

tion gears are often bevel. There is considerable advantage in having the bevel gears as the highest speed gears. It reduces cost and also provides a chance to get a belt pulley on a fairly high speed shaft without the necessity of using a separate set of gears and clutch.

When a spur reduction is used first, the change speed gears and reverse are generally a part of it as they can be much smaller and cheaper in this position than in the next reduction. This arrangement is general on tractors where the engine sets crosswise, and it is also used to some extent where the motor shafts are lengthwise the tractor, even though this arrangement necessitates a larger and more expensive set of bevel gears in the second reduction, and also the use of a separate set of gears for the belt pulley.

It is usual that change speed gears are arranged so that the pinions slide on the drive shaft and engage large gears on the driven shaft. No counter shafts as are found in automobile transmissions are used except for reverse gears. This arrangement means that all gears are disengaged except the ones actually being used and also means that no idle gears or extra reductions are necessary for different speeds. Another advantage in this arrangement is that all change gears are disengaged when the belt pulley is to be used. Tractors are used for belt work for long continuous runs for gears or shafting running idle are undesirable because they waste power and require special lubrication.

The second reduction is sometimes the final drive, though this is not often the case. Usually it is the drive to the shaft which carries the differential. If the differential can be placed in this position, ahead of the last reduction, considerable expense can be saved because the parts can all be made much smaller.

Differentials have to be very strong and ample as the traction members are always slipping and keeping the differential parts working all the time. Differential locks are considered good practice. Brakes for holding one side for short turning are often used, but brakes for stopping while necessary are not very important.

The third reduction is usually the final, and this is the most important part of a tractor transmission. The load and vibration on the teeth and bearings generally causes wear of these parts first, and as these parts are large, expensive, and difficult to replace, it is very necessary they be made to give the best of service.

In cases where more than three-gear reductions are used the extra reduction is used either to

gain compactness or to provide for some special arrangement of parts.

Tractors are used for plowing a large per cent of the time and generally are operated at from 2 to 2 3/4 miles per hour. Many have only a single speed, but most of the late designs have two or three speeds. When there are three speeds one is lower and one higher than the plowing speed, and when only two speeds are provided the second speed is usually slower than that for plowing. The range between speeds is nearly always between 30 and 40 per cent.

A tractor transmission is really a series of compromises, each part being affected by all of the others, so it is no wonder that there is such a difference in design. A difference of opinion as to the proper location of the belt pulley alone will very materially affect the entire transmission arrangement. At present there is little chance of valuable transmission standards. It will require more time and many tests to prove what is best.

NEW DIRECTOR UNION BANK

IN furtherance of the policy outlined by the president of the Union Bank of Canada at the annual general meeting held January 9th last, to have representative business men from the different provinces in which the bank does a substantial business on the board, the appointment of Stanley Edward Elkin, Esq., of St. John, N.B., to the directorate of the Union Bank has just been announced.

Mr. Elkin is one of the strong business men of the Maritime Provinces being president of the Maritime Nail Co., Ltd., president of Motor Car and Equipment Co., Ltd., and connected with many other large commercial enterprises in New Brunswick.

He is also well known politically, being one of the members for St. John, N.B., of the present Union government.

The directorate of the Union Bank is a particularly strong one—nearly all provinces in the Dominion having representatives on it.

The appointment of W. H. Malkin of British Columbia a few months ago and now Mr. Elkin of New Brunswick, indicates the determination of the bank to be not only "the pioneer bank of Western Canada," but a most active financial institution all over the Dominion. Over 100 branches are established in the East and over 200 in the West, giving splendid service to the public.

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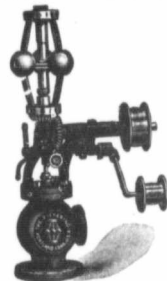


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