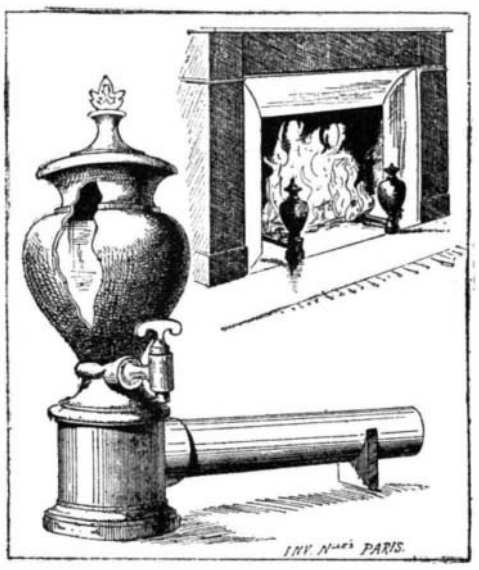
TEA KETTLE ANDIRON.

The apparatus represented herewith seems destined to replace to advantage the tea kettles that are usually placed before the fire in order that hot water may always be at one's disposal. This andiron is entirely hollow, so that it may be filled with water. A cock placed at the side permits of drawing off the water in measure as it is needed.

If it is desired to convert the apparatus into a hot water bath, it is only necessary to remove the cover



TEA KETTLE ANDIRON.

and to immerse in the boiling water the vessel containing the liquid to be heated.

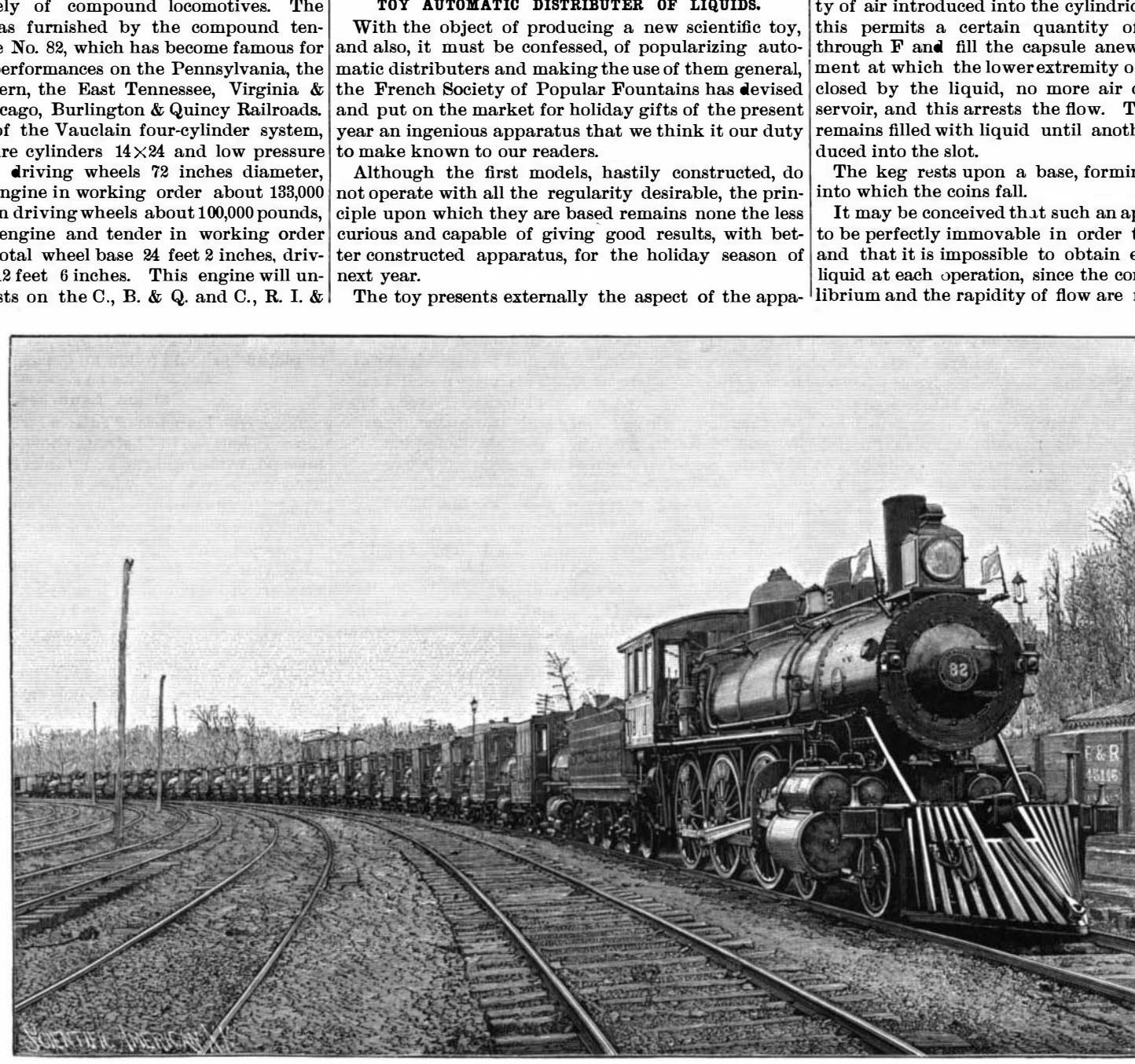
It is very easy to give the apparatus an artistic form that will permit of its being utilized in any fireplace.—*Les Inventions Nouvelles.*

A TRAIN OF COMPOUND LOCOMOTIVES.

The Baldwin Locomotive Works recently shipped by the Lehigh and Wabash Despatch a novel train, consisting entirely of compound locomotives. The motive power was furnished by the compound ten-wheel locomotive No. 82, which has become famous for its remarkable performances on the Pennsylvania, the Norfolk & Western, the East Tennessee, Virginia & Georgia and Chicago, Burlington & Quincy Railroads. This engine is of the Vauclain four-cylinder system, with high pressure cylinders 14×24 and low pressure cylinders 24×24, driving wheels 72 inches diameter, total weight of engine in working order about 133,000 pounds, weight on driving wheels about 100,000 pounds, total weight of engine and tender in working order 200,000 pounds, total wheel base 24 feet 2 inches, driving wheel base 12 feet 6 inches. This engine will undergo further tests on the C., B. & Q. and C., R. I. & P. and M. P. Railroads after its arrival at Chicago. The train which it hauled consisted of 20 compound locomotives of the Vauclain system, intended for the equipment of the Chicago & South Side Rapid Transit Railway, otherwise known as the Alley Elevated Road. The aggregate weight of the 20 engines comprising the train was 1,000,000 pounds, exclusive of the live engine hauling the train above described.

These engines for the Alley road were built in accordance with specifications prepared by Mr. R. I. Sloan, chief engineer, and Mr. D. L. Barnes, consulting engineer, of the South Side Railroad. They combine novel features, which are believed will make them better adapted to elevated service than any locomotives heretofore in use. The compound system practically does away with loud or offensive noise from the exhaust and prevents throwing of sparks or cinders. By the use of anthracite coal, all show of smoke is avoided. The engines weigh in working order about 58,000 pounds, and have about 40,000 pounds on drivers. They are intended to haul five-car trains, making an average rate of speed, including stops, of 20 miles per hour; and a maximum speed between stations of from 25 to 30 miles per hour. The amount of work required by this performance can be appreciated when it is understood that the stations are at the rate of three per mile.

The movement of this train required three sets or relays of engineers and firemen, working eight hours each, to enable the train to run night and day without other stops than necessary for coal and water. Pilot engineers were taken over each division of the lines traversed by the train. Seven engineers or machinists acted as messengers, to see that the train ran cool, and to avoid possibility of accident. The whole train was in charge of Mr. W. J. McCarroll, assisted by Mr. Jerome J. Parmelee and Mr. H. Burall, traveling engineers employed by the Baldwin Locomotive Works. Mr. Burall took charge of the tests of the compound engine 82, and Mr. McCarroll and Mr. Parmelee attend to putting the elevated locomotives into working order and conducting tests of their performance on the road.



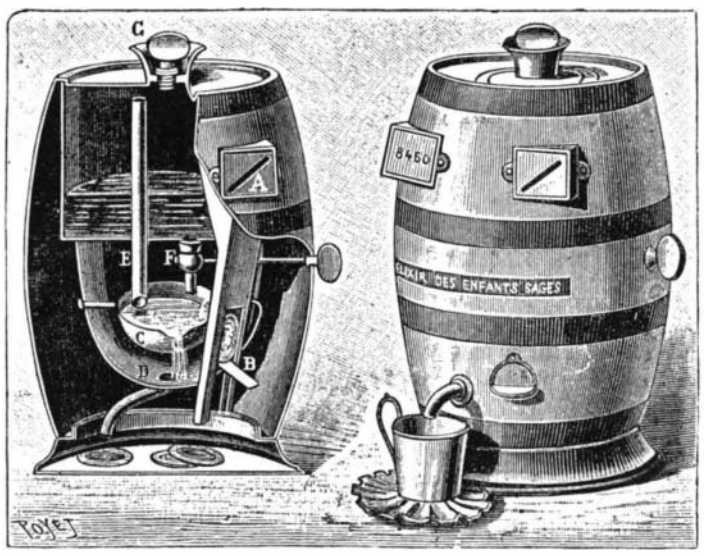
LOCOMOTIVES FOR THE CHICAGO AND SOUTH SIDE RAPID TRANSIT RAILWAY.

TOY AUTOMATIC DISTRIBUTER OF LIQUIDS.

With the object of producing a new scientific toy, and also, it must be confessed, of popularizing automatic distributers and making the use of them general, the French Society of Popular Fountains has devised and put on the market for holiday gifts of the present year an ingenious apparatus that we think it our duty to make known to our readers.

Although the first models, hastily constructed, do not operate with all the regularity desirable, the principle upon which they are based remains none the less curious and capable of giving good results, with better constructed apparatus, for the holiday season of next year.

The toy presents externally the aspect of the apparatus that we have already described,* but operates through a much simplified mechanism, based upon the principle of the fountain of birds. To this effect, the liquid to be distributed, called "Elixir for Good Children," is contained in a cylindrical reservoir contained in the keg. It is introduced through the aperture, G, which it is necessary to close hermetically by screwing down tightly the plug that serves as a stopper. This reservoir is provided beneath with an aperture fitted with a cock, F, through which the liquid flows in sensibly equal proportions. This cock is closed during the operation of filling, and opened immediately afterward. A vertical tube, E, is soldered in the reservoir, and its upper extremity debouches therein, while its



TOY AUTOMATIC DISTRIBUTER OF LIQUIDS.

lower ends in the interior of a hemispherical capsule, C, capable of tilting. If a cent be placed in the slot, A, it will fall at B upon a lever fixed to the capsule. The latter, in tilting, empties the liquid that it contains at D, whence it makes its exit and flows through a tube into a small cup placed alongside of the keg. On tilting, the capsule opens the lower extremity of the tube, E, which dips into the liquid. During the tilting there is, therefore, a certain quantity of air introduced into the cylindrical reservoir, and this permits a certain quantity of liquid to flow through F and fill the capsule anew just at the moment at which the lower extremity of the tube, being closed by the liquid, no more air can enter the reservoir, and this arrests the flow. The capsule then remains filled with liquid until another coin is introduced into the slot.

The keg rests upon a base, forming a money box, into which the coins fall.

It may be conceived that such an apparatus requires to be perfectly immovable in order to work properly, and that it is impossible to obtain equal volumes of liquid at each operation, since the conditions of equilibrium and the rapidity of flow are not the same, according as the reservoir is full or nearly empty. It is possible, however, by regulating the level of the lower extremity of the tube, F, dipping into the capsule, C, to modify in a certain measure the quantity of liquid discharged through the introduction of another coin into the slot, A.—*La Nature.*

*SCIENTIFIC AMERICAN, Dec. 26, 1891, p. 403.