

Scientific American.

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

VOLUME 5.]

NEW YORK MAY 18, 1850.

[NUMBER 35.]

THE
Scientific American,
CIRCULATION 14,000.

PUBLISHED WEEKLY.

At 128 Fulton Street, New York, (Sun Building,) and
13 Court Street, Boston, Mass.

BY MUNN & COMPANY.

The Principal Office being at New York.

Hotchkiss & Co., Boston.
Geo. Dexter & Bro., New York City.
Stokes & Bro., Philadelphia.
R. Morris & Co., Southern.
Responsible Agents may also be found in all the
principal cities and towns in the United States.

TERMS—\$3 a year—\$1 in advance, and
the remainder in 6 months.

Rail Road News.

Railroad Bridge.

The bridge of the Kennebec and Portland Railroad, over the Androscoggin River at Topsham, is one of the largest and most substantial structures of the kind in the United States. It is a deck bridge, the upright posts and rods being about 18 feet from the lower to the upper deck. One of them reaching from centre to centre of the piers, is one hundred and eighty feet. The piers are of granite laid in the most durable manner. The whole length of the bridge, is over seven hundred feet. The track of the road along the upper deck will be about fifty feet above tide water. The large lower and upright timbers, and the iron work, together with the X work between decks, give the bridge an appearance of strength and solidity sufficient for any weight.

Railroad to Cairo.

Mr. Douglas succeeded, on the 2nd instant, in getting his bill for an appropriation of lands for the construction of a railroad from Chicago to Cairo, Ill., through the Senate. This bill contains a grant of every alternate section of land comprised in a strip five miles wide on each side of the road. The bill was so amended, on its final passage, as to make a similar donation to a continuous road from Chicago to Mobile. This railroad will embrace the most important points of communication on the Mississippi River. The time will yet arrive when communication by water conveyance, will be of but small importance compared to what it now is in the interior of our country. The railroad will yet banish both the canal and river boat from competition, except in carrying heavy freight.

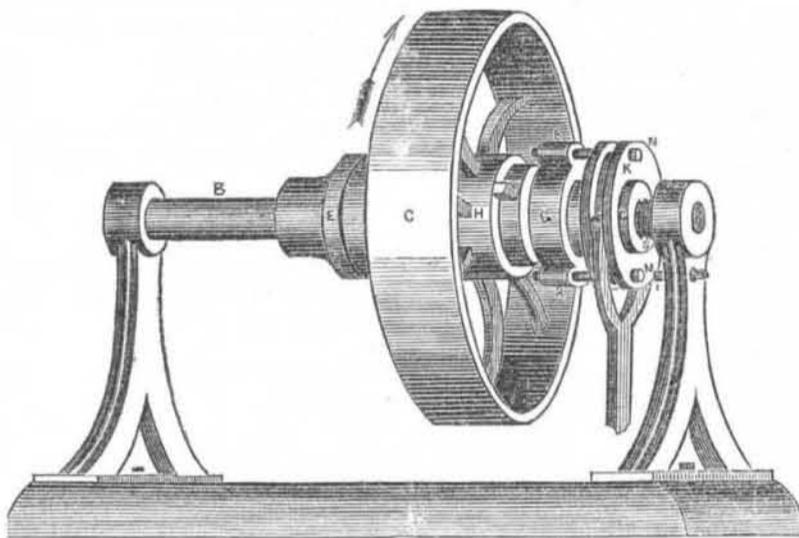
Foreign Hops in England.

The importations of foreign hops continue to take place to a considerable extent from the United States of America, and also to lesser extent from Belgium, the produce of these countries, which is of importance, as evincing the practicability of a continuance in the supply of this novel article of foreign merchandise throughout the year, the present being the first of such importations from abroad taking place. The American ship Independence, from New York, brought 101 bales, consigned to order; the Nautilus, from Antwerp, 5 bales; Soho, from Antwerp, 10 bales; and the Sir Edward Banks, from the same place, 15 bales of the article.

A coach of colossal dimensions is at present being constructed in Edinburgh. It will afford ample accommodation to forty-eight passengers, be drawn by five horses, and run almost hourly from Edinburgh to a neighboring town much frequented during summer months.

Engines are now constructed for sale in London, called Phillip's fire annihilators. They are drawn on wheels very easily by two men. The largest machines cost \$35. They emit a humid, expansive vapor, which instantly extinguishes fire.

IMPROVED CLUTCH FOR MACHINERY.



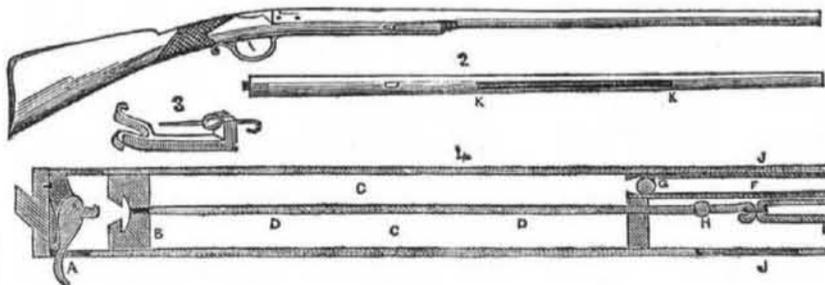
This improved Clutch is the invention of Mr. Nelson Barlow, of St. Louis, Mo. The principal feature of the improvement consists in securing a screw on the clutch shaft, which graduates the coupling of the machinery, so as to prevent jarring or sudden shocks, in clutching. It is well known that in connecting machinery by the common clutch, there is always a sudden jar or shock experienced, and if the running machinery has a high velocity, it is liable to break the clutch, unless it is made very strong. This evil is effectually removed by this improvement. This engraving is a perspective view, and is designed to represent those parts particularly, to which the improvement is applied. B is the running shaft; E is a fixed collar on it, and C is a large pulley, which is converted into the fast or loose pulley by the clutch, as may be desired. Two pulleys may be operated by this clutch for reversing machinery, but this plan is not represented in the engraving. The pulley is represented as running loose in the direction of the arrow. H is the collar of the pulley, with two projections on its face (only one seen.)—G G is a long nut through which the screw part, L, of the shaft passes; K is the clutch or sliding collar on the nut; it has a groove of the usual kind in it, with a fork lever to slide it forward and back on the nut. R R are two lugs through which the clutch pins pass to take into the projections of the collar, H. N N are the outer ends of the said pins, which,

when the clutch is out of gear, should be retained by the pin, I, on the standard to prevent the collar, K, from turning round.

When it is desired to make the loose pulley fast, the clutch collar, K, is pushed by the fork lever towards the face of the pulley, when the pins take into the projections, and the said collar moves round, screwing the nut, G, and the shaft together, thus making a very close coupling. When it is desired to ungear, the collar, K, is drawn back on the nut, G, until it is arrested by the pin, I, taking into pins, N N, when the nut, G, is held, and the pulley, by passing around, unscrews itself, as will be understood by every mechanic. One advantage about this improvement is, that the harder the drag there is upon the pulley, the firmer is the coupling geared together. A very small turn of the screw sufficeth for gearing and un-gearing. Another modification of this improvement consists in discarding the pins and projections, and substituting a cone cup on the collar, H, and a cone face on the sliding collar, with a feather in the nut, G, to gear and ungear in the same way. We believe that this is a good invention, and of no small importance to those engaged in the construction of machinery.

The inventor has taken measures to secure a patent, and more information may be obtained from him by letter (p. p.) addressed according to the above direction.

NEW AND SIMPLE AIR GUN.—Fig. 1.



This gun is the recent invention of an English mechanic named Mr. John Shaw, of Glosop, and is of great simplicity, and can be constructed by any of our gunsmiths. We do not say that it will propel a ball with the effective force of gunpowder, but it will enable a sportsman to amuse himself at but little expense, and will do execution, too, at considerable distance from the mark. The air that projects the bullet is condensed by a piston, which draws out a strong india rubber spring, which, when it is set free, suddenly draws up the piston, condensing the air in the air cham-

ber, and impelling it against the bullet to discharge it with considerable velocity and power.

Fig. 1 is a view of the gun. Fig. 2 is a detached view of the barrel. Fig. 3 is a view of the hook to draw down the piston, and fig. 4 is a large vertical longitudinal section of the stock, showing its interior. The same letters refer to like parts. A is the trigger; B is the movable piston, which condenses the air. It is formed with notches to take into the trigger when drawn down, and to be set free when the trigger is pulled; D. D is a strong steel wire

with a bead, H, on its outside of the breach plate, which has an opening through it, in which the wire works air tight. J J are the two sides of the chamber and case; G is the ball; F is the barrel, and I is the strong india rubber spring attached by a link to the hook on the end of the wire, D. The spring is capable of being drawn out the full length, from the bead, H, till the piston notch catches into the trigger. Fig. 4 represents the piston just liberated and the ball starting.

After the ball is placed in the barrel, the hook, fig. 3, is introduced into the groove, K K, fig. 2, catching round the bead, H, and then by pulling on the hook with both hands, the piston, B, is drawn down till it catches into the trigger, A: it is then ready for discharging. The butt of the gun should be placed against the thigh, to pull down with the hook. The hook, therefore, loads (it may be said) the gun. The india rubber spring has to be very strong and elastic, made of the best quality of material, as the power of discharge depends upon the suddenness with which the india rubber contracts to its fixed natural dimensions.

Useful Receipts.

Phosphurets.

Phosphurets are compounds of phosphorous with metallic and other bases; phosphuret of sulphur is employed to form matches, for the production of instantaneous light, phosphuret of lime has the remarkable property of decomposing water, when a piece of it is thrown into water the hydrogen that is liberated unites to a portion of the phosphorous, and forms phosphuretted hydrogen—which takes fire on coming in contact with atmospheric air.

Phosphuretted Hydrogen.

Phosphuretted Hydrogen, is a gaseous compound of phosphorous hydrogen, it is extremely combustible, inflames by mere contact with the atmosphere, in oxygen gas inflames with a brilliant white light,—with chlorine it detonates with a brilliant green, it has a disagreeable smell resembling putrid fish, and combines in but a very slight degree with water. It has been supposed that those lights observed about a church-yard, and where animal matters are putrifying, are produced by the formation and inflammation of this gas, these lights are vulgarly called, "Jack o' the Lantern," "Will o' the Wisp," "Ignis-fatui," &c.

To Form a Phosphoric Fire Bottle.

Put about the size of a pea of phosphorous into a small phial about the size of one used for hair oil, let it be dry—heat a wire and with the hot end of it melt the phosphorous and spread it over the inside of the phial, and cork it—the fire bottle is now formed,—all that is required to get light is merely to take a sulphur match, turn it two or three times round in the bottle, rub it on a cork and it will inflame.

A Fountain of Fire.

Take two parts of granulated zinc, one part of phosphorous, (say ten grains phosphorous and twenty of zinc), and pour on it, half an ounce of sulphuric acid, (oil of vitriol) in a short time phosphuretted hydrogen gas will be produced, extinguish the lights, and beautiful jets of blue flame will be seen to dart from the bottom of the liquid, while its surface will be covered with a luminous smoke. This is a beautiful experiment and is easily performed.

Great Steam Ship.

A French battle steam ship of 100 guns, named the President has her machinery just finished. Each engine is 960 horse power. It is the largest steamship in the world, but time alone will tell whether it will be successful or not.