boards particularly can be bent much better. This is a great advantage in making pipe-staves, or sieve-frames, which require still more art, and in forming various imple­ments of a similar kind.

Our common saw, which requires only to be guided by the hand, however simple it may be, was not known to the inhabitants of America when they were subdued by the Europeans. The inventor of this instrument has been in­serted in their mythology by the Greeks, with a place, in which, amongst their gods, they honoured the greatest be­nefactors of the earliest ages. By some he is called Talus, and by others Perdix. None except Pliny make Dædalus the inventor ; but Hardouin, in the passage where this oc­curs, reads Talus for Dædalus. Talus is the name of the inventor according to Diodorus Siculus, Apollodorus, and others. He was the son of Daedalus’s sister, and was by his mother placed under the tuition of her brother, to be instructed in his art. Having found the jaw-bone of a snake, he employed it to cut through a small piece of wood, and by these means was induced to fabricate a similar instru­ment of iron, that is, to make a saw. This invention, by which labour is greatly facilitated, excited the envy of his master, and prompted him to put Talus privately to death. Being asked, when burying the body, what he was deposit­ing in the earth, he replied, a serpent. This ambiguous answer discovered the murder ; and thus a snake was the cause of the invention, of the murder, and of its being brought to light. By others the inventor is called Perdix, who is supposed to have been the son of a sister of Dæda­lus. Perdix did not employ the jaw-bone of a snake for a saw', but the back-bone of a fish, as is mentioned by Ovid.

The saws of the Grecian carpenters had the same form, and wore made with equal ingenuity as the same instru­ments at present. This appears from a painting preserved among the antiquities of Herculanum. Two genii are re­presented at the end of a bench consisting of a long table resting on two four-footed stools, and the piece of wood to be sawn through is secured by cramps. The saw with which the genii arc at work bears a striking resemblance to our frame-saw'. It consists of a square frame, having a blade in the middle, the teeth of which are perpendicular to the plane of the frame. The piece of wood to be sawn extends beyond the end of the bench, and one of the workmen ap­pears standing, and the other sitting on the ground. The arms in which the blade is fastened have the same form as that which is given to them at present. In the bench are seen holes, in which the cramps holding the timber are stuck. They are shaped like the figure 7 ; and the ends of them reach below the boards which form the top of it.

*Saw-Mills.* The most beneficial improvement of the operation of sawing was the invention of saw-mills, which are driven either by water or by wind. Mills of the first kind were erected in Germany, on the small river Ruer, as early as the fourth century. The art of cutting marble with a saw is very ancient. According to Pliny, it was invented in Caria. Stones of the soap-rock kind, which are softer than marble, were sawn at that period ; but it appears that the harder kinds of stone were also then sawn ; for we are informed of the discovery of a building which was encrusted with cut agate, carnelian, lapis lazuli, and amethysts. There is, however, no account in any of the Greek or Roman writers of a mill for sawing wood ; and as modern authors speak of saw-mills as new and uncommon, it appears that the oldest construction of them has been forgotten, or that some inte­resting improvement has made them appear entirely new.

Becher says that saw-mills were invented in the seven­teenth century, which is a mistake ; for when the Infant Henry sent people to settle in the island of Madeira, dis­covered in 1420, he gave orders for saw-mills to be erected, for the purpose of sawing into deals the various species of excellent timber with which the island abounded, and which

were afterwards exported to Portugal. There was a saw­mill in the city of Breslau about the year 1427, producing a yearly rent of three merks ; and in 1490, the magistrates of Erfurt purchased a forest, in which they erected a saw­mill, besides renting another in the neighbourhood. The first saw-mill in Norway was erected about the year 1530. In the year 1552 there was a saw-mill erected at Joachime­thal, the property of a mathematician called Jacob Geusen. In 1555, the Bishop of Ely, ambassador from Queen Mary of England to the court of Rome, having seen a saw-mill in the vicinity of Lyons, the writer of his travels gave a particular description of it. The first saw-mill was erecte<l in Holland at Saardam in 1596, the invention of which is ascribed to Cornelius Cornelissen. The first mill of this kind in Sweden was erected in the year 1653.

In England, saw-mills had at first a similar effect with printing in Turkey, the ribbon-loom in the dominions of the church, and the crane at Strasburg. When attempts were made to introduce them, they were violently opposed, because it was apprehendcd that the sawers would thus be deprived of the means of procuring subsistence. An opu­lent merchant in 1767 or 1768, by desire of the Society of Arts, caused a saw-mill to be erected at Limehouse, driven by wind ; but it was demolished by the mob, and the da­mage was sustained by the nation, while some of the riot­ers were punished. This, however, was not the only mill of the kind then in Great Britain; for at Leith there was one driven by wind some years before. Saw-mills are very com­mon in America, where the moving power is generally water. Some have been constructed on a very extensive plan.

The mechanism of a sawing-mill may be reduced to three principal things. The first is, that the saw is drawn up and down as long as is necessary, by a motion communicated to the wheel by water. The second is, that the piece of tim­ber to be cut into boards is advanced by an uniform motion to receive the strokes of the saw ; for here the wood is to meet the saw, and not the saw to follow the wood, there­fore the motion of the wood and that of the saw ought im­mediately to depend the one on the other. The third is, that where the saw has cut through the whole length of the piece, the whole machine stops of itself, and remains im­moveable ; lest having no obstacle to surmount, the moving power should turn the wheel with too great velocity, and break some part of the machine.

When a completely cylindrical pillar is to be cut out of one block of stone, the first thing will be to ascertain in the block the position of the axis of the cylinder, then lay the block so that such axis shall be parallel to the horizon, and let a cylindrical hole of from one to two inches diame­ter be bored entirely through it. Let an iron bar, whose diameter is rather less than that of this tube, be put through it, having just room to slide freely to and fro as occasion may require. Each end of this bar should terminate in a screw, on which a nut and frame may be fastened. The nut-frame should carry three flat pieces of wood or iron, each having a slit running along its middle from nearly one end to the other, and a screw and handle must be adapted to each slit. By these means the frame-work at each end of the bar may readily be so adjusted as to form equal isos­celes or equilateral triangles ; the iron-bar will connect two corresponding angles of these triangles, the saw to be used two other corresponding angles, and another bar of iron or of wood the two remaining angles, to give sufficient strength to the whole frame. By this construction the workmen are enabled to place the saw at any proposed distance from the hole drilled through the middle of the block ; and then, by giving the alternating motion to the saw-frame, the cylin­der may at length be cut from the block, as required.

If it were proposed to saw a conic frustum from such a block, then let two frames of wood or iron be fixed to those parallel ends of the block which are intended to coincide