IMPROVED STEAM HAMMER.

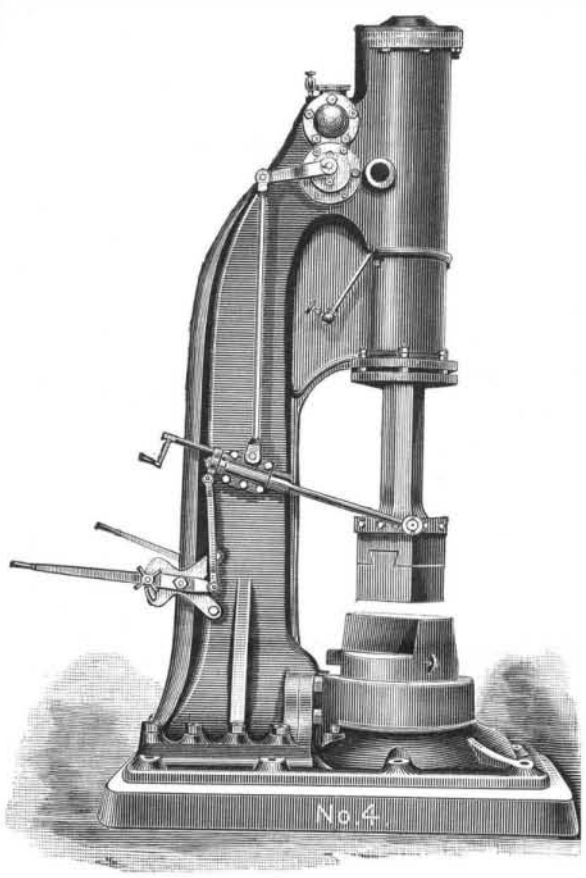
The many advantages resulting from the use of steam hammers, not only in the forming of large pieces in rolling mills and forges, but in the every day work of the smith's shop, are most generally recognized; by their use a saving is effected in time, fuel, and material, the amount of labor is reduced, and, most important of all, the character of the work is improved. The wide adoption of hammers of this kind has been the outcome mainly of their durability, their simplicity of construction, reliability in operation, the rapidity of the blows, and the ease with which the force and number of blows may be regulated.

The improved steam hammer shown in the accompanying engraving, being of small cost, has removed the great obstacle to the introduction of the steam hammer in the ordinary smith's shop. It is of very simple construction, having single column standard with bed plate and cylinder cast in one piece. As will be seen from the cut, it is very strongly and compactly built, and is easy to manage. All the moving parts are so proportioned as to reduce the wear to a minimum, and any necessary repairs can be easily made. It is self-acting, taking steam at both ends of the cylinder, and in all of the sizes manufactured a square blow is delivered. Either of the sizes will strike a heavy or light blow as required, and can be worked either single or double acting, the change being quickly effected and without trouble.

The small sizes of this hammer will work up old car axles, the product being especially applicable for connecting rods, eccentric rods, and other parts of machinery which require iron of the best quality. They will also work up old scrap, quantities of which are always to be found in the blacksmith shop, and which produces one of the best irons for ordinary purposes.

Size No. 4, shown in the illustration, was constructed with a view to furnish at a moderate price a hammer that would forge large and heavy cranks and shafts, and the frames and bearings connected with locomotives, not only with expedition, but with the greatest accuracy and saving of labor; and it is claimed that twice the number of locomotive frames and bearings can be turned out in the same time that would be required with appliances hitherto employed for doing the same work. With a heating furnace it will work up scrap into billets for making car axles, crank shafts, and all heavy forgings which formerly required large and expensive hammers to accomplish.

In this size the cylinders are 12 inches in diameter and the stroke 27 inches. The piston and die weigh 1,500 pounds, and the whole weight of the hammer is 14,000 pounds. A blow of upward of 10,000 pounds



BELL'S IMPROVED STEAM HAMMER.

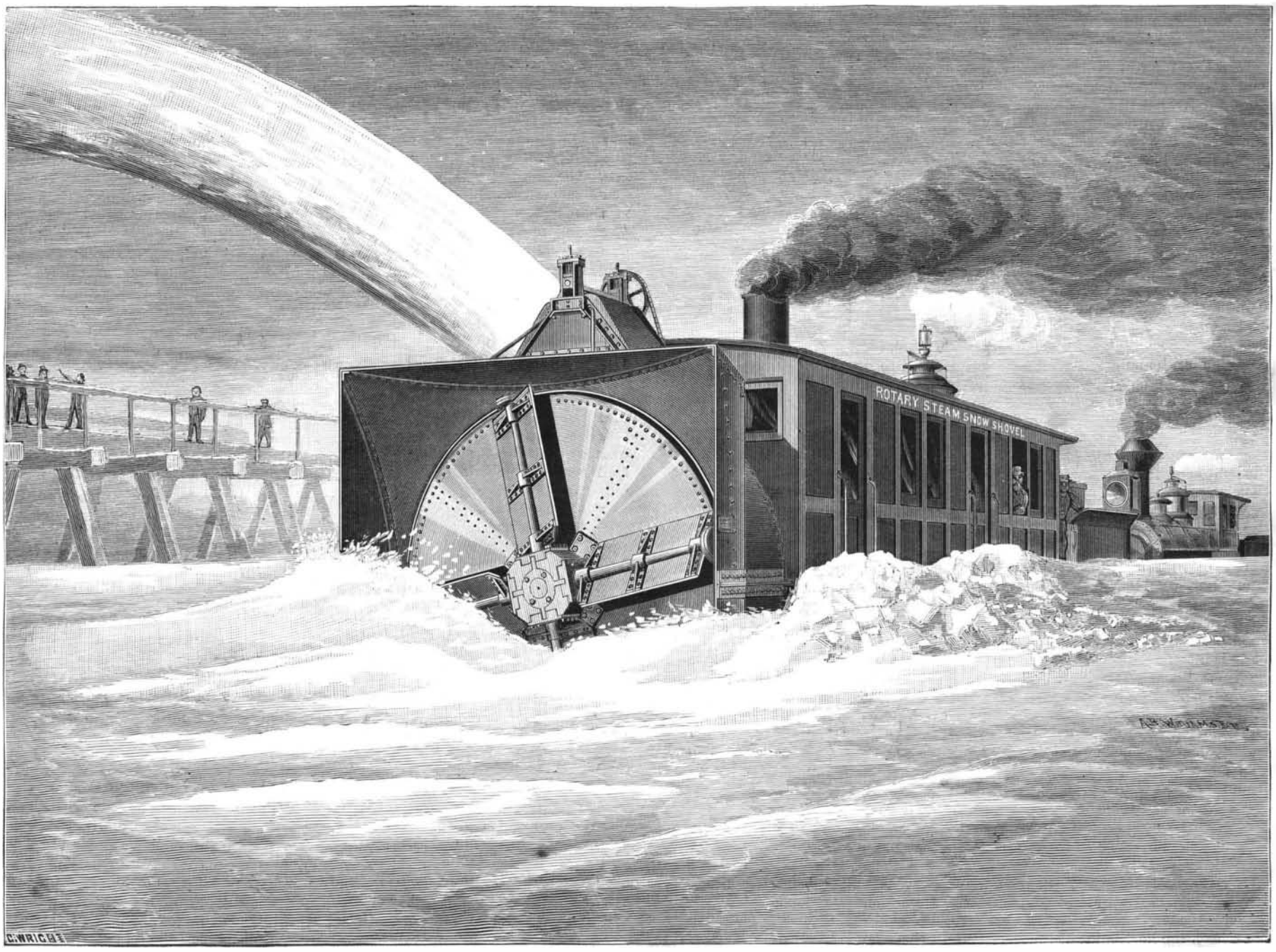
may be struck, and the rate may be 100 blows per minute. A shaft 9 inches in diameter can be beaten out at a single heat.

The manufacturer of this steam hammer, Mr. David Bell, of Buffalo, N. Y., who will furnish all further information, has received many letters of commendation from those who have used and tested the hammers.

A MAMMOTH STEAM SNOW SHOVEL.

On March 28th last, a shovel designed by Mr. E. Leslie, superintendent of the Rotary Steam Snow Shovel Manufacturing Company, of 203 East 16th St., this city, and built by the Cooke Locomotive and Machine Company, of Paterson, N. J., was tested on the tracks of the Buffalo Creek Railroad at Buffalo. N. Y. The track selected for the trial had been covered with snow all winter, and being near the Lake front there were no obstructions to break the force of the wind snow storms; the snow was from 2 to 6 feet deep, compact and solid, and was more or less mixed with sand blown in from the beach of Lake Erie. The test, although undoubtedly as severe a one as the machine could have been put to, was most successful, as the shovel cut a clean channel, and threw the snow from 100 to 300 feet from the track. The performance of the shovel is well illustrated by the accompanying engraving, made from an instantaneous photograph.

The knife wheel and shovels (or fan wheel) are driven by two cylinders, 17 inches diameter by 22 inches stroke. The boiler is of locomotive type and is 50 inches diameter, with a fire box 69 inches long, 34 inches wide, 66 inches deep. There are 165 flues, 2 inches diameter and 11 feet 2 inches long. The total heating surface is 1,030 square feet. Boiler and engines are fastened to the main frame of heavy I iron, 12 inches deep, 5 inches wide, the front end of which receives the bed plate and pillow block castings carrying the fan wheel and knife wheel shafts, and at right angles to the latter the engine shafts. The front bed plate casting with main pillow block extends the whole width of the outside frame, which is 9 feet 6 inches. It is well ribbed, to enable it to receive the six gussets of ½ inch steel plates which carry the drum, and to which latter the gussets are fastened by means of 3½ inch by 3½ inch by ½ inch double angle irons. The drum is otherwise well braced to the frame to enable it to bear all the strains and shocks which might occur in going through deep drifts. The face wheel shaft is hollow, and the shaft of the knife wheel revolves within it. The space between the babbitted bearings is used as a receptacle for oil, which will last for a considerable length of time. The solid shaft, after passing through the hollow shaft for some distance, rests at the back end in a thrust bearing, to provide against the fore-and-aft thrust of the knife wheel. The motion of the knife wheel and fan wheel is transferred from the engines by means of beveled gears, one gear on the hollow



A MAMMOTH STEAM SNOW SHOVEL.