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Coal Burning Locomotive.

Our wood burning locomotives must soon give place to those for burning coal, especially on the New York and New England railroads. In Pennsylvania those for burning coal have already attained a profitable and permanent footing, especially on the Reading Railroad, but in New York, so far as we can learn, there is but a single coal burner in use, and that one a clumsy and uncouth monster, employed for drawing freight on the New York and New Haven Railroad. We perceive by the New Bedford Mercury, that an anthracite coal-burning engine which ran with great regularity for two months on the Taunton and New Bedford Railroad, has been transferred to the Western Railroad, Massachusetts, and has done well. This locomotive was built at Taunton, Mass., and is thus described by the paper referred to:—

"The peculiarity of this locomotive consists in the construction of the boiler. To state this plainly we may say that the water comes to the fire, instead of the fire going to the water. This passes through the tubes, instead of the fire, as in locomotives of the old construction, and is continually circulating round the fire box. In this way, a moderate combustion generates the necessary amount of steam, and the fire box not being subject to the violent heat, which has been the real difficulty with other engines for burning anthracite, is preserved, while it has been burned out in all other engines in a few weeks."

From this description we understand that this is one of Dimpfel's locomotives which was illustrated on page 248, Vol. 7, SCIENTIFIC AMERICAN.

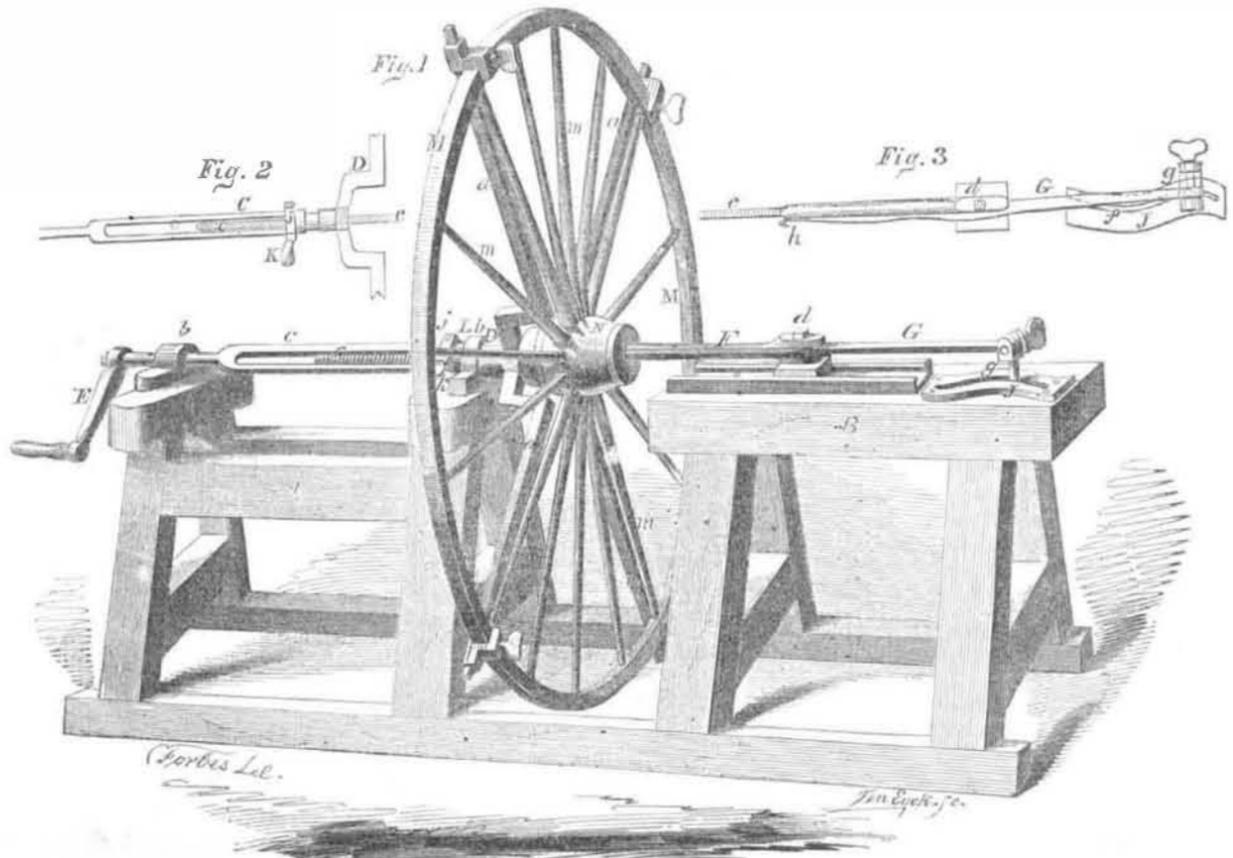
The Crown of England.

The following is estimated as the value of the jewels in this magnificent diadem: Twenty diamonds round the circle, £1,500 each, £30,000; two large center diamonds, £2,000 each, £4,000; fifty-four smaller diamonds, placed at the angle of the former, £1,000;—four crosses, each composed of twenty-five diamonds, £12,000; four large diamonds on the top of the crosses, £4,000; twelve diamonds contained in fleur-de-lis, £10,000;—eighteen smaller diamonds contained in the same, £2,000; pearls, diamonds, &c., upon the arches and crosses, £10,000; also one hundred and forty-one small diamonds, £5,000; twenty-six diamonds in the upper cross £3,000; two circles of pearls about the rim, £3,000. Cost of the stones in the crown, exclusive of the metal, is about £111,900.

Cause and Effect.

It is singular how one thing is dependent on another in this country. Speculators in New York put up the price of riddle cakes, and the failure of one extravagant man makes "hard times" for a hundred others.—A rise of \$10 per tun on logwood puts port wine out of the reach of the community—two cents advance on cotton makes shirt flaps the same number of inches shorter, while a fall in cotton increases the size of busts and bustles. "Such is life."—[Ex.

CASSELMAN'S HUB BORING MACHINE.



The accompanying engravings are views of an improved machine for boring taper holes in hubs of wheels, for the purpose of receiving their journal boxes, for which a patent was granted to W. J. Casseleman, on the 9th of last May.

The nature of the improvement consists in having a cutter attached to one end of a lever, and a pin on the opposite end working in an oblique slot in a metal plate secured to a suitable bed. The fulcrum or pivot on which the lever works passes through a rod which has a screw cut upon a portion of it, and a nut working thereon. The rod and lever are moved by turning the nut mentioned, and the cutter on one end of the lever is made to pass through the hub in an oblique direction, cutting a taper hole, owing to the direction given the cutter by the pin on the opposite end of the lever working in the oblique slot in the metal plate, J. The hub rotates with the nut.

Figure 1 is a perspective view of the machine with a wheel in it in the act of having its hub bored, and figures 2 and 3 are sections of the clamping, cutting, and guiding devices and combinations. The same letters refer to like parts on all the figures.

A B are two frames for supporting the parts, and the hub to be bored; C is a shaft in the form of a link, and having a collar or socket, D, at one end, with radial arms, a a. The shaft, C, works in suitable bearings, b b; E is its crank handle. F is a rod which passes through the center of the collar, D, and through the center of the inner journal of shaft, C, it has a screw thread, c, cut upon its inner end. The outer end of this rod has a slot cut in it, in which a portion of a lever, G, fits a pivot, d, on which this lever turns, passing through the end of the rod; J is the plate with the irregular or oblique slot, f, cut in it. On the outer side of lever G, there is a pin, g, projecting downward from it, and fitting on the slot, f. On the inner end of lever G is a cutter, h. The outer end of rod F rests upon a slide which works between guides at the edges of the bed plate. The pin, d, of lever G passes into this slide

and secures the rod, F, to it; L is a nut attached to shaft C; it is formed of two sections, or halves, j j, one of which has a screw thread cut in it, and fits on the screw, c, on the rod, F. A spring catch, k, secures the two halves of this nut together.

M is a wheel placed in the machine against the collar, D, and its spokes are secured to graduated arms, a a, by clamps. The inner end of the hub, N, of the wheel fits in the collar and is thus placed in the machine. The rod, F, is then passed through the mandrel hole in the hub, and the two halves of the nut, L, are brought together and secured by the spring catch, k. Motion is then given to the handle, E, when the shaft C, nut L, collar, D, and wheel, M, rotate the nut, L, drawing the rod, F, and lever, G, through the mandrel hole in the hub, and the cutter, h, at the inner end of the lever, G, cutting the taper hole in the hub owing to the direction given it by the pin, d, working in the slot, f, in the plate, J. The taper hole may be cut larger or smaller by varying the position of the cutter; for example, when the plate, J, is in line with the center of the hub, N, the diameter of the taper hole will be of a size corresponding to the obliquity of the slot, f, when the end of lever, G, is adjusted so as to be out of line with the center of the hub, the diameter of the taper hole will be proportionably increased. When the taper hole is bored, the nut, L, is opened, and the rod, F, is forced backward by hand, and the wheel is then detached from the collar, and another one put in its place, and operated upon in a similar manner. It will be observed that the pin of G is guided in the oblique groove, therefore when the pin is moved considerably to the one side, the cutter, h, is thrust out more to the one side, and as the wheel rotates, the cutter must bore a hole of a larger diameter than when it is less thrust out of a central line. This principle of boring taper holes is very simple and correct. Wheels can be trued either from their circumference or the center of the hub. The time required to place the wheel true on its position, and replace the screw rod, cutter, &c, does not ex-

ceed one minute. The outer end of the cutter lever, G, is set in any position by a setting screw above pin, g, to make the cutter, h, bore a hole of any size desired in the hub.

More information respecting this machine may be obtained of Thomas George Walker, No. 70½ Pine street, New York.

Fish Cast Up from the Sea.

A curious phenomenon has lately been witnessed in the port of Vera Cruz. For several days in the beginning of last month, the shores of the harbor and neighborhood were strewn with dead fish, cast up from the sea. So great was the quantity, that serious fears were entertained lest disease should follow from such a mass of putrefaction. Bodies of troops were turned out each day, who gathered the fish and bury them on the spot. A general order was issued commanding all those residing in the vicinity to take the same steps for the prevention of disease. An order was also issued prohibiting the sale of fish. This phenomenon continued for several days, and at last gradually disappeared. In the appearance of all the fish the first thing that struck the attention was the inflamed and protruded state of the eyes, such as ordinarily takes place in strangulation.—On opening the fish, the intestines were observed to be much distended with a gas which, on testing, proved to be carbonic acid gas. It was concluded by a doctor in one of the hospitals, that this gas had been evolved during a submarine volcanic eruption.

Shade Trees on Railroads.

MESSENGERS EDITORS—It has often occurred to me that railroad companies would gain much by planting the waste land on each side of the track with trees. The locust, for instance, which will grow in any soil, requires no attention, and is of rapid growth. The advantages would be, first, a refreshing shade. Second, a protection from the dust by retaining the moisture. Third, strength to embankments, and fourth, sufficient timber, and superior to any other, for all the ties on the road; a tree will grow sufficiently large in ten or fifteen years. N. JONES.