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POSTAGE FREE.

The Field.

Hay-Making Machine.

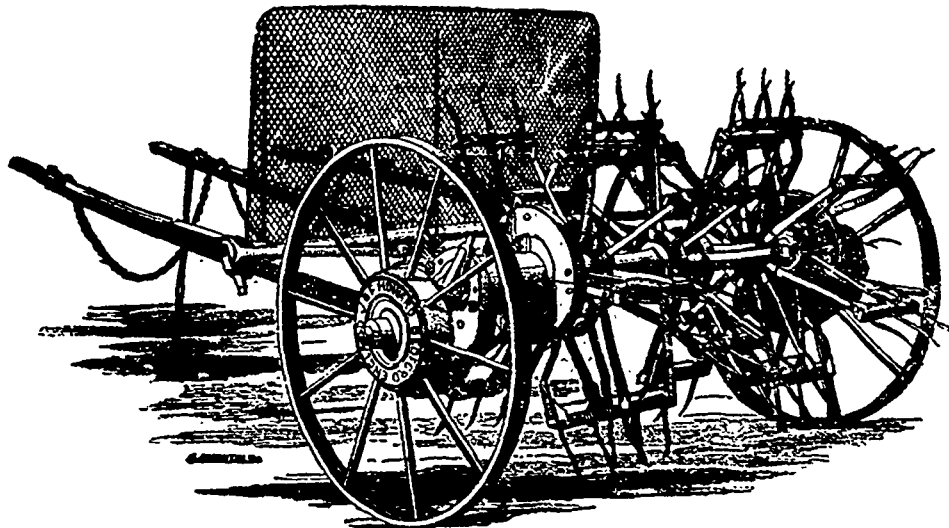
THE hay harvest is to the farmer one of the most important periods of the year. The utmost care, attention, activity, and perseverance are requisite to secure the crop in a proper condition. To the hay crop he trusts for winter provender for his horses and cattle; and he ought to apply his utmost exertions to prevent it from being wasted by unfavourable weather, or bad management. In a country like ours where labour is oft-times difficult to procure, the value of a first-class Haymaker, not liable to disarrangement, can hardly be rated too highly. We are not over-estimating the advantages of such a machine when we assert that on many an extensive farm, it has repaid its cost in a single season.

The accompanying illustration represents a New Patent Haymaker, invented and manufactured by Messrs. J. & F. Howard, of Bedford, England. It was first exhibited at the Leeds meeting of the Royal Agricultural Society. At that exhibition, it distanced all competitors, and was awarded the first prize. It is unquestionably the best machine of its kind in existence at the present day. It contains many improvements on Haymakers of earlier inventors, which tend materially to increase its durability and efficiency. The foot barrels are so arranged as to render clog-

ing all but impossible. The forks themselves are mounted in sets of three, and placed in a zigzag position,—an arrangement which has the merit of equalizing the work, and of rendering the separation and distribution of the crop more perfect. We have had some experience in the working of the machine, and we can safely avow that the hay under operation undergoes a most perfect teasing or tedding. In fact it is separated and tossed about till scarcely two stems of the plants are left in contact. Before the appearance of Howards' Haymaker, the usual method of reversing the motion in double action machines was either by means of loose sliding pinions; or by means of clutches on the fork barrels; or, in some cases, by the sliding fork barrels themselves. The two first methods were generally unsatisfactory; while the last had the obvious disadvantage of altering the relative position of the forks, and of render-

ing the machine extremely liable to clog. In the machine under consideration, while the gear work is both strong and simple, the motion is instantly changed to the backward or forward action by a simple eccentric movement of the main axle. By this artifice the disadvantages just named are entirely obviated. A similar eccentric movement is also used for raising or lowering the fork barrels to or from the ground. The machine can therefore be accurately adapted to the nature of the crop. Like all Messrs. Howards' implements, the new Patent Haymakers are manufactured with the utmost nicety and the greatest care. Every part of the machine liable to strain is made of wrought iron; and it may safely be removed any distance without fear of breakage, and without the necessity of taking it to pieces.

By the operation of a machine like this in a hay crop, the drying process is not only effected in a



much shorter period, but is more thoroughly accomplished than could be done by any number of hands. Thus, for example, if the horse walk two and a half miles per hour, and supposing the machine to cover six feet, we have a surface of nearly an acre and a half thoroughly tedded every hour.

Howards' Haymakers are constructed of various sizes, suitable either for one or two horses. The respective prices are as follows:—

	£	s.	d.
One horse light machine—Weight 9 cwt....	13	13	0
“ “ “ “ “ 10 “	15	15	0
Two horse “ “ “ 10½ “	16	16	0
“ “ with front wheel and pole for two horses and seat for driver. “ 12 “	18	18	0

The fifteen Guinea machine is probably the most useful size; and, indeed, it is recommended as such by the manufacturers themselves.

Familiar Talks on Agricultural Principles.

CHEMICAL COMBINATION.

It has been found necessary already in the course of these “talks” to allude to a process constantly going on in nature which is called chemical combination. As observed in our issue of Jan. 15, “a plant is a compound thing.” We have been examining the material which enters into the composition of the various vegetable formations. A number of organic and inorganic substances of which plants consist, have been noticed, and the sources whence they are derived have been pointed out. A few words now as to the process by which plants are formed out of this varied material, thus obtained.

A simple body or substance—in other words, any thing that is constituted of one kind of matter only—

is called an *element*. One that is composed of two or more elements is known as a *compound*. Thus iron, being composed of one kind of matter, is an *element*; the rust of iron, being formed of oxygen and iron, is a *compound*. Put a drop of water on a piece of bright iron, and soon there will be a spot of rust. Some of the oxygen of the water will have combined with portions of the iron, and formed a third body, oxide of iron, familiarly known as rust. Water is composed of two elements; Epsom salts of three; Alum of four; while plants consist of many elements.

These unite in a peculiar manner. They are not *mixed*, but they *combine*. Ceasing to retain their own distinct character, they unite to form something entirely different from themselves. It is thus that compounds are brought into existence. The difference between a *compound* and a *mixture* will be readily understood by the help of a few illustrations. Thus if you bring chlorine and sodium together, a substance totally unlike either is produced. From two virulent poisons there is formed that wholesome and useful substance, *common salt*. This is a *compound*. If, on the other hand, you put water with milk, no new substance is formed, the liquid is water and milk still—this is only a *mixture*. When chalk is powdered and mixed with water, the result is a creamy-looking liquid, with qualities midway between water and chalk. Let it stand awhile, and the chalk will settle to the bottom, leaving the water clear as it was pre-