

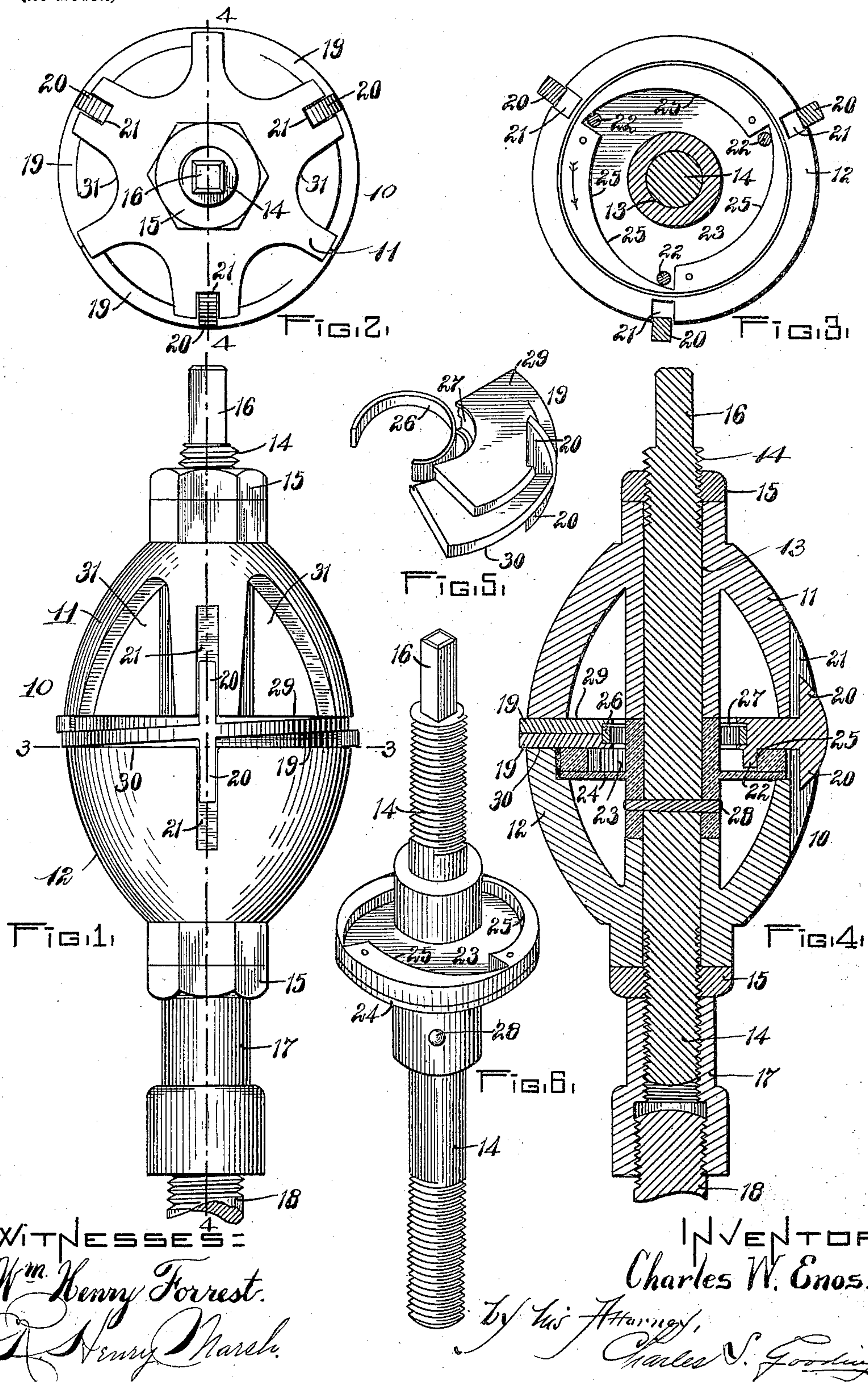
No. 688,612.

Patented Dec. 10, 1901.

C. W. ENOS.  
FLUE CLEANER.

(Application filed Aug. 1, 1901.)

(No Model.)



WITNESSES:

Wm. Henry Forrest.  
R. Henry Marsh.

INVENTOR:

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# UNITED STATES PATENT OFFICE.

CHARLES W. ENOS, OF PEABODY, MASSACHUSETTS, ASSIGNOR OF ONE-HALF  
TO JOHN BOETTNER, JR., OF PEABODY, MASSACHUSETTS.

## FLUE-CLEANER.

SPECIFICATION forming part of Letters Patent No. 688,612, dated December 10, 1901.

Application filed August 1, 1901. Serial No. 70,507. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES W. ENOS, a citizen of the United States, residing at Peabody, in the county of Essex and State of Massachusetts, have invented new and useful Improvements in Flue-Cleaners, of which the following is a specification.

The object of this invention is to provide a cheap, practical, and durable device for cleaning the tubular flues of boilers which shall be adjustable within certain limits to varying diameters of tubes and the bearing-surface of which shall be flexible, so as to yield to slightly-varying diameters or inequalities of the tubes through which the cleaner is being passed.

The invention consists in the combination and arrangement of parts set forth in the following specification and particularly pointed out in the claims thereof.

Referring to the drawings, Figure 1 is a side elevation of my improved flue-cleaner. Fig. 2 is an end elevation of the same as viewed from the top of Fig. 1. Fig. 3 is a transverse section taken on the line 3 3 of Fig. 1 looking downwardly in said view. Fig. 4 is a longitudinal section taken on the line 4 4 of Figs. 1 and 2. Fig. 5 is a perspective view of one of the cleaner-plates. Fig. 6 is a perspective view of the central spindle to which the shell of the tube-cleaner is attached, together with a cam-plate fast thereto, by means of which the cleaner-plates are moved radially toward the center of the spindle.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 10 is the shell of my improved flue-cleaner, consisting of two parts 11 and 12, preferably ellipsoidal in contour and having a central hole 13 extending there-through to receive the spindle 14. The spindle 14 is screw-threaded at each end thereof to receive check-nuts 15 15. One end of the spindle 14 is made square in cross-section, as at 16, to receive a wrench for the purpose of rotating said spindle with relation to the shell 10. The other end of said spindle is screw-threaded at the end to receive the check-nut 15 and also a sleeve 17, to which a rod 18 is attached by screw-threaded engagement.

Between the two parts 11 and 12 of the shell

10 are three segmental cleaner-plates 19 19 19. Each of said cleaner-plates has projections 20 extending from opposite faces thereof into slots 21, formed in the parts 11 and 12, the purpose of said projections 20 and slots 21 being to guide said cleaner-plates when they are moved radially toward or away from the center of the shell 10. Each of the cleaner-plates has a pin 22 projecting from the under side thereof into a recess 23, formed in the upper side of a cam-plate 24, fast to the spindle 14. Said pins are held against the cam-faces 25 25 25, formed in the cam-plate 24, by a flat annular spring 26, which bears against the inner edge of said cleaner-plates and rests in an annular groove 27, formed upon the inner edge of said cleaner-plates. The cam-plate 24 is fastened by a pin 28 to the spindle 14. The upper and lower faces 29 and 30, respectively, of the cleaner-plates are made parallel to each other in order to be guided by the parallel end faces of the parts 11 and 12; but the periphery of said cleaner-plates is made upon a spiral, and the ends of each of said cleaner-plates overlap the ends of the cleaner-plates adjacent thereto, as shown in Fig. 1, the object of this spiral periphery being to provide a continuous bearing-surface for the cleaner-plates and also in order that the ends of each of said cleaner-plates may overlap the ends of the cleaner-plates adjacent thereto.

The shell 12 is cut away at 31 in order to allow the dust and scale removed from the interior of the tubes to drop through said shell.

The device is adjusted and operated as follows: The cleaner-plates are adjusted to substantially the interior diameter of the tubes to be cleaned by means of the spindle 14. The set-nuts 15 are first loosened and the spindle 14 rotated in the direction desired to draw the cleaner-plates toward the center of said spindle or to allow the spring 26 to move them outwardly therefrom, as the case may be. When the exterior diameter of the segmental rings is substantially that of the interior diameter of the tubes to be cleaned, the shell and cleaner-plates are locked together by means of the set-nuts 15. The cleaner is then introduced into the tube, the square portion 16 being in advance and pushed for-



ward and backward through the tubes until they are thoroughly cleansed in a manner well known to those familiar with devices of this character.

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

1. In a flue-cleaner, a shell in two parts, segmental cleaner-plates located between said  
10 parts, a central rotary spindle extending longitudinally through said shell, a cam-plate fast to said spindle engaging said cleaner-plates and adapted to move said plates inward radially with relation to said shell, and  
15 a spring to force said cleaner-plates outward radially with relation to said shell.

2. In a flue-cleaner, a shell in two parts, segmental cleaner-plates located between said parts, projections upon said cleaner-plates  
20 adapted to project into grooves provided in said shell and guide said cleaner-plates during the radial movement thereof, a central rotary spindle extending longitudinally through said shell, a cam-plate fast to said spindle  
25 engaging said cleaner-plates and adapted to move said plates inward radially with relation to said shell, and a spring to force said cleaner-plates outward radially with relation to said shell.

30 3. In a flue-cleaner, a shell in two parts, segmental cleaner-plates located between said parts, means to lock said cleaner-plates cir-

cumferentially in position with relation to each other and to said shell, a central rotary spindle extending longitudinally through  
35 said shell, a cam-plate fast to said spindle engaging said cleaner-plates and adapted to move said cleaner-plates inward radially with relation to said shell, and a spring to force said cleaner-plates outward radially with re-  
40 lation to said shell.

4. In a flue-cleaner, a shell in two parts, segmental cleaner-plates located between said parts, projections upon said cleaner-plates adapted to project into grooves in said shell  
45 and guide said cleaner-plates during the radial movement thereof, means to lock said cleaner-plates circumferentially in position with relation to each other and to said shell, a central rotary spindle extending longitudi-  
50 nally through said shell, a cam-plate fast to said spindle engaging said cleaner-plates and adapted to move said plates inward radially with relation to said shell, and a spring to force said cleaner-plates outward radially  
55 with relation to said shell.

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

CHARLES W. ENOS.

Witnesses:

CHARLES S. GOODING,  
JOHN BOETTNER, JR.