

FIG. 8.—SECTIONAL VIEW OF SIMPLE HYDRAULIC PRESS.

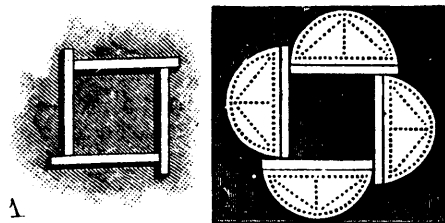
served in a crosstee, to opposite sides of which are attached ordinary check valves. The tee is fastened to the base by a plugged piece of pipe, extending through the base and provided with a nut, which clamps the base tightly. The barrel of the pump is in all respects like the press barrel, except in size. The piston consists of a $\frac{1}{4}$ inch brass rod, to the upper end of which is attached a T-handle.

A heavy bar of wood is supported over the pipe, A, by bolts extending through the base and through a re-enforcing bar under the base. The check valves both open toward the cylinder, A, and the outer one is provided with a rubber suction pipe. Water is drawn into the pump by lifting the piston and forced into the press barrel by the descent of the piston. The proportion of the pressure attained to the power applied will be as the area of the large piston to the area of the small one. With pistons of respectively 2 inch and $\frac{1}{4}$ inch diameter, a pressure of 3,000 pounds may be produced easily. If it is desired to create a greater pressure, the barrel, A, may be made of hydraulic tubing, and a lever may be applied to the pump piston.—By GEO. M. HOPKINS, in *Scientific American*.

A BOY'S INVENTION.

Dr. L. K. Klemm, of the Technical School of Cincinnati, Ohio, tells, in the *Journal of Education*, of a rather interesting instance of the inventive genius of a boy which had been stimulated and developed by technical education. At a tile manufactory near that city, it was the practice to have different sized steel forms for each size of tile. Whenever it was necessary to make a new size of tile, a new form was necessary, the cost of which was \$18.50. In the course of a year this item became quite a heavy expense. A boy, whose name

it is unnecessary to mention, was passing through the works one day with his father, and his attention was called to this fact, whereupon he said he had a suggestion he would like to make. Upon being given paper and pencil, he made the accompanying diagram after a few minutes' thought, stating that the steel bars could be arranged to form either squares or rectangular tiles. It was then explained to him by the manager that it would be necessary to provide some means of retaining the bars in position, as the moulds had to be subjected to a



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heavy hydraulic pressure, which would separate them, unless they were fastened securely in place. He then suggested backing the bars with plates as shown, which should be provided with holes, enabling them to be screwed firmly to the table, which should be provided with corresponding holes. In this way a solid form was provided, which could be used as a universal mould for tiles of various sizes and shapes. The idea was a good one, and reflects much credit for originality upon its youthful inventor.