

New Inventions.

An American Engineer in Defence of Hot Air.

In an article in the London *Illustrated News*, of the 23d of February last, J. Bourne, author of some excellent works on the steam engine, severely criticised the claims set up for Captain Ericsson's new hot air engine. This has given some of his friends great offence, it seems, and one of them, stated to be an eminent proprietor of engineering works in this city, has published an article in a recent number of the London *Mechanic's Magazine* as an answer to Mr. Bourne. The following is a portion of the article:—

"The advantage resulting from the mere proportion thus exhibited of force imparted to the machine, and force expended in compressing the cold air, is by no means apparent to those who merely theorize in the matter. Indeed, Captain Ericsson's disappointed expectation, in relation to the calorific ship, is solely to be attributed to his disregarding the size of the supply cylinders, on the strength of his theoretical deduction that, however great the force expended in compressing the air, it would be returned by the working cylinders independently of heat. The differential force of the gigantic pistons, considered by itself, certainly appeared most satisfactory, but proved too precarious in practice. The resisting force within the machine was too great in proportion to its entire motive energy—there was not margin enough to meet the unavoidable losses in practice. Already six engines have been built under the recent patent, with cylinders varying from 15 to 40 inches diameter, all of which are now under trial. One of these, an engine with cylinders of 30 inches diameter, finely executed, and working with peculiar regularity and smoothness, is intended for Europe.

"Altogether, Captain Ericsson has built twenty-seven engines, in New Town, actuated by heated air, twenty-five of which the writer has seen in operation. The vast labor expended in planning, independently of execution, can only be appreciated by those who are acquainted with the wide range of Captain Ericsson's experiments, and the diversity of form and combination of these engines, destined shortly to supersede steam as a mechanical motor."

Although intended to be complimentary to Capt. Ericsson, this article is, unwittingly, the reverse. It is stated in the above that by altering the proportions and making different mechanical arrangements, in the new hot air engines they are rendered so perfect that "they are destined shortly to supersede steam as a mechanical motor." It is also stated that the advantages of the particular proportions of the new hot air engine, are not apparent to those who merely theorize in the matter. Well, this is a plain charge, that Capt. Ericsson merely theorized, and failed to theorize right in the construction of his old engines, which are confessed to have been failures. The failure of the calorific ship is called a "disappointed expectation," in other words, an exhibition of theoretical and practical miscalculation; that is the plain meaning of the above language.

The author of the above article has seen twenty-five of Capt. Ericsson's hot air engines in operation. They were built at some out-of-the-way place called New Town; whether this is the quiet rural inland village on Long Island, or not, we are not informed. He certainly has been very fortunate in seeing so many hot air engines working, but it is remarkable that there is not a single one of them in public practical operation, doing useful work, anywhere. The first engagement that ought to be fulfilled, to show how the hot air engines are destined to supersede steam, would be to place one of them in the New York *Evening Post's* press-room, to drive the presses.

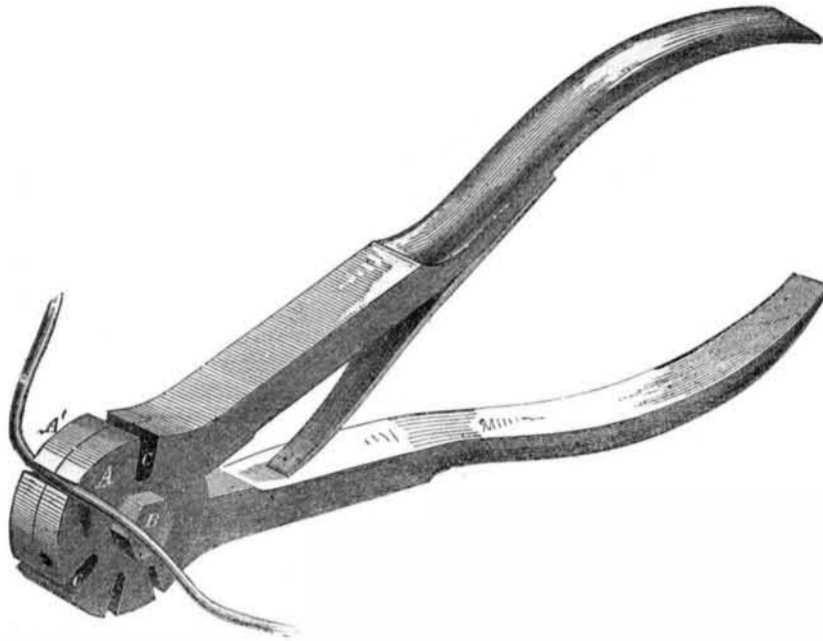
We have not, at present,—and, indeed, it is not required of us—to take up any more space in our columns in discussing this question. As a simple matter of news relating to engineering, we thus bring it before our readers. It is for those who have asserted, and who do assert, that hot air will soon supersede steam,

to prove their words by deeds, and who so able as this eminent New York engine builder, the author of the above article. He has the means, and until he proves his assertions by open conclusive works, his defence of the new hot air engine will be regarded by all our steam engineers with suspicion.

Convenient Writing Ink.

Dissolve half a pound of the extract of log-wood in five gallons of hot water, and add half an ounce of the bi-chromate of potash. Stir for a few hours, and bottle for use. The cost for five gallons of ink is about twenty-five cents. F. H.

INSTRUMENT FOR CUTTING WIRE.



Improved Wire Cutter.

When wire is cut by means of the common nippers, or bent back and forth with pliers until it breaks, there is a burr left upon the pieces, which must be placed in a vise or smoothed off with a file. The wire must also be straightened out again by hand. These inconveniences, although not amounting to much individually, become very objectionable where any considerable quantity of wire is to be cut, or nice work desired, as for example in pianoforte making.

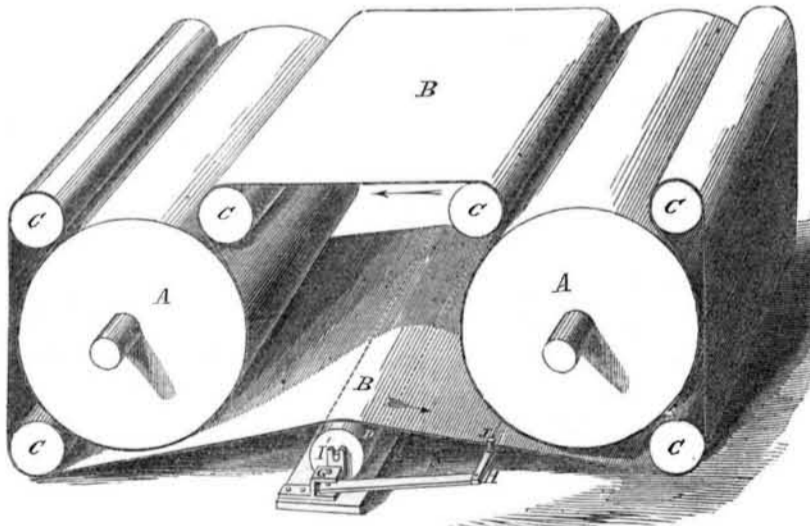
The present improvement consists of a pair of disks, A A', having handles, put together like nippers. The disks, A A', are pivoted at B, and have slots through their peripheries at C; these slots are of different sizes, so as to accommodate different varieties of wire. The wire to be cut is placed in the slots, as shown, and the handles pressed; this causes the disks

to turn in different directions, and the sharp edges of the slots sever the wire.

When wire is cut with shears, the blades tend to push it out from between them; but in this improvement the disks act in a contrary manner, and tend to hold the wire firm, so that there is no slip.

This improvement obviates all the objections of the common nippers, or other methods of cutting, and saves time, labor, expense of files, &c. It severs without leaving any burr whatever, and without bending the wire in the least; no after-smoothing is required: the work is done quicker, far better, &c. We regard it as a very excellent and useful invention. Patented Sept. 18, 1855, by Wm. Grover, of Holyoke, Mass. Sell for \$2.75 each. Further information can be had by addressing E. D. & G. Draper, Hopedale, Milford, Mass. See their advertisement in another column.

IMPROVED SELF-ACTING FELT GUIDE.



Improvement in Paper Machines.

This invention consists of an improved method of guiding the felt cloth used in the manufacture of paper, by which the felt becomes its own regulator. The guide works without perceptible friction, and is said to be so perfect in its operation, that the attendant has no more care or trouble with the felt than with the belts which drive the machine. By the use of this improvement, one felt cloth will outlast two which are guided by hand in the common way, and the edges of the cloth, which naturally give out first, will wear as long as the body parts. The invention is adapted to all kinds of felts, occupies very little room, can be applied to any kind of paper machine with very little trouble and small expense.

Our engraving is a perspective view of a

portion of a paper machine with frame removed. A, A, are the paper drying cylinders, heated by steam in the common manner. B is the felt cloth; C are a series of rollers over which the felt passes; D is the guide roll over which the felt also passes. This roll is hung in movable bearings, I, which arrangement constitutes the improvement. F are crooked levers pivoted at G, and bent up and forked at I, so as to form the movable bearings of roll D. The other end, F, is pivoted to a connecting rod, H, which extends from lever F to a corresponding rod on the other side of the machine. Upon this connecting rod are two upright friction rollers, J. The journals of roll D, being placed in the forked bearing, I, and friction rollers, I, adjusted to the width of felt, B, the machine is ready for use. The operation of the improvement will

be easily understood. When the felt inclines to one side, the connecting rod, H, will be carried with it, and move the levers, F, and thus shift the bearings of roll D, in such a manner as to carry the felt back again to its place. The invention works so easily that even if the felt is very slack it cannot get out of place. We consider the above a valuable improvement. Invented by Mr. P. H. Wait, and patented April 8, 1856. For further particulars address N. W. Wait, sole agent, Sandy Hill, Washington Co., N. Y.

Artificial and Peruvian Guano.

There is very little use, we conceive, of our planters and farmers making any more efforts to obtain Peruvian guano at a lower price than that at which it is now selling. A letter before us, by J. Y. De Osma, the Minister of the Peruvian Government at Washington, settles this point. It states that the Peruvian Government conducts the guano trade with foreign countries on its own account and risk, and regulates and establishes the price of this fertilizer, and that it finds it difficult to supply the demand for it at \$50 per tun. It is also stated that only about one-fourth of the supply is consumed in the United States, and that if a cheaper fertilizer can be obtained anywhere else, our farmers are not compelled to purchase of Peru. We, indeed, cannot blame that government for obtaining the highest prices it possibly can for guano; our farmers do the very same with their products. But cannot as good a fertilizer be manufactured artificially for \$30 per tun? This is an important question for our chemists to answer. The commercial value of the principal constituents of Peruvian guano—including ammonia, phosphate of lime and potash, equal \$65 per tun—therefore, an artificial fertilizer, containing a like amount of such constituents, cannot be manufactured from drugs sold in the market at the present prices. But then, we have the wide sea washing our coasts, from the products of which, we think, cheap fertilizers might be manufactured. Sea weed contains a great amount of kelp, which is a crude alkali, eminently fitted for mixing with the myriads of coarse fish and king crabs that infest all the sea swamps and inlets of the Atlantic coast. These no doubt can furnish a great amount of ammonia and phosphates, and it appears to us, that an artificial guano, might be manufactured from them so cheap as to preclude the necessity of sending to the Chinca Islands for the Peruvian: "Here is a wide field for the introduction of a new manufacture, and from which fortunes may yet be made."

James' Patent Bill.

The *New York Herald* continues to belabor this foul monstrosity. In an article entitled "Corrupt Legislation," the *Herald* says:—

"The next instalment for the benefit of the plunder jobbers will be the new patent right scheme under consideration in the Senate. We may expect, in the full development and success of this plot, a new term of monopoly to all the old patent monopolies—pistols, plows, planing machines, and what not, of the last twenty, twenty-five or thirty years. To this end we understand that the machinery of the lobby at Washington is in perfect trim, and well oiled throughout, and that it includes newspaper editors, reporters, &c., in any quantity, and cheap for cash. We should infer, from the special pleading of some of our city cotemporaries, that at least one gallant chevalier of the fraternity has a pretty long finger in the pie. And why not? Does not the good book say, that 'where the carcass is there will the vultures be gathered together?' But what is to be the end of all this? We look at the condition of Mexico, and turn down the leaf."

Figures in Relief upon Marble.

A method has been discovered for tracing figures in relief upon marble with great facility. For this purpose, the desired figures are first traced upon the marble with chalk, they are then covered with a coat of varnish, made of common Spanish sealing-wax, dissolved in spirits of wine, after which a mixture of equal parts of acid of salt and distilled vinegar is poured upon the marble, which corrodes the ground while the figures remain in relief, as if engraved, saving the cost of time and expense.