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

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.

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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 independently of the weight of the hammer.

The machinery is erected on and secured to a strong and neat iron frame. H is the arbor; 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 tripers, F, at the middle, which, as the shaft, E, is revolving, rotate between the standards, D, and lift up and let go the trip blocks, G, 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 all air pass from the inside out, from under the piston. By 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.