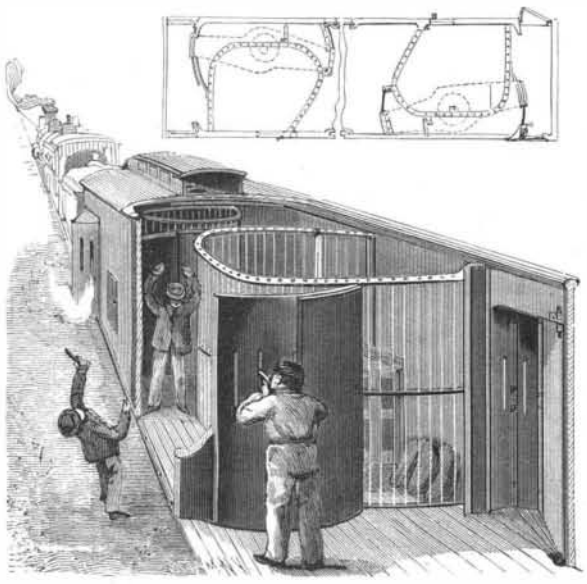
A BURGLAR PROOF EXPRESS CAR.

In the improved car shown in the illustration, cages designed to be opened only from the outside, by the depot man at the station, are provided for the safe and the more valuable parcels, and the arrangement is such that, if the robbers succeed in entering the car, they will be exposed to the fire of the messenger from a bullet-proof compartment in each end of the car, the messenger being also able to shoot along the



MORELL AND FERRER'S BURGLAR PROOF CAR.

sides of the car to protect the engineer, or to prevent burglars and robbers from making an entry. The improvement has been patented by Messrs. Miguel Morell and Ramon M. Ferrer, of Santa Barbara, Cal. The car has a double floor and double roof, and in each end is a messenger's compartment, from which he may shoot along the side of the car from outwardly swinging sections provided with portholes or through portholes in its end. At opposite sides of the car, adjoining each messenger's compartment, as more fully shown in the small plan view, are strongly formed barred compartments or cages, for the reception of safes, etc., each cage being reached by a door in the side of the car, having a lock on the outside. Each cage also has a door opening into the body portion of the car, and a passageway is left on one side of each cage from the messenger's room to the central portion of the car. This passageway is designed to be closed at each end by doors carried on the ends of a platform pivoted between the floors, the doors being thus simultaneously opened and closed, and the arrangement being such that a robber gaining access to the center of the car is liable to be shut in there, or in the passageway, by the messenger, the latter taking refuge in one of the end compartments, where he may fire through portholes in the doors upon the robber thus imprisoned. The passageway is also closed by an intermediate door having a lock on the side next the messenger's room. The construction is designed to be very simple and substantial, and yet not very expensive.

Here's a New Malady.

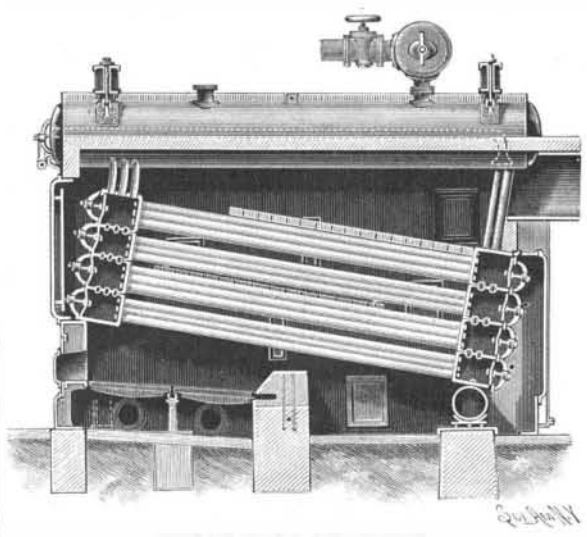
A typewriter was heard to say that when she first got a circular letter to do she thought she had a soft thing. It was a committee notification, the only difference in the letters being the names and addresses, subsequently added. There were five hundred of these letters to be typewritten. She began her work in high glee. After having finished half a dozen or more she had the text by heart, and rattled on at a high rate of speed. After having done thirty or more her speed began to fall off. Shortly it began to be necessary to rest a few minutes between each letter. Then her eyes refused to distinguish the letters. Her fingers worked automatically. The mind failed to understand the meaning of the words. Then the eyes closed with weariness and the fingers groped their way unaided by sight. After a time the text became so confused, the letters so mixed up, that the work had to be turned over to another person. The testimony of other typewriters confirms the nervous excitement and bodily exhaustion that result from repetition. Women who conduct offices of typewriting report that frequently girls have been laid up at their homes and in hospitals from making excessive copies of circular letters. In well conducted offices these are now given in rotation, alternating with other work.

STEEL BRIDGE, MALLECO RIVER, CHILE.

Our engraving, which is from La Ilustracion Sud-Americana, shows a notable bridge of steel erected over the river Malleco, on the Central Railroad of Chile, in the southern part of the republic. Great difficulty was experienced in the construction, owing to the mountainous character of the country. The approximate length of the bridge is 1,200 feet. It is supported on four piers, the highest of which, from level of the river, measure about 315 feet. The total weight of the metal of the bridge is 1,400 tons. Designed by Aurilio Lastarria, a distinguished Chilean engineer. Erected by the Creusot Works, France.

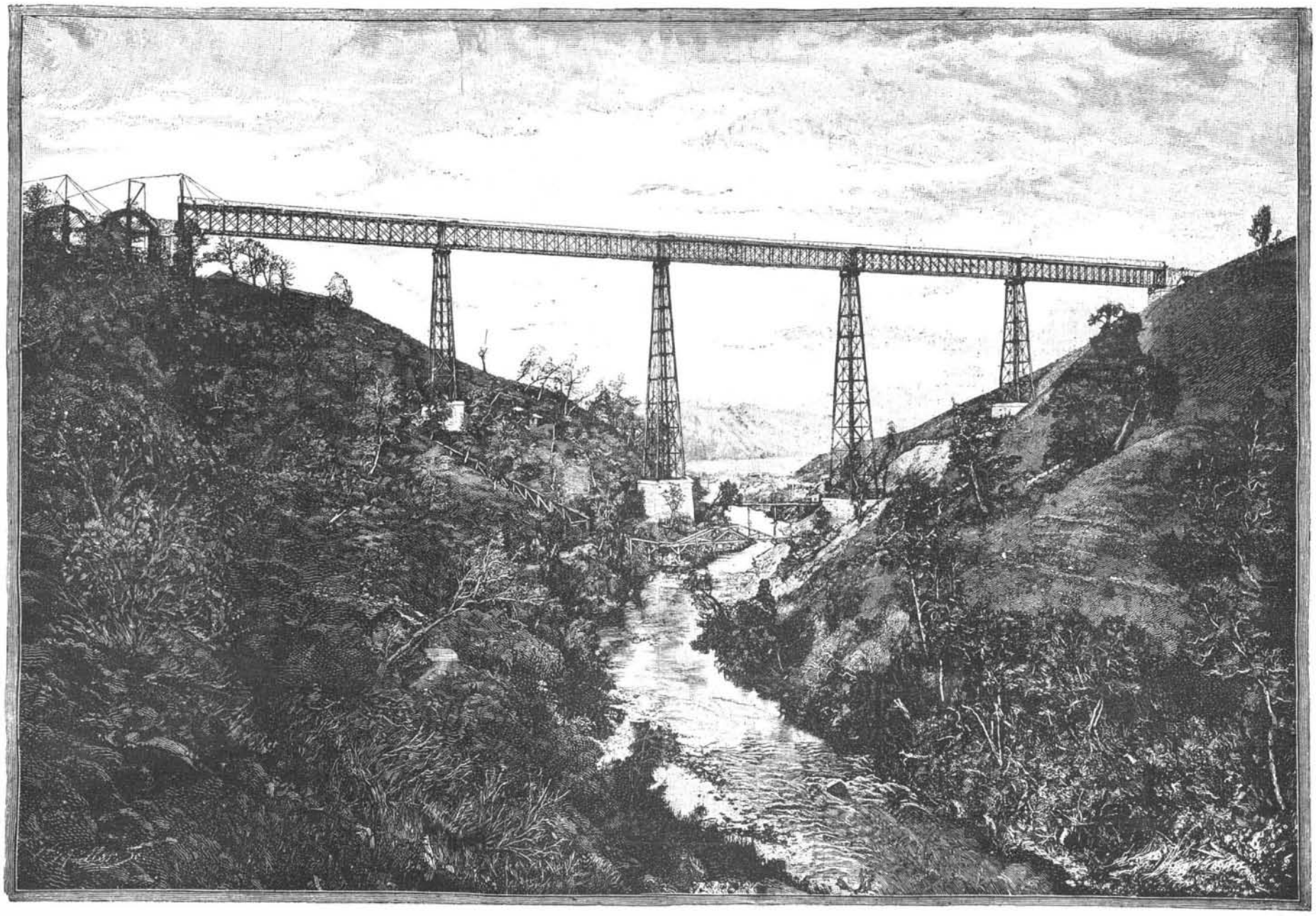
AN IMPROVED STEAM BOILER.

This boiler is made with wrought steel headers, not liable to crack, carries a large body of water, and has large disengaging surfaces for steam, producing absolutely dry steam, as the hot gases from the fire circulate around the heads as well as around all the tubes.



FINGER'S STEAM BOILER.

It has been patented by Mr. Carl Finger, of Wilkes-Barre, Pa. The water tubes are arranged in sets and connected at their front and rear ends to heads arranged in pairs and connected with each other by short pipes at their contacting rims. The uppermost heads at the front and rear ends are each connected to a longitudinal steam drum, connected by a pipe to a transverse superheated steam drum, from which the steam to be used in the engine is taken. Any desired number of sets of pairs of heads may be arranged alongside of each other, there being a separate steam drum for each set, and the lowermost row of heads is connected with the usual mud drum. With this construction no stays are necessary for the heads, so that the entire boiler may be of wrought iron, and the manhole cover can be readily removed from its seat in each head to give access to the several tubes entering the head.



STEEL BRIDGE OVER THE RIVER MALLECO, CHILE.