

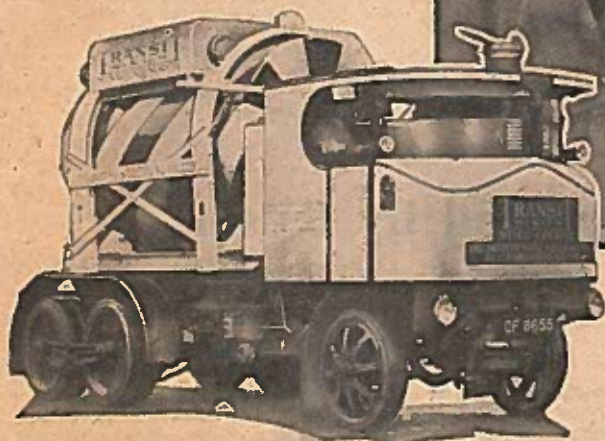
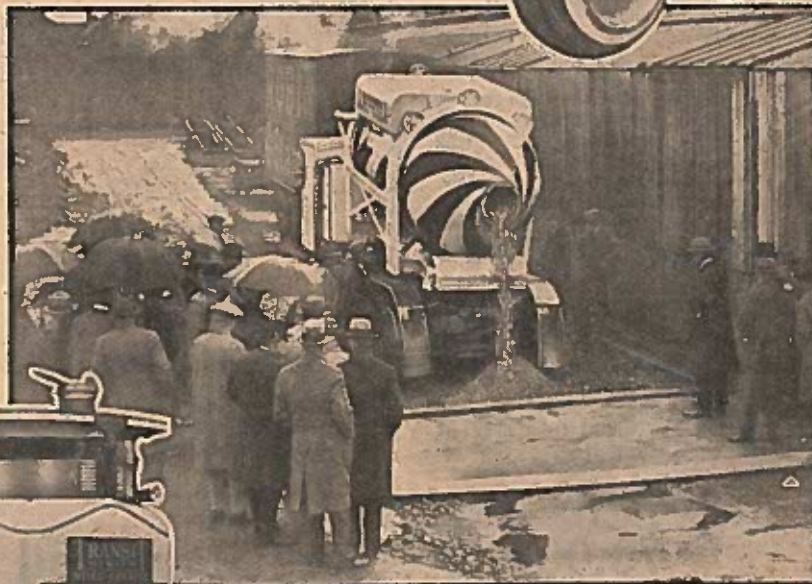
An Interesting Machine Designed to Effect a Saving for Builders and Constructional Engineers

Mixing the Concrete While Travelling

ALTHOUGH the use of concrete for building purposes is almost age-old, it is only of recent years that really extensive use has been made of this highly desirable addition to the constructional engineer's choice of materials. Naturally, methods of production and transport of the aggregates, or mixed constituents, have been the subject of much study on the part of raw-material manufacturers and the builders themselves; their research has yielded the conclusion that best results can be obtained only when accuracy in apportioning the appropriate aggregates and the correct mixing time are ensured.

An interesting appliance for mixing the concrete while it is being carried is being introduced by the British Steel Piling Co., Ltd., of 54a, Parliament Street, London, S.W.1. It is called the Transit Concrete Mixer. The Sentinel Waggon Works, Ltd., of Shrewsbury, has mounted one of these mixers on a Sentinel DGG-type six-wheeled steam chassis with end-tipping gear, the ideal circumstances in which the outfit may work being, of course,

An unusual steam-wagon outfit.



In the uppermost picture the tipping gear is shown, whilst the other two illustrations give a good idea of the vehicle, its mixer and water tank, and how it discharges the concrete after it has been mixed thoroughly.

in conjunction with a central loading plant.

As the Sentinel chassis has already been described fully in the pages of *The Commercial Motor*, we can take it for granted that readers are fully aware of its many interesting points, so that attention can be confined to the special gear with which the model under review is equipped. Its essential features consist of a cylindrical drum equipped with internal blades and capable of rotation, this being effected through the medium of shafts and gearing from the power unit of the vehicle. As will be seen from the photographs, the whole unit is relatively compact in shape and is not unduly large, despite the fact that a capacity for mixing 5 cubic yds. of concrete is provided in the drum which is carried.

Before actually describing the method of rotation it would seem opportune to say a few words concerning the loading operations. When the appropriate quantities of aggregates and cement have been decided upon, a door at the apex of the conical end of the drum is opened and, by means of a chute (or, in the absence of special loading mechanism, by spade and manual labour) the materials are loaded into the mixer drum while it is revolving. They are then distributed evenly throughout the length of the drum and, thanks to the internal blades, they get a thorough mixing.

At the same time as this operation is being carried out the correct amount of water, in accordance with the amount of cement used and the consistency of concrete desired, is measured in the

water tank, which is located above the centre of the drum. Actually there are two tanks, one of relatively large capacity for supplying water under pressure to the "mix" and the other, much smaller in size, for flushing out the drum or any similar purpose. With the full load of dry aggregates the vehicle is then ready to proceed to the building site, and about five minutes before arriving at its destination the driver can open the tank valve which empties the water into the mixer so that, as the wagon arrives at the site, the concrete is ready for use. If for any reason a delay be inevitable and the wagon has to wait before the load can be tipped, the drum can be kept rotating, but in any case only a freshly mixed batch of concrete that has had no chance to segregate is delivered.

The use of pre-mixed concrete should be a great convenience to any contractor, since it simplifies his organization by eliminating stationary mixers and the gang of men required to run them. Further, only one material—concrete—has to be ordered instead of three, so that space on the site which would otherwise be occupied by somewhat cumbersome machinery and material is left free for other purposes.

Having outlined the general conception of the vehicle we can now turn to the details of construction. The drum is built into a girder-like framework, which is hinged to the rear of the

chassis. The rotating gear is actuated by means of a primary chain which conveys the drive from the power unit of the vehicle to a gearbox, thence by a shaft running along the chassis to a right-angled drive at the rear. A pinion in mesh with a circular rack running around the drum allows the latter component to be rotated when the vehicle is stationary or in motion, or even during the action of tipping, a differential action between the driving and driven components permitting the relative movement between them.

The mixer drum revolves, at a speed of from 10 to 20 revolutions per minute,

on four ball-bearing rollers, upon which it is entirely supported. The tipping of the mixer is effected by means of a Bromilow and Edwards patent tipping gear which, of course, is operated by an oil pump driven from the wagon engine.

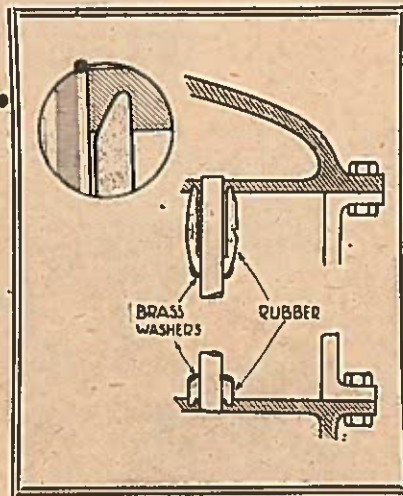
The foregoing notes were prepared following upon a demonstration which we witnessed recently at the Sentinel works, where a vehicle has just been completed to the order of a well-known British concern of structural engineers. The demonstration went off without a hitch, and the ease of control, and of operation generally, created a very favourable impression.

Easily Replaceable Radiator Tubes

ONE of the most vulnerable parts of a commercial vehicle is the radiator. Any damage done to this part may hold up a vehicle for days, and, owing to the extremely thin metal which has to be used for the tubes, they are quite easily damaged. A radiator with instantly renewable tubes should be welcomed by the maintenance engineer.

A new method of fixing the tubes, which we have seen in operation, has recently been introduced. By this scheme a tube can be removed and replaced by a new one in a few seconds.

The upper and lower tanks are cast in one piece, including the part which is usually a separate plate. The tubes, which can be killed or wound with spiral wire, are provided with brass washers, as shown in the drawing. The lower end has a rubber washer which can fit snugly to the tube. The upper end carries a washer which is some distance down the tube. This end is provided with a rubber sleeve of some length, fitting the metal tube only at its lower part, thus leaving the re-



The Whitby rubber-sleeve device for facilitating the removal and replacement of radiator tubes.

mainder free, so that the sleeve can be pressed upwards to allow the lower end to be placed in its hole in the tank. A compression of $\frac{1}{4}$ in. of the rubber sleeve is allowed when the tube is in place, this being found sufficient to prevent leakage.

Rubber has been used before for making a seal, but trouble has arisen through the rubber vulcanizing to the tube, thus rendering difficult the removal of the tube. The particular feature of the present plan is that the bulk of the long sleeve is not in contact with the tube, consequently it is free at any time to compress and so allow the tube to be removed. This radiator is the patented invention of Mr. Holly Whitby, of Edglt Street, Ponder's End, Enfield.

We understand that Serck Radiators, Ltd., is interested in the production of this new type of radiator, and that the company will shortly be prepared to convert existing radiators to this design, the service of its 15 branches throughout the country being available for the purpose.

70,000 Tractors Required by Russia

SO strict is the censorship on news emanating from the Soviet Republic that scarcely a person outside Russia has the slightest idea as to market conditions obtaining in that country. Certain American concerns, however, with enormous financial resources, have decided to take the risk of establishing big factories in Russia and, at the same time, to assist the Russian people in building up their own motor-vehicle industry.

The institution of communal farming has resulted in the formation of gigantic farms, some of them being over 50,000 hectares in area (over 123,500 acres). These are the largest, or National, farms, the working of which on up-to-date lines necessitates a fleet of about 600 agricultural tractors per farm.

As there are no fewer than 40 of these huge farms in existence, in addition to innumerable big provincial properties, which are administered by local authorities, the magnitude of the demand for tractors and industrial vehicles becomes apparent. The Soviet Government states that 20,000 tractors are needed for the National farms, and at least another 50,000 for the land that is run

Facts About the Activities of Several American Concerns that are Interested in the Soviet Market

by the many and various authorities.

Two Russian national factories for the manufacture of tractors exist—the old Pontilow works at Leningrad and the Kharkow works in the Ukraine. The Pontilow factory is said to have an output of 500 tractors per month. New plant is being installed with which it is hoped, by the end of 1930, to bring the capacity of the works up to 10,000 tractors per year.

The Kharkow factory is smaller, with a reputed output of 1,300 tractors per annum. These works are also in process of transformation, with a view to bringing the production up to 5,000 units per annum.

With an immediate need for 70,000 tractors, the inadequacy of the Russian output, even after reconstruction of the present works, is obvious. This is where the American undertakings come in, for, in addition to the Ford works

at Nijni-Novgorod, three other American factories are either already under construction or are about to be taken in hand.

These are at Stalingrad, where a mixed output of 10,000 industrial vehicles and tractors, rising to 40,000 per year, is projected, at Chetyabinsk, in the Ural province, with a proposed annual output of 30,000 tractors, and at Yaroslav, with possibilities of producing 20,000 tractors per annum.

In so far as possible, raw materials of purely Russian origin are, it is understood, to be employed, whilst Russian labour is certainly not lacking. There is no doubt that the American concerns are taking a long view of the matter. By risking important capital in helping the Russian Government to establish a great and essential industry, thereby bringing back some measure of prosperity to its colossal country, they hope, in years to come, to create an increasing and, indeed, practically unlimited, market for American cars, lorries and mechanical commodities of all kinds. It would appear that the American magnates are building not for the moment but for 10 or 20 years ahead.

How (Detail) ber of

WE need whether will agree be made the numbers and beneficial

In rev taken b may poi of acci was at occurred a thing tion of operati ments locally re of dang

There the con body r for im point of danger remark wish those the ro

A C What even screen that wiped good on the with driven

The screen view rain view trate on s know men vehi at the

At peiv driv roac eng into the in f It the sibil of mi