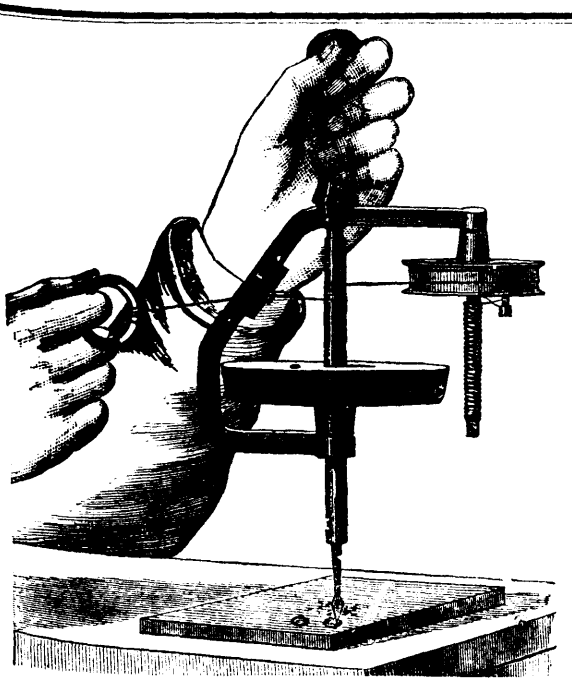


THE HAND-POWER ROCK-DRILL.

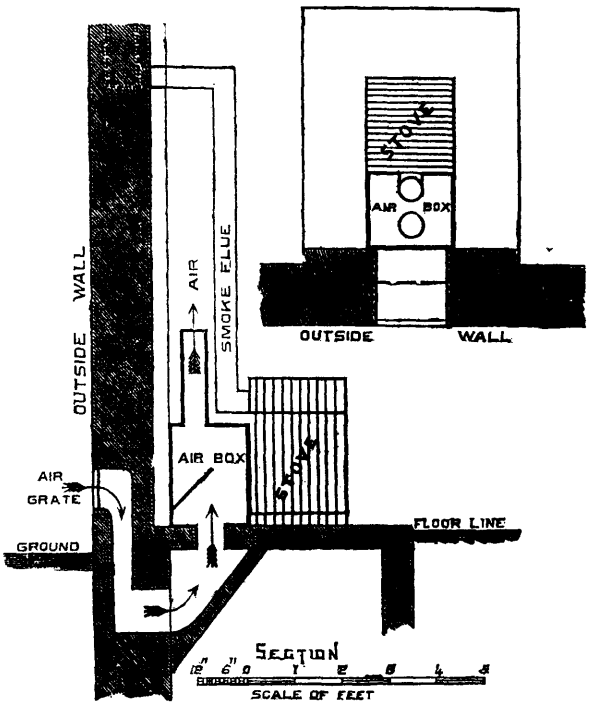
Various forms of percussive rock-drills are constantly being invented; but never before we believe has a hand-worked machine been offered to the mining public. This drill is not intended to compete, in the amount of work done, with the larger appliances driven by steam or compressed air as ordinarily used from a reservoir; but it is destined to afford a cheap and portable means of boring holes for blasting, whereby manual power may be turned to better account than in the primitive methods of "jumping" and driving with drill and sledge, without the necessity of a heavy expenditure for plant.

We were invited to a trial of this new borer on Wednesday last, at the works of the makers, Messrs. Glover and Hobson, where the results achieved were highly satisfactory in themselves, under conditions which were most unfavourable to the machine. In the space of one minute, 1¼-inch holes were drilled 6½ inches deep in hard Portland stone, 3 inches deep in Aberdeen granite, and 5½ inches in sandstone; at least that was the rate at which the last hole was bored, but the sleeping of the stone put a stop to this particular trial. In the other two trials, it was evident that the blows of the drill on the stone were cushioned, owing to the soil beneath not being sufficiently firm, so that a still better result may be looked for in the solid rock of a mine or quarry.

The upper cover of the cylinder is air-tight; but air is admitted through ports at the lower end, and passes round the piston, when at the lowest part of its stroke, to supply any leakage. In the upward stroke this air is compressed, so as to give a smart blow on the next downward stroke. The piston connected to the drill-bar is raised, so as to compress the air, by a double cam on a shaft, turned by a couple of men with winch handles, so that two blows of the chisel are made for each revolution. The cams are so formed that, after raising the drill-bar by means of a thrust block, they release it suddenly for giving the blow. As the thrust block is cylindrical and the cams strike it on the end, they cause it to make a partial revolution. A form of drill like two gouges united, so as to make a cutting edge like the letter S, is found to give the best results, never striking twice in the same place. The upper end of the drill-bar is screwed, and works in a long phosphor-bronze nut. When this nut is clamped so as to be fast, the revolution of the drill-bar is to be fed down; but by turning the nut, by means of a small handle and hevel pinions, the drill-bar can be hand fed, or raised and lowered at the rate of a foot a minute. It will thus be seen that a simpler machine, or one with fewer working parts, it would be difficult to design, while the method of working the piston is mechanical and direct, without the intervention of any valve whatever.

Though the working parts are the same, there are three classes of the machine, for sinking shafts, quarrying, and driving adits, each of which has its special form of stand or frame. We observed, however, that the range of boring in each was amply sufficient for its individual requirements. We defer a more detailed description of the drill and its carriages to accompany the drawings, which we shall shortly reproduce.

The Royal Cornwall Polytechnic Society awarded a silver medal this year to the hand-power rock-drill, which, on account of its efficiency, simplicity, compactness and low cost, deserves the attention of all engaged in mining operations. It is the invention of Messrs. Thos. B. Jordan and Son, who act as managers to the Hand-Power Rock-Drill Company (Limited).—*Iron.*



VENTILATION.

(*To the Editor of the Builder.*)

SIR,—A simple and effectual method of supplying fresh air without draft to a school-room, may perhaps be thought worth notice in the pages of the *Builder*. The details will be seen on reference to the accompanying small plan and section. It may be described as an air-box made of sheet-iron, and placed behind an ordinary Gill stove. The box is connected by an air-shaft with the outside wall, and has an inlet-pipe above, which admits the fresh air into the room. In passing through the "box" the air becomes slightly warmed in winter, when there is a fire in the stove, and it is a good ventilating shaft in summer. It is most effective when it is most required, *i.e.*, when other openings, doors or windows, are closed. Its advantage over the old plan of a simple opening under the stove, is that there is no danger of dirt or ashes falling into it and filling it up. I may add that I designed it twelve months ago, for a Board School in Leicester, where it has been found to work admirably.

[We have frequently urged the necessity of a similar method of supplying warm and pure air to public and private buildings, for the latter particularly.—*Ed. C. M. M.*]

FIRE-PROOF JOIST.—An ingenious kind of fire-proof joist, recently introduced, consists of a slip of wood five inches wide, by five-eighths of an inch thick, belted between two flanged strips of quarter-inch iron, making a beam quite as strong as those of wood ordinarily employed. The iron sides, in addition to affording strength, it is claimed, render the joist substantially fire-proof, while the centre of wood affords the means of putting down floors and nailing on laths in the usual manner. The impediment to the manufacture of these joists heretofore has been the difficulty of rolling the flanged iron sides, but this has now been successfully overcome.