

IMPROVED STEAM HAMMER.

The accompanying engraving illustrates a power hammer constructed by Messrs. Breuer, Schumacher & Co. As may be seen, the frame consists of two strong uprights, whose well proportioned bases are secured to a very solid bed plate, while their upper extremities are connected by means of the wide base of the steam cylinder, and of bolts that support no stress. To give greater rigidity to the whole a few strong cross braces are placed between the uprights, which latter, like the cylinder, are strengthened by flanges. The anvil stock is completely isolated from the frame of the machine, and is mounted upon a strong piece of wood and secured in position through an aperture in the bed plate. The sides of this stock are placed obliquely with respect to the axis of the machine, the object of this arrangement being to permit the operator to easily dress the piece in one direction and flatten it in the other, without being interfered with by the uprights.

The anvil naturally has a direction corresponding to that of the stock. It is fixed firmly to the latter by dovetails and steel keys, and its faces are constructed of forged steel. The body of a hammer is a piece of forged steel of the first quality, planed, and adjusted between two guides that are arranged in such a way as to take up all wear.

One interesting peculiarity of this machine consists in the construction of the piston and its rod out of a single block of steel. The rod runs through a wide stuffing-box lined with bronze rings that can be changed with the utmost facility. The flange bolts run through the shell of the stuffing-box, and their heads are set into the base plate of the steam cylinder. These details of construction, like those of the hammer guides, have been studied with care, since upon the carefulness with which they are carried out the good performance of the machine very often depends.

It is in the steam distributing mechanism, however, that we find the most interesting improvements. This consists in a bronze cylinder in which runs a bronze piston which is so arranged that it can be balanced. Motion is then given the slide valve by means of a bent lever which is placed in contact with a spring. While operating, the hammer communicates motion around a center of oscillation to the lever, and these motions are transmitted to the valve rod. The position of the latter's points of attack can be changed; by separating them a variable expansion is produced, while by bringing them very near one another the steam is admitted under full head.

It is proper to add that the point of oscillation of the bent lever is arranged eccentrically, and connected with an external lever that permits of varying the stroke of the piston at will.

Finally, we may state that the admission of steam into the distributing box occurs through a cock whose valve is actuated by a third lever arranged between the uprights of the machine.

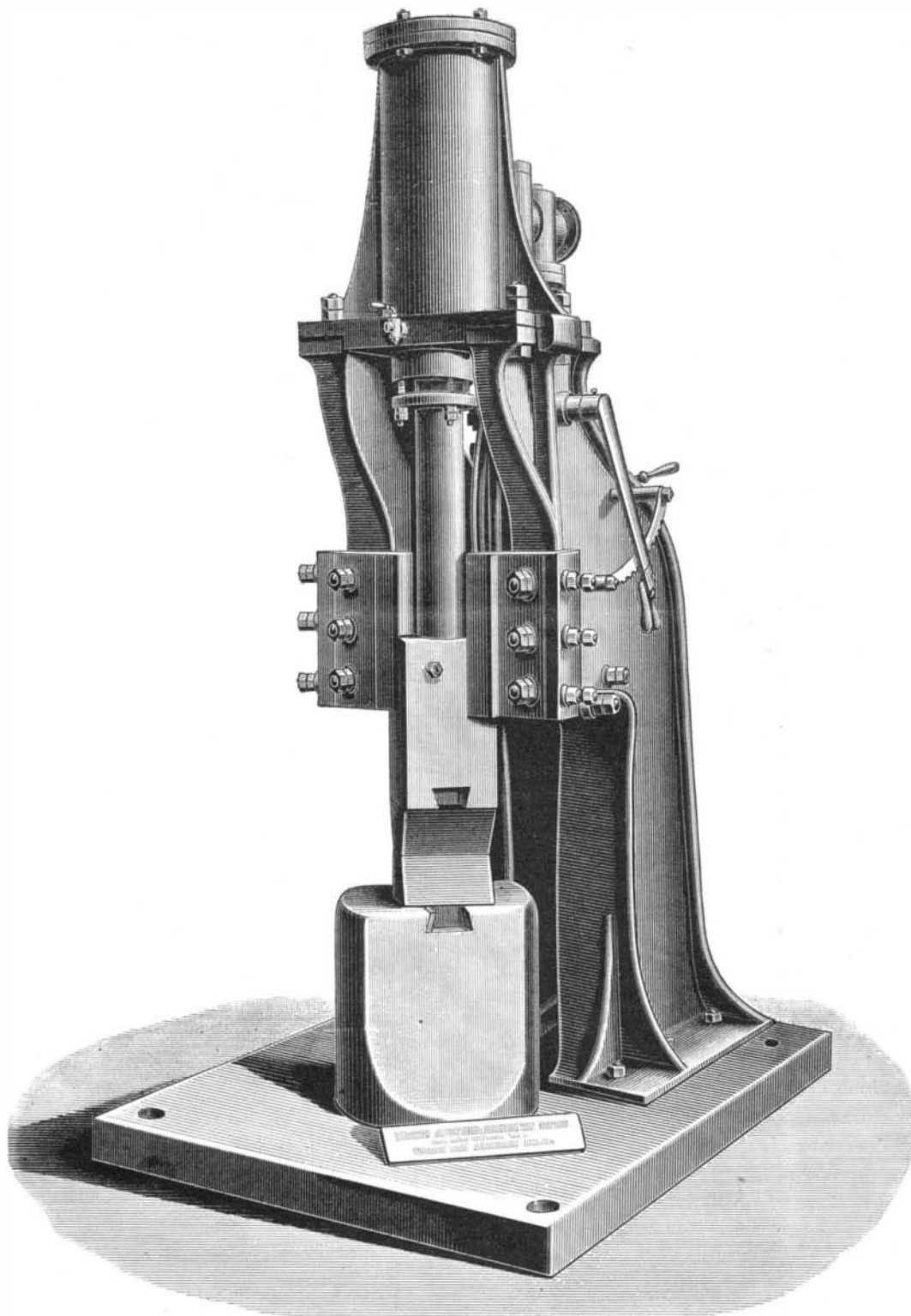
The use of a variable expansion in power hammers offers great advantages as regards a saving in steam, and consequently in fuel. All the operations of a forge can thus be performed without any fear of causing the pressure in the boiler to fall, as occurs in workshops where the power of the generator does not correspond to the work developed by all the machines in operation.

The type of power hammer under consideration has been more particularly devised for machine shops, railway shops, and ship yards, and for testing steel in steel works.—*Revue Industrielle.*

MR RICHARD A. PROCTOR holds that if the full power of the arms and legs can be so applied to ingeniously arranged mechanism as to work wings more or less resembling those of a bird, there is little reason of doubting man's power of sustaining himself in the air and even traveling with great rapidity through it. Probably, he adds, it will be much easier for him to sustain himself while traveling rapidly onward than while hovering over the same spot.

Carpet Beating.

The annual domestic revolution dear to housekeepers, and known by the name of "spring cleaning," has this year, owing to the cruel easterly winds, been deferred to an unusually late period. However, during the last few days, to judge from the uproar from carpet beating, etc., arising from every backyard and adjacent mews, the process is now in full swing. We have no wish to decry this periodic purification, but merely to point out rules for its better conduct and efficiency. The usual process in households, which cannot afford to have it carried out by special agency, is first to take up the carpets, and sweep the walls and ceilings, and then to wash the floors. While the latter is drying, work must be found for the idle hands, and they cannot be better employed than in beating the carpets in the courtyard or back garden, a work attended with a horrid din and clouds of dust. It will be unavailing, we know, to complain of the noise—no appeal in this direction will gain a moment's sympathy; but we hope more attention will be paid to the other nuisance. When we reflect on the nature of the dust thus raised, we are surprised that sane persons allow to be thus stirred up under their noses all the nause-

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ous accumulations of dining room, bedroom, and stair carpets, to say nothing of door mats, etc., into a fine dust, and which thus dispersed finds its way again into our houses in a form most readily accessible to our respiratory organs. Indeed, it is fortunate if the dust thus roused is only nauseous and not infective, since the desquamated cuticle of scarlet fever, the scabs of small pox, the dried sputa of consumptive or whooping cough patients, living parasites, and hairs from many cats and dogs may thus invade our rooms.

Carpet beating, we are aware, is forbidden in public thoroughfares; but it should, in any form, be prohibited within a reasonable distance of dwelling houses; and for those who cannot afford to pay the small sum required to have their carpets and mats properly cleaned, the authorities should set aside some open space, to which on stated days and at certain hours persons might bring their carpets and have them beaten, without causing annoyance or danger to themselves or neighbors.—*Lancet.*

Explosion of Brass Pipe.

We had occasion a few days ago to inquire into an accident of a kind new to us, and interesting to architects, plumbers, and others who use brass pipes for any purpose. In the present instance a piece of heavy drawn brass tubing, about three-quarters of an inch in diameter, was used to connect a hot water tank in the basement of an office building with a cold water tank on the roof. The height of the pipe was about 93 feet, and the pressure at the bottom therefore about 45 pounds to the square inch, but the metal was nearly an eighth of an inch thick, and should have been capable of withstanding with perfect safety a strain of two or three hundred pounds. The flow through the pipe was always downward, so that the temperature of the water in it was nearly constant at from fifty to sixty degrees Fahrenheit.

After the pipe had been in use about two years it suddenly gave way, the length of straight pipe tearing in long, ragged seams, in two or three places at once, and letting the water escape in a flood over the basement. On shutting off the supply it was found that so many lengths of pipe in the stack were affected that it was necessary to replace the whole. This happened in warm weather, so that there could have been no question of the freezing of the water in the pipe, and even if it had occurred in winter its situation in a building kept warm throughout, and its proximity in the basement to a steam furnace which was constantly burning, would have excluded the idea of freezing. From the testimony of the engineer of the building, and of a plumber of experience, it would appear that such mishaps are not infrequent with brass pipe, and that they are perhaps more common with the heavy than the light tubing.

The only explanation which seems likely to be well founded is that the particles of brass, in being forced over the mandrel by the enormous pressure which it is necessary to exert, are thrown into a state of internal tension, like that which exists in badly proportioned or unskillfully cooled iron castings; and that this internal tension, especially if aided by other circumstances, may determine the disruption of the pipe at any moment. In the present case, the pipe carrying only a steady flow of water, and hammering in the pipes having been carefully guarded against by air chambers, the molecular disturbance seems to have been alone responsible for the accident. It is said that the manufacturers of the tubing have learned from experience to anneal it before putting it on the market. In that case it would be very desirable for those who use it to be furnished with some rule for judging whether what they buy has been subjected to the annealing process or not. If any one of our readers can throw more light on the subject, we shall be very glad to hear from him.—*American Architect.*

Salt in Western New York.

It is estimated that the salt fields of Western New York will this year produce 900,000 barrels of the best salt manufactured, and that the production will be doubled the following year.

A few years since a well was sunk at the little village of Wyoming, on the Rochester and Pittsburg Railroad, forty miles southwest of Rochester. The diggers were looking for petroleum, but found instead a deposit of rock salt. Wells were shortly after put down in various places within a radius of 100 miles, and the results have been wonderful.

The most prominent place in this territory, perhaps, is Warsaw, Wyoming County, where there are eight wells. Solid salt is found at a distance from the surface of from 1,600 to 1,800 feet. The beds are about 90 feet thick. Dr. Gninlock is manufacturing from one well an average of 300 barrels daily. The Warsaw Salt Company manufacture 500 barrels from four wells, the Crystal Salt Company 600 barrels from two wells, and the Standard Works 100 barrels from one well. Pans are used for evaporating in all the above works except the last named, where steam kettles are employed. The industry has imparted great activity to the village, and many workmen are employed.