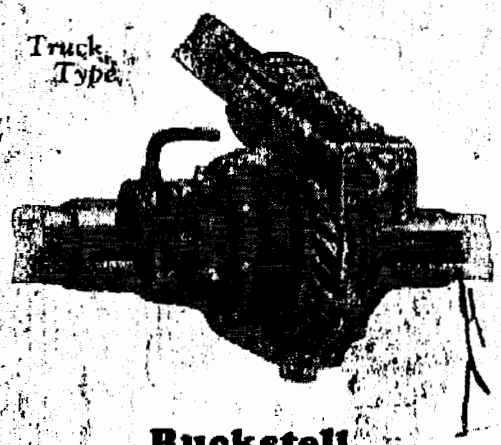
Truck Type



Ruckstell
Sales & Manufacturing Co.

Berkeley, Cal. — *San Francisco, Cal.*
Denver, Col. — *Los Angeles, Cal.*
Kansas City, Mo. — *New York, N.Y.*

Hall-Scott Motor Car Co., Inc.

San Francisco, Cal. — *Buffalo, N.Y.*

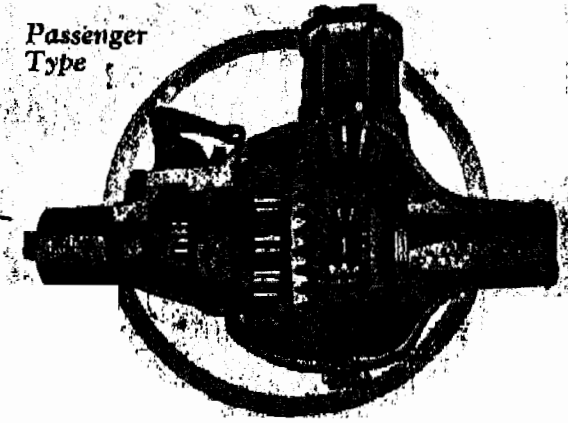
Authorized Distributors of Ruckstell Axles are located in all Ford Branch Cities.

In Canada:
Ruckstell Axle Co., Ltd.
Montreal and Toronto

In Europe:
Continental Ruckstell Sales
Amsterdam, Holland

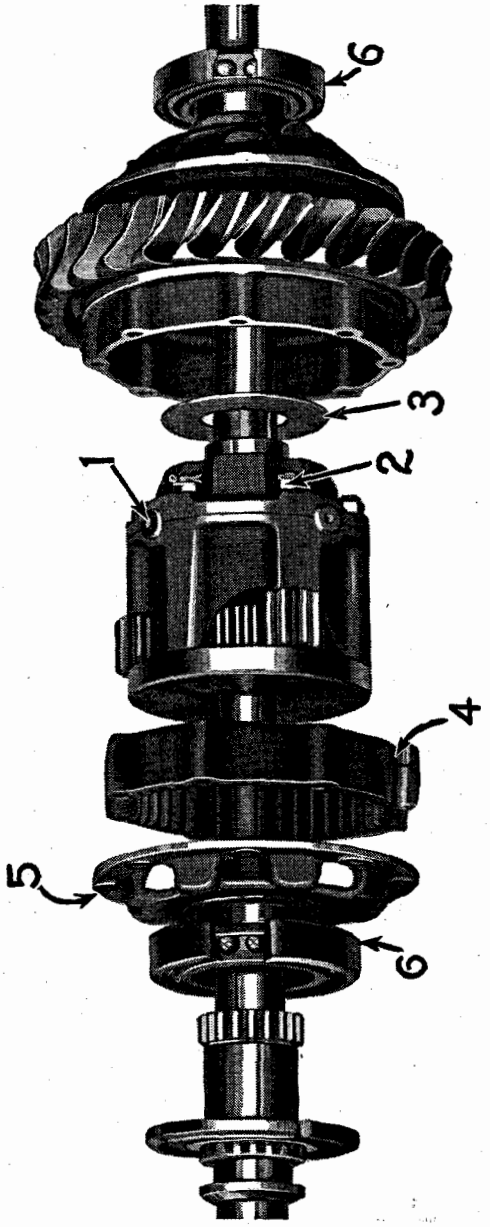
RUCKSTELL MANUAL FOR SALESMEN

Passenger Type



RUCKSTELL AXLE

Ruckstell Truck Axle Assembly



Foreword

The purpose of this manual is to furnish information, in condensed form, on the RUCKSTELL AXLE and its sales field in connection with Ford cars and Ford trucks.

We are standardizing on this manual because it forms a handy ready reference booklet that is easy to memorize. Its contents should be the basis of every salesman's knowledge of the subject.

Ruckstell Sales & Mfg. Company

Sales Slogans

(a) "To sell more Ford cars and trucks"
(b) "Additional power properly applied"

Chapter One

Mechanical Construction and Operation

KNOW the mechanical construction of the Ruckstell Axle and how it works. Remember, people will question you on this, *so be prepared.* Study a cutaway model—watch an assembly made in a Ford shop so that you may be able to explain the unit and its working in the simplest possible terms, as follows:

"The Ruckstell Axle is a planetary gear reduction like the Ford transmission and Ford steering gear. This unit is built up as a part of a new differential case and as such becomes a connecting link between the ring gear and the differential case—*a connecting link that is a gear reduction in a place where no such reduction has ever been possible before.*"

THE RUCKSTELL UNIT can do TWO things—*lock* or *unlock.*

In the *locked* position it is inoperative and the differential case and the ring gear turn revolution for revolution just as in the standard Ford assembly.

In the *unlocked* position it is operative, with the result that the differential case takes the reduction of the planetary and slows down 50%. And so, in the unlocked position we have a reduction functioning *back* of the ring gear, something absolutely new in automotive mechanics.

From the foregoing it can be seen that we have doubled the gear ratios of the Ford. We have our regular high, low, and reverse, when the shift lever is in the forward position with the Ruckstell unit *locked;* and, a 50% reduction working with high, low, or reverse, when the shift lever is in the back position and the Ruckstell unit is *unlocked* and operating.

Study the explanation you have just read and check it point for point with the cutaway.

Chapter Two

What It Means to Say "Ruckstell is Planetary"

Stress the fact that the Ruckstell Axle is of planetary construction—an exact duplication on a larger scale of the Ford steering gear. Call attention to the fact that the *Ford Transmission is planetary.*

All salesmen should realize the important part that the Ford planetary transmission has played in Ford construction, and that it has been practically unchanged since 1908. In that year, Ford Motor Company engineers designed the famous Model T. They laid out the principal units of its construction with the idea that it was to be a permanent model—one on which they were going to get into larger and larger production as the years went by. That light car was a success from the very start in the hands of people all over the world. All through the years that followed 1908, production was constantly increased until it has reached the enormous volume that stands today. *The same principal features of design remain just as they were originally laid down in 1908*: unit power plant, three point suspension, detachable head, flywheel magneto, dual ignition, thermo syphon cooling, two-point spring suspension, enclosed universal joint, torque tube, planetary steering gear and planetary transmission. These features and these units have been a success—*they have made the biggest automobile business the world has ever seen.*

We are principally interested in one of these units—the planetary transmission. We know that it has been a success mainly for three reasons:

1—It is shock-proof.
2—It is fool-proof.
3—It is simplicity itself in operation.

We claim that of the principal units in Ford construction today, the *planetary transmission* has contributed more largely to the success of the car as a whole than any other unit. The Ford selling organizations know these facts and they talk and sell the Ford planetary transmission as one of the important features of the car. On the strength of this we make the point that if any supplementary speed device is to be used in connection with the Ford planetary transmission, this device *should also be planetary in form* and thus *in accord with Ford principle and Ford selling talk.*

An understanding of these facts definitely separates the Ruckstell from all other supplementary speed devices for the Ford car or truck. The Ruckstell is the *only planetary* unit, therefore it is clearly in a class by itself in this field.

Chapter Three

The Exclusive Ruckstell Features

In Chapter One we called attention to the fact that the Ruckstell unit was the connecting link between the ring gear and the differential case, and that it provided an independent reduction *back* of the ring gear. This brings us to a statement that is fundamental and upon which we are going to build up the features of Ruckstell performance. THE RUCKSTELL AXLE IS THE ONLY MANUALLY CONTROLLED REDUCTION BACK OF THE RING GEAR THAT HAS EVER BEEN DESIGNED FOR THE AUTOMOBILE.

Being back of the ring gear with parts moving at axle speed or less, there are a number of remarkable features in its performance and operation—new and startling.

Memorize These Four Features

(1) The Fool-proof Shift

The Ruckstell unit gives, for the first time with present day automobiles, an absolutely *fool-proof shift*. By this we mean that no matter what the speed of the car or engine, the shift is accomplished at anytime *instantly* and *noislessly*—clashing is impossible.

This is a very important feature since we can truthfully say that the addition of the Ruckstell unit has not complicated the simple Ford operation. The driver has *nothing new to learn* and the less he knows about sliding gear transmissions, the better.

(2) A Noiseless, Fast, Intermediate

For the first time in automobiles of the present day, we have with the Ruckstell unit a perfectly quiet intermediate—just as quiet in fact as Ford high—and so we really have *two quiet high gears*. This is a splendid selling feature, particularly with the passenger car models, for we have, besides the only light four speed automobile, a car with ratios so spaced as to give a quiet intermediate gear for *performance* from three to twenty-five miles per hour.

(3) Perfect Safety—No Positive Neutral

The Ruckstell unit *does not have a positive neutral* position. By this we mean that, at no time can the shift lever be placed in such a position that it cannot instantly be put into gear, one way or the other.

This is a very important feature, because the Ford driver depends largely upon the service brake in the transmission.

Any supplementary speed device back of the transmission having a positive neutral will, if it gets into this neutral, render the Ford service brake useless. Safety is one of the valuable features of the Ford transmission. The Ruckstell unit maintains this *safety 100%*, and adds 50% to the braking efficiency when the service brake is used with the Ruckstell reduction.

(4) No harder on Ford driving parts

The importance of this feature can be readily understood because we know that all Ford parts back of the Ford transmission are built to take the strains of the standard low speed and reverse reduction ratios. If the Ruckstell unit was cut into the drive shaft, the added leverage of the lower reductions that it gives would put additional strains on certain Ford parts, such as the drive shaft splines or keys, gear teeth, thrust bearing, etc., that these parts were not originally designed to take.

BUT we have seen that the Ruckstell reduction is *back* of the ring gear where *only the axle shafts have to take the slight additional strains.*

Feature number 4 is probably the most important of all. It puts the Ruckstell unit definitely in a class by itself as a supplementary speed device for the Ford car or truck. An appreciation of the foregoing four Ruckstell features gives us an understanding of the important points concerning principle, strength, wearing qualities, and performance that carry the Ruckstell Axle far beyond any of the so-called supplementary sliding gear transmissions.

We have the new way and the right way of giving
"Additional Power Properly Applied."

Chapter Four

Two-Purpose Performance

The Ford dealer is interested in increasing Ford sales. We can show that the Ruckstell Axle will do it. The whole thing is summed up in the phrase, "Two-Purpose-Performance."

Make it plain that the shift lever has TWO POSITIONS only—forward and back, and that the possibilities of performance of car or truck change with the movement of the lever.

FORWARD POSITION—the Ruckstell unit is *locked* and the regular ratios in high, low and reverse are unchanged. We have a speedy and economical car or truck for road work.

BACK POSITION—the Ruckstell unit is *unlocked* and lower ratios in high, low, and reverse are obtained. We have a powerful pulling car or truck, strong on hills or bad roads, and flexible in traffic.

"Two-Purpose-Performance" is the key to all Ruckstell "sales helps" and in the following chapter we have classified these "helps" in such a way that the salesman may have something definite to talk about.

Chapter Five

Ruckstell Axle Helps Ford Sales

1st Class—As an "Interest Getter"—An Appeal for Attention

Used from this angle it gives the Ford salesman an additional leverage to get the prospect's attention directed to the car or truck with the new features of "four speeds forward"—"two-purpose-performance." You can create interest by a few initial statements as to what the axle will do. This will be the means of getting the prospect to agree to a demonstration where he might not have been otherwise interested.

The appeal for attention based on the performance features of the "two-purpose" car or truck *must be followed up with a demonstration.* It is the demonstration that makes the prospect *want*—and it is *wanting* that makes him buy.

2nd Class—To Satisfy the "Hard to Please" Owner

Many present owners of Ford cars and trucks consistently overload them. Used in this second class the Ruckstell Axle provides the means of satisfying the customer even though his loads and the nature of his work constitute unreasonable conditions.

In this class is the man with the truck who expects to start excessive loads in muddy roads, soft fields, or gravel pits, and to pull in high gear under impossible conditions.

In this class is the man who puts a heavy panel body on a Model T chassis to be heavily loaded, and with standard touring gears expects touring car performance.

In this class is the man with a sedan who puts in his car, besides a full load of passengers, a heavy camping equipment or perhaps pulls a trailer and sets out for a trip to the mountains.

In this class is the owner, often a woman, who uses the car continually in congested traffic and expects high gear flexibility that is impossible with any four-cylinder car.

These are only a few examples of the possibilities in this class. Ruckstell performance will go a long way toward meeting all special and difficult requirements.

3rd Class—Meeting Light Car Competition

There is certain competition in the light car field fairly near to the Ford price, and the salesman who does not recognize it, is deliberately closing his eyes to a fact that concerns him vitally. Competitors in their sales talk and their advertising are claiming two things in comparisons between their car and the Ford, namely—"additional equipment" and "superior performance." BUT salesmen who "know the Ford," particularly those who also "know the Ruckstell" welcome this kind of competitive propaganda, especially if it is a matter of performance. FOR—our four-speed sedan will out-demonstrate theirs in every particular, except for extreme speed, where standard gears are used. Where additional speed is desired with the lighter models we recommend our special chrome vanadium 3-1 high speed gears (pinion and ring gear 13-40 teeth.) This combination with the Ruckstell Axle has everything for any kind of a competitive demonstration—*no reservations at all.*

In this third class of sales help we are dealing with prospects, many of whom have listened to competitors' talk on three-speed transmission performance.

Meet Three-Speed Competition With a Four-Speed Demonstration

The Ford dealer wants to make every possible sale—he doesn't want to lose a single one, so the chance to help sales in this class is very great—*remember that.*

4th Class—Selling Against Much Higher Priced Cars and Trucks

The opportunities of selling the Ford car or truck in competition with cars and trucks costing many hundreds of dollars more are unlimited—*if you show them "two-purpose-performance."* Here are two examples—

PASSENGER CAR EXAMPLE:

A well known manufacturer builds a car that averages to cost, on all body types, between five and six hundred dollars more than the Ford. Yet—the Ford sedan, Ruckstell equipped, with five people, will *duplicate every detail of this sedan's* performance, except for extreme speed. In real heavy pulling the Ford *will beat it.*

"The Same Performance for One-half the Price"

That is what we mean by extending the sales field for Ford passenger cars. *Don't forget* that the increased confidence that Ruckstell performance gives a Ford salesman, will help him to go out and sell in this field.

TRUCK EXAMPLE:

The same manufacturer referred to above builds a one-ton truck that sells for more than fifteen hundred dollars. Two other large manufacturers of like capacity trucks are in this same price range. The Ford truck, with Ruckstell Axle, sells

complete with body for less than one-half this price. It will take the same load and do everything that these other trucks will do.

"Same Performance for Less than One-half the Price"

Everybody knows that the Ford truck has never had any competition as far as price is concerned. It is supreme in the light truck field. 80% of all the light trucks used today are Fords, and this can be made 90% as easily as not. All we need is just an additional 10% of new business, and some of the other fellows' business in the higher priced trucks. When we get the 90% there is still room to go. *Tell them that.*

Demonstrate!!

The basis of all sales of Ruckstell Equipped Ford cars and trucks is *actual demonstration.* A good demonstration can only be given by efficient equipment properly handled. Therefore, keep your car or truck "tuned-up" to maximum performance. Perfect yourself in driving—you will continually find new advantages of the Ruckstell Axle and be able to talk more convincingly in your work with Ford dealers and prospects. Keep your car spick and span—a sloppy car has lost many sales.

Chapter Six

Truck Facts

With the high speed worm and Ruckstell equipment we have *both* the high and low speed trucks *in one*, and even better. This truck is ideal for road work, and for heavier pulling has *more* power than the standard low speed truck.

With the low speed worm and Ruckstell equipment we have *in one truck both* the *standard* truck and *another* truck geared half again as low. Such a truck is ideal for extra heavy loads, tank wagons, trailer work, etc.

(Study gear ratios on page 18 and know what we mean by "two trucks in one.")

Put on Real Demonstrations

Get a Ford truck, Ruckstell equipped, *on* the job for the prospect and haul his loads for him. Get your ton mileage cost and then let him be the judge.

(Have your truck in good shape and see that the driver understands Ruckstell operation.)

Ruckstell Hauling Reports

To help you in this important work of hauling demonstrations, we have printed on pages 14 and 15 a complete report in a form that will show you just what data is needed on any hauling test. This particular report is bonafide and you will note that it shows the results of the test itself figured down to a mileage cost basis. It also gives complete data on cost of Ford equipment, maintenance, depreciation, etc., compared with more expensive equipment.

Use this same form yourself and get up your own reports. Have them certified by the parties interested and send a copy to our factory office. They make wonderful sales ammunition for us all.

Photographs of all interesting installations, with data attached, will be useful to you and copies will be greatly appreciated by us.

(Every man indirectly engaged in selling Ford products should have a camera and know how to use it.)

Chapter Seven

Relative Merits of the Ruckstell Two-Speed Axle and All Sliding Gear Transmissions

The expression "supplementary speed device" as applied to the Ford car or truck covers all units designed either to supplement or replace the Ford transmission and furnish extra gear ratios. All supplementary speed devices fall into two classes; first, the Ruckstell Two-Speed Axle, which, as we have seen in the foregoing pages, is by its design in a class by itself. Second, the so-called supplementary sliding gear transmissions, of which at the present time there are at least a dozen on the market —all practically alike in construction.

These sliding gear transmissions have practically the same undesirable features when incorporated in the Ford car or truck. These are as follows:

(1) Being of sliding gear design they are at odds with the fundamental Ford transmission principle, which is *planetary*. Their use with the Ford car or truck certainly weakens the dealers' sales talk, as it amounts to an admission that the planetray principle is not right.

RUCKSTELL IS PLANETARY AND KEEPS THE FORD A PLANETARY CAR OR TRUCK THROUGHOUT.

(2) All sliding gear transmissions should have a perfectly free releasing clutch to make them operate satisfactorily. The Ford high speed clutch is not free releasing and never was designed to be used with a sliding gear transmission. This seriously complicates Ford operation.

RUCKSTELL SHIFT IS MADE INSTANTLY AND NOISELESSLY AND DOES NOT COMPLICATE FORD OPERATION.

(3) Sliding gear transmissions have a positive neutral, which means that they can be gotten out of gear, when the car or truck is running, by any pressure on the shift lever or by "missing" the shift. Once in this neutral position, if the vehicle has any road speed, remeshing of the transmission gears is almost impossible, and the Ford foot brake is useless. The cases where this has happened with a loaded Ford truck, particularly on hills, are very numerous, and many serious and fatal accidents have been the result.

RUCKSTELL CANNOT SLIP OUT OF GEAR AND THE SHIFT CANNOT BE "MISSED." RUCKSTELL INSTALLATION DOES NOT NECESSITATE EXTRA REAR WHEEL BRAKES.

(4) Sliding gear transmissions installed behind the Ford transmission, add about forty-five pounds of unsupported weight in a place where no such weight was ever intended to be placed. That this extra weight tends to rack the chassis and the unit power plant suspension, goes without saying.

RUCKSTELL ADDS ONLY A FEW POUNDS OF FULLY SUPPORTED WEIGHT, BUILT IN.

(5) Sliding gear transmissions require the cutting and mutilating of one or more important Ford parts—torque tube, drive shaft, and radius rods. The transmission is "added on."

RUCKSTELL DOES NOT MUTILATE FORD PARTS —AND IS BUILT IN.

(6) Transmissions are noisy in both over or under drive and with wear become more so. For this reason alone they are not suited for use on Ford passenger cars.

RUCKSTELL IS NOISELESS AT ALL TIMES.

(7) Transmissions, in their lower reductions, put additional strain on many Ford parts not designed to take it. In the truck, the drive shaft, spline sleeve, and thrust bearing generally are first to show the effects of these added strains.

RUCKSTELL, WITH ITS REDUCTION BACK OF THE RING GEAR, PUTS THE SLIGHT ADDED STRAIN ON THE AXLE SHAFTS ONLY.

(8) Transmissions have two shafts and sets of gears running and wearing at high speed. In operation they continue to get noisier.

RUCKSTELL PLANETARY GEARS ARE LOCKED AND NOT MOVING OR WEARING 90% OF THE TIME. WHEN UNLOCKED THEY ARE TURNING AT AXLE SPEED OR LESS.

(9) Some transmissions having an over drive, as well as an under drive, claim the advantage of gear ratios lower than the Ruckstell. These "paper" gear ratios are very misleading and far from giving the full actual effect of the figures. In starting a load through a worm gear, the tooth pressure is very great and the friction resulting from this mounts up rapidly as the load and leverage are increased. Here the power losses, chargeable to this ever-increasing friction, are enormous, and the actual power of these lower reductions is greatly reduced. A considerable proportion then of this lower "paper" ratio must be written off against friction.

RUCKSTELL REDUCTION BACK OF THE RING GEAR DOES NOT INCREASE TOOTH PRESSURE ON THE WORM. The additional leverage is applied on the outside of a circle 7½ inches in diameter around the differential case itself. This adds leverage, without friction, close to the wheels where the work is being done. The full effect of the gear reduction is obtained—55% to 60% more power.

(10) Occasionally the claim is made that a transmission "over drive" can be used with a high speed worm in a truck. This gives a ratio of about 3½-1 and the conditions under which such a ratio can be used are so limited as to be unworthy of consideration. "40-mile-an-hour" talk does not come from any real Ford truck salesman. He knows that it will harm the Ford truck business.

The Ford truck with the High Speed Worm and *Ruckstell* equipment gives all the road speed that the engine and chassis were designed for.

In the last analysis, and aside from all comparisons, isn't it a fact that the salesman who puts out a Ford truck with a sliding gear transmission is deliberately *converting the planetary operator into a sliding gear operator?* Aren't there thousands of Ford owners, who buy year after year, whose families and employees know only the Ford planetary operation, and to whom the sliding gear transmission is a doubtful proposition?

All other makes of light cars and trucks have sliding gear transmissions—why take this class of customer then, and sell him and teach him the competitors' "stuff?" *It is all wrong.*

Read the First Seven Chapters again and again and memorize the outline.

Demonstrate!!

The basis of all sales of Ruckstell Equipped Ford cars and trucks is *actual demonstration.* A good demonstration can only be given by efficient equipment properly handled. Therefore, keep your car or truck "tuned-up" to maximum performance. Perfect yourself in driving—you will continually find new advantages of the Ruckstell Axle and be able to talk more convincingly in your work with Ford dealers and prospects. Keep your car spick and span—a sloppy car has lost many sales.

Sample Hauling Report

Ruckstell Equipped Ford

H. D. Lee Mercantile Company
Kansas City, Missouri

(Made under average working conditions)

	Trip	Tonnage	Trip Time	Stops	Mileage	Gas	Oil
	1	4500	3:10	23	27		
	2	4500	2:18	19	19.8		
	3	4500	1:18	8	19.3	5-gal.	0
1st day	3	13500	6:46	50	66.1	5	
	1	5000	1:06	1	2.1		
	2	4000	1:36	15	12.1		
	3	3500	:59	10	9.1		
	4	3000	1:12	7	9.		
	5	4000	:53	13	14.1	5-gal.	1-qt
2nd day	5	19500	6:26	46	46.4	5	1
	1	4000	2:12	15	8.6		
	2	4000	:59	6	4.6		
	3	4000	2:08	15	13.4		
	4	4700	1:17	7	4.6	5-gal.	
3rd day	4	16700	6:36	43	31.2	5	
	1	4000	1:34	19	6.3		
	2	5500	3:00	18	24.3		
	3	5000	:30	1	2.2		
	4	5000	:40	1	2.2	5-gal.	
	5	2000	:50	4	0.3		
4th day	5	21500	6:34	43	44.3	5	
	1	5000	2:10	17	10.4	3-gal.	
	2	4000	1:50	11	7.7		3-gal gasoline to fill tank — no oil needed.
5th day (½ day)	2	9000	4:00	28	18.1	3	
Total:	19	80200	30:22	210	206.1	23-ga.	1 qt.

SUMMARY

Gas Consumed—Oil—Total Cost

Gas Consumed, 23 Gal. @ 21c	$4.83
Oil Consumed, 1-Qt. @ 25c	.25
Total cost Gas & Oil—(4½ days)	$5.08
Total cost Gas & Oil—1 day	$1.13
Total mileage	206.1
Total tonnage	40.1
Average tons per day	8.9
Total number trips	19
Average load per trip	2.1 tons
Average miles per day	46
Average miles per trip	10.8
Average miles per year (280 days)	12,880
Miles per gallon of gas	4
Cost of gas and oil per mile	.029

Sample Hauling Report

(Continued)

Comparative Cost Sheet

(Based on 12,800 miles)

FIXED EXPENSE	FORD TRUCK	TWO TON TRUCK
Initial Investment	$800.00	$3700.00
Interest	48.00	222.00
Depreciation—50%	400.00	740.00 (Depreciation 20%)
Insurance	118.20	210.90
Upkeep and repairs	110.00	230.00 (1 overhaul and repairs)
Tires—1 set	67.00	135.00
TOTAL FIXED	$743.20	$1537.90
Gas and oil (12,800 miles)	$307.20	$614.40
TOTAL YEARLY COST	$1050.40	$2152.30

Saving $1101.90 Per Year

Note: (Depreciation on Ford truck is figured at 50%—replacing chassis each year. Heavy truck depreciation 20%, figuring on five years use.)

Cost per Mile (exclusive of driver)

	FORD TRUCK	TWO TON TRUCK
Interest	.004	.017
Depreciation	.031	.06
Insurance	.009	.016
Repairs	.009	.018
Tires	.005	.01
Gas and oil	.024	.049
	.082	.170
Cost per day, exclusive of driver, (280 days)	$3.72	$7.69
Yearly tonnage (280 days)	2492 tons	2492 tons
Cost per ton	42c	86c

Yearly Saving, per truck . . . . $ 1,101.90
" " Fleet 14 Trucks . . 15,426.60

Chapter Eight

Study the following questions in relation to the information given in this manual—then write down your own answers. Every salesman selling Ruckstell Axles should be able to answer each question:

1.—What is the Ruckstell Axle?
2.—What is meant by planetary?
3.—How many moving parts does it have?
4.—How does it differ from a sliding gear transmission?
5.—Which of these two principles is in harmony with Ford design?
6.—Does the auxiliary sliding gear transmission change the principle of Ford construction in any way?
7.—Why has the Ford Motor Company continued to standardize on the planetary principle of transmission?
8.—What is the purpose of the Ruckstell Axle?
9.—Is the Ruckstell Axle sold exclusively through Ford dealers and why?
10.—What do you consider the best way to sell two-purpose-performance?
11.—Whom do you consider good prospects for Ruckstell equipped Fords?
12.—What are the four exclusive Ruckstell features?
13.—Where does the Ruckstell reduction take place?
14.—Will the Axle give the Ford car more speed?
15.—When do you recommend the use of three to one gears for passenger cars?
16.—Why is there no friction in the additional power you claim by the use of the Axle?
17. Why is there considerable loss of power with all types of sliding gear transmissions when used on Ford trucks?
18. What Ford driving parts get a slight additional strain when used with the Ruckstell Axle?
19. What Ford driving parts get serious additional strain when used with a supplementary sliding gear transmission?
20.—Why do we make a two-speed axle for the Ford passenger car as well as the truck?
21.—Is there any reason for installing a Ruckstell Axle in a car to be used in level country over good roads?
22.—How will the Axle be of particular advantage in mountainous country?
23.—What can you say about the ball thrust bearing in the passenger car Axle?
24.—How is the Ruckstell Axle controlled?
25.—Why is the long shift tube not a bad feature as used with the Ford car?
26.—Is there noticeable vibration of this shift tube or of the shift lever?
27.—Can the Axle be used on any other car or truck than the Ford?
28.—Will it fit all models of Fords?
29.—Is the added unsprung weight sufficient to constitute a disadvantage?

30.—Does the installation of the Axle change the road clearance of the car or truck?
31.—Is the installation of the Axle complicated?
32.—What information on installation comes in each Axle box?
33.—Does the installation require any special tools?
34.—How long should it take to install a passenger Axle?
35.—How long should it take to install a truck Axle?
36.—Does the Ruckstell Axle complicate the operation of a car or truck?
37.—Why should the use of the Axle decrease the cost of operating the car or truck?
38.—What Ford units should have longer life when used with a Ruckstell Axle?
39.—What do we mean by fool-proof?
40.—Does the Axle unit have a positive neutral point?
41.—Does it have a tendency to slip out of gear?
42.—Are the reduction speeds on the Ruckstell Axle noisy?
43.—Is the Ford guarantee affected by the installation of the Axle in a new car?
44.—What about transmissions?
45.—How does the use of the Axle increase the braking efficiency of the car or truck?
46.—When should the low speed worm be used with Ruckstell equipment in the trucks?
47.—When should the high speed worm be used?
48.—What are some of the new commercial fields that can be reached with the Ruckstell equipped truck?
49.—Can you name any large corporations or companies who are meeting with success where Ruckstell equipped Ford trucks have replaced more expensive equipment?
50.—Explain the operation, in driving, in going from Ford low to Ruckstell high.
51.—What happens if you wait too long before shifting back to Ruckstell high on a hill?
52.—What is necessary to really sell a prospect Ruckstell Ford performance?
53.—What class of prospects will be interested in hauling demonstrations?
54.—What is of most importance about a Ruckstell demonstrating truck?
55.—Why is the instantaneous shift an important feature with a loaded truck?
56.—Does the Ruckstell Axle ever require any adjustments?
57.—What is the life of the Ruckstell Axle?
58.—Is it made of high grade material?
59.—Is the dealer required to carry a large investment in parts?
60.—What is the attitude of the Ruckstell Company regarding service?

THE STUDY OF A CUTAWAY AXLE AND A SHOP INSTALLATION WITH A KNOWLEDGE OF THIS MANUAL WILL ANSWER THE ABOVE QUESTIONS.

Chapter Nine

Gear Ratios

Ford Passenger Car

Choice of Three Different Ratios

	High Ratio 13-40 Gears
Ford High	3.00 to 1
Intermediate High	4.73 to 1
Ford Low	8.45 to 1
Extra Low	13.01 to 1
Ford Reverse	12.26 to 1
Low Reverse	18.88 to 1

	Standard Ratio 11-40 Gears
Ford High	3.63 to 1
Intermediate High	5.59 to 1
Ford Low	10.00 to 1
Extra Low	15.40 to 1
Ford Reverse	14.50 to 1
Low Reverse	22.30 to 1

	Mountain Gears 10-40 Gears
Ford High	4.00 to 1
Intermediate High	6.16 to 1
Ford Low	11.00 to 1
Extra Low	16.94 to 1
Ford Reverse	16.00 to 1
Low Reverse	24.64 to 1

Ford Truck

Choice of Two Different Ratios

	High Speed Worm	*Low Speed Worm*
4th—Ford High	5.16-1	7.25-1
3rd—Intermediate High	8.25-1	11.6 -1
2nd—Ford Low	14.20-1	19.95-1
1st—Emergency Low	22.7 -1	31.92-1
Ford Reverse	20.60-1	29.00-1
Emergency Reverse	32.9 -1	46.4 -1

62 1/2 90

Chapter Ten

How to Choose Gear Ratios

Passenger Car

1. Ruckstell special three-to-one overdrive gears are recommended only for the lighter models in districts where the country is fairly flat and the roads good. Where highways are smooth enough to allow sustained speeds of over thirty miles per hour, the overdrive gears are of great advantage. Motor speed is decreased and vibration reduced, while the reduction in gasoline and oil consumption is an added feature of great value. Overdrive gears *are not* recommended for sedans under any condition or for the other models of passenger cars in districts where the roads are heavy or where hills predominate. Do not recommend overdrive gears to any inexperienced driver.

2. Standard gears are recommended for all ordinary purposes.

3. Four-to-one gears, or special Ford ten tooth drive pinions, are recommended for sedans, even when Ruckstell equipped, in districts where mountains or very bad grades predominate. This ratio is also proper for model T chassis with panel bodies used for city or country delivery work. All model T cars used for extra heavy work—small tanks, dealers service cars, and for trailer work should use the four-to-one gears.

Truck

1. The high speed worm is recommended where a speed of 28 or 30 miles an hour is desired, with loads not to average over 2500 pounds. This is the "Speed Truck." With Ruckstell equipment, it has also more power than the truck with the low speed worm. You have, therefore, a Two-Purpose Performance Truck—"Power" and "Speed."

2. The low speed worm is recommended for all heavy hauling where power is the big factor and speed secondary. This is the "Power Truck." With Ruckstell equipment, the low speed worm is recommended for conditions where overloads are the rule. Large dump bodies, tanks, trailers, etc., use the low speed to best advantage.

CAUTION: While the low speed Ford truck with the Ruckstell Axle is capable of hauling up to the enormous load of 6,000 lbs., nevertheless drivers should be cautioned to keep loads within reasonable limits. 4,000 lbs. is *double* load capacity and should satisfy any man or business concern anxious to get double service out of the investment. Over loading is the "road to ruin"—and soon racks the best of trucks.

(In recommending the proper worm to use, remember—where the standard low speed truck has power enough to do the work, the high speed worm, with Ruckstell equipment, can be recommended, as it has even more power than the standard low speed truck.)

Chapter Eleven

Ruckstell Service

"Not One Dissatisfied User—Every Owner a Booster"

The policy behind each Ruckstell Axle insures to its user the 100% service that is built into the Axle at the factory. This is due the purchaser as value received, and no effort should be spared to see that he gets it.

Proper installation is the most important part of service. The Ruckstell Axle is as nearly 100% perfect mechanically as the human equation allows. Not one in a thousand will require service if correctly installed.

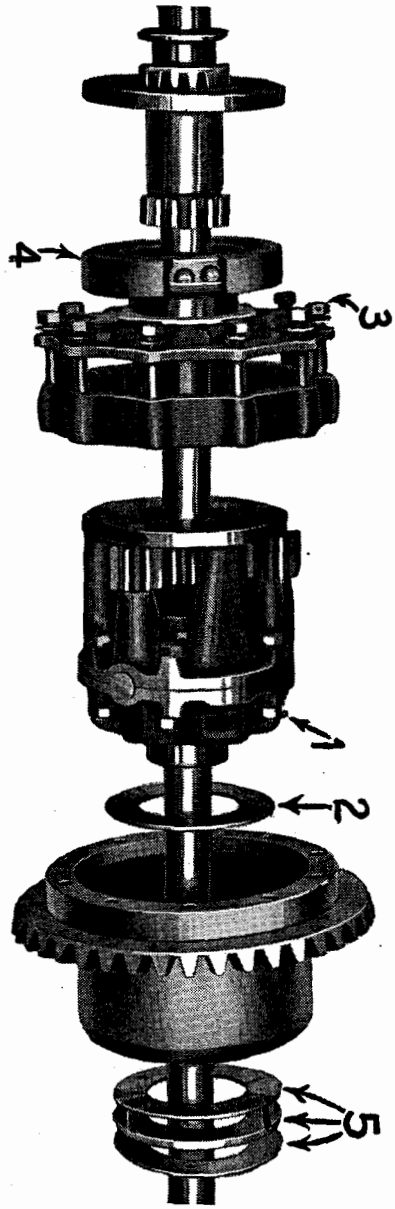
Each salesman *must* know Axle installation. He should be able to put on overalls and install Axles in the dealers' shops. With this knowledge the sales force becomes the most valuable part of the Service Department because the salesman is always on the job. Study the Installation Manual and become familiar with all details so that you can demonstrate the proper installation to Dealers' shop forces, and the best short-cuts to reduce labor and time.

DRIVING THE RUCKSTELL EQUIPPED FORD

Study the Operating Instructions as printed in Ruckstell Folder S-3. One of these folders is enclosed in each Axle box. Perfect yourself in shifting the Axle smoothly under all conditions. Take every opportunity to instruct dealers' salesmen and owners in the proper driving of Ruckstell equipped cars and trucks. In starting all loads in bad places or under difficult conditions, make it as easy as possible by using Ruckstell low. Under conditions where Ford low can be used to advantage in starting, always use Ruckstell high next—this is done by pressing the Ford low speed pedal with the shift lever in the forward position and then snapping the lever to the back position as the foot allows the pedal to come back into high. For the smoothest shifting a foot throttle is recommended.

Ruckstell Guarantee

The Ruckstell Axle carries the standard automotive guarantee of 90 days against defective workmanship or material. Impress upon your dealers when ordering parts, for replacement, the necessity of giving the *serial number* of the Axle for which parts are needed.



Ruckstell Passenger Car Axle Assembly