No. 729,474. PATENTED MAY 26, 1903.

O. E. WILSON.

APPARATUS FOR FEEDING PULVERULENT AND SMALL FUEL TO FURNACES.

APPLICATION FILED MAR. 3, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

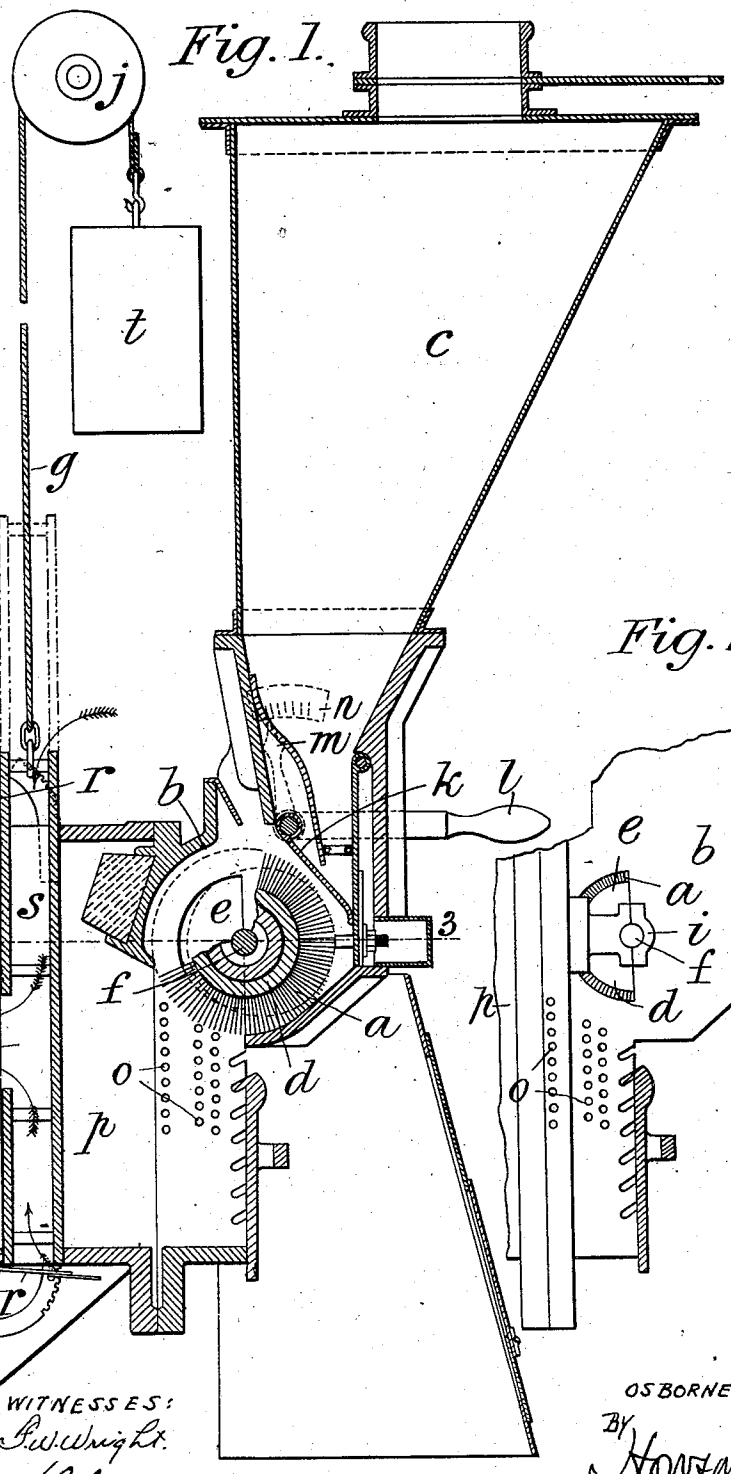
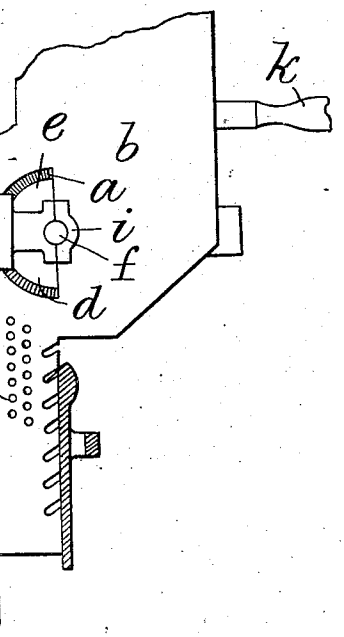


Fig. 2.



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Fig. 4.

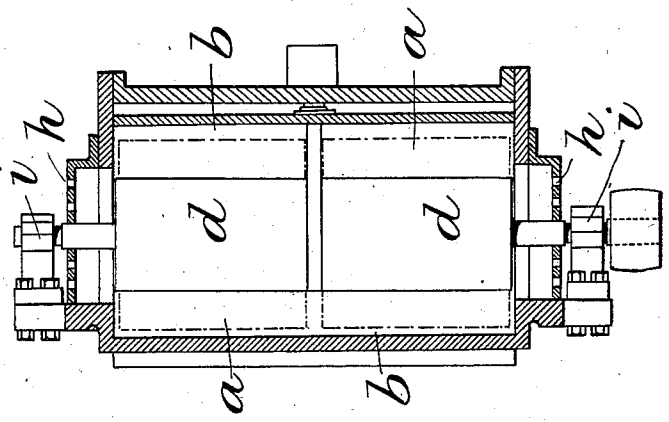
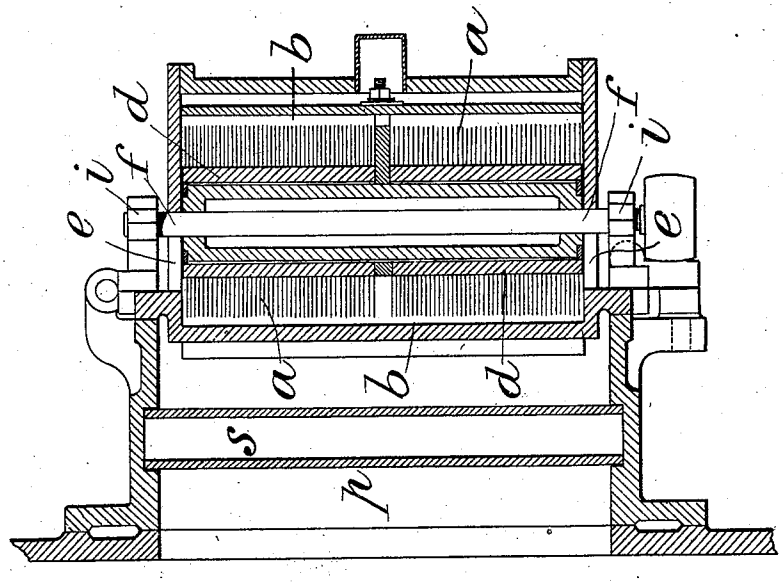


Fig. 3.



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UNITED STATES PATENT OFFICE.

OSBORNE ERNEST WILSON, OF HUYTON, ENGLAND.

APPARATUS FOR FEEDING PULVERULENT AND SMALL FUEL TO FURNACES.

SPECIFICATION forming part of Letters Patent No. 729,474, dated May 26, 1903.

Application filed March 3, 1903. Serial No. 145,889. (No model.)

To all whom it may concern:

Be it known that I, OSBORNE ERNEST WILSON, engineer, a subject of the King of Great Britain and Ireland, residing at Fernlea, Tarbock road, Huyton, in the county of Lancaster, England, have invented certain new and useful Improvements in Apparatus for Feeding Pulverulent and Small Fuel to Furnaces, of which the following is a specification.

My invention relates to apparatus for feeding pulverulent and small fuel to boiler and other furnaces by means of a rotating brush. In apparatus of this kind the brush is caused to rotate in a partly-cylindrical chamber at the lower end of a hopper charged with fuel, which fuel passes from the hopper in a regulated continuous stream into the partly-cylindrical chamber in which the brush rotates and is expelled by the rotating brush through an opening communicating with the furnace-chamber in which combustion takes place, air being admitted through suitable openings to the chamber to support combustion. It has been found in practice that such apparatus constructed as heretofore becomes useless in a very short time owing to the dusty fuel accumulating between the ends of the brush body or core and the adjacent ends of the chamber in which it rotates and becoming charred prevents the brush rotating, and consequently renders it useless.

One of the objects of my invention is to obviate this defect, another object being to prevent the feeding device from being damaged by the heat from the furnace.

I will describe my invention with reference to the accompanying drawings, of which—

Figure 1 is a vertical section of my improved fuel-feeding device; and Fig. 2, a side elevation of a portion of the same, showing one of the bearings on which the rotary brush is mounted; and Fig. 3 is a horizontal section on the line 3 3, Fig. 1; and Fig. 4 is a similar view of a modification.

a represents a rotating metal brush, *b* the chamber in which it rotates, and *c* the hopper from which fuel is fed into the chamber. According to my invention I provide in the ends of the chamber in which the brush rotates openings or spaces *e*, adjacent to the ends of the core or body *d* of the brush, which openings or spaces may extend from the part where the axle *f* of the brush passes through the said ends to within a short distance of the periphery of the brush. These openings or spaces *e* may be of semicircular shape and extend only around the portions of the ends of the brush core or body *d* which are nearest to the furnace, or the said openings or spaces may be of greater or less extent. For instance, they may be of completely circular form and extend, as shown in Fig. 3, all around the ends of the core or body *d*, so that in the first case (shown in Figs. 1 and 2) the ends of the core or body of the brush will be only partly covered by the ends of the chamber, and in the other case (shown in Fig. 3) the whole surface of the ends of the core or body will be uncovered. These openings or spaces may be covered by perforated covers or caps *h*, secured to or formed on the ends of the chamber. By dispensing with portions of the ends of the chamber or providing spaces at the ends of the chamber opposite the ends of the brush core or body, as described, the dust will not collect, so as to form at the ends any obstruction to the rotation of the brush, while air will be drawn by the chimney-draft into the chamber through the said spaces or openings *e* to support combustion. The air as it passes into the said chamber through the spaces or openings *e* by impinging against the bearings *i*, in which the brush rotates and which are situated outside the ends of the chamber, maintains the said bearings cool.

The supply of fuel from the hopper *c* to the chamber *b*, in which the brush rotates, can be regulated as required by a movable portion *k* of the hopper, adjustable in position by means of a handle *l*, so as to contract more or less, as required, the passage for the fuel from the hopper to the chamber in which the brush rotates. The operating-handle may be provided with a pointer *m* to indicate on a scale *n* the extent to which the passage is opened to admit a certain quantity of fuel in a certain time, so that the attendant can readily ascertain the quantity of fuel being supplied during any definite period.

o represents perforations in the sides of the chamber *b* for the admission of air to mix with the fuel as it is driven into the furnace by the rotating brush.

Instead of connecting the feeding appara-

tus directly to the furnace-front by hinged joint or otherwise, as heretofore, I connect to the furnace-front a casing or tube *p* and hinge to the outer end of this casing or tube the feeding device. In this casing or tube *p* openings *q* are provided, through which air can pass into the casing or tube and thence into the furnace, these openings being provided with doors or covers *r*, which can be adjusted in position by catches or bolts *u* on the doors engaging with fixed rack-teeth *v*, so as to close the openings *q* more or less, as required, to regulate the admission of air. When the feeding device is out of action, a damper or closing device *s* can be inserted through the openings *q* to close the communication between the feeding device and the furnace-chamber, and thus prevent the feeding device from being damaged by the heat from the furnace. Connected to the closing device *s* by a chain *g* or the like passing over a pulley *j* is a counterweight *t*, to facilitate the raising or lowering of the said closing device. This damper or closing device *s* is preferably hollow and has an opening *t* or perforations in the side adjacent to the mouth of the furnace, through which opening or perforations air has access to the combustion-chamber.

I claim as my invention—

1. Apparatus for feeding pulverulent and small fuel to furnaces, comprising a rotating brush, a chamber therefor, located near the mouth of the furnace, openings in the wall of the chamber adjacent to the ends of the brush, substantially as described.

2. Apparatus for feeding pulverulent and small fuel to furnaces, comprising a rotating brush, a chamber in which it is mounted, a casing secured to the furnace-mouth, said brush-containing chamber secured to said casing and supported by it, substantially as described.

3. Apparatus for feeding pulverulent and small fuel to furnaces, comprising a casing adjacent to the furnace-mouth, a rotating brush, and chamber therefor secured to said casing, air-openings from the outside into the space within the chamber and casing and removable covers for said openings, substantially as described.

4. Apparatus for feeding pulverulent and small fuel to furnaces, comprising a rotating brush, a chamber wherein it rotates, a casing on which it is hinged, said casing adjacent to the furnace-mouth and a damper to close the casing to said hinged chamber, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

OSBORNE ERNEST WILSON.

Witnesses:
H. T. HAWKINS,
JAMES ALCOCK.