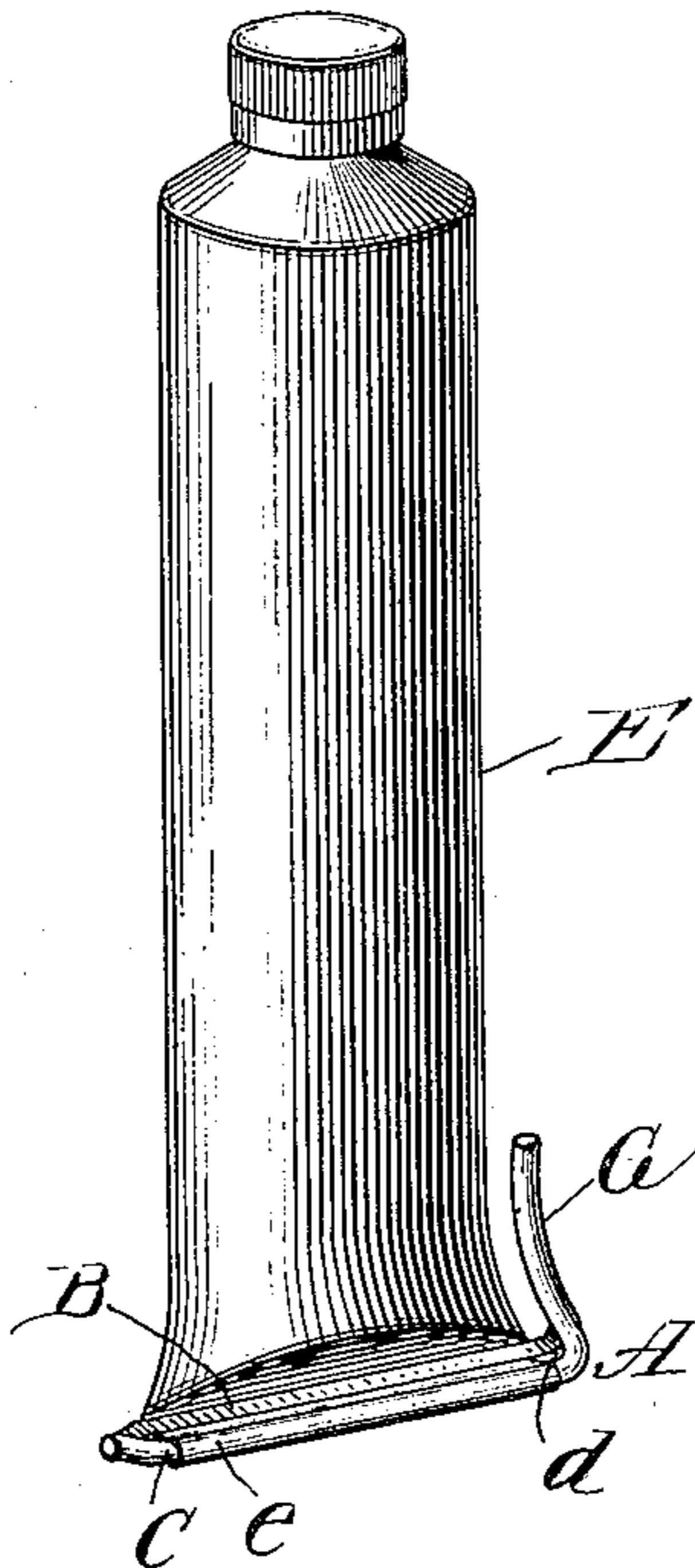


F. KINSEY.  
KEY FOR ROLLING UP COLLAPSIBLE TUBES.  
APPLICATION FILED FEB. 1, 1909.

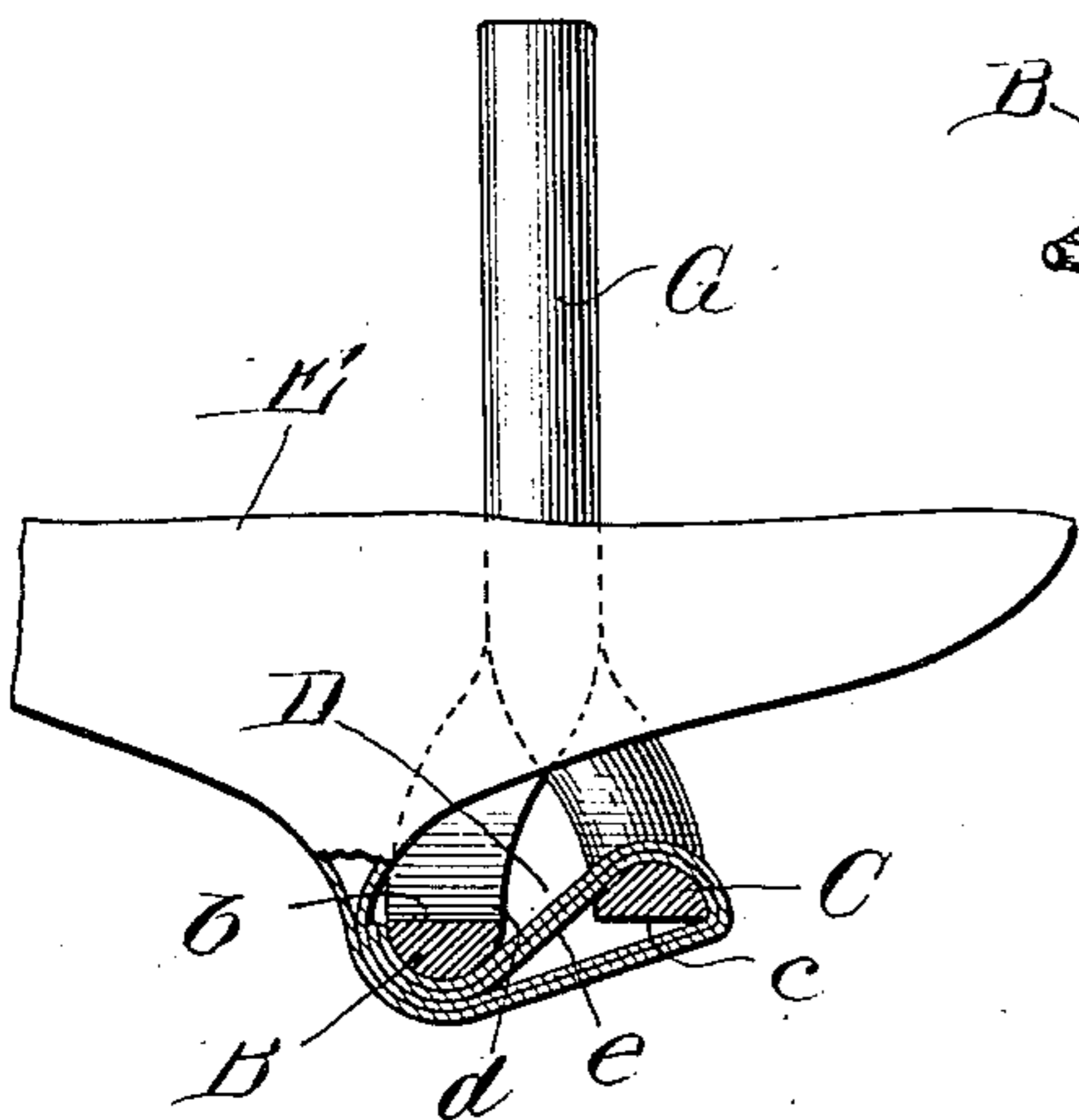
951,132.

Patented Mar. 8, 1910.

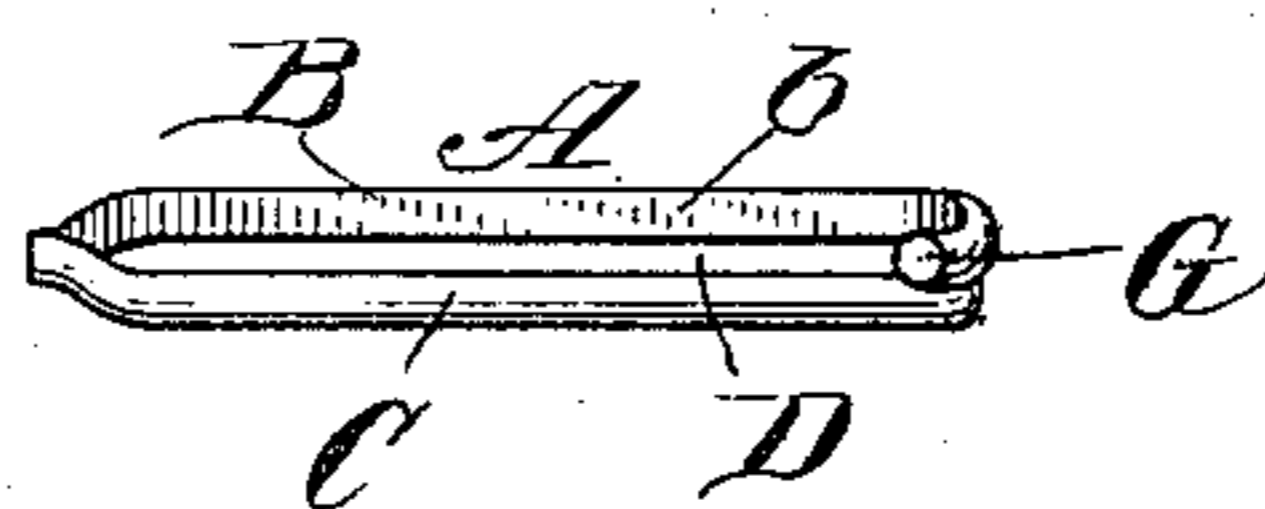
*Fig. 1*



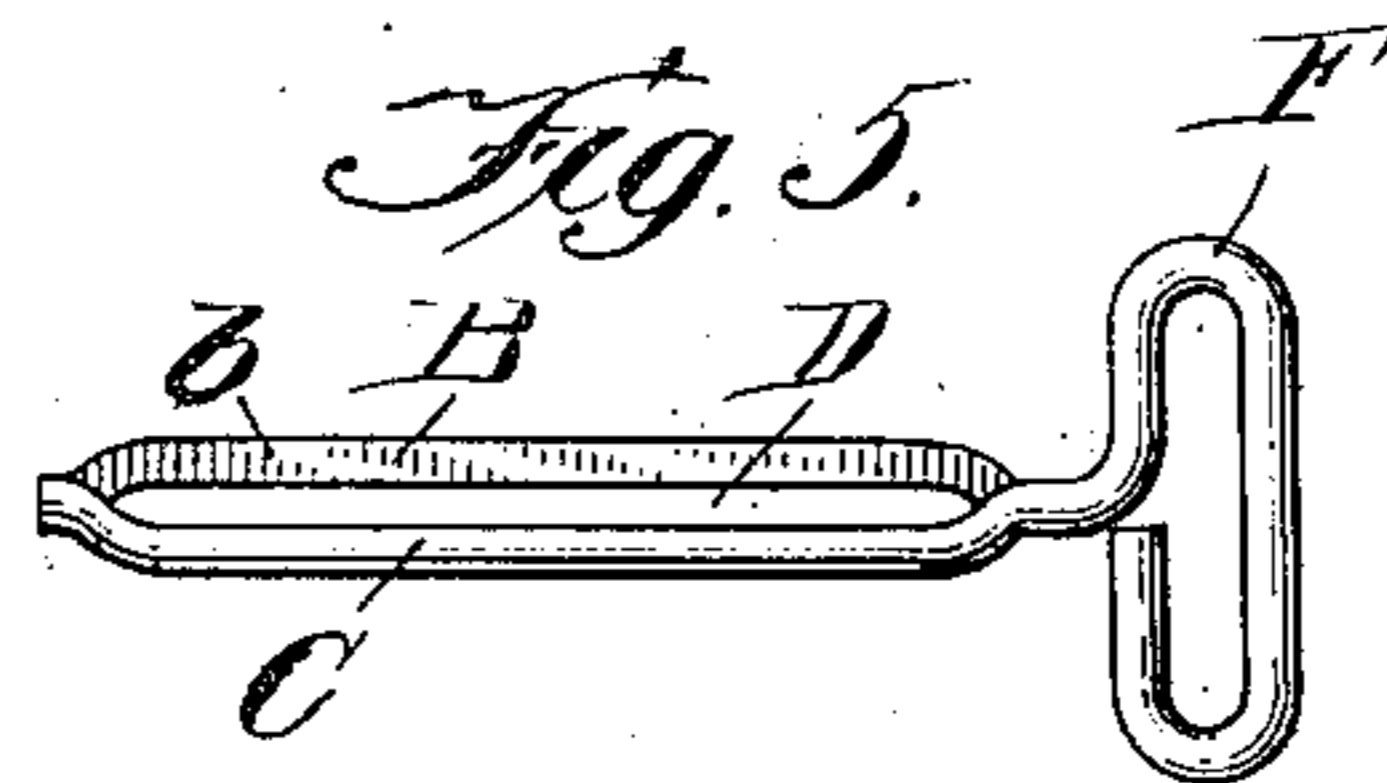
*Fig. 2.*



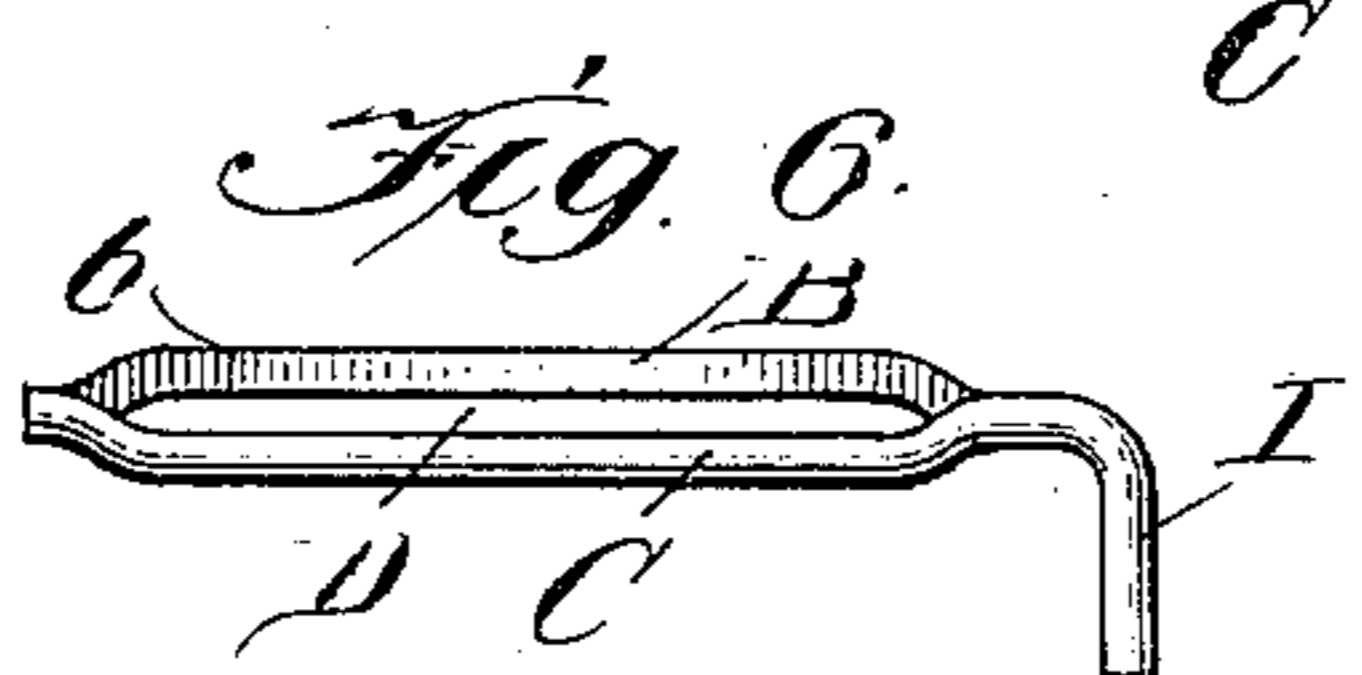
*Fig. 3*



*Fig. 5.*



*Fig. 6.*



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*attys.*

# UNITED STATES PATENT OFFICE.

FRANK KINSEY, OF CHICAGO, ILLINOIS.

KEY FOR ROLLING UP COLLAPSIBLE TUBES.

951,132.

Specification of Letters Patent.

Patented Mar. 8, 1910.

Application filed February 1, 1909. Serial No. 475,382.

*To all whom it may concern:*

Be it known that I, FRANK KINSEY, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have  
5 invented a certain new and useful Improvement in Keys for Rolling up Collapsible Tubes, and declare the following to be a full, clear, and exact description of the same, such  
10 as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

It is common to package many kinds of  
15 semi-fluid or pasty commodities in collapsible tubes, there being an outlet at one end of such a tube and the user gradually and progressively collapsing the tube from the opposite end to force the contents from the  
20 outlet. Unless such a tube is completely collapsed in rear of the contents there will be more or less back-flow of the contents into the collapsed portion on account of the resistance to the forward movement in the  
25 tube and through the discharge outlet. In endeavoring to effect a complete collapse of portions of the tube the user often manipulates the tube until it cracks, or until the sealed end opens partially. If there is a  
30 break in the tube or the seam at the closed end opens partially there is, of course, a waste of the contents, the exterior of the tube becomes soiled and the entrance of air into the tube damages the contents more or  
35 less.

The object of my invention is to provide a novel key whereby tubes of the character described may be collapsed quickly, completely, effectively, and without soiling, and  
40 the discharge of the contents be delicately controlled by simply flattening the tube and progressively rolling it upon the key as the contents are used.

The various features of novelty whereby  
45 my invention is characterized will hereinafter be pointed out with particularity in the claims; but, for a full understanding of my invention and of its objects and advantages, reference may be had to the following detailed description taken in connection with  
50 the accompanying drawing, wherein:

Figure 1 is a perspective view of a collapsible tube fitted with a key arranged in accordance with a preferred form of my invention; Fig. 2 is a view on a larger scale showing a portion of the lower end of the tube,

the key and adjacent portions of the tube being shown in cross section; Fig. 3 is a plan view of the key itself; and Figs. 4, 5, and 6 are views similar to Fig. 3 showing other  
60 modifications.

Referring to the drawing, A represents a key formed of a piece of wire, which term is used to designate a long, thin piece of metal whether in the shape of a bar or rod.  
65 The wire is split longitudinally from a point near one end to a point between the ends and the two members B and C, thus formed, are spread apart so as to form between them a long, narrow slot D of uniform width from  
70 end to end. The separation of the members B and C is preferably made so that their inwardly directed faces *b* and *c* lie in approximately the same plane, thereby producing a slot which is bounded by sharp  
75 edges. The slot is made long enough to receive the flattened end *e* of a collapsible tube E. It will be seen that when the end of the tube is inserted through the slot and then folded over one of the members bound-  
80 ing the slot, the key is in position to flatten the tube progressively and roll it up as the key is turned. Since the key extends entirely across the tube it always presses the flattened walls thereof together along a  
85 straight line extending across the tube and leaves no room for any back-flow. Furthermore, as the tube is rolled up it is sealed more and more completely at its closed end so that all danger of leakage at this point  
90 disappears. By expanding the two members of the key body in the manner described, sharp edges are left which will bite into the material of the tube and provide a firm hold for the key when the turning operation is  
95 first started. This is quite an important feature since collapsible tubes are usually made of some soft metal containing lead in their composition and their surface, therefore, acts very much as if it were greased,  
100 making it easy for a key to slip from it instead of taking hold. It is also necessary that the slot be of uniform width throughout its entire length, in order that the tube may be evenly rolled up without leaving  
105 openings at any point between its collapsible walls through which back-flow may occur.

That portion of the key heretofore described is common to all of the four modifications illustrated, the difference between  
110 the several forms of keys lying in their operating members or levers. It is evident

that one end of the wire of which the key is formed may be bent into a loop or ring lying in the plane of the members B and C as indicated at F in Fig. 5. The member F affords a very good finger-hold whereby the key may be readily manipulated and controlled so as to maintain it at right angles to the axis of the tube during the rolling operation. In order to secure the best results from the use of these keys and, furthermore, in order to save the user the trouble of placing the keys on the tubes, it is desirable that keys of this kind be put on the tubes before they reach the hands of the user. Where the tubes are to be sold with keys attached it is necessary, or at least highly desirable, that the length of the keys be but little greater than the width of the collapsed ends of the tubes, in order that the cartons or other receptacles in which the tubes are packaged need not be made materially larger than has heretofore been necessary. Therefore, instead of providing a projecting ring or loop as illustrated in Fig. 5, it will be preferable in many instances to make use of an operating handle or lever which will lie closely beside the tube to which the key is attached. Such handles or levers are indicated at G and H in Figs. 1 to 4. The member G is simply the free end of the wire bent substantially at right angles to the slotted portion and at right angles to the plane of the faces *b* and *c*. Since it is impossible, or at least impracticable, to maintain the uniform width of the slot just at the ends thereof, there will be short contracted portions at the ends of the slots in keys of the character described. If the main portion of each slot is made just wide enough to receive the end of a tube conveniently, the short contracted portions will not be wide enough and the slot must, therefore, be made slightly longer than the width of the collapsed tube.

In order to avoid the necessity of unduly lengthening the key because of the contracted ends of the slot the member G may begin at a point *d* within one end of the slot so that the contracted portion of the slot at one end will be contained within the handle or lever and, therefore, this member may lie closely beside the tube. Furthermore, if desired, the handle or lever may be curved inwardly so as to conform approximately to the outline of the lower end of the tube; for it will be seen that if the handle or arm were straight and extended at right angles to the body portion of the key its upper end would stand away from the cylindrical portion of the tube, although the lower end might lie in contact with the edge of the flattened portion. The key indicated in Fig. 4 is just like the one shown in Figs. 1 to 3, except that the arm or handle H extends at right angles to the body portion of

the key and begins at a point just beyond the end of the slot. A key of this kind is necessarily slightly longer than a key of the form shown in the first three figures and having the same capacity.

The arrangement shown in Fig. 6 is similar to both of those shown in Figs. 4 and 5. The arm I is similar to the arm H but lies in a plane at right angles to that containing the latter arm. A key of this kind cannot be made quite as short even as a key of the same capacity made like Fig. 4 because of the danger of distorting the slot in bending the handle or lever laterally in the plane of the members B and C; it is, however, shorter and cheaper than that shown in Fig. 5.

Although all of the keys have not the same advantage as to size, cheapness and ease of manipulation, yet each is capable of collapsing a tube when and as desired; without waste of the contents either through leakage, back flow into the collapsed portion, or through inability of the tube to discharge all of its contents; and without causing the exterior of the tube to become unclean or to present an unsightly, battered appearance.

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

1. A key consisting of a wire split longitudinally for a portion of its length only so as to leave the ends unseparated; the separated portions being spaced apart so that their inner faces lie parallel with each other in approximately the same plane with their adjacent edges at some distance apart, thereby forming a long, narrow slot bounded on two sides by sharp parallel edges.

2. A key consisting of a wire split longitudinally for a portion of its length only so as to leave the ends unseparated; the separated portions being spread apart so that their inner faces lie parallel with each other in approximately the same plane with their adjacent edges at some distance apart, thereby forming a long, narrow slot bounded on two sides by sharp parallel edges; and one end of said wire being bent at right angles to form a handle or lever.

3. A key consisting of a wire split longitudinally for a portion of its length only so as to leave the ends unseparated; the separated portions being spread apart so that their inner faces lie parallel with each other in approximately the same plane with their adjacent edges at some distance apart, thereby forming a long, narrow slot bounded on two sides by sharp parallel edges; one end of said wire being bent at right angles to said plane to form an operating handle or lever.

4. A key consisting of a wire split longitudinally for a portion of its length only so as to leave the ends unseparated; the

separated portions being spread apart so that their inner faces lie parallel with each other in approximately the same plane but at some distance apart, thereby forming a  
5 long, narrow slot bounded on two sides by sharp parallel edges; one end of said wire being bent at right angles to said plane at a point within one end of said slot.

10 5. In combination, a collapsible tube having its end flattened; and a key consisting of a wire split longitudinally so as to leave the ends unseparated, the separated portions being spaced apart so that their inner faces

lie parallel with each other in approximately the same plane with their adjacent edges  
15 at some distance apart, thereby forming a long narrow slot bounded on two sides by sharp parallel edges; the flattened end of said tube being threaded through said slot and wound about the key.

20 In testimony whereof, I sign this specification in the presence of two witnesses.

FRANK KINSEY.

Witnesses:

WM. F. FREUDENREICH,  
HARRY S. GAITHER.