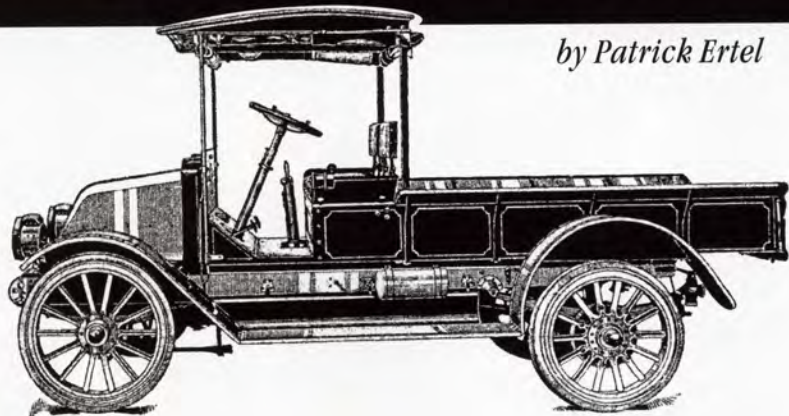


# The Duckbill Binder

by Patrick Ertel

*In 1908, International Harvester Company was the world's largest manufacturer of farm machinery, and company president, Cyrus McCormick, wanted to keep it that way.*



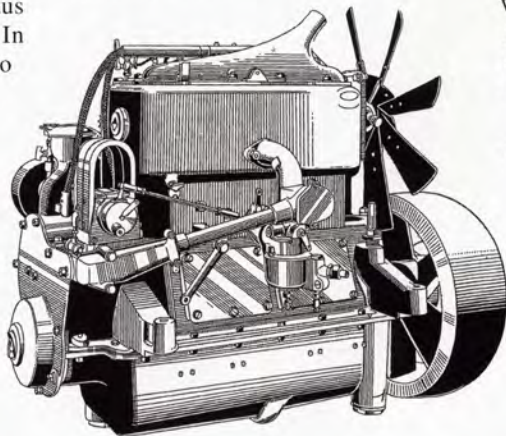
When McCormick gave chief engineer Edward Johnston permission to design and build a truck for IH, he stipulated that it serve the hauling needs of the farmer. That Johnston's AutoWagon would be a success on the farm was expected, but its popularity in other markets came as a surprise.

The truck industry had dozens of manufacturers by 1910. Most were regional operations selling assembled trucks locally. With a dealer network that covered the globe, International was quickly propelled to the status of a major truck manufacturer. In spite of McCormick's desire to focus his company on the needs of the farmer, a demand for International trucks developed in the cities.

With its high wheels and 20 mph top speed, the AutoWagon was well suited to the country, but many of them found their way into urban areas. There, truckers

acknowledged the little truck's agricultural roots by affectionately calling it a "Cornbinder" or "Binder" for short. At the same time, they demanded a more modern "Binder" from IH to help them meet the needs of non-farm trucking. International's first answer was the one-ton Model F, introduced in 1915. Then came the very similar 3/4-ton Model H, introduced a year later.

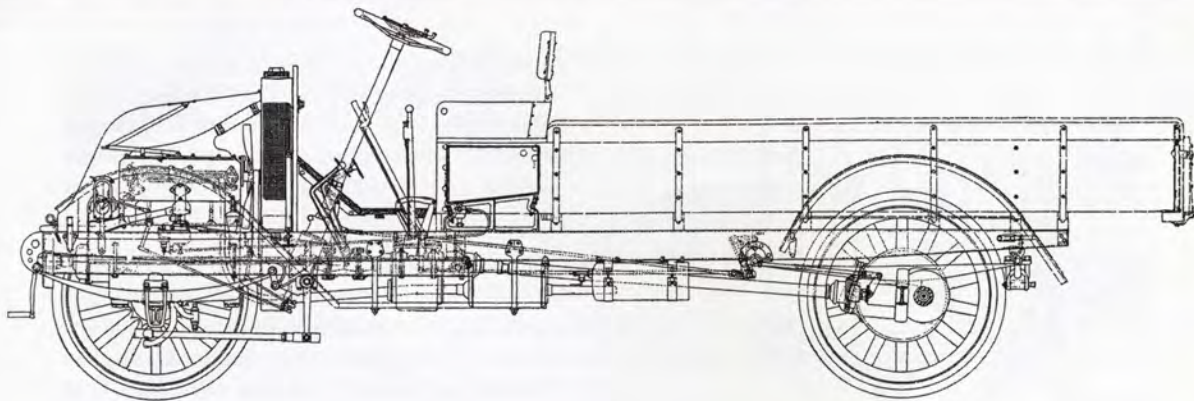
The new trucks featured a robust,



4-cylinder engine designed and built by International. It produced 19.6hp from 202ci of displacement. A leather-lined cone-type clutch connected the engine and the three-speed sliding-gear transmission. Both models had internal expanding brakes on the rear wheels only. Front suspension was by forged axle and semi-elliptic springs. At the rear, a solid beam supported by semi-elliptic springs carried the load, while the differential and driveshaft, mounted behind the beam, drove the wheels through bull-and-pinion gear sets. The new Model F cab and chassis cost \$1,500, while the Model H cost \$1,225.

With its engine mounted under the seat, the old AutoWagon was an unusual design even for 1915. The new trucks differed dramatically from the AutoWagon but managed to be peculiar in their own right. The locations of the radiator and engine were the most

# International's Interim Design



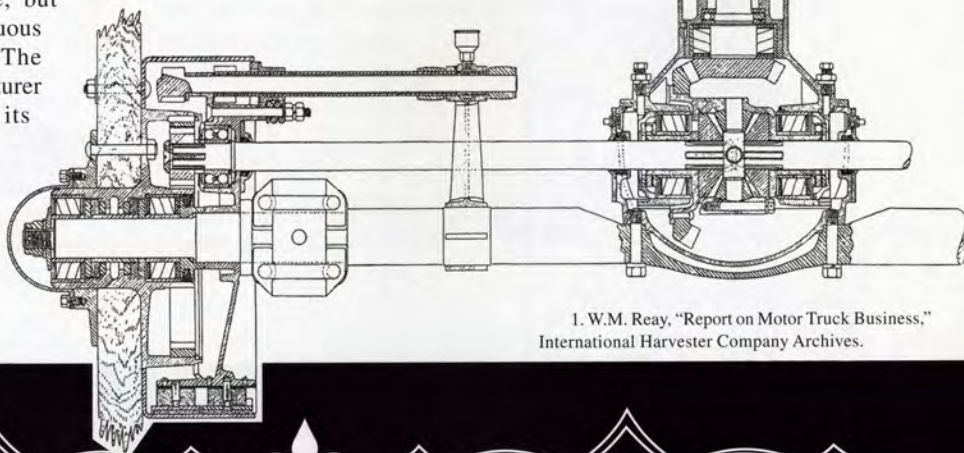
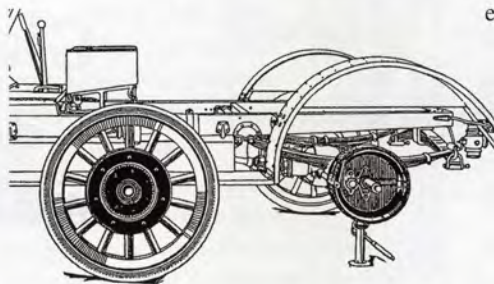
striking differences. The engine was raised and moved from under the seat to the front of the truck. The radiator was located behind the engine, just in front of the driver. This allowed for a steeply sloping hood that offered excellent forward visibility and convenient access to the engine. With engines that required daily maintenance, easy access was an important feature. International referred to this as the "Renault Style" truck. Truckers came to call it the "Duckbill Binder" because of the odd-looking hood.

The two new trucks sold reasonably well, and larger trucks were added to the line, but trucks still held an ambiguous place at International. The farm-equipment manufacturer had a good product on its hands but wasn't sure where it fit in the organization's business plan. As WW I

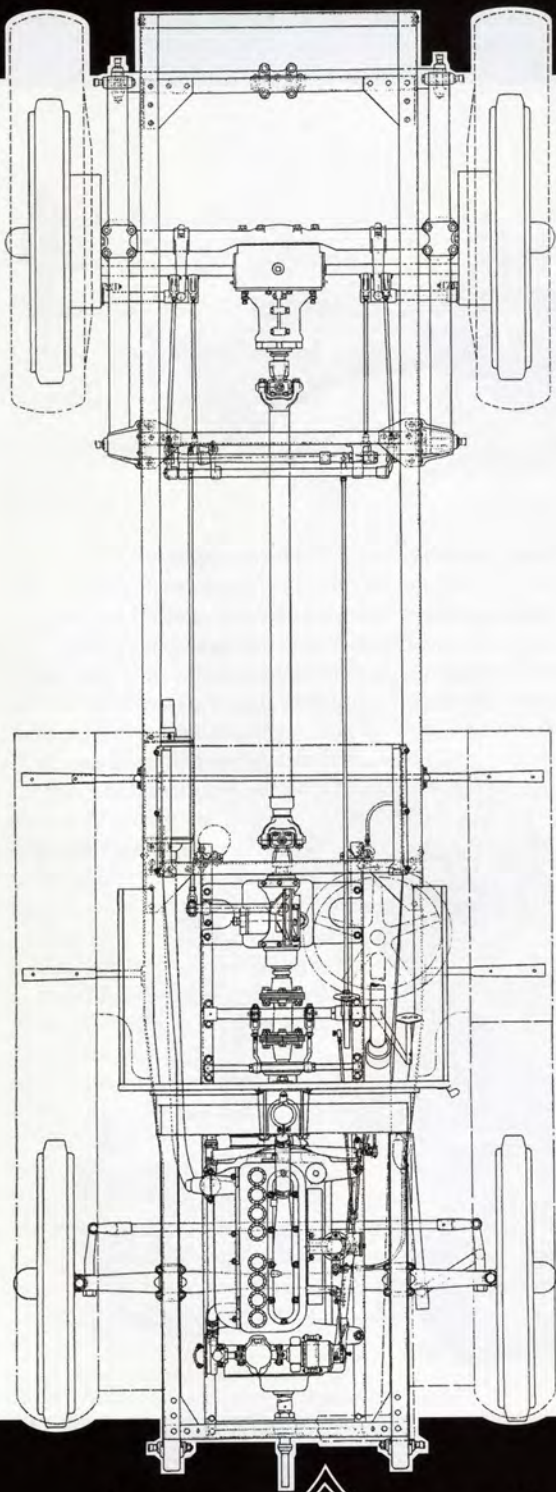
loomed, International trucks were still assembled in a makeshift plant in Akron, Ohio. In 1917, a management committee studied the truck's identity problem and concluded, "Our present relative position in the

truck field is due undoubtedly to the fact that the motor truck business has been considered more or less as a side-line. We recommend that this business be separated from the harvester lines [and be awarded] its own executive, sales, manufacturing, and experimental departments."<sup>1</sup>

General Manager  
Alexander Legge  
recognized the profit



1. W.M. Reay, "Report on Motor Truck Business,"  
International Harvester Company Archives.



potential in trucks and favored the suggestion, but with WW I raging and the Army's truck business going largely to other manufacturers, it was too late to take full advantage of wartime truck business.

After the war, Legge did, indeed, raise the status of International Harvester's truck business. One of the first orders of business was to replace the "Renault Style"-trucks with faster and even more modern Speed trucks, and then to add ever-larger trucks to the line. Manufacturing was transferred to dedicated truck plants in Springfield, Ohio, and Chatham, Ontario. With Legge's decision, Cyrus McCormick's demand that International trucks be built only with the needs of the farmer in mind was abandoned, and the funny-looking "Duckbill Binder" that had kept International in the truck business through the company's years of indecision was relegated to history. 🚚

## Clutch Brake and Silent Gear Shifting

*by Patrick Ertel*

In the days before synchromesh transmissions, shifting gears was often a noisy process. Cone clutches tended to stick, engines refused to attain the right speed, and gears were heavy and balked at being moved. A certain amount of grinding was expected from all but the most skilled drivers. International Harvester Company offered the following advice to new owners of its Model H trucks to help them shift their trucks "without much noise."

A good driver will learn to shift gears without much noise. To facilitate this a clutch brake is provided which is brought into operation when the pedal is pushed well forward. The clutch then stops very quickly. This is a help to quiet gear shifting when changing to a higher gear, but is not wanted when going from a high to a lower gear, when the clutch should be speeded up.

The ideal method of operating is to get the clutch running at the right speed before meshing the gears instead of letting the gear teeth do it by clashing. That is, get the clutch running at the same speed as the engine would in the new gear ratio that you are about to engage. This means slowing it down by using the brake when shifting to a higher gear.

Push the pedal well forward, bringing the gear lever into neutral at the same time. Wait an instant, depending upon how fast the engine is running, and it is generally well to let up on the accelerator at the same time if the

engine is running very fast. When, in your judgement, the clutch has slowed down enough, push the gear lever firmly into the desired position. The slower the engine is running the shorter the pause at neutral.

When shifting to a lower gear, the engine will run faster in the new gear and so the clutch must be speeded up or the car slowed down before meshing the new gear. Naturally the car will slow down some, but it is best to speed up the clutch, too.

In declutching for this shift, press the pedal forward only enough to release the clutch, retaining enough drag to make it follow the speed of the motor.

The accelerator pedal is naturally pressed down. Keep it there. Shift gear lever into neutral and the engine, released from its load, will speed up, carrying the clutch with it. At the right speed, push the gear lever into the desired position. On a steep hill or in mud, the shift must be made quickly, putting the gear-shifting lever into neutral as the clutch is being released.

A green operator who has never driven a car will do well to jack up the rear axle so that the wheels are free from the ground, taking care that the axle is firmly

supported. He can then go through all the operations of starting, changing gears, quick stopping, etc., until his hands and feet get used to working together without the added task of steering or danger of running into something. ■

