

Improved Revolving Hay Rake.

The rake herewith illustrated is of the ordinary kind, with a few exceptions. The operator rides instead of walking, and the load is discharged from the seat instead of by grasping the handles behind, as in the old style. The arrangement for transporting the rake to and fro is also different. The center of the head, A, which carries the teeth has a journal on which the whole rake revolves. There are two cams, B, on the shaft which the stop, C, butts against when at work, and holds the teeth in the proper position. By withdrawing this from the seat, the head rolls over and deposits the windrow with great regularity. There is a spring catch at D which prevents the rake from slipping backward when at work.

Rights to territory for sale in any part of the United States not sold, and in any quantity to suit customers. For any information address H. N. Tracy, Painsville, Vt.

ORDNANCE AND ARMOR.

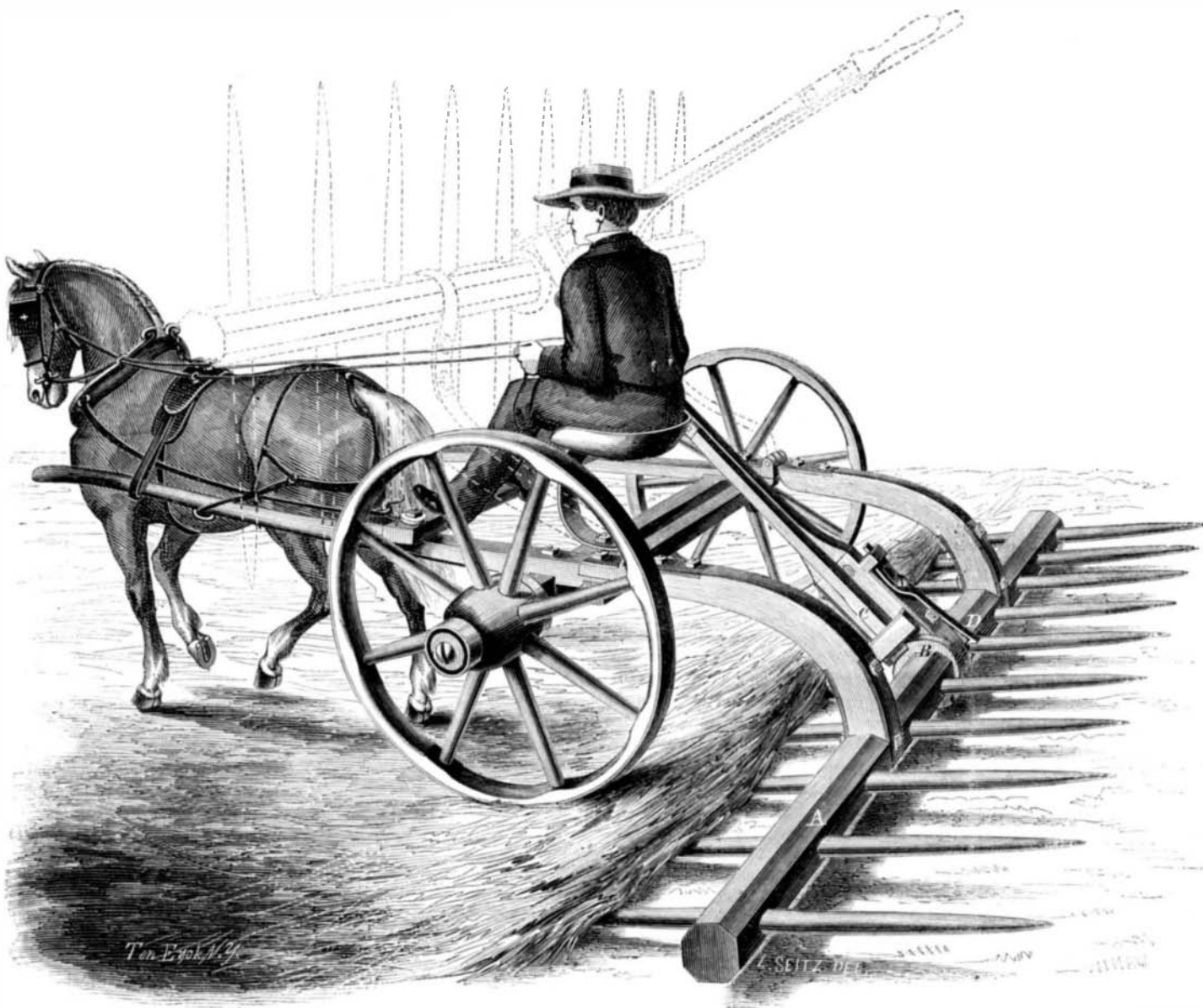
D. Van Nostrand, of 192 Broadway, New York, has just published a treatise on Ordnance and Armor, by Alexander L. Holley, B. P., and we tender our thanks to the author for a copy of the work. It is a book of 900 pages, with 493 engravings, printed in fair type on good paper, and handsomely bound. It is filled from beginning to end with the most valuable and interesting facts pertaining to the subject of which it

exception of those which are taken from the pages of the SCIENTIFIC AMERICAN.

From the talent shown in the collection and compilation of facts, it is safe to infer that the discussions are also able; we shall notice these more at length when we have given them further examination.

Fatal Accident From Oxygen.

In December last, a Mr. Crowther, at Manchester, England, while engaged in preparing oxygen gas for the Drummond or oxy-hydrogen light, was instantly killed in his own dwelling by the explosion of his retort. His son and wife were also badly wounded. Mr. Crowther had often before prepared the gas, and it appeared at the inquest, that the explosion was

**WARNER'S REVOLVING WHEEL RAKE.**

The dotted lines show the position of the rake when folded up for moving from one field to another. By bearing on the handle at the side of the driver the rake can be elevated so as to clear obstacles of any nature. The proprietor says:—

"In offering his improved rake to the public he feels sure that he has the rake especially adapted to gathering hay, and one which will command the patronage of all hay growers after practical use.

"The labor of operating this rake consists in riding upon the cart, and resting the hand steadily upon the end of the lever. When it is to be revolved, bear a little upon the lever and at the same time spring the latch with the thumb upon the side of the lever, and the rake revolves, when the latch flies back and catches the rake from revolving the second time. In passing over obstructions the operator elevates the forward ends of the teeth by lifting up the lever; the rake may then be driven over; or, by bearing down upon the lever, the rear end of the teeth are elevated, when the rake may be backed up if desired.

This rake may be used by old men or boys, in fact, any one who is old enough to manage a horse and handle the lever. Patented through the Scientific American Patent Agency, Nov. 15, 1864.

treats. We have not space even for an enumeration of its contents, but select a few of the subdivisions as samples. Under the head of Hooped Guns there is first a description of the Armstrong gun: giving details of fabrication, breech-loading, rifling, charges, proof, cost, and endurance. Then follow the same details in relation to the Whitworth gun, the Blakely gun, the Parrott gun, and other hooped guns. The next section is devoted to solid wrought-iron guns, and contains descriptions of the Horstall, the Stockton, the Brooklyn Navy Yard 12 in., and many other wrought-iron guns, with the particulars of their fabrication, charges, and endurance. Heavy shot at low velocities is discussed under seven heads, with full accounts of the various experiments bearing on the subject that have been made in England and America. In the same detailed and thorough manner are treated the subjects of small shot at high velocities, "The two systems combined," "Breaching masonry," "Resistance to elastic pressure," "The effects of vibration," "The effects of heat," "Elasticity and ductility," and, in short, all departments of the subject. The author asserts that the reports of experiments are derived almost exclusively from records and drawings in Government offices, with the

due to the adulteration of the manganese used, with soot or coal, and that when a small quantity of any such organic substance is present with chloride of potash a very explosive mixture is generated in the retort.

The practice of using oxygen gas for home pictures in the magic lantern has become quite common. We have never before heard of any serious injury resulting from its preparation, though we have more than once been cognizant of the unaccountable bursting of the elastic pipe which connects the retort and the wash bottle.

We believe that the magnesium light might be substituted for the oxy-hydrogen. The metal in the form of wire, for burning, is sold in London for 1½ cents a foot. At triple this price it would be as cheap as the oxy-hydrogen light for the majority of amateurs.

A good paste for fixing paper labels on tinned sheet iron may be obtained by preparing a paste from water, rye flour, and a small quantity of a solution of glue, to which add so much of Venice Turbith as to fit it for brushing over the labels, which will adhere closely to the tinned surface and will not be affected by moisture.