

WHY TRIPPER NEVER BRAKE LINING TOLD

Any Owner Ought to Be Able to Turn Trick.

ORDINARY TOOLS NEEDED

William Vogler Gives Full Explanation of Each Step in Making Repairs to Auto.

Application of the brakes by pressure on the pedal or pulling of a lever is supposed to retard the motion of the car and stop it. Sometimes the side of a house, a lamp post or another car is used to bring an automobile to a standstill, these unconventional methods being used chiefly by neglectful motorists who allow the brake bands to wear down beyond further adjustability or who adjust good brakes only after an accident, writes William Vogler in Motor, the national magazine of motoring.

This same motorist is of the type who never calls the work hinders, the poor things seems willing to run. The wise owner, unlike our ancestral drivers, should be thankful if the car can be stopped instead of started and run.

The braking system of the modern car is one of the simplest systems we have, and likewise one of the simplest to care for. Any owner sufficiently progressed in the use of tools to wield a hammer and chisel ought to be able to retune a set of brakes in good fashion. Unable to do this, or embarrassed when it comes to work which might soil his hands, he at least ought to know how the work is done when brake bands need retuning, how they act when they are not working properly, how they ought to be adjusted and all the rest of the simple things that go with these.

Stopping an automobile by application of the brakes is accomplished by frictional contact of so-called brake bands against a moving part of the car, such as a drum attached to each rear wheel or the propeller shaft. The drum turns with the wheel or the shaft and the brake fits around the drum but does not turn. When the brake pedal is pressed or the brake lever pulled the bands press against the drum and the more you press the pedal or the harder you pull the lever the greater the pressure against the drum and the quicker the drum wants to stop. One can realize that when a fast moving part such as a metal brake drum is suddenly called upon to reduce its speed, the heat which is generated makes it stop is going to rub so much in doing its work that both parts will get very hot. The heat of friction when braking calls for brake band lining, a material, riveted to the metal brake band, that will withstand the great heat without burning or wearing out too fast. For this reason we use brake lining or brake facing made of a material in which asbestos is the main constituent.

Metal itself is sometimes used without any lining or facing, but this is not done on passenger cars. The horse-drawn or tractor wheels on city streets often have brakes of metal with a so-called brake shoe which rubs against the metal wheel. When the driver wants to save the metal shoe from wearing out very fast he covers the shoe with rope or leather or something of the kind. This use metal shoes altogether.

Band Lining Wears Out. The brake band lining does not last forever. It is easy to see that every time the brakes are used not only does the lining wear a little, but the great pressure exerted caused the band to compress slightly. It is because of the natural wear and compressing of the lining that you have to adjust the brakes. The adjustments merely compensate for reduced thickness of the lining, but we all know, you cannot get good braking indefinitely by adjusting, because a time comes when the band is worn so thin that the adjustment range is insufficient.

Often the metal band stretches and this adds to the lining by giving sagging. So long as the lining is worn evenly and no metal spots show the lining is serviceable. If, however, this may be the case, but the rivets which hold the lining may already be showing signs of wear. Lining which is good may be used even though the copper rivets are beginning to wear down, but this should not be allowed to continue very long. At the first opportunity the lining should be replaced.

Brake lining must fit the band properly and must make proper contact with the drum. Where one side of the lining only bears against the drum you are getting reduced braking efficiency and at the same time encouraging rapid wear of the lining. Keep in mind that a lining to give safe service must not be worn through at any one point. Even wear will result only when the whole lining is used. Have you ever driven behind a car and noticed the shiny brake drums of the car ahead? The brake bands have shifted to one side, and the drum does not give the service for which they were intended. The shifting over of the whole band is usually due to wear in the brake band pivots or supporting means. Brakes may be sluggish because of oil on the drum or lining, oil that has worked its way through the axle tubes from the differential housing. This leakage usually is caused by the use of too much oil or defective felt washers in the ends of the axle tubes. I have seen chronic cases of leakage cured only by wrapping some cheesecloth around each axle shaft. It is unsafe to drive with sluggish brakes, at least if there is no time to do anything else, use kerosene to clean off as much of the oil as you can and get temporary braking of a sort.

Having decided that the brake lining has outlived its usefulness, it is not the job of a so-called expert to replace the lining. Before you remove the old lining you ought to have the new lining all ready, cut to size. Most supply stores sell the lining at so much per foot and you are asked for the number of feet you need. The supply store keeps a record of the number of feet per brake for all cars, so if you give the make and model of your car you don't have to know the exact length of lining. Be sure to buy the best lining. While the difference in price between one grade and another may seem comparatively insignificant it is nevertheless an economical step to buy the better grade. It does not pay to try to save a few cents per foot on an important item as brake lining, because the cheaper grade will have to come off sooner, it will compress rapidly, perhaps squeak, and its holding powers are lower than the good material.

Change Requires Much Work. Before the old lining can be removed the wheels must be taken off in order to get at and disconnect the brake bands from their supports. In the case of a propeller shaft brake

the floor boards must be removed, an obvious procedure. Some brakes are internal expanding, others external contracting, but the method of detaching the brake bands will at once be clear. The brake rods must be detached, which usually is done by removing a cotter pin and clevis. The means of attachment to the brake support is not the same in all cars, but it usually calls for removal of a bolt and nut or some other procedure equally as simple. After the bands have been taken off, clean the parts at the end of the axle, using kerosene. Look about for worn spots. Clean the brake bands, and, all the small parts removed, place the small parts in a box.

The old lining must be removed by first cutting off the rivets that hold it. Various ways will suggest themselves, but usually the band is placed in a vise and a chisel and hammer employed to chop off the old rivets. One must use sharp chisel and avoid damaging the band at the rivet holes. Clean the band after the lining is removed, file off any burrs and see that the rivet holes are not out of shape. If they are, insert a drift pin or something to make them round.

Fitting of Lining Explained. In fitting the new lining, place a length against the band surface so it fits snugly, leaving slightly over an inch at one end. Cut the lining with a hacksaw. To avoid measuring over again, use this piece to cut off others.

FRONT VIEW OF THE NEW DAVIS SIX.



This new car here has a distinctive type of radiator that you can't miss after a look at the new Davis Six. The car, which is the Davis sport model, is J. H. Graham of the J. H. Graham Motors company, who is also Case and Scripps-Booth distributor here. This Davis is equipped with the new Continental aero-type 7-R motor.

from the full length, if that is the way you bought the lining. It now is necessary to mark the lining that holes may be drilled through to accommodate the rivets. While the lining is snugly in place on the bands one may fill each rivet hole with chalk or an awl may be used to force into the lining. Some good operators drill through the lining while it is in place on the band.

Really the success of the whole job depends upon the neatness with which the holes are indicated and drilled, because if the holes are out of alignment with those on the band the lining will not fit. You then will get a crimp or a loose section and the lining will not do its work properly.

After the lining is drilled the holes must be countersunk a little so that the rivet heads will be beneath the lining surface. If you cannot countersink, or if you haven't the tools with which to do it, I would advise the owner to have the work done at some shop, or, if one is fearful lest he make an error, both the drilling and countersinking should be given to a shop.

The lining countersunk, it now is ready for riveting to the band. Some backstop or rivet supports are placed in the holes, a rivet inserted into one of the holes, and the head of the rivet made to rest against the part in the band which is to be riveted to.

The riveter is simply a small piece of metal with the end honed out so that a nice round head is formed on the end of the rivet.

CHAMOIS FOR REFLECTORS

Don't Try to Clean Lights With an Ordinary Cloth.

Do not try to clean the headlight reflectors with an ordinary cloth, because you are apt to scratch the highly sensitive surface and do more harm than good. The best way to polish them is to first sponge them with a slightly wet soft cloth, and to remove all loose dirt. When dry take a piece of dampened chamois and rub the reflectors with a spiral or circular motion, starting at the center. You will be surprised what a difference clean reflectors will make in the light reflected upon the road.

MANY DRIVE TO THE PARKS

Through Spokane Alone.

SPOKANE, Jan. 17.—A total of 120,000 tourists passed through this city over the national parks highway during the last season, it is estimated by Frank W. Guilbert, chairman of the national parks highway committee of the local chamber of commerce, in his annual report to the chamber today. He estimates these tourists spent approximately \$1,000,000 in this vicinity. Local free municipal camping grounds were occupied by an average of 40 cars daily, he says, or approximately 120 people.

SWEDEN LIKES TRACTORS

Four Factories There Not Able to Meet Huge Demand.

WASHINGTON, Jan. 17.—Of American agricultural machinery, the tractor seems to have the largest field in Sweden, according to a report received by the department of commerce. The demand is great and Sweden's four factories, with an estimated output of 400, are entirely unable to meet the situation. These factories also turn out motor plows, grain threshers and portable steam engines.

Deliveries which are impossible until spring bring deposits of enormous size in England, according to news from that country. It is not unusual to pay \$5000 down on a \$15,000 car or delivery many months in the future. One maker asked a like amount for a place among the first 50 buyers.

TIRE INSTRUCTION GIVEN CONSERVATION DAY IDEA OF VALUE TO OWNERS.

Practical Demonstrations in Care of Tires Teach Drivers How to Conserve Equipment.

A new educational idea that is bringing home to motorists important lessons of tire care is the tire conservation day programme developed by the Goodyear Tire & Rubber company.

This idea is right in line with the spirit of economy which motorists must practice to get the greatest possible mileage from their tires. It swings on the salesman as a pivot. Goodyear salesmen in all sections of the country are qualifying as tire experts and officiating at these various conservation day meetings.

A special trunk containing the supplies necessary to the demonstration is routed ahead to the point desired. Sections of tires showing the well-known forms of abuse, crude rubber of various types, sections of used tires that have given good mileage,

photographs of manufacturing processes, booklets and other tire literature are among the contents of the trunk.

After suitable announcement has been made these meetings are held at the business places of Goodyear dealers. The motorist is given a variety of helpful advice as to how to increase tire mileage and is asked to measure his tire cost in terms of miles rather than in initial cost.

Fabric and cord construction are demonstrated, bringing out the superior qualities of the cord tire. Such significant points as overdrive, added rubber, on-air cure and wrapped tread are emphasized.

Special attention is paid to the matter of caring for tires—giving them a fair show—that they may deliver the mileage that is built into them at the factory. The many neglected conditions that prematurely ruin tires are considered and explained. With each form of tire abuse considered a tire section is exhibited, showing its ultimate effect.

One of the most pleasing results of these meetings is the assimilation of new selling points by the dealers, their efficiency as merchandisers thereby increasing immeasurably. Just before the month of October, during which the importance of tire care was carried to the 21,285 persons who attended the average attendance at these meetings was 88.

It is not difficult to visualize the ultimate result of the hundreds of these meetings held each month in all parts of the United States, for the application of this idea means that at the end of the year many thousands of tire users will have learned and put into practice the various elements of tire care that add so much to tire life.

Great Sale of Auto Supplies

DRAWING BIG CROWDS

Big Supply House—Entire Stock on sale—thousands of dollars' worth of brand-new, right-up-to-the-minute supplies and accessories for your auto, for your truck. Thousands of articles to choose from—tires, tubes, boots, patches, tools, tool kits, pumps, jacks, bumpers, spotlights, searchlights, soaps, sponges, oils, grease, etc. ALL GOING AND ONLY

6 Days Left to Do Business in This Building—We Are Forced to Vacate

Going at Less Than BED-ROCK PRICES—It Will Pay You to Come

Big Reductions on Inner Tubes, Tires, Patches, Boots, Etc.

- INNER TUBES
- 30x3 \$3.50 Tubes\$1.95
 - 30x3 1/2 \$4.10 Tubes for only.....\$2.45
 - 32x3 1/2 \$4.60 Tubes for only.....\$2.85
 - 33x4 \$5.65 Tubes\$3.20
 - 34x4 \$5.85 Tubes\$3.30

- PATCHES
- 3-inch Blowout Patches25¢
 - 3 1/2-inch Blowout Patches29¢
 - 4-inch Blowout Patches35¢
 - 5-inch Blowout Patches49¢

- LACE-ON BOOTS
- 3-inch Lace-on Boots62¢
 - 3 1/2-inch Lace-on Boots69¢
 - 4-inch Lace-on Boots79¢

- CEMENT PATCHES
- 25c can No-Cement Patches18¢
 - 50c Large can Patches39¢
- A Thousand Other Wonderful Bargains.

Big Tire Bargains

Just 6 Days Only. This sale closes next Saturday night. These tires are all good non-skid, run 4000 to 5000 miles. Owing to these unheard-of low prices we will not give guarantee.

- NON-SKID
- 30x3 on sale\$ 8.98
 - 30x3 1/2 on sale\$11.29
 - 32x3 1/2 on sale\$12.89
 - 31x4 on sale\$17.25
 - 32x4 on sale\$17.52
 - 33x4 on sale\$18.35

Big Reductions on All Tools

- 75c Rim Lug Brace39¢
- \$1.25 Rim Lug Brace69¢
- \$1.00 Machinist Hammers69¢
- 75c Machinist Hammers52¢
- 65c Machinist Hammers42¢
- 50c Pliers37¢
- 35c Steel Wrenches25¢
- \$2.25 Set of Open-end Wrenches.....\$1.65
- \$3.00 Set "S" Open-end Wrenches.....\$1.79
- \$2.75 A. L. A. M. Sets Dies on sale \$1.69

- JACKS
- \$1.50 Jacks on sale89¢
 - \$2.00 Rapco Jacks on sale\$1.39
 - \$3.50 King Jacks, screw and ratchet on sale at only\$2.49
 - \$5.00 Truck Jacks\$3.69

Special. Every car owner needs one 5-Minute Super Vulcanizer complete outfit. The marvel of the day. Regular price \$1.50, on sale at 98¢.

- Ford Front Radius Rods
- List price \$3.00, on sale\$1.89
 - \$2.50 Ford Auxiliary Rods on sale 98¢
 - 40c Ford Cylinder Head Gaskets.....27¢

- Ford Cast Iron Brake Shoes, set...69¢
- 75c Windshield Cleaners39¢
 - \$1.50 Ford Timer on sale79¢

- Pumps
- \$2 Single-action Tire Pumps.....\$1.39
 - \$4 Extra Big Single-action Pumps \$2.79
 - 75c Grease Guns39¢
 - \$1.00 Grease Guns59¢
 - \$2.00 Grease Guns\$1.29
 - \$3.50 Grease Guns\$2.79

- Spotlights and Horns
- Reg. list \$3.75 Hand Phone Horns \$2.59
 - Reg. list \$4.00 Standard Hand Horn and Special Bracket for Ford cars.....\$2.79
 - \$6.00 Electric Non Tone Horns.....\$4.39
 - \$7.50 Chime Horns, complete.....\$4.79
 - \$7.50 Silver Beam Spotlights.....\$5.39
 - \$5.50 Williams Spotlights.....\$3.98
 - \$5.00 All-Black Spotlight.....\$3.69
 - \$3.50 Special Spotlight.....\$1.85

Engines with complete equipment for Stationary, Marine and Auto, ALL ON SALE.

Big Reduction on Grease and Oils

- 50c Cup Grease in tubes.....39¢
 - 25c one-pound can Cup Grease.....19¢
 - No. 600W, gallon cans.....49¢
 - Special—Medium oil, one-gal. can.....59¢
- Reduction on all others in stock.

- Spark Plugs
- Regular Standard Auburn \$1.00 Spark Plugs59¢
 - Set of four\$2.00
 - Reg. 75c Spark Plugs39¢
 - Reg. 90c Spark Plugs49¢
 - Reg. 60c Spark Plugs, 4 for98¢

- \$1.50 Gas Gauges for Fords and Chevrolets79¢

- Ford Radiator Caps22¢
- \$4.50 Ford Bumpers\$1.48
- Stewart Speedometer Heads.....\$1.79
- \$3.00 Cables for Stewart Speedometers on sale\$1.98
- \$3.00 Swivel Joints for Stewart Speedometer\$1.98
- Fiber Pinions for Speedometers8¢
- \$10.00 American Speedometer, complete outfit for Fords and other cars.....\$4.89
- \$7.50 2-in. Channel Bar Bumpers \$5.19
- \$10 2 1/2-in. Channel Bar Bumpers \$5.95
- 25c to 35c Body Sponges29¢
- 50c large Body Sponges49¢
- 75c to \$1 large Body Sponges49¢
- \$1.25 to \$1.50 large Body Sponges 89¢
- \$57.00 Bosch Magneto\$44.85
- Heco High-Tension Magneto.....\$24.50
- Size "E" Prest-o-lite Tank, fully charged, on sale\$9.50

- SPECIAL OFFER
- 6-volt Starting and Lighting Batteries on sale\$22.50
 - 12-volt Batteries\$31.75
 - Medium size Lighting Batteries \$15.75
 - Large size Lighting Batteries \$17.95
 - \$2.50 Mirrors\$1.39
 - \$1.75 Mirrors89¢
 - 25c Petcock Wrenches13¢

SPECIAL BIG REDUCTION ON TOOL KITS AND ALL KINDS OF FILES

- \$3.00 Ford Oil and Electric Tail Lights on sale\$1.79
- Ford Headlights, list price \$7, sale \$4.89
- \$1.00 Robe Rails for Fords29¢
- Special sale price Ford Fan Belts.....19¢
- Fan Belts for other cars.....29¢
- Ford Spark Plug Wires9¢
- Ford Timing Wires, set.....49¢
- 25c Clear-View Windshield Protector on sale10¢

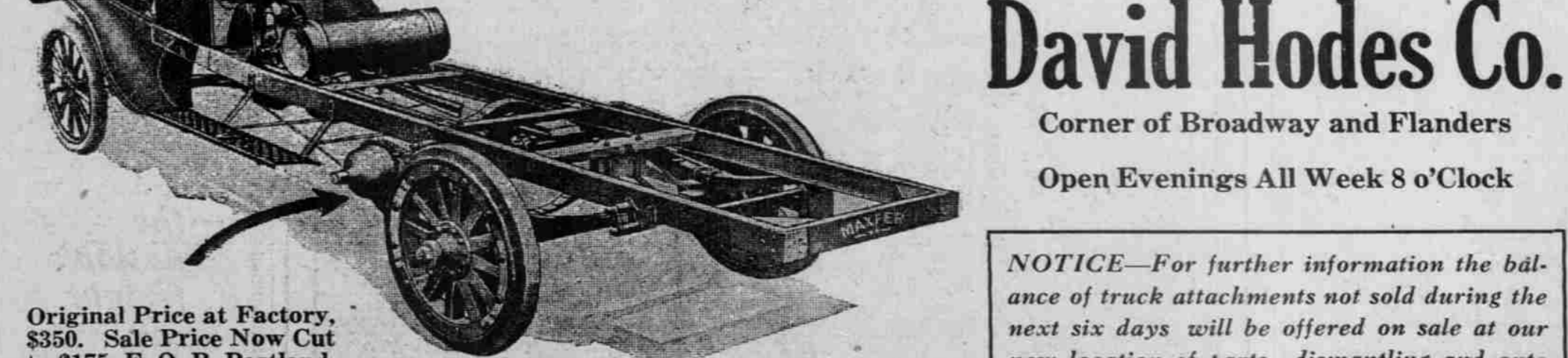
All articles quoted in this ad subject to prior sale.

MAKE A TRUCK OF ANY MAKE OR OBSOLETE MODEL PASSENGER CAR

If you want a truck for little money you can make one without any trouble or delay—no matter what the make of your car—with the Maxfer Attachment. One-half of your truck is right at your door—get the other half in the form of a Maxfer Perfected Universal Attachment. It makes a perfect truck of Fords and can easily be adjusted to any make of car. There is not another attachment like the Maxfer on the market.

If you want a truck at a very small cost, the attachment we offer at this price will solve the problem. Brand new complete Maxfer attachment.

BE SURE TO LOOK INTO IT AT ONCE



Original Price at Factory, \$350. Sale Price Now Cut to \$175, F. O. B. Portland. Also 2 and 4-Wheel Trailers, from 1000 to 3000-Pound Capacity, will be sold at a fraction of regular price. NOTICE—Lumbermen, Road Builders, etc., it will pay you to get our prices.

Hundreds, yes, thousands of other wonderful bargains—the entire stock going—Just 6 days more—Sale closes Saturday night—We must get out of the building.

SALE OPENS TOMORROW 8 A. M. TILL 8 P. M.—EVERY DAY ALL WEEK—SIX DAYS

David Hodes Co.

Corner of Broadway and Flanders Open Evenings All Week 8 o'Clock

NOTICE—For further information the balance of truck attachments not sold during the next six days will be offered on sale at our new location of parts—dismantling and auto wrecking—at 105-107, near Flanders, the new home of a million parts.

TIRES

Factory Firsts Fully Guaranteed

- Special Prices
- 30x3 Non-skid.....\$11.35
 - 30x3 1/2 Non-skid..... 13.75
 - 32x3 1/2 Non-skid..... 36.50
 - 34x3 1/2 Non-skid..... 31.75
 - 31x4 Non-skid..... 22.60
 - 32x4 Non-skid..... 23.00
 - 33x4 Non-skid..... 24.25
 - 34x4 Non-skid..... 24.75
 - 36x4 Non-skid..... 37.50
 - 35x4 1/2 Non-skid..... 33.00
 - 36x4 1/2 Non-skid..... 33.50
 - 37x5 Non-skid..... 41.00

We have a large assortment of Standard Makes

Goods shipped C. O. D., express or parcel post. Money refunded on goods returned intact within 10 days.

MALCOM TIRE CO.

Cor. Broadway and Everett Sts. Portland, Oregon