

## Combines

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### The conventional combine

Figure 1 illustrates the operation of a conventional grain combine. The crop is fed tangentially into a cross-mounted, cylinder-concave assembly. Threshing occurs through the impact of the cylinder bars on the incoming crop. Much of the separation occurs through the open grate concave. Separation of the remaining grain from the straw is accomplished with straw walkers. A cleaning shoe, with chaffer and sieve, is used for scalping and final cleaning.

separation. A conventional cleaning shoe is used for scalping and final cleaning. Several different sizes of this combine are currently being produced.

**International Harvester** (Figure 3) has a single, longitudinally-mounted, axial-flow, threshing and separating rotor. Threshing occurs at the front section of the rotor; separation of the grain from the straw is accomplished along the full length of the rotor in both the threshing and separation concaves. A rear beater aids in straw discharge. A conventional cleaning shoe is used for scalping and final cleaning. The company produces several different sizes of this combine, including a pull-type version.

### New types of combines

**Sperry New Holland** (Figure 2) has two longitudinally-mounted, axial, threshing and separating rotors. Threshing occurs in the concaves at the front of the rotors. Separation of the grain from the straw is accomplished along the full length of the rotor. A rear beater-grate assembly performs the final

**White** (Figure 4) also has a single, longitudinally-mounted, axial threshing and separating rotor. Threshing occurs at the front section of the rotor. Separation of the grain from the straw is accomplished along the full length of the rotor in both the threshing and separation concaves. A conventional cleaning shoe is used for scalping and final cleaning.

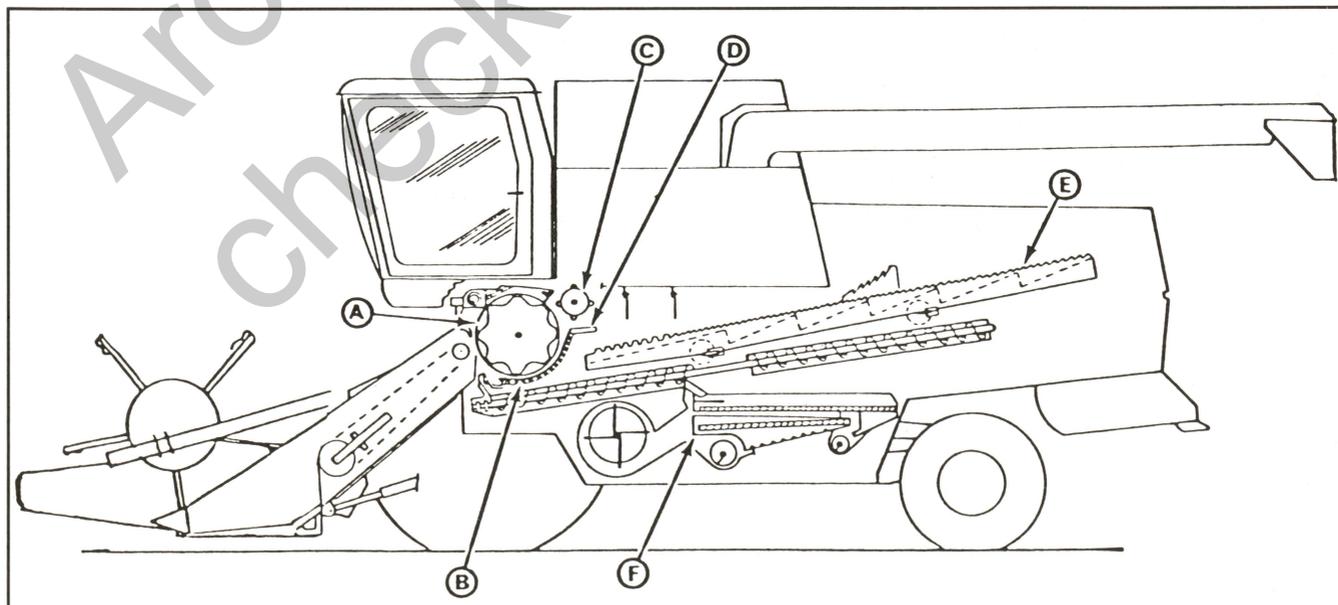
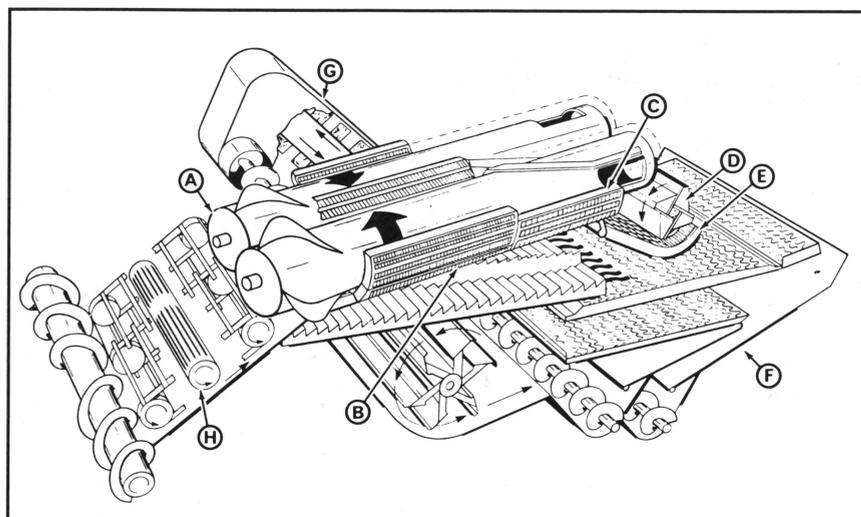


Figure 1. John Deere 8820: (A) cylinder, (B) concave, (C) back beater, (D) beater grate, (E) straw walkers, (F) shoe.

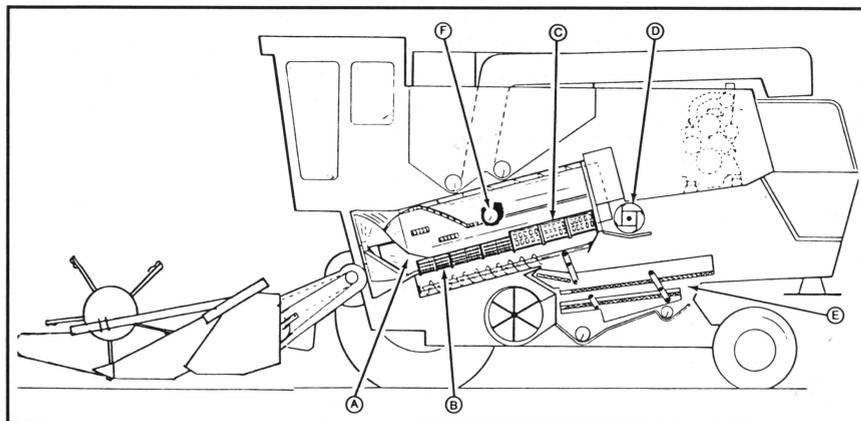
**Allis Chalmers** (Figure 5) has a different design than Sperry New Holland, International Harvester and White combines. The threshing and separating rotor (cylinder) is mounted crosswise, with the crop fed tangentially into one end of the rotor. Threshing and separation occurs along the full length of the rotor, as the crop spirals sideways along the rotor. A paddle and impeller assembly discharges the crop from the outlet end of the rotor. A conventional cleaning shoe, combined with accelerator rolls and a high velocity air blast, is used for scalping and final cleaning. Several sizes of this combine are available.

**Claas** of America, Inc. (Figure 6) calls its new combine the Dominator 116 CS. The CS stands for cylinder system. In place of the conventional system of separating and cleaning, Claas has eight synchronized, serrated, separating cylinders, with corresponding concaves, following a six-rasp-bar threshing cylinder.

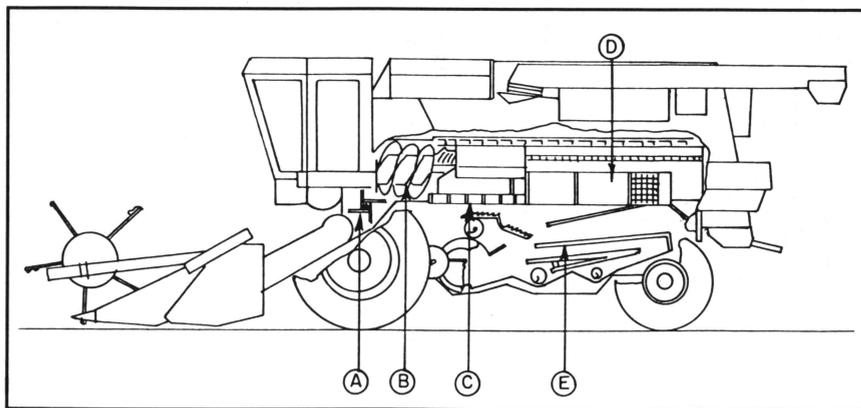
The synchronized, positive-output cylinders carry the crop over the concaves in a thin layer. Grain falls onto the cleaning sieve, and crop residue passes through to the double, straw spreaders.



**Figure 2. Sperry New Holland TR95:** (A) rotors, (B) threshing concave, (C) separating concave, (D) back beater, (E) beater grate, (F) shoe, (G) tailings return, (H) stone ejection roller.



**Figure 3. International Harvester 1460:** (A) rotor, (B) threshing concaves, (C) separating concaves, (D) back beater, (E) shoe, (F) tailings return.



**Figure 4. White 9700:** (A) feed impeller, (B) rotor, (C) threshing concaves, (D) separating concaves, (E) shoe.

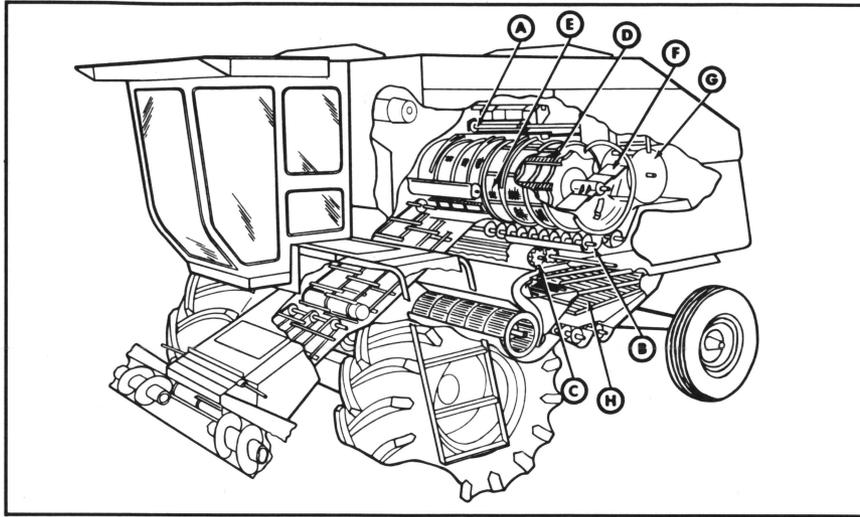


Figure 5. Allis Chalmers N6 Gleaner: (A) cage sweep, (B) distribution augers, (C) accelerator rolls, (D) rotor, (E) concave, (F) paddles, (G) impeller, (H) shoe.

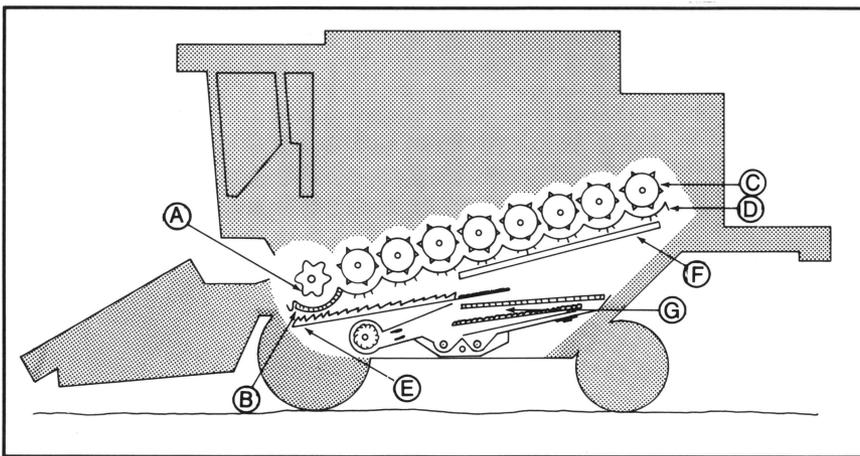


Figure 6. "Cylinder System Combine": (A) cylinder, (B) concave, (C) separator cylinder, (D) separator concave, (E) preparation pan, (F) returns pan and (G) upper and lower frog mouth sieve.

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