

No. 754,952.

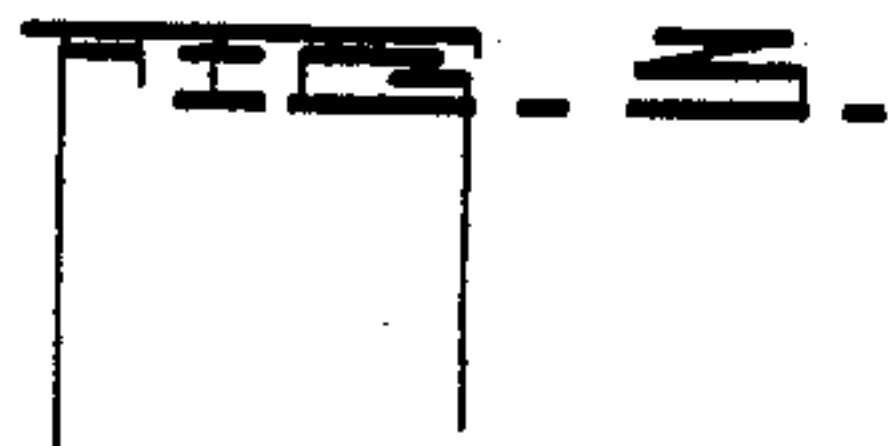
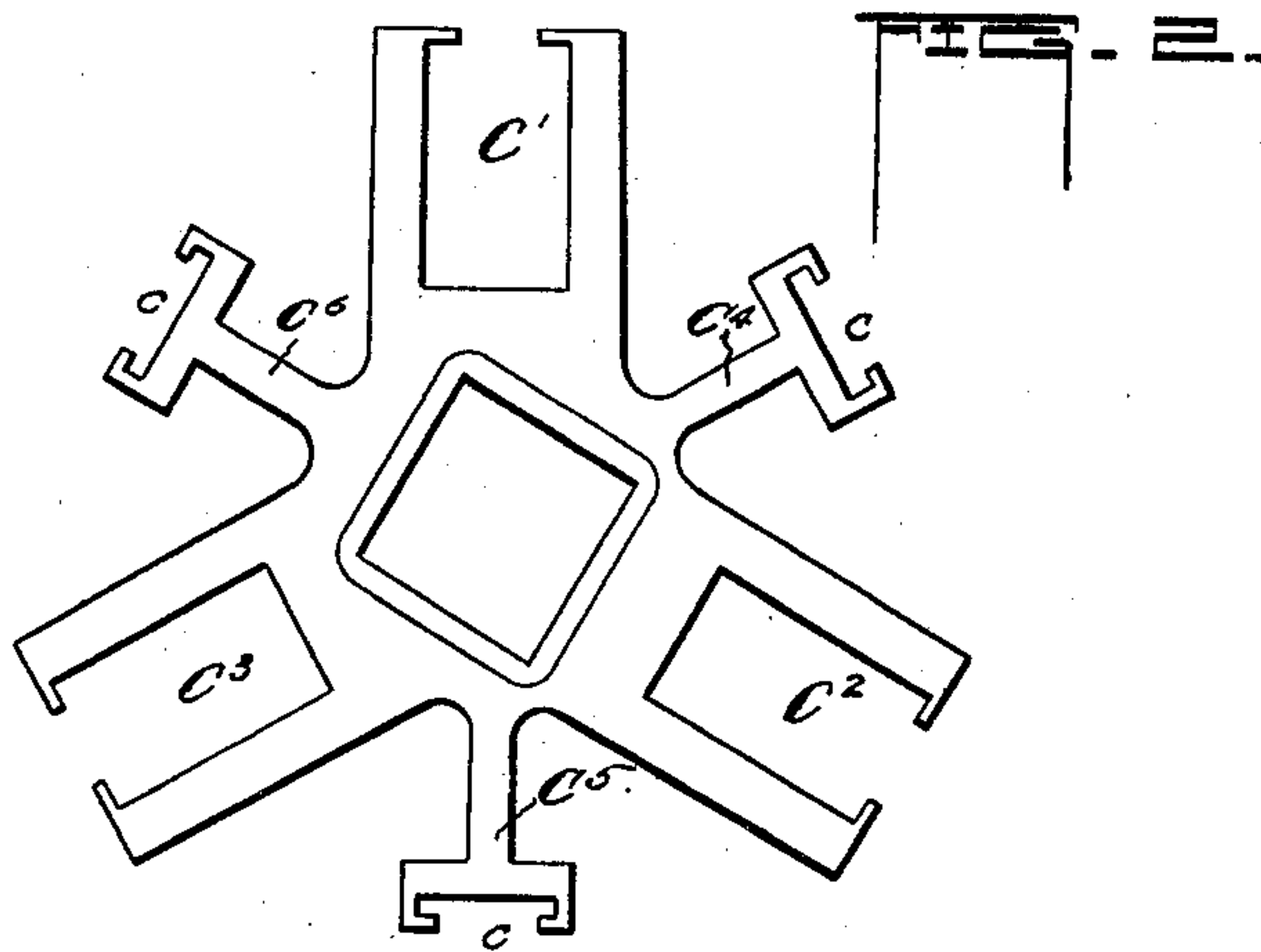
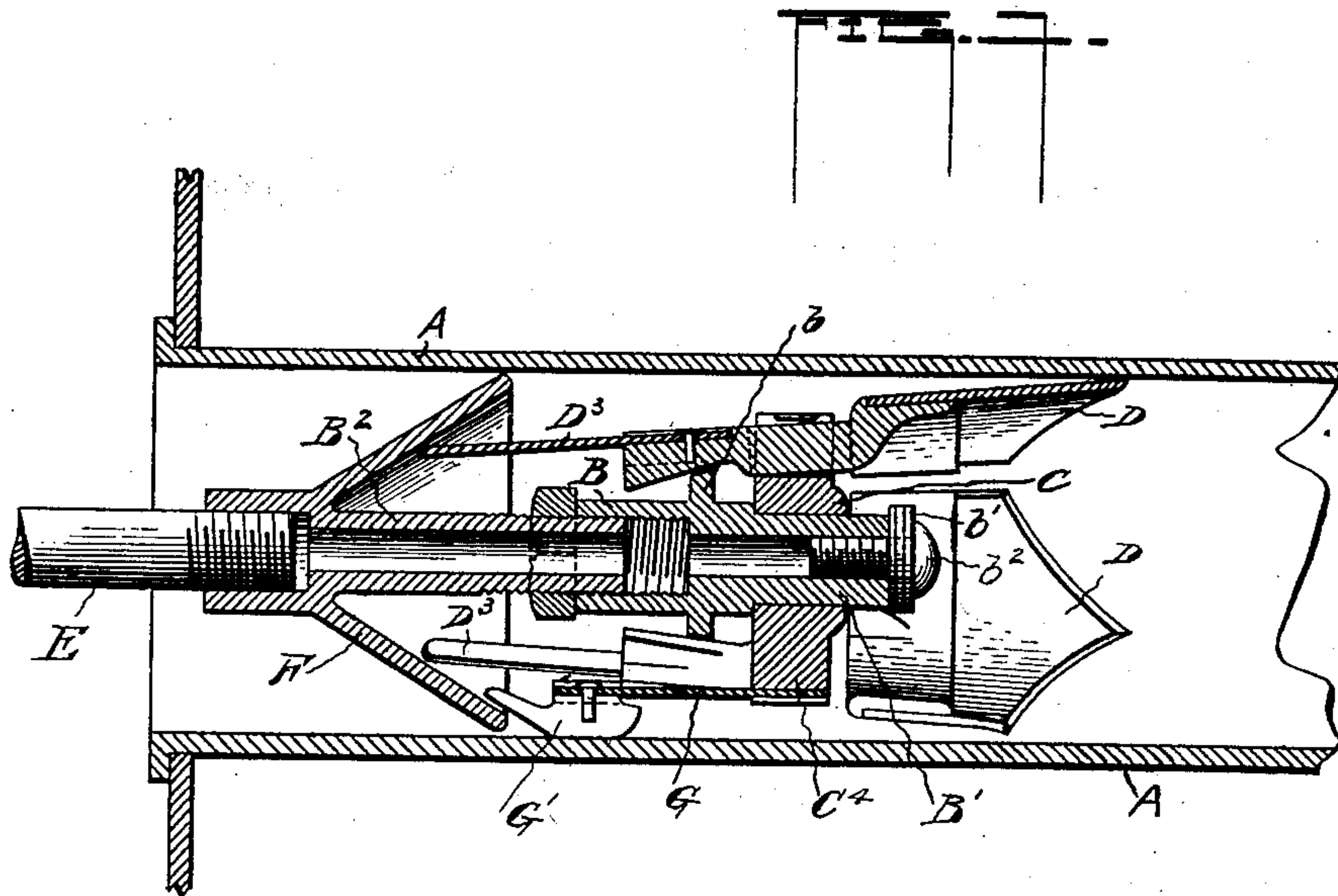
PATENTED MAR. 15, 1904.

E. M. SMITH, W. H. CARPENTER & E. B. WEIDKNECHT.

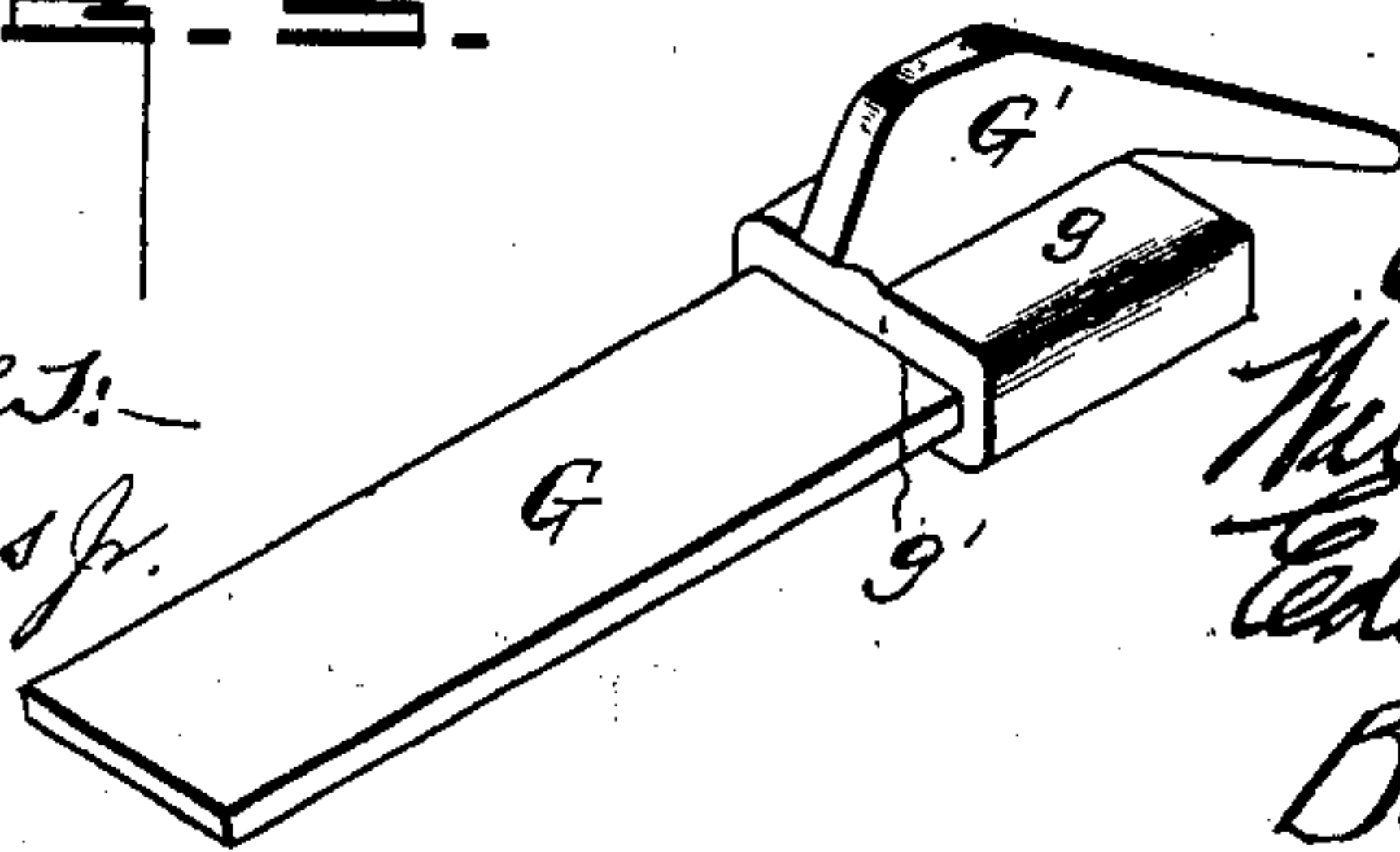
TUBE SCRAPER.

APPLICATION FILED AUG. 24, 1900. RENEWED AUG. 14, 1903.

NO MODEL.



Witnesses:
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UNITED STATES PATENT OFFICE.

EDWARD M. SMITH, WILLIAM H. CARPENTER, AND EDWARD B. WEIDKNECHT, OF PEORIA, ILLINOIS; SAID SMITH AND CARPENTER ASSIGNORS OF ONE-HALF TO HENRY OELKERS, OF PEORIA, ILLINOIS.

TUBE-SCRAPER.

SPECIFICATION forming part of Letters Patent No. 754,952, dated March 15, 1904.

Application filed August 24, 1900. Renewed August 14, 1903. Serial No. 169,555. (No model.)

To all whom it may concern:

Be it known that we, EDWARD M. SMITH, WILLIAM H. CARPENTER, and EDWARD B. WEIDKNECHT, citizens of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Tube-Scrapers; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to improvements in tube-scrapers, and has reference especially to an improvement upon the tube-scraper described and claimed in Letters Patent No. 547,451, dated October 8, 1895, of which we are at present joint owners; but the application of the same need not necessarily be confined to this particular scraper, as the same may be applied to other scrapers with as good result without departing from the spirit of the invention herein set forth.

Referring to the patent above mentioned, which is provided with a series of scraper-blades which are mounted on a head-piece so that their ends may be expanded or contracted as the cleaner is passed through the tube, the head is 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 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 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 coöperating with the conical shell, and the whole is adapted to be connected to a suitable handle.

The object of the present invention is to provide, in combination with the sleeve or collar which is carried upon the head, spring-arms having means which will impinge the wall of

the tube, making more perfect the operation of the head and blades when it is desired to expand or contract the blades—in other words, to allow the head to have a sliding movement in the sleeve or collar, which movement is absolutely necessary when the scraper is being inserted within a tube to insure their engaging the wall thereof. Thus the blades may be operated with more accuracy and insure a ready expansion or contraction, when desired, which will also prevent any slipping of the scraper within the tube and yet not impinge the wall too much to effect the withdrawal of or pushing the same in the tube.

That our invention may be more fully understood reference is had to the accompanying drawings, in which—

Figure 1 is a longitudinal section of the scraper referred to with our improvement applied thereto. Fig. 2 is an elevation or end view of the sleeve or collar. Fig. 3 is a perspective view of one of the spring-bearing arms.

In the drawings, for convenience, it will be noticed the parts of the scraper are referred to and lettered substantially similar to the application above referred to, which will enable those skilled in the art to readily combine the parts.

A represents a section of a tube, in this instance a boiler-tube, with the cleaner in position, showing the blades expanded.

B is the head of the cleaner having the squared portion B', with flanges or bearings *b b'* at each extremity of the squared portion. In this instance the flange *b* is integral with the head, while the flange or bearing *b'* is represented as several washers held in place, as by the screw *b²*.

B² is a rear extension of the head and is arranged to have a stem or handle connected therewith.

Mounted on the square head portion B' is a sleeve or collar C, which may have a sliding relation on said head and is provided with the radial extensions C' C² C³, and C⁴ C⁵ C⁶ are radial extensions carried intermediate the ex-

tensions C' C^2 C^3 and from the body of the sleeve and are provided with the channel-faces c , as shown.

G represents spring-bearing arms or extensions which are suitably held in the channel-faces of the arms or extensions C^4 C^5 C^6 , and G' represents impinging heads or blocks having the lateral extensions or lug-arms g and the channel-faces g' , in which the spring-bearing arms G are carried and by suitable means secured therein or to said blocks. The object we have in view in providing the spring-bearing arms into two distinct parts is to prevent the heat passing too quickly to the scraper proper, which would be the case if the same were made of one piece. Thus it will be seen that when the scraper is inserted into a tube for the purpose of cleaning the same the instant the spring-bearing arms come into contact with the wall of the tube the sleeve C will be held in a relatively stationary position to that of the head B , and the forward action of the same will cause the conical shell or funnel F to engage the extensions D^3 and cause the scraper-blades D to expand and engage the wall of the tube, while a slight pulling movement of the stem E will release the same and yet not disturb the normal relation of the sleeve thereto, which is held in the tube by the impinging arms G , thus insuring a complete contact of the blades with the wall or disconnection therewith, when desired, without advancing or withdrawing the same, which is a valuable feature when coming into contact with a large weld, at which time it is necessary to release the blades to enable them to slip by the weld, as the least pull on the stem will release the blades, which is a very difficult thing to accomplish when the head and sleeve have a sliding relation and the operator has no means of releasing the one and holding the other, such as is the case with this device.

Having thus fully described our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

1. A tube-scraper, comprising a main body portion, a sleeve slidable on said body, scraping means carried thereby, spring-arms extending rearwardly from said sleeve carrying means adapted to flexibly engage the walls of

a tube being scraped to retain the sleeve in a position relatively stationary to the body portion supporting said sleeve, substantially as described.

2. A tube-scraper, comprising a main body portion, a sleeve slidably mounted thereon, scraping means supported by said sleeve, a handle provided at its end with a conical chamber adapted to act on the scraping means, auxiliary mechanism carried by the said sleeve arranged to have a flexible bearing relation to the walls of the tubing being scraped, holding the sleeve in a fixed position when it is designed to move the main body portion and conical member from disengagement with the scraping means, substantially as described.

3. In a tube-scraper, the combination with a body part and a sleeve slidably arranged on said body part, scraping means carried by said sleeve, a series of radial arms extending from said sleeve, and a series of spring-engaging devices carried by said arms adapted to engage the wall of a tube being scraped for forming a frictional bearing for the sleeve within the tube, substantially as described.

4. In a tube-scraper, the combination with a body part having a squared portion and a handle from its opposite end, a sleeve slidable on said squared portion of the body part, scraping means carried by said sleeve, means for causing the expansion of or contraction of said scraping means, radial arms of said sleeve having channel portions, spring-arms secured in said channel portions of the radial arms and impinging-blocks secured to the free ends of said spring-arms, substantially for the purpose described.

5. In combination with a slidable member of a scraper, of the arms G , the members G' having lateral extensions g , and channel-faces g' , in which one end of the arms G are secured, substantially as described.

In witness whereof we affix our signatures in presence of two witnesses.

EDWARD M. SMITH.

WILLIAM H. CARPENTER.

EDWARD B. WEIDKNECHT.

Witnesses:

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R. N. McCORMICK.