The New York Tribune Building.

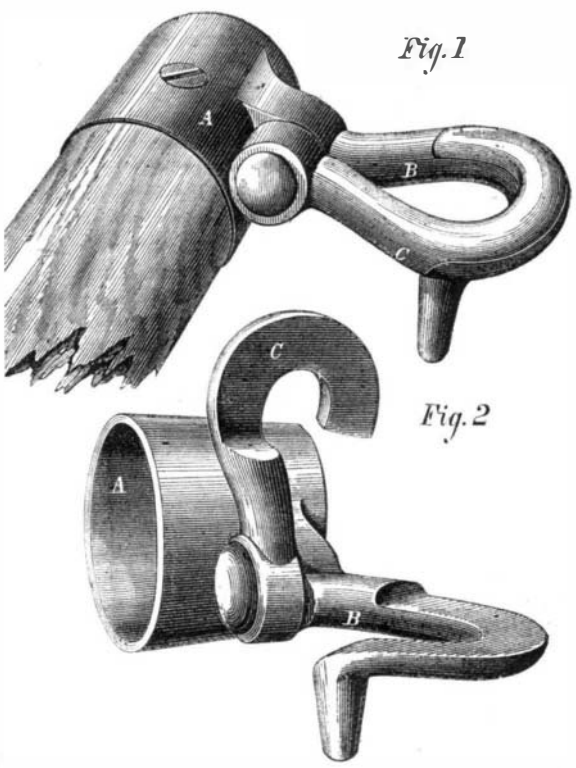
On April 10, the 34th anniversary of its commencement, the New York *Tribune* opened the doors of its new offices to the public. The structure is of great hight and immense solidity, and is built of brick laid in cement, with dressings of stone and granite. The finial on the clock tower is 260 feet above the sidewalk, surmounting a building containing sub-cellar, basement, nine stories, and attic. The walls of the lower portion, sustaining the great weight of the masonry, are 5 feet 2 inches to 6 feet thick. The building is claimed to be absolutely fireproof. No wood is used in its construction, except for floorings, doors, and window frames; and the wooden floors are mere plankings laid over solid cement. No iron pillars are used, masonry being employed on each floor to carry the superstructure. The floors are ingeniously constructed, being flat arches of hollow concrete blocks, resting at the ends on flanged iron beams; they are made of plaster of Paris, coke dust, and the hydraulic lime of Teil. When the whole building is complete, it will certainly be an exceedingly handsome and commodious structure.

A Hoe web press is already at work in the new press room, and has a capacity of 16.000 complete copies per hour. The composing room is fitted up for one hundred compositors, and the editorial and other offices are intended to be models of comfort and convenience. Speaking tubes are used for intercommunication, and pneumatic tubes convey papers and documents between the editors' room, the counting room, and the composing room; and the elevators and heating and ventilating apparatus are all of the most modern design. The pneumatic tubes are operated by a blower placed in the basement of the building, similarly to those in the Western Union offices, an illustration of which we recently published.

SMITH'S IMPROVED WHIFFLETREE HOOK.

This is a simple device for attaching the trace to the whiffletree, and consists of a pair of sister hooks, which are arranged to open to receive the trace, and which, when closed, prevent the trace from becoming accidentally detached under any circumstances.

Fig. 1, in the engraving, shows the hooks closed, and Fig. 2 the same open. A is the ferrule, which is secured to the whiffletree in the usual manner. The lower half, B, of the hook is in one piece with the ferrule, and has a downward projecting lug on the end, as shown. The upper half, C, is pivoted sidewise to the lower half, but is bent in opposite direction to the latter. Both parts are recessed at their overlapping front portions, to form, when together, as in Fig. 1, an eye for the ring of the trace. In attaching the latter, the eye is first placed over the part, B, and carried back to the rear; the upper part is then brought down, and the trace pushed forward over both.



This device, the inventor informs us, has given general satisfaction wherever used. It offers no open hook in which the reins are apt to get caught, and yet allows of the attaching or detaching of the traces in the shortest possible time. It certainly is a very simple and ingenious appliance for the purpose intended.

Patented through the Scientific American Patent Agency, February 16, 1875. For further particulars relative to sale of entire right, or with regard to manufacturing on royalty, address the inventor, Mr. O. J. Smith, Wauwatosa, Milwaukee county, Wis.

Consumption of Wood in France.

The *Independence Belge* gives some curious statistics relative to the consumption of wood in France. A large quantity of soft wood is used for making toys, and to give an idea of the magnitude of this trade it will be sufficient to take one article alone, children's drums, of which in Paris alone 200,000 are sold every month. The total number made annually in France is estimated at 30,000,000, while a considerable quantity of woodmust be consumed to supply 60,000,000 drumsticks

A CURIOUS OCULAR ILLUSION.

It is generally believed that the minute striæ which appear upon diatoms, under the microscope, are in reality an assemblage of hexagons, as the striæ resolve themselves into an assemblage of such figures when subjected to higher magnifying powers. M. Nachet, the celebrated French microscopist, describes, in a recent number of *La Nature*, an odd optical illusion which, he states, accounts for the figures on the diatoms appearing as hexagons, when, in reality, they are spherical in shape.

The reader can see for himself, from the diagrams given herewith, that M. Nachet's conclusion is without doubt correct. The large circular dots in Fig. 1 are drawn as nearly as possible in positions similar to those of the supposed hexagons on a very beautiful diatom, called *pleurosigma angulata*. If the figure be looked at for a moment, especially through the eyelashes, that is, with the eyes nearly closed, the circles will instantly appear as hexagons. This effect is all the more striking in Fig. 2, which is the same reduced by photo-engraving. Fig. 3 is a negative reproduction of Fig. 2, by the same process. The curious effect of irradiation is noticeable by comparing the last two diagrams, the white circles, though of exactly the same size, appearing much the larger.

Fig. 1

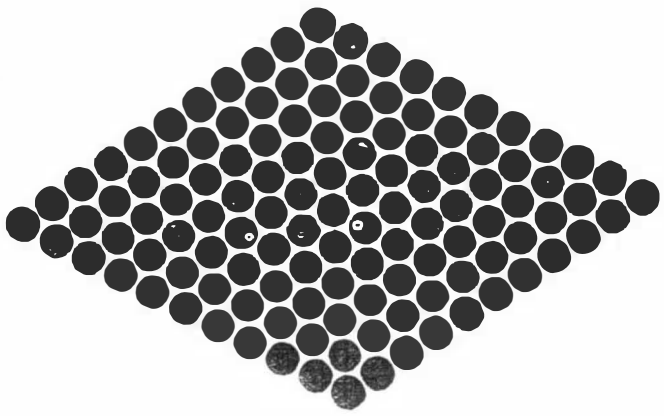


Fig. 2

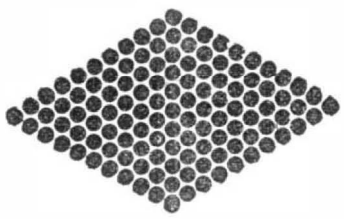
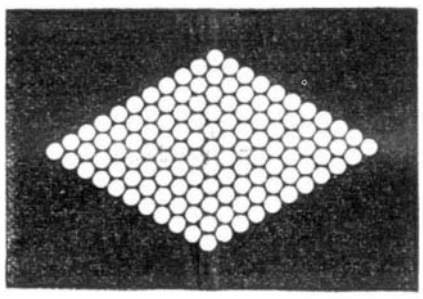


Fig. 3.



Pure Sulphate of Nickel.

The salts of nickel employed in the electro-deposition of that metal are prepared from commercial nickel, which is an alloy of nickel, copper, and iron, with traces of arsenic, containing from 40 to 90 per cent of actual nickel. The author's process consists of four operations: Solution of the crude metal in acids; precipitation of the copper by iron; peroxidation of the iron, and conversion of the metals into sulphates; precipitation of the iron by carbonate of baryta, and crystallization of the sulphate of nickel. The nickel is first dissolved in seven to eight times its weight of aqua regia; the solution is evaporated almost to dryness; the residue is re-dissolved in water, using about five times the weight of the nickel employed. A little arseniate of iron remains insoluble, and is removed by filtration. Metallic iron, preferably small nails, is introduced into the hot liquid, to about the weight of the nickel employed. It is stirred from time to time to detach the copper from the iron. As soon as a piece of bright iron, introduced into the liquid, is no longer coated with copper, this process is complete. The whole is thrown on a filter, and washed repeatedly. The copper is then collected by sifting it under water, in a sieve coarse enough to let pass the coppery metallic powder, but retain the iron. The copper is dried, and is then marketable. The filtrate now contains merely nickel and iron. The latter is peroxidized, either by a current of chlorine, or by treatment with nitric acid. Sulphuric acid at 66° Baumé is then added, in the proportion of 2 parts to 1 of nickel employed, and the whole is evaporated to dryness to expel nitric and hydrochloric acids. The dry residue is re-dissolved in water, a part sometimes remaining insoluble, consisting of sub-sulphate of iron. From the solution the iron is thrown down by means of carbonate of baryta (artificial precipitated). This carbonate separates the iron as sesquioxide, and forms at the same time insoluble sulphate of baryta, without acting upon the sulphate of nickel. The last traces of arsenic are thrown down along with the sesquioxide of iron The precipitation is effected by gradually adding a slight excess of carbonate of baryta to the liquid, slightly heated, but not so as to exceed 50° to 60° Fah. It is complete when a further addition of carbonate occasions no effervescence, and does not become covered with peroxide of iron. Pure sulphate of nickel then remains in solution. It is separated from the precipitate by filtration, and the filtrate is evaporated till a pellicle appears on the surface, when it is set aside to crystallize.—*M. A. Terreil.*

A Varnish from Vulcanized Rubber.

The following description of a method of making a varnish from vulcanized rubber is taken from the *Moniteur Industriel Belge*. In answering questions relating to the dissolution of vulcanized caoutchouc, we have repeatedly doubted the possibility of so doing. The present process, however, seemingly includes burning out the sulphur, etc., and then dissolving the residue. If any of our readers practically test the recipe, we should be glad to learn the result.

The fragments of vulcanized rubber are deposited in a deep earthenware pot, which is closed by a tightly fitting cover and deposited on burning coals for about five minutes. During this period care must be taken not to open the vessel, as the vapor is highly inflammable. On removal, the mass is examined by pushing a wire into it to see that it is uniformly melted; and if this be the case, it is at once poured out into a large, well greased, shallow tin pan, and left to cool. When hard, it is broken into small pieces, placed in a bottle with benzole or rectified essence of turpentine, and there thoroughly shaken and stirred.

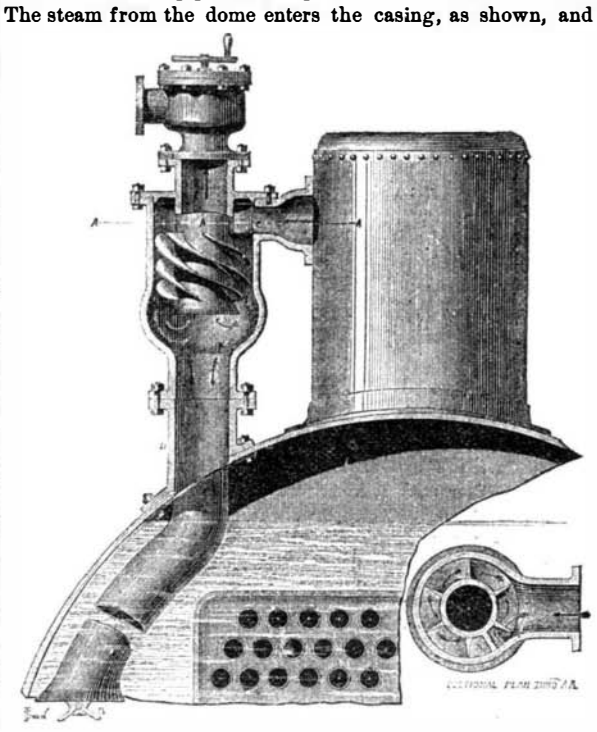
The dissolution then takes place, and after a brief rest the clear liquor which forms the varnish is decanted from the impurities which settle at the bottom.

STOCKLEY'S IMPROVED ANTI-PRIMER.

Hundreds of our readers have to complain of inefficient working done by steam engines, and of damage to cylinders (in the bore and to the heads) and pistons, all being caused by water working over into the engines in the steam. Dry steam is an absolute necessity to the engineer who desires to work economically, both in consumption of fuel and wear of his machinery.

Mr. J. Stockley, an engineer employed in the Wallsend coal district, England, has invented an appliance for securing dryness of steam, and it has, we are informed, been already applied to several marine engines with marked success

A fixed case or pipe, C D, is put on the boiler, as shown. The steam from the dome enters the casing, as shown, and



the theory is that the helix within C causes the steam to assume a whirling motion, by which the water is expelled by centrifugal force, and falls down D into the boiler, while the now dry steam, pursuing the course shown by the arrows, rises and escapes through the stop valve above. The action will, we think, be readily understood. Flap valves, to prevent the water rising, are inserted in the pipe, C D. This invention appears to have given excellent results in practice, and it is no doubt designed on sound principles.

An Excursion to the Mediterranean.

The memorable cruise of the Quaker City, so comically described in Mark Twain's "Innocents Abroad," is to be repeated; and those who have wished to "do" Europe, after the manner recounted by that genial humorist, will this summer be offered an excellent opportunity for so doing. Mr. George F. Duncan, himself one of the original Quaker City travelers, proposes to charter a steamer and secure about 100 passengers, whom he will conduct to nearly every point of interest in the Mediterranean. The ship will sail on about the 1st of June, and the cruise, which includes visits to the Holy Land, Egypt, etc., besides affording abundant time for rambles inland on the Continent, will terminate with the arrival of the travelers back in New York on about the 10th of November. The cost of the trip will be $1,500 currency for each passenger.

This is an excellent chance to see a large amount of the world for little money. The reader will find further particulars in the advertisement on another page