

and the amount saved will, of course, increase proportionately with the number of gallons of water returned to the boiler, and the difference between the normal temperature of the feed water and the final temperature when entering the boiler. The use of a Pratt return steam trap has, in many instances, effected a saving of from 10 to 25 per cent. In comparing this trap with a pump for returning condensed water, it will be apparent that the pump requires live steam to perform its work, and unless the exhaust is condensed and passes through an oil filter into the receiver, considerable heat will be wasted. In the matter of cost for repairs, the trap would also be found the more economical, as many cases are on record where these traps, after ten or fifteen years' constant use have been repaired and made absolutely as good as new at an expense of from \$15 to \$20. Steam fitters will experience no trouble in connecting, as there are no fine adjustments to be made.

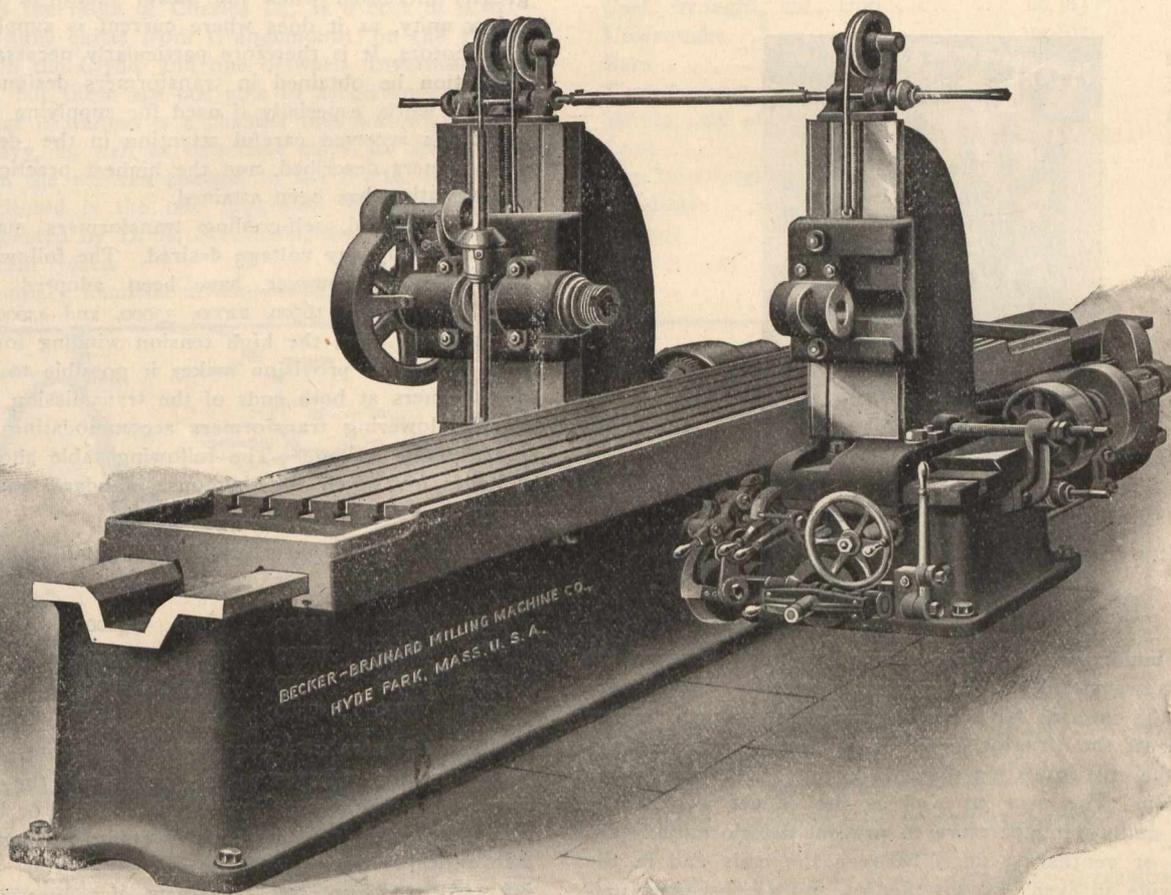
The Fairbanks Co., Montreal, are agents for this trap, and will be pleased to give the advice of experts who have made studies of this question to suit different requirements.

### PLANER-TYPE MILLING MACHINE.

The illustration here given shows a new machine, put on the market by the Becker-Brainard Milling Machine Co., of Hyde Park, Mass. It is a 32-in. by 26-in. by 10-ft. planer-type milling machine, and is built from new designs and new patterns. It is of very heavy construction, being

full length and at each end. It travels on flat ways securely gibbed and has quick return operated by power from a separate countershaft. It can also be moved by the usual hand wheel. The feed table is directly operated through gearing from the spindle at ratios of  $13\frac{1}{2}$  and 27 to 1 by 5-in. belt on a 5-step cone, the diameter of which is 23-in. on the largest step and 13-in. on the smallest, giving a range of feed through eight changes from  $\frac{3}{64}$  to  $\frac{3}{8}$ -in. These changes of feed can be made instantly by means of a lever, without stopping the machine. The head may be adjusted in either from either side of the machine, so that it is not necessary to take the cutters off the arbor in order to change their position in relation to the work. The bed is extra deep, extending to the floor and making a solid foundation. It is securely braced by heavy cross girders, which are evenly spaced throughout the entire length. The bed can be made any length desired.

The specifications are: Working surface of platen, 120-in. by 26-in.; length of bed size of platen inside oil pockets, 120-in. by 26-in.; longitudinal feed, automatic in both directions, 120-in.; greatest distance from centre of spindle to table, 28-in.; least distance from centre of spindle to table, 2-in.; greatest distance from end of spindle to centre of table,  $16\frac{3}{4}$ -in.; least distance from end of spindle to centre of table,  $6\frac{3}{4}$ -in.; greatest distance from end of spindle to tail stock spindle, 37-in.; least distance from end of spindle to tail stock spindle, 17-in.; net weight, 25,000 lbs.



designed for strength, rigidity and power, with special provisions for ease of operation and the demands of modern milling machine practice. The spindle is made of hammered crucible steel, 5-in. in diameter, has a threaded nose and runs in self-centering bronze boxes with nut and check nut to compensate for wear. The spindle carrier is very heavy and is held firmly to the upright by long gibs. It is elevated by a screw with adjustable dials graduated to thousandths of an inch, and has a counterbalance for ease of operation. There are twenty changes of speed for the cutter spindle obtained by gearing in the main driving cone, operated by clutch and lever, so that all changes can be made instantly. The table is very heavy and is regularly built with five T slots lengthwise, and an oil channel the

### SELF-COOLING TRANSFORMERS.

Though the successful transmission of high voltage currents over long distances has been advanced by the introduction of the polyphase induction motor, and improvements in electrical machinery generally, the greatest credit belongs to that which has made the use of the others possible—the high voltage transformer. On all high potential transformer current circuits the oil-insulated, self-cooling type is undoubtedly the best at the present time. The many advantages of oil insulation have made it almost essential for high voltage transformers, while the great heat-conducting power of oil also serves to keep down the temperature. In Westinghouse transformers both high tension and low ten-