

SEEKS BETTER TRUCK AXLES

Evolution of Rear System Still Undergoes Constant Experiments.

No other vital part of a motor truck has given engineers as much trouble as the rear axle. This is due to the many different kinds of stress to which rear axles are subjected, as well as to the fact that the rear axle is the first part of the truck to receive abuse due principally to lack of attention.

Engineers have computed the stresses and strains and have endeavored by various means to make allowances for them, both through the size and quality of the material used. They seemed to have been more successful in the early days than they were a few years later when it was necessary to change the type of drive.

When the first rear axles were built for passenger cars, the power was transmitted through a bevel gear and the jackshaft was enclosed in the load-carrying housing of the rear axle. Because of the light loads carried in passenger cars, this method of construction was satisfactory. When it came to putting a rear axle under a truck for the purpose of carrying a load of from one to three tons, however, the engineering problem was decidedly different.

Difficulty With Chains.
The first solution given by engineers was a solid load-carrying dead axle with the power transmitted by means of chains and sprockets from a driveshaft mounted well forward of the wheels. This type was very successful so far as the load carrying was concerned, but the wear on the exposed chains, due to mud and dirt, caused them to wear out rapidly and break at critical moments. Outside of causing many accidents, these breaking chains were a continual source of annoyance and delay and so it was found necessary to discard that form of drive.

The next solution was copied from passenger cars. In the new type of rear axle the gear ratio of the bevel gears instead of being 4 to 1, as was the custom in passenger cars, had to be increased to 7 to 1 because of the great pulling power necessary to move heavy loads. It was, therefore, necessary to greatly increase the size of the gear on the axle which in turn greatly reduced the road clearance. This developed into what is known as the worm gear, which is quite similar to the old form of passenger car drive.

With this type of axle, it was again necessary for the axle housing to carry the entire weight of both the truck and the load. Consequently an enormous weight of heavy steel was necessary to make the housing sustain the heavy loads.

Ratio for Weights.
Engineers estimate that a load of one pound of unsprung weight, which is a weight directly on the axle and not allowed the benefit of spring suspension, is equivalent to nine pounds on the truck.

The combination of this extremely heavy rear axle, and the fact that, to reduce the weight of the axle housing, it was necessary to greatly decrease the amount of road clearance, made this type of axle generally unsatisfactory, particularly for trucks in the one to two-ton class. This heavy type of rear axle was extremely destructive to tires.

The internal gear drive rear axle used on the Fulton motor truck is the latest and most successful solution of the great problem that has been confronting engineers since the first building of motor trucks. The Fulton type of internal gear drive has all the advantages of the former chain drive, without any of its disadvantages, and in addition to this it gives a maximum road clearance with a minimum of weight.

Frederic Melush, of that company, has said: "We keep a corps of engineers constantly experimenting for real improvements in motor truck design."

Transportation Is Now Question of the Hour

"Transportation has become the question of the day," declares W. L. Kissel, secretary and treasurer of the Kissel Motor Car Company.

"The war, as far as the people at home are concerned, has become a matter of production and transportation. It seems as if the perfection of the motor truck alone, which was being developed before the war, was planned for a purpose bigger than we at that time dared conceive of."

TELLS HOW U.S. USES TRUCKS

Col. Andrews Addresses Auto Owners on Army Problems.

The feature of the first day's sessions of the Fifth National Truck Owners' Conference at Detroit on September 19 and 20 was the address delivered by Lieut. Col. Barrett Andrews, U. S. A. Motor Transport Division, on the subject, "How Uncle Sam Uses His Motor Trucks." Experienced in the intricate problems of motor truck transport, both in the United States and in France directly behind the battle lines, Lieut. Col. Andrews made a most interesting and illuminating talk regarding the efficient methods used by the Army Truck Transport Division. He gave his audience a staggering array of facts concerning the magnitude of the work already accomplished along transport lines in France, giving the number of vehicles used by our first American field army as follows: Forty thousand trucks, 7,800 passenger cars, 24,250 motorcycles and 6,500 ambulances. These vehicles alone require the entire attention of 154,000 men. In other words, 16 per cent of our force is used in truck transportation work.

Although trucks arrived in France without bodies and despite other big difficulties, the truck transport corps worked so hard and so efficiently that not a single soldier has as yet missed a meal. The two lessons that have been learned about truck transportation under war conditions are the necessity for simplification and standardization. The great value of the truck was never better shown than at Verdun, where had it not been for this vehicle in quantities of thousands used for transport of men and munitions, the pivotal city would have fallen to the Hun. For the Boche had shelled and destroyed three out of the only four transport lines leading to the city defenses and over the one road escaping the enemy shells, rumbled 15,000 trucks day and night for twenty-eight days, carrying men and supplies to the front line defenses.

Artillery Demands Big.
As an example of the gigantic use of ammunition he pointed out that munitions which had taken twenty-eight days to transfer to the front-line guns had been shot away in three days and two nights. Lieut. Col. Barrett Andrews commented that the war will have developed hundreds of thousands of trained and disciplined truck drivers who materially enrich this country's skilled labor after the war. He made a plea for the more mature and experienced truck men of America to enter the truck transport service abroad.

Addresses illustrated by graphic motion pictures featured both afternoon and evening sessions. Each address was delivered by a well-known traffic expert most experienced in his particular field of truck activity. The efforts of the Truck Owners' Conference have the active support of the Highways Transport Committee, the Fuel Administration, and other government departments. The State highway transport committee of Michigan was represented by State Chairman William Metzger who made an appeal for closer co-operation between Federal, State and civic bodies in the interest of better highways transport facilities.

During the next ten months the Truck Owners' Conference staff will hold eighteen additional conferences in as many of the larger cities from coast to coast. Buffalo is the next city scheduled for a convention. It will take place under the auspices of the Chamber of Commerce of that city on October 10 and 11. Already plans have been laid for an interesting and valuable two days' program wherein will appear a number of traffic experts from Buffalo and surrounding territory. It is expected that hundreds of interested truck owners from the East and middle West will attend. Other cities in line for immediate conferences in the fall are Boston, New York and Philadelphia.

Flags by the Million for Italy.

The Stars and Stripes are in tremendous demand in Italy. There has just come by cable from the Red Cross Commission for Italy a request for 1,800,000 American flags on sticks or pins, and for 10,000 yards of flag stripping. The request met prompt response on the part of the War Council, and \$72,456 was appropriated for the purchase of the material now emblematic of liberty's cause the world over.

Announcing the Arrival of the Columbia Six Sedan

Highest grade equipment; upholstered in finest materials; staggered doors; finished in Columbia Blue.

Immediate Deliveries

Note the Following Features

Continental Motor, Timken Axles, Harrison Radiator with Thermostat controlling radiator shutters; Borg and Beck Clutch; Warner Steering Gear.

Henderson Motor Car Co.

F. S. Carmody, President

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TIRES!

NEW CLEAN FRESH STOCK STANDARD MAKES WORLD'S GREATEST CUT RATE TIRE CONCERN

Size	Plain	Non-skid	Grar.	Rib.	A.W.T.
28x3	\$2.10	\$1.40	\$2.19
30x3 1/2	9.50	11.90	2.20
32x3 1/2	12.40	15.50	2.55	\$27.10	\$29.15
34x3 1/2	14.55	18.20	2.75	28.95	31.15
36x3 1/2	19.95	22.80	2.90	35.55	38.20
38x3 1/2	19.40	24.25	3.50	36.65	39.50
38x4	20.25	25.30	3.75	37.60	40.60
38x4 1/2	20.70	25.90	3.85	38.55	41.70
38x4	23.10	28.90	4.00
38x4 1/2	26.20	32.75	4.30	38.55	41.40
38x4 1/2	26.55	32.20	4.45	40.75	43.80
38x4 1/2	27.70	34.65	4.50	41.55	44.70
38x4 1/2	28.15	35.20	4.60	42.55	45.75
38x4 1/2	30.55	38.20	5.00
38x5	31.65	39.55	5.25	50.15
37x5	33.50	41.90	5.60	52.85	56.80

Price list as of August 1, 1918, subject to change without notice. Other sizes at proportionate prices. Goods shipped C. O. D. Money refunded on goods returned intact within a month.

28x3 Motorcycle Tires... \$10.90 Standard Make Tubes \$1.00

Automobile Tire Co., Inc.
ED C. GRIFFITH, President.
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AUTO NOTES.

Jim Jimson stopped his touring car and let the motor run while handing out with face ajar. Some facts about the Hun. He pushed hot language from his throat.

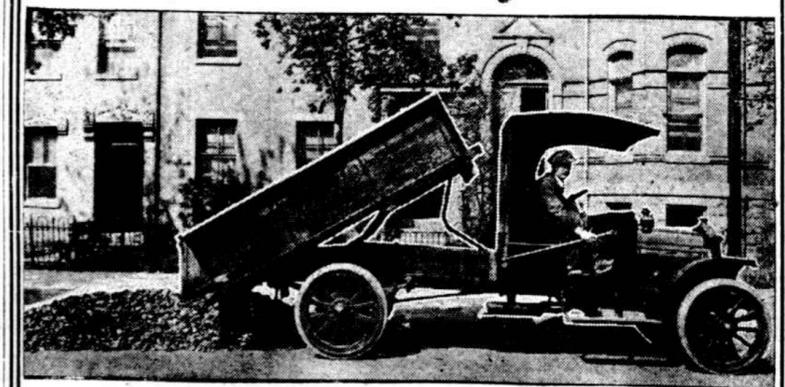
For minutes seventeen. And all the time his hie boat was burning gasoline. A million cars thus wasteful stand. As we proceed to press. The gas thus burned throughout the land would make a lake, I guess.

WALT MAPON.
The last word in saving of man power in handling coal and similar products seems to be the Ritter Automatic Dump for use on motor trucks of any capacity. By the use of this body on a truck a 10-year-old boy can dump a load of coal and be ready to get away in thirty seconds. It is simplicity itself and absolutely foolproof. J. C. L. Ritter is the patentee and manufactures them at 1522-34 Pennsylvania Avenue southeast.

SPECIAL

Jack's Auto Supply House
Store No. 2
1338 14th St. N. W.
Texas Medium Oil... 50c gal.
Mosler Spitfire Spark Plugs, 30c each, or 4 for \$1.00.
35x5 Lee Non-Skid Tires, 4,000-mile factory guarantee, \$41.00
All kinds of Automobile and Tire Accessories at Cut Prices.

Get Wise--Save Money Buy a Liberty Bond



THE RITTER AUTOMATIC DUMP

1-ton body, \$150; 2-ton, \$250.
Will fit any truck. Positively foolproof. Built for durability; metal lined; hand-forged iron used throughout. 150 of the bodies in use in Washington, giving entire satisfaction. Any kind of commercial body built to order on short notice.
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PATENTEE AND MANUFACTURER
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Regain Your Health in Nature's Way

WHEN ILLNESS OVERTAKES YOU, that is evidence that you have, either consciously or unconsciously, violated Nature's routine way of providing health for your body. It is therefore the most sensible thing in the world to turn to the remedy that Nature has provided for fundamentally removing the cause of sickness so that health can be yours again.

Nature has provided in Cacapon Water, which comes from Capon Springs in West Virginia, a highly effective remedy and tonic which removes the cause of sickness by cleansing your system of poisons and impurities. Cacapon Water has been healing sick bodies for centuries and has been a wonderful relief to mankind.



Doctors have prescribed it for many, many years, always with the same wonderful results. If you want to win back robust health and a ruddy color and clear complexion, by all means try Cacapon. Don't put it off. Every day, you are without it means just that much longer time required to restore health.

PRESCRIBED BY PROMINENT PHYSICIANS FOR

DRINK AND LIVE

ASK ANY TONIC DOCTOR ALTERNATIVE OR TRY IT. DIURETIC. HAS CURED FOR CENTURIES.

Stomach Troubles, Dyspepsia, Uric Acid, Gout, Urethral and Uterine Troubles.

Should be used by all men of Sedentary Habits.

CACAPON SPRINGS CO.
CAPON SPRINGS, W. VA.

CACAPON Healing Water

No matter what you have tried for your particular case, do not hesitate to try Cacapon at your earliest opportunity. Many cases of long standing stomach, kidney and bladder trouble which doctors have pronounced "incurable" and "chronic" have been relieved at once by a consistent use of Cacapon Healing Water. Ask your druggist for Cacapon or send \$5 for five gallons to the Cacapon Company of Washington.

CACAPON Better Than Drugs

Cacapon Co. August 24th, 1918.
Gentlemen:
I was nearly helpless from paralytic rheumatism of long standing when I began drinking CACAPON a few weeks ago.
After a few days' use of CACAPON I began to regain the use of my right hand and now have complete control of it except for a slight stiffness in the thumb, which is also disappearing.
My left hand and arm were in even worse shape and are also improving, though the effect is naturally slower.
I have no doubt of a complete recovery and am continuing the regular use of CACAPON and recommending it to others.
I did not believe that anything in the world was capable of curing a case as bad as mine and feel so grateful to you for bringing CACAPON within reach of the public that you are free to print this if it will help others.
Yours truly,
R. V. HOUSTON, Phar. D.
Southern Drug Co., 13th & G Sts., N. W. Washington, D. C.

A Friend Indeed!

San Francisco, Cal., July 28, 1918.
Cacapon Springs Co.,
Capon Springs, West Va.
Gentlemen:
Enclosed find Postal Order for Six Dollars for Six Gallons of Capon Springs Water.
The water was recommended to me by my old friend Mr. Will Atkinson, who upon his own suggestion and at his own expense, has sent me four gallons of the water, most of which I have already taken, with very encouraging results.
My trouble is "Uraemia," and he assures me that the water will cure me, and from my experience with the sample he sent, I verily believe it will.
Kindly send the water at once, as I do not want to be without it for even a day.
Respectfully yours,
(Signed)
JAMES G. MAGUIRE,
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Phone Main 989.

Cacapon Co. of Baltimore
918 Equitable Bldg.

Cacapon Co. of Detroit
718 Penobscot Bldg.
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