No. 57 CHAMBERS ST., N. Y., September 3d, 1855.

67-4

Editor of Hartford Times:—Sir: It is now about a year since the Court of Common Council of the city of Hartford, resolved to rescind a contract which had been entered into by their immediate predecessors in office, for the construction of a Cornish engine to pump water into the city reservoir; and to pay the contractor an equivalent in money for the profits which he had hoped to earn by its execution. In taking this step the members of the Court assumed a great responsibility. The contract had been entered into by others than themselves—upon whom the law had imposed the duty of making it; who had been led to it by the example of many other cities, where great care had been taken to obtain the best machine; who had been deterred by the failure of others who had left the beaten track, from making new experiments; and whose course had been sanctioned by the approval of such men as Stevens of Hoboken, and Graaf of Philadelphia. The objections which were urged in the court against the contract, and its execution, were theoretical—sustained only by arguments drawn out of the principles of nature, and not by any facts whatever; while the friends of the contract supported it by the unanimous testimony of the books, and by an array of favorable opinions expressed by many practical men who were engaged in hydraulic engineering in the country.

Upon the trial of the question I took the ground that it was *physically impossible* for a Cornish engine to operate in the situation where the Hartford engineer had decided to place it; and upon that issue the court heard testimony and argument, and made their decision. It will, no doubt, be recollected, that I assumed the responsibility of saying, that the attempt to drive the column of water through the ascending pipe, leading from the Connecticut river to the reservoir, by the Cornish engine, at such a speed as would supply the needed amount, would be followed by an instantaneous destruction of the engine, and of the building in which it stood. That pipe is seven thousand feet long, and will contain about three hundred tons of water, when full. In reply to this, several witnesses were examined, who stated among other things, that in the city of Philadelphia, where the water was pumped through an ascending pipe of about three thousand feet in length, by double acting force pumps, the engineer had decided to substitute a Cornish engine, which was then in process of construction, because of the imperfect manner in which the old engines did their work; and it was agreed that this proved the capacity of the Cornish engine and the failure of other systems. I replied that it only proved the ignorance of the Philadelphia engineers; and the Common Council agree with me, by rejecting the Cornish engine, and leaving it to the skill of American engineers to find a better one.

The conflict was between science and empyricism; and there was enough intelligence in the Common Council of Hartford to decide as reason and demonstration required rational men to do. It is now an agreeable task to me, to show them the correctness of the argument upon which they relied; and to satisfy them of their wisdom in following it.

The Cornish engine was built in Philadelphia, as Dr. Hunt testified it would be. It was built in one of the best machine shops in the world—that of J. P. Morris & Co. The builders had sent to England to make sure that it should be as *strong* as possible, and had procured exact drawings from the most reliable sources there. No pains were spared to make it succeed. It was to run ten strokes a minute; and to do it so cheaply that the City of Philadelphia was expected to be able to set up a coal yard with the coal they were to save. The errors committed in the Buffalo and Jersey city engine were to be remedied here upon the most approved English plan—just as my friend the Dr. testified. In short the laws of nature were to be ignominiously defeated; and a hundred tons of water was to submit patiently, without resentment, to be kicked up hill through a pipe about three thousand feet long to the height of one hundred and twenty feet, by the clumsy plunge of a stupid machine, rushing at it ten times a minute.

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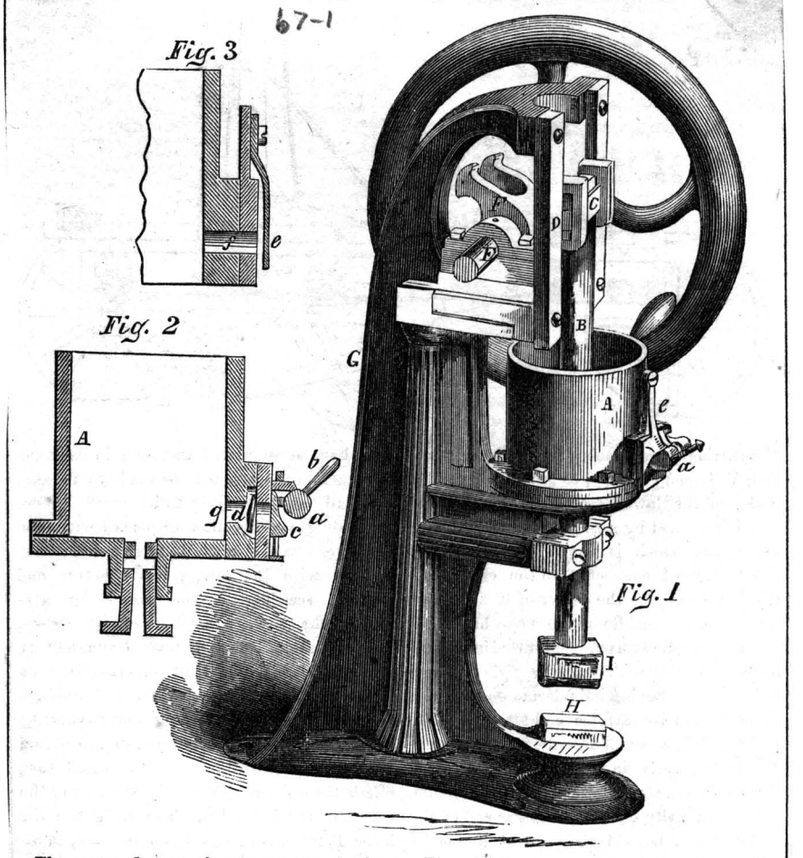
HUGHES' ATMOSPHERIC TRIP HAMMER.

67-1



The annexed engravings represent an improvement in Trip Hammers, for which a United States patent was granted to Bernard Hughes, of Rochester, N. Y., on the 16th of last May, and since that period patents have been taken out by us in Europe.

Figure 1 is a perspective view; figure 2 a vertical section through the atmospheric cylinder, showing one of the regulating valves, and figure 3 is a broken vertical section through the cylinder showing a second regulating valve. Similar letters refer to like parts.

The nature of the invention consists in providing the rod of the hammer with a piston fitting and working in a cylinder which is so constructed and furnished with valves that the air may be excluded from under the piston, and admitted in such a manner and in such a degree as to control the force of the blow of the hammer at the pleasure of the operator; also to increase the force of the blow independent of the weight of the hammer.

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The machinery is erected on and secured to a strong and neat iron frame. H is the anvil; I is the hammer secured to a vertical rod or shaft, B, which is furnished at the top part with a trip block at each side, which have slides running in guide grooves in the two upright standards, D, which are firmly secured to the head and to a block of the frame, G, by bolts and screws; E is the driving shaft with a fly wheel on it, at one side, and double toes or trippers, F, at the middle, which, as the shaft, E, is revolved, rotate between the standards, D, and lift up and let go the trip blocks, C, and consequently the hammer, giving to the latter its up and down reciprocating motion. On the hammer rod, B, is a piston fitting air tight into the cylinder, A, which is open at the top, but closed at the bottom, the rod, B, working through an air tight stuffing box in the bottom, as will be understood by referring to figure 2. On the side of this cylinder is a valve box having two valves, the one, *c*, figure 2, to allow air to pass from the outside to the inside of cylinder A, and the other, *e*, figure 3, to allow air to pass from the inside out, from under the piston. By the working of these two valves, the useful effects stated as comprising the nature of the invention, are obtained. The valve which allows the air to pass out of the cylinder is a nicely suspended spring plate valve, *e*, hung on a stud, figure