

# COMBINE HARVESTERS



A combine harvester is a farm machine that harvests lots of different crops. It is called a combine because it combines two jobs: harvesting (cutting the crops) and processing (separating the straw from the grain).

They can harvest and process wheat, barley, oats, maize, sunflowers, sorghum, millet, soya, grass, and even beans and peas.

## History:

The first combine harvester was invented by Hiram Moore in the United States in 1834. The early versions of the combine harvester were pulled by horses, mules or oxen. Steam was used in the late 19<sup>th</sup> century and then combustion engine from 1935.



## How does a combine work?

First you lower the header and then start the header up. Then you just drive along slowly making sure you don't dig into the ground. Most combine harvesters have self-levellers on the headers to make sure they don't dig into the ground.

### Fact box

**Main Brands:** New Holland, John Deere, Claas.

**Harvesting Speed:** 3-4 mph

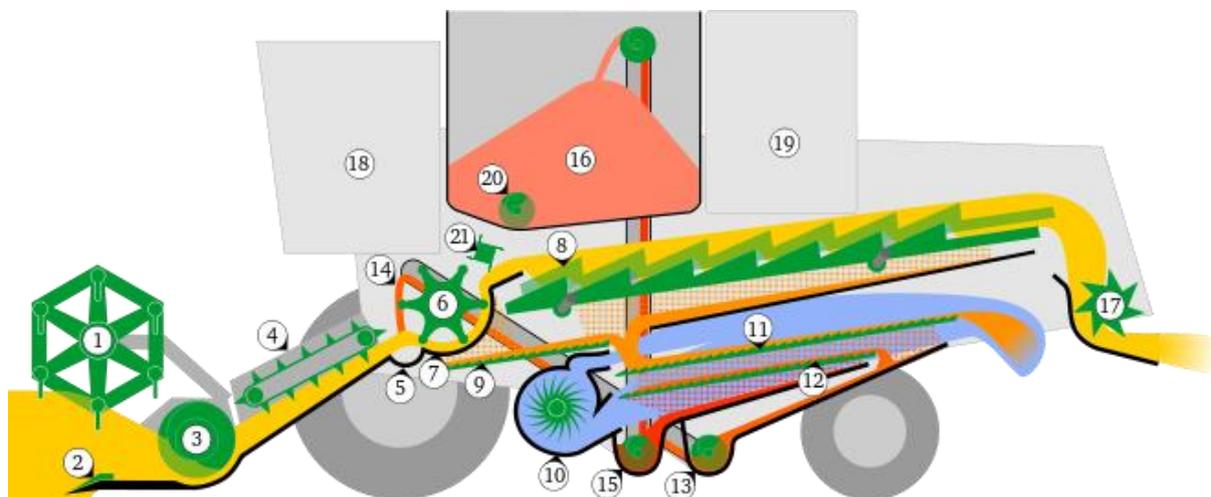
**Top speed:** 20 mph

**Price:** £100,000 - £400,000

**Cutter width size:** 3-10 metres

The **cutter bars** cut the crop then the **reel** feeds it through the header to the **intake auger**. The intake auger feeds the crop through to the **feed conveyor**. Then that feed conveyor puts it through the **threshing drum**. The threshing drum beats up all of the crop to get the grains out of it. The grains fall onto the **preparation pan** which carries the grains to the sieves. The sieves let the grain fall through and the left over light straw gets blown out of the back with a gentle airflow from the **fan**. Then in that container under the sieves, there is an elevator which makes the grain go up into the **grain tank**. Then what happens to the straw? After the threshing drum, the straw is fed onto the **straw walkers** which get the rest of the grain out of the straw and put the grain onto the returns floor. But with that straw, the straw walkers just walks it to the back of the combine and drops it out of the end. The returns floor has a gentle slope going down towards the preparation pan and it goes through the whole grain process.

When the grain tank is full you need to put the auger out to the side of the combine and empty the grain into a grain trailer pulled by a tractor.



Conventional combine harvester (cut)

- |                    |                             |
|--------------------|-----------------------------|
| 1) Reel            | 11) Top Adjustable sieve    |
| 2) Cutter bar      | 12) Bottom sieve            |
| 3) Intake auger    | 13) Tailings conveyor       |
| 4) Feed conveyor   | 14) Rethreshing of tailings |
| 5) Stone trap      | 15) Grain auger             |
| 6) Threshing drum  | 16) Grain tank              |
| 7) Concave         | 17) Straw chopper           |
| 8) Straw walker    | 18) Driver's cab            |
| 9) Preparation pan | 19) Engine                  |
| 10) Fan            | 20) Unloading auger         |
|                    | 21) Impeller                |