

LOW GEAR SAFEST BRAKE ON HILLS

In Interest of Safety First,
Every Motorist Should
Know How to Use It.

RESISTANCE HOLDS CAR

Problem of Making Use of Engine
as Brake Much More Simple
Than Many Drivers Suppose.
Much Practice Advisable.

Few motorists recognize what an efficient braking system they have in the gear box, combined with the engine. A thoroughly reliable effect may be obtained which will save the brake linings and may even save life in case the brakes fail.

A case comes to mind of a driver who took two women friends down a mile or more of mountain road and killed both them and himself at the bottom. The brakes had failed, and he did not know what else to do but steer until death overtook him.

However, such knowledge is more general now, the only difficulty being that drivers do not know what gear to use. Fortunately, the problem is a very simple one. If the clutch is engaged and the gears in a speed it is evident that the engine will give more from the engine right through to the rear wheels.

It must be equally evident, if the car is running down hill and the clutch and gears are engaged, the engine being dead, that the rear wheels will drive the engine. This requires work to be done, and the effort on the wheels is to slow them down. It becomes then simply a question of choosing the gear which will cause the rear wheels to do the most work.

Low Gear Best Brake.

It will readily be seen that this must be the low speed. On the direct drive (which is the high speed in a three-speed gearbox) the engine revolves once to a turn of the driveshaft once. But on low gear the engine may revolve three or four times, depending on the size of the gears. If the drive is reversed the engine must revolve three or four times for every revolution of the driveshaft. As this gives three or four times the drag that would be given by the high gear, it is evident that it should be used.

This may not seem to be very hard work, but that is because we have not yet considered the reduction of gearing that takes place at the differential. This varies with different cars, but one will call it four to one. That is, the driveshaft turns four times to drive the differential and axle once. If we reverse the wheels turning once will drive the driveshaft four times.

If the low gear is in mesh the engine will revolve four times for every turn of the drive shaft, making 16 revolutions of the engine to one of the rear wheels. If high gear were used, the engine would turn over only four times. By using the low gear we are four times the braking effect. If we have a four-cylinder engine we have two times the braking effect. If we have a four-cylinder engine we have two strokes of the engine for each revolution, making 32 strokes of the piston to each revolution of the rear wheels.

Tests Should Be Made.

The question arises as to whether suction or compression is used. Most people say compression, as they know how difficult it is to crank an engine over compression. But it is not difficult to spin an engine once. It is started, as the release of compression helps the fly wheel along. If in doubt, try spinning an engine by hand, with the compression cocks open, and again with them closed. It will be found much harder if cocks are closed.

The condition of suction above the pistons is opposed by atmospheric pressure below the pistons, making a heavy resistance. This is not only reasonable, but it may be readily tested out in practice.

To try it out on a car, choose a moderately steep hill and go down on low gear, clutch in and ignition off. Try varying the speed with the throttle. It will be found that the car slows down when throttle is closed and speeds up when throttle is closed.

The practice of using the engine as a brake is advisable, especially on steep mountain roads. It insures safety, saves the brakes and cools the engine, which should be reason enough for doing it. The usual procedure is to use the foot brake for a while and then to change to the emergency brake. This relieves the brake linings, but does not cool the drums, as the two brakes, internal and external, use the same drum. So by using the engine and gears the brakes are relieved of much duty. The engine is cooled by this process, as cold gasoline vapor is drawn into the engine from the carburetor. This is a decided advantage, as the gasoline spray softens the carbon on cylinder walls and pistons, and so enables it to burn away more readily when the engine starts firing.

Mistaking May Result.

If this is continued too long, however, another effect is produced which is not so desirable. All the time the engine is being driven this way oil is being siphoned to the top of the piston, due to the unusually strong suction, while throttling down. This effect is the more pronounced if the piston rings are faulty or the cylinders are worn out of round. While the engine is working normally the oil is pushed down by the force of the explosion, and so does not accumulate in the cylinder head. But when the engine is used as a brake the tendency toward mistaking to oil is increased.

Using the engine as a brake does not merely concern the saving of the brakes, but may be of vital importance in case the brakes fail. This is a rare occurrence, to be sure, but the history of motoring shows many fatalities from this cause. Before negotiating a steep decline it is best to murrh the gears before the necessity arises.

Do not wait for an emergency before trying out this suggestion. Try it every time you go down a very steep hill.

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A. H. Knaus—By Himself.

President of Twin States Automobile Company Admits He Can't Tell All Good Points of Chandler Six in Here 300 Words.

WHAT could be more exquisitely delightful than to have 300 words with which to tell 30,941 subscribers (The Oregonian admits it) what a daring, dashing helluva fella you are!

The engine has been granted me, and I am so excited over the chance to talk about myself that I am shaking like a Ford.

I was born successfully somewhere in Missouri. By patient persuasion my mother convinced me that I was "some boy." After leaving home I realized that this conviction was true, only the emphasis belonged on "boy" instead of "some."

The gods designed me by taste, temperament and physique to be a three cushion expert, being just the right height to recline gracefully on or over the 5 by 8, but destiny gently took me by the hand and led me along the gasoline saturated paths of the automobile business.

I've never been sorry, except on one occasion, years ago, when my first employer told me that the night shift that I ever would know the difference between a magneto and a carburetor, and that though the firm would probably suffer a loss of \$40,000 or \$50,000 a year on account of my leaving he would endeavor to struggle along without me.

I thought he underestimated the loss. In the five years since that time I have come to realize that the course of the automobile business is not strewn with roses, and that it is very easy to overestimate one's ability as well as one's success.

A good car, hard work, and the realization that there are two viewpoints to a business transaction, i. e., the customer's as well as one's own, are elements that have contributed to a modest success. But I am falling into the habit of which most automobile men are accused, i. e., talking too fast and too much; anyway, space is too limited to delineate the merits of the

Chandler; most any owner can give better and more eloquent testimony.

HERE'S TRICK WORTH KNOWING

How to Keep Car Going Without Battery Is Explained.

It is possible under certain conditions to keep a car that uses battery ignition running without the use of the battery. This is when the battery system employs a generator to feed a load after a certain engine speed has been reached, while the battery is called upon for speeds of less than 15 miles or so.

If the battery is out of commission it is impossible to get the car started in the ordinary way, but if the vehicle is towed or otherwise got in motion, it can be kept going. Obviously the starter is out of commission and the speed of the car must be kept pretty well up, but in emergencies this dodge is worth remembering.

A. C. Stevens—By Himself.

Winton and Haynes Distributor Started as Repair Shop Mechanic 15 Years Ago.

MY connection with the automobile business started 15 years ago, in Washington, D. C., as a mechanic in a repair shop. I learned how to take an automobile apart and put it together again in that shop and the experience prepared me for my next step, which was to work in the mechanical departments of various automobile factories.

I was in one factory, that of the F. B. Stearns Company, on and off for four years, working in different parts of the plant, particularly in the testing and assembly departments.

In 1908 I came West to Seattle. For a year and a half I was assistant manager for the Seattle Taxicab Company. Then for one year I was salesman for the Stearns people. In 1911 I became assistant manager of the Winton branch in Seattle and three years later was transferred to Portland as manager of

the Winton branch here. Last June I took over the Winton business myself for the whole Oregon territory and added the reliable Haynes line also. Business is good and it is going to be still better in 1918.

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To provide additional room for their growing business, the Western Motor Car Sales Company is remodeling its public garage into a service station for the Chalmers and Hal Twelve cars, for which it is distributor in this territory. Beginning today the garage will be discontinued and will be operated as a service station only. The clutch room is also being remodeled.

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you would want a positively driven oiling system that would eliminate lubricating troubles and consequent costly repairs—just as the Kissel Truck has.

you would build a frame for that motor larger than most people seem to think necessary, such that it could stand all the wear and tear on the job that you have in mind—just as Kissel has done.

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