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Improved Railway Supply Apparatus.

With fast running trains much time is lost in stoppages for water and fuel. The annexed engraving represents an apparatus designed to not only obviate the loss of time for taking in water and fuel, but to enable anything, as mails, express packages, etc., to be supplied to trains while running at full speed.

A frame work made by posts and cross beams, connected by a longitudinal girder, is erected over the track at the station from which supplies are to be taken. From each of the cross beams project downwards two arms, and between these arms is pivoted a tripping bucket of large size. The pivots are so placed that the buckets hang in a vertical position, but are so nearly balanced, when charged with water or coal, that a slight force will invert them. From the bottoms of the buckets project downward tripping arms, which, upon the passage of the locomotive, are struck by a vertical post on the top of the locomotive, attached at a suitable distance forward of the tender; this distance varying with the speed at which the train is designed to move.

The vertical post on the locomotive has a rubber buffer at the top to lessen the percussive force of its contact with the tripping arms of the buckets.

The longitudinal girder which joins the cross beams should be made of plank and sufficiently wide to constitute a walk for the attendants who fill and take care of the buckets. A hose may be employed for conveying water to the buckets, and an elevator for raising coal to the level of the buckets.

The tender is provided with a properly constructed hopper to receive the charge of fuel, water, or other material from the buckets.

This invention is very simple, and is much cheaper than some methods hitherto successfully employed to supply water to locomotives; while it is equally applicable to the supply of fuel or the other purposes above specified.

Patented in this country November 2, 1869, and also in Europe, through the Scientific American Patent Agency, by David Harrison, of Fayette, Miss.

Improved Rotary Grates.

Our engraving represents an improved form of rotary grate, the construction of which is so plainly delineated by our artist as to render a description almost unnecessary. It may be described, however, as a series of rings connected by longitudinal bars and arranged parallel to each other at right angles to a longitudinal shaft; this shaft serving to support the grate in the furnace, as shown.

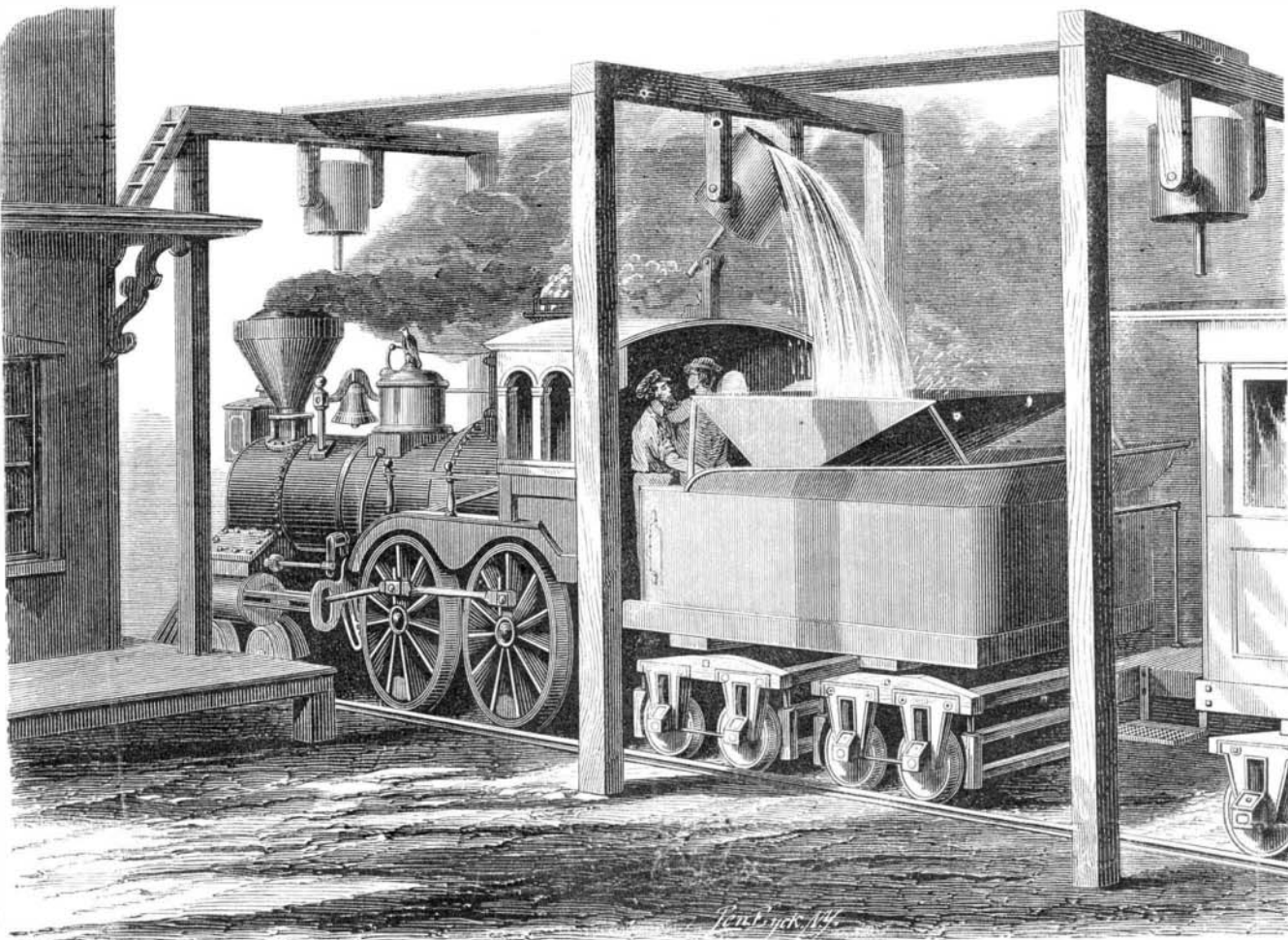
These grates have been subjected to a year's severe test in the foundry of Joseph King & Co., at Sharon, Pa., and the results of these experiments have, we are assured, established the following important claims:

First. On a stationary grate the fire rests constantly on one

portion of the bar, which, as a consequence, becomes overheated and warps; while, with the rotary bar, a revolution can be made which turns the heated portion of the bar away from the fire, and, at the same time thoroughly rakes the fire.

Fifth. It is claimed that coal-slack, refuse lumber, saw dust etc., are effectually and economically consumed in this grate.

Sixth. Clinkers and cinders are removed much easier than from flat grates.



HARRISON'S WATER AND FUEL SUPPLY APPARATUS.

Second. In raking the fire, when stationary grates are used, the doors of the furnace must necessarily be left open, for a time admitting the influx of cold air to the bottom of the boiler, and thus impairing the power of the steam. This is entirely obviated by the use of the rotary grates.

Third. They are claimed to last from four to six times longer than any other bar now in use.

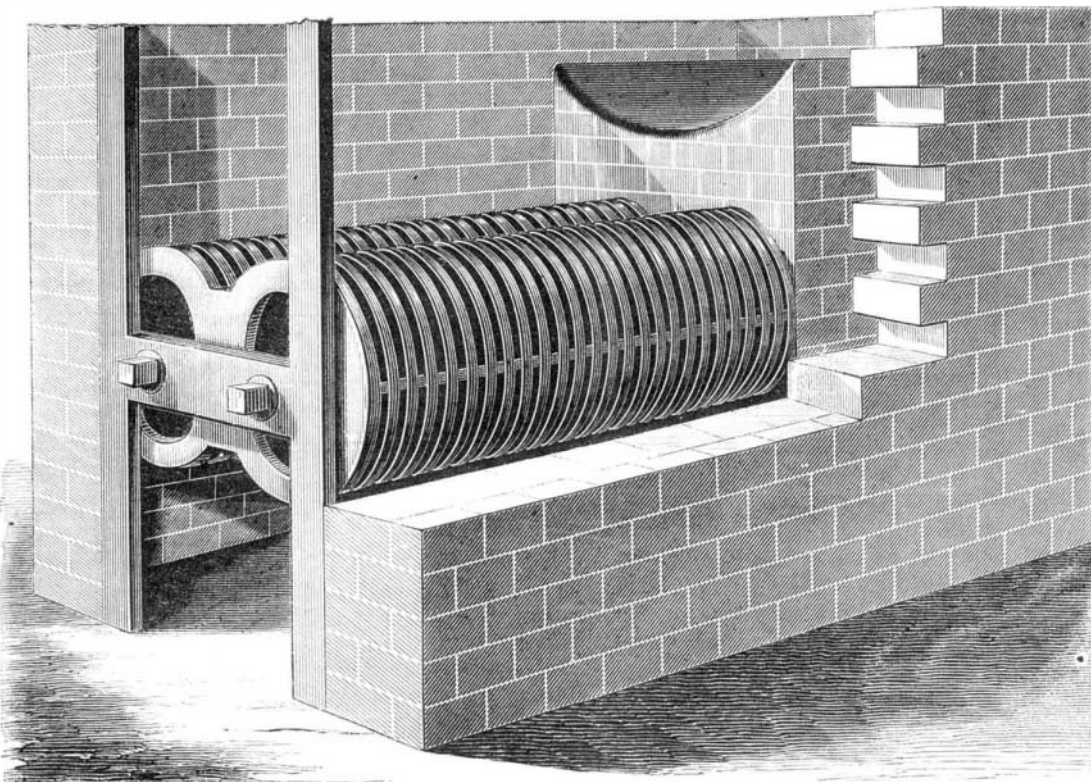
Fourth. A much better draft is claimed, and it must be ob-

fact that both the date of erection and the subsequent history of the monument, are so distinctly ascertained.

After the cleansing of the statue of the Countess of Richmond, to which so much public attention was directed in last May, the curators of the tombs proceeded to examine the central monument of the Abbey, that of King Henry VII. and his queen, standing, as is well known, in the chapel founded by that sovereign under the protection of a richly-wrought grille.

Not only did the effigies appear to be coated and partially corroded in consequence of long neglect, but the altar-tomb itself gave symptoms of dilapidation and decay. Joints yawned, and cracks menaced, and the general appearance was such as is often produced, in similar structures, by subsidence of the foundations. The effigies were therefore carefully removed and carried into the eastern apse, or smaller chapel, where they were cleaned, and that with great science. The altar-tomb itself was taken to pieces, with a view to its replacement in its original integrity. It soon appeared that no subsidence had occurred. On the contrary, the tomb had been built on the finished pavement of the chapel, and the portion of this pavement which had thus been protected from wear was in a condition of great and original splendor, being enriched with a diapered pattern, partly polished, and partly pounced or frosted.

The actual cause of the dilapidation of the tomb then appeared. It was nothing but the oxidation of the only pieces of iron which had been employed by the builders. All the fittings were of copper, with one exception. At each corner of the tomb sits a boy angel, in gilded copper. To keep these figures in their place copper bolts were employed, which



BYARD'S PATENT ROTARY GRATES.

vious that a greater extent of grate surface is secured in a fire-box of given section, than where flat grates are used, the difference being nearly the same as between the semi-surface of a cylinder excluding the ends, and the area of its longitudinal section through its axis.