

THE
Scientific American,
PUBLISHED WEEKLY
At 123 Fulton Street N. Y. (Sun Buildings.)
BY MUNN & COMPANY.

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Responsible Agents may also be found in all the principal cities and towns in the United States.
Single copies of the paper are on sale at all the periodical stores in this city, Brooklyn, and Jersey City.

TERMS.—\$2 a year,—\$1 in advance and the remainder in six months.

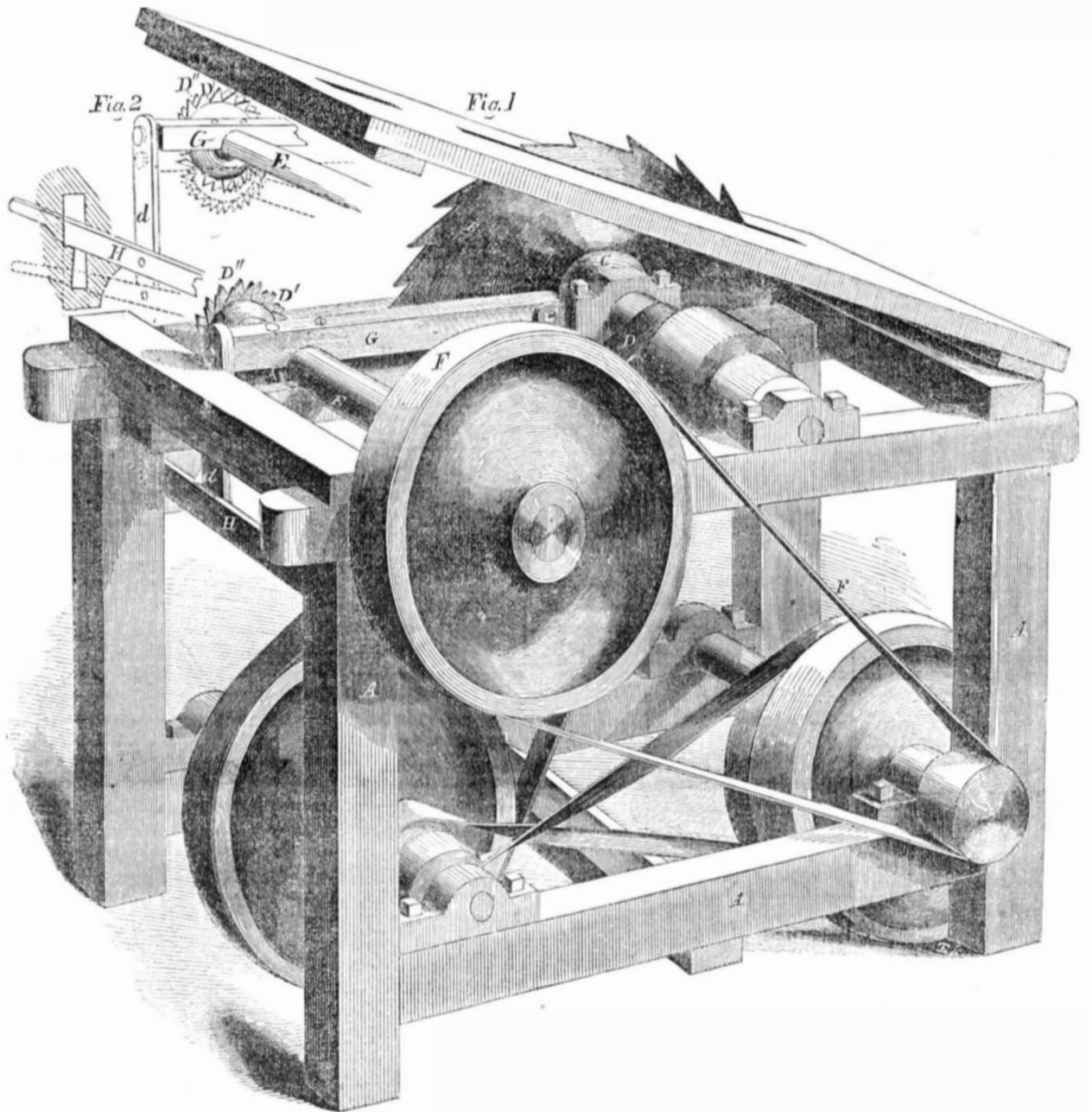
Motive Agents.—Hot Air.—A Singular Coincidence.

The number of the London *Mechanic's Magazine*, of Jan. 26th, which came by the *Persia*, contains an able criticism on the new hot air engine of Capt. Ericsson, by Dr. Benjamin Cheverton. It is indeed, singular, that the very views we presented, (and in many sentences the very same language) in the *SCIENTIFIC AMERICAN* of last week, are employed by him in pointing out the defects of this engine, and those of hot air as a motive agent. His article was written two weeks before ours, but his article was not read by us until ours was printed.

He states that he pointed out the fallacy of the Caloric Engine in a paper, read before the Institution of Civil Engineers when the ship *Ericsson* was pronounced a "triumphant fact." He is the only writer on the subject, with but one exception, who have reviewed the question as we have done. Many men of scientific reputation then wrote on the subject, and pronounced themselves in favor of hot air, proving by tremendous columns of figures, signs, and symbols, its advantages over steam, predicting the ultimate success of such engines, and the decay of steam power. Dr. Cheverton is more distinguished than any other person in England for experimenting with ether carbonic acid gas, and superheated steam as motive agents. He was engaged with Brunel thirty years ago, in the construction of a carbonic gas engine, just immediately after this gas was first reduced to a liquid by Davy, and when it was thought it would be a grand economical agent to supersede steam. This puts us in remembrance of asking the advocates of hot air why they do not use carbonic acid gas in preference to air. We have stated that the great bulk of air to be heated, in comparison with water, was one of the most serious objections to its use. The only rational argument ever presented in favor of hot air as a motive agent, is its inferior capacity for heat in comparison with steam raised from water. If air could be obtained in a condensible form, like water, then the obstacle to its use of "great bulk," would be removed. Since carbonic acid gas, therefore, can be obtained in a liquid form, and since its capacity for heat is even less than that of air, it being as 2124 is to 2669, why do not those who advocate the use of air as an economical motive agent on account of its inferior capacity for heat in comparison with steam, use this more economical gas. As the steam engine is as much, yea, more, of a differential than the air engine is, it exhibits great perversity of vision in those who advocate the use of hot air as a motive agent on account of economy by inferior capacity for heat, that they do not use a gas which, in this respect, is still more economical. They are walking behind Brunel, Brown, and Cheverton, who employed this carbonic acid gas thirty years ago as a substitute for steam.

Granulated cork mattresses are now used in some hospitals for patients afflicted with inflammatory rheumatism. Cork being an excellent non conductor, it is said to be favorable to the cure of this disease.

IMPROVEMENT IN SAWING MACHINES.



Patent Sawing Apparatus.

The above engraving illustrates an improvement in machines for sawing up boards, and lumber of every description. It is the invention of Mr. J. F. Lovcroft, of Rochester, N. Y., and was patented by him Dec. 12, 1854.

This invention consists in a peculiar arrangement for feeding the stuff to the saw. A is the frame of the machine, B is the saw, C mandrel of same, D F driving belts and pulleys. E is the shaft upon which the feed wheels, D'D' are placed. They consist of spur wheels, having teeth shaped somewhat like those of a saw. The teeth of one wheel, it will be observed, are placed opposite the open space between the teeth of the other. This arrangement increases the number of bearing points of the feed wheels, and prevents any marring or indentation, when thin stuff is being sawed.

The table top of the machine is thrown up, in the engraving, so as to afford a better view of the parts. There is a slot in the table top, through which the feed wheels, D'D' project. In sawing, the stuff is laid on the table, and rests upon the spurs of the feed wheels. A slow motion, towards the saw, is given to the shaft, E, which causes the feed wheels to carry the stuff up against the saws, with perfect accuracy, and without aid from the attendant.

By the push of a small lever, the feed wheels may, at pleasure, be depressed and thrown below the top of the table, thus becoming inoperative. This lever is shown at H, which is

pivoted at one end, and terminates in a convenient handle on the side of the machine opposite to that shown. A connecting rod, d, extends from lever H, to bar G, which latter supports one end of shaft E. Bar G has a pivot at G', so that when the lever, H, is raised bar G is also elevated, and with it shaft E and the feed wheels, D'D'. If the lever is depressed, the feed wheels are correspondently carried down below the table top. This method of throwing the feed wheels in and out of operation in the stuff is convenient and quick. The arrangement also enables the operator to regulate the bite of the feed wheels upon the stuff, according as the stuff is heavy or light. The handle extremity of the lever, and the connection between rod d, bar G and shaft E, are plainly seen in figure 2

This invention, although quite simple, and cheap in construction, is nevertheless one of great utility. It can hardly fail to meet with general favor among that large portion of the working community for whose assistance it is intended. Any further information can be had by application to the inventor.

Zinc Paint.

We have received a communication from D E. Goodell, of Pittsfield, Mass., in which he states, it is his opinion, and that of others, that zinc paint is more poisonous than white lead. He is a painter, and he judges from witnessing its effects upon himself and other persons. He asks our opinion on this point, because

it has been stated that zinc paint will not injure the human system like lead paints.

Pure oxyd of zinc used as a paint is not poisonous, as we understand it, therefore it is not hurtful to the system like white lead. But then, almost all zinc ores contain arsenic, and unless this is expelled in making the oxyd for paint, it (the paint) will be more poisonous than white lead. Mr. Goodell states it as his belief that it will never take the place of white lead for priming, but it is four times more durable for an outer coating, and will therefore still maintain its place as a valuable paint. He also states that it turns yellow much sooner than white lead. This should not be the case with pure white oxyd of zinc; and in our opinion it is a sign that the kind he speaks of contains arsenic, which becomes yellow by an increased absorption of oxygen. Arsenic forms the basis of the yellow in French green paint, and in the "sage green" of the dyer.

Plain Writing.

In writing for publication, persons should be careful to write in a plain bold hand, using no abbreviated words. In making a statement of facts, the correspondent—who knows what they are, and not the editor—should be careful not to use the stunted words lb. for pound; and bl. for barrel, or else write them pointedly plain, which very few persons do. Many great typographical mistakes have occurred from the use of abbreviated terms by correspondents of periodicals.