

RUCKSTELL AXLE

Why
you
should
have
a
Ruckstell
Axle



FOREMOST in the automotive world today stand Ford products, supported by Ford manufacturing facilities and raw material supplies. Fully half of the world's road commerce at this time is transported by Ford cars and Ford trucks.

The opinion prevails that the low prices of Ford car and truck models, are alone responsible for their world-wide use and favor. On the contrary, quality of construction and material has been as large a factor in their success as has price, while the easy accessibility of Ford repair service, though an intangible asset, has played an important part in building up Ford good-will.

The Ruckstell Axle does not conflict in any way with the essentials of the Ford car and truck. Its operation, construction and quality are identical with Ford operation, construction and quality. *Its purpose is to add further to the service value of Ford products.*

THE
RUCKSTELL AXLE

FOR
FORD CARS
AND
FORD
TRUCKS

What it
is and
what it
does

*Manufactured
and sold by*
RUCKSTELL SALES
AND
MANUFACTURING CO.

THE Ruckstell Axle is a simple, fool-proof gear shift built into the rear axle. It requires no adjustments and is lubricated with the same oil with which the rear axle is lubricated.

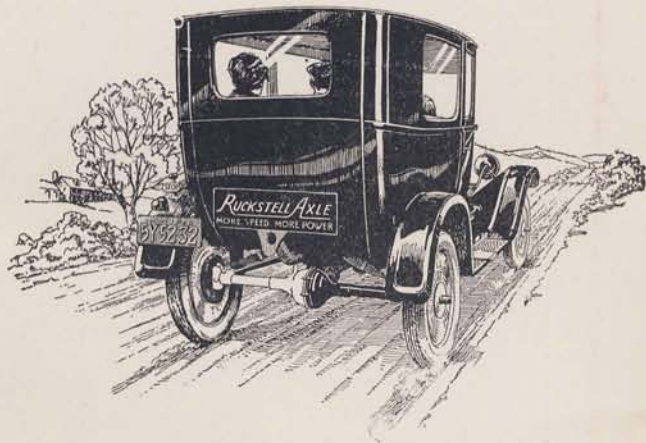
As a result of installing a Ruckstell Axle, the Ford is provided with the following six speeds:

- 1—The usual FORD HIGH (or fourth),
- 2—*Ruckstell Intermediate High* (or third),
- 3—The usual FORD LOW (or second),
- 4—*Ruckstell Emergency Low* (or first),
- 5—The usual FORD REVERSE, and
- 6—*Ruckstell Emergency Reverse*.

Thus, the usual number of speeds is doubled, giving one reduction speed lower than each corresponding Ford speed.

This total of six changes of gear provides for all the emergencies of driving generally encountered. It overcomes the difficulties of driving in heavy traffic; it furnishes the necessary additional power for hill climbing, hauling big loads and heavy going through bad roads; it improves the braking efficiency and increases the road speed.

The Ford, Ruckstell-equipped, is provided with the unique feature of TWO NOISELESS HIGH SPEEDS in the same car or truck—*Ruckstell Intermediate High* being as noiseless and smooth running as the usual FORD HIGH.



TRAFFIC DRIVING

The driver of a Ruckstell-equipped Ford can take advantage of added flexibility in traffic driving by placing the shift lever in the Ruckstell position (See figure No. 2, page 7) and operating the car in Ruckstell speeds only.

This provides the most desired advantages in traffic transportation: rapid get-away, quick and sure braking and a driving range of 2 to 20 miles per hour without the necessity of using clutch or shift lever.

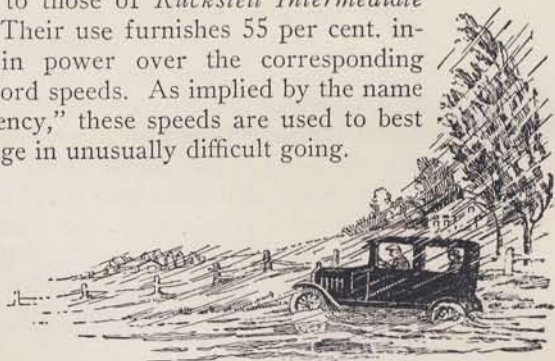
HILL CLIMBING

About 90 per cent. of all hills encountered can easily be climbed in *Ruckstell Intermediate High* (or third). Driving in this speed in place of the usual FORD LOW effects a substantial saving in time, gas, oil and wear on the motor. Also, since the necessity of holding down the foot pedal is eliminated while driving in this speed (third), the wear on the low speed band is minimized.

DRIVING ON DIFFICULT ROADS

The same advantages are gained in driving over rough or muddy roads or through heavy snow. The 55 per cent. increase in power afforded by the use of *Ruckstell Intermediate High*, proves sufficient for most difficult going without the necessity of having to drop into the usual FORD LOW.

The advantages of *Ruckstell Emergency Low* and *Ruckstell Emergency Reverse* are similar to those of *Ruckstell Intermediate High*. Their use furnishes 55 per cent. increase in power over the corresponding usual Ford speeds. As implied by the name "emergency," these speeds are used to best advantage in unusually difficult going.



INCREASE OF BRAKING EFFICIENCY

Use of Engine Compression. Fully 60 per cent. of the down grades encountered can be travelled in *Ruckstell Intermediate High* without having to use the Ford foot brake. Just as driving in Ruckstell reduction speeds adds 55 per cent. more power to the engine, so does it add 55 per cent. more resistance in the retarding of speed on down grades.

Use of Foot Brake. With the Ford foot brake located in the transmission, the retarding power of the brake band is increased 55 per cent. by the use of *Ruckstell Intermediate High*. Thus, when it becomes necessary to use the foot brake on unusually steep down grades, the braking efficiency is improved 55 per cent. In other words, less than half as much pressure is required on the foot brake when down grades are driven in *Ruckstell Intermediate High*. Therefore, eliminating the use of foot pedal on over half of the down grades encountered and increasing the efficiency of the braking mechanism 55 per cent. on very steep grades, accounts for a POSITIVE SAVING IN WEAR on brake band and brake linings.

HIGHER ROAD SPEED

The changes of speeds offered by the Ruckstell Axle have been found, by thorough investigation, to be those most universally required.

For the car owner desiring more road speed, however, a higher ratio gearing—a 3 to 1 gear—has been designed, which, though still providing direct drive on Ford high, increases the car speed by 20 per cent., and at the same time provides a lower gear than the usual FORD LOW speed.

The truck owner to whom speed is essential but who requires, at the same time, greater pulling power than the high-speed truck affords, secures this desired combination in the Ruckstell-equipped Ford truck with high-speed worm.

RUCKSTELL 3 TO 1 GEARS (Passenger Models)

When Ruckstell 3 to 1 gears are installed, the standard 11-tooth pinion and 40-tooth ring gear are replaced with the Ruckstell 13-tooth pinion and 40-tooth ring gear.

This makes possible a speed of 38 to 40 miles per hour without motor vibration, while, at the same time, sufficient power and flexibility for hill climbing, for muddy roads and for traffic driving, is still available through the use of *Ruckstell Intermediate High*.

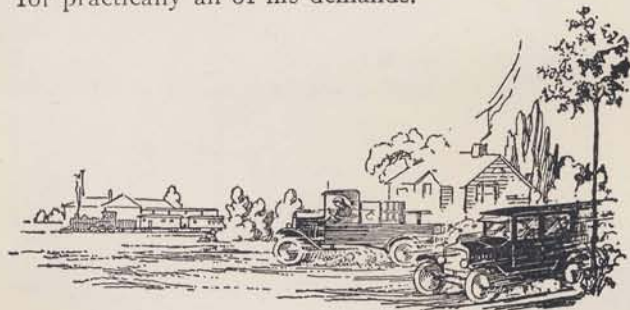
Such a combination is ideal for drivers traveling paved roads and level country, and for tourists and traveling salesmen for whom a saving in time is an important factor.

USE OF HIGH SPEED WORM (Truck Model)

As before stated, the Ford truck Ruckstell-equipped, provides *two-purpose performance*—a combination of SPEED and POWER available in *one* truck.

In the Ford truck equipped with high-speed worm and Ruckstell Axle, speed is available without sacrificing power. As will be noted from the chart on page 10, *Ruckstell Emergency Low* on the high-speed truck, is more powerful than the usual FORD LOW on the low-speed truck.

From this, it will also be noted that the truck driver who requires unusual power rather than speed, secures, in the Ruckstell-equipped low-speed truck, gearings suitable for practically all of his demands.



HOW THE RUCKSTELL AXLE OPERATES

CHANGING from Ford speeds to Ruckstell speeds is accomplished instantly by merely slipping the clutch pedal and moving the shifting lever back, with a quick snap—the quicker the better. There is no danger of stripping gears, as, unlike the usual selective type of automobile gearing, the Ruckstell gears are always in mesh. Changing can be accomplished regardless of engine speed, without injuring the gears. No matter how fast you are traveling, perfect shifting is easy. Your car is always in—

FORD SPEEDS when the LEVER is FORWARD.

RUCKSTELL SPEEDS when the LEVER is BACK.

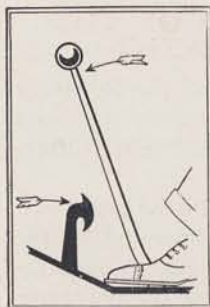


FIGURE 1

FOURTH
or the usual
FORD HIGH

(Ruckstell lever forward; Ford foot pedal released)

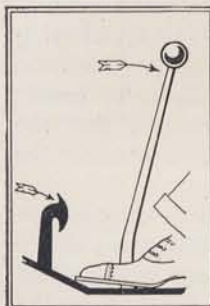


FIGURE 2

THIRD
or
Ruckstell Intermediate High

(Ruckstell lever back; Ford foot pedal released)

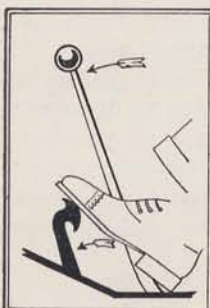


FIGURE 3

SECOND
or the usual
FORD LOW

(Ruckstell lever forward; Ford foot pedal pressed down)

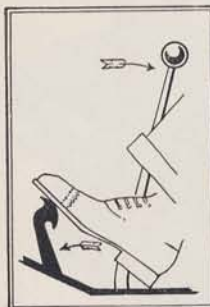


FIGURE 4

FIRST
or
Ruckstell Emergency Low

(Ruckstell lever back; Ford foot pedal pressed down)

THE MECHANICS OF THE RUCKSTELL AXLE

The Ford transmission and the Ruckstell Axle are constructed on precisely the same principle with one slight mechanical difference.

When the car or truck is driven in Ford low, the Ford brake band operated by the foot pedal, holds the Ford center gear attached to the drum, allowing the planetary gears to rotate around it.

When the car or truck is driven in Ruckstell speeds, the Ruckstell center gear is locked by a sliding spline sleeve, allowing the three Ruckstell planetary reduction gears to rotate around the Ruckstell center gear in exactly the same manner that the Ford planetary gears revolve around the Ford center gear.

This sliding spline sleeve is in constant mesh with the Ruckstell center gear, as are the three Ruckstell planetary gears which are the **ONLY MOVING PARTS** in the Ruckstell Axle. With the Ruckstell lever in the forward position and the car or truck driven in Ford speeds, these three reduction gears are locked and not in motion.

The Ruckstell Axle gearing is placed in the rear axle in such a position as to secure the greatest possible increase of power—that is, between the main bevel gear, or worm gear, and the differential (or, between the bevel gear, or worm gear, and the rear

wheels). Situated thus, the Ruckstell gearing brings about a reduction in wheel speed without a reduction in engine speed. This reduction takes place *after the power has been transmitted from the engine through the bevel gear or worm gear*, thus eliminating any possibility of loss of power through friction.

The Ruckstell Axle gearing gives then a reduction of axle speed for every Ford speed. If you are in Ford high and the shift lever is pulled back, the reduction gears at once commence to operate. The speed of the motor remains constant, but the axle speed—and in consequence, the wheel speed—is reduced, thereby giving more power.

The same applies in Ford low, or in Ford reverse. Each time the lever is pulled back, a reduction of wheel speed takes place. Each time it is pushed forward, the Ruckstell gears cease to operate, and the car runs as in Standard Ford Speed.

The Ruckstell Axle when in operation is noiseless. There is no danger of clashing gears when changing, as the gears are always in mesh. Each part of the Ruckstell Axle is built with the greatest possible precision. The life of the axle is such that if desired, it can be taken from an old car and installed in a new. The road clearance remains unchanged and the added axle weight is but a few pounds.

RUCKSTELL
UNIT
IN LOCKED
POSITION
WITH
RUCKSTELL
LEVER
FORWARD

See Figures
Nos. 1 and 3

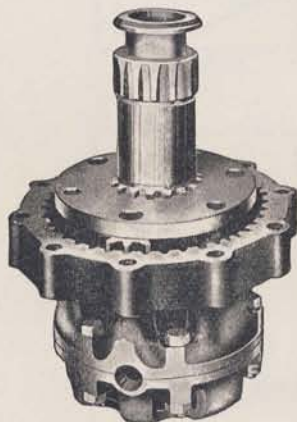


FIGURE 5

RUCKSTELL
UNIT
IN UNLOCKED
POSITION
WITH
RUCKSTELL
LEVER BACK

See Figures
Nos. 2 and 4

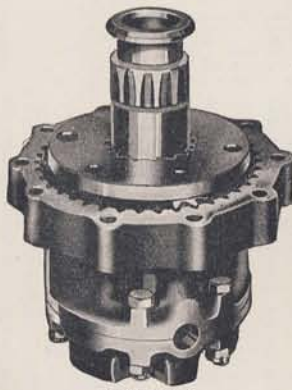


FIGURE 6

TABLE OF RATIOS

Passenger Car Speed Ratios with Ruckstell Axle

<i>High-Speed Gearing</i>		No. Wheel Revolutions
No. Engine Revolutions	To	Revolutions
3	—	1
4.7	—	1
8.5	—	1
13	—	1
12.30	—	1
19	—	1

<i>Standard Gearing</i>		No. Wheel Revolutions
No. Engine Revolutions	To	Revolutions
3.63	—	1
5.59	—	1
10	—	1
15.40	—	1
14.50	—	1
22.30	—	1

The Usual FORD HIGH
Ruckstell Intermediate High
 The Usual FORD LOW
Ruckstell Emergency Low
 The Usual FORD REVERSE
Ruckstell Emergency Reverse

Truck Speed Ratios with Ruckstell Axle

<i>With High-Speed Worm</i>		No. Wheel Revolutions
No. Engine Revolutions	To	Revolutions
5.16	—	1
8.25	—	1
14.20	—	1
22.7	—	1
20.60	—	1
32.9	—	1

<i>With Low-Speed Worm</i>		No. Wheel Revolutions
No. Engine Revolutions	To	Revolutions
7.25	—	1
11.6	—	1
19.95	—	1
31.92	—	1
29	—	1
46.4	—	1

The Usual FORD HIGH
Ruckstell Intermediate High
 The Usual FORD LOW
Ruckstell Emergency Low
 The Usual FORD REVERSE
Ruckstell Emergency Reverse

March 10th, 1925.

ROEFLEET AND TURFF
 FORD DEALERS
 LEED SUMMIT, MO.

Gentlemen:-

Over a year ago, you put in three Ruckstell Axles for me, in my Ford ton trucks, and put in high speed gears.

As it is now over a year and I have had an opportunity to check up on these Axles, here is what I have found.

My repairs on the Three Ford Ton Trucks for the three worst months of the year, namely December 1924 and January and February 1925, totalled \$60.00. These figures are for repairs only.

A year before, over the same period of the year, the same three months, with three trucks of the same age, over the same roads, with conditions as nearly alike as possible, the repair bills only, were, \$200.00. Note the saving.

I could not possibly make these routes without the Ruckstell Axles, even with a low gear, as my loads are heavy and the mud bad, and then reach Kansas City with my milk in the 2 hour limit as provided by the Kansas City Board of Health. The high speed gears allow me to make the speed on the good road and the Ruckstells pull the mud and the load.

What more could any one ask? If you have any skeptics, send them to me.

Sincerely yours

James T. Smith

Greeneport, Mo.

CITY LAUNDRY COMPANY



Specialists in
FINE LAUNDERING
 98 LENOX ST
 BOSTON, MASS.

Boston, Mass., Aug. 29, 1925.

H. E. Implement Co.,
 Boston,
 Mass.

Gentlemen:

We are using Ruckstell Rear Axles on ton, and half ton trucks. We find them very satisfactory for heavy work especially in the winter time and are able to haul our loads over relatively steep grades on high gear, whereas in the past we were compelled to use the low speed gear. We also find that they have an excellent braking effect in going down hill and reduce the wear on our bands and brakes.

We would be pleased to recommend them to anybody who desires to get the most out of every Ford truck.

Yours very truly,

CITY LAUNDRY CO.

BED/M

B. E. Deane Mgr.

PATRONS ARE INVITED TO INSPECT OUR PLANT AND ALL PHASES OF WORK

IN BRIEF

The Ruckstell Axle is a simple, easily operated gear shift which necessitates no additional care nor expense. On the contrary, its use has been found to assist in more economical operation as it effects a substantial saving in gas, oil and wear on brake and transmission bands.

The Ruckstell-equipped Ford is provided with a total of SIX speed changes: *four forward*, including TWO NOISELESS HIGH SPEEDS, and *two reverse*. **HIGHER PRICED CARS HAVE ONLY THREE FORWARD AND ONE REVERSE.**

When in operation, the Ruckstell Axle increases the power of each higher corresponding Ford speed by 55 per cent. It also improves the braking efficiency 55 per cent.

Higher road speed is possible in the Ford car Ruckstell-equipped with 3 to 1 gears. A combination of SPEED and POWER is available in ONE TRUCK by installing the Ruckstell Axle in the high-speed Ford truck.

The Ruckstell speed change is made instantly and noiselessly regardless of car or engine speed. As Ruckstell gears are in constant mesh, clashing or stripping is impossible. Ford driving operation is not complicated by the addition of the Ruckstell Axle.

The principle of Ruckstell Axle design is in harmony with Ford construction. No Ford parts are damaged by its installation, and the usual Ford guarantee remains unchanged.

When the Ruckstell-equipped Ford is driven in the usual Ford speeds, the Ruckstell planetary gears are locked and neither moving nor wearing. When driven in Ruckstell speeds, the three Ruckstell planetary gears are the ONLY MOVING PARTS of the Ruckstell Axle.

THE RUCKSTELL AXLE IS AN INVESTMENT—NOT AN EXPENSE!

SIX-CYLINDER PERFORMANCE

THE **RUCKSTELL AXLE**

is sold exclusively

BY

**AUTHORIZED
FORD DEALERS**

ALSO

**AUTHORIZED
FORD SERVICE STATIONS**



RUCKSTELL SALES & MFG. CO.

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Corporate Office

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Branch Offices

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DENVER, COLO.

KANSAS CITY, MO.

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MONTREAL, QUE.

In Europe

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