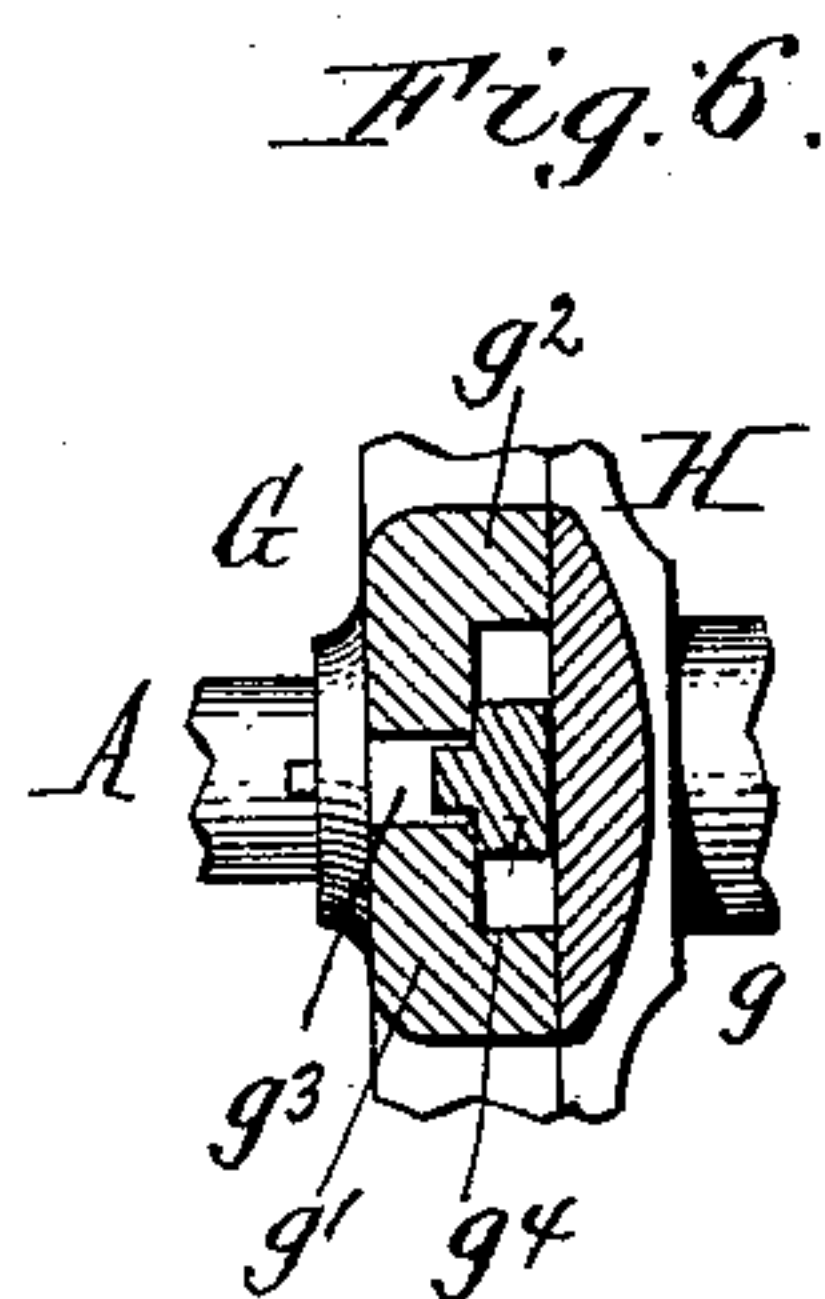
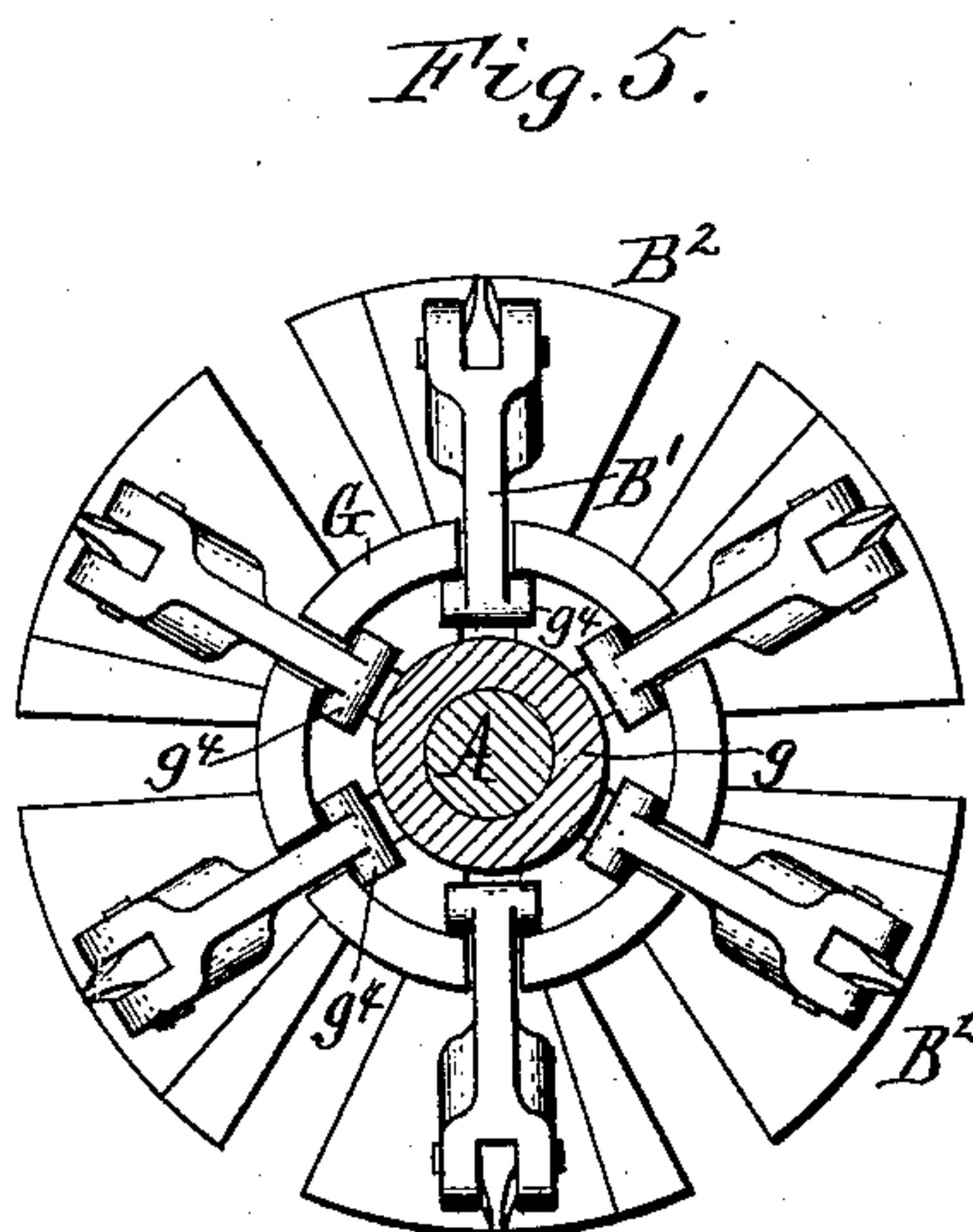
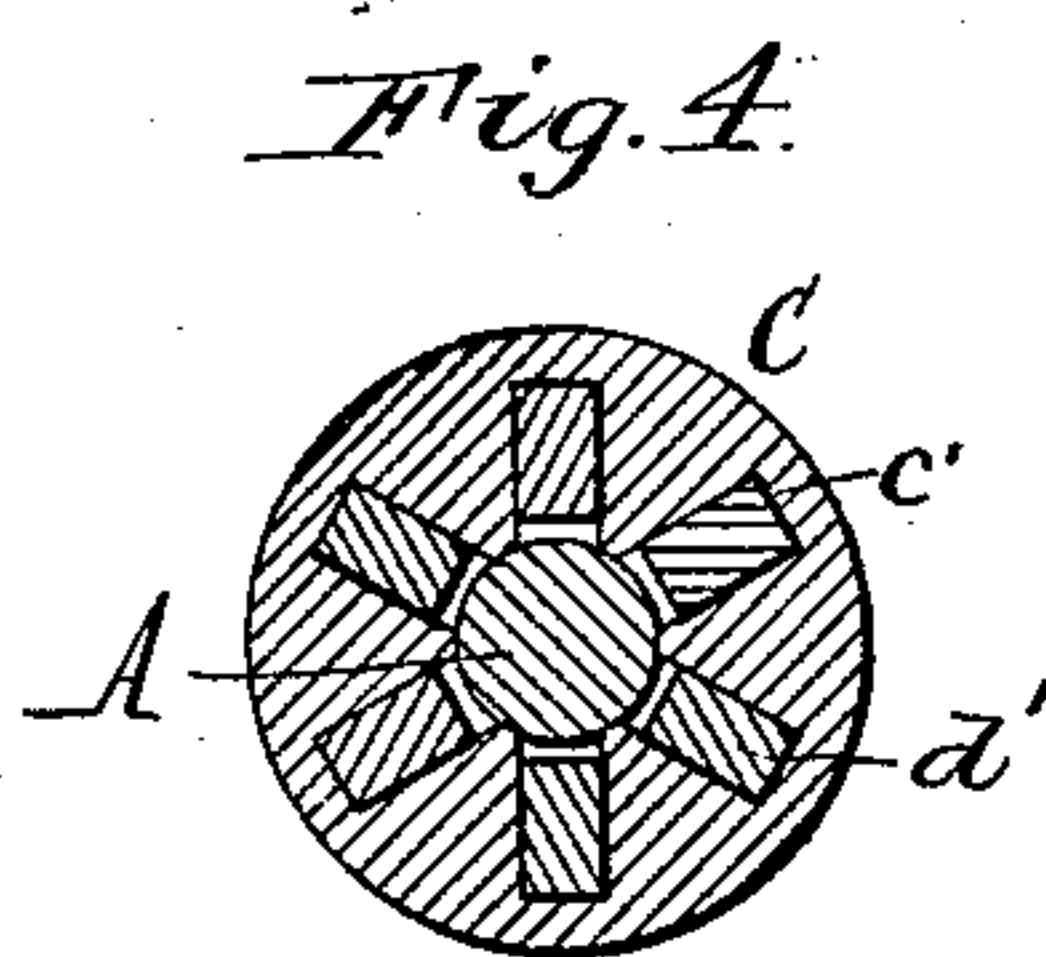
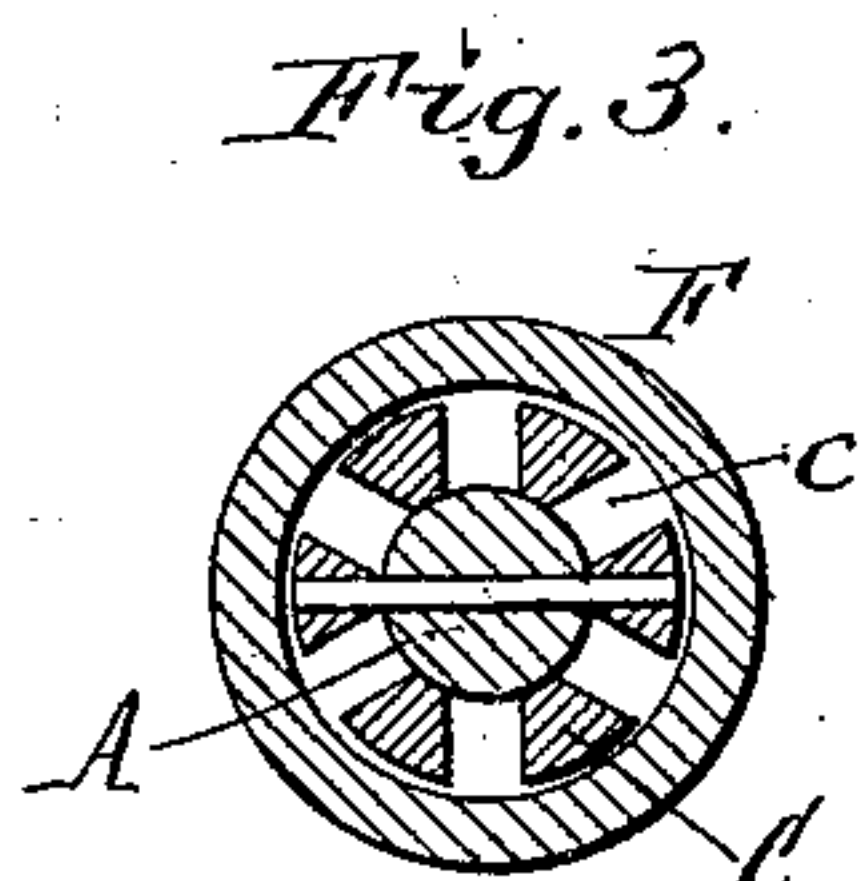
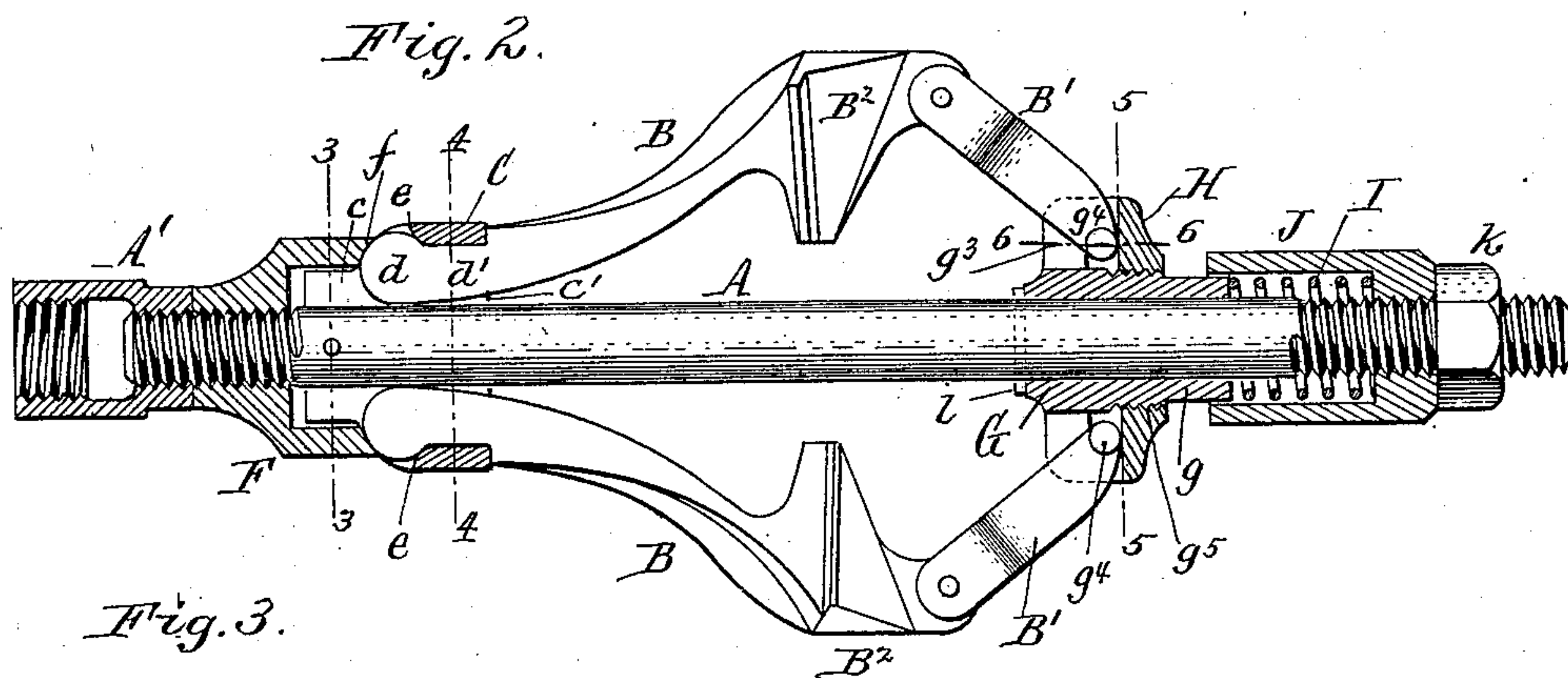
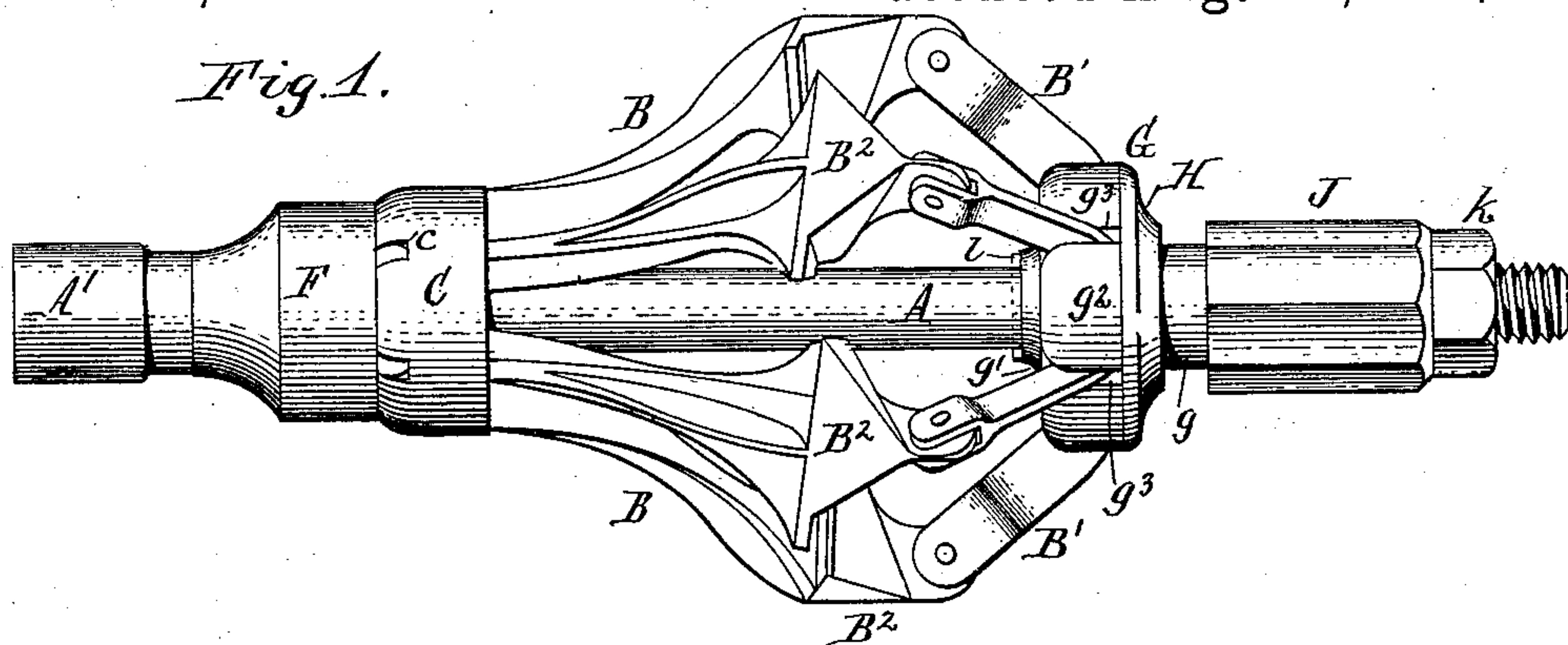


(No Model.)

H. W. HUBBARD.
FLUE CLEANER.

No. 589,086.

Patented Aug. 31, 1897.



Witnesses:

Emmett Pulford.
Henry L. Deck.

A. W. Hubbard Inventor,
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UNITED STATES PATENT OFFICE.

HIRAM W. HUBBARD, OF PAINTED POST, NEW YORK, ASSIGNOR TO
HUBBARD & CO., OF PHILADELPHIA, PENNSYLVANIA.

FLUE-CLEANER.

SPECIFICATION forming part of Letters Patent No. 589,086, dated August 31, 1897.

Application filed January 6, 1897. Serial No. 618,127. (No model.)

To all whom it may concern:

Be it known that I, HIRAM W. HUBBARD, a citizen of the United States, residing at Painted Post, in the county of Steuben and State of New York, have invented new and useful Improvements in Flue-Cleaners, of which the following is a specification.

This invention relates more particularly to that class of flue-scrapers which consist of a central stem and longitudinal toggle arms or links pivotally connected at their ends to a pair of heads, one of which is movable on the central stem and held in position by a spring, whereby the arms which carry the scraper-blades are yieldingly held in their expanded position.

My invention has for its object to connect the scraper-arms with the heads of the cleaner without the use of bolts or rivets and without requiring machine-work, so as to simplify the construction of the device and reduce its cost.

In the accompanying drawings, Figure 1 is a side elevation of a flue-cleaner containing my improvement. Fig. 2 is a longitudinal section thereof. Figs. 3, 4, and 5 are cross-sections of the same in lines 3 3, 4 4, and 5 5, Fig. 2. Fig. 6 is a longitudinal section in line 6 6, Fig. 2.

Like letters of reference refer to like parts in the several figures.

A is the central rod or stem, which carries the parts of the flue-cleaner and which is provided at one end with the usual screw-coupling A' for receiving the front end of the handle, which latter is not shown in the drawings.

B B' represent the links of the jointed or toggle arms, which latter are arranged lengthwise and radially around the central stem and carry the usual scrapers or blades B² at their jointed salient portions.

C is the stationary head, which is keyed or otherwise secured to the rear portion of the central stem and to which the rear ends of the toggle-arms are pivotally connected. The rear portions of the toggle-arms are fitted loosely in radial slots or mortises formed in the fixed head C, the rear portions c of these slots extending from the bore to the periphery of the fixed head, as shown in Figs. 1, 2, and 3, while their front portions c' terminate at a distance

from the periphery, as shown in Figs. 2 and 4, so that these front portions are closed at their outer ends and open into the bore of the head at their inner ends. Each of the scraper-arms is provided at its rear end with a head or enlargement d, which is arranged in the rear portion c of the adjacent slot of the head, and on the inner side of said head with a neck or contracted portion d', seated in the closed front portion c' of said slot. The closed portions of the slots are made of such a depth that when the fixed head is in place on the central stem the latter will hold the necks of the scraper-arms at the closed ends of the slots, so that their heads or enlargements d abut against the stops or shoulders e, formed at the junction of the open and closed portions of the slots, as shown in Fig. 2. The closed portions of these slots are rounded at their rear ends, and the heads of the scraper-arms are correspondingly rounded or convex to permit the necessary pivotal action of the arms as they expand and contract.

F is a retaining cap or collar applied to the central stem A on the rear side of the stationary head C and having in its front end a concave seat or socket f, which receives the reduced rear portion of said head and overlaps the enlargements d of the scraper-arms, whereby the same are held against rearward displacement in the slots of the head. The scraper-arms are thus held against longitudinal displacement in one direction by their end enlargements bearing against the shoulders e and in the opposite directions by the retaining-collar F. This collar is preferably provided with an internal screw-thread which engages with an external thread of the central stem, as shown in Fig. 2.

G is the movable or yielding head, to which the front ends of the scraper-arms are pivotally attached. This head is arranged to slide on the central stem and consists of a collar g, surrounding the central stem, and a disk g', arranged at the rear end of said collar and having a rearwardly-extending marginal flange g². In this disk and flange are formed radial slots, recesses, or mortises g³, which extend to the edge of the flange and in which the front portions of the scraper-arms are loosely fitted. The scraper-arms

are provided at their front ends with cross-bars, T-heads, or trunnions g^1 , which are arranged on the inner side of the marginal flange g^2 so as to retain the arms in the slots of the sliding head, while at the same time allowing the same to move freely toward and from the center stem. The T-heads of the scraper-arms are confined in the slots of the movable head by a cap or plate H, applied to the front side of the said head and closing the open ends of the slots. This cap has a central opening for the passage of the central stem and is preferably provided with an internal screw-thread engaging with an external thread g^3 of the collar g , as shown in Fig. 2.

I is the spring, which resists the forward movement of the movable head and tends constantly to hold the scraper-arms in their expanded position, and J is the adjusting-sleeve, whereby the tension of the spring is regulated by compressing the same more or less. The spring surrounds the center stem and bears at its rear end against the collar of the movable head G and at its front end against a head or flange arranged at the rear end of the adjusting-sleeve J. This sleeve engages with the central stem by means of a screw-thread and is clamped in position after adjustment by a jam-nut k .

l represents a stop-pin mounted on the central stem for limiting the rearward movement of the sliding head.

In assembling the parts of the flue-cleaner the T-heads of the scraper-bars are first engaged with the radial slots of the movable head G and the cap H is then applied to the head. The rear ends of the arms are then placed in the radial slots of the rear head C and the central stem A is then passed through the two heads, whereby the rear ends of the arms are held at the outer closed ends of the slots, with their enlargements d seated in the open rear portions c of the slots. The rear head C is then secured to the central stem and the retaining-collar F screwed into place, after which the spring I, adjusting-sleeve J, and jam-nut k are applied to the opposite end of the central stem.

It will be observed that in my improved flue-cleaner the scraper-arms are pivotally connected with the fixed and sliding heads by means of interlocking parts formed integrally with the heads and arms, thus dispensing with rivets, bolts, or other separate connections and requiring no machine-work, and reducing the cost of the device correspondingly. By this construction the parts can also be assembled in less time than by the use of rivets or bolts, thus effecting a further saving in the cost of manufacture.

I claim as my invention—

1. In a flue-cleaner, the combination with a central rod or stem, of a head surrounding said stem and provided with radial slots opening into the bore thereof, scraper-arms having one of their ends fitted loosely in said

slots and bearing against said central stem and provided at their ends with enlargements, a retaining cap or collar for preventing displacement of said enlargements in said slots, a second head also arranged on the central rod, and means for attaching the opposite ends of the scraper-arms to the last-named head, substantially as set forth.

2. In a flue-cleaner, the combination with a central rod or stem, of a head surrounding said stem having a reduced rear portion and provided with radial slots extending outwardly from the bore of the head, the front portions of said slots being closed at their outer ends and their rear portions being open at their outer ends, scraper-arms seated with one of their end portions in the closed portions of said slots and provided at their ends with heads or enlargements arranged in the open portions of said slots, a retaining cap or collar bearing against said enlargements and inclosing the reduced rear portion of said head, a second head also arranged on said central rod, and means for attaching the opposite ends of the scraper-arms to the last-named head, substantially as set forth.

3. In a flue-cleaner, the combination with a central rod or stem, of scraper-arms each provided at one end with a T-head or cross-bar, a head surrounding said central stem and provided with radial slots which admit said T-heads, a retaining-cap whereby said T-heads are confined in place in the head, a second head also arranged on said central rod, and means for attaching the opposite ends of the scraper-arms to the last-named head, substantially as set forth.

4. In a flue-cleaner, the combination with a central rod or stem, of a head surrounding said stem and having a marginal flange provided with radial slots extending inwardly from its edge into the head, scraper-arms having one of their end portions loosely fitted in said slots and provided at their ends with T-heads or trunnions bearing against the inner side of said marginal flange, a retaining-cap which covers the open ends of said slots, a second head also arranged on said central rod, and means for attaching the opposite ends of the scraper-arms to the last-named head, substantially as set forth.

5. In a flue-cleaner, the combination with a central rod or stem, of a head surrounding said stem and having an externally-screw-threaded collar and a marginal flange provided with radial slots extending inwardly from its edge into the head, scraper-arms having one of their end portions fitted loosely in said slots and provided at their ends with T-heads or trunnions, a screw-cap engaging with said screw-threaded collar, a second head also arranged on said central rod, and means for attaching the opposite ends of the scraper-arms to the last-named head, substantially as set forth.

6. In a flue-cleaner, the combination with a central rod or stem, of a fixed head sur-

rounding said stem and provided with radial
slots opening into the bore thereof, a yield-
ing head also surrounding the central stem
and having a marginal flange provided with
5 radial slots extending inwardly from its edge
into the head, jointed scraper-arms provided
at one end with enlargements arranged in the
radial slots of said fixed head, and at their
opposite ends with T-heads arranged in the
10 slots of said yielding head, and retaining-

caps whereby the ends of the scraper-arms
are confined in their respective slots, substan-
tially as set forth.

Witness my hand this 24th day of Decem-
ber, 1896.

HIRAM W. HUBBARD.

Witnesses:

JNO. J. BONNER,
ELLA R. DEAN.