

(No Model.)

V. RADSPINNER.
TUBE SCRAPER.

No. 547,451.

Patented Oct. 8, 1895.

Fig. 1.

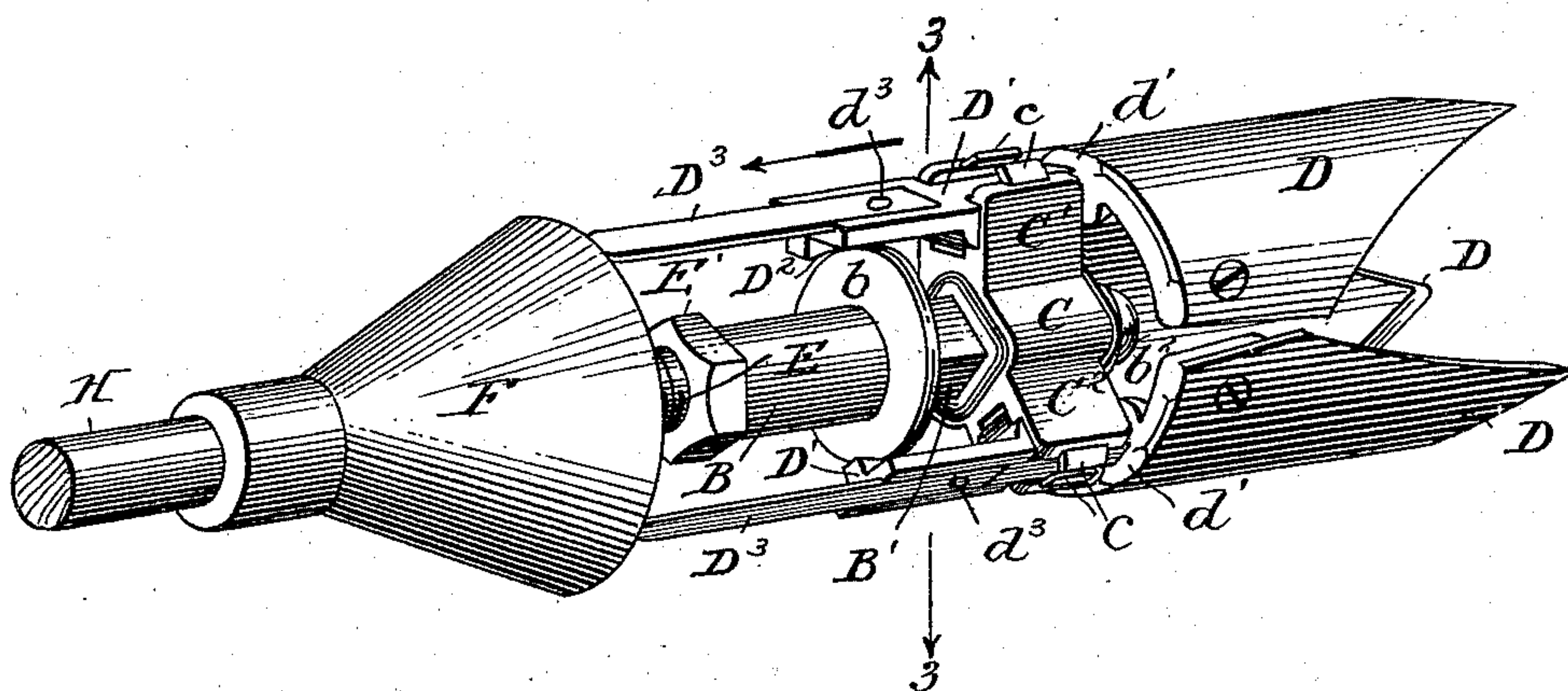


Fig. 2.

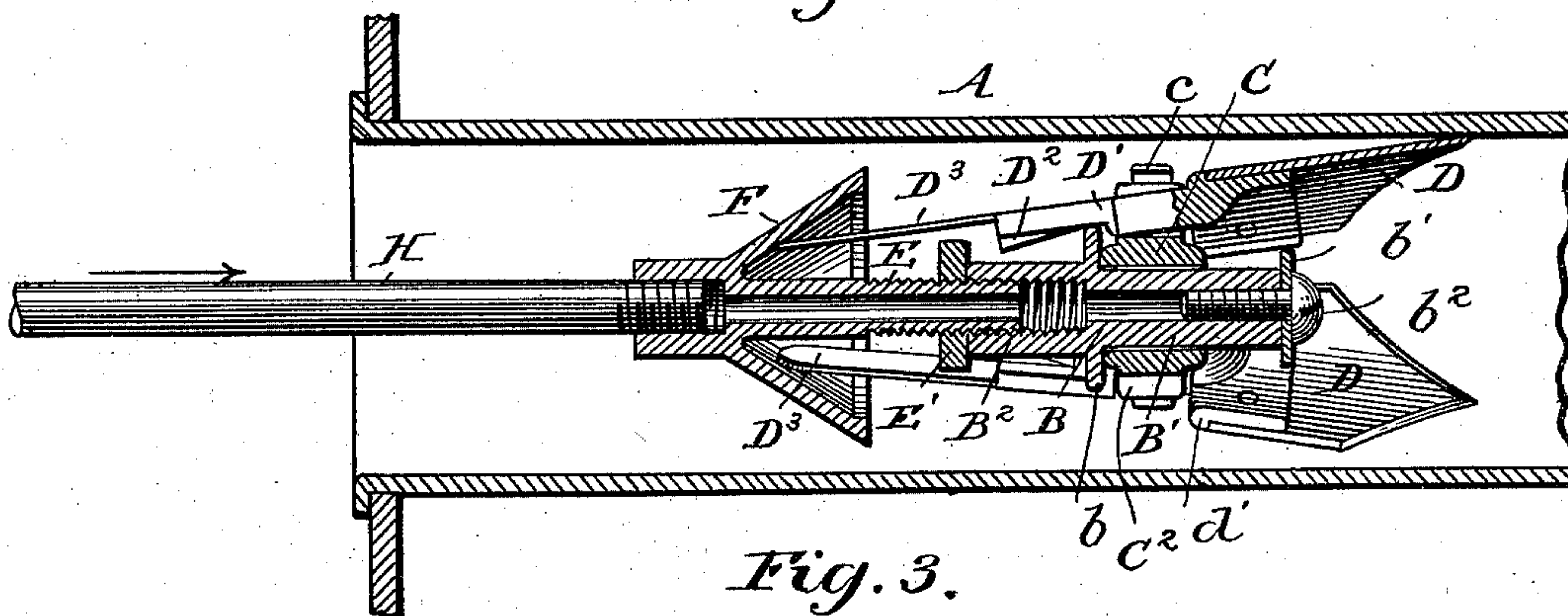
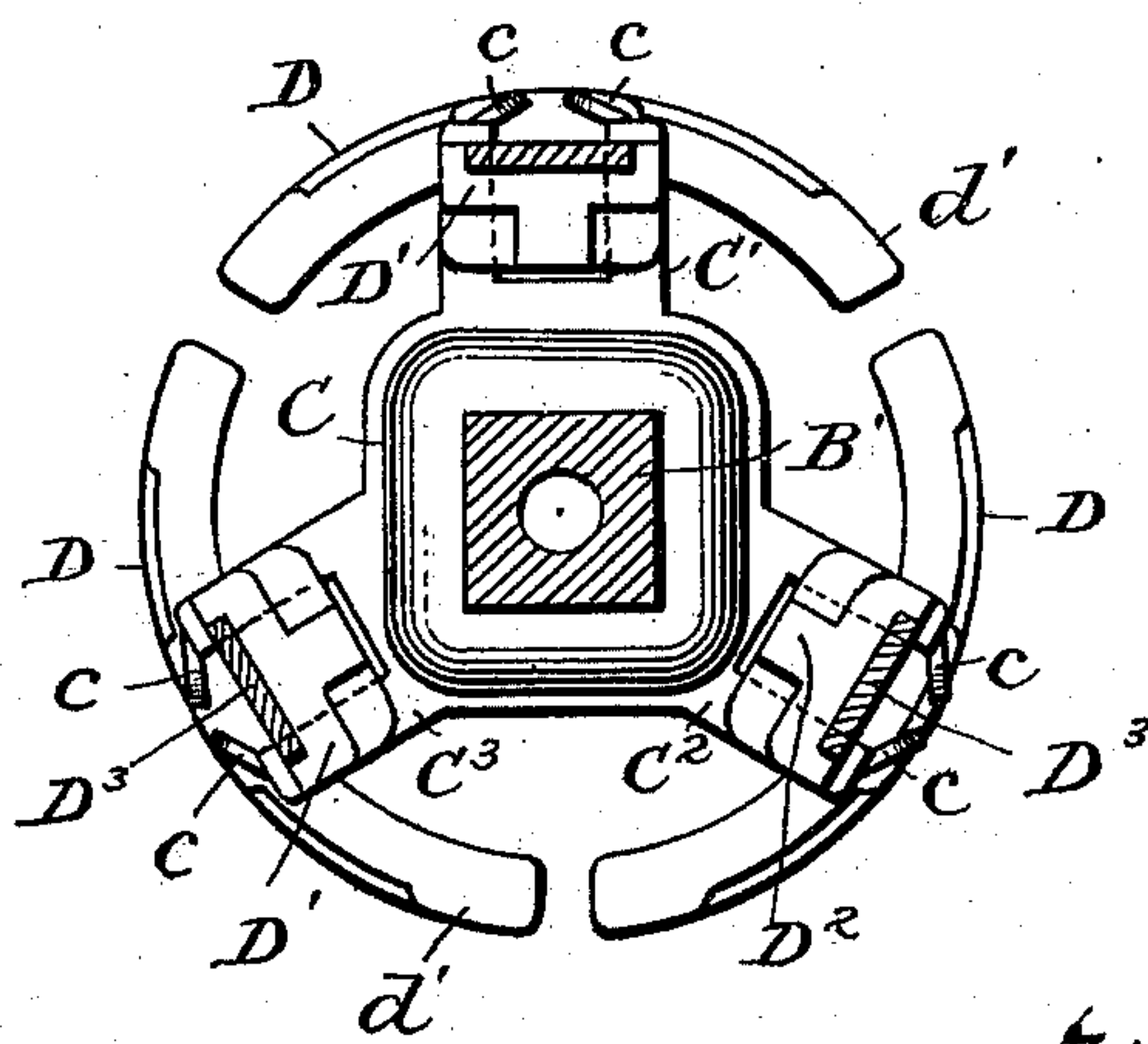


Fig. 3.



Witnesses
J. A. Fairgrieve,
G. O. Kramer.

Inventor
V. Radspinner
By Foster Freeman
Attorneys

UNITED STATES PATENT OFFICE.

VEITUS RADSPINNER, OF PEORIA, ILLINOIS.

TUBE-SCRAPER.

SPECIFICATION forming part of Letters Patent No. 547,451, dated October 8, 1895.

Application filed January 28, 1895. Serial No. 536,486. (No model.)

To all whom it may concern:

Be it known that I, VEITUS RADSPINNER, a citizen of the United States, residing at Peoria, Peoria county, State of Illinois, have invented certain new and useful Improvements in Tube-Scrapers, of which the following is a specification.

My invention relates to flue cleaners or scrapers for use in connection with boiler-tubes and the like; and it has for its object to improve and simplify the construction of such devices and at the same time provide an efficient, cheap, and practical cleaner; and to these ends my invention consists in the various features of construction and arrangement of parts, substantially as hereinafter more particularly set forth.

Referring to the accompanying drawings, Figure 1 is a perspective view of the cleaner. Fig. 2 is a longitudinal vertical section of the same; and Fig. 3 is a vertical transverse section of the same on the line 3 3, Fig. 1, the parts being enlarged.

In carrying out my invention I provide a series of scraper-blades, which may be of any desired shape or configuration, depending upon the particular character of the work to be performed, which blades are so mounted on a head-piece that their ends may be expanded or contracted as the cleaner is passed through the tubes. This head may be variously arranged, but is preferably provided with a sleeve which slides upon the head, to which sleeve the scraper-blades are directly connected, and the head is so formed that when the sleeve is in one position the scraper-blades will be expanded at their outer ends and when it is in another position the blades will be contracted to permit their ready withdrawal from the tube. This head is connected with a stem which is preferably provided with a conical shell which acts upon the scraper-blades and tends to expand them, the blades being preferably provided with spring or elastic projections co-operating with the conical shell, and the whole is adapted to be connected to a suitable handle.

With this general statement of the invention, I will now proceed to describe the embodiment thereof set forth in the accompanying drawings, in which—

A represents a section of a tube—in this in-

stance a boiler-tube—with the cleaner in position.

The cleaner comprises a head B, which in the present instance is shown as being hollow, although it need not necessarily be so formed, and having a squared portion B', with flanges or bearings b b' at each extremity of the squared portion. In the present instance the flange b is formed integral with the head, while the flange or bearing b' is represented as a washer held in place, as by a screw b^2 , which permits the ready removal of the flange. The rear portion B² of the head is provided with means for connecting it to a stem or handle, and in the drawings it is shown as having a screw-threaded opening.

Mounted on the squared or similarly-formed portion B' of the head is a sleeve or collar C, which slides freely thereon and which is provided with extensions C' C² C³, which form supports for the scraper-blades. These blades may be adjustably or pivotally mounted in these extensions in any suitable way, as by pivots, when deemed necessary, but I have found it convenient to provide the extensions with lugs c c , which may be bent over, as clearly shown in the drawings, to retain the scraper-blades in position and still permit of proper movement in the extensions.

The scraper-blades D D (of which three are shown in the drawings, although any other desired number may be used) may be made integral with their supporting portions, although I prefer to make them in the manner shown in the drawings, in which the blades are formed of steel or similar metal with sharpened edges and are attached to the pieces D', which form the pivotal supports for the scraper-blades and which are shown as mounted in the extensions C'. The blades may be secured by screws or rivets, and I preferably provide the projections d' on the parts D', against which the rear edges of the blades can abut, although this is a refinement of the invention and may be varied as required in any particular case. The rearwardly-extending pieces D' of the blades are provided with inclined surfaces D², which are arranged to co-operate with the flange b on the head in such a manner that when the sleeve C is in the position shown in Fig. 2 the scraper-blades may be expanded, but when

the sleeve is moved forward toward the end of the head, as shown in Fig. 1, the flange will impinge upon the inclined surfaces and cause the forward pieces of the blades to collapse or approach each other, so that they can readily be withdrawn from the tube.

Some suitable means are provided that will cause the scraper-blades to expand as the cleaner is forced forward, and I have shown a stem E, which is adapted to be adjustably attached to the head B and which carries a conical shell F, and this stem also forms a convenient means for the attachment of the handle H, by which the cleaner can be operated. Co-operating with the funnel F are the extensions D³ of the scraper-blades, which, while they may be formed integral with the portions D', are in the present instance made separate and secured thereto in any suitable manner, as by rivets or screws d³, and they are preferably of thin material, which will yield to a greater or less extent, if necessary, in the operation of the device. The stem can be adjusted in the head so that it will give any required degree of expansion to the scraper-blades, and it may be secured in this adjustment, as by a lock-nut E' or other suitable means.

Such being the preferred construction of the device, its operation will be readily understood by those skilled in the art, and it will be seen that the sleeve carrying the scraper-blades is free to slide upon the head, and when the cleaner is forced forward it naturally assumes the position shown in Fig. 2, and the funnel impinging upon the extensions D³ will force the edges of the scraper-blades against the inside of the tube to remove the incrustations or other extraneous matter. When, however, the handle is withdrawn, the sleeve will naturally assume the position shown in Fig. 1, and the flange b, acting on the inclines D², will cause the blades to collapse, so that they can readily be withdrawn, the extensions D³ in this operation being withdrawn from the conical shell F. It will also be observed that the relation of the conical shell to the blades can be adjusted so that any desired degree of expansion can be obtained within the limits of the construction. With this arrangement the operation of cleaning tubes may be quickly and effectively accomplished with the least effort, and it will be seen that the parts are simple in structure and may be made strong so as not to be liable to breakage or injury, and the whole provides an efficient cleaner.

What I claim is--

1. A cleaner comprising a support, a head adjustable thereon, a series of scraper blades mounted on the head to slide thereon and means for automatically expanding said blades as the cleaner is moved through a boiler tube, substantially as described.

2. A cleaner comprising an adjustable head, a collar mounted to slide thereon, a series of scraper blades connected to said collar and

means for expanding the scraper blades, substantially as described.

3. A cleaner, comprising a head, said head being rectangular in cross section, a collar provided with a rectangular opening and mounted on said head, and a series of scraper blades mounted on said collar, substantially as described.

4. A cleaner comprising a head, a collar mounted to slide on said head, a series of scrapers mounted on the collar and means for positively expanding and contracting the blades, substantially as described.

5. A cleaner comprising a head, a series of blades mounted on the head and adapted to slide thereon, and means for positively and automatically expanding and contracting the blades as the cleaner is inserted into and withdrawn from a boiler tube respectively, substantially as described.

6. A cleaner, comprising a head, a collar sliding thereon, a series of scraper-blades loosely mounted in the collar and provided with extensions having inclines, and a flange on the head adapted to impinge upon said inclines, substantially as described.

7. In a cleaner, the combination with the head, of the scraper-blades mounted to slide thereon, said blades having extensions, and a conical shell connected to the head and adapted to operate on the extensions to expand the blades, substantially as described.

8. In a cleaner, the combination with the head, the blades mounted to slide thereon, and means for collapsing the blades, of a stem adjustably connected to said head, and a conical shell mounted on the stem and adapted to expand the blades, substantially as described.

9. In a cleaner, the combination with the head, the collar mounted to slide thereon, and blades loosely mounted in the collar and provided with rearward extensions, of a stem adjustably connected to the head and provided with a conical shell operating on the blades, substantially as described.

10. In a cleaner, the combination of a support provided with bearings the scraper blades provided with inclined surfaces adapted to engage the bearings of the support and a sliding connection between the scraper blades and support, substantially as described.

11. In a cleaner, the combination of a head, a collar mounted to slide thereon, a series of blades supported on the collar and devices attached to said head for expanding and contracting the blades as the cleaner is forced forward or withdrawn respectively, substantially as described.

12. A cleaner, comprising a support provided with bearings, scraper blades mounted to slide on the support and provided with inclined surfaces adapted to engage the bearings of the support, to contract the same and independent means on the support for expanding the blades, substantially as described.

13. A cleaner comprising a support, a conical

cal shell thereon, scraper blades mounted to slide on the support and engage the conical shell, and means for automatically contracting the scraper blades, substantially as described.

14. A cleaner comprising a head having a flange, the scraper blades mounted to slide on the head and having inclined portions for engaging the flange of the head, and a conical shell adapted to be engaged by the scraper blades, substantially as described.

15. In a cleaner, the combination of a support, a series of scraper blades mounted thereon, and means for positively and automati-

cally expanding the blades as the cleaner is moved through a boiler tube in one direction and for positively and automatically contracting said blades as the cleaner is moved through the tube in the opposite direction, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

VEITUS RADSPINNER.

Witnesses:

L. D. BENNER,
GEO. K. BEASLEY.