

(No Model.)

2 Sheets—Sheet 1.

C. WEGENER.

FIRING APPARATUS FOR USE WITH COAL DUST.

No. 511,004.

Patented Dec. 19, 1893.

Fig. 2.

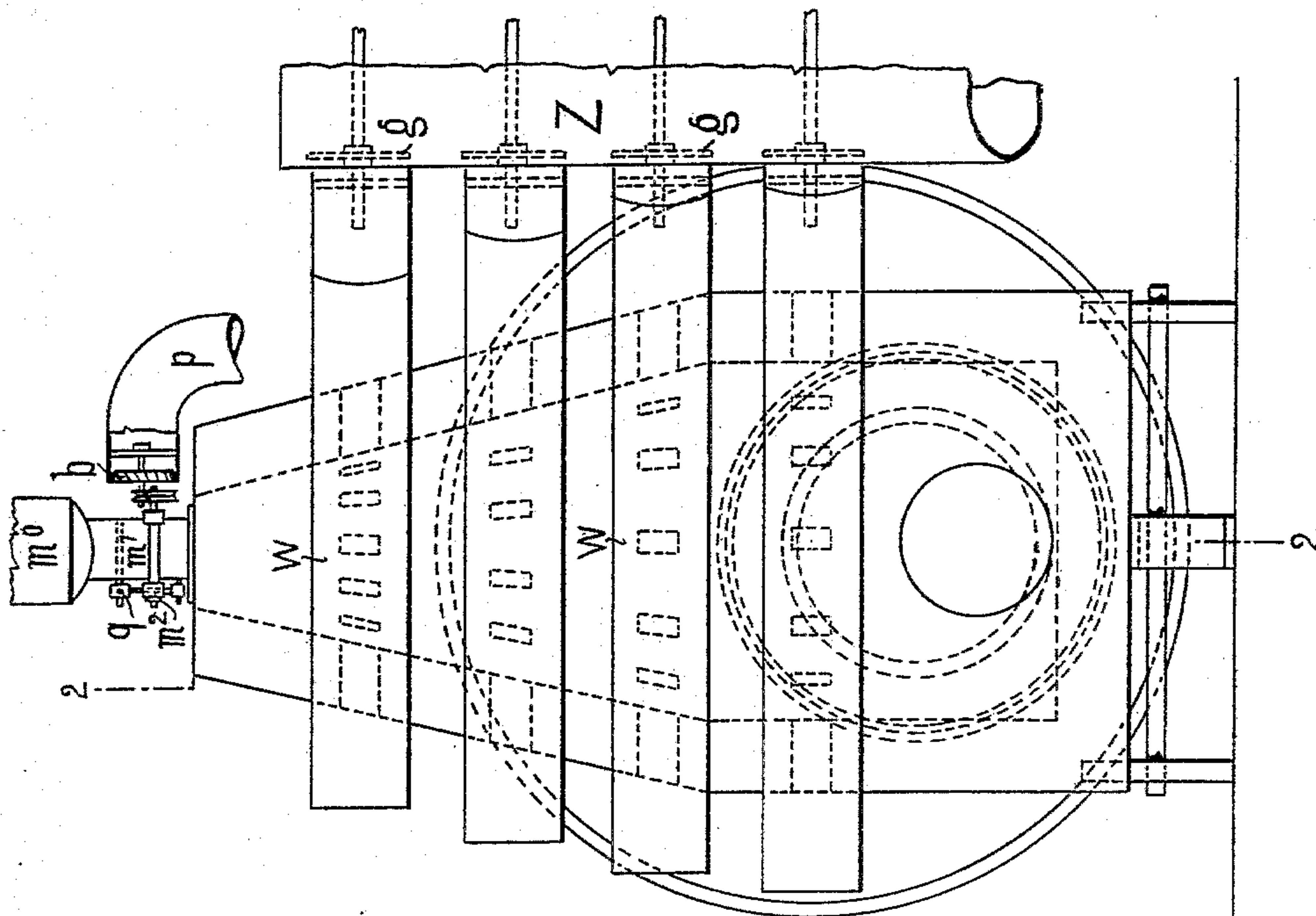
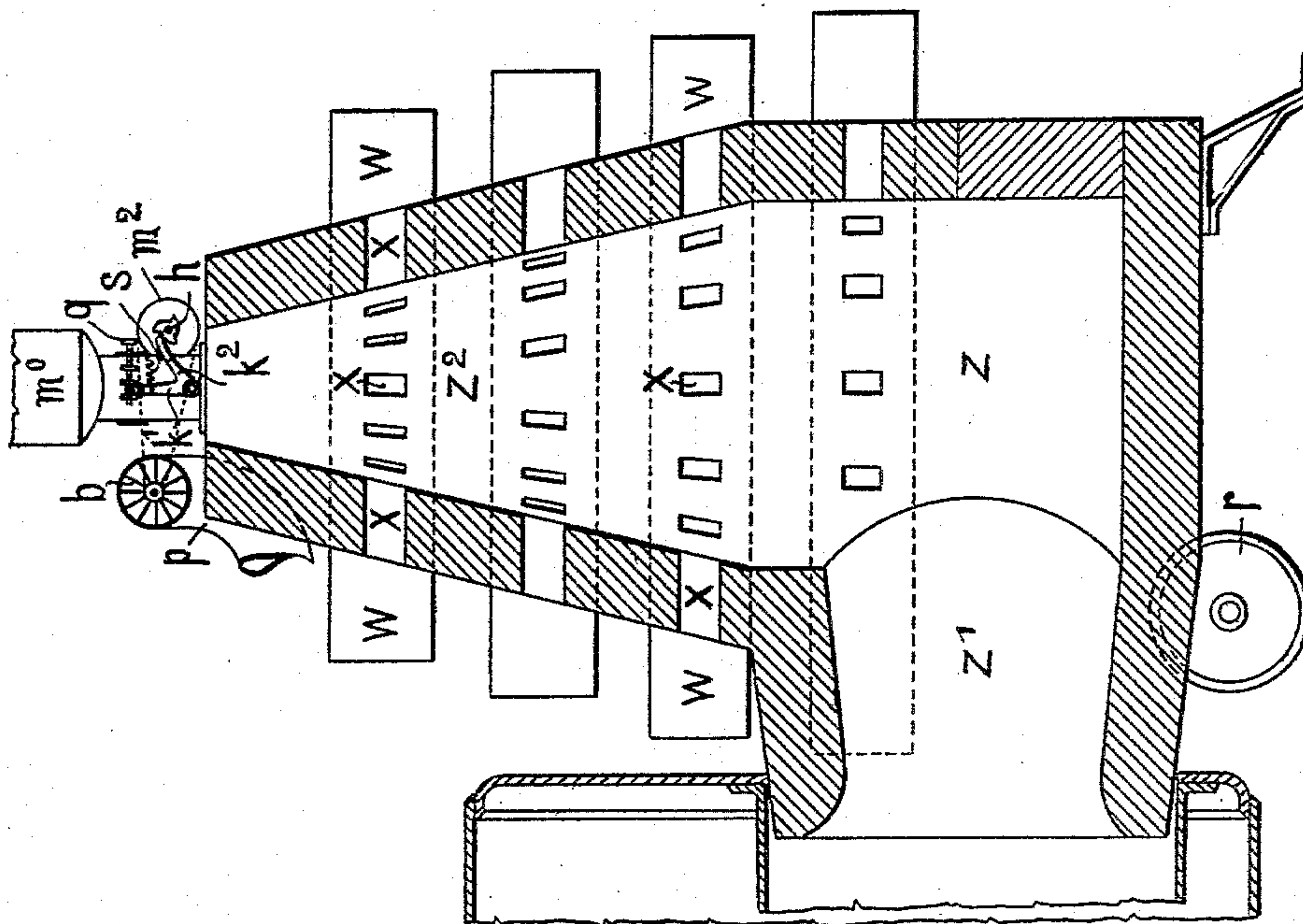


Fig. 1.



Witnesses:

Chas. E. Rindau,
John Johns

Inventor:

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(No Model.)

2 Sheets—Sheet 2.

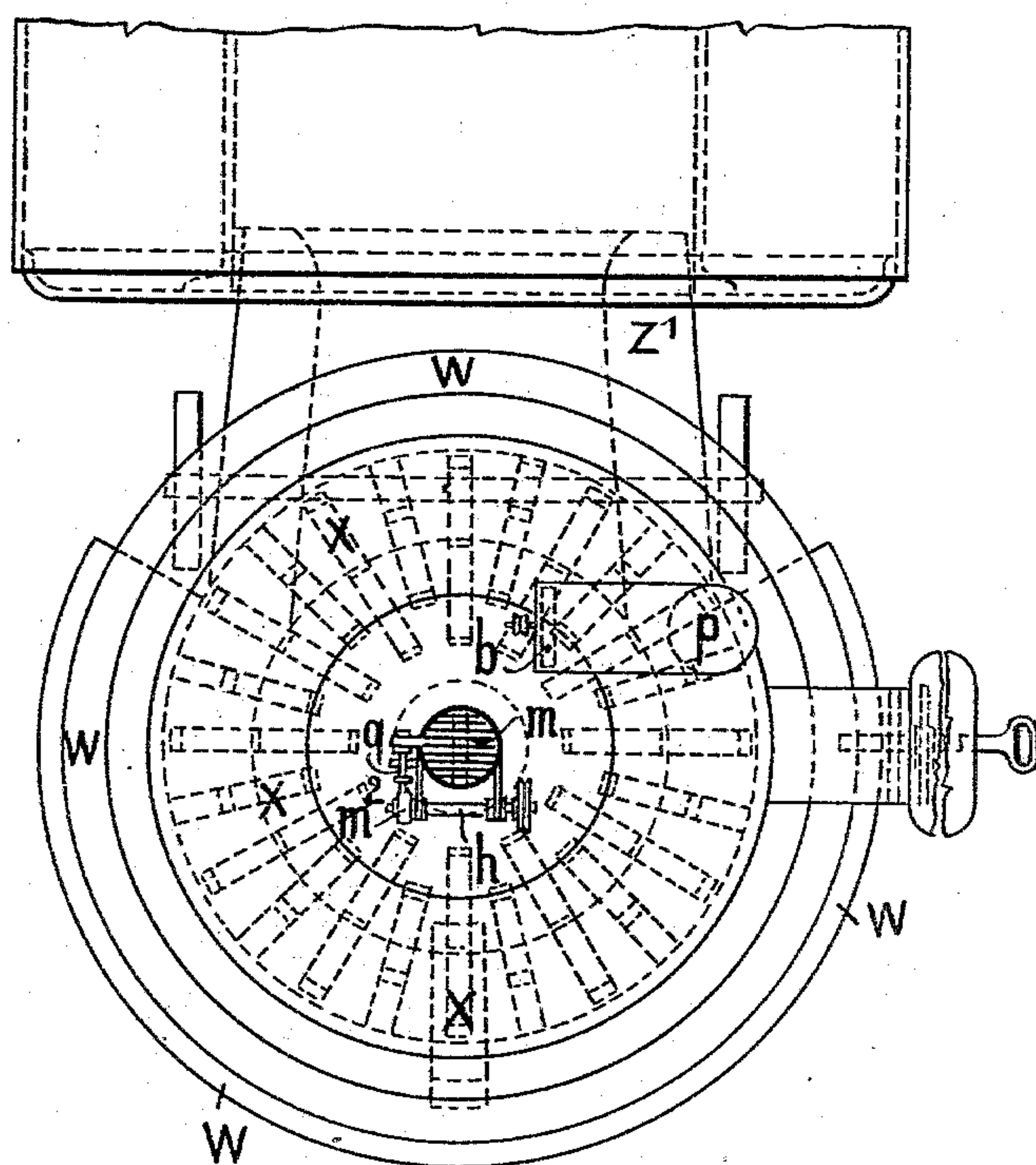
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Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

CARL WEGENER, OF BERLIN, GERMANY, ASSIGNOR OF ONE-HALF TO PAUL BAUMERT, OF SAME PLACE.

FIRING APPARATUS FOR USE WITH COAL-DUST.

SPECIFICATION forming part of Letters Patent No. 511,004, dated December 19, 1893.

Application filed March 8, 1893. Serial No. 465,141. (No model.) Patented in Luxemburg August 8, 1892, No. 1,668; in Italy September 2, 1892, LXIV, 94; in Belgium September 5, 1892, No. 101,232, and in Spain September 22, 1892, No. 13,680.

To all whom it may concern:

Be it known that I, CARL WEGENER, a subject of the King of Prussia, and residing at Berlin, in the Kingdom of Prussia, Germany, have invented certain new and useful Improvements in Firing Apparatus for Use with Coal-Dust, (for which I have obtained patents in Spain, No. 13,680, bearing date September 22, 1892; in Luxemburg, No. 1,668, bearing date August 8, 1892; in Italy, No. 94, Vol. LXIV, bearing date September 2, 1892, and in Belgium, No. 101,232, bearing date September 5, 1892,) of which the following is a specification.

The present invention relates to a class of furnaces described in my Letters Patent No. 475,715, dated May 24, 1892, in which coal dust or other pulverulent fuel is consumed; in this patent a firing chamber of a cylindrical or conical form has been shown and described, arranged horizontally to be introduced into the open end of the fire flue of the boiler to be heated. The fine fuel is blown or forced into the ignition chamber by the aid of steam or air under pressure or a mixture of both.

In the present invention the firing chamber is constructed in the form of an elbow, having its horizontal arm preferably of a conical shape to fit tightly into the mouth of the firing flue; while the pulverulent fuel is introduced at the top of the vertical arm. The fuel enters into the firing chamber by gravity, assisted only by a blast or the natural draft of the chimney.

In the accompanying drawings, Figure 1 represents a vertical longitudinal section through the apparatus on the line 2—2 of Fig. 2; Fig. 2 an end end view, and Fig. 3 a plan of the same.

The pulverulent fuel is supplied into a hopper m^0 at the top of the vertical arm z^2 of the firing chamber z and caused to fall into the latter in the form of a shower of fine dust by means of a horizontal circular sieve or grating m , rocking or oscillating on a vertical axis. This feed grating m also disintegrates the coal dust, that may have become caked. The grating is actuated by the bifurcated arm k' of a bell-crank lever, the other arm k^2 being in continuous contact with cam disk m^2 secured on the revolving shaft h .

For regulating the introduction of the coal dust into the combustion chamber z , the stroke of the bell-crank lever $k' k^2$ may be controlled by set screw q , which limits the retrograde motion of the lever. This returning motion is effected with greater velocity than the forward movement caused by the cams m^2 , a suitable spring s being provided for this purpose. The resulting oscillations of differential velocity are very favorable for the disintegration of the fuel. The rotating shaft h may be actuated by any suitable means. To avoid the aid of a special motor, the natural draft of the chimney may be used for driving a little motor-wheel, as shown in the drawings. To such purpose, a spirally-winged wheel b is disposed in the orifice of a tube p entering the chimney and connected with the shaft h by any appropriate gearing. The shower or spray of coal dust produced by the grating m falls down into the vertical arm z^2 of the combustion chamber z . This arm is provided with horizontal rows of air-supply-channels x , each row communicating with an exterior annular chamber w fed by a common air-supply-pipe Z and provided with a regulating valve g . By properly regulating the admission of the air to the combustion chamber, a perfectly smokeless combustion of the coal dust may be obtained. The horizontal arm z' of the chamber z shows a conical exterior shape, appropriate to enter into the mouth of a steam boiler flue. The whole apparatus is made portable by being mounted on wheels r .

What I claim is—

1. The combination with the elbow-shaped combustion chamber having the vertical arm, of a disintegrating and supplying device for coal dust or other fine fuel, adapted to produce a shower of the latter, located at the apex of said arm; the latter being adapted to freely receive the fine fuel or dust falling from said supplying device, and provided with air feeding ports, whereby the dispersion and combustion of the dust are effected, substantially as described.

2. The combination with the elbow-shaped combustion chamber having a vertically disposed conical arm, of the disintegrating and supplying device for coal dust or other fine fuel adapted to produce a shower of the lat-

ter; said device being arranged at the apex of the cone, so that the latter may receive the fine fuel which drops down from said dust supplying device; and said vertical arm being
5 provided with air feeding channels for producing the dispersion and combustion of the dust, substantially as described.

3. The combination with an elbow-shaped combustion chamber, air channels issuing
10 from annular chambers and a common air supply pipe, of a bell-crank lever for actuating the rocking disintegrator, a rotating cam and a spring, both moving to and from the lever, and a set screw, limiting the stroke of the
15 lever, substantially as set forth.

4. The combination with an elbow-shaped combustion chamber for fine fuel, of a spirally-winged motor-wheel mounted in the orifice of a pipe communicating with the chimney, and driven by the draft of the latter, 20 and suitable means for transferring the rotation of the motor-wheel to the cam-shaft, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing 25 witnesses.

CARL WEGENER.

Witnesses:

W. HAUPT,
L. A. EDWARDS.