The Canadian Thiresherman and Farmer

types are in use—fluted seed cell, and the internal feed. The most common type is the former, which consists of small fluted wheels

the centre of the drill and carry braces which strengthen the front of the frame. In this construction the axles on which the lowering or raising the furrow openers. Having the seed shell shaft in two sections, necessitates having both wheels drive, and



attached to a seed shaft and runs in seed shells in the bottom of the grain box. A clearer understanding of this type of force feed may be had by referring to Fig. 3. The wheels revolve are supported by a well trussed seed box. This style of mounting is hard on the wheel hubs, especially if the drill is wide and heavy. makes it easier on the operator, as he can raise half of the gangs at a time. One half of the furrow openers can be left in to finish a narrow strip, or permits drilling



feed is varied by exposing more or less of the fluted feed shell. The delivery is very uniform, but gives some trouble in cracking the grain. Some drills have a means of regulating the size of the seed outlet. By this device seeds of any size can be sown in an even, continuous stream, without bunching or breaking the kernel. This regulating device is shown by Fig. 3.

Fig. 4 shows the internal feed device, which consists of internal cells, which are uniform in size, attached to a revolving wheel, which receives its motion from the main axle. The amount of seed is regulated by varying the speed of the shaft carrying the seed shells.

In order to handle successfully seeds of different size the seed shell is made with two flanges with seed cells of different sizes in each, as is seen by referring to Fig. 4; one side being adapted to the seeding of large seed such as corn, peas and beans; while the other for such seeds as rye, flax and alfalfa: A hinged cover in the seed box permits the seed to pass out through the passage which is uncovered.

Axles are either stub or continuous. The stub axle consists of an axle of about thirty inches long, which revolves in self-al gning bearings fastened by brackets, securely rivetted to the frame. On these axles the wheels are securely keyed, as is shown by Fig. 5.

Sometimes on drills that have not the I beam to support the back part of the frame these stub axles are long enough to meet in The continuous axle is used on both styles of frames. Sometimes one wheel is fastened securely to the axle, thus causing the axle to

revolve while the other wheel is

deeper with one half, should there be occasion.

Seed Tubes.—The common methods of conveying the seed from the seed box to the boot of



Fasten all Gates with Latches on left side to sow all kinds of small grain and seed. Adjustable Force Feed. se Seed. so on right side b, Beans, Corn Gates and raise to clean Loosen the Lati Gates and raise

left loose on the other end, doing away with any dogs or differential gearing.

Other drills have a set of ratchet dogs in each wheel, which act as differentials, thus allowing both wheels to drive the feed. As the feed shells are not very hard to drive, one wheel will do the work easily, and by leaving the other loose gives much simpler construction. On other drills the wheels revolve on the axles. In drills where the axle revolves, the feed shells are driven from the axle by means of a train of gears, or by sprocket wheels and chain. When wheels revolve on the axle, the gear wheel is usually fastened on the hub of the wheel. In most cases if the width is greater than seven feet, the feed shell shaft is in two pieces and has two sets of gears, which are thrown in and out of gear by

the drill is through rubber, steel ribbon, or coiled wire tubes. Rubber tubes are quite satisfactory and are largely used, but if exposed to the wet and sun are not so durable. An advantage is that they are not subjected to dents. Steel coiled wire is very satisfactory until once stretched, for it cannot be satisfactorily repaired, and causes the grain to spill. The flexible steel ribbon tubes are very serviceable, and are perhaps the most extensively used. On raising and lowering drills with double discs, seed tubes often become "jammed," denting or cutting them. In all cases the seed tubes should adjust themselves to any position of the boot, and be so constructed as not to hinder the passage of the grain from the box to the boot, which would cause a strip to be left with no seed.

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Furrow Openers.—Drills differ mainly in the types of furrow openers, which in most cases are made interchangeable by the manufacturer so that the user may use the type best suited to the conditions of the soil. The types used on drills are the hoe, shoe, single disc, and the double disc.

Hoe Drill .- The hoe drill consists of a cast pipe or spout with a steel point securely riveted to it. This steel point is sharp with a little curve ahead; thus giving it good penetrations, and also long wearing qualities. The hoe is usually provided with breaking pins, or trip springs, which allow the hoe to straighten back when it catches on something solid, such as a stone or a stump. and allows the machine to pass over without breaking the hoe. (Fig. 6). The hoe drill has good penetrating qualities, long lifeas there are no bearings to wearand medium weight; but its great drawback is the tendency for rubbish to gather around the point and stop up the seed opening which is directly behind the steel point.

Shoe Drill.—The shoe drill consists of a bar sharpened on the bottom .dge. At the end the sharp edge is slightly rounding, which drags over the soil, and by applying pressure is forced into the ground, making a very narrow opening. The seed is ccnveyed down through a cast boot, attached to the bar, and drops close behind, before the banks of the opening have time to close in.

Double Disc.—Thé double disc consists of two flat discs al-out 14 inches in diameter, which revolves on an axle of such a shape that they close at the front, and about 1¼ inches apart at the rear. These discs cut and crowd the soil to each side forming a seed bed with a small peaked ridge in the centre and bottom of the opening. This ridge tends to spread the seed, not crowding



rig. 4. Showing Internal Feed of Deering Drill.

it into a narrow shaped opening as the shoe does.

Single Disc.—As the name applies the single disc, consists of

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