

## Emplements of Husbandry.

### The Roller.

The principal uses of the roller are to smooth the surface of new meadows &c. in the early part of spring, and to press down grass and other seeds after sowing. On certain soils the use of the roller is most valuable at almost any time; light and especially sandy soils require a certain amount of surface-packing, to prevent the too ready absorption of solar heat, and the equally speedy evaporation of moisture. On heavy clay soils, however, its employment is not so beneficial; in fact, if used on such soils when wet, the result will be injurious, for it will simply form a close crust on the surface, through which neither heat nor air can pass as freely as it should.

The "PIONEER" ROLLER was very early in use in Canada. It has done and is still doing good service in the backwoods. It is made of a single log of wood, dressed, as nearly as possible, to a true cylinder—the greener the wood is, the heavier the roller. A round iron spike of one or one and one-half inches diameter is then driven into the centre of each end, representing the ends of its axis. A frame to which shafts are attached is next placed over the log, and rests upon the spikes which play in its sides, and the implement is complete. To increase the weight, if necessary, the frame may be so constructed that large stones or other weights may be rested upon it both behind and in front of the roller. The principal objection to the single-piece roller is that it scrapes the ground badly in turning.

The DOUBLE-PIECE WOODEN ROLLER is an improvement upon the pioneer in two respects. 1st, It adapts itself more readily to the inequalities of the ground, and, 2nd, it does not scrape the soil so badly in turning.

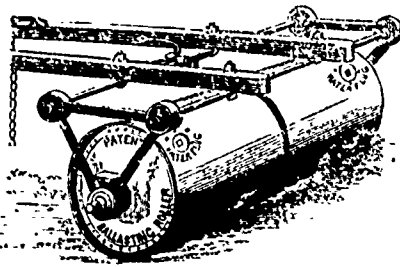
Single and double wooden rollers are also made in another way. The roller itself is made not of solid wood, but of pieces of well dried wood put together after the manner of a barrel, and hooped about with iron bands. Of course the axle in this case is one bar, extending the whole length of the roller, and any required pressure upon the soil is effected by placing heavy weights upon a platform which rests upon the framework, and is elevated a few inches above the roller.

A much better, heavier, and more durable article than any of those enumerated, is the IRON ROLLER which—even though it is considerably more expen-



sive—farmers generally adopt as soon as they are in a position to do so. Like the iron harrow, and all other iron implements as compared with those made of wood, it is impervious to the ravages of the weather, and that fact alone, even if it had no other advantage, should be sufficient to merit much consideration. But it has other advantages. As in the accompanying cut the iron roller is made of cast iron sections, each about one foot in length and about 27 inches diameter. It is mounted on a strong wooden frame, and weighs made as it generally is, of seven sections, 1200 lbs. gross weight—the weight is however in proportion to the width of roller and can be increased at pleasure by placing stones upon the platforms. As the sections act independently of one another, the surface of the soil is not damaged or disfigured.

Another excellent iron roller, much used in England, and one which took first premiums at several English exhibitions, is constructed as in the accom-



panying engraving on the water-ballooning principle.

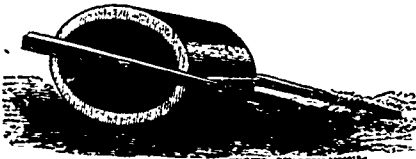
The cylinders (two in number) are made hollow, of cast-iron, and their weight or pressure upon the soil may be regulated by filling them wholly or partially with water.

### Clod Crushers.

The name of this implement explains its use. On clay soils it is well known that during cultivation, clods are abundantly formed, and that these, in dry weather, become so hard and solid

as to prevent not only the expansion of roots in search of nourishment, but likewise the proper intermixture of manure with the soil, without which much of their strength is lost. It consequently becomes of immense importance that these clods should be pulverized, and to do this, been devised, the simplest form of which is made out of a hollow log and called a "Drag Roller."

A tongue, if for two horses, or a pair of shafts, if for one, is fastened into this log, and the implement is dragged not rolled over the ground. Of course the greater the diameter is the less liability there is to have it 'clog' or drag the clods before it. The annexed cut represents one of these one horse drags, and it will be found of great service in working, for instance, between rows of corn on cloddy ground. It, as well as the two horse 'drag' may be made of a half log with the round side downward. Simple as this implement appears, it has been often the means of pulverizing hard clay clods to a

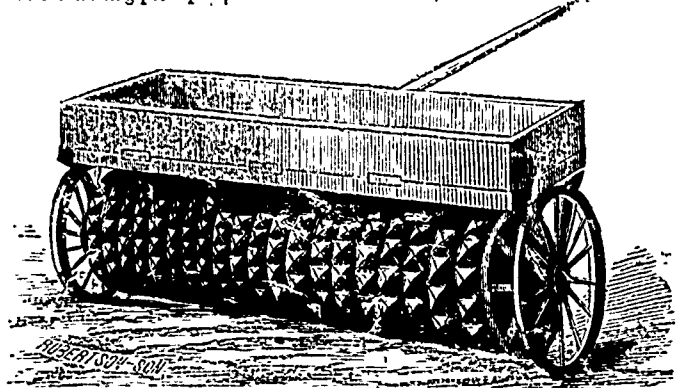


condition almost as mellow as ashes—and of thereby doubling the crops.

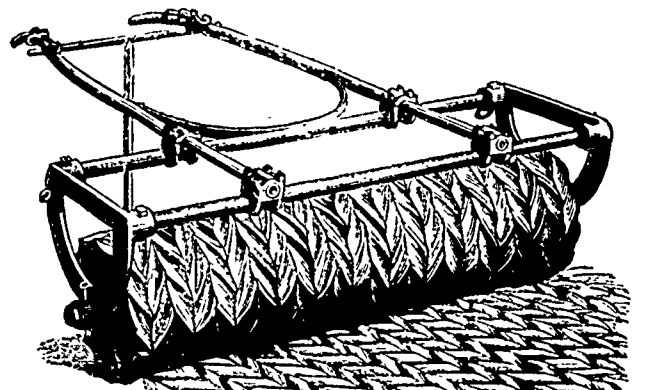
A much better, though of course more costly implement than this, is that known as "Crookall's Clod Crusher" and modifications of it, used in many districts of Britain and America. It consists, as in the accompanying illustration of from 20 to 24 circular cast-iron discs, set loosely together upon an axle so as to revolve separately. Their outer circumferences are formed into teeth of various shapes, which cut and grind up the clods as the implement passes over the field. Every alternate disc has likewise a larger hole for the axle, which causes it to rise and fall as it turns over and thus prevents clogging. This implement is used only on very heavy clay soils.

And in every case let it never be forgotten, the clod crusher, of whatever description, is to be used only on dry ground, the drier the soil the greater is the benefit derived. On wet soil it will do more harm than good; because the clods in such a case will neither crush nor pulverize, but simply pack and clog.

The next cut represents SPENCER'S EXCELSIOR ROLL, and clod-crusher, the discs of which are arranged as in the former one, to work separately. The advantage claimed for the Excelsior is that in addition to its clod-crushing capacity it affords an equalization



of pressure—particularly in packing the soil in about the roots of plants. The peculiar impression which it leaves on the soil, will be seen from the engraving—the maker claiming that it approaches nearer to the trampling of the sheep than anything else. He also claims that it effectually destroys the wire-worm and



grub; thoroughly pulverizes the clods, and obviates the objection to a row of clover coming immediately upon a row of wheat.

By means of the roller, says Mr. Waring, the following results are obtained:—

1. The soil at the surface is pulverized without the compacting of the lower parts, the area of contact being large.
2. The stones on the land are pressed down so as to be out of the way of the mowing machine.
3. The soil is compacted around seeds after sowing in such a manner as to exclude light and to touch them in every part, both of which are of essential advantage in their germination, and assist in giving them a good start.
4. When the soil is smoothed in this manner, there is less surface exposed for the evaporation of water with its cooling effect.
5. Light sandy lands, by being rolled in the fall, are rendered more compact, and the loosening effects of frequent freezing and thawing are lessened.
6. The earth is compacted about the roots of grass and grain crops early in the spring. The freezing and thawing of winter leave them usually partly uncovered, or surrounded by air spaces. Their best growth requires that these roots be closely pressed by the earth—and this pressure is given by the roller better than in any other way.