Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOLUME 6.] NEW-YORK, SEPTEMBER 6, 1851. [NUMBER 51.

THE
Scientific American,
CIRCULATION 16,000.
PUBLISHED WEEKLY
At 128 Fulton, street, N. Y., (Sun Building,)
BY MUNN & COMPANY,

A. T. Hotchkiss, Boston.
Dexter & Bro., New York City.
Weld & Co., New Orleans.
Stokes & Bro., Philadelphia.
Jno. Thomson, Cincinnati, O.
Cooke & LeCount, San Francisco, Cal.
Courtenay & Wienges, Charleston, S. C.
John Carruthers, Savannah, Ga.
M. Boullemet, Mobile, Ala.
Barlow, Payne & Parken, London.
M. M. Gardissal & Co. Paris.

Responsible Agents may also be found in all the principal cities and towns in the United States.

TERMS---$2 a-year---$1 in advance and the remainder in 6 months.

Rail-Road News.

Broad Gauge on the Far West Railroad.

Mr. James Kirkwood, engineer, of the Pacific Railroad, has come out in an able report to Mr. Allen, the President, in favor of the broad gauge on railroads west of the Mississippi. He states that the narrow gauge, which was first adopted in England, was not the result of experience as best suited to locomotive power, but was in a great measure accidental. He states, justly, that the fewer trains on a road the greater the safety and economy; hence, for heavy freight, powerful engines are the best; the exceptions to this rule are for passenger trains in a densely peopled country; but in a thinly peopled country the passenger business, to be done with profit to the company, must be done by large trains running once or twice per day both ways. The advantages of the wide over the narrow gauge are clearly set forth, and as the Mississippi cuts off all communication with the East, and West engines and carriages, no objection to the wide gauge, for non-intercommunication, can be urged. If all the railroads in the East were to be built over again, the broad gauge, we suppose, would be universally adopted. It would be well, then, for the States on the west of the Mississippi, to take Mr. Kirkwood's advice, and commence with the broad gauge of five feet six inches.

Hudson River Railroad.

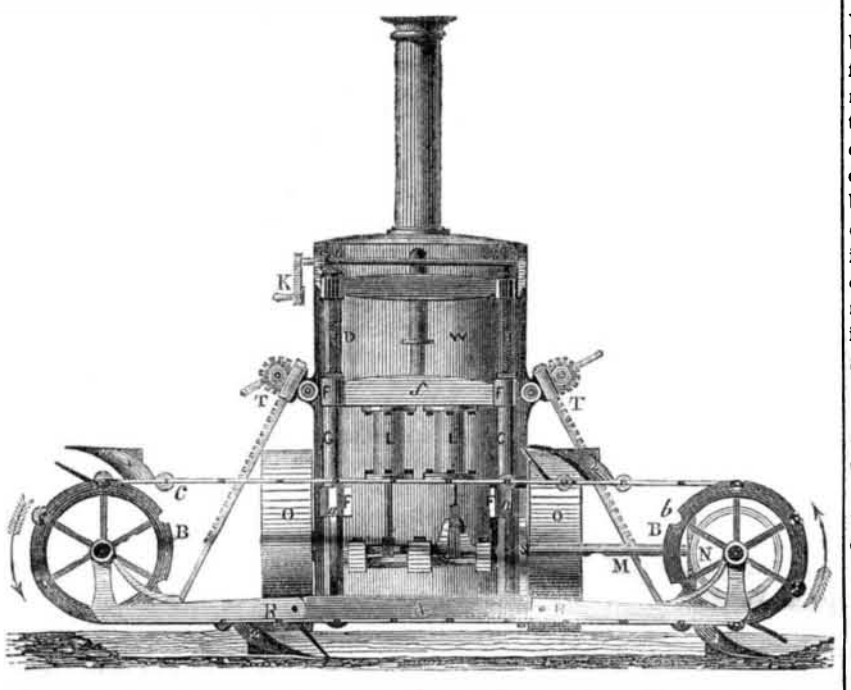
Before the first of October, it is announced that this road will be in operation to Albany. Geo. B. Butler, Esq., Secretary and legal Agent of the company, has resigned his position and he becomes a partner and assistant editor of the N. Y. Journal of Commerce. Mr. James Boorman, of New York, President of the Company resigns his office on the completion of the road, and Mr. Wm. C. Young, the present Chief Engineer of the road is to take his place. When this road is completed we shall be able to go to Albany in five hours, at most.

Pittsburg and Erie Railroad.

The Mercer Luminary learns that the entire line of the Pittsburg and Erie Railroad, from the town of Erie to the junction with the Ohio and Pennsylvania Railroad at Enon Valley, was contracted for at Erie, on the 13th inst There was quite an animated competition among bidders, and it is said the work has fallen into competent hands.

Twenty miles of the Milwaukie and Mississippi Railroad, west from Milwaukie, have been completed, and are now in operation, and in about three months time about eighteen miles more will be finished. The length of this road will be about 200 miles, and the cost with a heavy T rail, so far as constructed, is only about $12,000 per mile. The authorized capital of the company is $3,000,000, of which nearly $1,000,000 has been subscribed by the people of Wisconsin.

STEAM PLOW.---Fig. 1.



In our country no attempts, so far as we are aware, have yet been made to plow by steam, nor has the time yet arrived for its economical use; in some localities, however, the time will yet arrive, when serious thoughts will be turned to its employment, as is now the case in Britain.

The accompanying engravings represent a steam plow, invented a short time ago by Messrs George Calloway, and Robert A. Purkis, of Putney, England, and which has been somewhat highly spoken of.

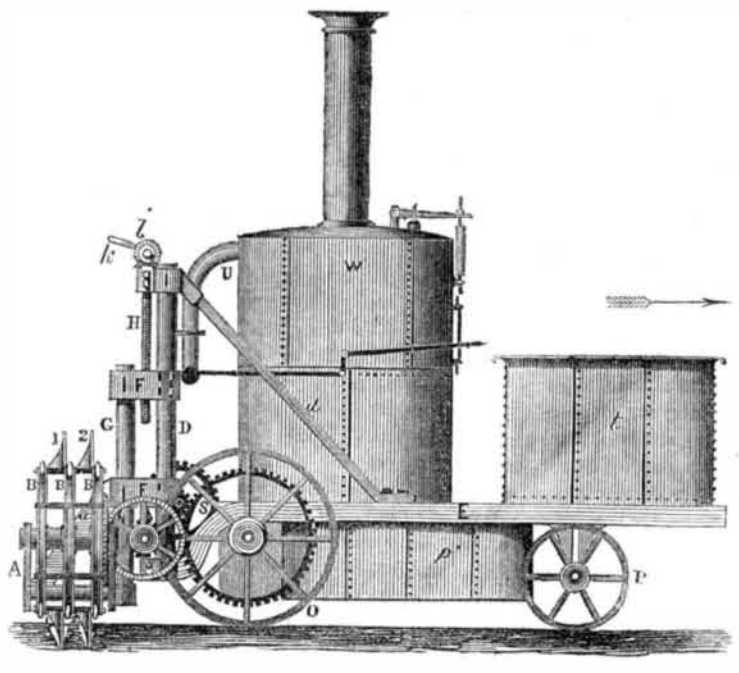
The mechanism of this steam plow is divided into two distinct parts, 1st, the plowing, 2nd, the locomotive part: to avoid confusion each part must be explained separate:—

The plowing part mainly consists of an endless chain, supported and driven by two sets of chain wheels, to which chain are fastened the plows, and consequently advance with it, which operation is accomplished in the following manner:—

Fig. 1 represents an end elevation, and fig. 2 a side elevation; the same letters denote corresponding parts in either figure.

A is a wrought iron frame, eighteen feet long, supporting on each end an axle, on which are keyed three cast-iron chain wheels, B, round which is passed the endless chain, C. This chain is eighteen inches broad, composed of two sets, nine inches wide, seen at B B B, fig. 2; on the outside of this chain are fixed four plows, 1 1, 2 2, in such a manner that 1 1 revolving on the same set, 2 2, B, fig. 2, does so in the same manner. D D, are two hollow wrought iron stanchions, firmly keyed and

Figure 2.



stayed to the framework of the locomotive at E *d*. The entire length of these stanchions is turned perfectly true, on which slide the four guides, F, into which are firmly keyed the two hollow tubes, G. The two upper guides, F, are cast in one piece with a cross head, *f*, and the lower guides, F, with the diagonal stays, *a*, *a*. These combinations of parts are firmly fastened to the frame, A.

H H are two screws working into the upper guides, F F. On the upper part of thes screws are fixed two bevelled wheels, *l*, which receive rotary motion from the handle, *k*, which will cause the framework, A, with the chain C, and plows to rise and fall at the will of the attendant.

L L, fig. 1, are a pair of oscillating steam engines fitted to the crosshead, *f*, and moving with the parts just described. M is a shaft in connection with the crank of the engines, driving a pair of bevelled wheels, N, one of which is fastened to the chain wheel, B, *b*, by which means a rotary motion is given to the endless chain, C, causing the plows to advance in the direction of the arrow. At the bottom of the wrought-iron framework, A, is formed a channel or guide for the antifriction rollers, fixed to the chain to run in, causing the plows to travel in the path assigned for them. It will be seen, as far as described, that a double row of furrows can be cut twenty feet long at any required depth within range of the machine, which is eighteen inches. To complete the process of plowing brings us to the second, or locomotive part, for which purpose the machine is made to advance progressively at right angles away from the furrows already cut, and is accomplished in the following manner:—

O O are two cast iron wheels, eighteen inches broad, in conjunction with two others, P, the axles of which support and carry the whole machine. O O are the two driving wheels, driven by the means of a combination of wheel work, S S, receiving primitive motion from the engine direct. This combination of wheels is so adjusted that, for one revolution of the chain, which plows up four furrows twenty feet long each, the machine will have advanced progressively thirty-six inches.—This operation being continually repeated, the engine will leave before it a surface of twenty feet broad, cut to any required depth, and executed with mathematical precision.

The lines or furrows thus cut will be slightly oblique, but may be made at right angles by placing the frame, A, at the required angle of the framework of the carriage, E.

The steering apparatus is of the ordinary construction as applied to all locomotives used on the common roadway. It will be seen that if the frame, A, was in one piece it would be inconvenient to move from place to place. This objection is removed by the following method:—The framework is divided into three pieces, and connected by means of the joints, R R, which enables the partly connected with the chain wheels B B, to be turned up and closed together by means of racks and pinions, T T. U is the steam-pipe from the boiler, W, fitted with moveable sockets to compensate for the rise and fall of the engine with which it is connected; *t* is the coal box, and *p*, the water-tank; the arrow indicates the motion of the locomotive.

In England it is estimated that the cost for steam power, is less by one half than that for horses, in our country even near the city of New York, the expenses would just be reversed. These things however, are of interest to our great agricultural community. The locations where steam plowing will turn out to be the most advantageous, will be in the Southern States, in favored level locations, where fuel is very cheap. The iron horse is not affected with heat, and his nerves and sinews do not require relaxation like those of the horse or mule.

Our Illustrations.

No less than six new inventions are illustrated in our columns this week, nine different figures are employed in the illustrations, these with the diagrams representing the action of water make up fourteen different figures. From week to week, no mechanical periodical in the world presents so many illustrated inventions to the public as the Scientific American, and no man can keep up with the improvements of the age and be without it.

Iron-Horse Race.

The Lowell Courier announces a race between locomotives, to take place at the approaching Fair in Lowell. The race-course is to be a section of the Boston and Lowell road.