously produced.

Steamboat Danzars.

On the evening of the 15th inst. the steam ferry-boat *New Jersey*, while on her regular trip from Philadelphia to Camden on the opposite side of the Delaware river, caught fire and was consumed, by which sad accident no less than fifty-six persons lost their lives. It seems that the boat met with a large mass of ice, which checked her progress, and at the same moment was heard the fearful cry of "fire." The flames were first seen near the smoke stack, and they spread with great rapidity. The passengers were driven to the extreme forward part of the boat, and the pilot headed her for a pier below Arch street, Philadelphia.

She came within two feet of the wharf when the pilot and the engineer were driven from their posts by the raging fury of the flames. The pilot and several other persons then leaped upon the wharf, and an attempt was made to throw a rope to those on board, but without success. As the blazing steamer dropped away, despair seemed to seize the passengers who were huddled at the bow, and numbers of them leaped into the river, preferring to be drowned rather than be roasted alive.

This accident has produced a deep and painful sensation in the hearts of the people of Philadelphia and Camden; and no wonder. It is one of the most heart-rending catastrophes that has taken place in our country since the burning of the *Henry Clay* on the North river a few years ago. There were no life-preservers on the *New Jersey*, and no adequate means provided for extinguishing the flames and saving life. This is the case with all steam ferry boats. Those belonging to New York city—of which there are about fifty—are destitute of the means of saving the lives of passengers in case of fire, collision, &c. They are not provided with life-preservers, adequate life boats, nor fire extinguishing apparatus. All river steamboats ought to have a life-preserver for each passenger, a number of life-boats, fire pumps and other means for suppressing fire. These are compelled, by the new law of 1852, to carry such appliances for saving life in cases of danger; but ferry boats are exempted from the claims of this law. Now we are confident that the exempted boats are quite as liable to accidents as coasting or river steamboats, and that, instead of being exempt, they should be most strictly compelled to observe the law.

The ferry boats running to and from New York City are frequently so crowded with passengers they have scarcely room to stand. It is not uncommon for 800 or 1000 persons, besides two or three dozen horses and carts, to be gathered on one of these boats. Should such vessel take fire in the middle of the river—and especially, as we have sometimes seen, when an engine is arrested at the dead points—the result would be dreadful. Ferry boats are exempted from the provisions of the new Steamboat Law in not being compelled to provide safety apparatuses for accidents! Such an exemption exhibits either stupidity or something worse on the part of the framers of this law. We were informed by one who spent a great deal of time and means to get it passed, that steam ferry-boats were embraced in a clause in the original draft, but this clause was struck out through the influence of one person largely interested in ferry boat property in this city. We now call upon Congress, in the names of those who have recently lost so many near and dear relatives at Philadelphia to take this matter up at once, and pass a supplementary act to the Steamboat Law of 1852, in which shall be included all steamboats now exempt from its provisions. Also to provide that all steamboats—those carrying passengers especially—be constructed according to the suggestion of "A Ship Builder" in the last number of the SCIENTIFIC AMERICAN,

viz., with iron bulkheads enclosing the entire boiler rooms, to prevent fires. Had the *New Jersey* been so constructed, the calamity we have recited would not have taken place.

On the afternoon of the 20th inst. the steam tug boat *Leviathan*, belonging to this city, took fire near Sandy Hook, and so sudden did this occur, and so swift did the flames spread that the crew had barely time to launch the life-boat and escape. In two minutes from the time the fire was first noticed the whole upper part of the vessel was enveloped in flames. This was the finest steam tug afloat, and cost \$70,000. If such an accident were to take place on any of our ferry boats when in the middle of the river all the life-preservers and life-boats in the world would not be able to save one-tenth of the passengers. "Prevention is better than cure," and we therefore hope this important amendment to the Steamboat Law will soon be made. Let not Members of Congress "deliberate in cold debate" respecting the passing of such an act, while thousands of our citizens in every State are liable every day to suffer from such accidents as those just recorded.

American Association for the Advancement of Science.

The next Annual Meeting of the above-named Association will be held in the city of Albany, N. Y., in the month of August next. We understand that invitations have been given to a number of the savans of Europe to be present on the occasion, and that some of these have been accepted. Some of the agents of the Atlantic steamers have offered a free passage to certain of these savans, and it is believed that the Committee of Arrangements, at Albany, will enable some of them to visit our country without its costing them anything. This is very gratifying. The Hon. Jas. S. Wadsworth has subscribed \$500 to defray Liebig's expenses, and others in Albany have also subscribed liberally. "The State Museum of Natural History" is then to be inaugurated, and Wm. H. Seward is to deliver a lecture on the occasion. This, we think, is a wrong arrangement. Some well known naturalist, like Agassiz, should have been chosen to do this. "The Dudley Observatory" is also to be inaugurated on the same week, and Edward Everett is to deliver the oration on that occasion. This we conceive is also a bad arrangement. The honor of doing this should have been awarded to a man of science—an astronomer such as Prof. Mitchell, or Pierce.

The meetings of this Association have hitherto been characterized more for the presentation of papers on curious rather than useful scientific subjects. It would please us much if our engineers and mechanics would attend this meeting, and present a strong front in the mechanical section of the Association, we would also like to see a strong body of our practical chemists present from the calico print-works, dye works, oil works, soap-works and laboratories—representatives whose science is useful—whose science is applied to every-day life.

Those who are called "our more intelligent classes," have generally incorrect ideas regarding men of science. They consider that men who are acquainted with the fossils of the earth, the movements of the stars, &c., are the men of science—savans,—while those who can build ships, and engines, and houses, and bridges, are mere mechanics; they have a kind of adoration for the former, but no respect for the latter. Now we have no hesitancy in asserting that the latter are the greatest savans.

Orfila's Hair Dye.

Take 5 parts of the sulphate of lead, 5 of slacked lime, 30 of water—all by weight—boil these four and a half hours together, and collect the powder formed. The moisture must all be driven off, and this powder made into paste with water, and applied to the hair.

Litharge and lime effects the same object by making them into a paste, applying the paste to the hair before going to bed, and covering up the part to which it is applied with a cloth. It bakes on the hair almost as hard as plaster, and is very disagreeable to take off, but it colors the hair black, and that most effectually.