IMPROVED ADJUSTABLE SCAFFOLD.

Painters and other mechanics, who have frequent occasion to use scaffolding in performing their work are, in the invention represented in the annexed engraving, provided with an adjustable extension truss which, according to the inventor, may be applied with equal facility to various purposes. It serves as a truss for scaffolding, a common ladder, platform, and step ladder, and, from its simple construction, may be built quite cheaply. It may be compactly folded, and thus readily moved from place to place.

The two parts, A and B, of the extension truss are hinged together near the top by means of side plates, cross rod, C, and nut, as shown, so as to fold together or to be detachable from each other. The tops of parts A and B are united by lateral boards, D, one of which is hinged so as to fit, when necessary, over the recess which holds the vertical cross piece, E, and which is lined with metal plates. Both parts may be extended to and adjusted at different hights, the front portion by sliding pieces, F, guided by suitable plates, I, one set secured to A, and embracing F, and the other arranged in the opposite manner. Holes in the sliding pieces and pins serve to lock the former in any desired position. The top slide plates limit the upward motion of the sliding pieces. F, the lower ends of which project beyond the parts, A, and are provided with metallic sockets, produced with the angles of inclination of the truss to the ground. Both portions are connected by rounds in such a manner that they offer, in any position, a double support to the foot.

The rear part, B, is extended by means of slides, G, which move in guide recesses. Lateral pieces stiffen the fixed portion, while steps or rods serve the same purpose for the slides. The connection of the two parts, B and G, is made by holes in both washer plates at the outer sides of part, B, and cross rods, H, with screw ends and heads, by which the whole is firmly retained in any position corresponding to that of the part, A. The slides, G, also terminate underneath in suitable shoes or sockets.

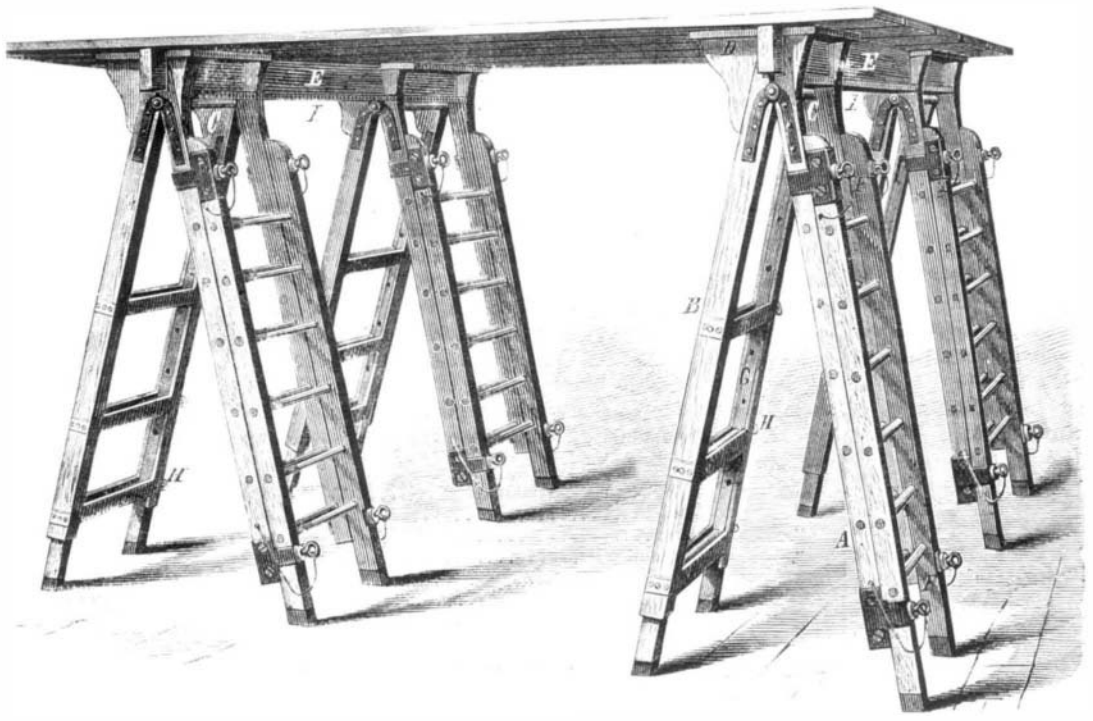
The platform may be constructed as represented in our illustration, or the cross pieces, E, may be removed and longitudinal timbers laid between the opposite trusses under the lateral boards, D, and above those marked I. Heavy bolts passing through all secure the beams in place.

The inventor states that, when the device is folded up, the boards connecting the trusses may be secured between the steps of the front part, A, serving thereby as a support for paint pots and other implements. In similar manner either half may be used as a suspended platform for painters in painting the outside of houses, while the detached front part may be applied as an extension ladder.

We are informed that a 4 feet 10 inch truss, as shown in the engraving, makes a scaffold that will reach to a ceiling of 14 feet 6 inches in hight. It also forms a step ladder of from 4 feet 10 inches to 8 feet, and of five distinct sizes.

The device may be used upon stairs as easily as on a level floor, by extending the front part two steps, or a sufficient distance to accommodate the rise. It has no braces, is self-bracing on top, and can never, it is claimed, spread or give way.

Patented through the Scientific American Patent Agency, November 4, 1873. For further particulars regarding sale of State rights, etc., address the inventor, Mr. John Dillon, 405 Fourth avenue, New York city.



DILLON'S ADJUSTABLE SCAFFOLD.

A NEW MAGNETO-ELECTRICAL INSTRUMENT.

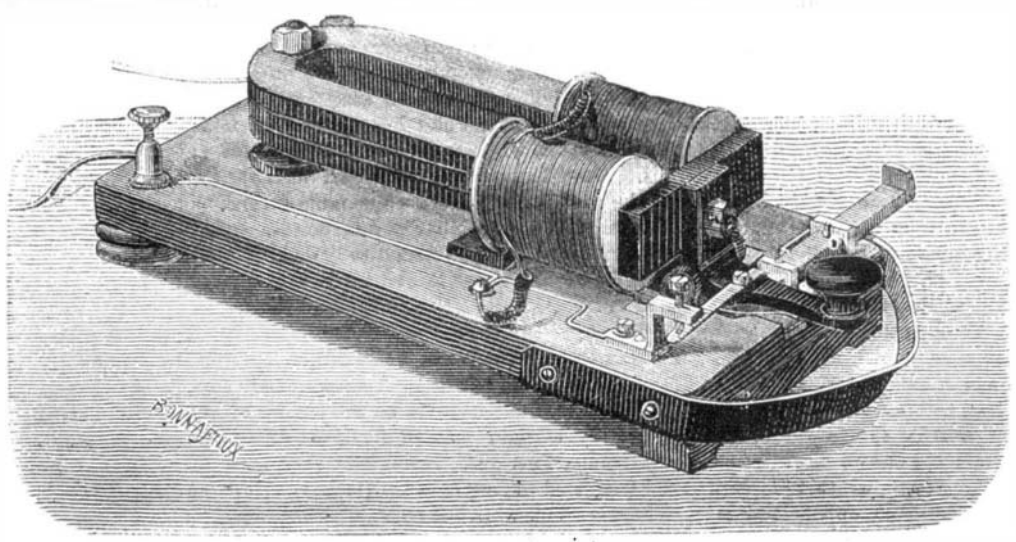
A novel form of magneto-electric battery, adapted for use as an exploder, is represented in the annexed engraving, which we extract from the pages of *La Nature*. It consists simply of a horseshoe magnet, around the arms of which are wound coils of insulated wire. To the poles is applied an armature of soft iron. The apparatus is a reproduction of a similar device used by Faraday in his experiments to show that, when the armature was suddenly removed from the poles, a current is almost instantly established in the coils, while, on replacing the iron, another current was engendered similar to the first, but in the contrary direction.

In order to use the current thus obtained, in place of that of an ordinary battery for exploding charges, a high tension is necessary, and this is obtained by a simple and ingenious attachment. The key which moves the armature carries a small spring (shown on the left in the engraving) which touches a screw. When the armature is removed from the magnet this contact is broken, but not instantaneously, as the parts touch until two thirds of the motion is completed. One of the conducting wires is connected with the lever of the armature, the other with the screw; consequently the current caused by the sudden break is kept within the apparatus during two thirds of the time of its production. This arrangement, which, at first sight, would appear designed to cause the loss of the effect of the greater portion of the current, really increases the tension, because the current which is delivered by the machine is no longer the magneto-electric induced current, but the extra current of the latter—in other words, a second induced current, which is produced at the moment of the rupture of the local circuit of the magneto-electric current. In round numbers, the attachment augments the current in the proportion of 1 to 5, and gives a spark which will explode ordinary hunting powder placed loosely between metal points.

This device is undoubtedly one of the simplest yet devised, for its purpose, as well as one of the easiest constructed. Its energy may be increased by using more powerful magnets, the Jamin, for example.

We should imagine that it might be advantageously substituted for the battery in short telegraph circuits; and in fact, it has been used for that purpose in the Vienna Exposition. The key of the instrument was manipulated exactly as that of the ordinary Morse machine, producing a series of currents alternately positive and negative, which operated a Morse receiver having a polarized armature.

For military telegraphs, the device would be very useful on account of its light weight, simplicity, and absence of battery. Another application which suggests itself is for counting either the revolutions of an engine or of a wheel in a vehicle, and transmitting knowledge of the same to any desired point. An eccentric might be arranged on the shaft the revolutions of which it is desired to know, so that at each turn the contact of the armature with the poles might be ruptured, and a current sent to a suitable receiver or counting apparatus, easily devised. Many other problems, it appears, may be solved by this machine, and inventors will find in its further applications an excellent field for the exercise of their ingenuity.



A NEW MAGNETO-ELECTRICAL INSTRUMENT.

C. G. V. P. says: "The reason we have so many false theories about ventilation is this: We have heard or read that carbonic acid is heavier than the pure air, and consequently must sink to the bottom, and should be discharged at the floor; but we forget that carbonic acid coming from our lungs has a much higher temperature than the surrounding atmosphere, consequently it rises. Make the discharge, therefore, in the ceiling or the chimney, and you are rid of it."

The Propagating House.

Our readers will perhaps say: "This subject has no interest for us, inasmuch as we do not possess such a luxury, and indeed consider such a structure entirely out of our reach." In this instance, however, if such have been your thoughts, readers, you have prejudged the case, for we intend showing how a splendid propagating house may be had at no additional cost to those who possess a small stove or vinery. We have seen this plan adopted in the gardens of a peer of the realm, and found that it answered admirably, and is worthy the notice of all who delight in their gardens, and have a love of plants, for by its use a good supply of young plants may be maintained for the decoration of the dwelling rooms and the dinner table, while no end of plants can be struck in spring for flower garden purposes. In the first place, then, readers, we will imagine you have a small vinery heated with hot water; that you have now, or will soon, start the vines, and will, therefore, have a nice gentle heat at command. Now our system does not consist in bringing in any large frames or hand lights to take up the limited space, because, if you are economical and practical, you will have brought in a considerable number of strawberry plants to produce some luscious early fruit, one or two pot vines to help out the crop from the roof, a few pot roses, some spireas, lilacs, and other fragrant shrubs to delight the olfactory nerves; but it is simply to have some small narrow frames made to fit the troughs on the pipes, these narrow frames to be fitted with a glass top; the troughs in question, being kept filled with water, produce a splendid moist bottom heat, which is one of the great desiderata in the propagation of most stove plants and all soft-wooded things; the frames need only to be a few inches high; they should have some drainage material placed in the bottom, and the remainder may be sand only, or what we prefer for striking the majority of cuttings in, namely, the refuse from cocoa nut fiber. In this material, and in such situations, cuttings of verbenas, coleus, geraniums, heliotropes, fuchsias, and any such kind of plants, may be rooted in a few days, while, as a matter of course, harder wooded plants will take a little longer. This is not a theory, readers, but has been reduced successfully to practice for many years, and those who would do more in the embellishment of their gardens, but for the want of a propagation house, may, with a few such little frames, produce any amount of plants in the spring months for summer use, and we cannot too strongly urge them to give it a trial.—*Land and Water.*

Floats for Ships' Boats.

The Marine Department of the London Board of Trade have been making experiments with the boats of coasters, and find that any old boat can be converted into an efficient lifeboat by using air casings outside. The Marine Department have, for this purpose, used air cylinders, which they have specially designed, fastened outside the boat by a netting; so that the boat can be used for an ordinary boat as long as wanted, and converted into a lifeboat when occasion requires it. The material used for these cylinders, and approved by the Marine Department, is a combination known as Clarkson's. It consists of a layer of cork about a quarter of an inch thick between two layers of strong canvas. One cubic foot of air space in these cylinders will support about 60 lbs. The cylinders of this material are the cheapest, most efficient, and most durable means yet invented for converting an old boat into a lifeboat. Mr. Clarkson has made the experimental cylinders on models furnished to him by the Marine Department, and is, we believe, prepared to supply any number demanded. Air cases to place inside lifeboats, also made of this material, have been supplied to some of the mail steamers, and are much preferred by the Marine Department to cases of copper, iron, zinc, or wood, as they are practically indestructible, are not affected by heat, and are very light.—*Nautical Magazine.*

- NOTHING can convey a more impressive idea of the power of water as a general agent than the wonderful cañons of Mexico, Texas, and the Rocky Mountains, where the torrents may be seen rushing along, through the incision it has cut for itself in the hard rock, at a depth of several thousand feet between perpendicular walls. The greatest of these cañons, that of Colorado, is 298 miles in length, and its sides rise perpendicularly to a hight of 5,000 or 6,000 feet.

DR. M. WYMAN, who made the autopsy of Professor Agassiz, states that the latter's brain weighed 53·4 ounces.