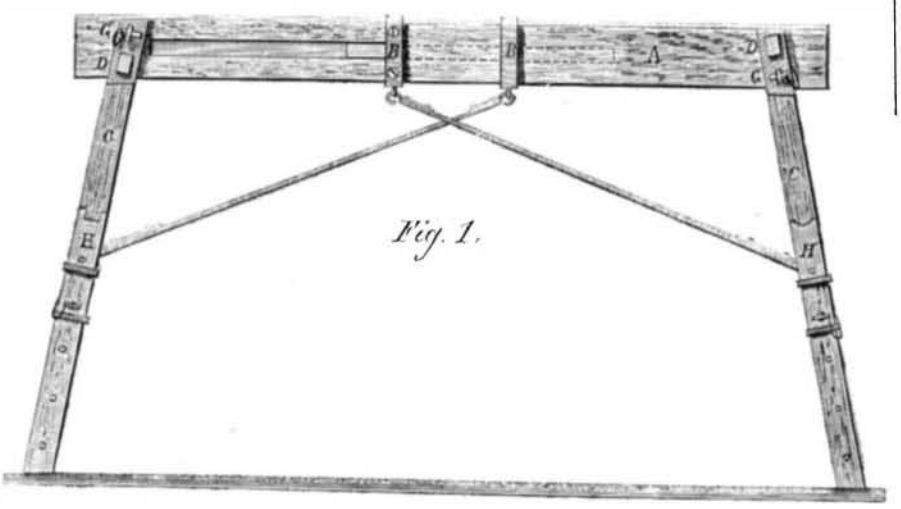
Improved Extension Trestle.

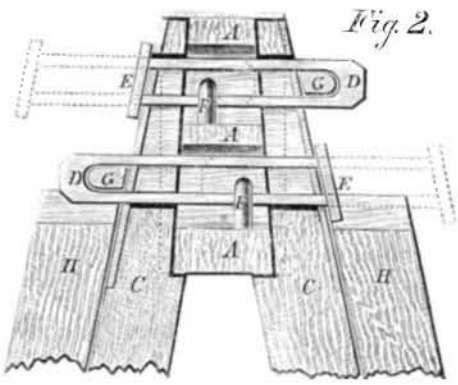
The object of the device shown in the engravings, in elevation and perspective, is to furnish a convenient trestle or horse for the use of masons, plasterers, and others, which can be extended in length and hight, or folded compactly together for transportation or stowage.

The main horizontal beam, A, is in two parallel parts, connected and held together by straps, B, one of which is fastened by screws to the inner end of each beam and surrounds the other, so that the two portions of the beam may be slipped, one past the other, for extending the length of the trestle. Between these two parallel parts is a bar or feather sliding in a groove, cut half in each portion of the beam and stayed by pins at its ends to prevent it from slipping entirely out. The object of the feather is to stiffen the beam when extended and to keep it perfectly in line.

At each end of the beam, A, are two legs, C, which are secured by means of slotted pins, D, Fig. 2, which are flat and have heads, E, inclined to the slant of the legs, C. The slot in these pins is to prevent them from being entirely withdrawn which is assured by the staples, F, fastened in the mortises through the beam, A, in which the pins, D, fit. The pins can be drawn back, as shown by the dotted lines, by removing the keys, G, when the legs or supports may be folded against the bar, A.

To these supports or legs are attached supplementary legs, H, in both figures, which are secured to the outside of the true legs by bands seen in Fig. 1. A series of holes through the extension leg and into the main leg secures the two, by pins, in any required position. Braces running diagonally from the rings, B, to cross braces between the legs, keep the structure in a rigid condition when in use.





The device was patented through the Scientific American Patent Agency, June 11, 1867, by Richard Hammill, of Mineral Point, Wis., who will answer all inquiries addressed to him relative to his improvement.

HAMMILL'S EXTENSION TRESTLE OR HORSE FOR SUPPORTING PLATFORM.

Improvement, and Usefulness of the Milling Machine.

It is doubtful if any tool now used by machinists is more valuable and capable of being applied to a greater variety of purposes than the milling machine, yet it has been a growth of comparatively a few years. Twenty years ago the milling machine, or rather the "slabbing machine," its progenitor, was seldom seen, and when found was constructed and used only for a special purpose. A pair of ways, on which traversed a platform or table, and from which rose two supports for a head that received an arbor with its rotary cutter, comprised the "slabber," and the work was fed to the milling tool by means of a weight and strap running over a friction wheel. It was a rude machine, coarsely made, and unreliable in its work; yet it was the germ of the present milling machine, one of the most expensive, best finished, and valuable of the machinist's tools.

For many uses it is better than the planer and superior to the shaping machine, and not seldom does the work of the gear cutter. The manufacture of fire arms, rifles and pistols, and of sewing machines could not be carried on so perfectly and rapidly without the milling machine. The cutting of ratchets, the squaring of studs, the finishing of nuts, scoring of taps and reamers, facing of surfaces, and a thousand and one other processes can be done with this machine quicker and better than with any other appliance used by the mechanic. When the machine works as it should, the article submitted to it comes out almost completely finished, without "chatter" marks, and smoother and more accurate on on the surface than is possible with the file, while its rapidity of execution puts to shame the most expert filer. We have seen the lock plates of fire arms so finely finished by this machine that it would seem to be a waste of endeavor and and time to do more than to polish them.

Some of those machines are of such perfection of workmanship, plan, and action that it would seem impossible to improve them. Their saving of files, and time, and labor, would hardly be believed by machinists who have never used them; and their easy adaptation to different jobs makes them one of the most economical machines ever constructed. And yet we are not aware that any man holds a patent on any essential portion of the machine; it has been the gradual growth of experience, one mechanic adding a part or improving a movement, and another improving again on that, until it would be assumption in any one to claim the machine perfected as his own.

Its value is such that a shop of any pretensions should as soon go without a decent screw-cutting engine lathe as without a good milling machine. There is no department of finished metal work where it cannot be advantageously used, and no matter how small the shop, or how contracted its influence, every manufacturer of machinery should possess a milling machine.

Aerial Navigation.

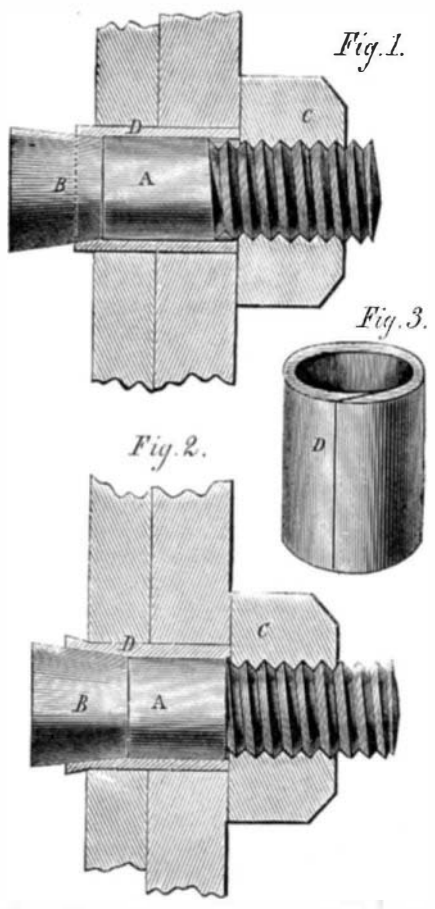
A stock company of San Francisco are building a flying machine which is described by papers of that section as resembling in appearance a hybrid between a fish and a short-necked bird with wings expanded. Hydrogen gas furnishes the ascensive power, the wings aid in sustaining it in mid air, and two propellers which may revolve at any angle, give motion to the machine. The rudder is like the tail of a fish, and to rise to any hight it is given a twist, the movable wings are depressed ten or twenty degrees and her propellers are placed at angles of forty-five degrees. Her weight including propellers, frame, engine of three horse power, boiler, furnace and fuel, is only 1,171 pounds, and in lightness and the application of steam power, rest the hopes of her projectors in success.

In M. de Louvrié's system of æronautics, which the Academy of Sciences have seen fit to disapprove, the recoil caused by a sudden expansion of gases as in the sky rocket, seems to have been made use of as a motor. This inventor provides a hollow cylinder which contains an explosive compound generated by the mixture of air with a highly inflammable gas formed from some volatile hydro-carbon, such as benzine or petroleum. The combined gases are lighted as they escape from a small orifice at the lower end of the cylinder and the resistance at the closed end from this explosion, causes the ascent. Of these explosions there are from thirty to forty per minute.

Justbefore the close of the war our government was induced to undertake the building of a flying machine constructed on what seemed the correct principle, namely, that of the flying top. Accordingly a huge ellipsoid of copper was constructed having three propellers, revolving in a horizontal plane above, and an equal number below. Although it, according to theory, ought to have ascended, the weight of the apparatus with its engine which was necessary to turn the propellers, was so great that the machine proved a failure, and it is now being broken up and sold as old metal at a heavy loss to the constructors.

CLARK'S COMBINED BOILER BOLT AND FERRULE.

Much difficulty is experienced in reparing boilers either by the ordinary rivets, or by screw bolts. Especially is this the case where the leak is near an angle or any abrupt connection of sheets with flues, etc. The use of red-hot bolts is attended often with considerable annoyance, and screw bolts are well known to be unreliable. The engraving represents a new style of bolt which posesses great advantages over the devices usually employed for the purpose. The bolt, A, has an "upset" or conical head, B, which prevents it from being drawn through the holes in the plates by the tension of the nut, C. On the outside of the shank of the bolt, is slipped a ferrule, D, of steel which is expanded by the strain of the nut and the incline of the head so as to entirely fill the hole. Fig. 1 shows section of the two plates of a boiler with the bolt and ferrule passed into the hole, and Fig, 2 shows the bolt set up and the ferrule spread. Fig. 3 is the steel ferrule, which is split. The larger end or head of the bolt is smaller than the hole through the plates, and the ferrule is of external diameter suited to the hole, so that the bolt can be passed, head first, through the hole, the ferrule passed over the shank and into the hole, and the nut screwed on from the outside. The result will be as seen in Fig. 2. The cone shape of the head forces the ferrule out against the sides of the hole making a perfect joint. It will be noticed that with this bolt there is no necessity for cutting hand-holes to get at the point for repair, and no bother of "stringing" bolts. Beside, the nuisance of "soft patching" is wholly avoided. The friction of the bolt in the hole is such that even by turning up the nut with the fingers, the bolt will never turn in setting up. If deemed advisable, an outer ferrule of brass or copper can be used over the steel ferrule, which fills more easily the hole in the plates. If the hole is somewhat out of round, this may be found to be an advantage. Seams can be chipped and calked where made with this bolt as readily as though made with the ordinary rivet.



Letters patent were secured for this improvement April 24, 1866, and it has been thoroughly tested on a large number of boilers always with satisfactory results. Further information may be obtained by addressing the patentee, E, Clark, a practical boiler maker, at 80 New Chambers street. New York city.

ANOTHER PETROLEUM DISASTER. DANGER OF TRANSPORTING CRUDE PETROLEUM.

On the 20th of June the ship *Meteor* with 2,007 barrels of petroleum, stowed away in the hold left New York for London. On the morning of June 14th when she was about 300 miles from New York, the captain who was looking over the ship's side felt something strike him on his back with great force, instantly followed by a great noise. For an instant he supposed that some of the crew had shot him, but turning round he saw the whole of the deck blown away, immense volumes of flames shooting into the air, and the top-gallant sail on fire. Between him and the fore part of the vessel the deck was blown to atoms, the boats were reduced to match wood, while beneath his feet was exposed the whole of the hold, one mass of fire, raging like a volcano. Several of the crew were instantly prostrated and although they state they heard no sound, the explosion was heard on a ship twenty miles away. This is the begining of the fearful disaster of which we have the further details in the newspapers.

This case of the *Meteor* is by no means the first of the kind nor is it mysterious nor extraordinary. We have read a dozen cases quite as remarkable. Every one understands the nature of petroleum, and can give the reasonable explanation of what are called "accidents." The hold of a ship in which crude petroleum is stored in ordinary wooden barrels, has an atmosphere which is as ignitable and explosive as gunpowder. The barrels perspire the oil at every pore, and the vapor which steams away from their surfaces mingles with the air—the other element of the danger. Moreover this explosive compound being heavier than the air, remains in the hold of a ship as if corked in a bottle, and is ready at any moment of the voyage to blow the ship to atoms. A ship laden with petroleum is the most fearful of torpedoes. Gunpowder will stay in its barrel, and will be found where it has been stowed, but petroleum escapes from its confinement and seeks the fire.

We earnestly submit that the time has come when the destruction of life and property by crude petroleum should be ended. These disasters are preventable and we believe that no reasonable and legitimate commercial interest is promoted by their contiuuance. The simple and practicable prevention of the danger of petroleum is the entire prohibition of the transportation of crude oil. The volatile and dangerous part of petroleum is useful and needed at the wells where produced, and at no other place. Why send it to New York and Europe where no one wants it? If the oil business were rightly managed, refined oil could be sold at lower prices to consumers while the proprietors of wells and refineries might have a better profit for their investments. The whole force of legislation, national, state, and town, ought to be brought to bear against the transportation of crude petroleum.

THE DENTAL ART AND PRACTITIONERS.—Forty years ago surgeons and doctors generally officiated as teeth-pullers whenever occasion demanded. In 1820 there were but thirty practicing dentists in the United States. In 1850 the number had increased to 2,923, and at present there are about 5,000 regular dentists. A college for the education of those desiring to enter this profession, has been established over a year in this city, and the faculty of Harvard College, at their last Commencement, provided for a department of dentistry in connection with that university.