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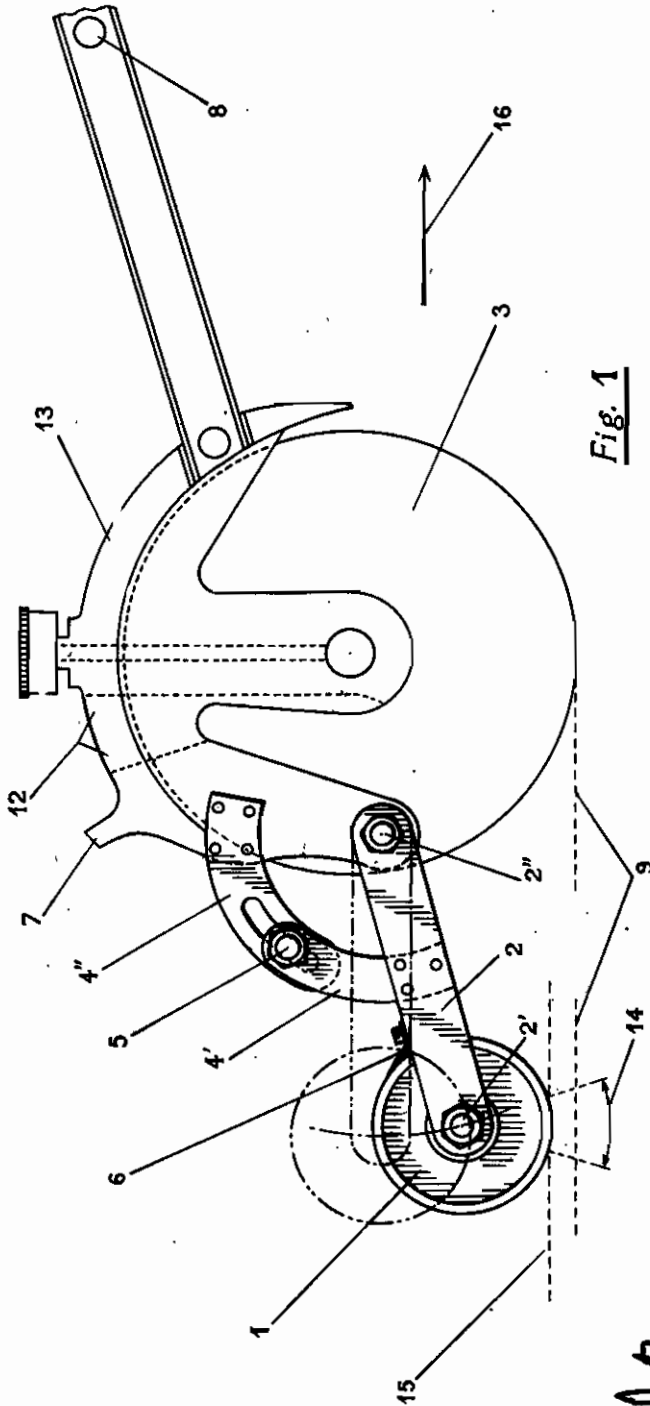


Fig. 1

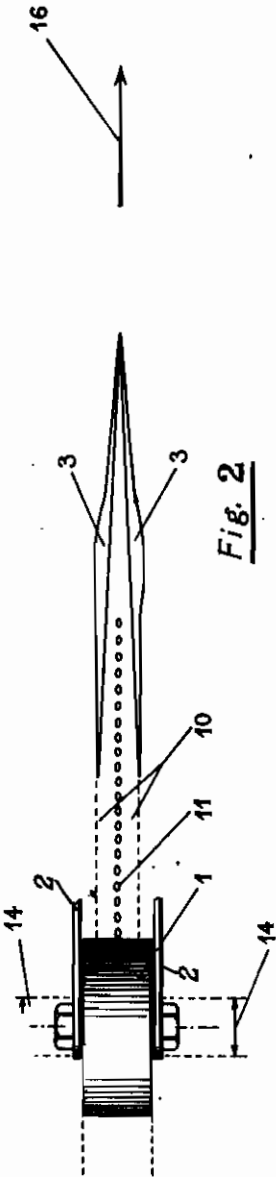


Fig. 2

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## REGULATING ROLLER FOR MACHINES SOWING IN ROWS

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Object of the present invention is an improvement in the construction of any type of agricultural machines for sowing in rows.

This improvement has been suggested by direct experiences in the wheat cultivation on dry grounds. In these workings elected sorts of wheat have been used, plentiful and seasonable manuring, deep and accurate working of the ground to make it very soft for sowing has been accomplished, and, in order to obtain high productions, seedings were dense and executed with selected, expensive seeds that, of course, must not be wasted. On the other hand, though disposing of the best seeds and of the best sowing-machines, the sprouting was always a little scanty and behind with regard to tests made temporarily in an experimental field, with a hundred seeds.

In the grounds made very soft through working, the sowing depth was not well controllable and certainly little uniform, especially for excessive sinking of the seeds here and there. The same inconveniences have been noticed in watery grounds, made too soft and muddy by a rainy season at the moment of wheat sowing. And also in many other grounds and even with the excellent furrowing devices "with double disc" that penetrate easily in any ground and that can work well in the same grounds, when they are, on the contrary, a little hard on the surface.

It is well known the capital importance of the coefficient "depth" for a good sowing, as the superficial, uncovered seeds are exposed to every unfavorable condition, while those that lie too deep germinate behind time and with a scanty efficiency.

The realization of the present invention consists in the application of rollers, one for each row, to the furrowing apparatus of any type (with simple or double disc, with sickles or similar). The most perfect result that makes a sowing-machine suitable for any solidity and type of soil is obtained, in a more general and complete way, with the application of rollers to the double disc furrowing devices. Said rollers substitute the chains or other means on the different types of known sowing-machines, which are used to cover the seeds. These rollers, besides covering the seeds in the best way and pressing perfectly the earth previously well mangled and pressed a little against the seeds (better than passing a second time with a roller), have the more important function of regulating and maintaining the thickness and homogeneity of the earth recovering the seed (sowing depth) con-

stant at any moment of the working, or in every part of the field, even if with surface irregular and not well prepared. This uniformity in covering the seed with the earth is obtained, according to the present invention, whatever the resistance the ground offers to the furrowing devices may be, this resistance being always variable. On the contrary, with the machines without rollers hitherto used, it is the soil conditions (difficult to be controlled) that fix the sowing depth, whatever the regulation of springs, weights, or any other device, may be. With the regulating rollers, however, this depth is regulated so as to have a thickness of covering earth from 1 mm. to 8 cm., suitable for any cultivated plant.

The appreciable advantages of this device, as well as the operating characteristics result more apparent by the following description, in which it is referred to the annexed drawings, in which:

Fig. 1 is a longitudinal complete view of a furrowing device improved by the application of the regulating roller and suitable to be used on a sowing-machine with a double disc furrow.

Fig. 2 shows a plant view of the ground sowed by one of the double disc furrowing devices provided with the regulating roller and mounted on a sowing-machine with double disc furrowing device.

As shown in Fig. 1, the device, object of the present invention consists in a roll or roller 1 rotating around a pivot, with a tyre breadth being a little greater than that of the furrow, in which the seeds fall; the roller 1 is supported by two parallel jaws 2, at the ends 2' of which said roller rotates around a suitable pivot, whilst at the other end the jaws may rotate around a pivot 2'' arranged at the connexion point with the furrow discs 3. In such a way the roller may describe an arc with the center on the pivot 2'. In order to set the roller and its support at the desired height above the furrowing device, a fastening device consisting of two flat, circular-shaped and slotted members 4' and 4'' with a fastening screw 5, is provided. The displacement upward and downward of the roller could be done also differently by making the whole support sliding on rectilinear guides, on which it may be fixed at the desired height by means of a screw. A steel blade 6 assured with screws to the support 2 and folded so that the free side being sharpened and wedge-shaped, and touching nearly the rotating cylindrical surface of the roller for automatic taking off the earth that eventually gets attached there, is provided.

Some springs and variable weights are applied

in 7 on the furrowing devices for push downwards as they rotate around 8 (pivot and bolt connecting the furrowing device to the sowing-machine), the said devices, in order to penetrate the furrow into the soil. Said springs and weights may be regulated so that the push be a little greater than that which is necessary for the desired sinking (punctuated line 9 in Fig. 1). Whenever the sowing depth has to vary, the roller must be adjusted, in order to obtain the desired depth. This is easily obtained by displacing it as far as to the position (punctuated line 15 in Fig. 1), in which, leaning on the ground, the furrowing devices penetrate into the ground to the desired sowing depth. Then, put into action the sowing-machine (the arrows 16 indicate the running direction), the furrowing devices trench the furrow 10 (Fig. 2) in the soil, on the bottom of which the seeds 11 fall (through the hole 12 of the support 13 of the furrowing discs); successively the roller runs on both the sides of the furrow, and closes the same, pressing the earth a little on the seeds. During the running of the sowing-machine the irregularities of the soil surface acting on each sowing row, or on each roller, independently of the others, force each roller to rise, where the ground makes a hump and to sink where the ground is lower. But the inner excavating end of each furrowing device, being connected and driven by the relative roller, is displaced upward and downward solidly, tracing a parallel curve to the traced one by the roller sliding on the ground, and the layer of earth between the parallels has always a constant thickness (constant sowing depth).

The roller, however, penetrates also a little into the ground, for the greater or smaller pressure exerted upon it and upon the furrowing

device connected to the roller, by the weights or the springs of the sowing-machine (in Fig. 2 the contact area of the roller with the ground is shown by hatched lines in 14). The resulting small furrow (with rectangular cross-section, having the aspect of wheel track) is normally of unimportant depth; at the first rain it disappears completely. If, however, it is desired to accentuate this furrow, to make it permanent and to constitute in this way a real sowing in furrowed rows, which in many cases is extremely useful and not practicable with the ordinary sowing-machines, there is but to augment the pressure of the springs or weights in 7 in conformity with the depth that is intended to give to the furrowing of the rows. The application of the rollers regulating the sowing in rows, is adapted to any ground and seed, included those minute seeds, for which nowadays are constructed special sowing-machines; in this way, especially by the combination of the double disc furrowing devices with rollers, any sowing-machine does a perfect work with guarantee of a practically total germination of all the seeds, with any condition of ground and with possibility of obtaining also thick seedings, without dissipation of expensive material.

The different parts described in the showed embodiment of the invention will have demonstrative and not restrictive sense, and they may assume different dimensions and forms for different types and dimensions of the machines, with which they have to be connected. It is understood therefore that any constructive change brought to the particulars of the device based upon the above exposed principles, has to reenter the field of the present invention.

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