

CENTER TURNING ATTACHMENT FOR LATHES.

The engraving shows a handy little tool for turning and truing up the centers of lathes, and for turning center reamers or countersinks. No center gauge is required where this tool is used, as the angle is fixed and unalterable. One tool serves for an entire shop, and all of the centers will of necessity possess the same angle, and work centered with the centering tools turned with this device will fit the centers of the lathe, and will wear truer and longer than centers made in an irregular way, and will insure finer work.

Fig. 1 shows the tool in perspective, and Fig. 2 shows the manner of placing the tool in the lathe. It will be seen that the device is virtually a slide rest fixed at the required angle and carried by the tail spindle.

The cutting bit is carried across the center by turning the small handle.

The cutter in the attachment is adjusted to the exact line of centers by turning the tool post slightly in one direction or the other on the barrel which supports it until the cutting edge of the bit is exactly on the center line. It is then tightened by turning a set screw at the bottom of the slide.

The depth of the cut taken by the tool is regulated by moving the tail spindle in or out.

This useful invention has been patented by Mr. Samuel Brown, of 1020 Hunter St., Philadelphia, Pa., who should be addressed for further information.

Fig. 2

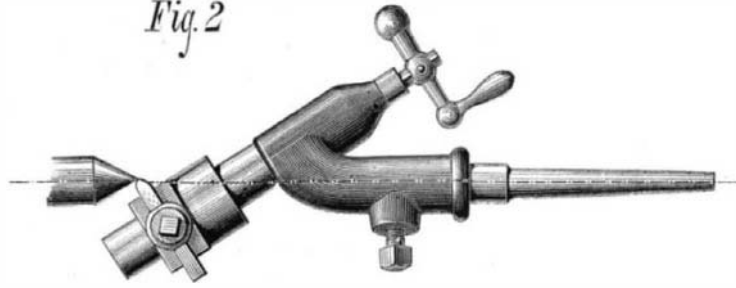
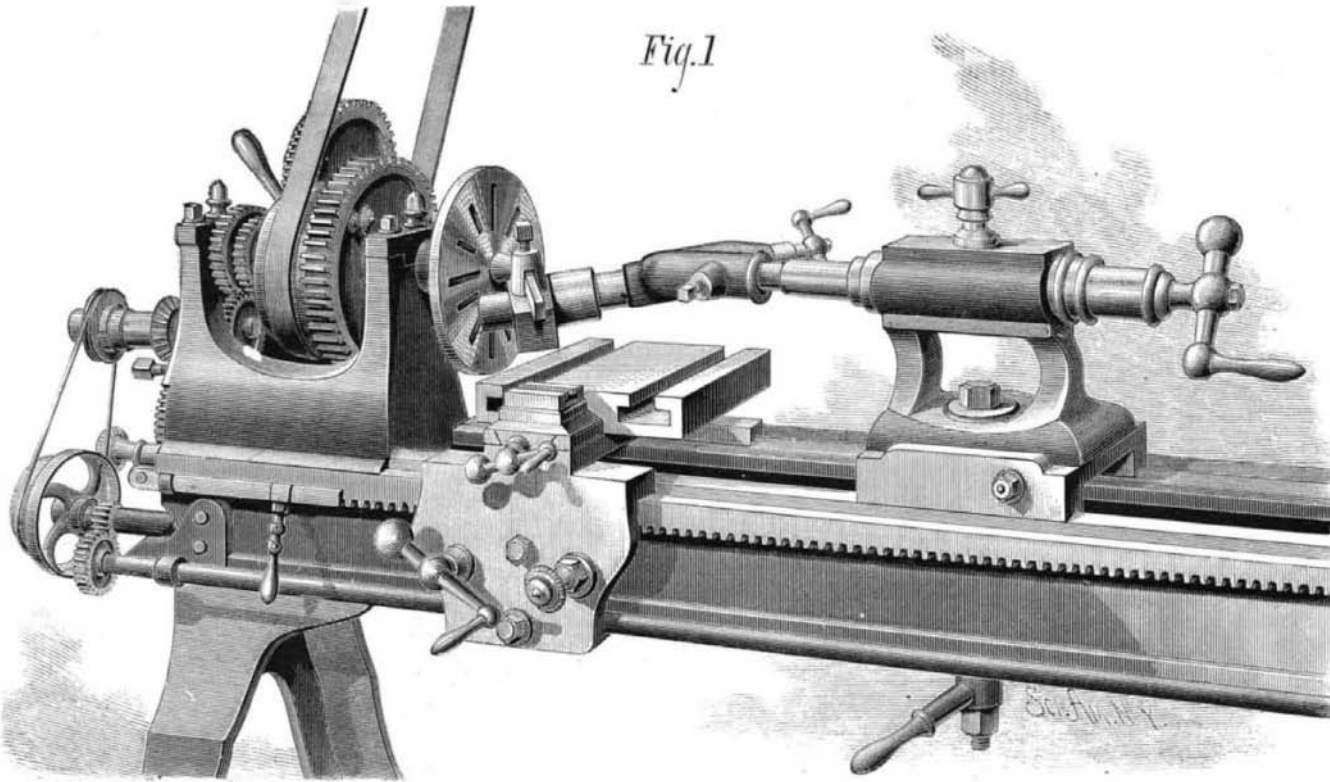


Fig. 1



BROWN'S CENTER-TURNING ATTACHMENT FOR LATHES.

the air is transferred from the heater to the cold end of the working cylinder and then back again, will be readily understood by referring to the engraving. The energy of the working pistons, operating at the top of the cylinders, is communicated to the crank shaft by two vibrating levers and

a central beam secured to a common beam center. It will be seen that the vibrating levers are connected with the pistons of the working cylinders by vertical side links, while the long end of the central beam imparts motion to the crank of the fly wheel shaft by a vertical connecting rod. The short end of the beam actuates the water pump, the valve chamber of which is partially seen between the jackets of the working cylinders. The two hollow plungers are moved by light steel rods passing through stuffing boxes in the top of the working pistons and connected to a common crosshead. The latter is operated by a vertical lifting rod, which passes freely through an opening in the central beam. By means of a bell crank actuated by a short connecting rod coupled to the crank pin of the fly wheel shaft, the necessary reciprocating movement is imparted to the lifting rod.

It is scarcely necessary to observe that the application of two working cylinders, the pistons of which operate *simultaneously*, does not affect the principle of the engine, since the mechanism employed for developing the motive energy, by alternately expanding and contracting a given volume of air, is essentially alike in the single and duplex caloric pumping engines. Both classes are manufactured by Messrs. Tompson, Sterne & Co., of Glasgow for Great Britain, and

by the Delamater Iron Works, New York, for United States.

Monkey, Dog, and Rats.

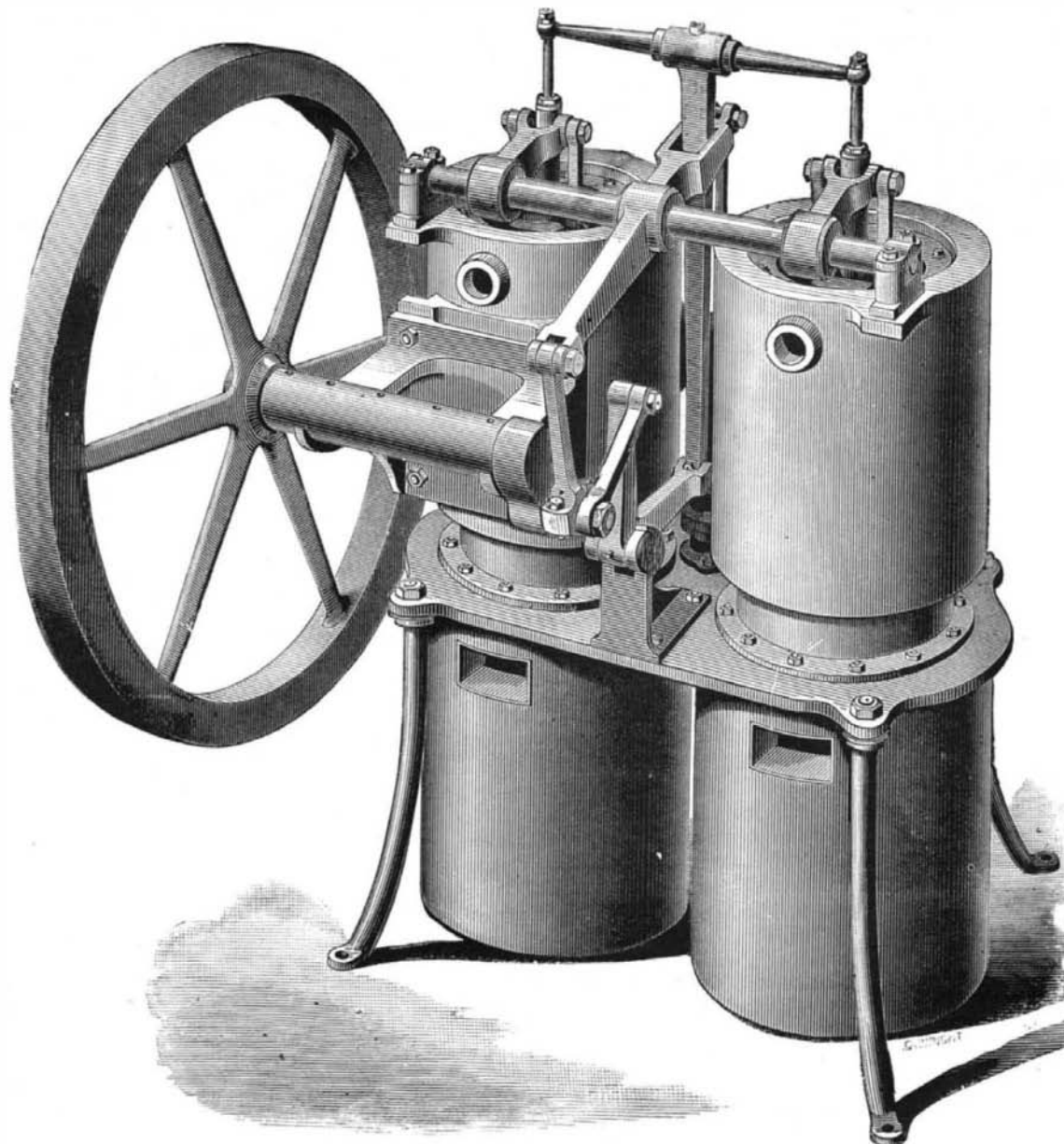
A London paper of recent date gives the following particulars of an extraordinary match at rat killing. "Hollin-

wood, near Manchester, was the scene of a rather novel rat killing match the other day, between Mr. Benson's fox terrier dog, Turk, and a Mr. Lewis' monkey, for £5. The conditions of the match were that each one had to kill twelve rats, and the one that finished them the quickest to be declared the winner. You may guess what excitement this would cause in the 'doggy' circle. It was agreed that Turk was to finish his twelve rats first, which he did, and in good time, too, many bets being made on the dog after he had finished them. After a few minutes had elapsed it now came the monkey's turn, and a commotion it caused. Time being called, the monkey was immediately put to his twelve rats, Mr. Lewis, the owner, at the same time putting his hand in his coat pocket and handing the monkey a peculiar hammer. This was a surprise to the onlookers; but the monkey was not long in getting to work with his hammer, and, once at work, he was not long in completing the task set before him. You may talk about a dog being quick at rat killing, but he is really not in it with the monkey and his hammer. Had the monkey been left in the ring much longer you could not have told that his victims had been rats at all—he was for leaving them in all shapes. Suffice it to say the monkey won with ease, having time to spare at the finish. Most persons present (includ-

ERICSSON'S DUPLEX CALORIC PUMPING ENGINE.

Our professional readers will perceive at a glance, on examining the accompanying engraving of this engine, that its principal features are identical with those of Ericsson's solar engine, illustrated in the SCIENTIFIC AMERICAN, August 2, 1879. In the solar engine the heater attached to the end of the working cylinder receives its caloric from the concentrated and reflected rays of the sun, while the corresponding part of the pumping engine is heated by a gas flame, or by radiation from a coal fire. In either case the working piston is actuated by atmospheric air, alternately expanded and contracted, within the working cylinder, by means of a hollow plunger less in diameter than the working cylinder. This plunger, composed of light steel plates, is caused to move up and down in such a manner that, just before the up stroke of the working piston commences, the air is transferred to the heater, and its tension thereby increased, while just before the down stroke of the piston the air is transferred to the opposite cold end of the working cylinder, where its tension is greatly reduced. It should be observed that the working cylinder is surrounded by a water jacket, through which cold water is circulated, by the simple plan of attaching the delivery pipe of the water pump to its bottom, the exit being formed at the top.

The mechanism actuating the hollow plunger by which



CAPTAIN ERICSSON'S DUPLEX CALORIC PUMPING ENGINE.