Scientific American.

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

VOLUME XI. NEW-YORK, AUGUST 2, 1856. NUMBER 47.

THE
Scientific American,
PUBLISHED WEEKLY

At 128 Fulton Street N. Y. (Sun Buildings.)
BY MUNN & COMPANY.

O. D. MUNN S. H. WALES A. E. BEACH.

Agents.

Federhen & Co., Boston. | Dexter & Bro., New York
A. Winch, Philadelphia. | E.E. Fuller, Halifax, N
A. G. Courtenay, Charleston. | S.W.Pease Cincinnati,O.

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

Single copies of the paper are on sale at all the periodical stores in this city, Brooklyn, and Jersey City.

TERMS--$2 a-year,—$1 in advance and the remainder in six months

Direct Acting Pumping and Cornish Engines.

As considerable has appeared in our columns relating to the Cornish Pumping Engine, the same question has lately excited no small amount of discussion on the other side of the Atlantic. A paper has been read on the subject before the Royal Scottish Society of Arts, by D. Landale, in which he described a direct-acting pumping engine, which, since 1852, has been slowly making headway against the Cornish Engine, on account of its simplicity and cheapness. There are two kinds of this engine, both condensing, high-pressure, and expansive; one with a 40-inch cylinder and 12 feet stroke, which is simply a Cornish engine turned upside down, the cylinder resting on a strong sole plate over the mouth of the shaft, and the piston-rod attached direct to the forcing set-pump rods. The air pump is small in diameter, with the same length of stroke as the engine, thus doing away with the ponderous beam, parallel motion, and heavy masonry of the cylinder pedestal, lever wall, and engine house, and obtaining any desirable length of stroke by merely adding to the length of the cylinder and piston-rod, thereby increasing the efficiency of the pumps, and making smaller ones do the same work. The second kind of engine is also inverted over the shaft, and secured and attached to its work in precisely the same way. It also uses high pressure steam expansively; but its peculiarity consists in there being a constant vacuum above the piston, both during the descent and ascent of the load. During a portion of the descent the piston is nearly *in equilibrio*, having a vacuum on both sides; that under being a partial, and the one above being about 12 1-2 lb. per square inch, or the common condenser vacuum. As the piston and load continue to descend against this vacuum, a self-acting valve shuts toward the piston, and a full vacuum is acquired by the time the piston has got to the lower end of the cylinder, thus giving a tension or extra pressure equal to 4 tuns on the 70-inch cylinder at the moment when it was most required to overcome the *vis inertia*. The steam valve is then opened, and high steam admitted for the up-stroke. There are only two double beat valves worked by the engine. The vacuum valve is self-acting, oblong, and hinged, working on the upper port of the cylinder.

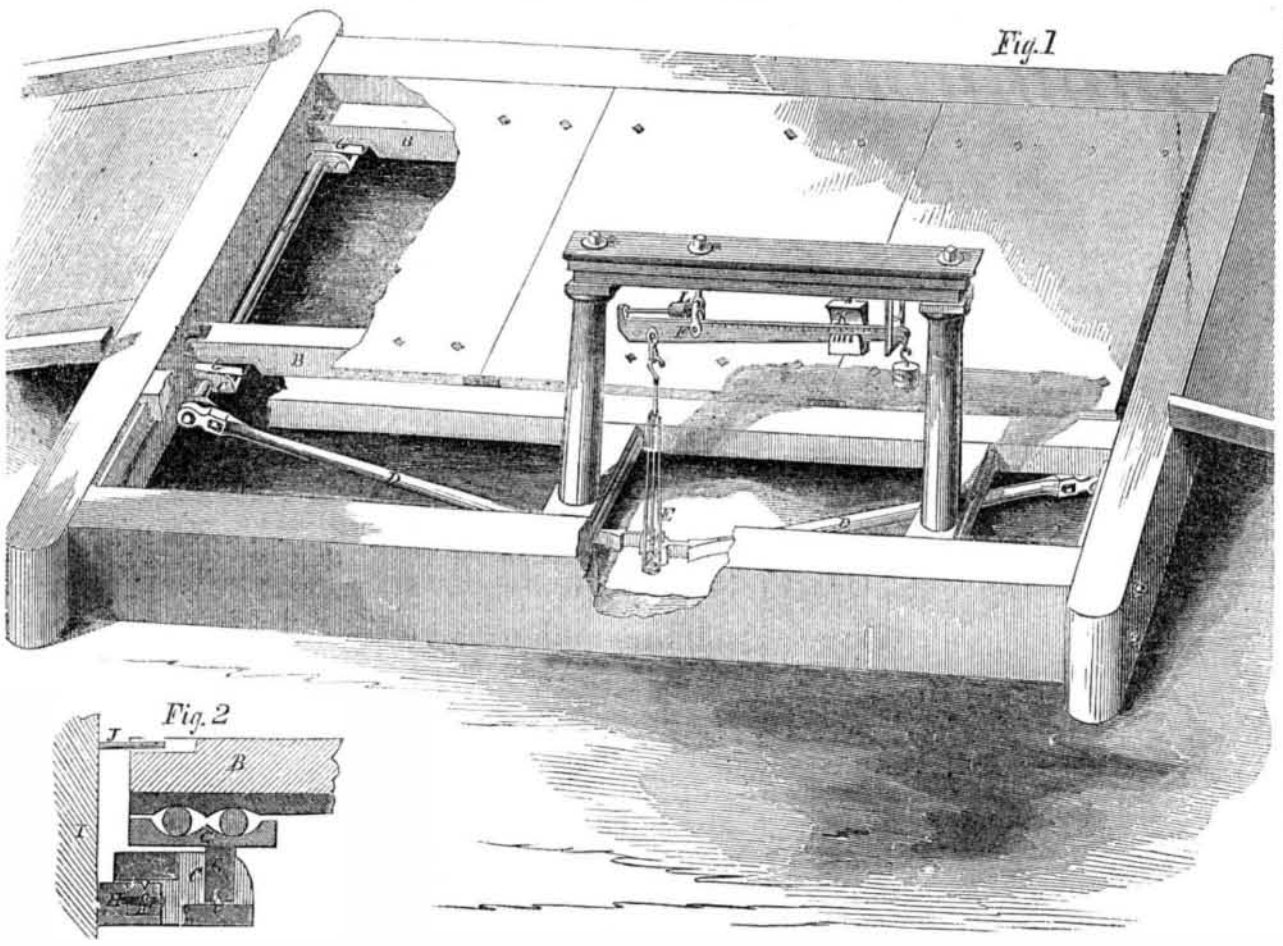
Convenient Railroad State.

It seems of the ninety-one counties in Indiana the inhabitants of eighty can leave home in the morning, go to Indianopolis by railroad, attend to business there from two to eight hours, and return home the same evening.

Polarized Light.

In the apparatus room of the Smithsonian Institution, there is exhibited an immense instrument for showing the colors of polarized light. The arrangement of this instrument is the invention of Dr. Edmundson, of Baltimore, who has long been known to the scientific world. The instrument presents on a larger scale than perhaps they were ever before exhibited, the gorgeous colors of light.

IMPROVEMENT IN PLATFORM SCALES.



Improved Platform Weighing Scales.

Our engravings illustrate the platform scales of Messrs Strong & Ross, Vergennes, Vt. Patented Jan. 15, 1856. Also patented in Europe.

In this invention, the long under bracing and levers generally required for platform scales, are dispensed with, rendering the pit in the ground unnecessary. The construction is also greatly simplified and cheapened. At each end of the platform there is a shaft, A. which is provided with short cranks, C. B B are the beams of the platform which rest upon the ends of the cranks, C, and consequently the weight upon the platform tend to turn shaft A. levers, D, extend from the shafts, A, and terminate in a sling, E, which connects with the scale beam, F, so that when A turns, no matter how slight its movement, the short end of scale beam E will be depressed; by putting on weights at the opposite end, the proper counterpoise will be obtained, and the correct weight of all articles placed on the platform indicated.

Fig. 2 is an enlarged view of the connection between the ends of the platform beams, B, and cranks, C. The end of beam B rests upon balls which are contained in a double cup-shaped piece, G; the latter has a vertical projection, G', which rests upon a knife edge, on crank C. H are studs projecting from the side frames, I; the studs support shafts, A, upon knife edges, *a*. The ends of these studs, H', are swiveled and turn on pivots, *e*, at right angles to the knife edges *a*; this arrangement permits the knife edges to adjust themselves by partial rotation upon the swivels, H', and thus a perfect bearing is insured; perfect accuracy in the fit and finish is also rendered unnecessary, expense reduced, &c. J are pins in frames, I, to prevent the ends of beams, B, from lifting out of place.

This method of connection gives free movement to the parts, in all directions, without friction, and yet keeps them all in proper place; the use of check rods is also unnecessary, for the platform does not rest rigidly upon the knife edges, and therefore there can be no direct shock or wear upon them.

When a very heavy load is placed upon the platform, its beams are likely to bend, and in common scales this bending pulls the levers, causing them to vibrate more than the true weight. The use of balls under the ends of the platform beams, totally obviates this objection.

The beam, F, has a sliding poise, K, of the vernier kind, graduated so that the fractions indicated by the beam may be easily read. This is very convenient in use, for only one operation is necessary to determine the weight of any load, viz., to slide the poise, M, until the proper balance is obtained. L is a screw weight for the finer divisions of fractions—such as ounces, half ounces, &c.

We saw the accuracy of this invention put to a severe test not long since. The capacity of the scales on trial was six tuns, a load consisting of a tun and a half of iron was rolled upon one corner, and then changed from place to place; at all points in which it was placed, the scale exhibited the same weight with scarce a variation of half an ounce; a copper penny thrown upon the platform, when thus balanced, would destroy the poise, so accurate was the apparatus.

The principles of this weighing machine are adapted to the construction of scales of the largest and longest description. For railroad purposes it may be arranged in elongated form, extending several hundred feet, so as to weigh a number of cars, with their burdens, at once.

It is extremely portable, rests flat on the ground, may be taken up and put down any where, or packed in small compass for distant transportation. Its construction is quite simple, and its manufacture very economical. The invention contains other points of interest, but our limited space prevents their special notice.

Address the inventors, as above, for further information.

Our Mechanics.

The Worcester (Mass.) *Telegraph* says:—"Without intending to disparage in the least the capitalists of Worcester, we may truly say that our city owes its growth and present business prosperity to the intelligence and activity of her mechanics. In saying this we cannot be accused of slighting those of our citizens who are enabled to live in well arranged mansions and to fare sumptuously every day, because most of these built the foundation of their present affluence in the machine shops of our city; most of them have in their day, toiled with their own hands, and started their fortunes by the sweat of their own brow. What they have accomplished others now laboring in our busy mechanical hives of industry will accomplish; and hundreds of young men who are now employed at the bench or vise, will, at no distant day, become the proprietors of the shops where they are now employed, and reside, perhaps, in the very mansions now occupied by their employers. Such is "manifest destiny," and such is the inevitable result of well-applied industry, and honest, upright conduct. So much for the mechanics of Worcester."

Cause of the Inundations in France.

At a late meeting of the Academy of Sciences, in France, a member read a paper, in which he attributed the recent destructive inundations in that country to a sirocco from Africa. He asserted that this sirocco passed over the sea, causing rapid evaporation, and that it carried the moist clouds to France, where they were condensed and fell on the mountains in heavy showers, melting the snows, and causing heavy torrents to flow down upon the plains, thus swelling the rivers to overflowing.

Good Speed.

On the 10th ult., the morning train bound east on the New York Central Railroad, ran from Buffalo to Syracuse, nearly 150 miles in 4 hours and 7 minutes.