

A SPEAKING TUBE AND EARIPHONE.

The accompanying illustrations represent the practical working of an extremely simple improvement in speaking tubes, the mouth piece being provided with an attached ear piece, whereby messages may be more conveniently received and transmitted. This improvement has been patented by Mr. Frederick Schluchtner, of No. 2661 Atlantic Avenue, Brooklyn, N. Y.

One of the pictures shows the improvement in use in the hallway or vestibule of a house, another representing its employment in a factory, where the different floors are thus held in communication with the office. The mouth piece may be of the usual form, but the tube in front of the whistle has an opening at one side, surrounded by a tube leading into an attached flexible tube, at the end of which is an ear cup. The branch tube leading from the side opening, in front of the

not being diverted into the branch tube. In like manner, in speaking into the tube, the voice is projected forward in the usual way; but one can likewise hear the return message without change of position, the voice in this case being diverted into the branch tube, and thence through the flexible tube to the ear cup, so that a conversation may be carried on without constantly changing the end of the tube from the mouth to the ear, and vice versa. A fork supports the ear cup when the mouth piece is not in use.

DETAILS OF SPEAKING TUBE.

England, France, Belgium, Germany, Austria, Italy, Switzerland, and Spain.

SURFACE CONDENSING TRIPLE EXPANSION MILL ENGINES.

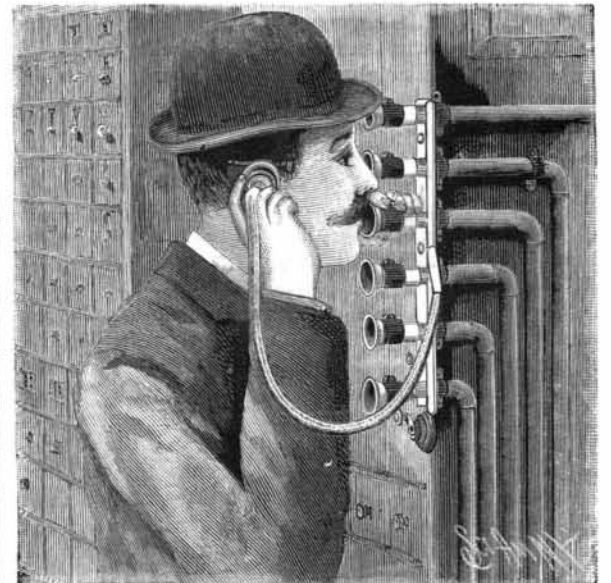
The engines which we illustrate have recently been constructed by Messrs. Hick, Hargreaves & Co., Soho Ironworks, Bolton, for a cotton mill belonging to the Kampenhofs Aktiebolag, Uddevalla, Sweden, to take the place of a pair of Woolf beam engines supplied by the same makers about thirty-five years ago. We are indebted to *Industries* for our engraving and the following particulars: The new engines are horizontal, and of the four-cylinder double-tandem type, the high and one low pressure cylinder working on one crank, and the intermediate and the other low pressure cylinder on the other crank. The high pressure cylinder is fitted with the makers' well known Inglis & Spencer's Corliss gear, the intermediate pressure cylinder with a piston valve, and the two low pressure cylinders with plain slide valves. All the cylinders are jacketed with steam at boiler pressure, and are lagged with composition and felt, cased with planished steel. The steam on its way from the high pressure to the intermediate pressure cylinder, and from the latter

to the low pressure cylinders, passes through two receivers, also jacketed with steam at boiler pressure. There are thus six jackets to be drained—viz., four cylinders and two receivers—and the makers, believing that the efficiency of jackets is largely dependent on the thoroughness with which they are kept clear of water and air, have devoted considerable attention to this problem. In the present engines the jackets are drained in series, the combined drain water from all passing into a receiver, which, standing on the engine room floor, and being provided with pressure and water gauges, gives the attendant a much better chance of keeping the jackets efficiently drained than where each jacket has its own trap placed out of sight under the floor, and too often out of mind. The engine is provided with very complete lubricating appliances, including oil pumps for the crank shaft bearings, and with indicating gear for all the cylinders. The power of the engine is transmitted by a steel spur wheel bolted to the fly wheel, but which was not in position at the time the photograph was taken from which our



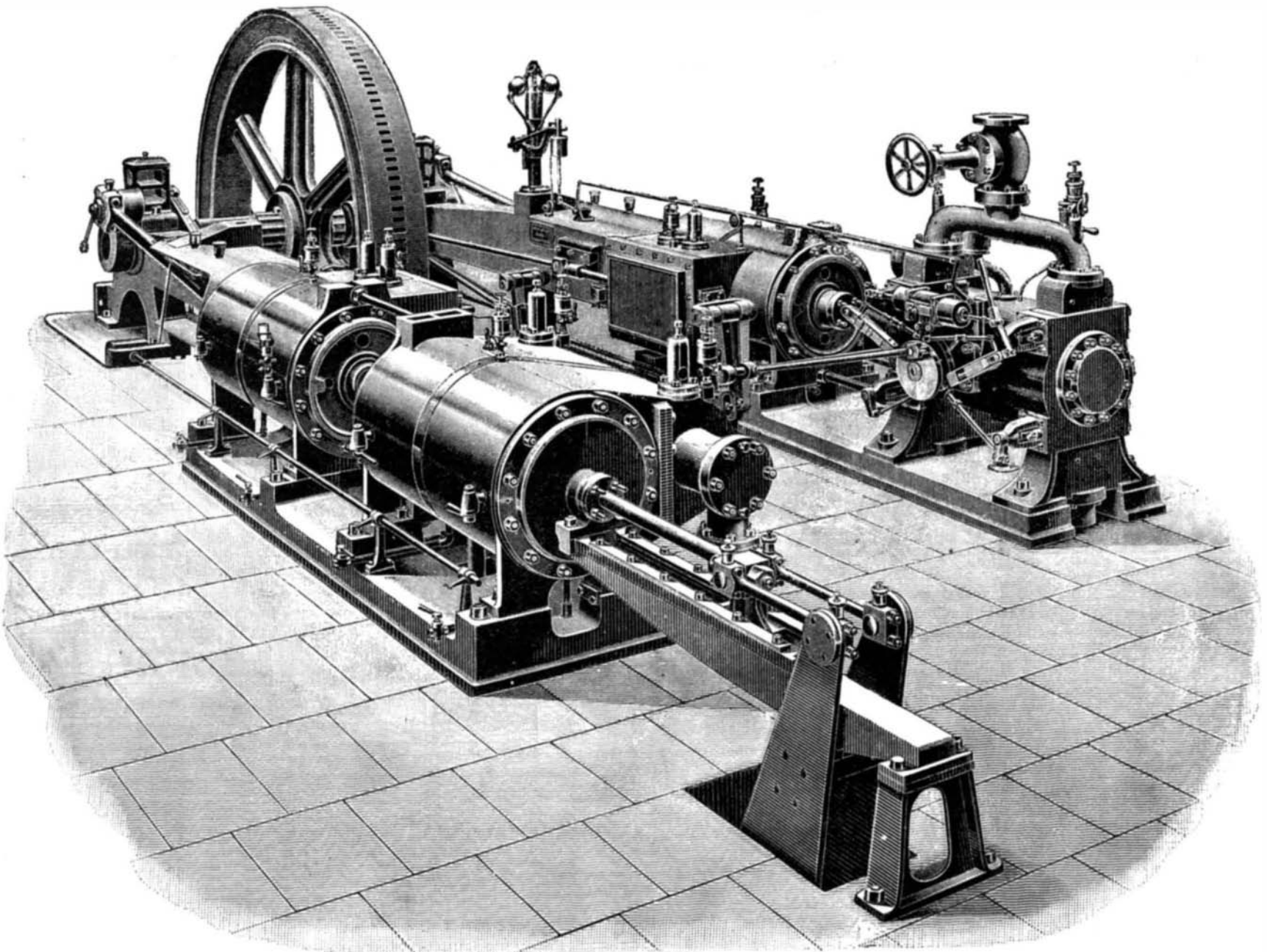
SCHLUCHTNER'S SPEAKING TUBE—USE IN A VESTIBULE.

mouth piece, leads backward at a slight angle from the main tube, and the branch tube is also made tapering, the flexible tube being secured to its smaller end. When a person blows into the speaking tube, the air exerts its full force upon the whistle in the usual way,



SCHLUCHTNER'S SPEAKING TUBE—USE IN A MANUFACTORY.

engraving is made. The surface condenser is of the marine type, the water making two passes through Muntz metal tubes fitted in Muntz metal tube plates, and packed with "Hall" joints. To the condenser are attached the air, circulating, feed, and jacket drain



TRIPLE EXPANSION SURFACE CONDENSING MILL ENGINES.