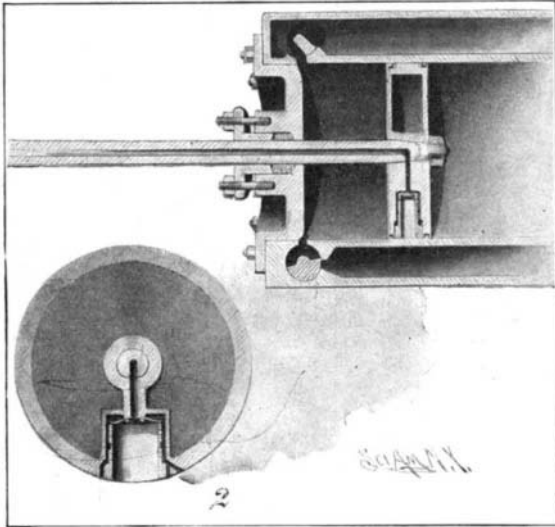


A FLOATING PISTON.

A recent invention provides a simple and effective means for sustaining the weight of a piston in a horizontal cylinder so as to reduce friction to a minimum and prevent the cylinder from wearing oval, which would cause leakage of steam or other fluid from one side of the piston to the other. The accompanying



A FLOATING PISTON.

illustrations show clearly the means provided, Fig. 1 being a longitudinal section through the center of the cylinder and piston and Fig. 2 representing a transverse section through the piston head. It will be observed that the piston rod is hollow and connects with a passage extending at right angles therewith to a chamber opening onto the peripheral face of the piston head at its lower side. Steam or air is admitted to this passage through the hollow piston rod, and this pressing against the cylinder sustains the weight of the piston head. In order to prevent the escape of the fluid from the pressure chamber, the latter is provided with a sleeve having a packing ring and an enlarged lower portion adjacent to a vent tube formed in the piston head and leading to the peripheral face thereof, to lessen the pressure per square inch on the bottom of the cylinder. Now, by the arrangement described the pressure on the top edge of the sleeve will force the same downward for the outer end to engage the cylinder, so that the fluid cannot escape from the pressure chamber to either face of the piston. The sleeve is also pressed on the top edge by springs secured to the pressure chamber, as plainly indicated in the drawings. This arrangement will be found very useful on steam engines of high and low pressure and for heavy trunk pistons of air compressors driven by gas engines. It can also be used on locomotives, as they have a constant pressure of air which may be

utilized to float the piston without waste. A patent for this invention has been granted to John C. Junkin, of Grafton, N. D.

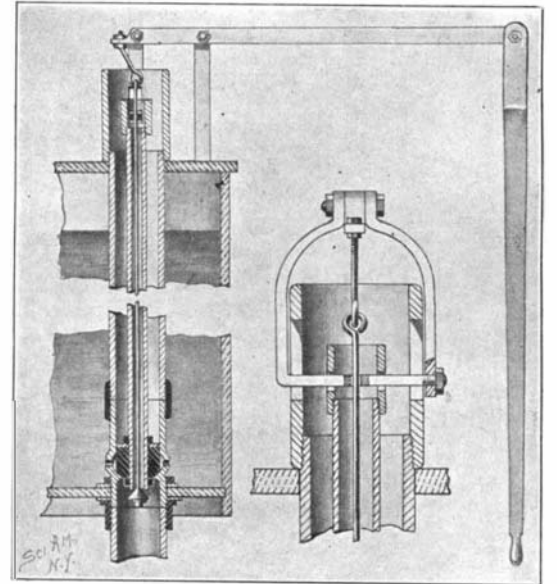
A NON-FREEZING VALVE.

The improved discharge valve for tanks which we illustrate herewith is so arranged as to prevent freezing of the parts in cold weather. The invention, which is to be accredited to Mr. P. J. Leithauser, of Clarendon, Texas, provides for the draining of water from the valve and the free circulation of air to absorb all moisture collected on the parts. The valve operates in a pipe which extends through the tank, the lower end being threaded into a short pipe section which contains the valve seat and also the ports for the outlet of the water when the valve plug is lifted. This pipe section connects at the bottom with a discharge pipe. The valve plug is secured to a hollow stem open at the bottom and passing up centrally through the main pipe. Within the hollow stem is a valve rod which is provided with a secondary valve arranged to close the bottom of the hollow stem when the main valve is lifted. This rod at the top is connected by a link with the valve-operating lever, and the latter is also connected by a yoke with the main valve stem, as shown in our enlarged detailed view. The cross arm of the yoke, however, is permitted a small amount of play in the top of the valve stem, so that on operating the lever the secondary valve is first raised to close the bottom of the stem and then the main valve is lifted. On releasing the lever, after the main valve is seated, the secondary valve opens. Just above the main valve plug the valve stem is perforated, and through these openings any water collected in the upper pipe may flow out by way of the secondary valve into the discharge pipe. These perforations also permit free circulation of the air and prevent accumulation of moisture, which on freezing would render the valve inoperative.

SOME INTERESTING MODELS.

BY H. D. JONES.

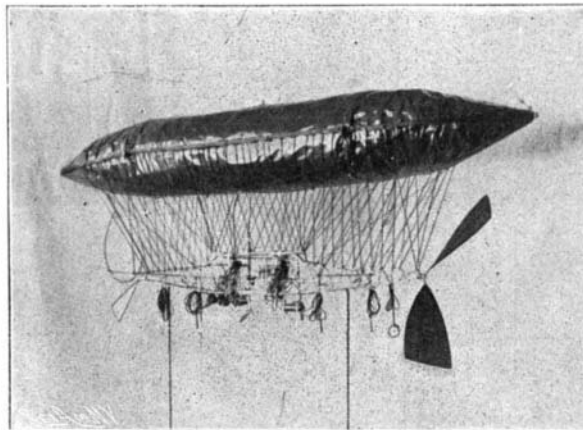
Model making is the hobby of Dr. Frank H. Brandow, president of the Berkshire Automobile Club, of Pittsfield, Mass. We reproduce in the accompanying illustrations a number of exquisitely made models turned out by Dr. Brandow in his private workshop.



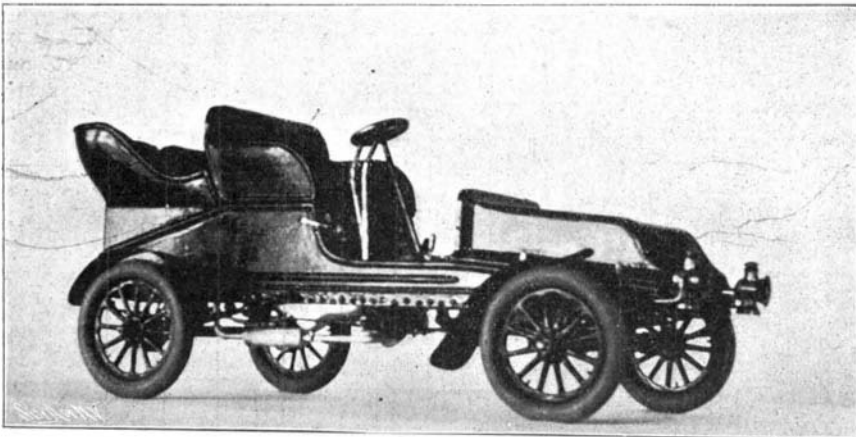
A NON FREEZING VALVE FOR TANKS.

These models were made during leisure hours, and show mechanical skill and ingenuity of a high order.

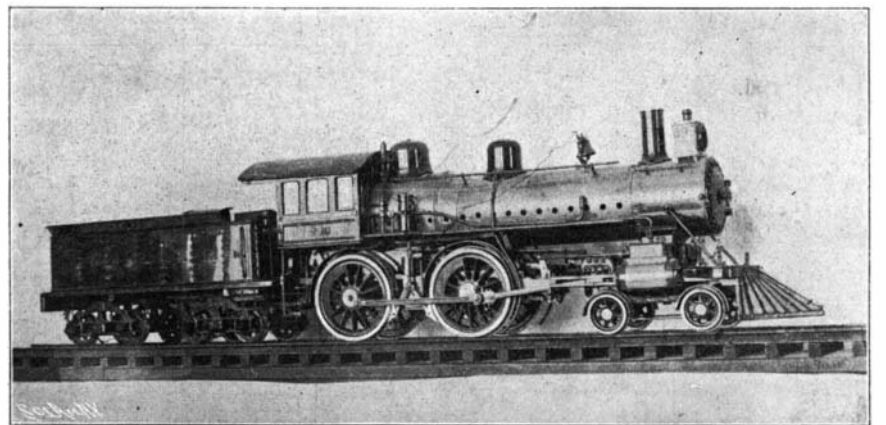
The model of the locomotive "999" weighs about 65 pounds. It is a perfect working model. It differs from the full-sized engine only in being fitted with a brake that works by steam instead of air pressure. Steam for the brake is supplied from a tank just above the forward truck, the tank generally used for air pressure in the Westinghouse brake system. The engine is built of brass, bronze, silver, copper, nickel plate, cast iron, aluminium, and gold plate. There is no woodwork in its construction. The tank is built of burnished copper riveted in the usual way. The headlight is supplied with a two-candle-power electric light, connected with a battery kept under the coal in the tender. The holes drilled in the boiler at the side and the bottom are used for draft for the alcohol burners used to make steam, it being impossible to generate steam in so small a boiler with flues on account of lack of draft. The crown sheet runs the entire length of the boiler, giving large heating surface for steam. The boiler runs on a pressure of from 40 to 60 pounds. Dr. Brandow was a year and a half in making this model. There are several thousand pieces, counting all the small parts. The hand brake in the tender and all the



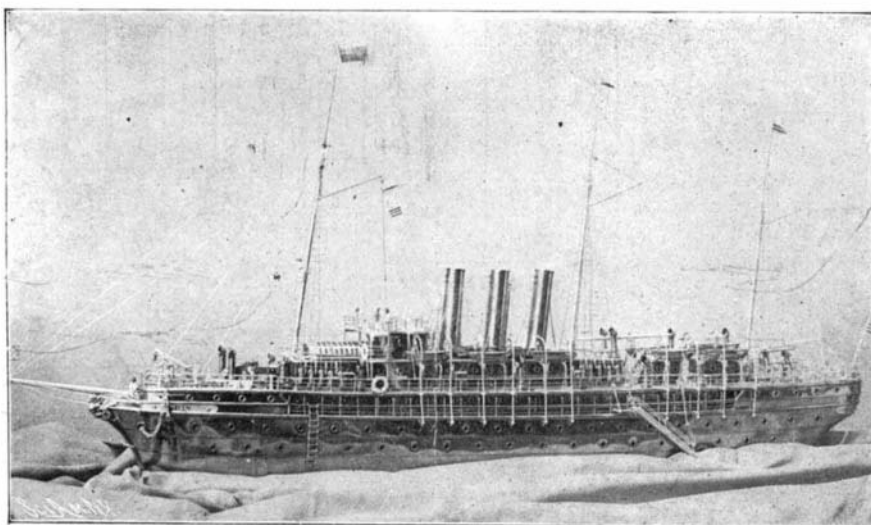
Model of an Airship.



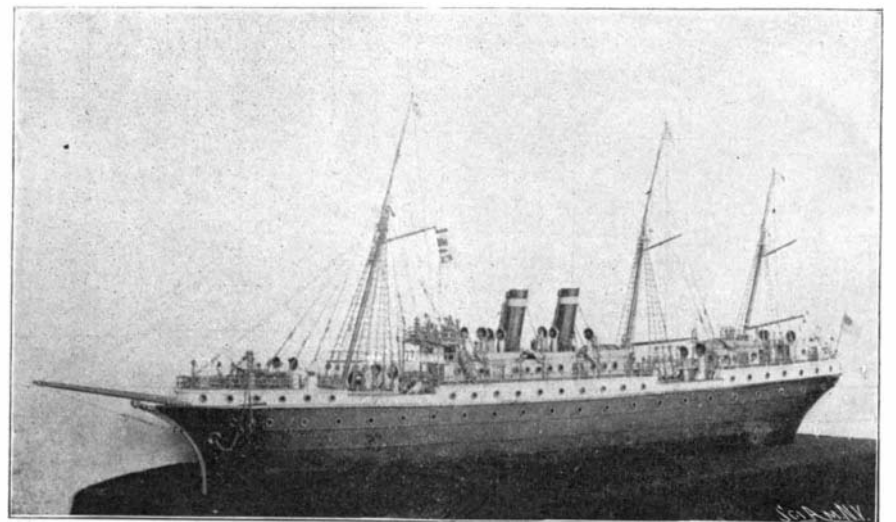
Working Model of a Winton Touring Car Exhibited at a Recent Automobile Show.



A Working Model of Engine 999. Weight 65 Pounds.



Model Constructed of Brass, Iron, Silver and Gold.



Model of an Ocean Liner.

AMATEUR MODEL MAKING.