

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.

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

Fig. 2

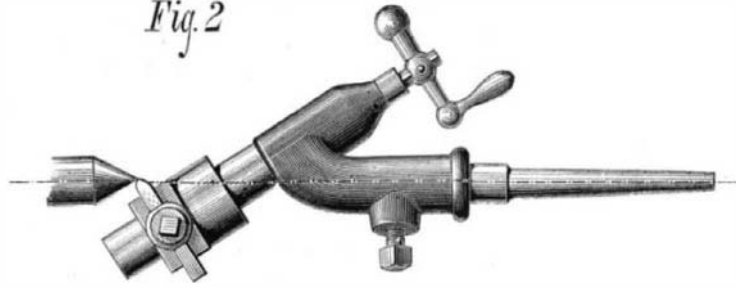
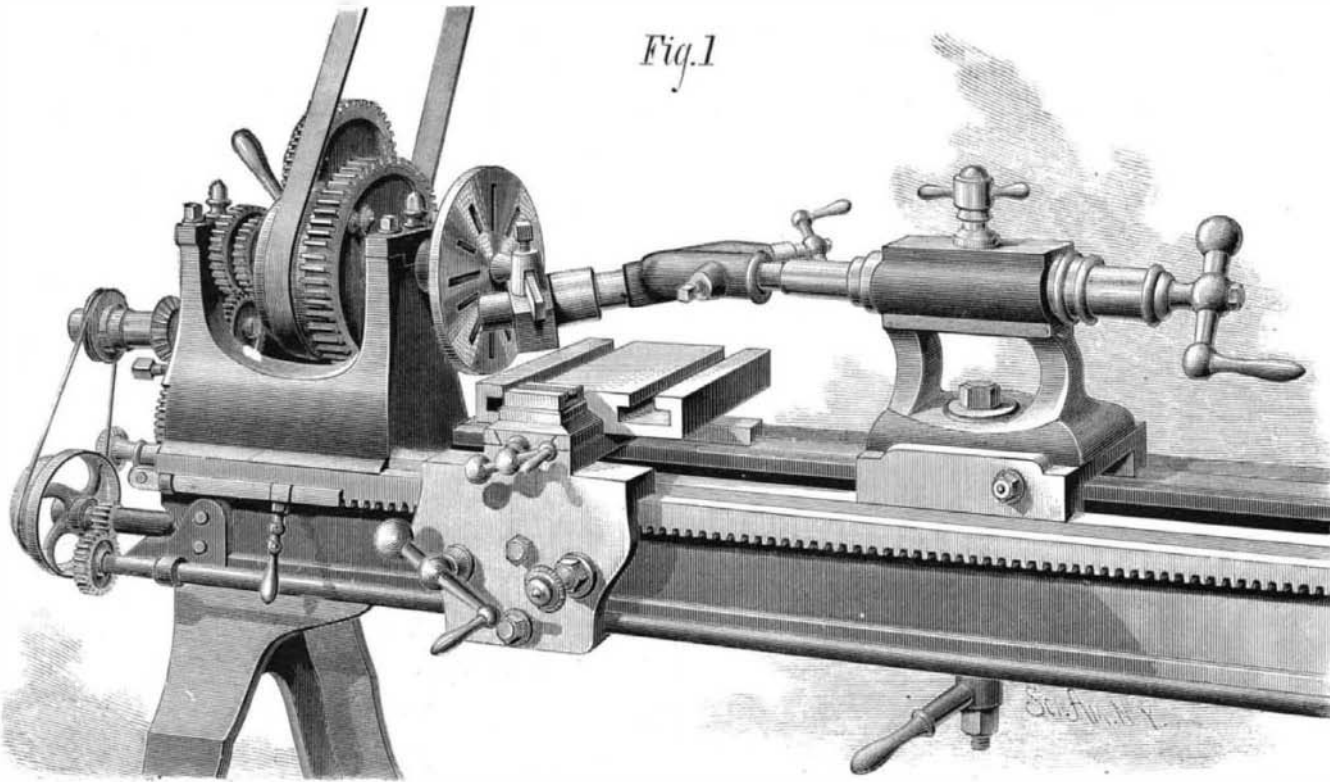


Fig. 1

**BROWN'S CENTER-TURNING ATTACHMENT FOR LATHES.**

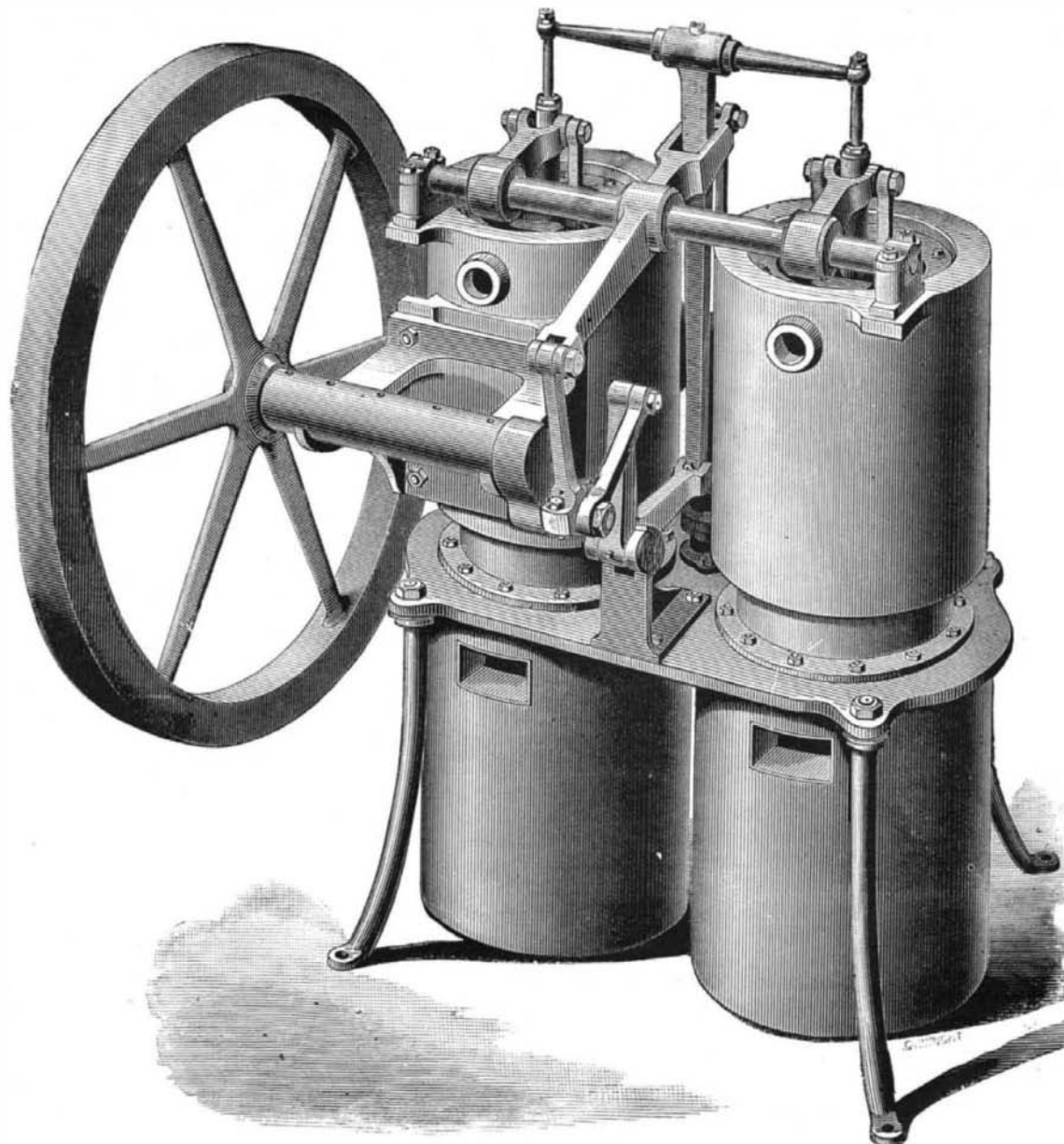
the air is transferred from the heater to the cold end of the working cylinder and then back again, will be readily understood by referring to the engraving. The energy of the working pistons, operating at the top of the cylinders, is communicated to the crank shaft by two vibrating levers and

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.

"Hollinwood, 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-

**CAPTAIN ERICSSON'S DUPLEX CALORIC PUMPING ENGINE.**

ing Mr. Benson, the owner of the dog) thought the monkey would worry the rats in the same manner as a dog does; but the conditions said to kill, and the monkey killed with a vengeance, and won the £5, besides a lot of bets for his owner.

THE GOLDEN EAGLE.

One of the finest of birds, says Wood's "Natural History," is the well known golden eagle. This magnificent bird is spread over a large portion of the world, being found in the British Islands, and in various parts of Europe, Asia, Africa, and America. The color of this bird is a rich blackish-brown on the greater part of the body, the head and neck being covered with feathers of a rich golden red, which have earned for the bird its popular name. The legs and sides of the thighs are gray-brown, and the tail is a deep gray, diversified with several regular dark-brown bars. The cere and the feet are yellow. In its immature state the plumage of the golden eagle is differently tinged, the whole of the feathers being reddish-brown, the legs and sides of the thighs nearly white, and the tail white for the first three-quarters of its length. So different an aspect does the immature bird present that it has been often reckoned as a separate species, and named accordingly. It is a truly magnificent bird in point of size, for an adult female measures about three feet six inches in length, and the expanse of her wings is nine feet. The male is less by nearly six inches.

In England the golden eagle has long been extinct; but it

sportsman-like manner. One of the eagles conceals itself near the cover which is to be beaten, and its companion then dashes among the bushes, screaming and making such a disturbance that the terrified inmates rush out in hopes of escape, and are immediately pounced upon by the watchful confederate.

The prey is immediately taken to the nest, and distributed to the young, if there should be any eaglets in the lofty cradle. It is a rather remarkable fact, that whereas the vultures feed their young by disgorging the food which they have taken into their crops, the eagles carry the prey to their nests and there tear it to pieces, and feed the eaglets with the morsels.

When in pursuit of its prey it is a most audacious bird, having been seen to carry off a hare from before the noses of the hounds. It is a keen fisherman, catching and securing salmon and various sea fish with singular skill. Sometimes it has met with more than its match, and has seized upon a fish that was too heavy for its powers, thus falling a victim to its sporting propensities. Mr. Lloyd mentions several instances where eagles have been drowned by pouncing upon large pike, which carried their assailant under water and fairly drowned them. In more than one instance the feet of an eagle have been seen firmly clinched in the pike's back, the bird having decayed and fallen away.

Packing Fruit for Conveyance.

The various packages of specimens which we receive from a distance show the defects of imperfect packing on one

pressure of the head holding all firmly together. But a single mistake spoiled the whole; the packer placed a handsome but soft pear among the rest in filling, and this soon giving way on the journey, and becoming a shapeless mass, left a vacancy in the barrel, loosening the rest and causing all to rattle, bruise, and spoil. There are some skillful cultivators of fruit from whom we occasionally receive specimens, which, through good packing, always come in perfect condition.

In this connection the premiums offered this year for the best packed boxes of fruit at Covent Garden, London, are worthy of mention. The competing specimens were to be delivered from a distance not less than twenty miles. In this country of long distances this should be greatly extended. The first prize was awarded for a box of grapes, the box being lined with soft, dry moss at the bottom, covered with a sheet of tissue paper; on this the grapes, which weighed 18 pounds, were placed. The sides were similarly treated. Two and a half dozen peaches were packed in a shallow box, the fruit first wrapped separately in paper, and then packed firmly with wadding. Strawberries were packed in mulberry leaves, a mode adopted by all the competitors. In the package of grapes which received the second prize, they were tied to the sides of the box with tissue paper and a layer of wadding beneath; but it strikes us this treatment would not be a guard against the tumbling over which occurs on railroads. The second prize peaches were firmly packed in wadding only. We obtain this information from the *Garden*. If prizes were offered in this country at our



GOLDEN EAGLE.—*Aquila chrysaetos*.

is still found in some plenty in the highlands of Scotland and Ireland, where it is observed to frequent certain favorite haunts, and to breed regularly in the same spot for a long series of years. Their nest is always made upon some elevated spot, generally upon a ledge of rock, and is most artistically constructed of sticks, which are thrown apparently at random, and rudely arranged for the purpose of containing the eggs and young. A neighboring ledge of rock is generally reserved for a larder, where the parent eagles store up the food which they bring from the plains below. The contents of this larder are generally of a most miscellaneous description, consisting of hares, partridges, and game of all kinds, lambs, rabbits, young pigs, fish, and other similar articles of food. An eagle's nest might therefore be supposed to be an unpleasant neighbor to the farmers, but it is said that the birds respect the laws of hospitality, and, provided that they are left unmolested, will spare the flocks of their immediate neighbors and forage for food at a considerable distance.

In hunting for their prey, the eagle and his mate mutually assist each other. It may here be mentioned that the eagles are all monogamous, keeping themselves to a single mate, and living together in perfect harmony through their lives. Should, however, one of them die or be killed, the survivor is not long left in a state of widowhood, but vanishes from the spot for a few days, and then returns with a new mate. As the rabbits and hares are generally under cover during the day, the eagle is forced to drive them from their place of concealment, and manages the matter in a very clever and

hand, and the perfection to which it may be carried on the other. The essential requisite for successful conveyance is to have the fruit incased so tight in the box that no shaking or jarring will cause it to rattle. A box of grapes was sent us; the bunches had been neatly placed in it, and some unoccupied space left in the box above the fruit. In a few hundred miles transit, it had been shaken or turned over perhaps a thousand times, or at least often enough to reduce all the grapes to a shapeless mass of pulp. If a number of bunches or specimens are sent, each should be wrapped separately with cotton or other suitable material, so that every jar and motion will carry fruit and packing all together. We received lately a small box of grapes. The bunches had been placed in the bottom, and the space in the box above compactly filled with newspaper. Here the packing and fruit were separate, and the berries were all more or less beaten and injured. If the bunches had been incased inside the packing, no trouble would have occurred. In another instance, the value of good packing was shown on the receipt of a few specimens of peaches from a distance of a thousand miles. Each peach was first wrapped in a few thicknesses of soft paper; then with cotton half an inch thick; this again with paper, and the whole placed in a box with a compact lining of paper, half an inch or more thick on each side. The fruit has doubtless had many tumbles in the mail bags, but it came without any injury whatever.

Soft fruit will of course fare worse than hard, but the latter may be easily spoiled in packages of much size. An instance—a half barrel of Bartlett pears were well put up, the

fairs for the best specimens of packing extra fine fruit for market, it would unquestionably be the means of effecting important improvements, and such exhibitions would be examined with great interest by fruit growers.—*Country Gentleman*.

Dangerous Toys.

A Brooklyn chemist was fatally poisoned recently while preparing the ingredients for the well known "serpent's eggs." Usually he mixed the ingredients of this dangerous plaything in the open air, knowing the poisonous nature of the vapors of mercury liable to be given off during the work, as well as when the eggs are burning. On the fatal day he melted the ingredients in his house. The retort cracked in the process, and knowing the consequence he warned his wife and children to run for the yard. He followed, crying that it was all over with him, as he had breathed enough of the fumes to kill him. He died the next day.

Natural Gas in Quebec, Canada.

The natural gas well in Maskinonge County, Quebec, is attracting considerable attention. Recently quite a gathering of prominent Canadians assembled at St. Pierre to witness tests of the illuminating power of the gas and to hear the report of a chemist who had been commissioned to examine the well. He reported the gas to be protocarburet of hydrogen, easily and cheaply convertible into the best illuminating gas. The capacity of the well is considerable—from 35,000 to 40,000 cubic feet a day.