

contact or pressure between the contact device and the suspended conductor. If any importance is to be attached to these verbal differences, the earlier patent claims a tension device, the chief function of which is to exert a normal centralizing tendency upon the arm, but which of necessity must maintain the upward pressure, while the later patent claims one, the chief function of which is to maintain upward pressure, but must of necessity also exert the normal centralizing tendency. If there had been in the description anything by which it could be ascertained which of the structural features exercises one function and which the other, a different case would be presented. The matter sought to be covered by the second patent is inseparably involved in the matter embraced in the former patent, and this, under the authorities, renders the second patent void.

"It is manifest that both patents are intended to, and do, secure to the patentee the same general inventions. . . . although the earlier patent also covers improvements in the switches, and subordinate combinations between these devices and the elements of the principal combination. . . .

"We are of the opinion that claim 15 of the earlier patent describes and embraces everything of substance which is covered by claim 7 of the patent in suit.

"We are also of opinion that claim 33 of the earlier patent specifies essentially the same combinations embraced in claims 8, 12 and 16 of the patent in suit, and that the 'spring or weight' of claim 33 is the same thing as the 'tension spring' of claims 8, 12 and 16, the 'weight' being only an alternative element."

As the facts which were before the court on this appeal must necessarily be the same on final hearing, and as this decision does not extend the rule laid down in the much cited and much abused decision of the Supreme Court in *Miller v. Manufacturing Company*, it seems to be generally believed that this decision will be followed not only in this circuit, but by the Supreme Court, if the controversy should be carried there.

The patent has been in constant litigation almost since the day of its issue, and injunctions have, on the strength of Judge Townsend's decision, been granted against numerous roads using the under-running trolley, and also against manufacturers who have furnished stands and other parts used in trolley road equipment, on the theory of contributory infringement.

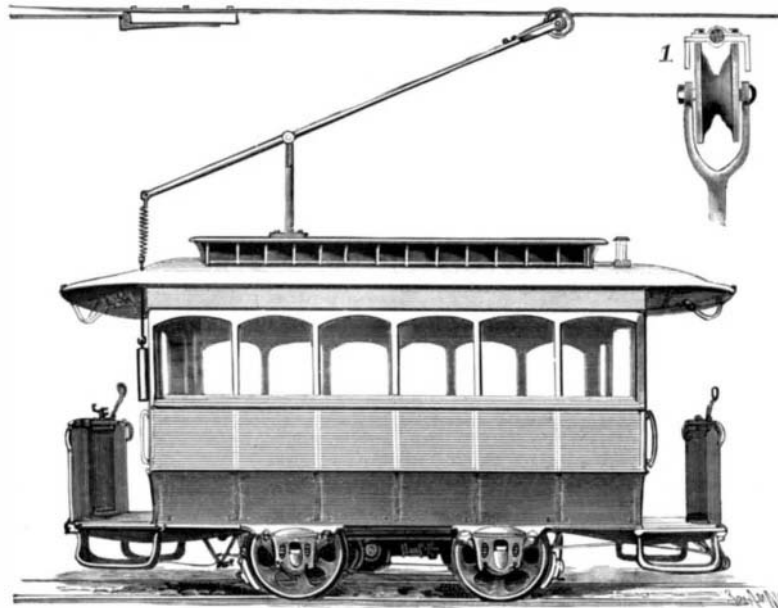
As late as May 17 last, the Circuit Court of Appeals for the Sixth Circuit affirmed an order of the Circuit Court for the Northern District of Ohio, granting a preliminary injunction restraining the Ohio Brass Company, manufacturers of trolley road equipment, from infringing the claims now held to be invalid. Precisely the same question was presented to that court, but the court, while evidently entertaining grave doubts as to the correctness of Judge Townsend's opinion, held that the decision of a circuit court of another circuit sustaining the patent should be of controlling weight in the court below, and that on appeal the case should be reviewed merely to ascertain whether there had been any abuse of discretion in the circuit court. The variance between the two decisions was simply as to whether Judge Townsend's decision should be examined collaterally. Judge Taft, speaking for the Ohio court, thought it should not, and Judge Wallace thought it should. The two decisions on the principal points at issue are therefore not inharmonious.

Dangerous Inks.

The London *Lancet* calls attention to the serious injuries which sometimes result from an apparently trifling scratch or puncture made with the pen. The chemical constituents of the ink which is introduced by the pen into the wound are not capable of producing septicemia, but microscopic examination proves that the ill effects are due to the liability of ink to contain pathogenic bacteria. Dr. Marpmann, of Leipsic, has recently published the results of the microscopic examination of sixty-seven samples of ink used in schools. Most of them were made with gall nuts, and contained saprophytes, bacteria, and micrococci. Nigrosin ink, taken from a freshly opened bottle, was found to contain both saprophytes and bacteria. Red and blue ink also yielded numerous bacteria. In two

instances Dr. Marpmann succeeded in cultivating from nigrosin ink a bacillus which proved fatal to mice within four days. This ink had stood in an open bottle for three months, and the inference to be drawn from the inquiry is that ink used in schools should always be kept covered when not in use. The practice of moistening the pen with the tongue is likewise a dangerous one.

The Bertillon System for Identifying Criminals.
H. P. Flower, Mayor of New Orleans, who has been



VAN DEPOELE UNDER-RUNNING TROLLEY.

to Paris to study the Bertillon system for the identification of criminals, has just returned. He said that, through the kindness of M. Bertillon, he had had an opportunity to master the system, which will be adopted by the Police Department of New Orleans. The mayor will teach the system to the police captains. The system was described in the *SCIENTIFIC AMERICAN* for April 3, 1897.

A NEW METHOD OF BUILDING SUBMERGED FOUNDATIONS.

We recently had an opportunity to inspect a full size working model of the proposed system of building submerged foundations which is shown in the accompanying illustrations. Its author, Mr. D. Jordan, a contractor of 800 Fulton Street, San Francisco, Cal., has for many years been engaged in the construction of various kinds of pier and bulkhead work, and the present method has been devised with a view to expediting the construction and lessening the cost of such work on all sites which offer a suitable foundation.

There are at present in use two or three leading systems of building such work. The first and most common is the pneumatic process, in which a caisson containing a working chamber is sunk to bed rock or other sufficiently firm material, the caisson being filled in with concrete and the masonry pier built upon it

massive blocks of concrete upon a suitable bed at low tide, and transport them suspended beneath a scow at high tide to the site of the work.

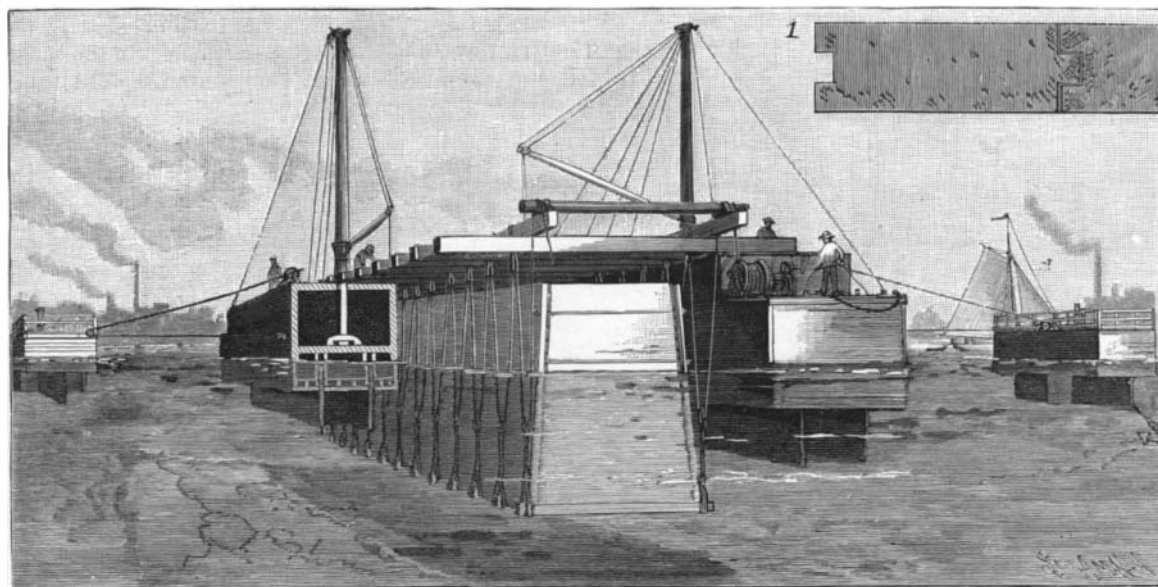
The system herewith illustrated, and which is protected by patents, differs entirely from the foregoing and possesses some points of practical advantage which will commend themselves to the engineer. Unlike the others, the whole of the sea wall, pier or bulkhead is built upon a platform suspended above the level of the water, and lowered as it is built until it rests upon the bottom of the river or harbor. In this way the use of the cofferdam, the pneumatic system, or of piling is unnecessary, and, judged on the face of it, the system should be considerably cheaper than any of those above mentioned. Its range of usefulness would, of course, be limited to those sites which offer a fairly homogeneous bottom, free from large boulders or projecting rock, and capable of being dredged to a true and level surface.

The illustration speaks for itself and needs but little explanation. Two large oblong barges are moored parallel to each other and at a little greater distance apart than the width of the foundation. Massive transverse girders, spaced a few feet apart, are laid across from roof to roof of the barges. Below them and just above the surface of the water is suspended a platform which is carried upon a series of girders spaced the same distance apart as the overhead girders above mentioned. A series of steel sheaves are suspended from two longitudinal stringers laid on the overhead girders, and a similar series is attached by steel straps to the girders of the platform. A wire cable is rove through each set of sheaves and its ends are wound on two winches located at

the ends of the barge. The masonry or concrete wall or pier is then built up on the platform, which is lowered as the building goes on until it rests on the bottom, which has already been dredged out for it. To insure that the rate of lowering shall be even on each side, the cables after leaving the drums are given a double turn around the heavy roller, shown in the engraving, before they pass to the sheaves. To give the barges lateral steadiness they are each provided with a pair of deep centerboards, and they are secured from forward-aft movement by heavy anchors. They are also secured by cables to auxiliary anchor barges, which are themselves provided with longitudinal and transverse centerboards, and are anchored in three directions as shown. The cables which connect the pier barges to the anchorage barges pass from the side of the former through sheaves on the latter and are carried back to the pier barge and drawn taut with a windlass.

It is claimed by Mr. Jordan that by this system he can build a sea wall or bulkhead in lengths with a tongued and grooved joint at the ends (Fig. 1) up to the water level, and from this point up construct them of continuous masonry. In the case of bridge piers which were too massive to be built on a single platform, the pier would be built in two halves up to the water line, and continued up to the desired height as a single block of masonry.

The system is also well adapted to the construction of dry docks. In such structures the blocks of concrete are packed watertight at the end joints. The outer wall surrounding the dock is first built, a temporary cofferdam being constructed at the entrance, then the water is pumped out and the inner concrete floor and abutting steps are made. Another suggestion of its use is the building of a harbor of refuge. The sea wall is first made quite high, and two hundred feet to the rear is a lower wall, the space between the two being filled in with sand, while the surface is arranged in a series of steps adapted for use in supporting artillery and protecting breastworks in case of war. Mr. Jordan's temporary address is Hotel Empire, Sixty-third Street and Boulevard, New York City, from whom further information may be obtained.



SUSPENSION METHOD OF BUILDING SUBMERGED FOUNDATIONS.

to the required height. In this system the caisson is surrounded by a cofferdam which permits the masonry to be laid dry until it is well above high water, the weight of the masonry serving to sink the caisson. A common method is to sink an open cofferdam, pump out the water, and excavate the material with dredges. Another plan is to drive piling, cut it off just above the river bottom, sink a grillage of 12 by 12 timbers upon it, building the masonry pier upon the grillage to the required height. Another system, frequently used in the construction of breakwaters, is to build

protecting breastworks in case of war. Mr. Jordan's temporary address is Hotel Empire, Sixty-third Street and Boulevard, New York City, from whom further information may be obtained.

A MONUMENT to the memory of Daguerre has been erected by public subscription at Bry-sur-Marne, and was inaugurated on Sunday, June 27. The memorial is a bronze bust on a stone pedestal, and is the work of Madam Bloch. At the close of the ceremony wreaths were placed upon Daguerre's grave.