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9. Cinders and clinkers from incoming engines are handled in various ways. An arrangement in common use which has proved very satisfactory is shown in Fig. 5. The contents of the ash pan are dumped on a platform about four feet below the top of the rail, with a slight incline toward a depressed pit into which cars are run for loading.
In Fig. 5 the rails are shown supported on wooden piles, the upper ends of which are surrounded by cast-iron pipes, with



Fig. 2.-Coaling Station with Trestle.

insulating material packed between the pipe and the pile. The use of concrete piers is considered preferable where foundation conditions will permit. The cinders and clinkers removed from the ash pan are wet down and shoveled into an open coal car standing in the depressed pit. With engine tracks on each side of the pit, several engines may be accommodated at a time, and the plan affords considerable storage capacity, so that, with a pit of moderate length, a day force of shovelers is sufficient to take care of the accumulation.

10. In some modern plants the slope from the outer rail **delivers** the refuse from the ash pan into a concrete pit about

eight feet in width and depth and filled with water. In this case the material is removed by means of a travelling gantry crane with clam shell or similar buckets, and delivered to cars standing on the side of the pit opposite the engine. In other cases pits are provided between the rails, in which buckets are placed, and the buckets are lifted out and the contents deposited in open cars by a gantry or ordinary overhead electric-driven crane with elevated runway.

11. The engine houses of the United States, usually being circular in form, require turntables for the delivery of engines to and from the house. A common length of table for new installations is 80 feet, though a great many shorter tables are still in service, and working satisfactory where the length of engines is not too great. Turntables are frequently moved by hand, though a more economical method, where a considerable number of engines are turned, is by tractors driven by gasoline engines or electric motors. The tractor has a heavy steel frame of triangular shape attached to the turntable by means of hinges at two points, the weight being balanced on the single tractor wheel travelling on the circular rail in the pit. On this frame are mounted the motor, gearing, bearings, shaft and brake, comprising the driving mechanism. Above the machinery, and entirely covering it, is mounted the operator's cab, in which the operating mechanism is located. Electric motors are generally considered preferable where current can be provided uninterruptedly, and on such installations a collector device is applied to the turntable center. This maintains a connection with the feeder line, which is brought underground to the center of the pit, though, in case the pit is subject to flooding, an overhead collector may be used.

The Engine House.

12. Fig. 1 shows the plan of an engine house with thirty 100-ft. stalls and an 80-ft. turntable, on a circle having a maximum provision for forty-seven stalls, including inlet and outlet tracks. This plan shows fire walls separating the house into three rooms of ten stalls each. The two center stalls are provided with drop pits, by means of which driving and truck wheels may be removed and replaced without jacking up the engine. The engines in this house are intended to be headed in and backed out.



Fig. 3.-Coaling Station with Bucket Elevator.