UNIVERSAL JOINT LITTLE UNDERSTOOD

Important Part of Machine Seldom Gives Trouble.

LUBRICATION IMPORTANT

Present Improved Universal Much Like Cardan Joint Invented 400 Years Ago.

There are some things about an automobile which the most experienced of us knows little about. The universal joint is one of these little things. Perhaps because it gives little trouble is one reason why we know so little about it, but aside from being about the hardest working part of the car, it is also the most efficient and one of the most peculiar in its action. You perhaps didn't know that the universal joint can affect tire wear, but that is true, nevertheless, under certain conditions. Perhaps you also did not know that the standard universal of today, the all-metal Spicer, is fundamentally like the original simple Cardan joint conceived about 400 years ago. These are facts.

The universal joints are those units which are attached to the propeller shaft of your car and enable that shaft to transmit the power to the rear axle and at the same time move up and down and sideways, depending on the action of the rear axle. The axle being on the ground and the engine clutch and transmission on the frame, the connection between power plant and axle must be flexible.

That is why they put universal joints on the propeller shaft. These joints allow universal movement or movement in any direction. According to tests made by Spicer, these joints will average 98 per cent efficiency, which is more than we can say of many parts which have to take practically the entire torque and power of the engine.

Speed of Universal Varies.

The strangest thing about a universal is that one part of it runs at a constant speed and the other varies its speed depending on the angularity of the joint. This variation in speed may be as high as 29 per cent, it is said by joint makers. The driving member of the joint is attached to the rear of the transmission and this runs at fairly constant speed, but due to the angle which the joint makes the driven member of it changes its speed four times in each revolution.

Now if one part of a joint runs at one speed and another part varies the driving system would have to withstand terrific stresses. Fortunately, however, there are means of overcoming the results of such action. The straight line driving is one of them and absolutely essential on a shaft with only one joint, if we are to avoid short life of parts and excessive tire wear. The tires tend to slip when a one-joint shaft makes an appreciable angle and is accelerated.

For some years past there has been a strong tendency toward the two-joint drive, that is, a propeller shaft with one joint at each end. This overcomes the trouble previously mentioned, or better, it overcomes the effect of the trouble. Whereas the driving member of the forward joints runs at constant speed the propeller shaft speed fluctuates, but the driven member of the second or rear joint runs again at constant speed, and it is constant speed of the pinion shaft (which is driven by the rear joint) which we are after.

Two-Joint Shaft Better.

Owners of automobiles in which a two-joint shaft is used have a drive of great flexibility because the rear springs take the drive and torque, that is, the car is pushed forward through the rear springs. If these springs are not fastened in place well they will move relative to the axle, with the result that the universal joints will have to do work they were not intended to do. Many owners who experience universal joint trouble can trace it directly to loose spring clips.

In addition to the flexibility obtained through the bending of the springs, this form of drive obtains flexibility because of the use of the slip joint. One joint of the two always is made with a so-called slip joint or sliding joint. The universal action is the same and the construction also with the exception of the method of attachment to the shaft. This is splined and the end of the universal splined to receive the shaft. One slides inside the other to compensate for shortening of the effective shaft length when the axle moves up and down.

A universal joint travels as fast as the engine. It is a fundamental rule in lubrication of machinery that the part should be lubricated according to its speed and load. A joint moves fast and nearly always is under heavy load.

The joint ought to be packed with grease, but not so full that movement of the joint and centrifugal force will cause the grease to ooze out of the joint cover. It is recommended that a joint case be packed one-third full of grease, at least this amount gives the best results, according to the Spicer company, which ought to know. Ordinary grease is a satisfactory lubricant, but a mixture of grease and graphite gives better results.

Joints will require repacking about three times a year. Most owners never bother at all about the universal because the grease remains in place as long as two years. However, to be on the safe side, it should be the owner's duty to remove the joint housing or cover. This is for examination and repacking, though the latter also can be accomplished simply by removing a grease plug and injecting lubricant with a grease gun.

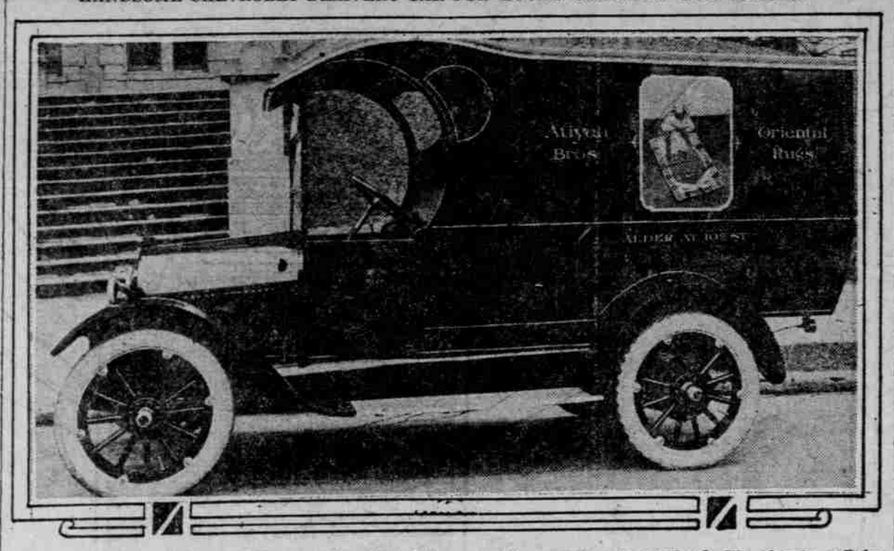
PAWNSHOP FOR AUTOS LATEST

Innovation in New York Meeting With Great Success.

The latest thing in pawnshops is one for motorcars, says a report from New York. Heretofore pawnshops have been reserved for the class that want to put up their watch or dress suit, but now, with so many owning flivvers, those who are on the inside of the pawning business decided that a similar institution for motorcars would not be bad.

The motorcar pawnshop is located near Columbus Circle, in the heart of "Gosaline Row," New York city. Here, when the motor owner is short of ready money, he may drive his "flivver" and place it in "hock." If he fails to pay back the loan with interest the car is sold as second-hand. All in all, it is said to be the most profitable business for these pioneers in the pawnbroking line, and they always have 100 or more cars of all kinds and conditions on hand.

HANDSOME CHEVROLET DELIVERY CAR FOR LOCAL ORIENTAL RUG DEALER.



The above picture shows one of the most beautiful delivery car jobs ever seen in Portland. The chassis, a Baby Grand Chevrolet, was purchased by Atiyeh Bros., from the Fields Motor Car company, local Chevrolet distributors, and the body was made and paint design carried out by Wentworth & Irwin.

TRAILER DEMAND NOTED

FOREIGN MARKET IS BROUGHT TO DEALERS' ATTENTION.

About 300 Heavy-Duty Vehicles Are Declared to Be Used in Marseilles District, France.

WASHINGTON, D. C., Feb. 12.—American consuls in all parts of the world have reported to the state department on the possible market for motor truck trailers manufactured in the United States. These reports show that this country is far in advance of all other countries in the use of this economical aid to highway transportation, notwihtstanding England was first to adopt the principle of trailer transportation and there are about a score of trailer manufacturers in Europe, located in England, France, Italy and Germany.

The United States, with about 75 trailer makers and probably 50,000 trailers in use, leads the world in this new industry.

Use of trailers by the American, French, English and Italian armies during and after the war, and the subsequent sale of much of this equipment, helped to introduce trailers in France and Belgium, and it is expected a return to more normal exchange rates will open a good market for American makes. Trailers are being exported in limited numbers from this country to many parts of the world, including Canada, the West Indies, some South American countries England, Scandinavia, West and South Africa, the Philippines and even China.

In the Liverpool district of England the demand for trailers has exceeded the supply. They are used chiefly by the large flour, sugar and oil mills and by heavy haulage contractors and forwarding agents. Local firms forced to transport goods by highway because of adverse railroad shipping conditions have generally adopted trailers in conjunction with motor trucks.

About 300 trailers are used in the Marseilles district in France. They are heavy-duty vehicles, of both two-wheel and four-wheel types, the former employed chiefly for carrying wine in casks, and the latter for hauling general merchandise.

There is considerable demand in Sweden for trailers for use with trucks of three, five and seven tons capacity and the market is expected to be large in the future.

Even the little republic of Salvador in Central America has imported a few trailers. A two-ton truck and two-ton trailer, bought by a coffee planter, displaced 160 oxen, 80 ox carts and 80 drivers. The value of the cars and oxen was about $4800 and it cost about $40 a day to feed the oxen, and an equal amount to pay the drivers. The truck and trailer, with one driver, make four trips a day and two at night over the 7½-mile road to the shipping point and haul 120,000 pounds of coffee in the 18 hours, or as much as the 80 ox carts did formerly in one day.

OREGON BATTERY MAKING GO

New Storage Battery of Allen Bros. Is Made in Portland.

Among the Oregon manufactured products for which a bright future is predicted is the Allen Bros. storage battery, being made in considerable quantities by E. H. and W. C. Allen of the Auto Electric Equipment company. The merit of this home product has already been recognized in many quarters and a steady expansion of the market is predicted.

E. H. and W. C. Allen, makers of the new battery, are among the pioneers in the storage battery business in Portland, having started here in 1916 handling Willard batteries. Later the present home of the company at Broadway and Flanders was erected in order that the organization would have more room, and the firm became distributors for Prest-O-Lite storage batteries. For several years it had been the desire of Allen Bros. to produce a battery of their own, but during the war this was found to obe impossible on account of shortage of material. Following the war, however, materials were obtainable and the Allen Bros. battery was placed upon the market.

While this Portland battery is not being turned out on a quantity basis as are the large eastern batteries, the saving in freight offsets the increase in production cost, it is declared by officers of the company. All the materials used in construction of the batteries except rubber, which is a small factor in weight, are produced in the west, it is stated.

VETERAN AUTO OFFICIAL RETURNS TO CADILLAC COMPANY.

Frank Johnson.

Frank Johnson, designer of the Lincoln car, has returned to the manufacturing department of the Cadillac Motor Car company to resume an association which began with the planning and building of the first single-cylinder Cadillac, back in 1902. Mr. Johnson's service with Cadillac was continuous for 15 years. He resigned from the company three years ago to become chief engineer of the Lincoln Motor company.

SHEARER SUCCEEDS CHAMBERS

New Officers of Oregon State Motor Association Outline Plans.

At a recent meeting of the directors of the Oregon State Motor association Alfred E. Shearer, formerly with the First National bank here and later with the Alexander Hamilton institute in California, was elected as assistant secretary of the organization in charge of the tourist and publicity bureau in Portland. Mr. Shearer takes the place of George Chambers, who recently resigned to go into the stock business in eastern Oregon.

The new officers of the state association, who recently took charge, are A. L. Tetu, president; John H. Hall, vice-president; Charles R. Frazier, secretary, and F. C. Stettler, treasurer. The clubhouse on the Sandy river is still unsold, although it has been on the market for some time past, and a committee consisting of Phil Metschan, Charles Rudeen and A. M. Wright has the matter in charge of either selling the property or of devising some means whereby it may be put on a paying basis.

100 TRUCKS SOLD IN LOT

DETROIT TRANSIT FIRM GIVES ACASON MOTORS ORDER.

Hauling Company Will Broaden Scope of Work for Year and Reach Across Country.

INDIANAPOLIS, Ind., Feb. 12.—(Special.)—The Red Ball Transit company of this city has placed an order for 100 trucks with the Acason Motor Truck company of Detroit. W. B. Hiner, general manager for the transit organization, states that the scope of work for his company will be greatly increased during the coming year. It is the plan of the company to extend their operations so that they will be doing inter-city motor vehicle transportation to all large cities in the country. Plans of the company for extended freight service, now well along, indicate the tremendous strides taken by auto trucks in freight hauling.

Organized three years ago, the Red Ball Transit company specializes in inter-city overland hauling. They use heavy duty trucks with large enclosed bodies resembling moving vans. Their main lines now operate to cities between Indianapolis and New York via Cleveland on one route and via Pittsburg on another.

Another line is between Indianapolis and Chicago, another between Indianapolis, St. Louis and Kansas City. Their main headquarters are at Indianapolis, but an office is being established in Chicago. In a few days they will have offices in Cleveland and other important cities through which their service operates.

They do no local hauling. It is the intention of the company to extend their activities so that their routes reach as far west as the Pacific coast. They have sufficient business on their books for them to immediately place 35 additional trucks in operation. The 100 Acason trucks just ordered are to be delivered within a six-months period.

The company have been very successful in moving household goods from one city to another. They have an exceptional plan worked out, so that the owner of goods is insured prompt delivery at low cost and less depreciation on goods than would occur if freight service was used.

WINTHER DELIVERY HERE

New Light Truck Promises to Be Popular in Local Field.

A number of the new Winther delivery specials, recently introduced by the Winther Motor Truck company of Kenosha, Wis., have been received here by the Buchholz-Stater Motors, Inc., local distributors for Winther trucks. The local organization is unusually pleased with the new light truck, it was stated, and has placed an order for a considerable number of them in anticipation to heavy spring business. The new car will retail around $2000.

The new Winther is rated at three-fourths to one-ton capacity, and is aimed to fit the need for rapid delivery service. The frame is of five-inch hot channel rolled steel and springs are of chrome vanadium steel. An internal gear type rear axle is used, provided with a solid I-beam member for carrying the load. In general characteristics and equipment the new delivery wagon is similar to the familiar Winther trucks, which have won a reputation for service throughout this section.

The imperial household garage of the Emperor and Empress of Japan will be completely installed with motor carriages by the first of the year. The delivery of these cars will mark the passing of the last magnificent coaches of state in the far east.

AUTO FUTURE IS BRIGHT

EDWARD S. JORDAN GIVES HIS REASONS FOR OPTIMISM.

New Appreciation of Motor Values Developing, Says President of Jordan Company.

The following interesting discussion of the present situation in the automobile business is by Edward S. Jordan, president of the Jordan Motor Car company, who was a Portland visitor last fall:

"In the last few months a remarkable condition has developed in the automobile industry. Many have cried 'wolf' and have been loud in their claims that the automobile industry has at last reached the saturation point. Yet 9,000,000 car owners continue to drive their cars. Nine million automobiles are wearing out.

"No one has bought a horse. No one has entertained for a minute replacing his car with any other means of transportation. Yet those with stunted vision cry that the motor industry has reached the end of its rope.

"Last September, when Ford saw fit to cut the price of his car, buying suddenly ceased. The need and desire for transportation by motor car, however, did not stop. Everyone immediately felt that further reductions on all cars were imminent. The history of buying repeated itself. Owners of cars felt that the price of new cars must come down. Yet 9,000,000 car owners did not realize that a reduction in the price of new cars meant a reduction in the valuation of their own cars.

"Many sensed this condition and sought their dealers at once and negotiated the best possible trade on their old car. Many held off in the hope that the situation would change. Then suddenly awakening to the real condition, they besieged their dealers in an endeavor to make a trade without disadvantage to themselves.

"Dealers quickly came to the point where these trade-ins could no longer be considered on the basis car owners desired. The result was stagnation in the buying of motor cars. Factories stopped running, parts makers stopped producing, dealers stopped selling. And still 9,000,000 motor cars continue to run and wear out.

"Today the motor industry faces a future as bright and as big as ever seen in the past. A new appreciation of motor car value has developed. The old idea that purchase price was the last price passed out with 1920. Never again will the public buy motor cars with the same attitude of mind that they buy shoes, clothing and food.

"Hereafter buying will be done toward the day when the car will be traded in again against a new car. Price will be a factor, but beyond this, the value the public places on any make of car—the service the manufacturer and dealer put into the car—the cost or upkeep the owner must meet in maintaining the car—these will be the big factors in determining price in the future.

"Many owners realize that the time to sell their old car is right now. Many are consulting their dealers and inquiring as to the time when their particular car will reach the point of diminishing returns.

"With the industry producing only about 20 per cent of normal demand the last three months of 1920—with 9,000,000 cars constantly wearing out—with transportation by motor car an economic fact—is there anything unusual or marvelous in the prediction that the motor car industry will continue on its upward swing?

"Is it unusual to predict a renewal of normal buying in the spring? Is it astonishing that the motoring public have at last reached the point where their formula of buying has become: 'Last price, plus upkeep cost, plus depreciation on a resale?'"

Tractors have been used in California for more than 18 years.

CHICAGO SHOW IS LIKED

RAPID REHABILITATION OF INDUSTRY EXPECTED.

Exhibit in Illinois City Is Declared to Be More Widely Attended by Auto Dealers.

CHICAGO, Feb. 12.—The close of the 20th annual national automobile show at the Chicago coliseum confirmed the hopeful expectations for a rapid rehabilitation of the automobile industry aroused by the recent successful show at New York.

The Chicago show has always ranked as the more important of the two national exhibitions, from the point of view of enabling an accurate forecast of business conditions in the motor car field. This is for the reason that it is more widely attended by automobile dealers, drawing a representative gathering from all corners of the United States.

The dealer attendance at the Chicago show this year was heavier than usual, and the sales contracts entered into, calling annually for shipments of cars running into millions of dollars, were well up to normal.

A general spirit of hopeful optimism, induced by the marked success of the show, both from a wholesale and retail sales point of view, was in general evidence, and officials of manufacturing concerns were greatly encouraged by the outlook.

George M. Dickson, president of the National Motor Car & Vehicle corporation, who has attended every Chicago show since its inception, voiced the opinion that a general condition of healthy and vigorous prosperity would prevail in the automobile industry within another month.

"The gradual easing in the financial situation and the uplift of business conditions generally," states Dickson, "has given rise to a buying movement that is already well under way. Further improvement is certain during the coming weeks, with a return to normal not far distant.

"The replacement business, or the sale of new cars to replace those worn out in service, figured by Collier's Weekly as 1,500,000 cars for 1921, is rapidly coming into evidence. During the last four or five months, hundreds of thousands of people have been driving cars that have outlived their real usefulness, at a cost of operation and maintenance prohibitively high. With the improvement in business conditions, these people are giving thought once more to the purchase of a new car.

"The general consensus of opinion, both on the part of the public and the industry, as reflected by the Chicago automobile show, is that prosperity is knocking at the door.

"It will take time, of course, for the industry to bring its manufacturing programme back to normal, probably more time than it will take for the demand to assume normal or nearly normal proportions. For this reason, it is only reasonable to expect that the closing months of spring and summer will witness a shortage in automobiles of greater or lesser magnitude."

Fender Ordinance Dies.

Truck owners in Chicago have been successful in their legal battle against the fender ordinance drafted by the Chicago authorities, says a report compiled by the Southern Motor Manufacturing association, Ltd. Under the ordinance every motor truck was required to be fitted with a fender, costing $200 or more, for protection of pedestrians. Contestants showed that the fenders designated—or any fender—were impractical for the purpose intended.

Ford

THE UNIVERSAL CAR

Announcement

Mr. Edsel B. Ford, president of the Ford Motor company, gives out the following statement:

"The price of the FORDSON Tractor has been reduced from $790.00 to $625.00, f. o. b. Detroit, effective immediately.

"This price change has been made possible through lower costs of materials and the fact that we are now located in our new Tractor Plant with greatly increased economic manufacturing facilities in immediate connection with our foundry and machine shops and large blast furnaces where iron is poured directly from the ore, giving us maximum efficiency with the power to reduce cost of production, and down comes the price in line with our policy to market our products at the lowest possible figure without in any way affecting our high standard of quality.

"We are particularly pleased in being able to bring about this big reduction in price at this time because the farmer needs all the help we can give him and this big cut in price will be the means of placing a valuable power unit within the reach of practically every one of them, not to mention industrial and commercial concerns which likewise have benefited through its use and are already realizing, to a much greater extent, its value as a power and hauling unit. But particularly has the FORDSON Tractor proved a most valuable factor in the saving of farm labor, at the same time increasing the per acre crop yield as well as making possible a utilization of previously uncultivated land, to say nothing of removing no end of drudgery.

"There is no question that the use of machine power on the farm is the greatest advancement made in the development of agriculture, not only in money saving and money making results, as well as raising the standards of living on the farm to a much higher level, but because of its proved value in making every type of land more productive, and consequently our desire to place the FORDSON within the reach of all.

"THERE IS NO CHANGE IN THE PRESENT FORD CAR AND TRUCK PRICES, which are already at the lowest possible figure and now with rock bottom reached on the tractor price a further reduction in price on either the Car, Truck or Tractor is out of the question; in fact, the big price cuts have been made in anticipation of continuous maximum production and increases may be necessary before long if a large volume of new business is not obtained. Therefore, present prices of Ford products cannot be guaranteed against possible increases."

Ask for the book "The Fordson at Work," which will be supplied free of cost. Let us demonstrate the value of the Fordson on your farm, in your factory, lumber yard, coal yard, or in any general hauling or power work you have to do and let us have your order for a Fordson.

The Following Prices Are Now in Effect on Ford Cars F. O. B. Detroit:

Chassis	$360	Touring, with starter	$510
Runabout, regular	$395	Coupe, with starter	$745
Runabout, with starter	$465	Sedan, with starter	$795
Touring, regular	$440	Truck, pneumatic tires	$545

For Sale by the Following Authorized City Dealers:

Francis Motor Car Company — Hawthorne at Grand

Wm. L. Hughson Co. — Broadway at Davis

Talbot & Casey, Inc. — East Ankeny at Grand

Palace Garage Company — 12th at Stark

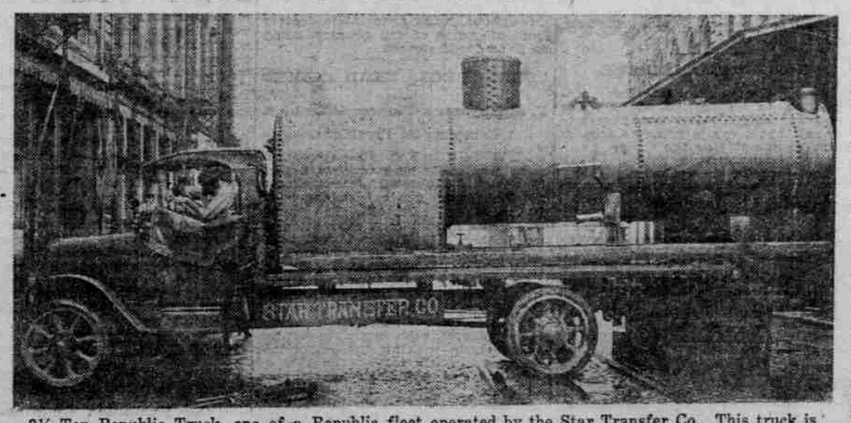
Rushlight & Penney, Inc. — East Third at Broadway

Robinson-Smith Company — Sixth at Madison

"The weather is always good in a Ford Sedan"

REPUBLIC TRUCKS

GOOD TRUCKS
GOOD OWNERS



3½-Ton Republic Truck, one of a Republic fleet operated by the Star Transfer Co. This truck is loaded with a boiler weighing 11,200 lbs., length 20 ft. Hauling problems satisfactorily solved by use of Republic Trucks.

Roberts Motor Car Co., Inc.

Boise, Idaho. Largest Exclusive Truck Dealer in the Northwest. Portland, Or.

Failure of Insulation is Not Excepted in the Philadelphia Two-Year Guarantee

THE separators or insulators are an essential part of a storage battery. Properly constructed they should last as long as any other part of the battery.

Under the Philadelphia Two-Year Guarantee, failure of insulation is a basis for adjustment just the same as the failure of any other part.

But Philadelphia insulation does not fail—for three reasons:

1. Philadelphia battery plates are long lived, but the patented separators, of quarter-sawed hard wood, are sufficiently strong to outlast the plates.
2. The rigidity of the Diamond Grid relieves them from pressure and strain.
3. The Philco Slotted Retainers offer still further protection by preventing contact between the separators and the positive plates.

Van Matre-Howard Battery Co.

Portland, Oregon — 48 North Broadway

Vancouver, Wash., — 405 Main St.