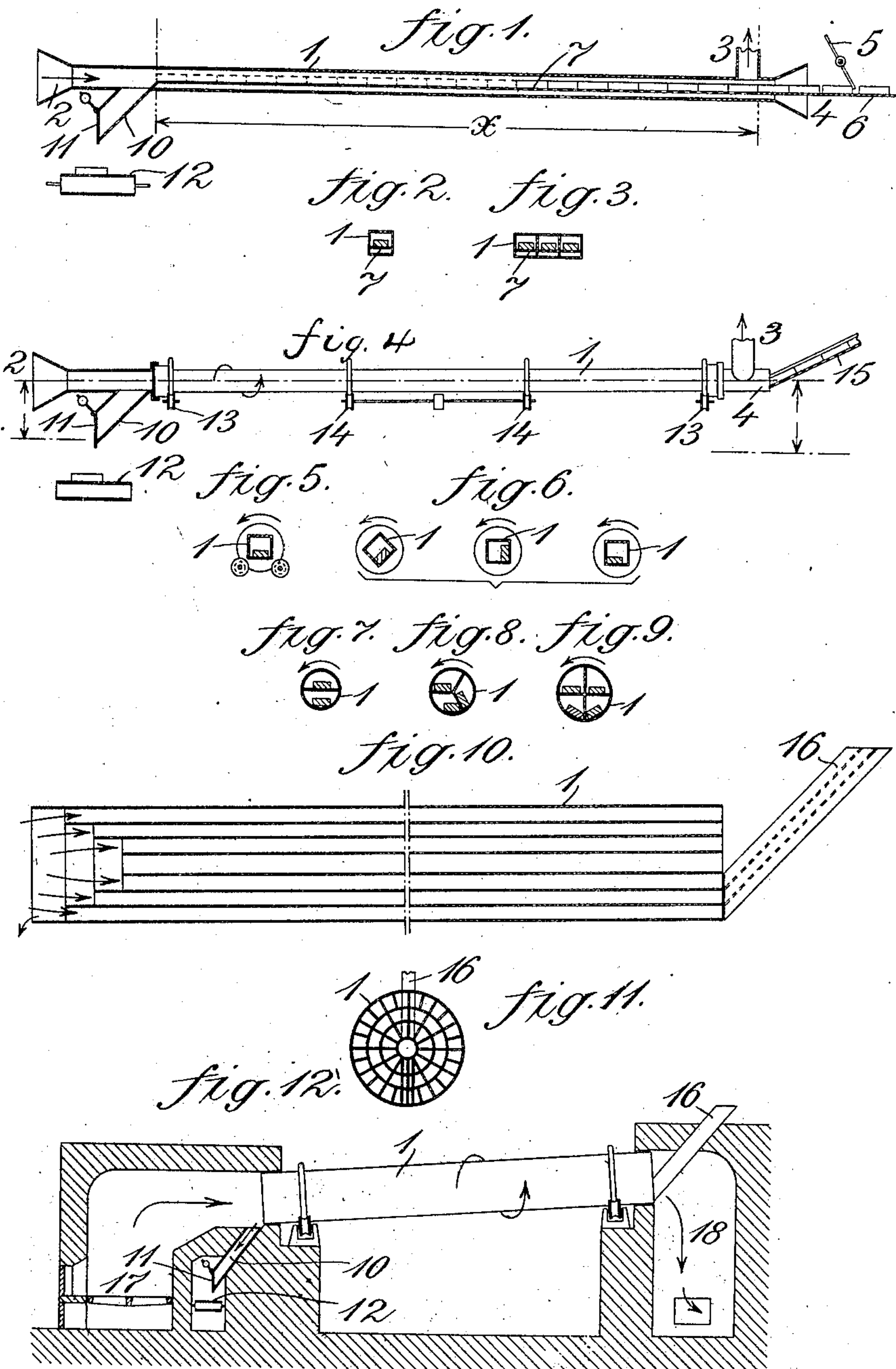


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B. WAGNER.  
APPARATUS FOR COKING BRIQUETS.

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Witnesses  
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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR COKING BRIQUETS.

No. 829,448.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, BERNHARD WAGNER, merchant, a subject of the King of Prussia, residing at No. 26 Mauerstrasse, Berlin, German Empire, have invented new and useful Improvements in Apparatus for Coking Briquets, of which the following is a specification.

In the manufacture of so-called "patent" or "brick" fuel, otherwise known as "briquets," with the aid of a cementing or binding agent which is soluble in water attempts have already been made to render the blocks or briquets weatherproof by coking the binding medium. Such experiments, however, in many respects have not proved satisfactory. In the first place it has not been possible to heat a large number of briquets simultaneously in such manner that each individual brick is exposed to the furnace-gases uniformly on all sides, but without burning—that is to say, so that all the parts may be submitted uniformly to the coking process. There have been, moreover, no devices whereby the process can proceed in regular uninterrupted manner and the coking-chamber and furnace-gases be thoroughly utilized.

According to my invention the furnace-gases pass through a continuous tubular casing, and the briquets also are caused to travel along it in such manner that all parts of each briquet are subjected to a uniform coking process without there being any danger of the briquet burning or being disturbed or injured. For this purpose the briquets are conducted through the coking-casing in continuous succession, one butting against the other, so as to form, as it were, a long train or rope. The rate of advance should be sufficiently slow to admit of the binding agent being thoroughly coked when the respective briquet again leaves the casing.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section, and Fig. 2 a cross-section, of one form of the new apparatus. Fig. 3 is a cross-section of a modification of the same, in which three adjacent coking-chambers are shown. Fig. 4 is an elevation and part longitudinal section of an apparatus having an inclined rotary casing. Fig. 5 is a cross-section of the same. Fig. 6 illustrates the successive positions occupied by the briquets during rotation of the casing shown in Figs. 4 and 5. Figs. 7, 8, and 9 are three cross-sectional views illustrating vari-

ous methods of dividing the coking-casing into a plurality of chambers. Fig. 10 is a longitudinal section of an apparatus in which the coking-casing is divided into a large number of chambers. Fig. 11 is a cross-section through Fig. 10. Fig. 12 is a longitudinal section illustrating a complete plant embodying the coking apparatus shown in Figs. 10 and 11.

1 is a sheet-metal casing into which the furnace-gases enter at 2, passing thence along the casing and making their exit at 3. The briquets the binding agent of which is to be coked are introduced at 4—for instance, with the aid of a wing or blade 5, which in rotating seizes the pressed briquet on the feed-board 6 and advances it toward the mouth 4 of the casing 1. Each time a new briquet comes before the wing 5, which is in constant rotation, the briquet is advanced through a certain distance, (for example, through the length of a briquet,) so that it strikes against the briquet which is already lying in the mouth 4, (for instance, on a wirework tray or sieve 7,) whereby the briquets in passing through the casing form, as it were, a continuous train or rope of blocks. At the end of the sieve 7, which supports the briquets, is the exit 10 of the casing 1, which exit is normally closed by a flap 11, which is only opened (if desired, automatically) when a sufficient number of briquets have collected in the chute 10, so that the latter may discharge itself, the briquets thus being delivered onto a traveling band 12. The purpose of the flap 11, which ordinarily closes the chute 10, is to prevent as far as possible the entry of fresh air into the coking-chamber—that is to say, to prevent burning of the briquets.

As Fig. 1 shows, each briquet must travel through the entire length of the casing 1, and since each briquet is always fed uniformly into the casing it is obvious that every briquet will remain therein for the same length of time. It will further be observed from Fig. 1 that the furnace-gases pass in the opposite direction to the line of briquets. In this manner the briquets fed into the casing will first encounter the relatively least hot furnace-gases, while the farther they are advanced into the casing in the direction of the exit 10 the hotter the gases which they meet. This method prevents the briquets at the commencement of the coking process from being suddenly subjected to the hottest fur-



nace-gases, whereby, also, they would be burned or cracked on their entry into the coking-chamber.

Instead of a single casing 1 a plurality of such might be employed, as is illustrated in Fig. 3, where three such casings are located side by side, each casing being traversed by the furnace-gases and fed with briquets in the manner described. In this way several trains of briquets, each of which may consist of several rows, are subjected simultaneously to the coking process, whereby at the exit of each individual casing weatherproof briquets are delivered.

Instead of the briquets being heated uniformly all round by being deposited on a sieve the briquets may be placed directly upon the wall of the casing 1 and during their passage through the latter be regularly turned over, so that all the faces of the briquet, one after the other, are subjected to the action of the furnace-gases. Such an arrangement is illustrated in Figs. 4 and 5. The casing 1 is here somewhat inclined and rotated with the aid, for instance, of supporting-rollers 13 and driving-gear 14. The briquets fed into the casing from the feed-board 15 are then by reason of the inclined position and the rotary motion of the casing slowly advanced and at the same time turned over, as shown in Fig. 6.

With this apparatus in the same way as described with reference to Figs. 1 to 3 several trains of briquets may be subjected to the coking operation simultaneously, as it is only necessary to select a casing of greater diameter and to divide it into separate smaller compartments, each of which is fed with briquets. In Figs. 7, 8, and 9 several different forms of casing partitioned off in this manner are shown. In each case by reason of the slow rotation and the inclined position of the casing each individual group of briquets will be continuously advanced and at the same time turned over for the purpose of enabling the furnace-gases to act on every side. Since the feed of briquets to the inlet of the casing goes on continuously and uniformly and since likewise the briquets are regularly distributed into the several compartments of the casing, the working proceeds uninterruptedly in the most advantageous manner possible, the entire coking-chamber and the whole of the furnace-gases being utilized to the greatest advantage.

Figs. 10 and 11 show in longitudinal and cross-section, respectively, an apparatus especially adapted for the wholesale manufacture of briquets, in which the latter are turned and fed forward automatically. The casing 1 is here subdivided into a large number of chambers or compartments, each of which is destined to receive a supply of briquets, which during the slow rotation of the casing pass through a chute or feed-channel

16 into the mouths of those chambers located for the time being before the chute and then travel through the coking-chambers until they reach the delivery end of the casing.

Fig. 12 shows a complete plant in which the coking apparatus illustrated in Figs. 10 and 11 is incorporated. 17 is a furnace from which the gases pass to the casing 1 and thence through the various compartments or chambers to the smoke-chamber 18, from which they may be drawn off by means of a suitable exhaustor or the like. The briquets travel in the opposite direction to the furnace-gases and on the periodical opening of the flap 11 are delivered through the chute 10 onto a traveling band 12. The arrangement of a smoke-chamber 18 prevents air which enters through the chute 16 from obtaining access to the interior of the coking-chambers, as on leaving the exit of the chute 16 (between its mouth and the end of the drum 1) the air immediately makes its way to the flues. Similar provision is made also in the apparatus shown in Figs. 1 to 4, where the air entering at 4 is immediately conducted to the outside by the flue-pipe 3, so that it does not enter the actual coking-chamber.

Having thus described my invention, I claim as new—

1. An apparatus for treating briquets, comprising an elongated, inclined, rotary cylinder having transverse partitions extending throughout its length and across the diameter of the cylinder dividing the same into two or more longitudinal compartments, substantially as described.

2. An apparatus for treating briquets, comprising an elongated, inclined, rotary cylinder having transverse partitions extending throughout its length and entirely across the diameter of the cylinder dividing the same into two or more longitudinal compartments, means for applying a heating-gas at one end of the cylinder and means for feeding briquets and removing the waste gases at the opposite end of the cylinder, substantially as described.

3. An apparatus for treating briquets, comprising an elongated, inclined rotary cylinder having transverse partitions extending throughout its length and entirely across the diameter of the cylinder dividing the same into two or more longitudinal compartments, means for supplying a heating-gas and delivering the briquets at one end of the cylinder and means for introducing a continuous succession of briquets and removing the waste gases at the opposite end of the cylinder, substantially as described.

4. An apparatus for treating briquets, comprising an elongated, inclined, rotary cylinder having transverse partitions extending throughout its length and entirely across the diameter of the cylinder dividing the same into two or more longitudinal compartments,



means for supplying a heating-gas and delivering the briquets at one end of the cylinder, a device for closing the delivery means and means for introducing briquets and removing the waste gases at the opposite end of the cylinder, substantially as described.

5. An apparatus for treating briquets, comprising an elongated, inclined, rotary chamber consisting of two or more concentric cylinders, transverse partitions extending throughout the length of said chamber and extending entirely across the diameter of the cylinders dividing the same into a series of longitudinal compartments, substantially as described.

6. An apparatus for treating briquets, comprising an elongated, inclined, rotary chamber consisting of two or more concentric cylinders, transverse partitions extending throughout the length of said chamber and extending entirely across the diameter of the cylinders dividing the same into a series of longitudinal compartments, means for supplying a heating-gas at one end of the cylinder and means for feeding briquets and removing the waste gases at the opposite end of the cylinder, substantially as described.

7. An apparatus for treating briquets, comprising an elongated, inclined, rotary chamber consisting of two or more concentric cylinders, transverse partitions extend-

ing throughout the length of said chamber and extending entirely across the diameter of the cylinders dividing the same into a series of longitudinal compartments, means for supplying a heating-gas and delivering briquets at one end of the cylinder and means for introducing a continuous succession of briquets and removing the waste gases at the opposite end of the cylinder, substantially as described.

8. An apparatus for treating briquets, comprising an elongated, inclined, rotary chamber consisting of two or more concentric cylinders, transverse partitions extending throughout the length of said chamber and extending entirely across the diameter of the cylinders dividing the same into a series of longitudinal compartments, means for supplying a heating-gas and delivering the briquets at one end of the cylinder, a device for closing the delivery and means for introducing briquets and removing the waste gases at the opposite end of the chamber, substantially as described.

In witness whereof I have hereunto signed my name, this 10th day of January, 1905, in the presence of two subscribing witnesses.

BERNHARD WAGNER.

Witnesses:

WOLDEMAR HAUPT,  
HENRY HASPER.