

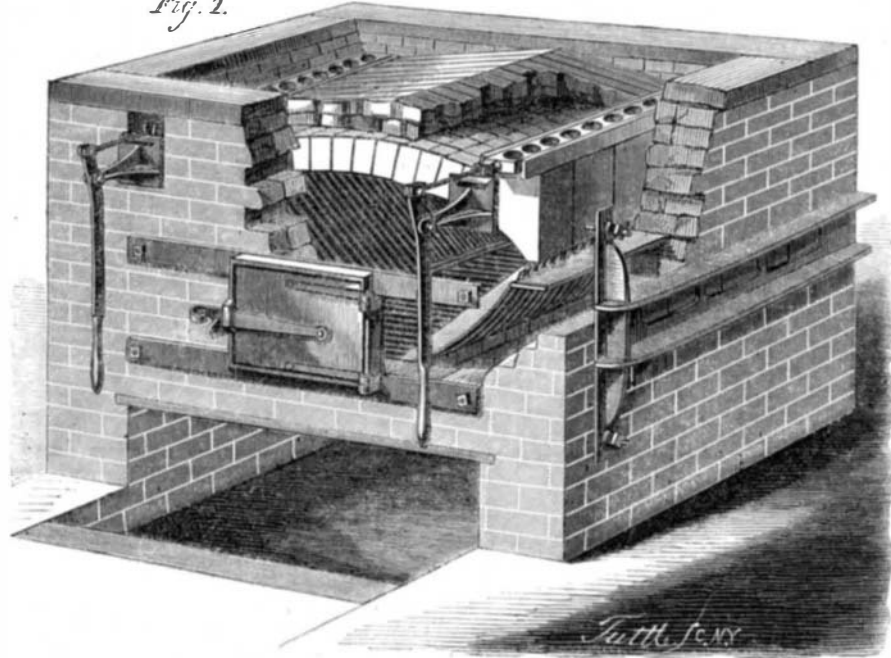
**Device for Burning Coal Dust.**

The question of economy in fuel is one that has for the past few years been growing in national importance. In the British Islands inquiry has already been started as to how many years their coal fields will supply the steadily increasing demands of the English factories.

In Germany, however, the limited supply has for a long time caused the inventive talent of the various nationalities, to be directed so as to obtain the most economical and perfect combustion. Mr. Ferdinand Braun, of Wiesbach, a member of the Royal Bavarian Engineer Corps, being appointed to the superintendence of a coal mine, very naturally had his attention drawn to the large percentage of waste slack or fine coal, which is found in all coal-mining regions.

This is at the present time not only a loss but a cause of expense to the miner, requiring labor to mine and haul to

Fig. 1.



the surface; and also the occupancy of extensive tracts of land upon which it may be allowed to accumulate. Many attempts have already been made to use this material pressed in blocks with coal tar, refuse petroleum, etc.; but even allowing this to be practicable, it requires a large outlay for labor and machinery. Mr. Braun viewed this problem from another standpoint. His predecessors had accepted as a fact the form of furnace now in general use, and endeavored to so manipulate the fuel as to allow of its use in them, but his labors were directed to construct a form of furnace in which this waste material could be burned without any change in the fuel. The accompanying engravings show the furnace which he invented.

It is adapted for burning fine and dust coal, peat, sawdust, spent tan, etc. Fig. 1 is a perspective view of the furnace with a portion of the wall broken so as to show the hopper or fuel chamber over the arch, the passage through the skew backs in the arch, from the fuel chamber to the grate in the fire box, the inclination of the grates from the sides to the middle of the fire, the levers and slides for regulating the amount of fuel fed to the fire, the fire-box door, used only for cleaning the fire, and the arch of fire brick or other refractory material.

Fig. 2 is a section through the middle of the fire, showing the inclination of the arch, A, upward, and the inclination of the grate, B, downward, from the front to rear, also the feed passages, C, for the fuel, which are at intervals from the front to the back, at the spring of the arch on both sides of the furnace. To burn this fine material requires that it should be in a thin layer and evenly distributed over the surface of the grate. This form of furnace meets these requirements by a continuous automatic feed from both sides of the fire, throughout its whole length, the feed being caused simply by the law of gravity causing the fuel to fall through the feed passages and slide on the inclined grates.

The advantages of this furnace are burning an inferior and cheaper material, and by means of the radiated heat from the arch a perfect combustion is obtained. The saving in weight arising from this perfect combustion of fuel amounts in practice to twenty per cent, in addition to that from the lower price of the fuel.

A great desideratum for the bituminous coal regions is that the perfect combustion in this furnace allows no smoke to escape, thus furnishing an easy and available remedy for the dingy clouds of smoke which envelope so many of our large manufacturing cities.

The patent for this invention in the United States was obtained through the Scientific American Patent Agency, May 17, 1864. It has since been assigned to the Fuel Saving Furnace Company, of New York City, which has been organized with a capital stock of \$200,000 for the purpose of purchasing said patent and doing all acts incident to the manufacture and introduction of the furnaces.

For further information call upon or apply to William Ennis, President, or J. W. Cole, Secretary, at the office of the Company, No. 205 Broadway, New York City.

**RELIEF OF THE CITY--ELEVATED RAILROADS.**

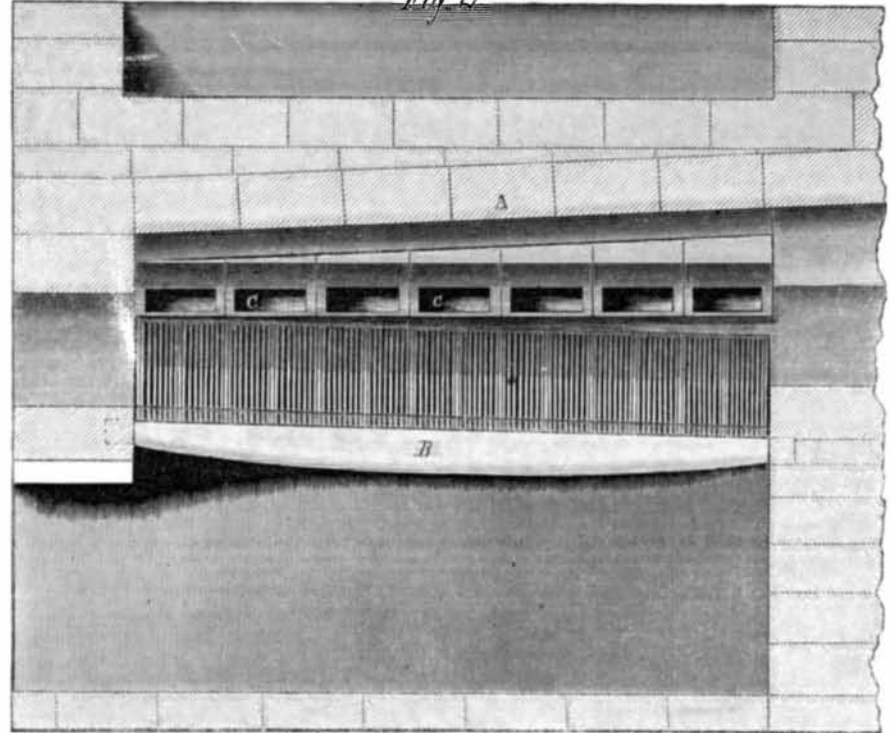
The experimental half-mile section of the West Side and Yonkers Elevated Railway, for which the surveys have been already made in the lower part of Greenwich street, is to be

the initiative, if successful and approved, of three lines conditionally authorized by the legislature, from the Battery to western, middle and eastern points in Westchester county. The west side line runs through Greenwich street to Ninth avenue, and thence by the most eligible route by way of Kingsbridge to Yonkers. The eastern line proceeds through Pearl street, Bowery, Third avenue and between Third and Second avenues to Harlem bridge, and thence to New Rochelle. The middle line runs through Broadway to Sixty-fourth street, and thence to probably the east side of the village of Yonkers, where large tracts of most eligible building

device. Preferably it is screwed in as shown in the engraving. By this means the tube may be elongated or contracted to suit the size of the hub. The cap, E, fits flush with the flange of the oiler when closed, and is held in position, either open or closed, by the spring, D. It is opened only to introduce the oil. The upper tube directly under the cap has a flanged annular recess in which is a disk of rubber, cork, or other elastic substance which prevents leakage of the oil or the introduction of dust. A small hole in the cap gives admission to air to force the oil to the axle.

This contrivance is perfectly simple, cheaply made, and

Fig. 2.

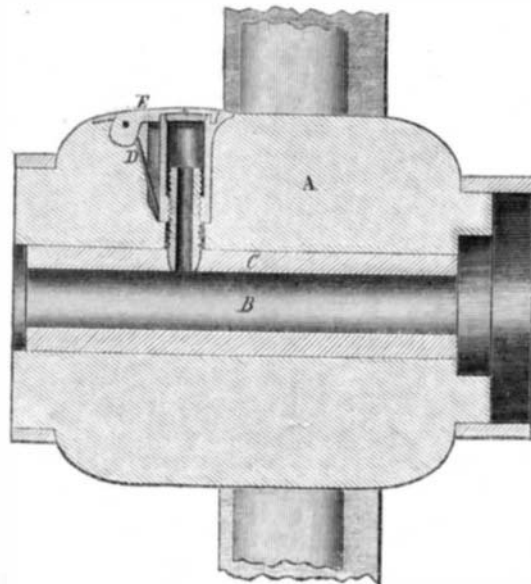
**BRAUN'S BASKET GRATE FURNACE.**

land await direct railway communication with the city to develop into great value both to present proprietors and the public.

These structures are to be supported on wrought iron columns in line with the curb stone, twenty-five feet apart. The track, which is to be of steel on a bed of india-rubber, will thus overlap the road and sidewalk equally. In the upper part of the city, right of way may be bought through the center of blocks, in the usual manner. Passenger stations will be provided, as far as possible by renting second floor rooms adjoining, with inside stairs and ornamental bridges conducting to the road, at intervals of from 1,500 to 2,500 feet. The cars are to be propelled by stationary steam power, imparted through a half-inch steel wire rope running between the rails. The estimated cost is from \$300,000 to \$500,000 per mile. After the experimental section is built, it is to be examined by three commissioners, two appointed by the Governor and one by the city authorities. Should the report be favorable to the road, not only as practicable but in no way interfering with the comfort of the community, or dangerous to life upon or below it, the companies shall then have the right to build the roads to Yonkers and establish a ferry over Harlem River. The construction of the Broadway road will require the consent of the Common Council.

**CALKIN'S AXLE OILER.**

The object of this invention is to obtain a ready means of oiling the axles of carriages, team wagons, etc., without re-



moving the wheels; one that will keep out the dust and still be adapted to every size of hub by simple adjustment. It is a tube formed in two parts, one to slide or be screwed within the other to adapt its length to hubs of varying diameters.

In the engraving A is a section of a hub and B the axle arm on which the box, C, turns. The oiler is of cylindrical form and is let into the hub by a mortise, a suitable recess being made for the action of the lever cap and spring, D. In the upper portion of the tube is a smaller tube either screwed in or made to slide, and held in place by a set screw or other

easily applied. There are no detached parts to be lost and its operation is uniform and efficient. John H. Calkins and W. T. Young, of Troy, Pa., should be addressed for further information.

**The Russian American Acquisition.**

The following is the substance of information in regard to the Russia America, derived from Professor Baird, of the Smithsonian Institute:

**MEANS OF INFORMATION.**—Has had two explorers in that field between one and two years, who returned last autumn, bringing a collection of specimens of natural history, extending from the British possessions to the shores of the Polar sea.

**CLIMATE, TEMPERATURE.**—The coast from Prince of Wales Island to the entrance of Behring's Straits during the winter months is about the same as at the city of Washington. Little snow, much rain. During summer months, very foggy.

**TIMBER.**—Whole country well up to the northern coast heavily timbered, chiefly hard pine forests; small trees up to the very shores. Some of the islands heavily timbered with pine forests and dense underbrush; some of them destitute of timber, and covered with grass of luxuriant growth. The soil on the west coast produces excellent barley and roots, such as radishes, turnips, and esculents, such as lettuce, cabbage, etc.,

**ANIMALS.**—Furred animals, such as sea otter, river otter, sable, furred seal, mink, foxes, black, silver, red, etc., in great great numbers. Red deer in the south, reindeer in the north.

**FISH.**—Herring, salmon, halibut and codfish abound in exhaustless numbers. Behring's sea and northward, great whales are very numerous.

**MINERALS.**—Surface washings of gold have been discovered on the headwaters of streams, on the east side of the coast range of mountains. Geological developments the same on the west slopes. Native copper has been discovered in various places on the coast, and in the vicinity of Copper river. Iron ore of excellent quantity, now being smelted and worked by Russian artisans in repairing ships, etc. Coal is found in large quantities, used by the Russians for naval purposes, similar to New Brunswick coal, but not equal to Cumberland coal. Recent discoveries have been made of what is believed to be a better quantity of coal, not yet tested.

**INHABITANTS.**—Five or six thousand Russians, and fifty or sixty thousand Indians and Esquimaux. The Esquimaux inhabit the coast on the Northern sea; are industrious, peaceable, and tractable, and live by hunting and fishing. The Inhabit the interior, and live by hunting, fishing, and trapping.

**A SALT MOUNTAIN.**—A communication read before the Scientific Association of San Francisco, describes a salt mountain resembling that in Louisiana, which became famous during the rebellion. It is situated near Muddy river, about 100 miles from the Great Bend of the Colorado, in Arizona; is about a mile wide by "several" miles long, and 400 feet high. The salt is nearly pure chloride of sodium. The old Spanish maps locate a "mountain of salt" in about the same position. Prof. Blake stated, as a remarkable fact, that he had found chloride of calcium by a recent analysis of salt brine brought from the neighborhood of St. Helens, Oregon