

(No Model.)

J. DARLING.
RIVET CATCHER FOR PUMPS.

No. 436,218.

Patented Sept. 9, 1890.

Fig. 1.

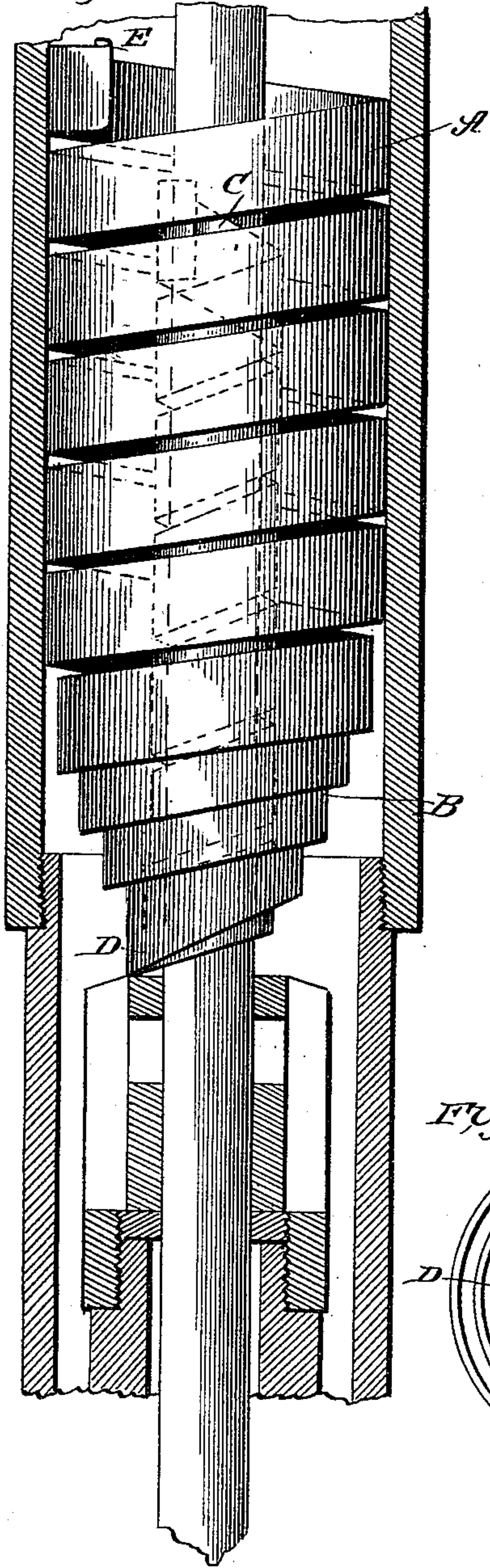


Fig. 2.

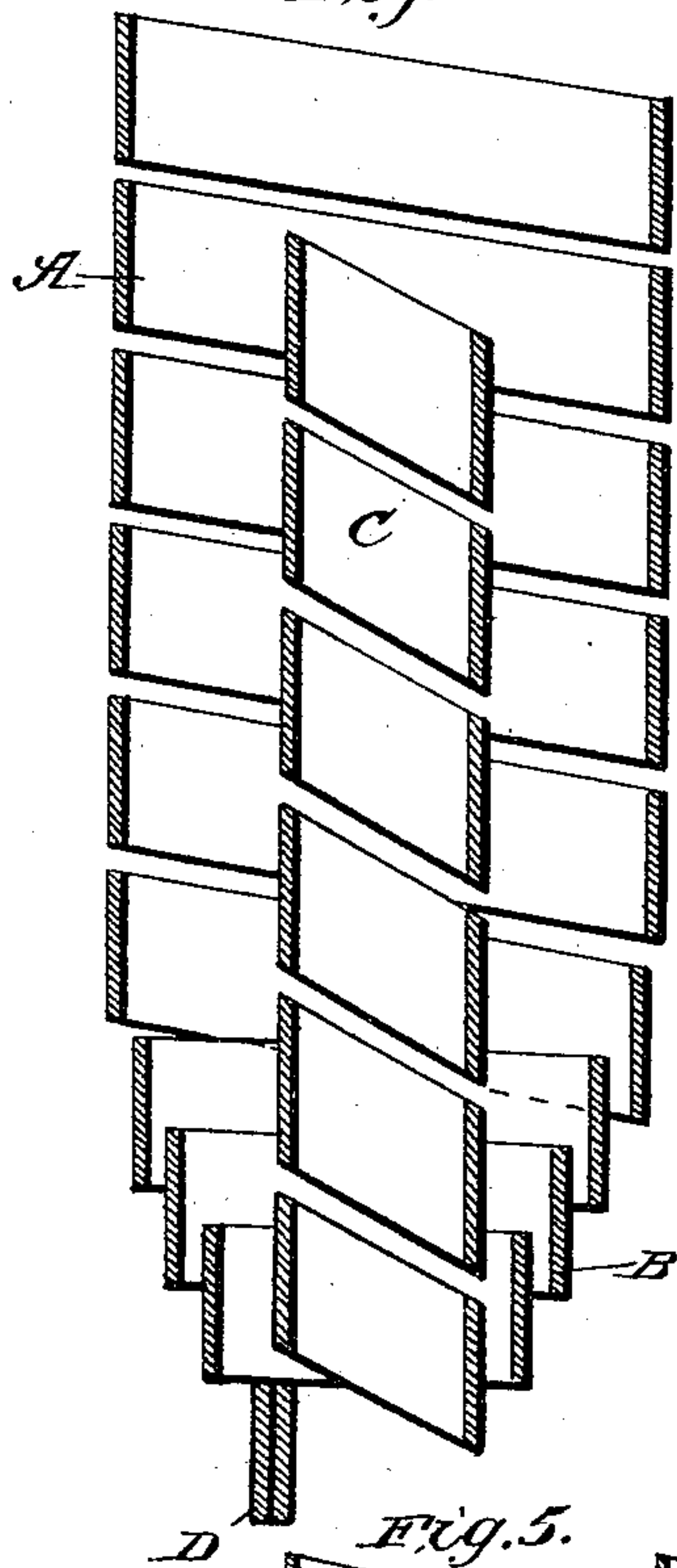


Fig. 3.

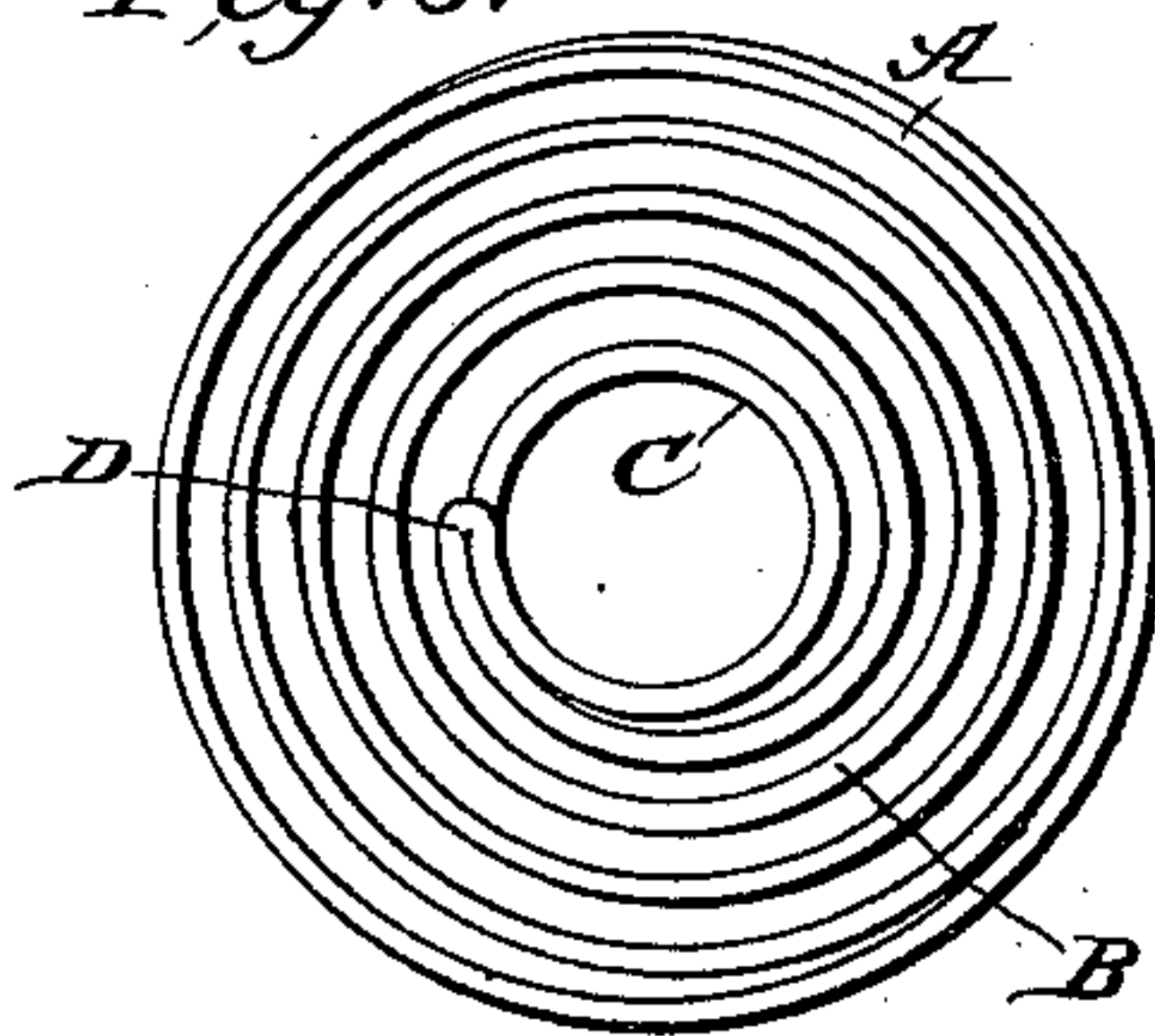


Fig. 5.

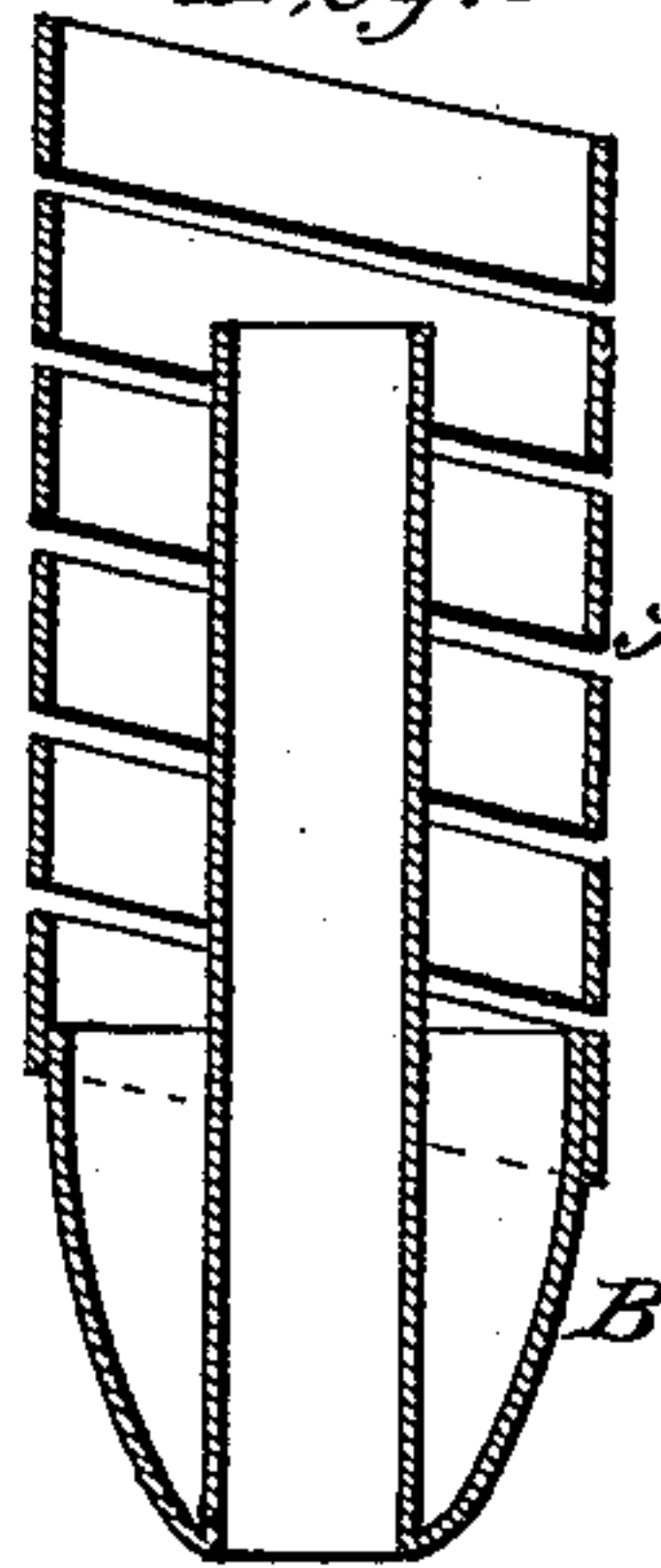
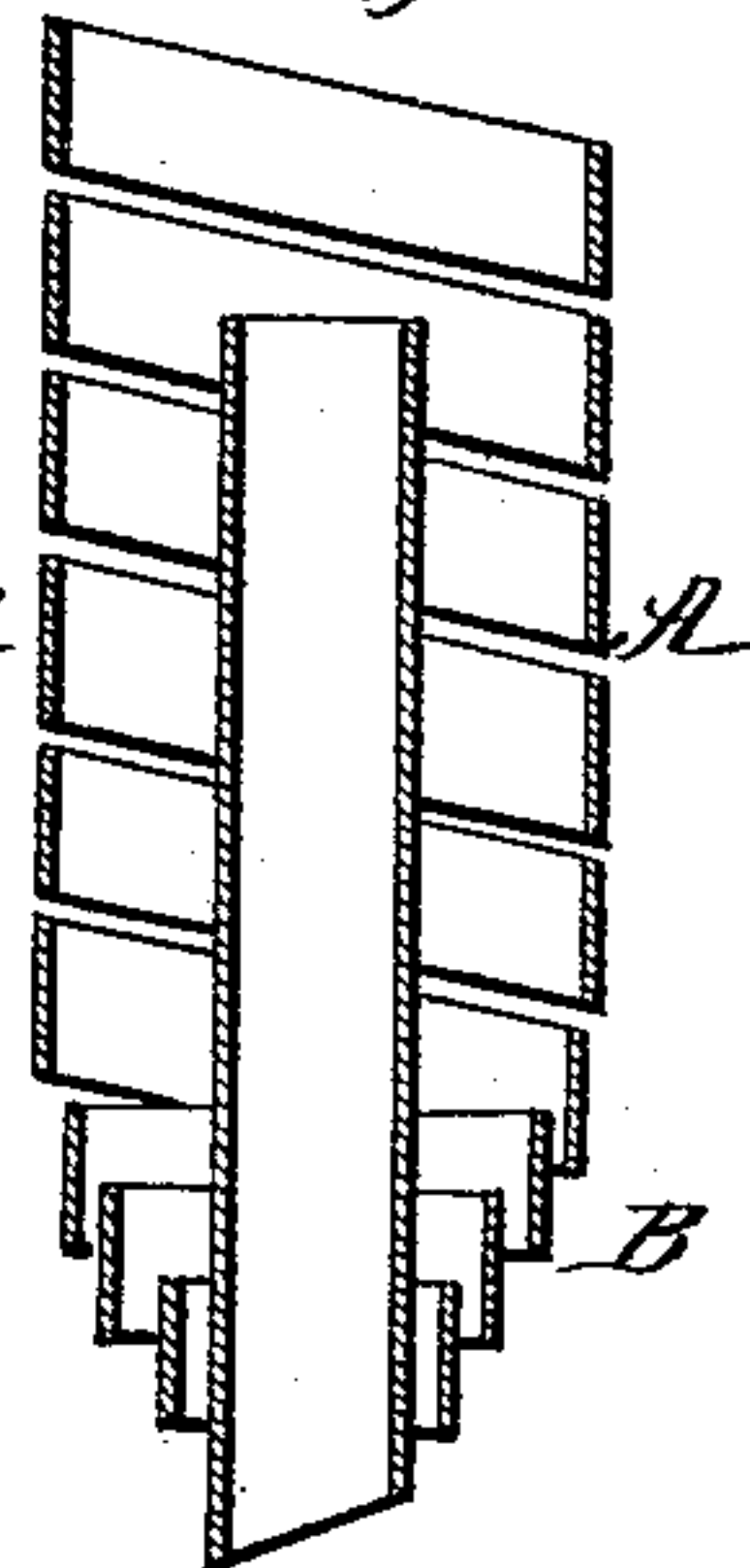


Fig. 4.



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RIVET-CATCHER FOR PUMPS.

SPECIFICATION forming part of Letters Patent No. 436,218, dated September 9, 1890.

Application filed December 5, 1889. Serial No. 332,631. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH DARLING, of Baldwin, in the county of Butler and State of Pennsylvania, have invented a new and
5 useful Improvement in Rivet-Catchers for Pumps, of which the following is a specification.

My invention is an improvement in rivet-catchers for use in pumps of the class employed in the oil regions, where the pumping devices proper are arranged many hundreds of feet under the surface of the ground, and are connected by jointed sucker-rods with the operating devices above such surface, the
10 said rods being united or joined by means of iron straps lapping the joints and riveted above and below. In such pumps it has been found that some of the rivets will break and fall out, while others will become loose and
15 the rivets or pieces thereof will drop to the pumping devices, where they will work great destruction among the valves, tubing, &c., as well as frequently damaging the operating machinery above by suddenly stopping there-
20 of because of the obstructions presented by the rivets to the working parts below when drawing the same out of the tubing. This has been overcome in part by the provision on the rods of a rivet-catcher formed of metal
30 and perforated for the passage of the fluid; but in said construction the said rivet-catcher is made rigid or inflexible and unyielding, and its upper edge is made at right angles to the direction of movement of the pumping
35 devices, the result of which is that if a rivet or piece of rivet gets above the said catcher and between its upper edge and any fixed part of the tubing—say the lower edge of the tubing-section next above said catcher—the
40 rivet will frequently bind at such point or be inclined back of or outside the catcher, and the jar or concussion will work serious damage to the mechanism. By my invention I seek to overcome such objections, in the first
45 place by making the catcher flexible or yielding, so it will cushion and compress when in contact with an unyielding part, and in the second place by inclining the upper edge of the cup of the catcher to the direc-
50 tion of its length, so that in case the said cup should catch a rivet between its upper edge and the bottom of an upper tubing-section it

will have a tendency to guide the rivet into the cup, the catcher being so held on the rod that it may turn freely thereon. Further-
55 more, in case the tubing parts above the rivet-catcher, as frequently occurs, and the sucker-rods are being drawn out of the well, when the rivet-catcher reaches the lower end of the section of tubing still hanging in the casing-
60 head, or where it has been broken off, there is danger with a rigid rivet-catcher, as there is no guide to make it exactly enter, so that the contact of such rivet-catcher and tube is likely to break the rods, when the rivet-
65 catcher would drop back as likely outside of the lower part of the tube as in it. By making my rivet-catcher with the elasticity or spring it will, when it strikes the upper tube, spring down and glance into the upper tube,
70 as will be understood.

The invention consists in the novel construction and arrangement of parts, as will be hereinafter described and claimed.

In the drawings, Figure 1 is a side view of
75 the device in position for use. Fig. 2 is a longitudinal section of the catcher. Fig. 3 is a bottom view thereof, and Figs. 4 and 5 are somewhat different constructions within some of the broad principles of my invention. 80

In proceeding to the detailed description of the construction of my rivet-catcher, it may be stated that in use it is applied just as the ordinary rivet-catcher is, being made to fit
85 around the pump-rod and rest down against the check-valve cage, as shown in Fig. 1, and, as will be understood by those skilled in this branch of the art, where a check-valve is not used it rests on or in the top of the working-
90 barrel.

The objection to the ordinary rivet-catcher has been fully stated and does not need to be repeated. In avoiding such objections I make the catcher with its cup constructed to spring
95 or yield. Now, so far as I am informed and believe, rivet-catchers have not heretofore been constructed to yield or spring, and I do not desire in this broad feature of my invention to be limited to the particular manner in
100 which I render the cup springy, although such construction is preferred. The cup may be said to consist of a cup-like portion A, the bottom B, and the central or sleeve-like portion C, the whole being preferably formed of

a strip of spring material, preferably steel, wound helically to fit the pump-rod, spirally to form the bottom, and helically to fit the bore of the well-tube, spaces being provided between the convolutions of the strip to permit the passage of the oil or other fluid, such spaces being made too narrow to permit the passage of a rivet or piece thereof.

In winding the strip to form the catcher it is usual to begin at the upper end of sleeve C and wind down on a suitable mandrel, a sufficient number of coils being made to provide a sleeve C of the desired length. The strip is then bent back upon itself at D, and is thence wound spirally, gradually ascending and enlarging until it reaches the diameter of the cup, when it is wound on a hollow mandrel to form the cup, the extremity of the coil at the upper end of the cup being slightly bent in at E to avoid an abrupt termination of the strip at the upper end of the cup. The said construction, it will be seen, renders the cup elastic, so that it may spring or yield, and thus prevent and cushion the jars and shocks. The said construction also serves to provide an inclined upper edge for the cup, and the spiral winding of the strips with the coils slightly separated permits the passage of the oil, &c. It will also be understood that the helical disposition of the strips to form the bottom of the cup is of importance and advantage, inasmuch as it permits the free passage of the oil through the catcher, and also enables the catcher to be drawn freely through the paraffine in the tubes.

It is manifest that it would be no departure from some of the broad principles of my invention to make the catcher with a sheet-metal sleeve, as shown in Fig. 4, or a sheet-metal sleeve and bottom, as shown in Fig. 5, but I prefer to construct the device as shown in Figs. 1 and 2, and before described.

The coiled strip forming the cup also forms

an efficient paraffine-scraper, as will be understood by those skilled in the art, and the spaces between the coils render the ready escape of the scraped paraffine.

Having thus described my invention, what I claim as new is—

1. A rivet-catcher substantially as described, having its cup formed of a strip of spring material wound spirally and having its coils normally separated to a substantial degree whereby to permit the flow of fluid between the said coils when the catcher is at rest, and also to permit the longitudinal compression of the rivet-catcher in case it meets an obstruction in being withdrawn from the well, as and for the purposes set forth.

2. A rivet-catcher having its cup formed of a length of resilient material wound spirally and having in its normal condition open spaces between its coils, substantially as described, and for the purposes set forth.

3. A rivet-catcher having its bottom formed of a length of resilient material coiled helically, with open spaces between the adjacent coils in both the normal and compressed condition of the rivet-catcher, substantially as set forth.

4. As a new and improved article of manufacture, the rivet-catcher herein described, having its cup-bottom and central portion formed of a single strip of spring material wound spirally and helically and having in its normal condition open spaces between the coils of its cup and bottom, the spaces between the bottom coils being open in both the normal and compressed conditions of the catcher, all substantially as and for the purposes set forth.

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