

No. 655,162.

Patented July 31, 1900.

P. F. POORBAUGH.

COKE BREAKER.

(Application filed Dec. 15, 1899.)

(No Model.)

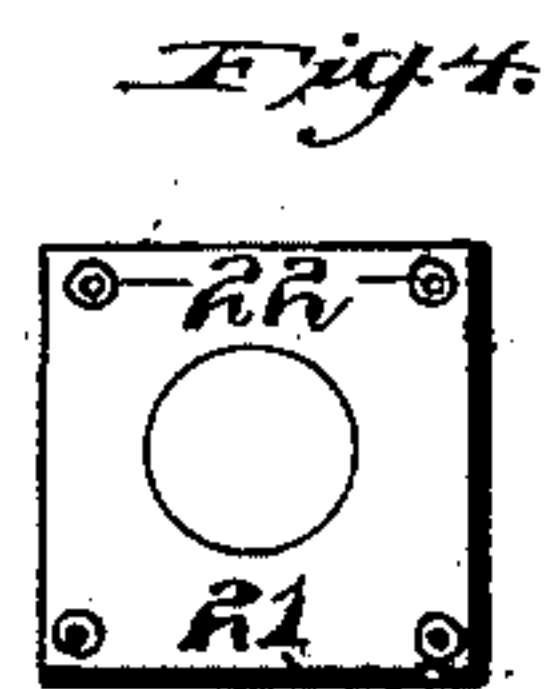
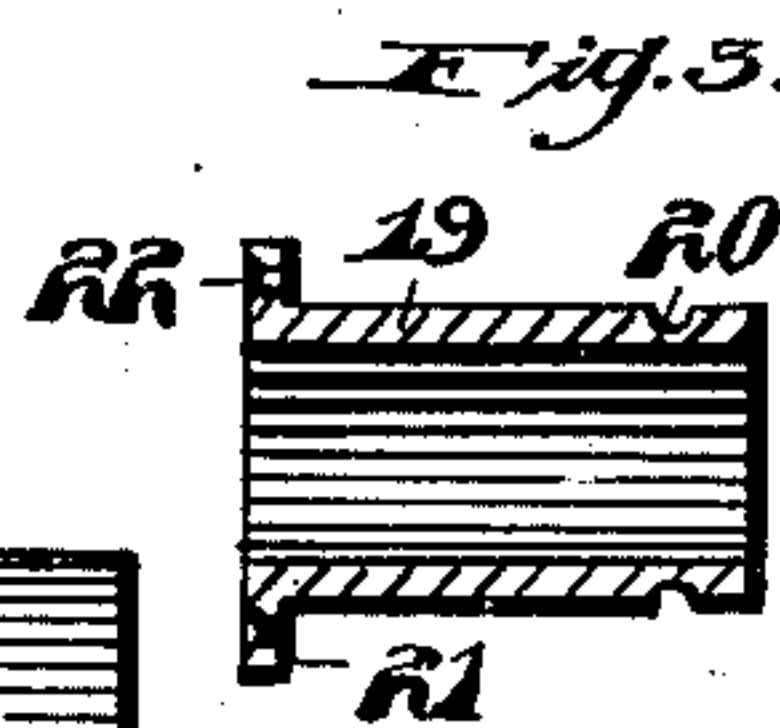
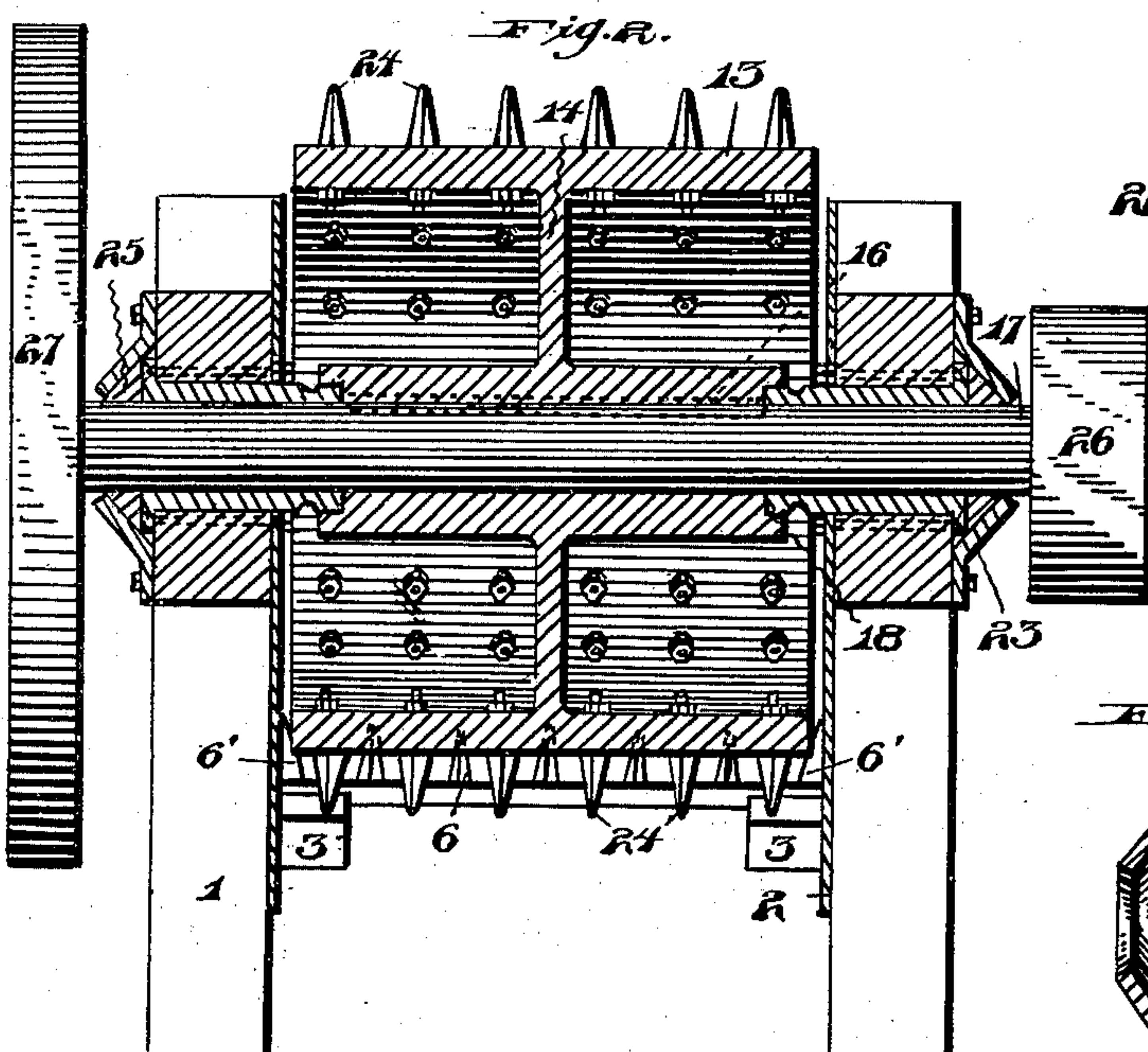
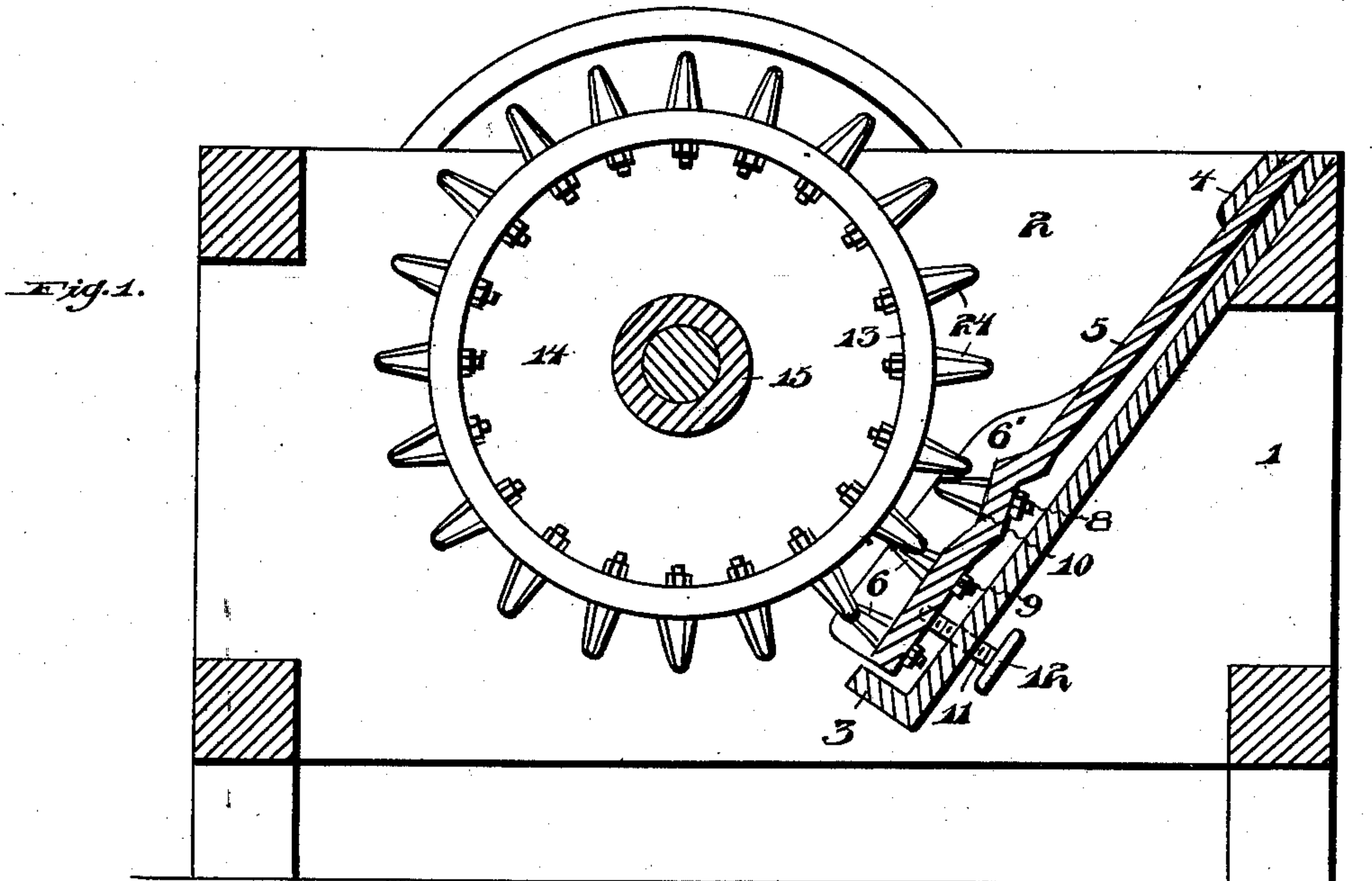


Fig. 5.



Fig. 6.

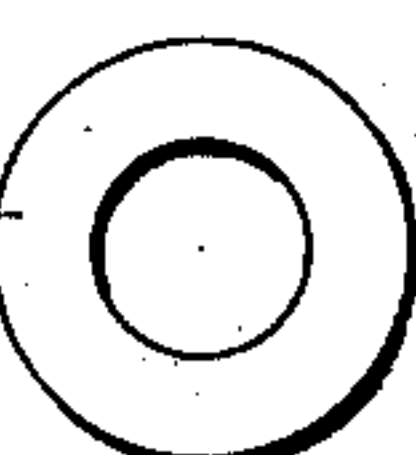
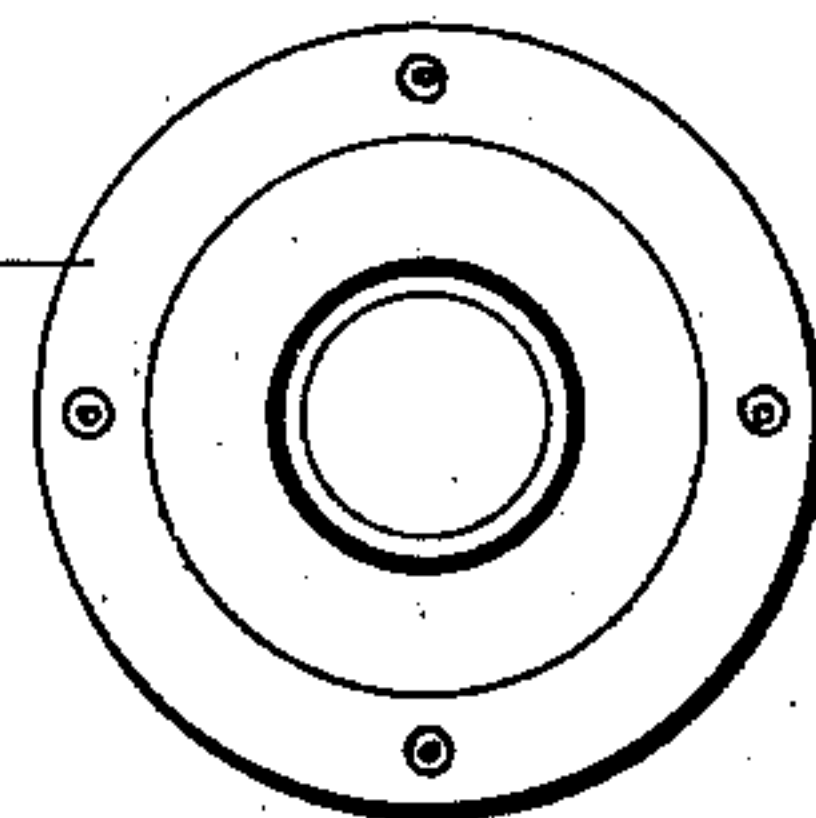


Fig. 7.



Fig. 8.



WITNESSES:

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Fig. 9.

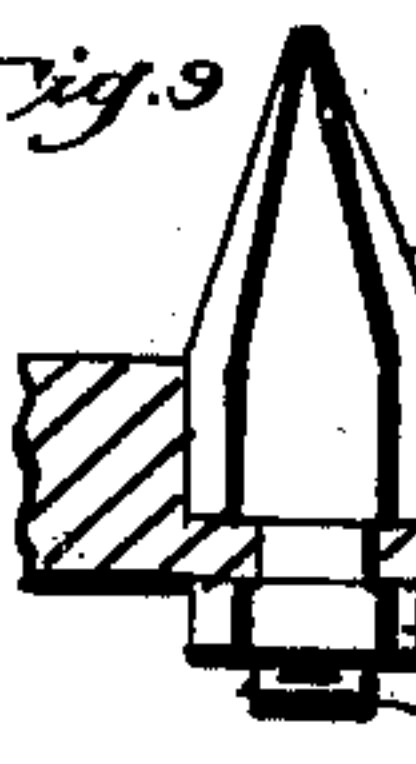


Fig. 10.

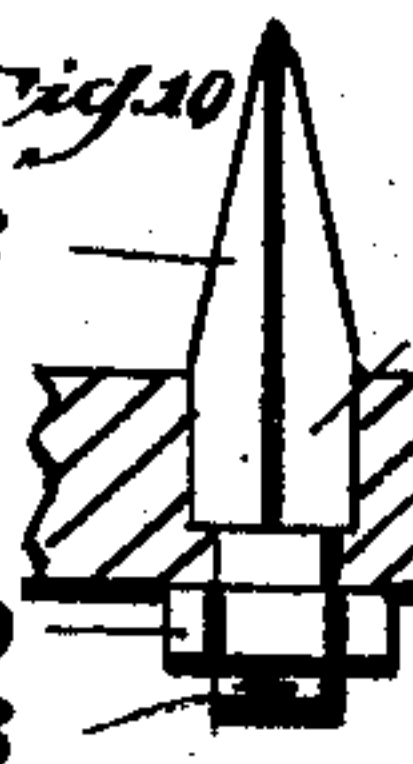


Fig. 11.

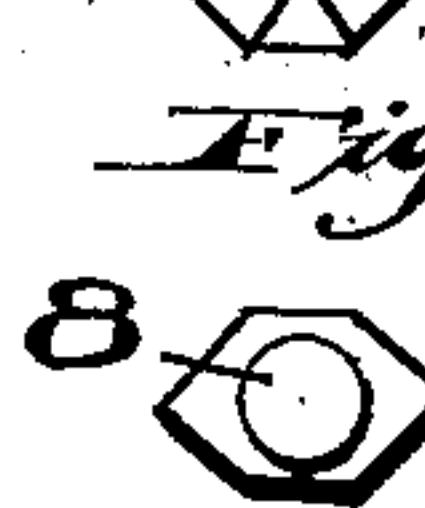


Fig. 12.



INVENTOR

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UNITED STATES PATENT OFFICE.

PHILLIP F. POORBAUGH, OF ALLEGHENY, PENNSYLVANIA, ASSIGNOR TO
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COKE-BREAKER.

SPECIFICATION forming part of Letters Patent No. 655,162, dated July 31, 1900.

Application filed December 15, 1899. Serial No. 740,383. (No model.)

To all whom it may concern:

Be it known that I, PHILLIP F. POORBAUGH, a citizen of the United States of America, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Coke-Breakers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain new and useful improvements in breakers, and is particularly adapted for use in breaking coke.

One object of my invention is to construct an apparatus of this character with a breaking-plate arranged in juxtaposition to the breaking-drum, so that when the teeth of the same are operating between the teeth of the plate they will be on the same relative plane to obtain a breaking action upon the coke and overcome the crushing action, which is objectionable in apparatus of this character heretofore in use.

A further object of my invention lies in my improved means for the preventing of the accumulation of dust upon the operating-shaft and interfering with the operation and wear of the same.

A further object of my invention lies in my improved manner of forming the breaking-teeth and for preventing the turning of the same when secured in the drum and plate.

A further object of my invention is to provide an apparatus of this character with an adjustable breaking-plate, so that the teeth thereof can be adjusted in relation to the teeth of the drum.

A further object of my invention is to construct an apparatus of this character which will be simple in its construction, strong, durable, efficient in its operation, and comparatively inexpensive to manufacture.

With the above and other objects in view my invention consists in the novel combination and arrangement of parts to be herein after more fully described, and specifically pointed out in the claim.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, and where- in like numerals of reference indicate corre-

sponding parts throughout the several views, in which—

Figure 1 is a longitudinal sectional view of my improved breaker. Fig. 2 is a vertical sectional view thereof. Fig. 3 is a longitudinal sectional view of the fixed bearing for the operating-shaft and drum. Fig. 4 is an end view thereof. Fig. 5 is a cross-sectional view of the bushing arranged on the operating-shaft. Fig. 6 is a plan view thereof. Fig. 7 is a cross-sectional view of the dust-preventing collar. Fig. 8 is a front plan view thereof. Fig. 9 is a sectional view of a part of the cylinder, showing one of the teeth in side view and secured therein. Fig. 10 is a like view showing one of the teeth in edge view. Fig. 11 is a top plan view of one of the teeth. Fig. 12 is an inverted plan view thereof.

Referring to the drawings by reference-numerals, 1 indicates a suitable rectangular frame provided at one end with a downwardly-extending substantially triangular-shaped casing 2, which is suitably secured to the frame, and the outer wall of the lower end thereof is provided with a ridge or shoulder 3. The inner faces of the sides of the casing, at the outer corner thereof, have each secured thereto a cleat 4, between which and the outer wall of the casing is slidably secured the upper end of the breaking-plate 5, while the lower end of this plate 5 is adapted to be normally supported by the ridge or shoulder 3. This plate 5 is provided at its lower end with a series of recesses, terminating in the underneath face of the plate in apertures, said recesses being of an outline conforming to the body portion of the teeth, which they are adapted to receive. The body portion 7 of these teeth is substantially hexagonal in form, with the teeth tapering to a point at one end and the other end formed with the shank 8 to engage in the apertures in the plate and receive the nut 9, by which the teeth are held in position. The hexagonal-shaped body portion of the teeth being thus seated in the plate serves to firmly secure the same and prevents their turning or wobbling during the breaking of the coke.

The plate 5 is formed at a point near its lower end with a bent portion 10, the upper

face of which is at an angle to the upper face of the remaining upper face of the lower part of the plate, as by such construction the upper row of teeth in the plate 5 is upon substantially the same relative plane as the teeth in the drum at the time each row of the latter teeth is about to pass between the upper row of teeth in the plate 5.

The plate 5 is adjusted by means of screw-rods 11, having hand-wheels 12, one of which rods is arranged at each side of the casing 2 and the inner end of the rods operating against the plate 5, as will be seen in Fig. 1 of the drawings.

6' indicates a flange arranged at each side of the teeth 6 of the plate 5 and forms a fixed cutting-tooth at the sides of the plate.

13 indicates an undershot drum or cylinder, which is provided with an integral strengthening-web 14 and a hollow hub 15. This hub permits of the mounting and keying of the drum, as at 16, upon the operating-shaft 17. Each end of the hub 15 is provided with an annular offset, forming a shoulder 18, which surrounds one end of the fixed bearing 19, mounted in each side of the frame 1. Near the inner end of the bearing 19 is formed an annular groove 20 to catch the dirt or dust and prevent the same entering between the joint of the shaft-bearing and hub. The bearing 19 has formed at its outer end a securing-flange 21, extending entirely around the same, and is provided with a series of openings 22 to receive fastening means for securing the bearing to the frame in the desired manner.

23 indicates a dust-preventing flanged collar arranged at the outside of the frame 1, surrounding the shaft 17, and inclosing the outer end of the bearing 19.

25 indicates a suitable bushing mounted on the shaft 17, between the collar 23 and the flange of the bearing.

The undershot drum has suitably arranged therein a series of openings to receive teeth 24, which are of the same construction and secured in the same manner as the teeth 6 for the breaking-plate. The teeth of the undershot drum are so arranged that when the drum is operated they will pass between the teeth of the plate and when in such position will be on the same plane as the teeth 6.

26 indicates a pulley-wheel mounted on the operating-shaft, and 27 indicates a suitable fly-wheel.

By constructing the coke-breaker in the manner shown—that is, the hub of the breaking-drum revolving upon the fixed bearing 19—the same will permit of the oiling of the parts, as well as obtaining longevity for the same. Owing to the fact that the bearing in this character of machines readily becomes worn it can easily be replaced without destroying the drum as an entirety.

It will be observed that the annular groove formed in the bearing will prevent the dust and dirt from entering the joint between the same and the hub and will not interfere with the operation of the drum and also that the collar 23 will prevent the dust entering between the bearing and the shaft and prevent the wearing of the same.

It is thought that the operation as well as the many advantages of my improved coke-breaker can be readily understood from the foregoing description, taken in connection with the accompanying drawings, and it will be noted that various changes may be made in the details of construction without departing from the general spirit of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a coke-breaker, the combination with the undershot drum or cylinder having the teeth seated therein, of an inclined plate having a ledge at its lower end, a breaking-plate arranged at an incline in front of said drum or cylinder and having a portion of its receiving-face set at an angle to the remainder of such face, a series of teeth seated in the lower portion of said breaking-plate and in the angular bent portion of its face, and screw-rods near the lower end of the inclined plate for adjusting the position of said breaking-plate, substantially as described.

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

PHILLIP F. POORBAUGH.

Witnesses:

JOHN NOLAND,
WILLIAM E. MINOR.