

Reaper-binder

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The reaper-binder, or binder, is a farm implement that improved upon the simple reaper. The binder was invented in 1872 by Charles Baxter Withington, a jeweler from Janesville, Wisconsin. In addition to cutting the small-grain crop, a binder also 'binds' the stems into bundles or sheaves. These sheaves are usually then 'shocked' into A-shaped conical stooks, resembling small tipis, to allow the grain to dry for several days before being picked up and threshed.

Withington's original binder used wire to tie the bundles. There were problems with using wire and it was not long before William Deering invented a binder that successfully used twine and a knotter (invented in 1858 by John Appleby).

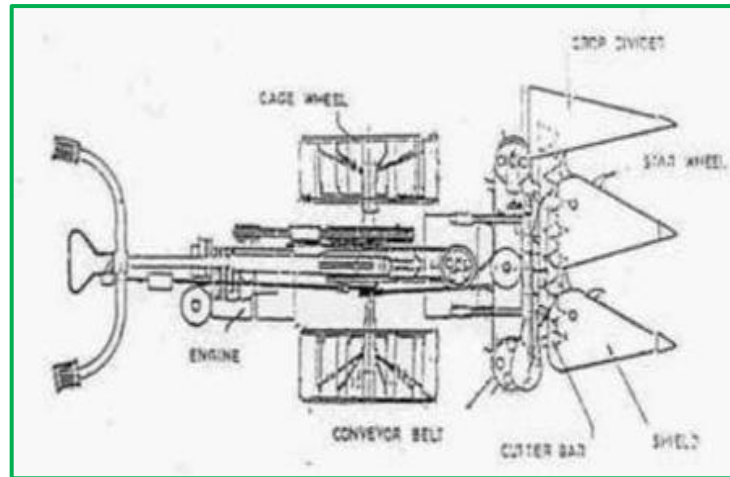
- ❖ Early binders were horse-drawn, their cutting and tying-mechanisms powered by a bull-wheel, that through the traction of being pulled forward creates rotational forces to operate the mechanical components of the machine. Later models were tractor-drawn and some were tractor-powered. (This mechanical power transfer is commonly referred to as a PTO or power take-off device.) Binders have a reel and a sickle bar, like a modern grain head for a combine harvester. The cut stems fall onto a canvas bed which conveys the cut stems to the binding mechanism. This mechanism bundles the stems of grain and ties the bundle with string to form a sheaf. Once tied, the sheaf is discharged from the side of the binder, to be picked up by the 'stookers'.
- ❖ With the replacement of the threshing machine by the combine harvester, the binder has become almost obsolete. Some grain crops such as oats are now cut and formed into windrows with a swather. With other grain crops, such as wheat, the grain is now mostly cut and threshed by a combine in a single operation, but the much lighter binder is still in use in small fields or mountain areas too steep or inaccessible for heavy combines.
- ❖ Reaper-binders were in wide use in the People's Republic of Poland, but farmers often could not operate them due to shortages of twine and a lack of replacement parts. This was such a regular occurrence that baling twine (Polish: sznurek do snopowiązałki) remains a symbol of the dysfunction of the communist economy in the cultural memory of Poland.



Components of A Reaper

Reaper consists of

- ✓ A cutter bar, crop row divider called reel and conveyor belt, star wheel etc. The reel direct the crop towards cutter bar where it is cut.
- ✓ The star wheel lift the cut crops up and turn it at 90 degree.



Working Principle

- ✓ When machine is push by the operator at the designed speed in the field, rear wheel rotation leads to reciprocate cutter bar with the help of sprocket and chain. The crop lifter guides the crop to the cutter bar and the crop is cut by the cutter. The cut crop is conveyed with the help of star wheel at one side by the lugged belt conveyer for easy collection and bundling.

General Characters of Reapers

- Mostly the reaper are mounted on front, rear but side as well as mid side of tractors or hand tractors.
- The tractor front mounted machine s having cutter bar length of 1.9-2.1 meter are operated at the forward speed of about 3 km/hr.
- The cut crops are carried along by belts to the entire width of machine before being placed on the ground with reaper winder or without winder.
- The reaper have the hydraulic lifting and lowering mechanism of cutter bar as cutting height adjustment of crops.
- Reaper is generally used to cut plant leaving crop stubble to a height of about 8 cm on ground.

Types of Reapers

- Self-Propelled Vertical Conveyor Reaper.
- Tractor Mounted Vertical Conveyor Reaper.
- Self-Propelled Riding Type Vertical Conveyor Reaper.
- Self-Propelled-Reaper Binder.

Self-Propelled Vertical Conveyor Reaper

- It consists of crop row divider, star wheel, cutter bar, and a pair of lugged canvas conveyor belts and a handle fitted with clutch and brakes.
- This type of machines cut the crops and conveys it vertically to one end and windrows the crops on the ground uniformly. Collection of crop for making bundles is easy and it is done manually.
- Self-propelled walking type, self-propelled riding type and tractor mounted type vertical conveyor reaper are also available.



- These types of reapers are suitable for crops like wheat and rice. In this reaper there is no shattering of the crop.

Tractor Mounted Vertical Conveyor Reaper

- The machine consists of a 76 mm pitch reciprocating cutter bar assembly, seven crop row dividers, two vertical conveyor belts fitted with lugs, pressures springs, pulleys and gearbox for the power transmission system.
- The crop row dividers are fitted in front of the cutter bar assembly and the star wheels are mounted over the crop row dividers.
- The machine is mounted in front of the tractor and the power to the machine is given from tractor PTO with the help of intermediate shaft running beneath the chassis of the tractor and a coupling shaft.
- Height of the machine above ground is controlled by tractor hydraulic with the help of pulleys and steel ropes.



Self-Propelled Riding Type Vertical Conveyor Reaper

- The riding type vertical conveyor reaper is a self-propelled unit in which the operator rides on the machine.
- Drive is given by means of two large pneumatic wheels and steering is by rear idlers. The prime mover is a 6 hp/4.5 kW diesel engine.
- Convenient clutch, break, steering, hydraulic system and simple power transmission are provided for ease of operation. It consists of crop row divider, star wheel, cutter bar (76.2 mm), conveyor belt and wire spring etc. This reaper has two forward and one reverse speed.



Self-Propelled-Reaper Binder

- It consists of a frame, cutter bar, handles fitted with clutch and brakes, seat for the driver, two drive wheels, one wheel below the seat for steering, crop gathering unit and twine.
- The cutting unit of this type of reapers may be disc type or cutter bar type.
- After cutting, the crop is conveyed vertically to the binding mechanism where it is tied by the twine and released to the ground in the form of bundles.
- Self-propelled walking type models are available but these are not popular due to high cost of twine. Reaper binders are suitable for rice and wheat.



Wheat Harvesting: Why Farmers Must Harvest Wheat with Reaper Binder Machine? Know its Benefits

Advanced equipment and machines have made the life and work of farmers easier. Earlier, the work which used to take days or weeks is now easily done in few hours with these modern machines. One of the machines about which we will talk in this article is 'reaper binder'. Reaper binder machine is mainly used to harvest & bind low stem crops like wheat, rice, oats, barley, and straw, etc. The machine has different structure & working rows to meet different needs of farmer.



Features of Reaper Binder Machine

Reaper-Binder is a unique harvesting machine that reaps the crop and at the same time binds it with a string. This Innovative Mechanical machine guarantees 100 percent recovery of straw with least grain losses at an amazingly low cost of operation. With the help of a reaper binder machine, a farmer can very easily cut the standing crops (5 cm above the ground).