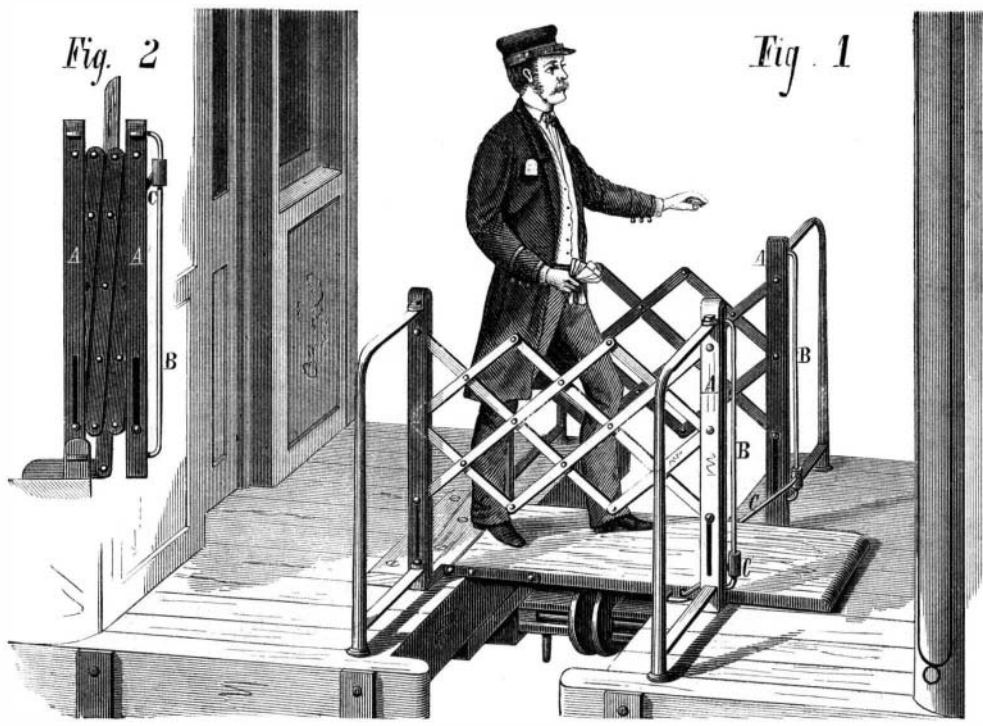
IMPROVED SAFETY BRIDGE FOR RAILROAD CARS.

The invention herewith illustrated is a gang plank and guard railing, designed for connecting car platforms, so that train employees and passengers can pass from car to car without danger while the same are in motion. The guards may be folded into a narrow compass so as to be out of the way when the cars are uncoupled.

The gang plank, Fig. 1, is hinged to an end piece which is rigidly secured to one platform, and is provided with fixed upright posts suitably connected to the platform railing. A pivoted guard rail extends along each side of the plank to movable upright posts, A, and is constructed in the form of lazy tongs, the folding of which is permitted through the lower ends playing in slots in the post, as shown in Fig. 2. The movable posts, A, are strapped to the platform railing, and are provided with guide rods, B, to which the gang plank is connected by swinging crank arms, C, shown in Fig. 2. These arms have sliding sleeves at their point of connection to the rods, B, so that the guards adjust themselves to the varying length of the platform during the motion of the train. They produce, when the gang plank is swung up, during the coupling or uncoupling of the cars, the simultaneous folding of the guard rail, and also the opening out of the same when the plank is lowered. The railing may be applied loosely to the platform or hinged to the fixed posts of the latter, so as to be swung sidewise. The device is equally well adapted to the gang planks of steamboats.

Patented through the Scientific American Patent Agency, May 16, 1876. For further particulars address the inventor, Captain L. F. Frazee, 194 Grand street. Jersey City, N. J.



FRAZEE'S SAFETY BRIDGE FOR RAILROAD CARS.

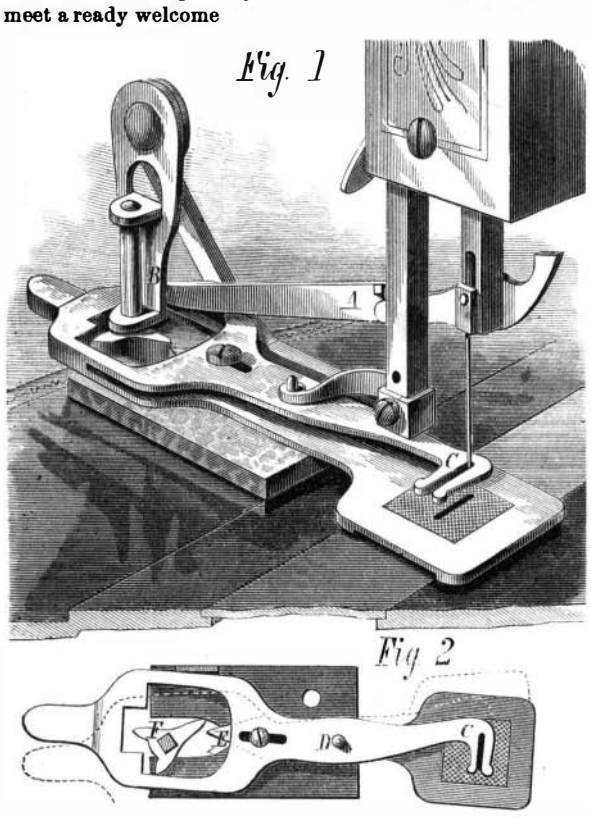
Captain Frazee will be remembered by many of our readers as the genial and popular captain of one of the steamboats that used to ply between New York and Long Branch.

Dyeing with Artificial Alizarin.

Forster proposes to add a fatty acid to the color, in order to produce upon cotton with artificial alizarin a red resembling Turkey red. He mordants with alumina, and dyes in an alizarin bath containing soap, neutralized with sulphuric acid. The mixture of alizarin and fatty acid, which separates out in fine flakes, dyes the tissues readily, and gives bright and solid colors—red, rose, and purple.

A NOVEL DEVICE FOR SEWING ON BUTTONS.

We illustrate herewith a very ingenious little attachment designed to render the sewing machine available for the sewing on of any kind of button. The device is simple and easily made and operated. In brief, it gives to the sewing machine a new capability, and for this reason will doubtless meet a ready welcome



It is obvious that, in order to give a button the necessary movement under the needle so that the latter can pass backward and forward from hole to hole, a different feed motion from that usually found in sewing machines is needed. And, moreover, such motion must be adjustable according to the distance between the holes in the button. This seems to be neatly accomplished in the present device.

A, Fig. 1, is an arm attached to the needle bar of the machine and jointed to the bar, B, which is pivoted to the inclined standard shown. C is the clamp for holding the work, and vibrates freely on the pivot, D, Fig. 2. Between the parts of the clamp is a bar, E, the pointed end of which protrudes into the opening in which is a cam, F, secured in a shaft which is attached to the bar, B. At each descent of the needle bar the cam, F, is carried backward, so that one or the other of its rear projections strikes the angles of the clamp plate, Fig. 2, and so turns its pointed forward end to either hand. When the needle bar rises the arm, A, swings the bar, B, forward, and the cam is carried in the same direction, so that it acts alternately first on one side and then on the other of the angle piece, E. This obviously vibrates the clamp and work under the needle. The piece, E, can be shifted along the plate and adjusted by the clamp screw shown, so as to regulate the throw of the clamp according to the distances between the holes of the buttons. The attachment can be adapted for use on any sewing machine, and is also suited for sewing on hooks and eyes, buckles, etc.

Patented through the Scientific American Patent Agency, April 4, 1876. For further particulars address the inventor, Mr. J. W. Fries, Salem, Forsyth county, N. C.

The Aquarium in New York City.

New York city is at last to have an aquarium. The subject of providing this most valuable means of study has been discussed repeatedly for the last ten years, and we, in common with others, have frequently advocated the establishment of a finny menagerie in Central Park. There is a probability of an aquarium being built in our great pleasure ground sometime in future; but before that collection is fairly begun, we doubtless will see finished the work recently started by private enterprise. The nearest approach to a large aquarium New York ever possessed was due to Mr. P. T. Barnum, who exhibited a number of tanks containing rare fish and a white whale (which some skeptics declared was of india rubber) in his old museum, which stood where the *Herald* building now is located. It is worthy of remark that to Mr. W. C. Coup, Mr. Barnum's former executive officer, is due the inception and undertaking of the present enterprise.

Work is already well advanced on the building, which is located on the plot of ground recently occupied by the Colosseum, at the corner of Broadway and 35th street. The edifice, says the *American Architect*, will be one story in hight, of brick, with large sash lights at the sides; and one immense skylight will form the roof. The tanks will be placed at a distance of three feet from the side walls, giving room for a passage, to accommodate pipes, and also to facilitate the passage of attendants. Light for the tanks will come from above, the spectator looking through a plate glass front. The sides of the tank are to be composed of slabs of slate, while rockwork will slant up at the rear. There will be a storage reservoir of a hundred thousand gallons, where a supply of salt water will be kept. This water will be conveyed from the river in barrels, and kept from stagnation by aeration, for which purpose air pumps worked by engines will be provided. The middle of the floor will be occupied by large tanks, built partly above and partly below the surface of the ground. These great tanks will be reserved for the white whale, sharks, and other large fish. Small tanks will be placed at convenient points; and when in running order, the establishment will be able to accommodate all classes of fresh and salt water fish.

Mr. Coup recently succeeded in capturing two white whales alive, in arctic waters, and in transporting them safely to a tank prepared for them in his building. Both, however, committed suicide in their endeavors to break through their narrow quarters, cutting themselves so severely, on projecting edges, that they bled to death.

Origin of Fiber in Puddled Iron.

The grain or absence of fiber is generally produced by the fusibility of the manganiferous or alkaline scoriæ, by the softness of carburetted or phosphuretted iron when heated, and by the high temperature at which the puddling is conducted; the fiber, on the other hand, results from the sparing fusibility of partially peroxidized scoriæ, and from the comparatively low temperature of the puddling.—*M. H. Le Chatellier.*

Historical Scientific Relics.

A remarkably interesting exhibition of scientific apparatus is now open in South Kensington, London. The enterprise was organized under government auspices, and is international. The collection includes not only apparatus for scientific research and for the teaching of science, but also any objects in any way connected with these. The end of the display is instruction and not advertisement, so that there is no competition and nothing in the shape of awards. Papers will, however, be read, descriptive of the articles exhibited.

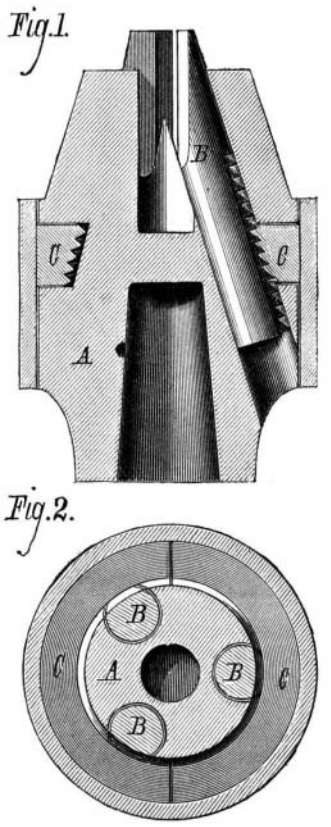
The most interesting part of the collection is that which includes modes and apparatus which are historical. Probably no such gathering of the results of the initial conceptions of some of the greatest discoveries and inventions n the world has ever before taken place. Among these are Bramah's original hydraulic press, the Comet, Puffing Billy, and Rocket engines; Newcomen's original model of his engine, a large collection of Watt's models, an unfinished steam cylinder made by Papin (1699), Sterling's model of his air engine, a link motion made by W. Howe in 1842, Symington's engine made for Dr. Miller in 1788 (the first engine used for steam navigation), the original model of the Eddystone lighthouse, and a bar lathe of Watt's. Still more interesting are the original apparatus with which Faraday obtained the magneto-electric spark; the original air pump and Magdeburg hemispheres of Otto Von Guericke, portions of the traces by which the horses were attached to one of the hemispheres being still left; also a stereoscope made by its inventor, Sir David Brewster, a "thunder house" made by Priestley, Galileo's telescope and several other of his instruments, Sir Francis Drake's astrolabe, the apparatus used by Joule in ascertaining the mechanical equivalent of heat, Black's pneumatic trough, a quadrant belonging to Tycho Brahe, a telescope by Huyghens, Babbage's calculating machine, Whitworth's original gages, the original Wheatstone bridges, and Armstrong's hydro-electric machine. There are hundreds of other exhibits, all connected with some great scientific achievement.

New Sulphate of Potassa.

The composition of this salt is: Sulphuric acid (SO_3) 44·9; potassa (KO), 50·6; water (HO), 4·6. The formula $SO_3KO + \frac{1}{2}HO$ would require: Sulphuric acid, 43·7; potassa, 51·3; water, 5·0.—*M. J. Ogier.*

ALMOND'S IMPROVED DRILL CHUCK.

We illustrate herewith a new and simple drill chuck, so constructed that the jaws have a large amount of bearing surface, and hence will keep true for a long period, that no dirt can enter the working parts, and that there is a direct connection between the jaws and the machine spindle, so that the parts become, it is claimed, as one piece.



The body of the chuck, A, Fig. 1, is turned of 1⅛-inch steel and is pierced with three guideways to receive the jaws, B. These are made of Stub's best wire, hardened at the gripping ends, and with the temper drawn to a blue at the part where the screw thread is cut. The thread engages with a corresponding thread in the embracing nut, C made and applied in halves as shown in Fig. 2. As the curves are alike, the jaws are prevented from turning on their own axes, although they are free to move endwise and towards the center, when the nut is revolved. The nut is hardened to a temper corresponding to the threaded part of the jaws. The latter have a slight twist, so that the tendency of the drill in the work acts to tighten their edges on the tool rather than to loosen them. The device, as a whole, is durable, compact, and cheap; and since all its parts are cylindrical and produced in the lathe, they may be easily duplicated.

Patented by Mr. T. R. Almond, February 8, 1876. For further particulars address the agent, J. M. Montgomery, 105 Fulton street, New York city. See advertisement in another column.