

From the front of one of the driving-rollers the reel is operated by a gearing so constructed that it allows great freedom of reel adjustment. On the Massey-Harris, the Noxon and the Maxwell binders this is accomplished by a bevel wheel and pinion, with bearings on the reel frame, the power being communicated from below through a square shaft which slides through the pinion as the reel is shifted. On the Frost and Wood the power is obtained from the top through a square shaft fitted with a sliding sleeve, and with universal joints at both ends, and the driving mechanism of the reel is operated through two chains, one for each of the two sections of the reel, which are independently adjustable. A vibratory motion is also communicated through one of the rollers to a reciprocating butter, which evens the butts of the grain and brings it down on the binder deck to within reach of the packers. There are two or three rapidly and continuously moving packers which force the grain tightly against the twine and a compress hook, until the proper amount for the size of bundle desired has been packed, when the pressure on a trip throws the binding mechanism in gear, it being driven from the packer shaft, generally by a chain, but in some by a bevel gearing, and in others by a combination of chain and spur gearing. All three of these methods are illustrated on the binders in the Canadian Exhibit.

*Knotters.*—These are different in detail in all the binders shown on Plate 4, but each consists essentially of a disc keyed to the knotter shaft working the movable parts either by cams or spur teeth, a notched disc or ring to hold the twine, a gripper or hook, a knife, and a stripping hook to remove the knot from the gripper when tied. One end of the twine is always held by the twine-holder tightly wedged between it and a short sleeve, and as the needle returns to its place, the twine is drawn through the eye from the twine can, and against this the grain is packed. When the knotting mechanism is set in operation the curved needle-arm rises, completing the circle around the bundle and carrying the twine beyond the holder, lays it across the top of the gripper and into one of the notches on the holder. There are now two strands across the tying hook, which is given