

If bundles are shocked promptly the shocks are carefully capped with two bundles, ripening may proceed, and both ends—full maturation and bright color—be measurably secured. Formerly the barley crop was usually cut with a self-rake reaper and laid off in small gravels or in continuous swaths. These were allowed to dry a day or so, as required, and then raked together, or, more usually, placed in piles by hand with a large wooden, four-tined fork. The aim was to get the barley dry as quickly as possible, so that it might be subject as little as possible to the rains and dews before reaching the stack. The severity of the beards and the shortness of the culms made it almost impossible to bind by hand. With the self-binder, it is the easiest of our cereal crops to bind. The shocking is now the most unpleasant operation. Barley of as good color is not obtained ordinarily when the sheaves are bound as when they are left open, chiefly because it is necessary to allow it to be long exposed to the weather before stacking or threshing. Considerable improvement in color may be effected by threshing the cap sheaves separately and using the grain from them for food for domestic animals.

RYE

Rye usually ripens about a week in advance of winter wheat.

On account of the greater length of culm, heavy crops of rye are likely to tax the capacity of self-binding harvesters. Rye may be shocked as indicated for wheat. But ordinarily it is not necessary to cap rye because the spikes lie so close together as to form a sufficient protection without capping. On account of the much higher price which can be obtained for straight rye straw as compared with tangled straw, threshing machines have been devised for keeping the straw straight during the operation, and some of the machines have a self-binding attachment by which the straw is bound again into bundles. Machines are made suitable for the use of individual farmers as well as the large machines intended for itinerant threshing.

I cannot enter into a discussion of Harvesting without saying something about the binder, the machine which makes the grain Thresherman Galley Thirty Six crops of to-day possible and in this connection the following, by Mr. F. W. Hunt, is very apt:

"When the announcement was made less than a generation ago, that a successful twine binder had been produced many there were who did not hesitate to de-

clare that such a thing was absurd, an impossibility, too good to be true, etc. The need had been felt for some time, for the wire binder was far from satisfactory, and many still preferred to bind the sheaves by hand. Now, the twine binder, or as it has come to be familiarly called, the binder or self-binder, since there is no need to distinguish from the wire binder which has long since disappeared, is taken as a matter of course. There still remains, however, in the minds of many, more or less of an element of mystery as to the manner in



The Champion Binder in Heavy Wheat

which the knot is tied, and as a thorough understanding of the principles on which the binding mechanism operates is necessary to the intelligent care of same, it might not be out of place to explain briefly the manner in which the sheaf is bound. While the binding mechanism varies considerably in appearance and in details on different binders, the underlying principles will be found to be substantially the same, so that a description of one will suffice.

The end of the cord is held by the cord-holder which is pressed

the binding device operate and will be a great help in locating any troubles with this mechanism.

Now, before you start your binder in the field turn the binding attachment by hand and watch carefully until you understand what each part does, and why it does it. Do not touch any adjustments of the knottor until you can give a reason for doing so. Be sure that the needle is properly threaded. It may not be easy to see why putting the twine in from one side or the other makes any particular dif-

ference, but this is very important. If the knottor misses a sheaf or two at the start do not jump at the conclusion that it is out of order; it has been tested before leaving the factory, and it is more than likely that a little grease or dirt on the billhook is the cause of the trouble and when this is cleaned off it will work alright.

The operation of the binder is a comparatively simple matter. A lever is provided for adjusting so as to tie the middle of the sheaf with grain of varying height. The size of sheaf can also be

may sometimes arise. Breaking of the twine is a very aggravating form of trouble. It occurs between the knottor and the tension it is due to too much tension—or poor twine. Do not have too much tension on the twine; it is better to tighten the trip or compressor spring if a tight sheaf is desired.

If the twine breaks at the knot it may be caused by the knife being dull or worn down so that it does not cut the twine quickly enough. It is well to examine the ends of the twine on a sheaf occasionally to see if the knife is cutting smooth and clean. If there is any indication that the twine has been frayed or broken, the knife needs attention. In grinding the knife take care to do it as it was originally done—if all on one side, do it that way when you sharpen it.

The tension or bill-hook should not be changed unless absolutely necessary. By turning the knottor slowly a point will be found where the spring does not appear cutting smooth and clean. If there is any indication that the twine has been frayed or broken, the knife needs attention. In grinding the knife take care to do it as it was originally done—if all on one side, do it that way when you sharpen it.

The tension or bill-hook should not be changed unless absolutely necessary. By turning the knottor slowly a point will be found where the spring does not bear on hook, and at this point the spring should be loose enough to be moved slightly with the fingers.

Failure of the bill-hook to hold the twine may be due to a little dirt or grain under the jaw. Clean it out and do not tighten spring unless absolutely necessary, as that means increased friction and wear. The same might be said of the cord-holder spring; if the end of cord slips out it is better to have a little tension on the twine and get

tightness of sheaf by compressor as previously mentioned.

All parts of the binder device must work in time in order to properly perform their work. Should it become necessary to replace any part of the binding mechanism have the binder in a locked position and carefully note the marks which are provided for setting all parts to work in time. The gears will usually be found marked with notches or pointers, which must come together when gears are in locked position. Sprockets are provided with notches and a certain number of links of chain must come between these notches to bring all parts in proper relation. Instructions on



The Massey Harris in some real heavy stuff.

against the cord-holder ring by a spring. The grain is pressed down against the compressor by the packers until sufficient has accumulated to operate the trip, causing the needle to advance and bring the cord around the sheaf and to the point where it enters the notch in the cord-holder ring, which then revolves sufficiently to carry the cord beneath the cord-holder where it is firmly held while the bill-hook revolves and ties the knot. The knife cuts the cord and the discharge arms discharge the sheaf from the binding platform or deck.

This should be sufficient to give a general idea of the manner in which the important parts of

regulated as well as the tightness of same.

The size of sheaf is regulated by adjusting compressor. The tightness of sheaf is regulated by adjusting the trip spring. In a binder which differs from the one shown, you can easily determine what adjustments will correspond to these.

Keep all bearings well oiled, when you are through with the season's harvest, coat the knottor and other bright parts with thick grease to protect them from rust and store the machine under cover at once. Plenty of oil when working and a dry place when not in use means several years added to the life of the binder.

Now as to the difficulties which

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