Parsnips.

The *Journal d'Agriculture Pratique* contains an article in favor of the parsnip as fodder for all kinds of domestic animals, and especially for milch cows. The author first notices some of the charges that have been made against the root as provoking certain diseases, and shows that they have but slight foundation. He then quotes Trehonnais, who ranks this as first among roots in respect to nutritive value.

In Bretagne 100 lbs. of parsnips are considered as equivalent to 300 of beets, and 16 to 18 lbs. of parsnips in the daily ration increase the flow of the milk and the richness of the milk in butter; several authorities are quoted as making similar statements, and among them so trustworthy a writer on these subjects as Magne. As to richness in nitrogen and proportionately in albuminoids, Corenwinder gives the following statement: Parsnip, 1·38 per cent; sugar beet, 0·25; red carrot, 0·23; ruta baga, 0·23; white turnip, 0·16. On good authority the albuminoids are regarded as the most valuable constituent of fodder, and therefore according to this comparison between these several roots, the parsnip is by far the most valuable one for this purpose.

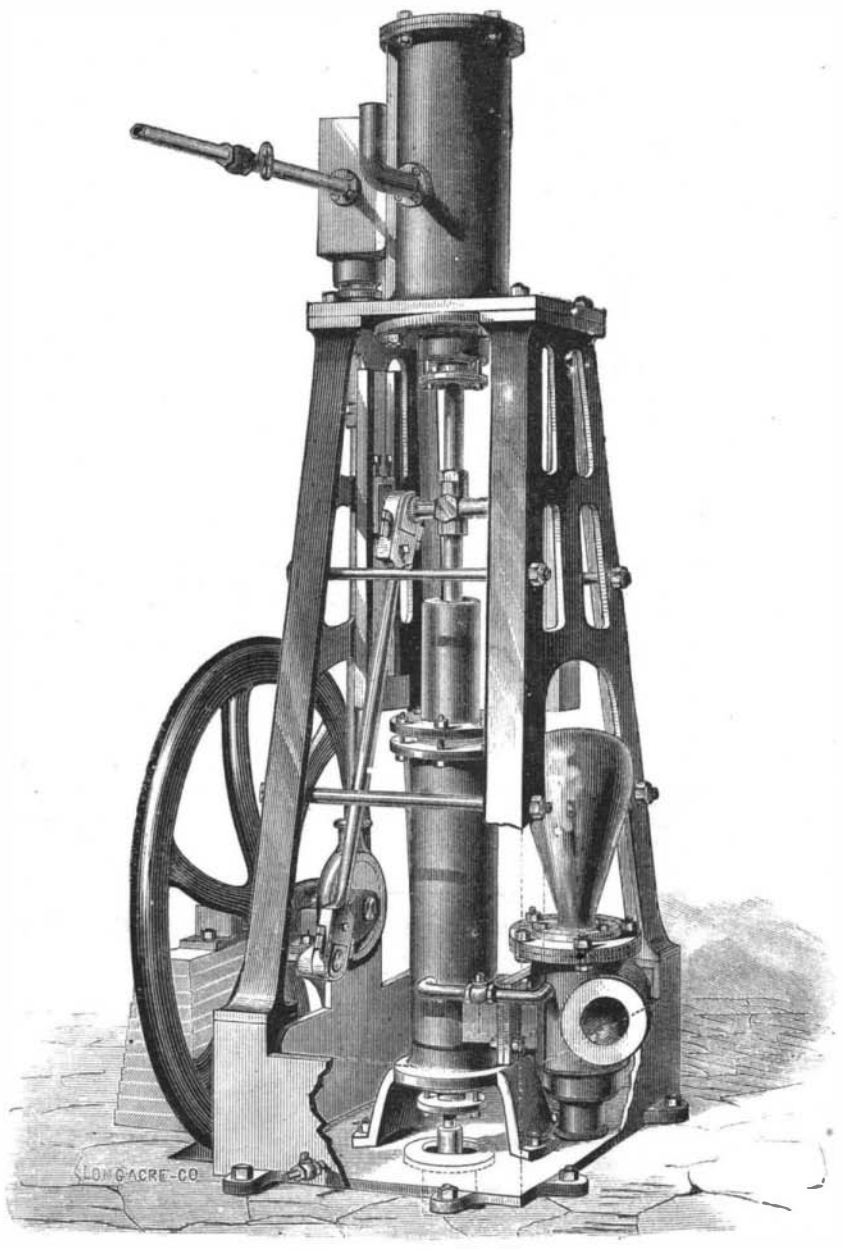
THE WATSON PUMP.

Philadelphia, at the present time, has a widespread and well earned fame for the production of many varieties of tools and machines, from the smallest implement to the stately locomotive, and other gigantic engines. At many of the machine establishments specialties are made the prominent articles of production. The Novelty Machine Works of Mr. James Watson, No 1,608 South Front street, Philadelphia, is one of these, where are manufactured a number of specialties, among which is the force and lift pump, for artesian wells or other deep pumping, shown in our engraving. The piston rod, plunger, and lifting or deep well rod of this pump, being in direct line, make the machine both simple and efficient. The bed plate is so constructed as to make a delivery water tank, from which the force pump takes its supply.

One of these pumps is now in operation in the artesian well at the Continental Hotel, in Philadelphia, where it raises water from a depth of one hundred and fifty feet into the tanks, which are placed upon the roof of the building one hundred feet above the pump room. The engineer in charge attests its perfect efficiency: it is so simple as to give no trouble should any repairs be required after long use. It lifts one gallon and a half of water to the stroke, or sixty gallons a minute; and it is very economical in the use of steam.

These pumps could be advantageously applied for purposes of irrigation in such sections as the arid lands of Colorado, and other districts that only require a supply of water to produce abundant vegetable growth, and thus greatly enhance the value of the land.

The machines are all of the best material and workmanship. We may also here state that the entire machinery of the Continental Hotel is driven by one of Watson's steam engines, which satisfactorily performs the work assigned to it. Mr. Watson has recently constructed some very superior machines for crushing bones, used in making fertilizers and manufactures; a patent gap lathe, and several very effective milling machines, and a variety of other labor-saving machines and implements. None but the best artisans are employed on the premises, and the whole work is superintended by the proprietor in person, who was practically brought up to the business by a long apprenticeship in England, and thus is calculated to direct understandingly the mechanical operations, as well as to attend to the theoretical and designing departments. Mr. Watson has secured a high reputation, both as a manufacturer and a man of business, by his skill, promptness, and probity.



THE WATSON PUMP.

Albumen of the Serum and that of Egg, and on their Combinations.

The alkaline albuminates differ according to the degree of concentration of the alkali employed. Weak alkalies give rise to a combination which does not yield in solubility to paraglobulin. The acid albumens differ equally according to the energy and degree of concentration of the acid. M. Aronstein had about the same time arrived at the following results: "That by dialysis, albumen can be obtained free from salts; that the albumen, both of blood and of eggs, is soluble in water, and does not coagulate on boiling, even after the addition of an acid; that the coagulation of these two species of albumen under the influence of heat is due to the presence of foreign salts." The results are diametrically opposite to those of the author. He concludes that Aronstein and Schmidt regarded their dialyzed albuminous solutions as free from salts, because they incinerated too small quantities of matter; that their solutions remained limpid on heating, because they still contained alkali, and that they did not obtain coagulation after the addition of an acid, because such acid was used in excess. He finds that after the most complete dialysis, there is obtained a combination of albumen with phosphate of lime and magnesia, which is soluble in water, but a really neutral solution of which abandons albumen in a coagulated form at the boiling temperature; that it is not possible to obtain by dialysis albumen free from salts, and that we are not justified in pronouncing it a compound soluble in water.—*A. Heynsius.*

New Agricultural Inventions.

An improvement in Grain Binders has been patented by Mr. Ignatz Karel, of Blue Earth City, Minn. This invention relates to grain binders for binding grain by means of twine; and it consists in a device for bundling, which also carries the twine to the knot-forming and twine-cutting mechanism. It has a novel arrangement for forming the knot.

An improved combination Digging Implement has been patented by Mr. James P. McCann, of Wesson, Miss. This is a new digging tool in which different kinds of spades, shovels, forks, hooks, hoes, etc., may be interchanged upon the same handle, the latter by itself being available for use as a tamping bar.

Mr. Robert Eason, of Springville, Ohio, has recently patented a Cider Mill, by which the cider is made with great rapidity, and with but a small amount of manual labor, the different operations being all performed by use of suitable devices operated from the driving shaft of the mill. The cider mill may be operated by one attendant only, who controls the entire machine from one platform, accomplishing successively the grinding of the apples and pressing of the pomace, the removal of the pomace from the cribs, the filling of the cider into barrels, and the hoisting and conveying of the barrels.

Mr. John S. Lenox, of Gainesville, Texas, has devised an improved Fence, which may be constructed out of common materials, such as can be obtained by farmers, and in such a manner that it will be strong and effect a saving in expense and land. It consists in a rail fence having the rails laid up in a straight line and the bottom one resting upon a pin that is driven in the ground. Wire links are placed between the ends of the rails, and wire is used to hold the rails firmly in place, and also to secure the inclined stakes and riders.

Mr. Jacob Essig, of Milford, Minn., has patented an improved Machine for Thrashing Grain and cleaning it at one operation. This invention possesses novel features, which cannot be described without an engraving.

Messrs. William T. Hildrup and Albert Tschop, of Harrisburg, Pa., have patented a Feeding Device for Seeding Machines, in which the seed is delivered by a revolving feed roller. The peculiar construction insures a rapid, uniform, and even flow of seed.

Closing of the French Exhibition.

The great Exposition Universelle at Paris has taken place, and is now rapidly approaching its dissolution. During the past summer it has been the leading attraction not only in and for Europe, but for the world at large, and has been visited by hundreds of thousands of persons of all nationalities, ages, and ranks, and of both sexes. From England a constant stream of visitors has been kept up, not merely from London, but from every town of any consequence in the provinces. Persons in search of pleasure or recreation have this year put off their customary visit to the seaside or Scotland, and have gone over the channel in order to participate in the general gathering in the French metropolis. Business men of all trades and pursuits have traveled to Paris intent on the lessons to be learned there, and have, for the most part, returned home not sadder but certainly wiser men. They have thereby acquired a better and more thorough knowledge of the manufactures and producing capabilities of their Continental and American rivals, and, with the acquisition of that knowledge, have also imbibed a keener and plainer appreciation of the difficulties they have to encounter nowadays in maintaining their old control of the markets of the world. Many of the British visitors were scoffers at the mere mention of foreign competition, and scouted the very idea of the Germans, Belgians, or Americans being in a position to do us harm in any market. This was aforetime and prior to their walk around to the different sections of the Exhibition. They do not feel quite so confident about the matter since that promenade, and are certainly not disposed to underrate the progress made in recent years on the Continent and in the United States.

Our friends at home, continues the *Ironmonger*, have long been convinced of their ability to win in the industrial contest, but they have now begun to admit that it is urgently and vitally necessary for them to gird up their loins and put forth their utmost strength.

The same journal, in an article on agricultural machinery and implements at the Exhibition, thus expresses its inability to describe the multifarious articles in this department:

To write of the immense collection of agricultural machinery and implements in the different parts of the Exhibition with anything like justice, and with a due and fitting appreciation of the value and merits of each separate section, would be to produce a volume far exceeding the whole of the space at our command; hence it is quite clear that what we have to say on the subject must be closely condensed, and from a general rather than from a detailed point of view.

The French, English, and American sections each have a large area devoted to these appliances, the two former being particularly imposing, and the latter hardly less so. Other nations—Belgium, Sweden, Denmark, Norway, etc.—send samples of a rough-and-ready kind of what they can produce in these classes, but they are not of a nature to place their producers in the front rank, and certainly have no claim either to originality or to take any prominent position in any purely international comparison.

Beginning with our own set of exhibits, we may at once give it as our impression that we are at the top of the tree, nothing in the whole range of building being of that equable and high excellence which is, from beginning to end, characteristic of our productions.

Most of our leading agricultural implement makers are present, and they send fixed portable and traction engines, plows, harrows, drills, thrashers, corn dressers, mowers, reapers, hoes, scarifiers, etc., got up with the most assiduous care, and with that close finish which has so long enabled us in this respect to hold the rest of the world at arm's length. In fact, some of the engines, plows, mowers, etc., are so exquisitely got up, polished, or nickel-plated, that they look fitter for a lady's boudoir than for actual work. In pleasing the eye, nevertheless, the manufacturers have in no single particular neglected utility and solidity, so that every article shown will do its work as well in the field as one taken from ordinary stock. Each exhibitor seems to have rivaled his neighbor, so that the general result is a higher tone than has ever previously been noticeable in the same class of goods.

In that portion of the United States space devoted to the same articles we find almost all their principal houses "on the spot," not so much in machinery, as in implements and light contrivances. None of our readers need telling that in all kinds of implements the United States manufacturers are quite up to our own level. If they do not rival us in respect of solidity and finish, they are even with us on the scores of ingenuity, lightness, and the adaptability to special uses of particular articles. This is more observable in mowers, reapers, self-binders, hay and straw forks, and sundry small implements, than in anything else; and we shall merely repeat the record of an acknowledged fact when we say that in these matters our American cousins have done

full justice to their reputations. Alluding to the French exhibit of agricultural machinery, the same writer says: It may be that we are able to find room for criticism here and there; that the portables are rather primitive in design and construction; that the reapers and mowers are somewhat clumsy; that bright brass drill tubes and boiler casings, and so forth, are not according to our ideas; but the broad fact still remains that the French are rapidly learning to manufacture all kinds of implements for their own use, and that they are quick to take advantage of all our improvements, as well as to note where we have failed. Under this great roof are all sorts of agricultural appliances from every part of France—from lost Lorraine to far Finisterre, from Rouen to Marseilles—some good, others indifferent, but all offering an increasing competition to us, and, consequently, placing more difficulties in our path.

The French manufacturers, it may be noted, appear to pay special attention, in the strength of cultivator tines, etc., to the great variety of soil in different parts of their country, and also discard all mere external ornaments for strength and solidity—especially in thrashers and the like large articles. In giving this measure of appreciation to our neighbors across the channel, we must not be understood to place them on a level with ourselves and the Americans, but simply do so to show that they are not asleep, but are actively and strenuously striving to supply themselves.

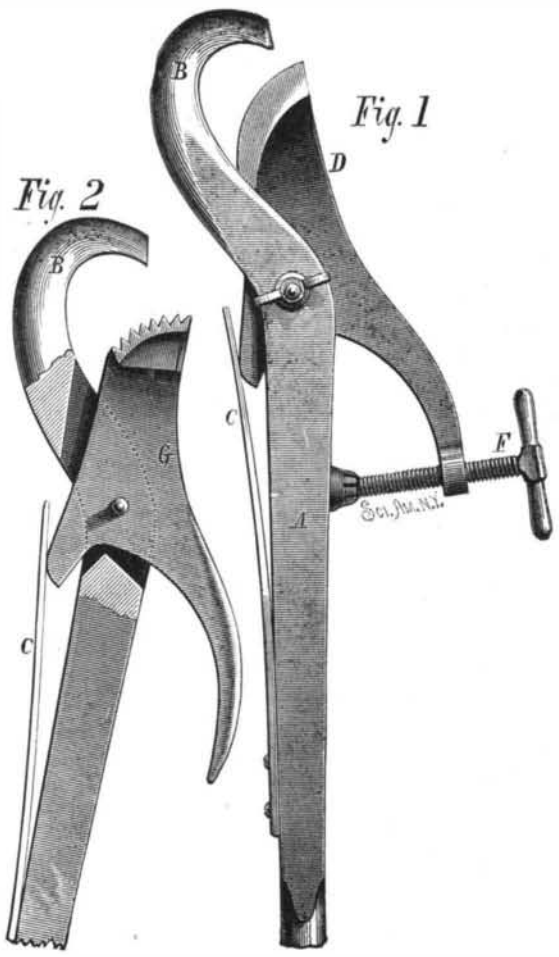
In the Swedish and Norwegian sections are a number of plows, chaff cutters, etc., which are more notable for their unusual strength than for any other quality. The plow beams and colters are uncommonly heavy, mostly of iron, and the shares, breasts, etc., are rough and uncouth. The chaff cutters are bulky and heavy, and have uninclosed feed motions. Our notice of this important section would be incomplete without a brief mention of a singular combination, shown near the Canadian timber trophy. It is a model of a combined reaper and thrasher, as used in South Australia, and of Australian manufacture. The knife bar is let down by a rack motion, and is geared on a universal joint from the road wheels, which also actuate a spindle moving the thrashing beaters in the hinder portion of the machine, into which the cut corn is forced in a continuous stream, so to speak. The machine is useful as showing the requirements of a climate where it is being already largely used; but that it is not in all respects satisfactory would appear to be shown by the offer of a reward of £4,000 for a perfect machine of the kind, by one of the Australian governments.

Roads in Baden.

In the Grand Duchy of Baden, in Germany, the government has built magnificent macadamized roads, as smooth as Central Park rides. These are lined on both sides by fruit trees—pears, apples, cherries, plums—and it is asserted that the fruit alone pays the full cost of repairs. All the droppings of the road are carefully and constantly scraped around these trees. The rain water of the road beds is led to them, and they bear most bountifully choice and valuable fruit. The beauty of such roads, nicely shaded, well kept, and in a picturesque country, is a thing never forgotten.

PIPE WRENCH AND CUTTER.

A new and very simple pipe wrench with a pipe cutting attachment is represented in the accompanying engraving.



TRULAND'S PIPE WRENCH AND CUTTER.

Fig. 1 shows the tool arranged for cutting, and Fig. 2, which is partly in section, shows the tool arranged for turning or holding pipe or round rods.

The handle, A, is curved, forming the jaw, B, near which there is a slot in which the cutter, D, is pivoted. One arm of the cutter is pressed by a spring, C, which is secured to the handle; a screw, F, passes through the other arm, and is used to force the edge of the cutter into the pipe as the tool passes over it. When the tool is used as a wrench the serrated jaw, G, is substituted for the cutter, and its engagement with the surface of the pipe is insured by the pressure of the spring, C, on one of its arms. The serrated jaw is disengaged from the pipe by the pressure of the thumb on the arm that extends downward nearly parallel with the handle.

This implement was recently patented by Mr. William L. Truland, of Lansingburg, N. Y., from whom further particulars may be obtained.

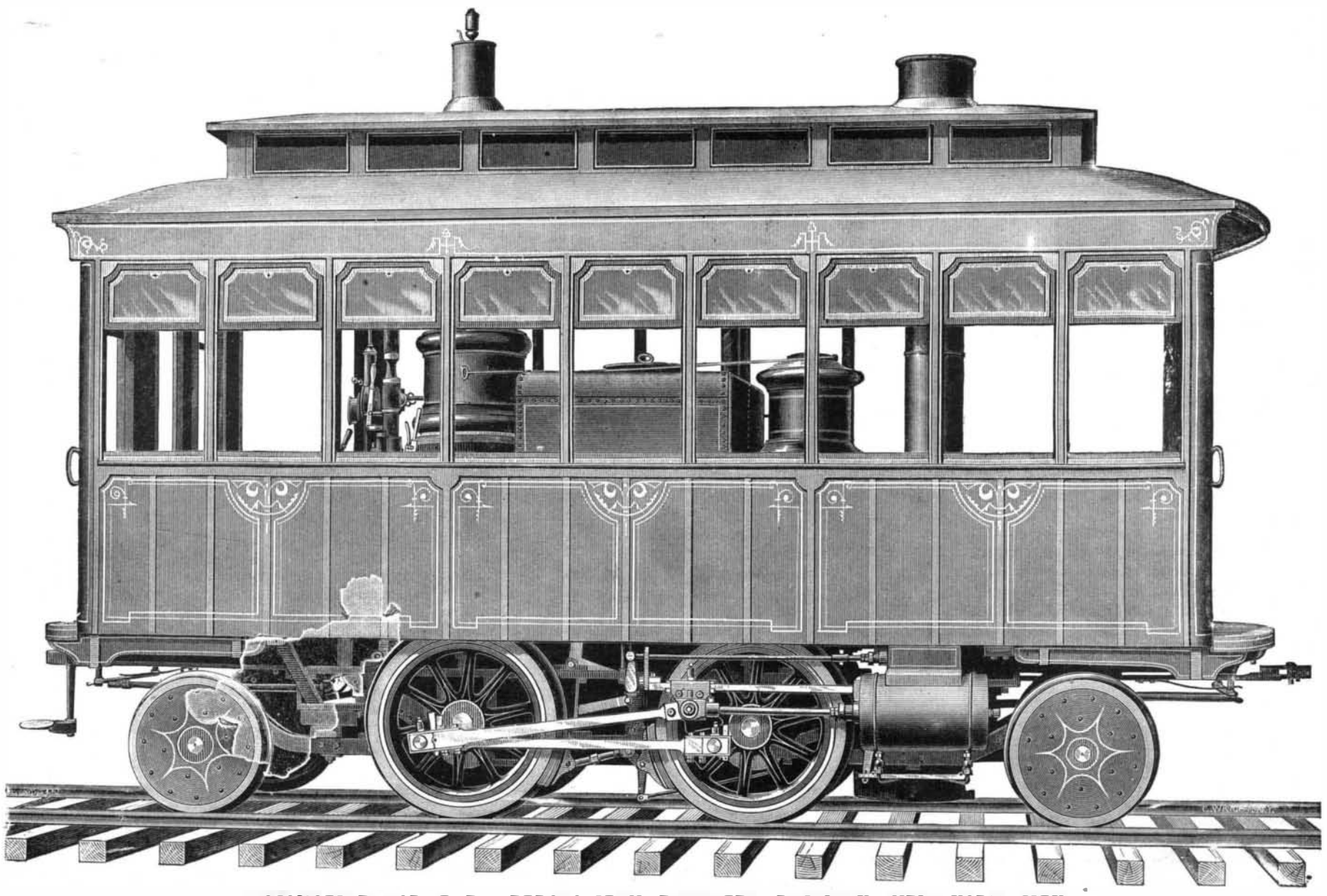
A Mirror Telegraph.

A party of gentlemen were standing on the Lake House porch recently watching the telegraphing between two parties of United States Signal Surveys. One party was stationed on the highest peak of the mountain range northeast of us, and the other on one of the peaks near Lake Tahoe. The telegraphing is done by an instrument known as the heliotrope, which concentrates the rays of the sun to a focus and casts them straight ahead, similar to a mirror, and by an agreed series of long and short flashes can communicate the temperature, etc., from point to point similar to telegraphing. This is in general use over the United States, and is of great value to the Weather Bureau. The party whose signals were noted is situated thirty-five miles from here, and yet the flashes were as bright as the sun.—*Reno (Nev.) Journal.*

WE understand that the fine steam engine now driving the machinery at the Mechanics' Exhibition in Boston has been purchased by Professor Edison, and will be placed in his laboratory at Menlo Park, N. J. The engine was built by C. H. Brown & Co., of Fitchburg, Mass., and is remarkable for its efficiency and finish.

LOCOMOTIVE FOR THE METROPOLITAN ELEVATED RAILWAY.

We publish on this page an engraving of one of the locomotives used on the Metropolitan Elevated Railway. The dimensions of these engines are as follows: Cylinders, 10 inches in diameter by 16 inches stroke; driving wheels, 39 inches diameter; truck wheels, 28 inches diameter; total wheel base, 15 feet 6 inches. The boiler is made of steel and has 125 flues 1½ inch in diameter and 70 inches long. The fire box is 42 inches long by 27 inches wide; axles, 4½ inches diameter; capacity of the tank, 320 gallons; weight of the engine loaded, 32,500 lbs.; weight on driving wheels, 27,500 lbs. These engines have now been working for several months, and have done good service. They pass around curves of 90 feet radius, and the heaviest trains consist of three loaded cars. The engines last ordered have larger boilers, and the cab is made shorter, so as to expose the water tank and a part of the boiler to view.



LOCOMOTIVE FOR THE METROPOLITAN ELEVATED RAILWAY, NEW YORK CITY.