

Doing Away with the Loafing Charge

Loading and Unloading Apparatus that Helps to Keep the Truck Always Productively Engaged

By Victor W. Pagé, M.S.A.E.

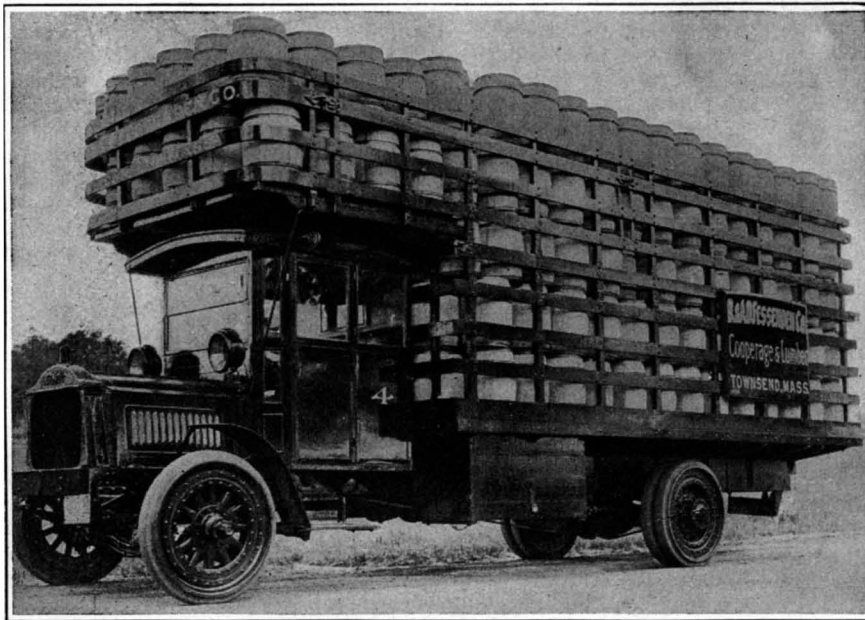
THERE are a number of conditions which must be taken into consideration if one is to operate one truck or a fleet of trucks economically. We have previously considered in these columns the importance of systematic maintenance and lubrication. The evils of over-loading have also been considered and considerable space has been devoted to the use of trailers as a means of increasing the hauling capacity of the motor truck.

There are a large number of items entering into the cost of operation, some of which can be taken care of by careful mechanical supervision, adequate lubrication and careful driving. There is one big item, however, that is usually beyond the control of the driver or those responsible for maintenance. This is the idle time of the truck, which helps to determine the actual operating costs. This depends on a number of factors, some of which can be controlled by proper mechanical supervision, while others call for executive consideration and direction. For lost time due to waste labor in loading or unloading the truck on account of the failure to provide the proper mechanical appliances to facilitate the work, no one is to blame but the truck owner or the executive directing the use of the trucks.

Whenever it is necessary to load heavy or loose material into trucks, it takes considerable thought to devise means to keep the time down. The time required for loading is said to be a more serious matter than that of unloading in handling many materials, so motor truck builders and those using them are trying to reduce this operation by the construction of ingenious special bodies and various loading devices.

Bulky materials of large size—such as baled hay and cotton, barrels, furniture, boxes and crates—are very easily handled because they can be moved from the loading platform directly to the body or platform of the truck and stowed away with comparative ease by the driver and his helper or by laborers employed for that specific purpose. Where a large variety of freight is handled, composed of parcels that differ greatly in size and weight, such as in furniture moving and in the express business, it is necessary to rely mainly on roustabouts for handling them. Materials with some degree of uniformity in size, such as gravel, road metal, ashes, dirt and coal and any other substance that is usually stowed in piles presents a problem that may be solved easily by using mechanical loaders.

In some cases scoop or bucket loaders operated by conveyor machinery greatly reduce the cost of loading a truck. As an example of how these mechanical devices cut down idle time, we are told that a



An excellent example of a body designed for a specific purpose. It permits the carrying of the maximum number of empty barrels

certain amount of coal that required the labor of several hand shovelers for twenty minutes was loaded by one shoveler and a mechanical loader in about three minutes. It has been estimated that in transferring crushed stone from the ground to a motor truck body the cost of hand shovelers is about twenty cents per cubic yard. With a mechanical loader the same amount of work can be accomplished at a cost of two and a half cents per cubic yard. In contracting work a steam shovel, which can dump its load directly into the motor truck body, will do the loading at even less cost than the figures mentioned so that the great advantage of machinery over hand labor is apparent.

In certain lines of business where a large number of small packages are carried that do not vary much in size, as in department store deliveries, the removable rack system is an important method of reducing the

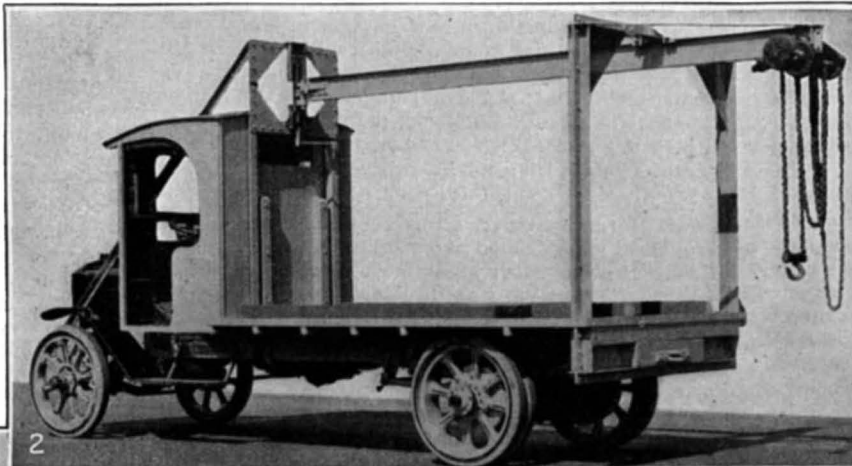
cost of both loading and unloading. Such racks are extremely valuable in moving goods from a warehouse to retail stores or from the main delivery stations to branch stations in outlying districts where lighter trucks or delivery wagons can handle the distribution to the individual consumer. Such racks are really special, but simply constructed bodies provided with sturdy truck caster wheels.

If heavy material is to be handled, such as paving blocks, bricks, boxes of canned goods, castings, etc., it is to be expected that the rack must be much more substantial in construction and be fitted with wheels adapted to run on light rails so the loaded rack can be easily moved from the loading platform to the truck chassis. The method of keeping the rack in place after it has been put on the body can be worked out by a number of simple expedients, such as rods on each side of the chassis provided with quick action clamps or turn-buckles that will engage hooks on the body sides.

When light goods are handled the rack may be lifted into the body of any ordinary delivery wagon. In many department stores the delivery of the parcels is made easier by using large fiber containers or wicker baskets, roughly about four feet wide by six feet long by four feet in depth. These are provided with wheels at the bottom so that they can be readily moved from the packing room to the loading platform and from that point to the truck body. It is the custom in the packing room to arrange the distributing so that each basket or group of containers represents a different delivery district. While the truck is in motion the helper usually sorts the packages so that they can be delivered in routine order when the district in which the delivery work is to be done is reached.

If a truck is designed for handling heavy material, it is a great advantage to provide a davit on the side from which a chain hoist may be suspended so that heavy packages, barrels, castings, etc., may be easily lifted into the main body. Quite a number of trucks built for special duty work are provided with winches mounted on the truck body platform at the front and just back of the driver's seat or at the rear end of the chassis. While some of these winches are operated by hand cranks and reduction gearing, most of them are operated from the engine. An excellent example of the practical use of a winch or windlass is on those trucks used for moving safes and pianos. In this case the truck power plant not only furnishes the energy for transporting the heavy load, but through the medium of the engine-driven winch, it furnishes power enough to unload it from

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1. The standard type of dumping body with hydraulic hoist, a quick way of unloading a large variety of materials. 2. Truck body fitted with traveling telfer mechanism to facilitate loading and unloading heavy material. 3. Truck and trailer outfit used for hauling finished lumber in Havana, Cuba

Some of the means at the disposal of the truck owner who seeks greater utilization of his trucks by cutting the time spent in loading and unloading

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the truck body and raise it to whatever story is desired.

The loading and unloading of bulky and yet not extremely heavy packages is greatly facilitated by using drop sides or removable sides. If the body is used for regular routine delivery work, it is apparent that the drop side will save time as it can be handled more easily than the completely removable side assembly. For example, a bale of cotton weighs approximately 500 pounds. Hoisting this over the side of a motor truck can be easily accomplished by a couple of reasonably strong men provided the lift is not too high.

Cranes of various kinds are also of considerable value on trucks handling heavy materials. For example, in a truck delivering materials in barrels, it is possible to make the work easy for the driver so that it will not be necessary to carry a helper. This is done by fitting a simple, hand-operated crane to one side of the truck body at the rear end, provided with a swinging arm, which has a winch so that it can swing to any central point on the truck body and after the barrel is gripped by the hooks, the arm may be swung around and the barrel swung clear of the truck platform.

The best loading mechanism, where it is practical to use it, is a portable wagon- or truck-loader which will eliminate a large amount of hand shoveling in handling materials such as coal, gravel, etc., that is usually stored in piles. For example, by the use of a portable wagon-loader, it is possible to unload gondola cars of the hopper or dump-bottom type very easily, inasmuch as the car is run along a section of track and the load dumped in a pile. The portable wagon-loader, which in its simplest form consists of an adjustable bucket-conveyor mechanism mounted on wheels, carries the coal to a chute at the top which transfers it into the truck body. In another form of scoop conveyor, the material is lifted from the car interior by a chain conveyor operated by any suitable crane rigging which lifts the coal into a large, hopper-bottom steel bin. This is supported on a trestle work of sufficient height so that a motor truck can be driven under it to be loaded.

Some forms have belts instead of metal bucket conveyors. In the belt form, two forms of cleats are provided depending upon the kind of material to be lifted. The usual speed of a conveyor belt is about 170 feet per minute. When the belt is fitted with low cleats it is suitable for carrying material such as bricks, coke, coal in large sizes, bags, boxes, paving blocks, tile and similar materials. When the belt is provided with high cleats it can be used for handling material such as fruits and vegetables, smaller sizes of coal, ashes, crushed stone and other substances of similar nature.

Perhaps the most common form of special body that has received general application and which is adapted for a wide range of industrial use is the rear-dumping body having hydraulic or mechanical hoisting mechanism. These dumping bodies are made in a wide variety of different patterns and differ in design according to the requirements of the people using them. Some of these bodies are centrally pivoted on the longitudinal axis and may be tilted so the load is discharged from one side. Others, which have been designed for use with trailers, are bottom dumped. Evidently the bottom discharge construction would not always be as practical on a motor truck chassis as it is on a trailer because of the parts of the truck mechanism that are carried on the frame underneath the body.

The usual form of dumping body is pivoted near the back end and lifts up so its load can be discharged through the

tail gate at the rear. It is possible to make a body of this type with a hopper-like back so that it is not necessary to use a tail gate. Automatic dumping bodies are designs in which the material is carried in a box having a sloping bottom so that it will discharge without tilting the body. This method of construction is not always advisable because there is considerable loss in the available cubical contents of the body. Some forms of bodies that are used in the coal industry which provide automatic dumping features are so mounted that they may be elevated so that the load will be raised six or eight feet higher than the ground.

Hoisting mechanism is of two general forms: those in which the body is lifted by arms actuated through gearing which may be turned by a hand crank by man power or through a power take-off by the engine, and that type in which the work is done by hydraulic means. The mechanism employing reduction gearing is merely an improvement on the old type that was formerly hand operated and provided as equipment on horse-drawn vehicles.

The present hydraulic type of hoist would not be practical except on motor trucks; they cannot be operated very well by hand, for they require motor power to turn the pump fast enough to lift the ram in a reasonable length of time.

An important consideration in the designing of all dumping bodies, whether these are to be of the automatic type, or that form in which the wagon body is raised, is the angle of slide. This means the minimum angle with the horizontal at which material will move by its own weight. Naturally this angle is altered by the nature of the material and the type of body construction. Authorities state that an angle of inclination of forty-five degrees will be ample for dumping any of the materials usually handled in dump bodies.

In certain classes of contracting work and around industrial plants, portable lifting cranes and derricks have been installed on standard motor truck chassis. Some of these derrick mechanisms have a capacity for lifting six or seven tons, the load being raised by block and tackle arrangement which is operated by a motor-driven winch or windlass carried behind the driver's seat and operated from the truck engine.

The reason a separate engine is used on some of these derricks rather than employing the truck power plant is that the amount of power required for operating the derrick is considerably less than that delivered by the motor truck power plant.

Other trucks have been designed that use a traveling telfer which is provided instead of the usual form of derrick boom. These are suitable for lifting very heavy loads and are simpler in construction than the derrick is. Their use is limited, however, as they can only lift material from the truck body to the immediate rear of the truck or lift it from the ground back of the truck into the body. In order to permit mechanism of this kind to handle heavy goods, a pair of substantial screw jacks is carried by the rear of the chassis. These are dropped down to the ground and adjusted to support the rear end of the frame and relieve the truck springs and tires of the heavy load. When the jacks are down, a rigid platform is obtained.

Aircraft for Pleasure

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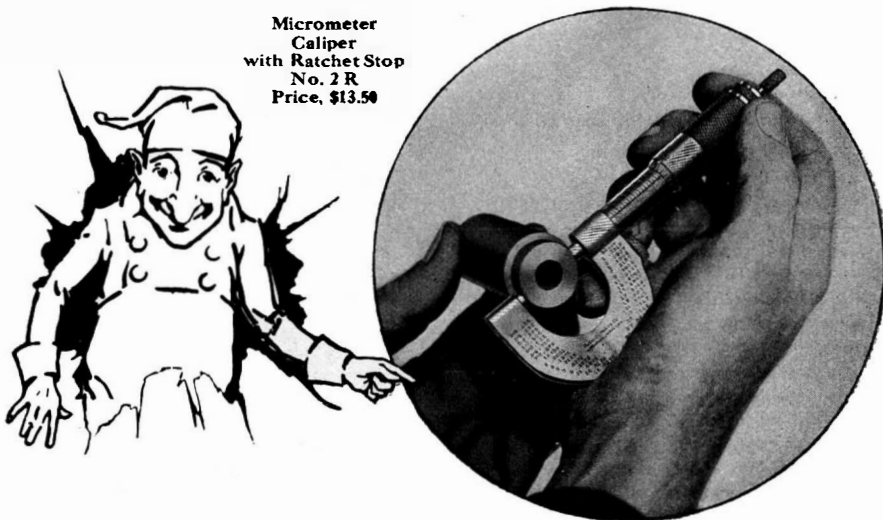
The Longhead motor weighs approximately 90 pounds, is water cooled, and has two horizontally opposed cylinders with a bore of $3\frac{3}{8}$ inches and a stroke of $4\frac{1}{2}$ inches. There are two independent magnetos; and two high pressure gear-type oil pumps. The radiator, as noted above, is mounted in a novel position, immediately under the fuselage—the most log-

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