March 16, 1937. C. F. SHULTZ 2,073,811

FLUE CLEANER

Filed April 11, 1936

FIG. 1.

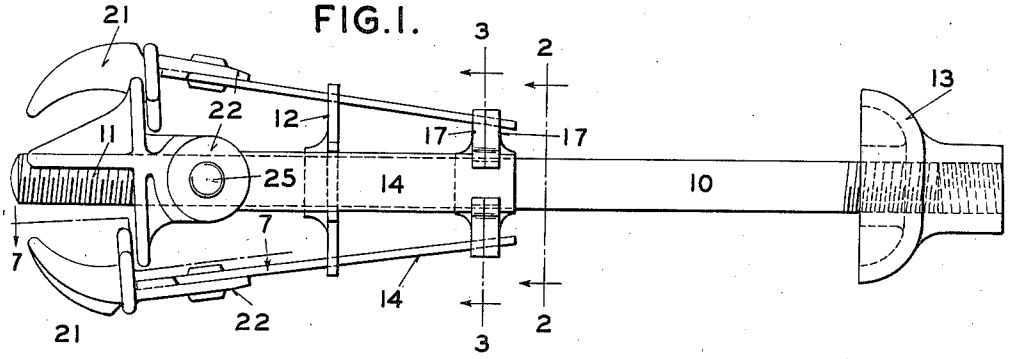


FIG. 2.

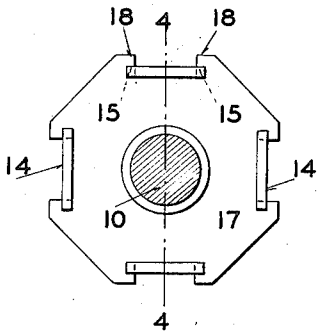


FIG. 3.

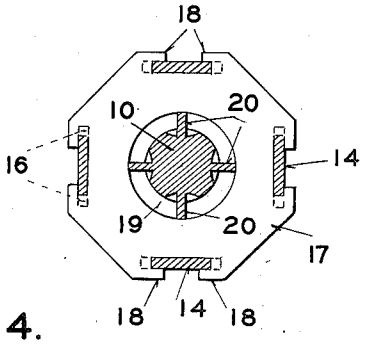


FIG. 4.

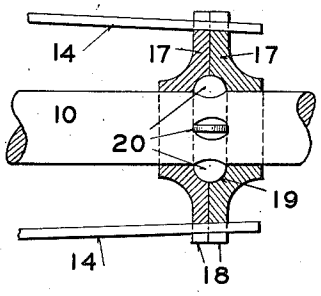


FIG. 5.

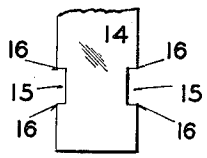


FIG. 6.

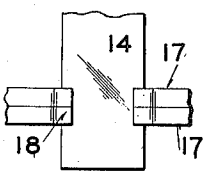
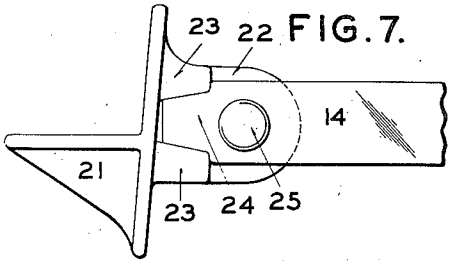


FIG. 7.



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FLUE CLEANER

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Application April 11, 1936, Serial No. 73,861

6 Claims. (Cl. 15—104.18)

My invention relates to a flue cleaner and more particularly to that type of flue cleaner, known as a tube scraper, in which a plurality of scraping blades are carried on spring arms supported from a hub, the hub being rotatably mounted on a threaded spindle by means of which the spring-arms are adjusted. Heretofore the hubs of such scrapers have usually been secured on the spindle by a pair of nuts, one being threaded on the spindle at each side of the hub, and the arms have been secured to the hub by means of bolts or rivets. This construction has been found unsatisfactory, particularly because the bolts or rivets are liable to be sheared off by the strain to which they are subjected during the operation of the device.

The principal object of my invention is to provide an improved form of hub in which the parts will be held together by interlocking means so that the use of bolts or rivets is avoided, thus producing a more simple and durable hub than has heretofore been employed.

Another object of my invention is to provide improved means for securing the scraper to the spring arms.

In the accompanying drawing, which illustrates one form of flue cleaner made in accordance with my invention, Figure 1 is a side elevation; Figure 2 is an enlarged section taken on the line 2—2 of Figure 1; Figure 3 is an enlarged section taken on the line 3—3 of Figure 1; Figure 4 is a section taken on the line 4—4 of Figure 2; Figure 5 is a top plan view of the inner end of one of the spring arms; Figure 6 is a top plan view of the end of the arm after it is applied to the hub; and Figure 7 is a section taken on the line 7—7 of Figure 1.

In the drawing the numeral 10 indicates the spindle of the device which is provided at one end with threads 11 for engagement with a spreader 12 and at the other end is provided with a coupler 13 by means of which it is attached to the driving part. It will be understood that in case of a double scraper the spindle will be provided with a second thread of reverse pitch to the thread 11 for engagement with a second spreader. The spring arms 14 are each provided with a pair of slots 15 (Figure 5) forming shoulders 16 adapted to bear against the end faces of a pair of octagonal hub members 17 provided on four sides with recesses of the proper width to receive the reduced portions of the arms between slots 15. After the arms are positioned in the recesses in the hub members the corners 18 of the latter are peened over upon the arms, as best shown in Figure 3. Thus the engagement of the corners 18 with the faces of the springs and the engagement of the shoulders 16 of the springs with the end faces of the hub members mutually interlock the springs and the two hub members to form a substantially unitary structure without the use of bolts or rivets. Formed at the juncture of the two parts of the hub is an annular raceway 19 to receive the projections on the spindle in order to permit relative rotary movement between the hub and the spindle but to prevent their relative longitudinal movement. These projections are preferably formed by pinching up portions of the material of the spindle to form semicircular lugs 20.

Mounted on the outer end of each of the spring arms is a scraper or claw 21 which may be of the usual and well-known form and which is provided with a shank 22. Carried on the inner face of each of the shanks are a pair of lugs 23 forming a reduced pocket between them, this pocket being slightly tapered to receive a correspondingly shaped tongue 24 so as to firmly wedge the two parts together. A rivet 25 passes through openings in the shank and arm to fasten the parts together.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a device of the class described, the combination with a threaded spindle, of a spreader on said spindle, a plurality of spring arms engaging with said spreader, scrapers carried by said arms, said spindle being provided with a peripheral projection, a hub comprising two parts positioned one at each side of the projection, means for securing the arms to the hub, and abutments on the arms engaging the hub to hold the parts thereof together.

2. In a device of the class described, the combination with a threaded spindle, of a spreader on said spindle, a plurality of spring arms engaging with said spreader, scrapers carried by said arms, said spindle being provided on its periphery with a plurality of integral projections, a hub comprising two parts positioned one at each side of the projections, means for securing the arms to the hub, and abutments on the arms engaging the hub to hold the parts thereof together.

3. In a device of the class described, the combination with a threaded spindle, of a spreader on said spindle, a plurality of spring arms engaging with said spreader, scrapers carried by said arms, said spindle being provided with a peripheral projection, a hub comprising two parts

positioned one at each side of the projection, and means for securing each part of the hub to the arms.

4. In a device of the class described, the combination with a threaded spindle, of a spreader on said spindle, a plurality of spring arms engaging with said spreader, scrapers carried by said arms, said spindle being provided with a peripheral projection, each of said arms being provided with a slot forming a pair of shoulders, a hub carrying said arms, said hub comprising two parts positioned one at each side of the projection on the spindle, the end faces of said hub engaging with said shoulders, whereby separation of the parts of the hub is prevented, and means for securing the arms to said hub.

5. In a device of the class described, the combination with a threaded spindle, of a spreader on said spindle, a plurality of spring arms engaging with said spreader, scrapers carried by said arms, said spindle being provided with a peripheral projection, each of said arms being provided with a slot forming a pair of shoulders, and a pair of polygonal members forming at their junction an annular race-way to receive the projection on the spindle, said hub members having peripheral recesses to receive the slotted portions of the arms, the shoulders on the arms engaging the end faces of the hub members to prevent their separation and the corners of the hub members engaging the outer faces of the arms to hold them in said recesses.

6. In a device of the class described, the combination with a threaded spindle, of a spreader on said spindle, a plurality of spring arms engaging with said spreader, scrapers carried by said arms, said spindle being provided on its periphery with a plurality of projections, said arms each being provided with a pair of slots providing shoulders, a pair of polygonal hub members forming at their junction an annular race-way to receive the projections on the spindle, said hub members having peripheral recesses to receive the slotted portions of the arms, the shoulders on the arms engaging the end faces of the hub members to prevent their separation, and the corners of the hub members engaging the outer faces of the arms to hold them in said recesses.

CHAUNCEY F. SHULTZ.