

IMPROVED AGRICULTURAL ENGINE.

We give an engraving of a 10 horse agricultural engine, 7 x 10 cylinder, built by the Taylor Manufacturing Company, of Westminster, Md., and designated by them as their dry steam engine.

This engine is the same style as the one illustrated in our issue of April 1; we then gave engravings showing the style of boiler and the design of cylinder and dome, together with the indicator card. There are in this style of engine many features interesting to those concerned in steam power.

The manufacturers claim that in this engine steam is transmitted to the cylinder with but very little loss, retaining its full pressure and power nearly to the end of the stroke, varying but little from boiler pressure, consequently giving high results in power developed for an engine having a cylinder of this size.

The crank bearings or journal boxes are large, and have gibs for quarter adjustment. The guides are the usual locomotive pattern, and the crosshead has large and ample wearing surface. The connecting rod is made of the best hammered iron, the straps being keyed and bolted and well fitted with gun metal boxes.

The box in the crank end of the rod is made square to prevent rocking. The crank shaft, which is of good size, is forged of the best hammered steel. The fly-wheels are heavy and carefully balanced. Much care is taken in the casting of the cylinder so as to have good wearing metal.

gine, and no matter how well an engine may be built, if particular care and judgment is not exercised in the proportions and constructions of the boiler, satisfactory results cannot be attained from the working of the engine. There are certain particular points in the construction of a boiler that are important; perhaps the most important is the proper staying of flat surfaces, especially the crown sheet. This engine is mounted on substantial wheels, and is exceedingly well adapted for transportation from place to place. For further details in regard to its construction we refer to the article above alluded to.

Besides this style of portable engine, the company builds the well known Utica engine, a new side-bed called the Tiger engine, the vertical Boss Clipper engine, and cut-off stationary engines from 12 to 200 horse power.

The company is now building large shops at Chambersburg, Pa., where it will remove November next, and will have increased facilities for its growing business. For further particulars, address Taylor Manufacturing Company, Westminster, Md.

The Philadelphia Elevated Railroad.

The newly completed elevated railway through Filbert street, Philadelphia, with its connections, comprises 1 $\frac{7}{8}$ miles of main track, with sidings, making the system equal to ten miles of single track. It includes all of the tracks from the Broad street station to the old passenger depot at Thirtieth and Market streets and to the West Chester crossing

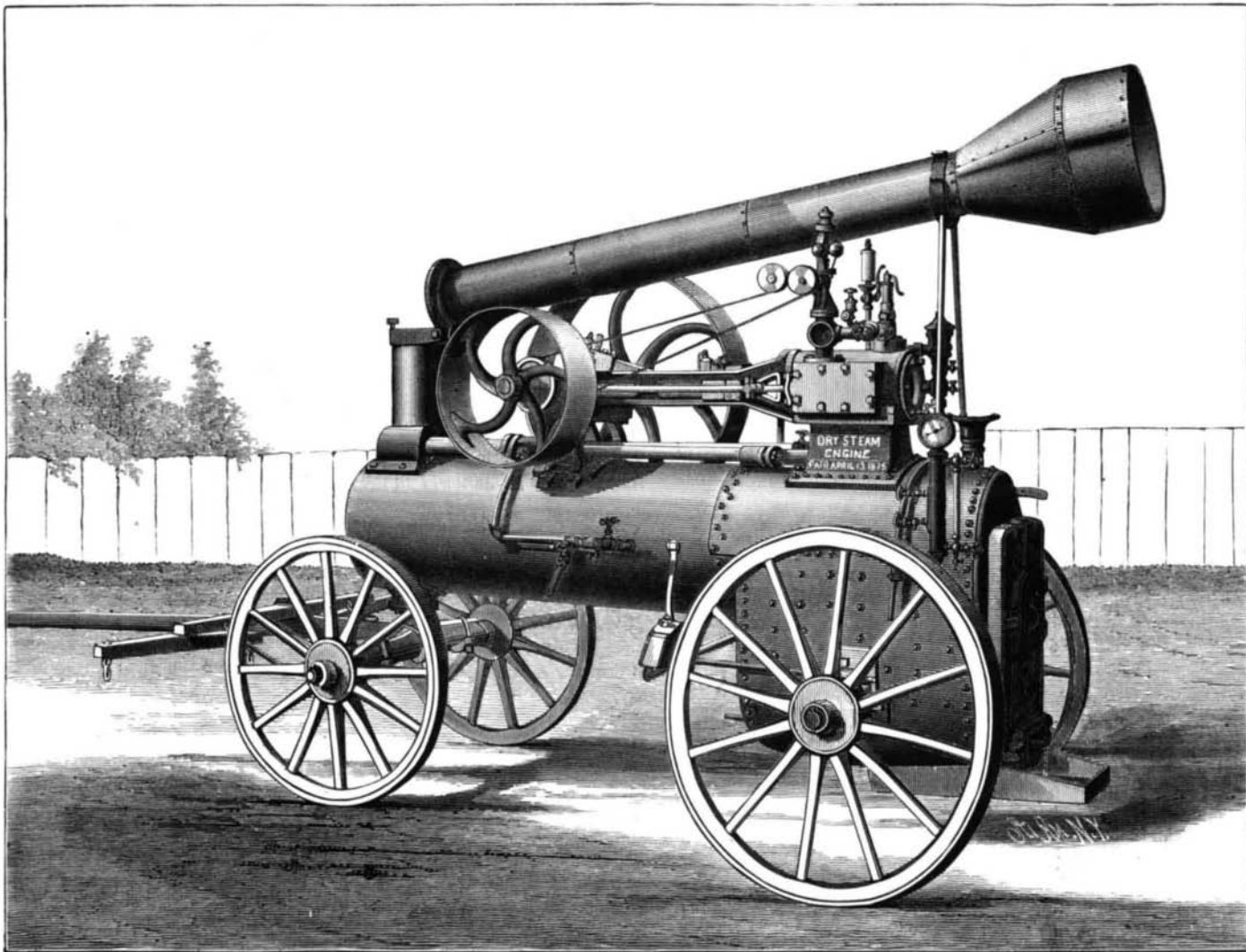
teenth and Twenty-first, including the placing of cars in and out of the station.

The operator has under his direction sixty levers in the second story of the tower, which are connected with pipes 1 $\frac{3}{8}$ inches in diameter, to move the switches and signals, he knowing the movements which should be made either by the time table or telegraph. This operator has two lever men, who do the mechanical part of pulling the levers as he may direct. The mechanism requires the pulling of from six to fourteen levers to perfect the movement of any switch or signal, and they must be moved in the order prescribed. It is somewhat similar to the combination lock in idea, and it is so arranged that it is impossible for the operator or lever men to make a mistake. There is nothing left to their discretion, as any error is immediately detected by their inability to move the levers unless they follow the precise order of the combination, and the worst that can happen is a temporary obstruction to trains. The safety signal is given to the engineers of trains by pulling the last lever of the combination.

Leigh Smith's Expedition.—Loss of the Eira.—Rescue of Crew.

The missing commander and crew of the Leigh Smith Arctic Expedition in the Eira have been picked up by the search steamer Hope, in Matakchyn Straits, Nova Zembla.

The Eira left England in June, 1881, for a summer cruise toward Franz Josef Land. The run northward was exceedingly fortunate until August 21, when the Eira was



"DRY STEAM" TEN HORSE POWER AGRICULTURAL ENGINE.—MADE BY THE TAYLOR MANUFACTURING COMPANY, WESTMINSTER, MD.

The piston is fitted with brass and Babbitt packing rings, all joints of the rings being ground and fitted so that the rings may readily adjust themselves to the surface of the cylinder.

The slide valve is of the usual D valve pattern, proportioned on correct principles. The steam ports are large and the distance to the cylinder short, giving the best results for a quick-acting engine. Eccentric strap is made in halves, and the eccentric rod is connected to the valve steam wrist-pin by means of an adjustable brass box. The engine is fitted with either pump or inspirator, as is desired, and is provided with a heater that surrounds the exhaust pipe nearly through its entire length.

The exhaust steam heats the feed water, and escapes through a pipe into the smoke stack. A nozzle is placed on the end of the exhaust pipe, by which the effect of the escaping steam can be regulated at will and made to produce a very strong draught if desired.

The Pickering governor used in connection with this engine is provided with a double valve that does not stick, and also with a stop motion that prevents the engine from running away in case the governor belt breaks. The speeder attachment is so arranged that the speed of the engine can be changed fifty revolutions or less without altering the size of the pulleys or stopping the engine. The engine is provided with automatic glass oilers and cylinder lubricator, a full set of wrenches, oil can, and, in fact, everything that should be found on a perfect engine. The boiler is made of the best Pennsylvania charcoal iron and carefully fitted. A successful boiler is a necessary counterpart of a good en-

on the Junction Railroad under the South street bridge. All the terminal passenger traffic of the Philadelphia, Wilmington and Baltimore, West Chester lines, main line of the Pennsylvania Railroad, and New York division, is concentrated at the Broad street station.

At the station there are four inbound and four outbound passenger tracks and four freight tracks. At Seventeenth street these narrow to four tracks, widening to nine tracks at Eighteenth street. At Twentieth street and out to Thirtieth street there are but three tracks, which widen to seven passenger and one freight at the latter locality.

The trains handled daily at the Broad street station are said to be more numerous than at any other terminal station in the world. The schedule shows a list of 129 arriving and 131 departing passenger trains daily, or a total of 260, with additional sections of at least eight of these trains arriving and departing daily except Sundays. There are also about nine freight trains arriving and departing daily. At some hours of the day the movements of trains are more numerous than the average, as between the hours of 5 and 5:30 P.M., when seven trains arrive and eight depart, an average of one train every two minutes, in addition to the movements of empty cars. The total daily number of train movements is over 1,100.

The movement of all these trains is controlled by an interlocking switch system, devised by H. F. Cox, Engineer of Signals. There are several signal towers: the one at Seventeenth street governs every movement of inbound trains between Fifteenth and Twenty-first streets, all outbound from Fifteenth to Nineteenth, and all shifting trains between Fif-

teenth and Twenty-first, including the placing of cars in and out of the station. The crew were not able to save many stores, and were not prepared for spending the winter in the far north. Yet by good management and good luck in finding an abundance of walrus and bears, they were able to maintain themselves in health until June 21, 1882, when they left Cape Flora in four boats. Favored by an open sea and a good wind, they reached Nova Zembla in safety August 2, landing within a mile of where the rescue steamer Hope was anchored.

Light Power of Railway Lanterns.

Mr. J. C. Prendergast, of the Savannah, Florida, and Western Railway, reports the following tests:

Two stakes, 9 feet apart, measuring 4 feet 6 inches on either side from center of track; stakes were 7 feet high, and on the top of each stake the lamps were hung.

First Test.—One red and one white hand lantern at a distance of 1,168 yards; red light barely visible, red and white lights showing a distance of about 3 feet apart.

Second Test.—One red and one white bull's-eye lantern, 5 inches in diameter, at a distance of 1,752 yards; lights showing nearly together, red light well in sight; but at a distance of 1,898 yards red light disappeared, white light showing plainly.

Third Test.—Red bull's-eye, 5 inches in diameter, and red hand lantern. At a distance of 1,383 yards, red light of hand lantern disappeared, and, at a distance of 1,898 yards, bull's-eye was well in sight.