

P. DORSEY.
TUBE CLEANER.
APPLICATION FILED JAN. 24, 1910.

974,041.

Patented Oct. 25, 1910.

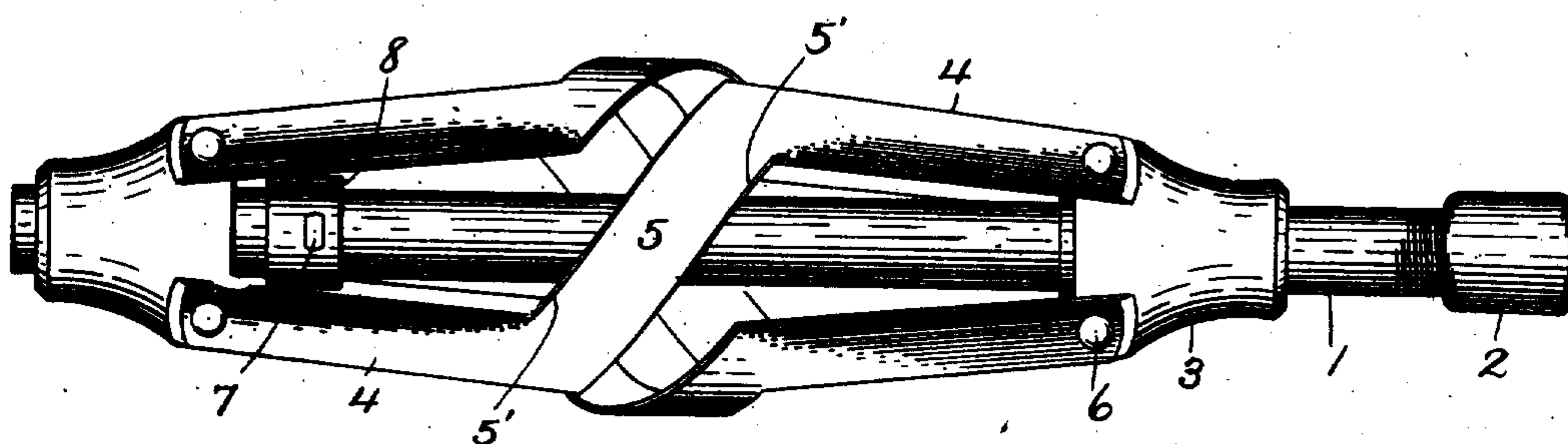


FIG. I.

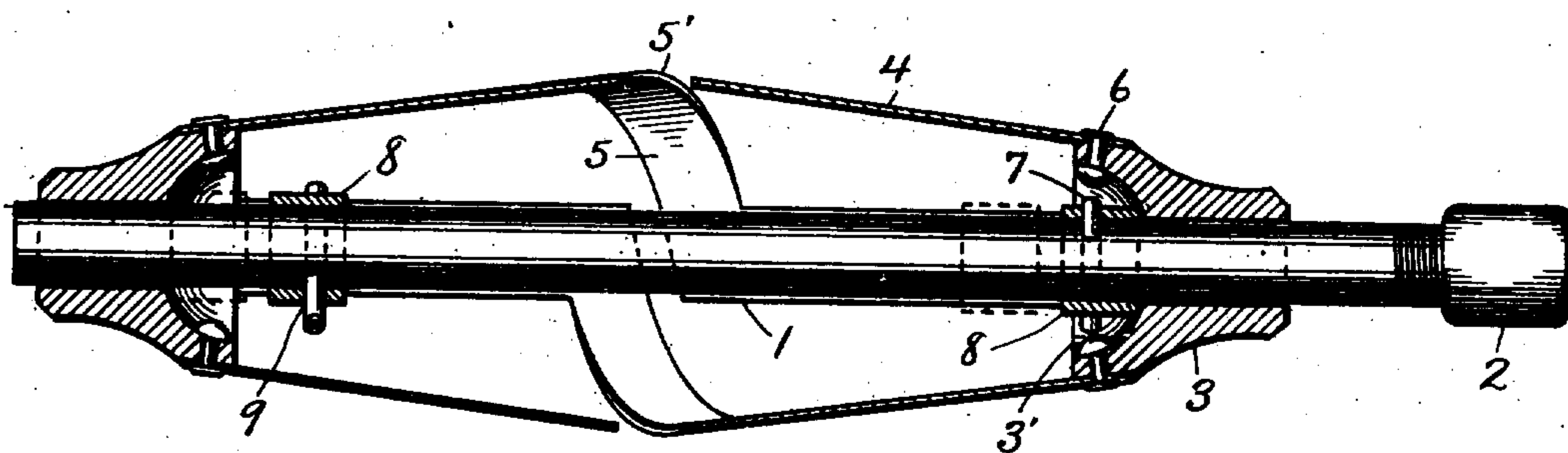


FIG. II.

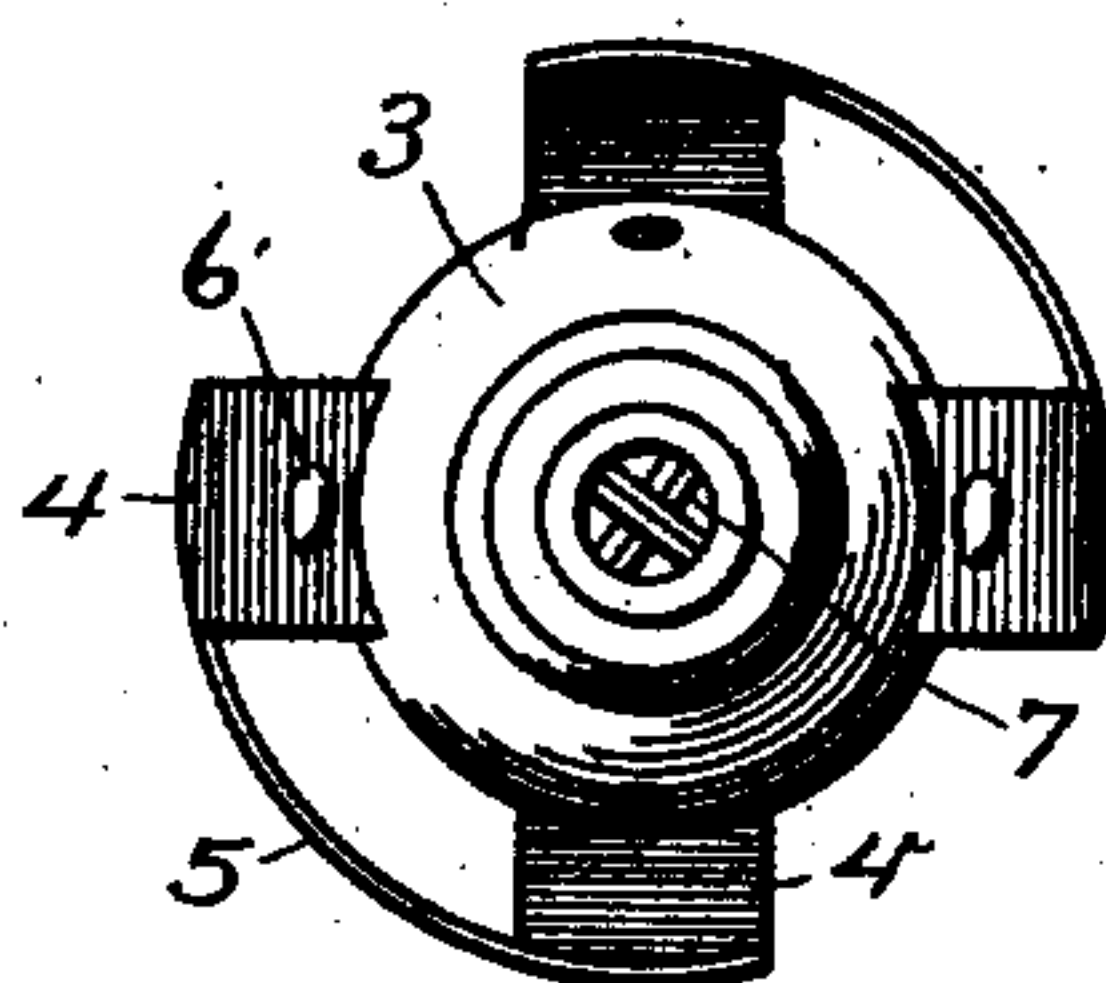


FIG. III.

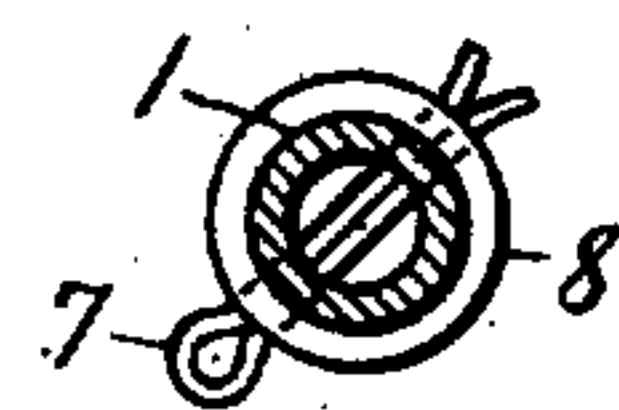


FIG. IV.

WITNESSES:

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PARMER DORSEY, OF HUTCHINSON, KANSAS, ASSIGNOR TO THE STANDARD SUPPLY AND MANUFACTURING COMPANY, OF HUTCHINSON, KANSAS, A CORPORATION OF KANSAS.

TUBE-CLEANER.

974,041.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, PARMER DORSEY, a citizen of the United States, residing at Hutchinson, in the county of Reno and State of Kansas, have invented certain new and useful Improvements in Tube-Cleaners; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to tube cleaners, and has for its principal object to provide a device of that class whereby scale may be cut from the inner surface of a boiler or other tube and which is sufficiently flexible to obviate its breaking or jamming in the tube should a solid obstruction be encountered.

A further object of my invention is to provide a mounting for the cutter heads that will enable the knife body to flex longitudinally in either direction, so that the blades may be contracted to pass an obstruction irrespective of the direction in which the cleaner is traveling.

A further object is to provide a tube cleaner of the kind described in which each knife may flex independently of the others, thereby making it possible for the cleaner to pass a protuberance in the pipe without affecting the cleaning operation except at the point of the protuberance.

A further and an important object of the invention is to provide means whereby the knife body may be pulled in the tube when traveling in either direction, thereby obviating the tendency of the knives to "buckle" when pushed against a protuberance or hard mass of scale. In the preferred form of my invention the pulling means may also serve as a hammer to assist the knife body through a tight part of the tube.

Further objects of the invention will become apparent from reading the following description and claims, the preferred form of the invention being illustrated in the accompanying drawings which bear reference numerals corresponding to the numerals in the description, and in which:—

Figure I is a side elevation of a tube

cleaner constructed according to my invention. Fig. II is a central longitudinal section of same. Fig. III is an end view of a cleaner with two of the blades removed. Fig. IV is a detail view of one of the keeper collars, the carrying shaft being in cross section.

Referring more in detail to the parts:—1 designates the shaft of the cleaner, which is preferably tubular and threaded at one end for connection with a coupling 2 or with the end of an ordinary operating rod (not shown).

Mounted loosely and slidably upon the shaft 1, are two heads 3, which are preferably bell shaped and are spaced a suitable distance apart. Secured to the outer faces of and connecting the heads 3 are the blades 4—5, which are preferably made from spring steel, and secured to the heads 3 by rivets 6.

Each of the blades 4—5 is shaped substantially as shown in Fig. II, from which it will be observed that the blade comprises the substantially straight end portions 4, and the intermediate portion 4 which forms abrupt angles with the end portions 4, the entire blade being bowed so that the angling portions 5 are at the center and have the greatest diameter, when assembled on the heads, such diameter necessarily diminishing from the middle of the sections 5 to the ends, where they join the straight portions 4.

The edges of the portions 5 are beveled outwardly at each side, to provide the cutting edges 5', but the straight portions need not be beveled for the reason that they infrequently come in contact with the scale, owing to the bow shape of the blade.

In order to retain the heads 3 on the shaft, I provide means which may be fixed to the shaft and project therefrom so as to engage the heads when the shaft is moved in either direction, such means preferably comprising the spring cotters 7 which project through apertures in the shaft adjacent to said heads. As there is a tendency of the cotters to bend, especially in the small sizes, when force is applied, I prefer to provide the thrust collars 8, which fit over the shaft and have apertures 9 through which the cotters may project to removably fix same to the shaft. These collars are so positioned

that the distance between their outer ends is less than the distance between the inner ends 3' of the heads 3, so that the shaft 1 may have a limited end play without imparting motion to either head 3.

In operating the cleaner the parts are inserted in the tube and the rod operated in the usual ways, no skill being required. When the shaft 1 is moved forwardly, the forward collar 8 will strike the adjacent head 3, thereby driving the blades 4—5 forwardly, so that the forward knife edge 5' will cut the scale.

Now let it be supposed that the blades, or any of them, encounter a heavy obstruction, as frequently occurs. As the blades are outwardly bowed, the obstruction will bend the blade or blades inwardly which will obviously result in elongation of the blade or blades and relative movement of the rearward head 3 away from the forward head. Supposing that the obstruction be encountered during a rearward stroke of the cleaner: then the forward head 3 will move relatively upon the shaft. It is thus evident that the blades can not become caught or jammed in any tube.

Should an unusually tight section of pipe be encountered, the end play of the shaft in the knife body will enable the operator to hammer the thrust collar against the knife head 3 to help the device through or along the tube.

The action of the blades in removing the

scale will be fully understood without description thereof.

Having thus described my invention, what I claim as new therein and desire to secure by Letters-Patent is:—

1. In a tube cleaner, a shaft, a pair of heads movable on the shaft, separate blades connecting said heads, said blades being bowed longitudinally and having offset central portions provided with cutting edges, and means on said shaft for engaging said heads.

2. In a tube cleaner, a shaft, a pair of heads movable on the shaft, separate blades connecting said heads, each of said blades being of spring metal and bowed toward its center, the central portions of said blades being extended diagonally to the end portions and provided with cutting edges.

3. In a tube cleaner, a shaft, a pair of heads movable on the shaft, separate resilient blades each having its ends fixed on opposite heads in offset relation to each other and having a diagonally extending section connecting the end parts, the blades being bowed and the edges of the diagonally extending sections being sharpened, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

PARMER DORSEY.

Witnesses:

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