

Bent Grasses in Canada

By M. O. MALTE

THE remarkable increase in the popularity of the game of golf during the last ten years or so has in Canada as well as in the United States, been in a very large measure responsible for an unprecedented demand for turf grasses of high quality, and particularly for grasses most eminently suited for greens. For the latter purpose forms of bent grasses (*Agrostis*) have long been recognized as possessing outstanding merits and, this being the case, special efforts have, during the last few years been made to supply the market with bent grasses of guaranteed superiority.

Several years ago, the United States Department of Agriculture inaugurated rather extensive experimental work with turf grasses, one of the results being the introduction of the so-called stolon method of greenmaking,

a method whereby a turf is produced, not from seed, but from cut-up stolons or surface runners. The grasses found most suitable for this purpose are certain hardy, durable, quick-growing forms of what is generally called Creeping bent grass. The runners of Creeping bent, which in several of its many forms may reach a length of 3 feet or more, will after being cut up in pieces about an inch long or a little longer, depending upon the length of the internodes, and after being strewn on prepared ground and thinly covered with soil, root freely at the nodes and will, providing the water supply is adequate, in a very short time produce a green far superior to greens grown from seed at present available through the trade.

The reliability and consequent popularity of the stolon method have naturally led to a search for suitable forms of Creeping bent of particularly fine texture. This search has revealed that Creeping bent, which so far has been imported from Europe, occurs in abundance in many parts of Canada, perhaps most plentifully in the Maritime Provinces, and especially in Nova Scotia and Prince Edward Island. Indeed, in certain districts of the former province, it occurs in such abundance and is mostly of such excellent quality that, with judicious selection of stock from the natural supply, a remunerative seed-growing industry, for home consumption as well as for export, could, in the writer's opinion, easily be developed.

Creeping Bent Has Limitations

CREEPING bent, like other grasses, has, however, its limitations. It grows naturally on low-lying land and is rarely found on soil deficient in moisture. As it is less well adapted to dry, sandy, or otherwise more or less sterile ground, it follows that, although it is excellent for greens that can be adequately watered, it is of minor importance for fairways and generally for situations naturally lacking in moisture.



FIGURE 1

FIGURE 2

Fig. 1. *Agrostis Stolonifera* Var. *Major* (Gaud.) Farwell. Redtop, known as *Agrostis Alba* in U. S. A.

Fig 2. *Agrostis Tenuis* Sbth. Rhode Island bent, known as *Agrostis Vulgaris* in U. S. A.



AGROSTIS STOLONIFERA VAR. COMPACTA HARTMAN
Creeping bent, known as *agrostis stolonifera* in U. S. A.

For the latter type of land so-called Rhode Island bent or Browntop is much better suited. This grass, which is related to Creeping bent, grows naturally in rather dry situations. It is a native of Eurasia and Northern Africa, which many years ago was introduced into Canada. At present it is particularly abundant on dry land in the Maritime Provinces, and especially in Prince Edward Island where it grows practically everywhere.

When the Seed Branch, Dominion Department of Agriculture, some years ago inquired where in Canada seed of a turf grass of good quality might be produced in quantity for commerce the writer was in the happy position of being able to point to Prince Edward Island as probably most suitable for the development of a seed-growing industry based on the har-

vesting of seed of the Browntop already growing in profusion in that province. The Seed Branch, acting upon the information supplied, has in the last few years made good progress in developing a new seed-growing industry in Prince Edward Island. In 1925 about 17,000 pounds of Browntop seed were harvested there, and for 1926 the crop was estimated at some 50,000 pounds.

In addition, it may be mentioned that a still more valuable turf grass, Velvet bent grass, is now being propagated, under the direction of the Seed Branch, Dominion Department of Agriculture, from seed harvested in Prince Edward Island.

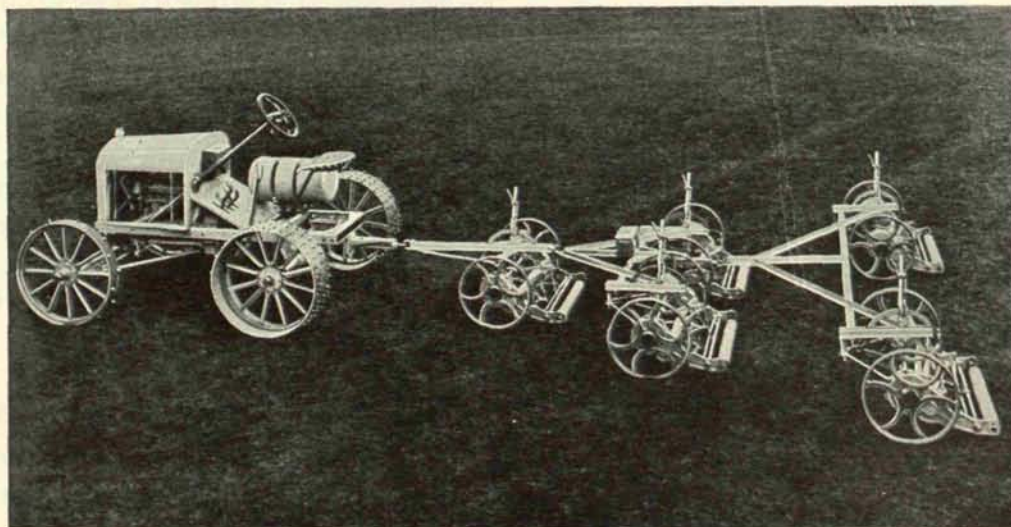
Great Interest In Bent Grasses

FROM the above it is clear that unusually great practical interest is at present taken in the commercial bent grasses, and the indications are that they may attain, as sources of revenue to seed growers, still greater importance in the future. In the writer's opinion, however, the success with which seed growing on a commercial scale may be met will, to a very great extent, depend upon the confidence which seedsmen as well as the purchasing public will have in the genuineness and truthfulness to name of the seed produced. Such confidence can be obtained only if the characteristics of the "varieties" can be precisely defined and if, based thereon, a supply of pure seed, true to name, can be offered to the trade.

At present, tens of thousands of dollars are wasted annually on account of a loose and in many cases quite misleading application of so-called scientific names to commercial varieties of bent grasses. For this the seedsmen must not be criticised too seriously as there exist, as will be seen in the following, very great differences of opinion among taxonomic botanists as to the systematic relationship between the various species and forms, differences which are quite natural on account of the perplexing variability of the different species. In the following the writer will endeavour to present, in a critical and analytical form, his conception of the relationship of the various species and

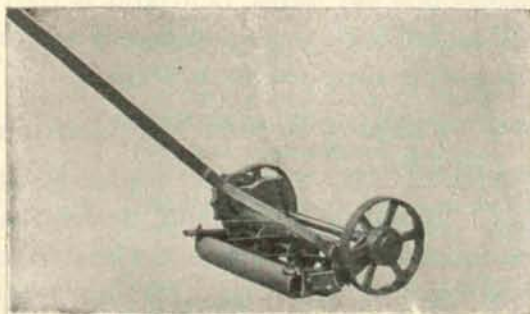
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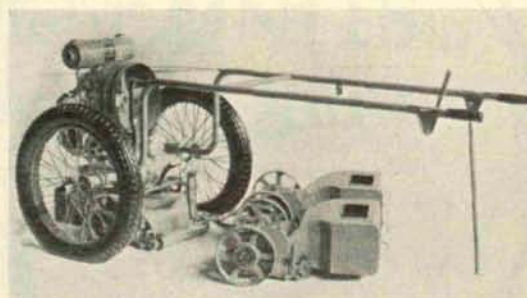
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varieties of the genus *Agrostis* which are of commercial interest to Canada.

Trade Varieties and Their Technical Names

IN MOST Canadian seed catalogues only three so-called varieties of bent grasses are listed, viz., Redtop, Creeping bent, and Rhode Island bent. Occasionally the names Herd's grass and Fiorin occur, and quite recently the name Prince Edward Island bent has been introduced by a few seedsmen.

In Canada, the name Redtop is generally applied to the tallest and agriculturally most im-

portant species of the bent grasses. It grows anywhere from 1 to 3 feet high or more and generally possesses runners or stolons which are either wholly underground or from a subterranean start develop into upright, aerial, leafy shoots. On account of its upright growth and plentiful foliage it is of importance as a

hay grass, especially on wet land. Its relative coarseness, however, and in many cases rather pronounced lack of durability, when cut close to the ground, make it not nearly as well adapted to lawns and greens as some of the other bent grasses.

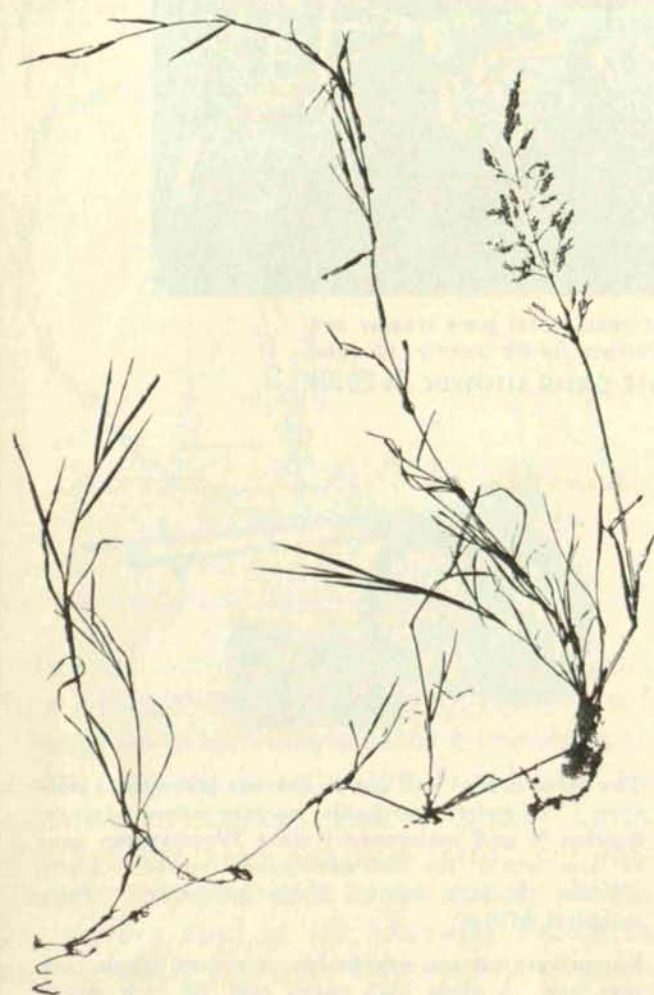
Of thirteen Canadian seed catalogues which the writer has had an opportunity to examine, ten have the name *Agrostis vulgaris* for Redtop; two call it *Agrostis alba*, and one *Agrostis stolonifera*. In "The Seeds Act, 1923," administered by the Seed Branch, Dominion Department of Agriculture, it was originally listed as *A. alba*. In the edition of October, 1926, the name was changed, at the writer's suggestion, to *Agrostis stolonifera* var. *major*. In "Standardized Plant Names", 1923, by Olmsted, Coville, and Kelsey, it is called *Agrostis palustris*, with *A. alba*, as understood by Bailey's Cyclopaedia of Horticulture, as a synonym. Redtop is known and called by U. S. department of Agriculture as *Agrostis alba*.

Creeping bent grass, as the name implies, is a grass of a spreading habit. By means of runners or stolons which trail on the surface of the soil and freely root at the nodes it quickly forms a dense and continuous sod. It thrives best on moist land and is particularly well suited for lawns and greens which can be adequately supplied with water.

Creeping Bent Is Not Uniform

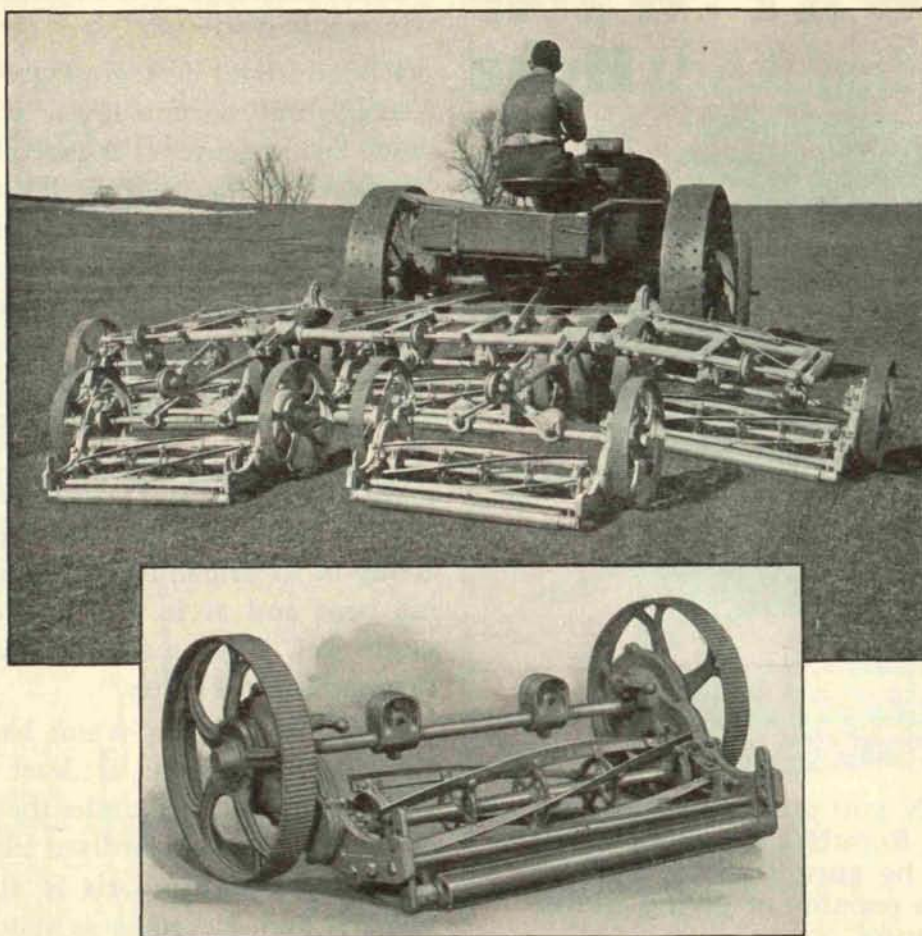
CREEPING bent is no uniform variety, in a botanical sense, but under that name are included many more or less sharply defined races of a similar, creeping habit. The majority of the Creeping bent races produce comparatively few and short, scantily leaved stems. It is, therefore, not nearly as valuable for hay as is Redtop, but will, on account of its dense bottom growth lend itself well to pasture, especially on wet land.

Creeping bent grass appears in Canadian seed catalogues under the name of *Agrostis stolonifera*. "The Seeds Act, 1923", originally used the name *Agrostis stolonifera*, variety. In "The Seeds Act, 1923", edition of October, 1926, it appears, at the writer's sug-



AGROSTIS STOLONIFERA
Stoloniferous variety with open panicle

portant species of the bent grasses. It grows anywhere from 1 to 3 feet high or more and generally possesses runners or stolons which are either wholly underground or from a subterranean start develop into upright, aerial, leafy shoots. On account of its upright growth and plentiful foliage it is of importance as a



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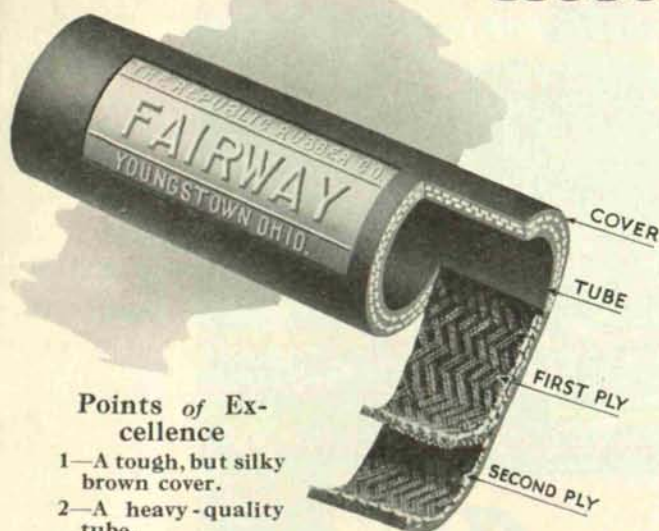
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gestion, under the name of *Agrostis stolonifera* var. *compacta*.

Rhode Island bent grass grows upright like Redtop, but is of a lower stature and of a much finer texture. It is generally rather loosely tufted, with a dense bottom growth of short, leafy shoots. In some of its many races creeping surface stolons are developed, but these are as a rule only a few inches long and never as luxuriant as in Creeping bent. It, therefore, spreads comparatively slowly and does not form as matted and compact a sod as that produced by the latter. Nevertheless it makes a fine turf and is much superior to Redtop for lawns and greens. It is much less exacting in its demand for moisture than Creeping bent and as it will thrive even on dry, sandy soil, it has a much wider range of usefulness than the latter.

Rhode Island bent is not handled by many Canadian seedsmen, at least not regularly. When it is, it is listed under the name of *Agrostis canina*. In "Standardized Plant Names" the name *Agrostis capillaris* is applied, with *A. vulgaris* and *A. tenuis* as synonyms (known as *Agrostis vulgaris* in U. S. A.)

Herd's grass, as understood when the name is applied to a species of the bent grasses, is the same as Redtop.

Fiorin, apparently a corruption of the Irish "Fiorthan," is an old name used by Dr. William Richardson of Moy, Ireland, in the early part of the nineteenth century, for a bent grass characterized by long, rather coarse, leafy stolons, creeping on the surface of soil and rooting at the nodes, in other words, for a grass belonging to the Creeping bent group. Now the name is in many cases applied indiscriminately both to Redtop and to stoloniferous bent grasses allied to the latter.

Browntop, a trade variety recently put on the market from Prince Edward Island, is botanically the same as Rhode Island bent. It is listed in "The Seeds Act, 1923," under the name of *Agrostis tenuis*.

Prince Edward Island bent is identical with the Browntop of "The Seeds Act, 1923."

Colonial bent is a bent grass grown in New Zealand which during the last few years has

been put on the North American market. According to Piper (27, p. 10), "turf and plants grown from this seed show it to be identical with Rhode Island bent." Its close relationship to Rhode Island bent and to the Brown-top of the Maritime Provinces is furthermore apparent from its history.

Velvet Bent Now Being Harvested

VELVET bent, or Brown bent is a species which so far has not been handled in its pure form by the Canadian trade. According to Piper and Oakley (28, p. 75) "the seed is nearly always found in Creeping bent, some-



FIGURE 1

FIGURE 2

Fig. 1. *Agrostis Canina*. Velvet bent, same in U. S. A.

Fig. 2. *Agrostis Stolonifera*. Non-stoloniferous variety with contracted panicle

times to the extent of 40 per cent of the whole." At present, as has already been indicated, it is being propagated for commerce from seed harvested practically pure on Prince Edward Island. Velvet bent is a more or less loosely tufted grass with short, very narrow-leaved basal shoots and commonly also with creeping surface runners. It grows to about

(Concluded on page 37)

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Lime—For or Against

By W. D. CHINERY, *Greenkeeper*
York Downs Golf Club, Eglinton, Ontario, Can.



W. D. CHINERY

WHEN speaking or writing on "lime" for use on a golf course I fully realize that I am picking a hard row to hoe.

Lime, as most of us realize by now, should be according to some experts taboo on a golf course. There have been quite a few fallacies exploded of late years about the growing of grasses and perhaps it is not unreasonable to predict that others will follow, but as I have chosen lime for my subject in the hope that it may bring about further discussion, let lime suffice.

There are generally two sides to a subject and we have it here with a vengeance.

What does lime do for soils where good turf is required as on a golf course. We are told by some experts that the application of lime sweetens the soil and "why sweeten the soil when a sour or acid soil is required for the production of good turf?" Others say that it brings clover or encourages clover—and that is about the worst they can say about lime—at least that is my impression.

On the other hand what can be said about the benefit of lime when applied to certain soils. Take for instance heavy and adhesive clay which is probably more deficient in lime than any other yet to render such soil suitable for producing good turf we are advised to render it acid by frequent applications of such chemical fertilizer as sulphate of ammonia (we are also told that by this treatment clover and chickweed (*cerastium*) will disappear.

My experience of such soil following this treatment is that they are extremely slow in reaction and with considerable expense attached. I may also add that clover and chick-

weed are much in evidence. To use the words of an old tutor of mine years ago, "Lime properly applied is the key to a locked store-room."

I am convinced after years of practical experience and observation that lime properly applied to heavy soils does vastly more good than harm where good turf is required. Now Mr. "Expert" throw those bricks at me.

Lime Lightens Heavy Soils

LIME as aforesaid will tend considerably to lighten heavy soils, rendering them more mellow and friable, and to improve the texture of the soils generally. This in itself will greatly assist in preventing so much baking and cracking as is generally the case during a hot dry period. Lime by its action also assists in providing better drainage—if we realize this we should see that by so doing the soil must lie drier and therefore consequently warmer enabling work to be proceeded with as desired.

Lime greatly assists in the decomposition of organic matter by allowing the soil bacteria to work more freely without which we are told no soil is fertile. Also by its action, lime releases certain properties in the soil which are not available as plant food. It would be reasonably safe to say that without the aid of lime in some proportion we are not getting the full benefit of the numerous fertilizers, both organic and otherwise that are being applied to many golf courses. We can have too much acidity as well as too much "sweetness" for the production of good turf.

Undoubtedly sulphate of ammonia is richer in nitrogen than most chemical fertilizers and unlike phosphoric acid or lime does not leach or wash away—is this a point worth considering. An over-abundance of one food does not make up for a shortage of one or two others, however good it may be, in fact it does harm eventually. I have seen both good and bad

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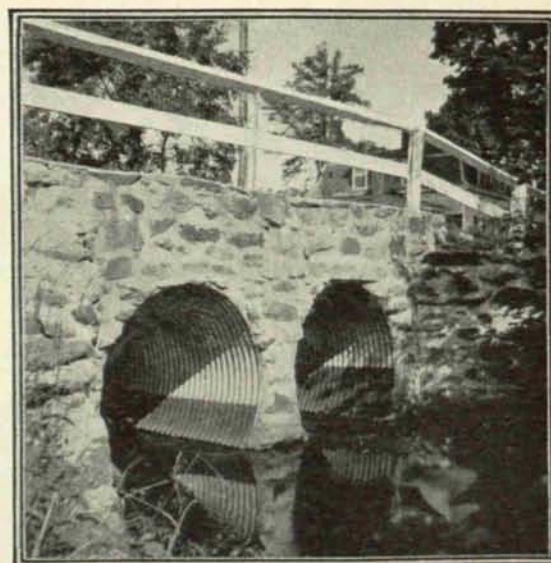
results from the use of sulphate of ammonia on plant life some thirty years ago—the remedy in the latter case was that condemned article—lime.

Lime Needed Near the Surface

WE HAVE often heard the argument that some soils are highly impregnated with lime on account of the deposit of sediment to be seen in water pipes or kettles, etc. This is absolutely correct but at the same time that is no criterion that there is sufficient lime where it is most needed, i. e. near the surface. This would apply more particularly where turf is being grown as the longer the turf remains with little or no disturbance, the more washing or leaching away of lime goes on, whether by natural or artificial means. With arable ground, conditions are somewhat different as, with continued cultivation going on more or less throughout the season, there is a better chance of bringing a certain proportion of lime to the surface and so retaining a certain amount for the need of the crop.

If we accept the fact that lime improves the condition of heavy soils then we should realize that this would mean a deeper root action, followed by a more sturdy growth of the plant and enabling it to withstand a period of drought far better than otherwise. Lime has proved to be a great aid against certain fungoid pests, and although it may be said to sweeten the soil there is more to be said in favor of the use of lime than against, if used judiciously.

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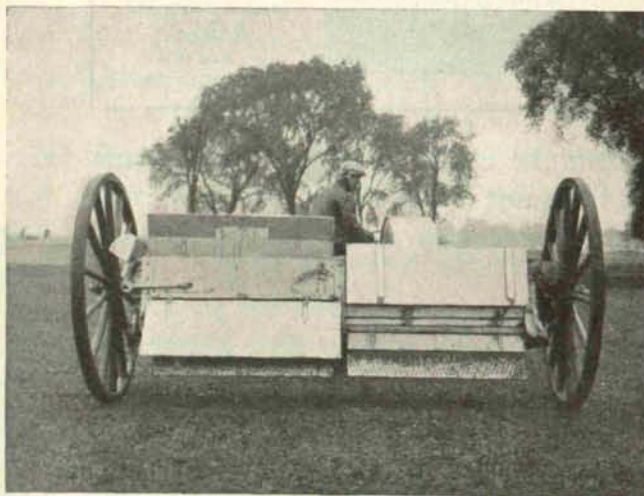
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