ever, differs essentially from the "elastic gore cloth," made in accordance with my invention, as the edge of the former is turned over parallel to the warp.

I do not claim the peculiar elastic cloth as made with its filling arranged at an acute angle with its warp; nor do I claim the elastic as made of two layers of such cloth combined.

But I claim as an improved manufacture an elastic band or gore cloth, when made not only of a fabric composed of a cement of India rubber or gutta percha and two pieces of cloth, in which the warp and weft of each piece are made to cross one another diagonally or at acute angles, but with the edges of the cloth cut and overlapped, and cemented down in a line or lines out of parallelism with either the warp or weft threads; the line of maximum elasticity in the binding, making that angle with the warp as well as the weft, which is the compliment of half the angle which they make with each other.

ABDOMINAL SUPPORTER—Julia M. Milligan, of New Albany, Ind. Patented Feb. 10, 1857: I claim the bandage, a, substantially as described, provided with a series of cords, g, and laces, b, or their equivalent, applied and operated substantially in the manner and for the purposes set forth.

LOOMS—Wm. V. Gee, of New Haven, Conn., assignor to The Atwater and Bristol Manufacturing Company, assignors to The Nashwannock Manufacturing Company, of East Hampton, Mass. Patented Feb. 27, 1855: I wish it to be distinctly understood that I do not limit myself to the special construction of parts, or their arrangement, as these may be greatly varied by the substitution of mechanical equivalents.

But I claim the privilege of varying them, so long as I attain the same ends by substantially the same means.

I claim, first, Mounting a loom with two distinct sets of harness, each governing all the warp threads, for the weaving of a web on one side of an intended button hole or slit, and capable of being thrown out of action each by itself while the other set is in action, during the process of weaving button holes, substantially in the manner and for the purposes before specified.

Second, I claim connecting each set of harness capable of being thrown in and out of action, and governing all the warp threads on either side as described, with a bar or slide govered by a cam or catch or the equivalents thereof, to throw one or the other of the said sets of harness out of action when necessary, substantially as described.

Third, I claim the combination of the mechanism before described for causing one set of harness to cease its action, or any equivalent therefor, with another mechanism substantially such as is before described for determining the period during which one set of harness shall remain out of action or lay dormant, or the time or moment at which such harness shall cease to act or any equivalent therefor; the combination acting substantially as and for the purposes set forth.

Fourth, I claim the combination of a slow moving cam, or cams, or its or their equivalents, for determining the time and period or time or period during which a set of harness shall be out of action as before set forth, with harness substantially such as is before described, mounted in sets, each set governing all the warp threads on one side of a button hole, so that different sets of harness may be in action or laying dormant at proper times and for proper periods, for purposes substantially such as are described.

Fifth, I claim a contrivance substantially such as is specified for throwing the take-up motion out of gear or any equivalent therefor, for stopping the take-up, in combination with two sets of harness, each governing warp threads, substantially in the manner and for the purpose described.

And lastly, I claim the combination of a slow moving cam, substantially such as is specified, or any equivalent therefor, with a mechanism for stopping or starting a take-up motion, substantially as described, or any equivalent therefor, whereby the time and period, or time or period of the stoppage or cessation, from action of a take-up motion may be determined automatically for the purposes substantially as set forth.

STENCILING WINDOW SHADES—Daniel Lloyd, (assignor to G. L. Kelty and D. M. Ferguson,) of New York City. Patented Jan. 29, 1856: I claim first, Producing patterns on window shades in which long or continuous lines form a prominent feature, by means of a pair or pairs of stencils of the full size of the design, prepared substantially in the manner set forth.

Second, The mode of registering the stencils by the use of the plates, E, and pins, C, for the purpose of adjusting and readily adapting the stencil to shades, as specified.

COATING WATER PIPES—Jonathan Ball, of Elmira, N. Y. Patented December 15, 1843: I claim lining metallic pipes with hydraulic cement, by means of a cone, or its equivalent, guided through the pipe so as to lay on the cement of equal thickness, and with great certainty and economy, substantially as described.

[For the Scientific American.]

The Aquarium or Aqua-Vivarium.

We have requested the gentleman whose name appears at the end of this description to write it for us, believing that it will prove of interest to our readers:—

I will commence by giving a brief account of the history and theory of the Aquarium. The first hint on this subject is found in a book published at Leyden, in 1778, wherein it is stated that plants immersed in water, and exposed to the action of light, emit oxygen gas. In 1833, a Mr. Danbury, and in 1837 a Mr. Ward, again promulgated the practicability of supporting animal life by oxygen furnished by vegetable growth. In 1852, a Mr. Warrington and a Mr. Gorse almost simultaneously made experiments, which have resulted in the successful sustenance of animal life in connection with vegetable existence.

The Aquarium, or Aqua Vivarium, is founded upon the principle that aquatic plants, while growing, emit sufficient oxygen gas for the support of animal life to a limited extent; the plants, in their turn, forming their solid structure by means of the carbonic acid thrown off by the animals in the process of breathing. This is the theory; the application is as follows:—A clean, tight vessel, with glass sides, is employed for a tank. The bottom is first covered an inch deep with clean, coarse sand, upon which I have found it best to put a thin covering of dark gravel. A rude rock-work adds much to the beauty of the tank and to the comfort of its inhabitants. Over the surface there should be scattered a few aquatic plants—if marine, attached to stones or shells; if fresh water, having their roots buried in the sand; and water is then added, and the whole left for a week or more, until the plants are acclimatized and are growing nicely. When thus ready, the "stock" may be added by degrees, until the proper balance of animal and vegetable life is effected. In both marine and fresh water *Aquaria*, a mucous or fungous growth is soon developed, which may be kept down by pond snails, or by the buccinum or salt water snail.

My first attempt was with gold fish (*Cyprinus*); but not being able to obtain the proper plants, I stocked a confectioner's glass jar with a few other plants from the sea, and there soon appeared a large number of small animals, which, viewed by lamp-light, were very interesting. I have found that very deep and narrow tanks, of various shapes, have not succeeded so well as those having a much greater breadth than depth. The tank which I successfully stocked was of an octagonal form, of thirty inches in diameter and about eight in depth. Excepting the great difficulty of rendering it tight, this tank has succeeded admirably. After being in use for a long time, the rock-work is still covered with vegetation, and crabs, minnows, eels and mollusca still sport and wrangle in the home which they have so long occupied.

The animals which I have found to thrive most easily, and to accommodate themselves most readily to their new home, are the minnows or killy fish, the stickleback (*Gasterosteus trachurus*), the shrimp, small specimens of lobsters, hermit crabs, serpulidans, small common crabs, eels, and star-fishes. I have been told that the small sheeps-head (*Sargus ovis*) is also very good. The patella, the buccinum or sea-snail, the purpara or whelk, and several varieties of crepidulas, have also succeeded nicely. The scallop, one of the most beautiful of animals, whose iridescent hues are marvelous in their brilliancy, I have not been able to keep for any length of time. The barnacle, also so interesting in its mode of breathing and of catching its prey, has not lived long. The spider crab, which the ancients held emblematic of wisdom, and which is noted for his fondness of dress and mischief, has been found altogether too reckless of the consequences of his pranks, and has been banished to a tank kept for "unruly offenders." No animal in a tank, however, has behaved with more propriety and been productive of more amusement than the small species of hermit or soldier crab. They are ever active, and constantly ready to change their shells for their own gratification or that of beholders. They seldom pass each other without disputing the right of way, and yet never injure each other at all. A little incident will show the pleasure that may be found in observing them. While watching my tank, I saw a hermit crab cogitating upon the expediency of vacating his shell for an empty one lying near him. After mature deliberation, he concluded upon the exchange, and suddenly popping his tail into the vacant shell, he crowded out a cloud of particles, probably of decayed animal matter; this attracted the attention of a shoal of minnows, which immediately attacked the poor hermit, endeavoring to draw him from his shell. But a new claimant immediately appeared in the person of a common crab, who clasped the hermit in his claws and attempted to carry him off by "force of arms." The minnows, unwilling to be thus defrauded, now beset the robber, while the hermit, taking advantage of this diversion, crept quickly away from the scene of strife; doubtless convinced that "there is no place like home."

Prawns and shrimps are also objects worthy of admiration. No bird sails through the air with more gentleness than these fish float through the water. Star-fishes, likewise, are very pleasing; they live long in confinement, but are, however, quite greedy, and the larger ones will soon destroy a stock of buccinums. The small sheeps-head is said by those who have kept it to be very hardy. Many other aquatic animals will doubtless be found to be as suitable as those already named.

The study (for *study* it is) of Aquaria is but yet in its infancy in this country; and we may reasonably hope that when those who are close observers of Nature become interested in this matter, we shall learn much more of the "private life" of the inhabitants of the ocean than we have ever hitherto known. Probably no such facilities for the study of natural history have ever been offered as are now presented by the Aquarium. We have in our rooms, where we may examine it at our leisure, a sort of section of the ocean, whose inhabitants may be examined in their natural abode, and under most favorable circumstances. With such facilities it will be easy to learn more in a few months' observation than we have heretofore been able to learn by years of examination of dead or dying specimens.

Tanks may be made of various forms. The simplest are made of confectioners' jars or any open-mouthed glass vessels. These will answer very well for small specimens; but the best kind, most proper for the fish, and well suited for observation, are those made in a rectangular form, with four glass sides. It has been found very difficult to make these permanently tight, and at the same time free from the taint of cement. This has, however, been remedied, I believe, by some of the dealers in tanks, so that they may now be purchased so constructed as to be put into use without fear of leakage.

In a fresh water tank we have no anemones nor hermit crabs; but we have newts, the stickleback which builds its nest beneath the waters, the water-beetles, the tadpoles, and numberless others, which fully compensate for the absence of those that are found only in sea-water.

The speedy popularity of this piscatorial and botanical "institution"—the Aquarium—is undoubted. All that is needed is to exercise patient perseverance, regular attention, and, above all, perfect cleanliness. No decayed matter, animal or vegetable, must be permitted in the tank. A strict care to not overstock or crowd the animals, and a determination to overcome obstacles, will insure success; and the Aquarium will become—what it has already become to thousands in Europe—a "new pleasure."

CHAS. E. HAMMETT, JR.

Newport, R. I., Sept. 21, 1857.

[At the polite invitation of our correspondent, we were permitted, while spending some time at Newport this summer, to examine the specimens to which he alludes; and we have seldom spent an hour more pleasantly. Those who may feel a desire to behold the wonders of the deep, in miniature, are referred to the Aquarium of our correspondent, or to Barnum's Museum, in this city, where some good specimens are on exhibition. Mr. Hammett's modesty forbids his intimating in the above article that he is prepared to furnish Aquaria tanks of superior construction (an improvement of his own) to such persons as may desire to try their skill in raising the pisces, molluscs, and articulates of the mighty ocean, and to derive instruction from observing the life and habits of those curious creatures.—ED.

The Teeth and the Beard.

MESSRS. EDITORS—The remarks of "Dentist" on "the best means of securing a healthy denture" have induced me to suggest whether wearing the beard might not promote that desirable result? Hair is among the best non-conductors; and to deprive the face of that natural protection to the delicate nerves of the maxillary region, must, it seems to me, expose the teeth to the deleterious action of atmospheric vicissitude. S. Y. A. L.

[We think that the growth or want of beard can only affect the teeth by protecting them or otherwise from external cold, as the teeth are formed and grow from the jaw which is separate and distinct from the surface of the skin, in which are the juices that afford nutriment to the hair. We know many persons having naturally excellent teeth, who are very far from hirsute, and also persons with large fine beards and very bad teeth; so it does not seem as if there was any connection between the two.

Aluminum.

A new method of making this metal has recently been patented in England by F. W. Gerhard. It consists in placing fluoride of aluminum in an iron oven, which may be heated in various ways. This oven is first strongly heated, and on the floor thereof is placed a number of shallow dishes. A number of these dishes are filled with dry and well powdered fluoride of aluminum, and the remainder with iron filings. They are so arranged that all of those dishes which contain the fluoride are on all sides surrounded by dishes containing the iron filings. The oven is then closed and luted, and the heat increased to redness, after which a stream of dry hydrogen gas is introduced. The effect produced is, that the hydrogen gas combines with the fluorine, and forms hydrofluoric acid, which acid is taken up by the iron, and is thereby converted into fluoride of iron, whilst the resulting aluminum remains in the metallic state in the bottom of the trays containing the fluoride.

The Electric Telegraph.

The first overhead telegraph in London has just been successfully put up by an enterprising firm in that city, to connect their two places of business. The distance between the two establishments is about one-third of a mile, and the whole space is traversed by a single wire, suspended from pole to pole, at a great elevation above the intermediate houses. It is understood that another will shortly be erected by the authorities, to connect the police courts, the police stations, and the fire brigade stations throughout the metropolis, by an economical system of overhead telegraph, devoting one wire to detective police purposes, and one to fire purposes. The telegraph has been used for all these purposes in this country for some time. Uncle John is, therefore, behind Uncle Sam by some years in the domestic adaptation of electricity.

Bronze Powder.

The London *Builder* says that Herr Konig has made a series of experiments to ascertain the method of preparing this substance, hitherto a secret. From the result, it appears that the several varieties of bronze powdered leaf are each composed of nearly the same proportions of copper, zinc, and tin, and that the variation of color is owing to different degrees of oxydation, which have been produced by heating the alloy at different temperatures.

Salt.

An improvement in the manufacture of rock and sea salt has been patented in England, which consists in fusing the raw salt, and keeping it for some time in a state of tranquil fusion, decanting it into hot molds, or letting it cool slowly; in this manner all the impurities are separated from the mass in fusion, and are eliminated by crystallization by the dry process, which corresponds with crystallization by the wet one.

Tin Plates.

Tin plates—that is, tin plates of iron dipped into molten tin, which covers the iron completely—are manufactured in South Wales and Staffordshire, to the extent now of about 900,000 boxes annually, equal to 56,000 tuns, and valued at over five millions of dollars. In England, almost every article of tinware is formed from these plates. Nearly two-thirds of the total manufacture are exported, principally from Liverpool to the United States

Telegraph in Brazil.

A proposition has been made to the Brazilian government for the construction of a submarine telegraph from Pernambuco to San Pedro de Sul, communicating with various intermediate places along the coast.

The longest railroad in the world is the Grand Trunk of Canada, 856 miles of which are open. When finished it will be 1,112 miles