AN INEXPENSIVE WINDOW AWNING.

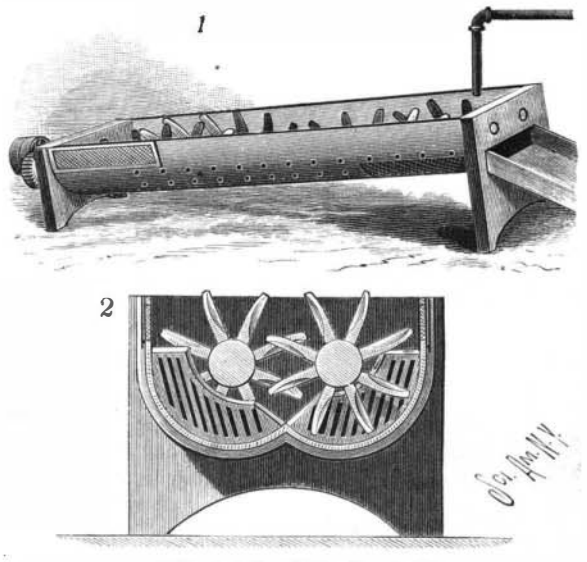
An improvement whereby the ordinary window shade may be used as a part of a window awning, serving when not so employed the ordinary purposes of a window shade, is illustrated in the accompanying engraving, and forms the subject of a patent which has been issued to Mr. Bernard Branner, of New York City. 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.

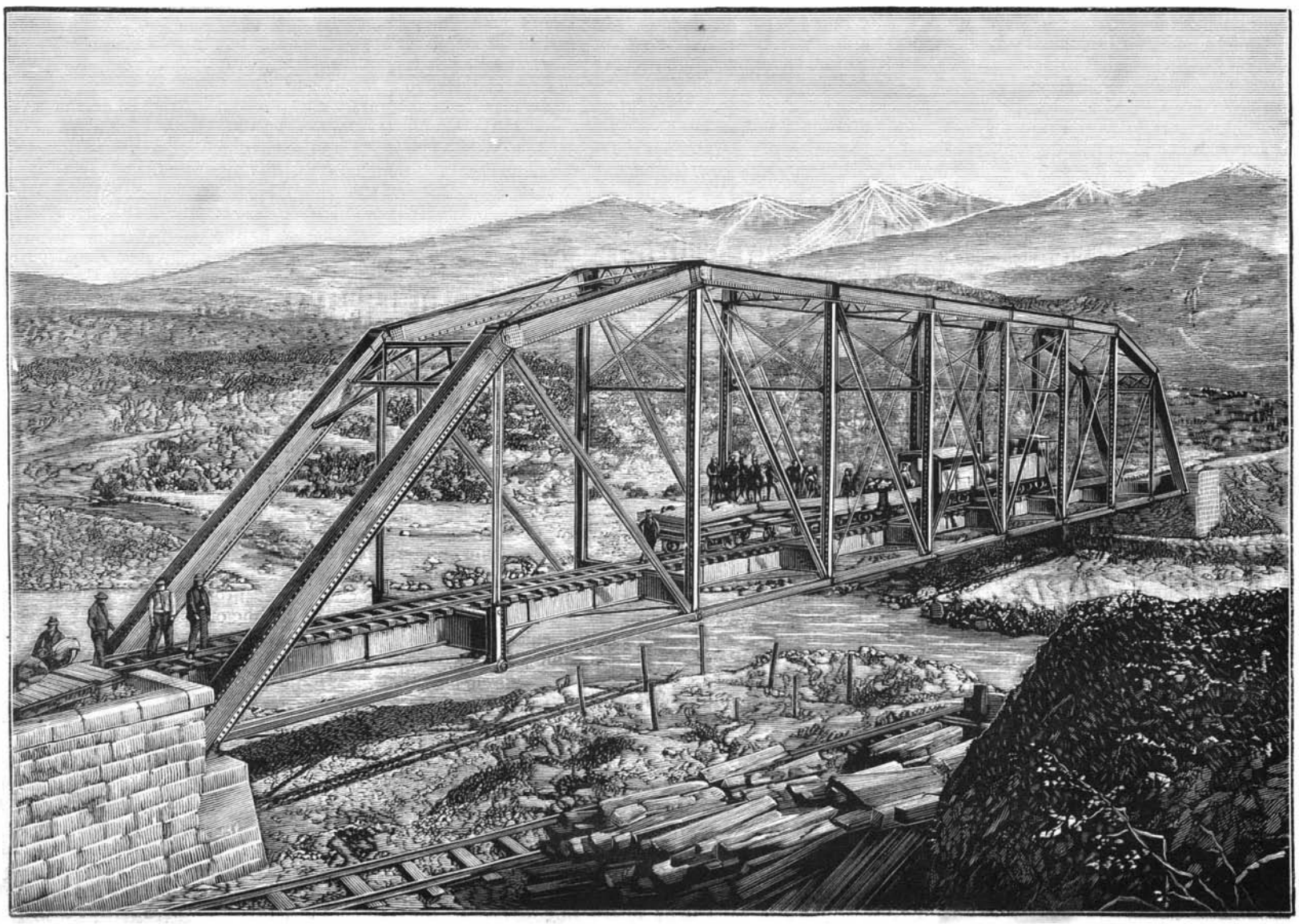
Of the new railway which completes the system across South America over the Andes range of mountains, connecting Buenos Ayres with Valparaiso, in Chile, 106 miles can now be traversed by trains, so that only 42 miles of the distance have to be traversed in carriages or on mules. These 42 miles involve 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.

weight was an important element in view of the distance the bridge had to be conveyed inland, so that the Phœnix Company got the order, although their price was highest. It is interesting to note that the changing of the material from iron to steel only involved an increase of 5 per cent, the tests being as above, and it is further noteworthy that the Phœnix Company wished the truss to be 35 feet deep, and offered to make the price less with it than with a 32 foot truss.

The point suggests itself: How could the American firms offer to build the bridge in as few weeks as the English firm required months? The reply is simply hat their sys tem of bridge building enabled it to be done. Here the builder gets his drawings from the railway engineer, who designs every rivet and bolt, if he does not specify how the rivet or bolt is to be driven. A. B. wishes one style, C. D. an entirely different type, so that the builder must be prepared for anything—the advocates of the American system might say for nothing. In America, on the other hand, the builder designs the bridge, or rather he has a standard type, and the engineer only needs to state requirements. The firm can therefore have special machinery for rolling their iron or steel to the standard sections needed, and are thus independent of steel makers. They are, therefore, prepared in the fullest sense of the word. It may be urged that the British system admits of greater choice of design, and therefore suits British needs; but after all it is to the foreigner we, in large measure, have to look for orders, and as a rule he is satisfied with what he can get quickly and cheaply, provided it meets the desired conditions as to load and tension and compression tests. We do not enter into the relative value of American and English designs, or as to whether American or British prices are lowest. Our contention is that there are most convincing evidences that the American practice has its advantages. As to relative prices, it is to be regretted that in the case of the 246 foot span quotations were not got from English as well as American firms; but Messrs. Clark's business was not to collect proofs on economic points. Fortunately, however, the idea suggested itself, presumably for other reasons, to get an English firm to quote a price for a 197 foot span from sketch drawings supplied by an American firm who had tendered, so that we have in this case comparative prices:

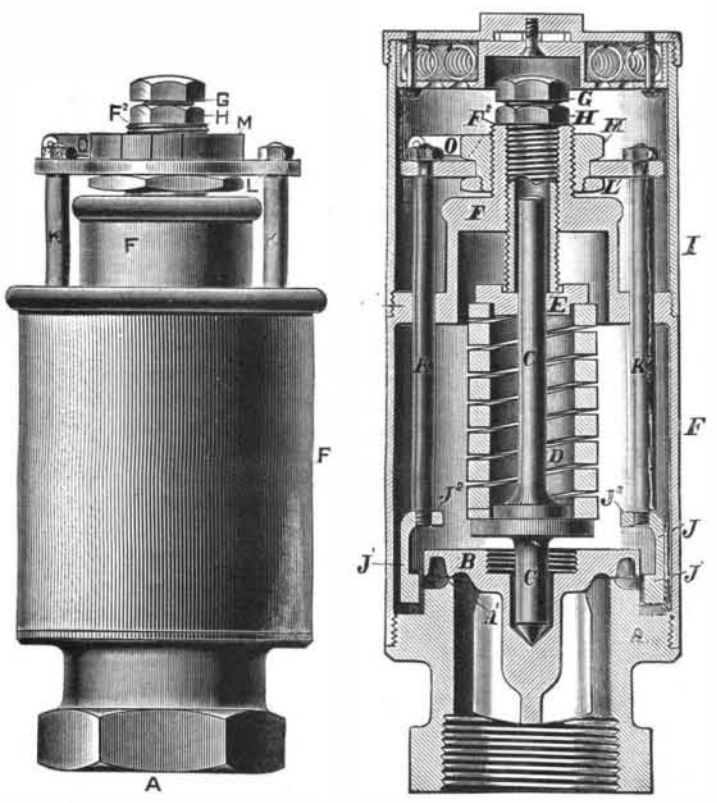
Quotations for 197 *Foot Span.*

	Price. £	s.	d.	Weight. Tons	Price per Ton. £	s.	d.
Pencoyd Bridge Company, America	1,679	13	0	117¾	14	5	0
British firm	2,025	3	0	138	14	13	6

It will be noticed that the British firm (which need not be named) assumed a greater weight—that is in accordance with practice—and that their price per ton was greater, notwithstanding that material and wages are said to be dearer in the States. Of course the American firm have special machinery. This, however, one may find in almost all concerns.

We are indebted to *Engineering*, London, for our engraving and the above particulars.

A SLIGHT earthquake shock was experienced in the northern part of New York City and Long Island City, N. Y., on March 8, at 12:40 A. M. The shock lasted thirty-two seconds, and was accompanied by rumbling noises, oscillations from east to west.



OUTSIDE VIEW WITHOUT MUFFLER. INSIDE VIEW WITH MUFFLER.

THE KINNEY LOCOMOTIVE VALVE.

AMERICAN IMPROVED LOCOMOTIVE VALVE.

The accompanying cuts show two forms of locomotive valves, one with muffler and one without muffler, which were designed and patented by A. P. Kinney, superintendent of the American Steam Gauge Co., of Boston. The superiority of this locomotive valve lies in the fact that it can be adjusted on top without removal from the dome of the locomotive. In order to adjust either the pressure or the blowdown, first remove the muffler, I; this exposes the compression screw, G, adjustable nut, M, crosshead, L, locking latch, O, and check nut, H. By loosening the check nut, H, and screwing down the compression screw, G, the pressure is increased, and the reverse for lessening the pressure. As a general rule, from 1-6 to ¼ turn will change the pressure of the valve five pounds either way. By raising the locking latch, O, and screwing down on the adjusting nut, M, one notch, you reduce the blowdown one pound, and the reverse increases it one pound.

Until the present styles of locomotive valves were placed on the market by this company, in order to adjust the blowdown, the valve had to be taken from the dome of the locomotive. It was also impossible to adjust while steam was on. The present styles do away with these objections and are a great advance over anything hitherto produced.

Although lately placed on the market, a number are in use on the largest railroads of the country. These are giving excellent satisfaction, and additional orders from the companies using them are the best evidence that a trial is all that is needed to secure their adoption.

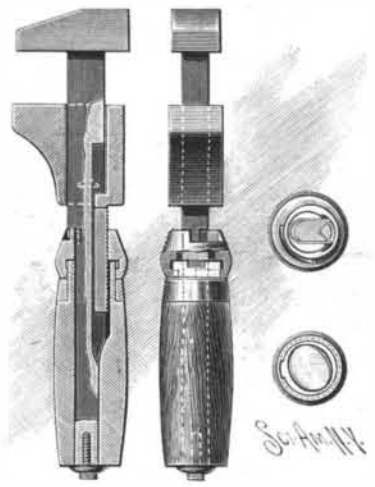
The American Steam Gauge Company, 34 Chardon Street, Boston, who are the sole manufacturers, will be pleased to furnish additional information to any one making application.

A LOCOMOTIVE STONE BREAKER.

With the improved means of stone ballasting a railway track shown in the illustration, nothing but clean stone, substantially free from dust, and with no admixture of soil, is placed upon the roadbed. The improvement forms the subject of two patents issued to Mr. A. B. Austin, of Fort Wayne, Ind., the machine being in the form of a locomotive adapted to run thirty miles an hour, while it can be changed to a stone breaker in five seconds, by raising the drivers off the track. The machine is always ready for use, on the road or in the quarry, and will break from twenty-five to thirty cubic yards of stone per hour, while it will also haul one loaded car. The rock for ballasting can be handled in large lumps, being loaded on flat cars and drawn to the place of use, two-thirds of the rock being undisturbed as it is dropped from the car on to the roadbed, thus saving the handling of the ballast by shovels. The distance between the crushing jaws and the size of the crushed material is regulated by raising or lowering wedges by means of a rod and nut. The material is crushed by the machine to a more uniform size and in a more expeditious manner than the same can be effected by hand for a macadam or an ordinary roadway, as well as for a railroad, and is delivered with great facility at any desired point, its means of self-propulsion enabling it to be moved at a minimum of cost, and saving expense of handling.

AN IMPROVED WRENCH.

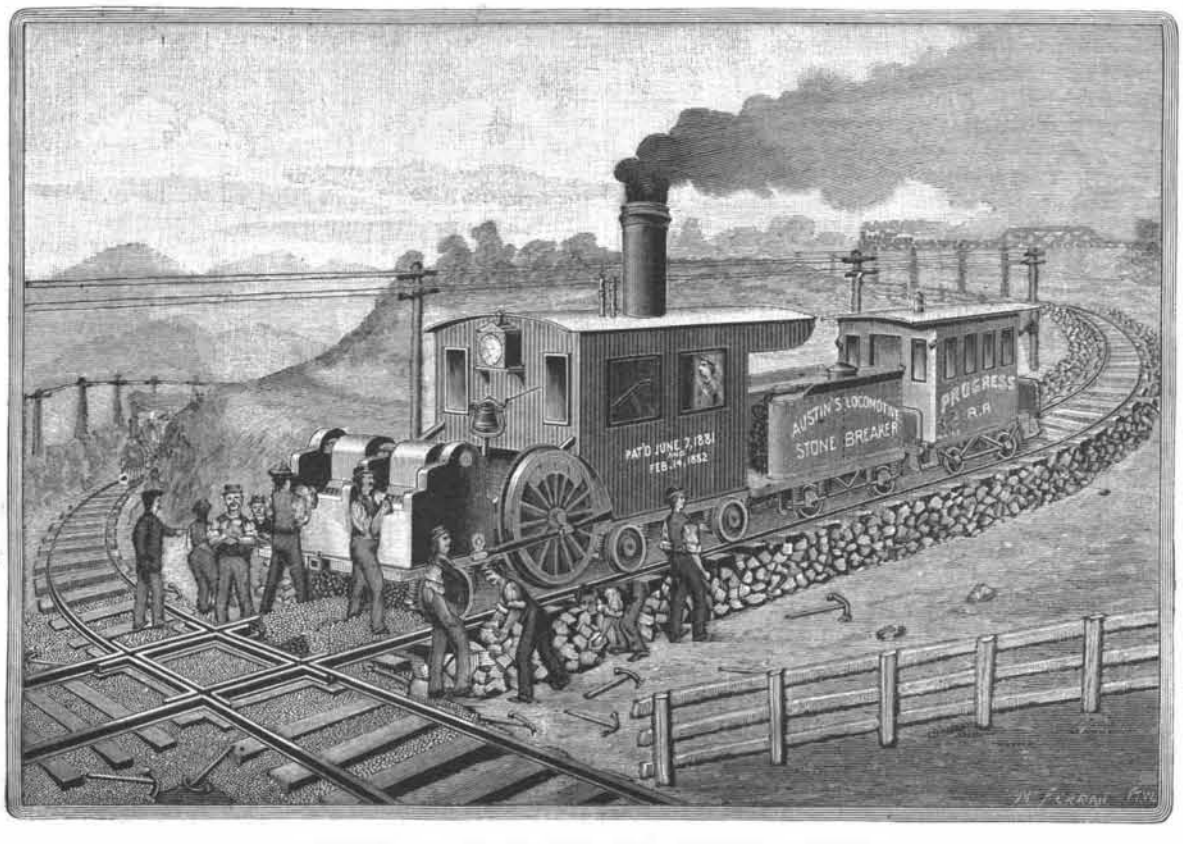
In this simple and durable wrench, which has been patented by Mr. William H. Kaltenbeck, the lower jaw may be made to slide up or down upon the shank of the body bar, and be locked at any desired position thereon, by means of an easily manipulated lock nut or sleeve. The small figures show different sections of the locking nut or sleeve, a cross section of the body bar for a portion of its length, as shown in one of these figures, having its forward edge cylindrical and threaded, while in its rear edge is a V-shaped groove, in which fits an arm or socket extension integral with the lower or movable jaw of the wrench, the exterior surface of the extension being cylindrical and provided with a thread. The locking nut or sleeve is swiveled upon the upper end of the handle, from which it is readily detachable, and this nut is made in two diameters, one greater than the other; at the lower diameter the inner contour is circular and at the upper diameter it is somewhat elliptical, the opposite side walls of the smaller diameter of the nut having threads. To adjust the lower jaw to or from the upper one, a turn of the sleeve or nut permits the lower jaw to be moved freely upon the body bar, and when the jaw has been properly placed the sleeve is turned in the opposite direction, when its threads engage the threaded surfaces of the body bar and the socket extension of the movable jaw, firmly locking the latter in the desired position. The jaws of the wrench may be shaped for use either as a monkey wrench or as a pipe wrench.



KALTENBECK'S WRENCH.

Further information relative to this improvement may be obtained of Mr. W. F. Baker, Middlesborough, Ky.

Electricity is our authority that an electric railroad from Main Street, Orange, N. J., to Montclair, with a branch running from West Orange to Eagle Rock, is to be built as soon as the weather will permit the work to be done. The terminus at Montclair will be at the Delaware, Lackawanna and Western Railroad station.



AUSTIN'S LOCOMOTIVE BALLAST CRUSHING MACHINE.