

# Scientific American.

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

VOLUME XII.

NEW-YORK, JUNE 13, 1857.

NUMBER 40.

## THE Scientific American,

PUBLISHED WEEKLY

At 123 Fultonstreet, N. Y. (Sun Buildings.)

BY MUNN & CO.

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

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Sampson Low, Son & Co., the American Bookellers, 47 Ludgate Hill, London, Eng., are the English Agents to receive subscriptions for the Scientific American.

Single copies of the paper are on sale at the office of publication and 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.

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### Permanent Way of Railroads.

A very interesting discussion recently took place on the above subject at a meeting of the Society of Engineers in London. It arose from the reading of two papers on the subject—one by W. Bridges Adams, C. E., and another by P. M. Parsons, C. E. The facts elicited were of considerable importance. It was stated that one thousand miles (single line) of iron permanent way had been laid in England, and that Greaves' system (illustrated on page 89, this vol., SCIENTIFIC AMERICAN,) had been extensively and satisfactorily used in Egypt. As to the assumed rigidity of cast iron permanent way, an objection urged against this system by some persons, this had been demonstrated to be a fallacy. It was found after a number of years of hard usage to be in an excellent state of preservation, and had not produced any injurious effect upon the rolling stock—engines and cars. The general opinion of the engineers present seemed to be that cast iron sleepers were preferable to those of wood.

### Curious Chemical Explosion.

On the 25th ult., while the assistant of Professor Doremus was preparing some oxygen gas, in the laboratory of the Medical College, this city, from the chlorate of potash, the receiver exploded with terrific violence, shattering the windows and otherwise doing considerable damage. At the time this accident took place, neither the Professor nor any other person could account for its cause. The gas itself is not explosive. What, then, was the cause? The flask containing the chlorate of potash, from which the gas was generated, became red hot, consequently the gas passed over in a highly heated state. In this condition, it is believed, it decomposed a portion of the receiver, which was india rubber, converting it into carburetted hydrogen gas, which being saturated with the oxygen, acquired a highly explosive character and was ignited by the hot oxygen.

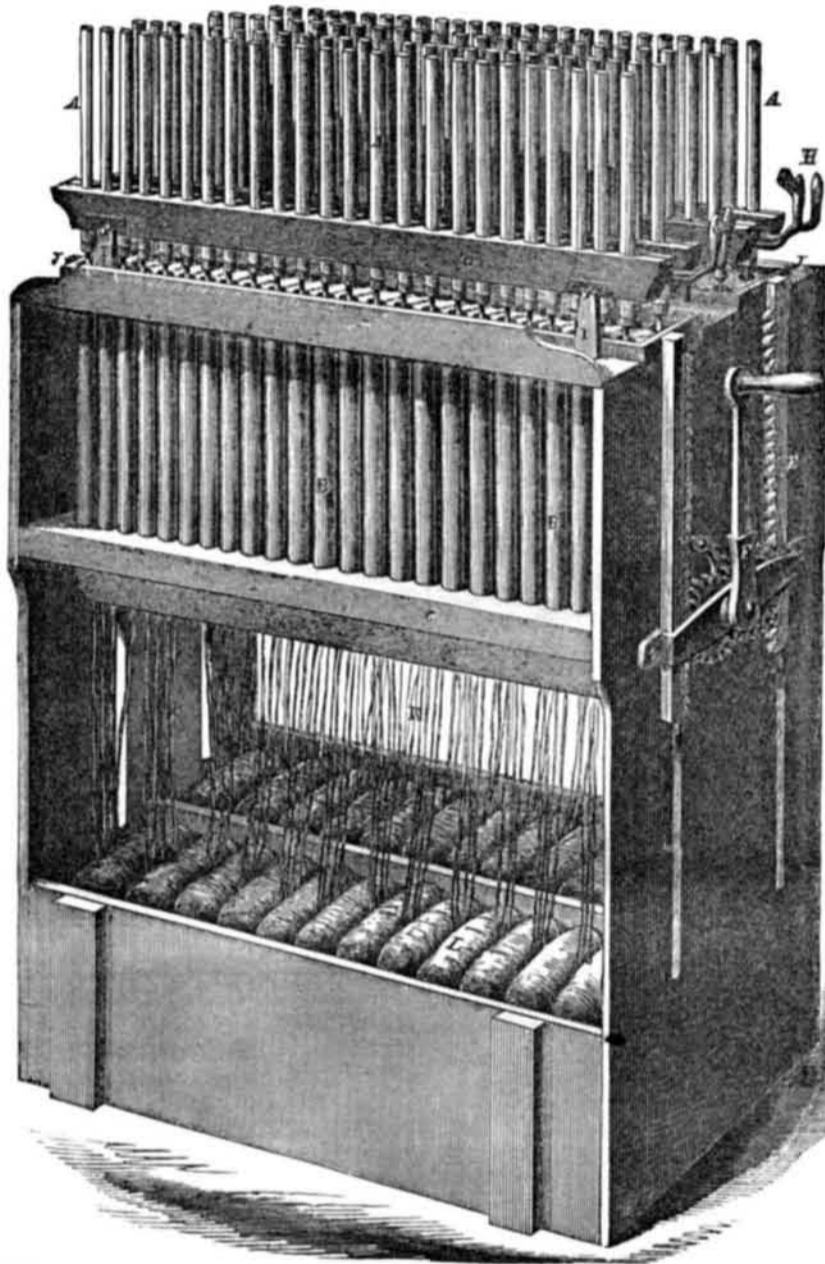
### The Menal Tubular Bridge.

The Philadelphia *Ledger*, which is usually so correct in mechanical matters, gives Brunel, Jr., too much credit in attributing to him the authorship of the above named celebrated bridge. William Fairbairn, C. E., discovered the best form of bridge, and he certainly is the inventor of it, as it is now constructed. Brunel, Jr., had nothing to do whatever with its construction or erection.

### Caution to Flies, Mosquitoes, Roaches &c.

We have received from Mr. I. S. Clough, inventor, 168 Broadway this city, some samples of his ingenious fly, mosquito, and roach traps. They are sure death to all unfortunate vermin which enter. We have seen practical evidence of this fact. These traps are particularly useful at this season of the year; and as they are cheap in price and ornamental in appearance, they will please everybody.

## HUMISTON'S CANDLE MACHINE.



Although in large towns and under favorable circumstances for the introduction of the successive innovations, it may with propriety be said that candles have long since given way to oil, and this again to burning fluid, which latter has been, in turn, superseded by gas, there are peculiar conveniences attending the use of the ordinary tallow candle, which will probably forever create for it an extensive demand. The many processes for forming these may be included under the heads either of dipping or molding, and the superior perfection of the product induces a strong preference for the latter. There are several machines in use to facilitate the manufacture by this method of these important illuminators, one of the most important and efficient of which is represented in the accompanying engraving. The wicks are drawn, by an automatic movement, through the mold, and held in place, while the melted tallow, poured by hand, congeals around them, and the finished candles are expelled by an easy movement, and conveniently removed in dozens or hundreds at a time, by the aid of simple clamps which grasp them.

The machine is a tolerably simple construction of moderate size, as represented in the accompanying illustration. The view is taken at a moment when the candles have just been thrust up from the molds, and are in the act of being seized by the clamps for removal.

A represents the candles, which are molded base uppermost. B are the molds of tinned

iron, or any suitable material slightly tapered. C is the flooring on which the molds are supported, and which is, in some of these constructions, lined with lead, and made to support ice water, which surrounds the molds, B, to hasten the cooling. D represents a movable platform capable of sliding vertically in the slots at each extremity, and attached to which are racks, E E, operated by the crank, F, which is turned by hand. Fixed in D are tubes or hollow plungers, smaller than the candles, through which the wicks, K, are led from the spools, L, below. When the candles are sufficiently cooled in the molds, revolving the crank, F, elevates D, and consequently thrusts them out at the top as represented. The upper ends of the tubes or hollow plungers are spread and made to fit nicely to the ends of the candles, as shown at the lower extremities of A. To facilitate the pouring of the tallow into the molds after the frame, D, has been depressed by a counter revolution of the crank, F, the cast iron troughs, J, are provided at the top as represented. G represents the clamps, each of which are composed of four parts, to embrace two rows of candles, all operated by one movement of the handles, H. These clamps are supported on the standards, I, and may be readily removed by hand to deposit them in the boxes.

The operation of candle making by this machine is simply as follows:—Commencing with the parts in the position represented, the pawl is elevated, and the crank, F, revolved in such manner as to lower the racks,

E, thus depressing the platform, D, and drawing downwards the hollow plunger through the molds. The wicks being still fast to the candles above, remain, of course, stationary. When D is in its lowest position, the troughs, J, are filled with tallow from the ladle, and after a few minutes cooling, the wicks connected to A, are cut by a rapid movement of a long handled knife, and the link represented being previously on the handles, H, the clamps, G, are lifted, and the candles, A, removed. Meantime the tallow in B has been rapidly cooling, and after a length of time depending on the temperature of the air, or of the water surrounding B, the superfluous tallow and wicking is scraped from the molds by an implement made to traverse in J, and the clamps, G, having been placed on the uprights, I, and opened as widely as possible to allow the easy ascent of the still somewhat soft candles, the crank, F, is moderately revolved, and the lot of candles gradually lifted, drawing with them the wicks, K, which are delivered from the spools below. The operation is very simple and rapid, and the machine cannot be too much admired, either for its labor saving qualities, or the cleanliness and perfection with which this operation is conducted.

This machine was patented April 4, 1854. For further particulars address the inventor, Mr. Willis Humiston, Troy, N. Y.

### Rezoil.

Mr. S. Piesse, in the *Gardeners' Chronicle*, says: It is well known that the patience and labors of the horticulturist are frequently rendered unavailable by the appetite of some insects. For preserving their flowers from these enemies, gardeners have adopted several plans, not one of which appears to be effective, more especially against the earwig, which is most to be feared as the flowers approach maturity. How many show dahlias are thus "cut off in their bloom!" With the hope that the following recipe will offer some check to these marauders, I send to you, assured that its cheapness and easy application will render it universally appreciated. Take of common rosin, 1 1-2 lbs.: sweet oil, 1 lb.: place them in a pipkin over the fire until the rosin is melted, stir the materials together, that they may be well blended; when cold the substance formed, which I call "rezoil," will be of the consistency of molasses. To use the rezoil it should be spread with a brush upon shreds or any fitting material, and wrapt round the stem of the plant; if any support is used, that should be brushed over also. No insect can possibly, or will attempt to cross this barrier; the rezoil never dries, but always remains sticky and clammy—its action as a trap is therefore obvious. To preserve grapes and other wall fruit we have only to nail a strip of list upon the wall round the entire plant, and then paint it well with the rezoil on both sides, if it can be managed, to keep insects from crawling under as well as over. Other modes of application will suggest themselves without my here enumerating them. Birds, cats and mice equally avoid soiling themselves with this substance.

The two mammoth steamships which are talked of to form a new line for California, will probably be constructed by Messrs. Perrine, Stack & Patterson, of Williamsburg. They are to be 450 feet long, with two pairs of paddle wheels.

The *Roanoke*, another of the new screw frigates, has just made a successful trial trip, and has been sent off on a cruise. Her speed under steam alone was eight knots, burning 3600 pounds of coal per hour.