AN INEXPENSIVE WINDOW AWNING.

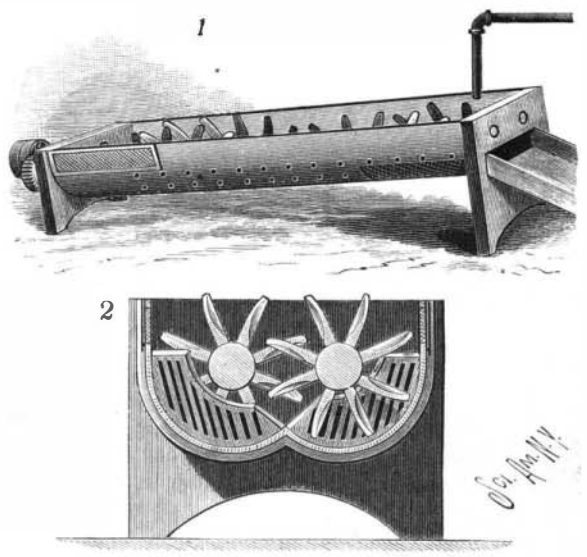
An improvement whereby the ordinary window shade may be used as a part of a window awning, serving when not so employed the ordinary purposes of a window shade, is illustrated in the accompanying engraving, and forms the subject of a patent which has been issued to Mr. Bernard Branner, of New York City. The ordinary spring roller shade, E, is shown extended outwardly as an awning, in which position it is supported by a keeper hook at each side in the outer ends of the stretcher rods, C, of the side wings, D. These stretcher rods are

BRANNER'S WINDOW SHADE AWNING.

each hinged on the lower end of an upright stay rod, secured one on each side of the window, the stay rods forming the upright supports for the wings, whose lower edges are connected with the horizontal stretcher rods. A cord, A, is passed through marginal rings in the wings, and by drawing on this cord the stretcher rods are folded upwardly, inclosing the attached wing material, a cord, B, facilitating the extension and securing of the awning in position. Different forms of side stay rods are contemplated by the invention, and the wings and their stretcher rods may readily be completely removed. When the shade is not to be used as an awning, it is released from the keeper hooks on the outer ends of the stretcher rods and drawn into the apartment, then becoming a pendent screen for the window. By a slight change in the location of the awning material the device may also be utilized as a screen for a door.

AN IMPROVED PHOSPHATE WASHER.

A simple device for separating sand, clay, marl or other substance from the phosphates, at the same time preventing the balling of the clay or marl, is shown in the illustration, and has been patented by Mr. William A. Beaty, of Plant City, Fla. The washer is represented in perspective in Fig. 1, and, as shown in transverse section in Fig. 2, the trough consists of two longitudinal sections, connected with each other in the middle to form a longitudinal ridge. In the two sections are transverse partitions, set to form alternating pockets, each of the par itions being perforated by slots. Through the pockets pass agitating arms set spirally and radially on shafts journaled in the legs of the trough, the outer ends of the shafts being connected with each other by gear wheels, and one of the shafts being connected with a source of power. The lower end of the trough is closed, except that it has side sections covered by wire netting, permitting the discharge of muddy water at this, the feed end of the machine. There are also perforations in the sides of the trough leading to the pockets, permitting the discharge of fine sand, clay or other refuse, and near the upper or discharge end of the trough are wire screen sections, over which the phosphate is passed to the discharge chute, the remainder of the sand, clay and marl, etc., being separated from the phosphate by the screens. Water flows constantly into the open upper end of the trough from a suitable supply pipe, meeting and thoroughly washing the material as it is fed forward by the rotating arms, the material being moved first from one pocket of one section to the alternating pocket of the other section, then back to the next forwardly alternating pocket of the first section, and so on until the refuse and the phosphates are completely separated by the time the latter are passed out of the open upper end of the trough.



BEATY'S PHOSPHATE WASHER.

BRIDGES ON THE TRANSANDINE RAILWAY.

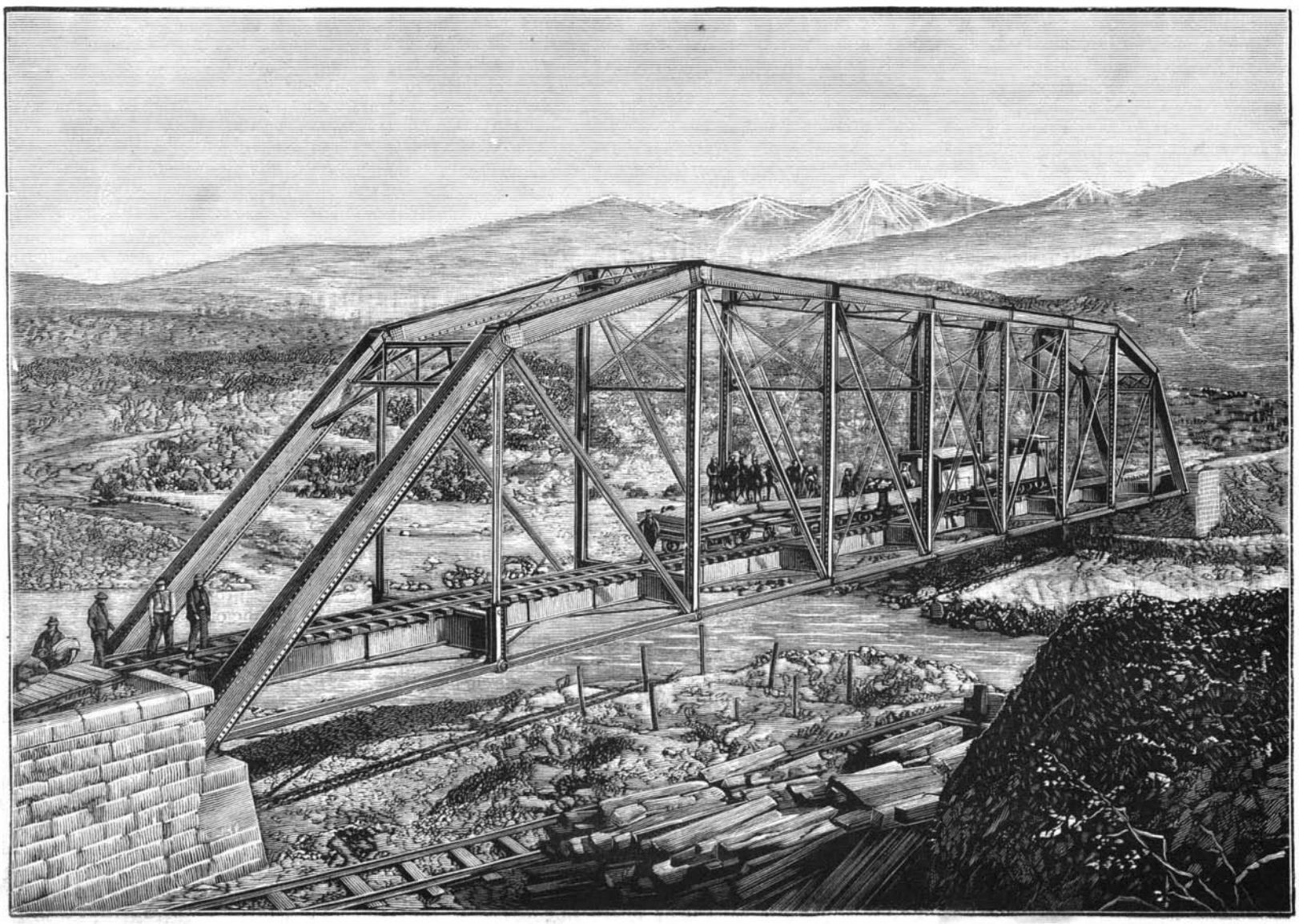
Of the new railway which completes the system across South America over the Andes range of mountains, connecting Buenos Ayres with Valparaiso, in Chile, 106 miles can now be traversed by trains, so that only 42 miles of the distance have to be traversed in carriages or on mules. These 42 miles involve the very laborious works of constructing the tunnels through the highest peaks of the Andes mountains. When completed the traveler will be able to cross the continent from shore to shore by railway in about 60 hours, whereas, by sea, round Cape Horn, the time taken is 12 days.

In the 109 miles of railway there are about six y bridges and culverts, varying in span up to 246 feet. We give an engraving of the largest bridge, of 246 feet span. The larger bridges are of American construction. The reason for this is cer ainly interesting, as it raises an important point on the relative value of American and British bridge building practice, and shows how that practice operates in the matter of securing foreign orders, or orders for foreign countries, which is not quite the same. Time was an impor ant element in the matter; the railway was practically completed, but could not be opened until the bridges were constructed and in position. Several British bridge builders were therefore asked to state the time they would require to build a bridge of 246 feet span, and the shor est time asked was eight months. A cablegram to one or two American firms brought the reply from two that they would deliver all the four bridges of the size required alongside a vessel at New York in eight weeks, while a third asked twelve weeks. There was no alternative. Cables were again sent to the three firms stating the load and the tests to be made when the bridge was in position, and offers were at once sent. The span we have given; the tensile strength of the steel used was to be from 26 to 30 English tons to the square inch, with an elongation of 20 per cent in 8 inches before fracture. The builders were to guarantee that the bridges satisfied the test requirements when in position. The main girders were to be 15 feet 1 inch between centers, to carry the single line of meter gauge (3 feet 3⅜ inches). Here are the offers:

Tenders for Bridge of one Span. 246 Feet.

Name.	Price. £	Weight. Tons.	Price per Ton. £ s. d.	Delivery. Weeks.
Union Bridge Company, U. S.....	2,515	156	16 2 0	12
Phœnix " " "	2,637	156	16 17 8	8
Edgmoor " " "	2,493	164	15 3 5	8

Time, as we have said, was the consideration, and



THE 246 FOOT SPAN AMERICAN BRIDGE ON THE TRANSANDINE RAILWAY.