

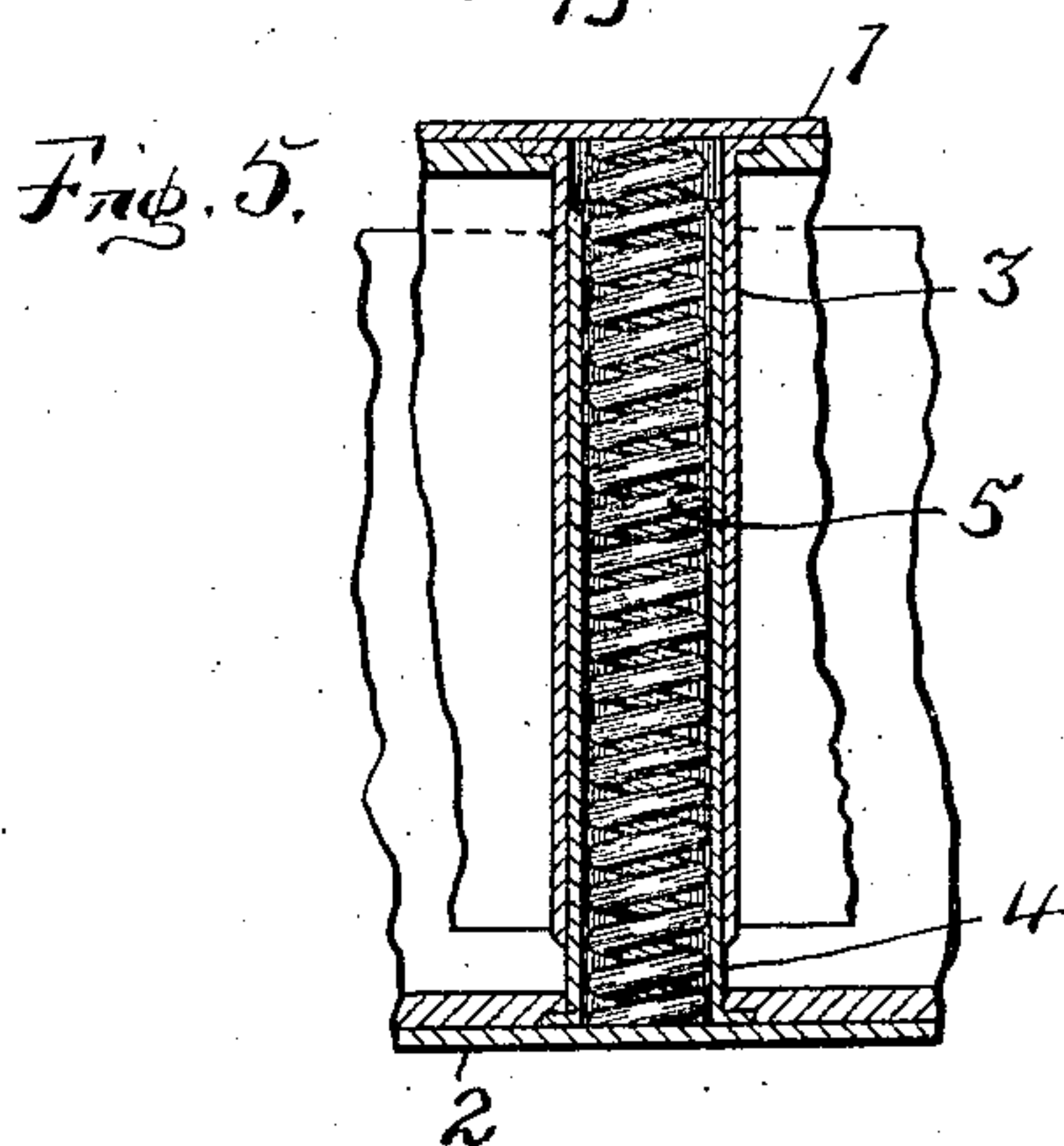
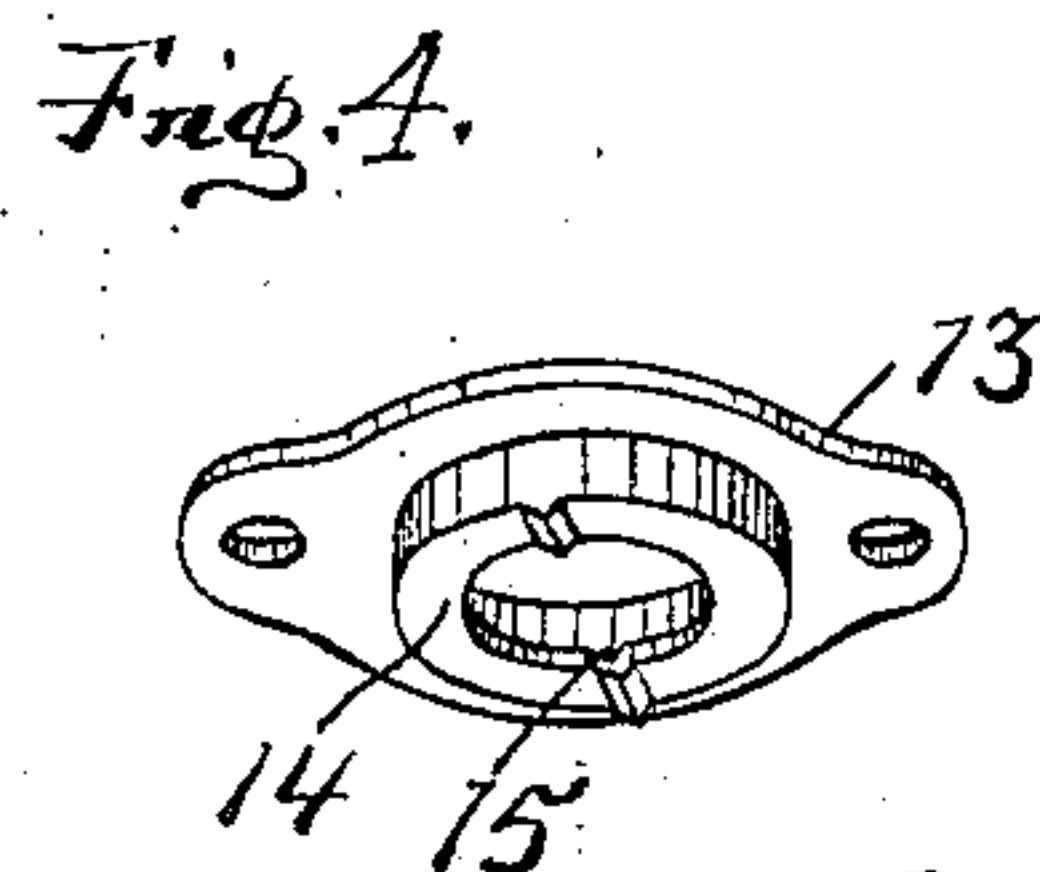
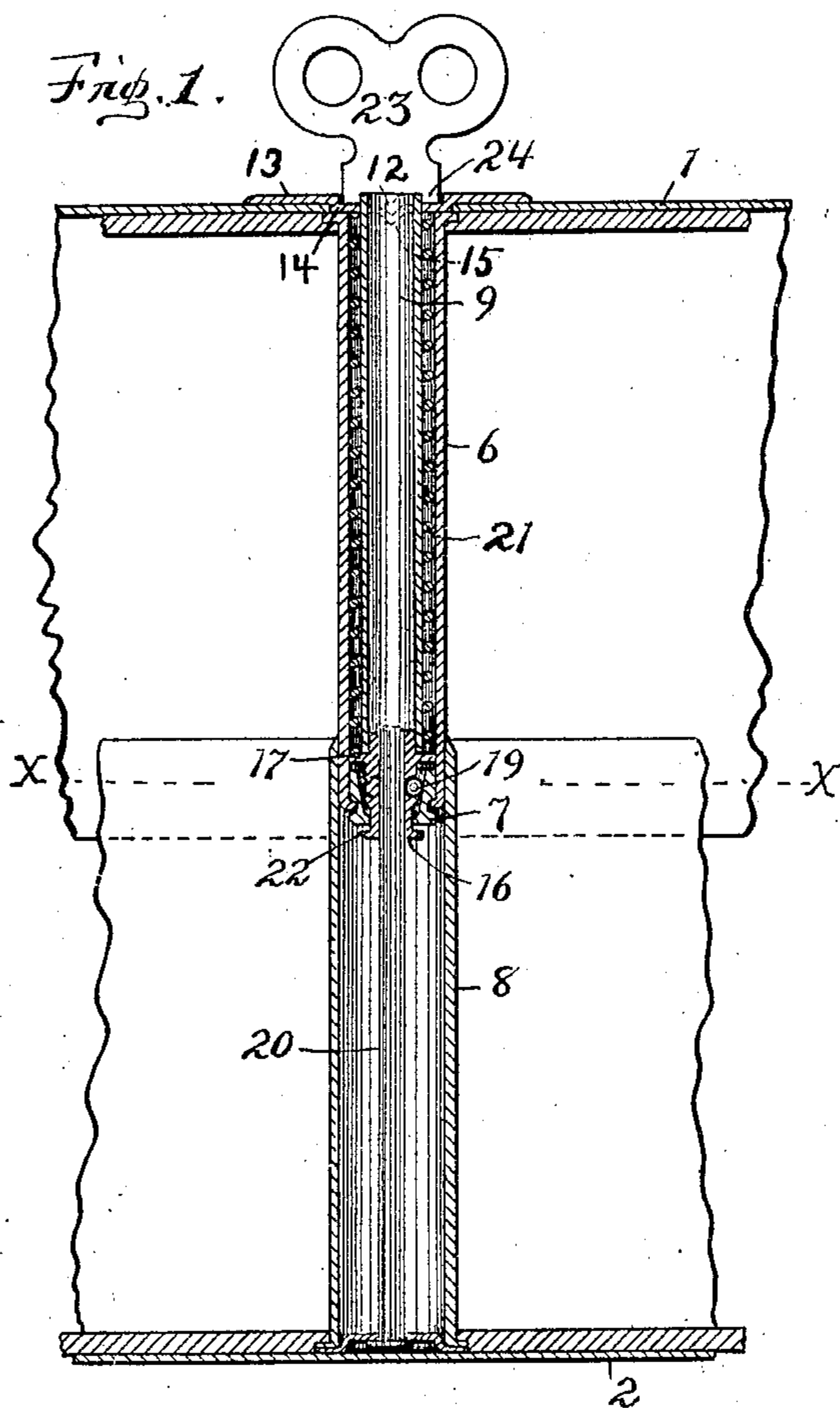
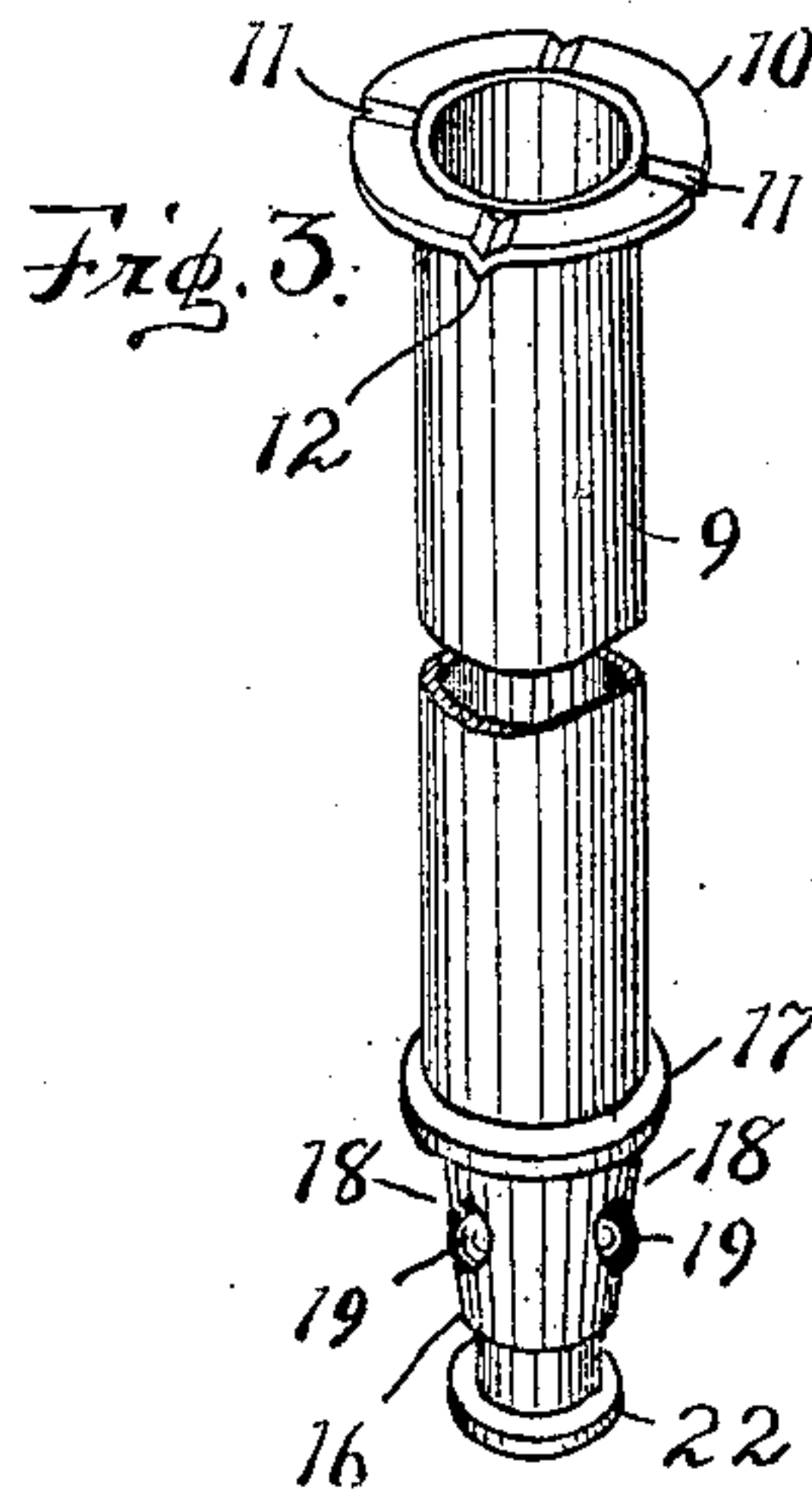
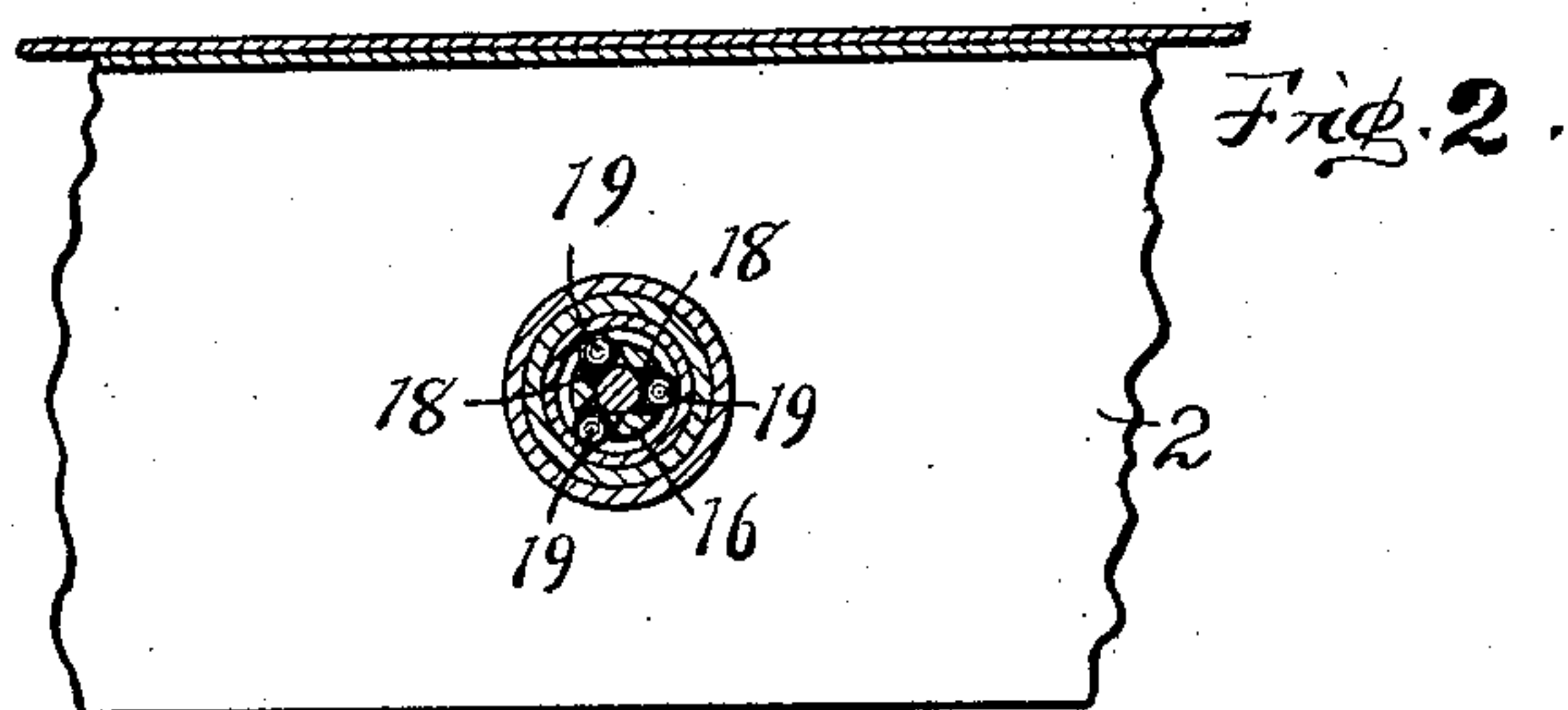
No. 840,963.

PATENTED JAN. 8, 1907.

A. I. RISSE & O. F. F. T. REINHARDT.

LOCK FOR LOOSE LEAF BINDERS.

APPLICATION FILED APR. 17, 1905.



WITNESSES:

J. M. Dickens.  
Herman J. Lampke

Arthur I. Risse  
and  
Otto F. F. T. Reinhardt

INVENTORS

BY W. G. Burns

ATTORNEY



# UNITED STATES PATENT OFFICE.

ARTHUR I. RISSE AND OTTO F. F. T. REINHARDT, OF CHICAGO, ILLINOIS,  
ASSIGNORS TO ROBERT H. CARNAHAN, OF INDIANAPOLIS, INDIANA.

## LOCK FOR LOOSE-LEAF BINDERS.

No. 840,963.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed April 17, 1905. Serial No. 255,914.

*To all whom it may concern:*

Be it known that we, ARTHUR I. RISSE and OTTO F. F. T. REINHARDT, citizens of the United States of America, and residents of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Locks for Loose-Leaf Binders, of which the following is a specification.

This invention relates to improvements in locks for loose-leaf binders; and the object thereof is to afford simple and effective means for securing the two telescoping sections in any position within the scope of the movement of one section relative to the other. We accomplish this object by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section through the locking mechanism. Fig. 2 is a transverse section through the locking mechanism on the line  $xx$  of Fig. 1. Fig. 3 is a perspective view of the revolving barrel, showing the binding-balls in connection therewith. Fig. 4 is a perspective view of the yoke, and Fig. 5 is a vertical section through one of the guide-posts.

Similar numerals of reference indicate corresponding parts throughout the several views, and, referring now to the same, 1 and 2 are binding-sections, one telescoping the other, and 3 represents guide-tubes secured to the section 1, which telescope corresponding guide-tubes 4, the latter being secured to the section 2. A spring 5 is arranged within each pair of said tubes 3 and 4 and acts oppositely against said sections 1 and 2, and thereby tends to hold said sections distent.

The lock consists of a tube 6, which depends centrally from the top of the section 1 and is fixed thereto, and in the lower end of said tube 6 is a bushing 7, which has a gradually-tapering bore with the lesser diameter at the lower end thereof. The said tube 6 extends into a corresponding tubular shield 8, which is fixed at its lower end to the section 2, and said tube 6 is longitudinally movable therein. 9 is a revoluble tube having at its top a flange 10, in which are made diametrically opposite slots 11 and also diametrically opposite lugs 12, which project downward from the under side of said flange. The said tube 9 extends down through a yoke 13, which is secured in the top of the section 1,

adjacent the top of the tube 6, so that the tube 9 will range centrally within the tube 6. The said yoke 13 has an internal flange 14, in the upper surface of which are made diametrically opposite depressions 15, which are adapted to receive the lugs 12 on the collar of the tube 9 when said tube is suitably turned. To the lower end of said tube is secured a head 16, which has an annular flange 17 and a central vertical bore throughout its length. Recesses 18 are made in said head, which extend through its sides into its bore, and into each of the recesses is loosely arranged a binding-ball 19. When the tube 9 is in place, the head 16 extends through the bushing 7, and said balls come into contact with the tapering wall of said bushing, so that when the tube 9 is moved downward the said balls will become directed inwardly. A stem 20 is rigidly fixed at its lower end to the section 2 and extends centrally through said shield 8 and head 16, and when said balls are pressed inwardly, as above indicated, they will bind in connection with the stem 20 and prevent the sections 1 and 2 from spreading. A spring 21 is arranged within the tube 6 and external of the tube 9 and acts against the lower face of the flange 14 on said yoke and upon the upper face of the flange 17 on said head. A projection 22 extends from the lower end of the head 16 a short distance beneath the bushing 7 and is adapted to limit the upward movement of said head and tube 9 relative to the tube 6 by coming into contact with the lower end of the bushing 7.

In the operation of this invention the tube 9 is turned by means of a key 23, the nibs 24 of which engage in the slots 11 in the flange of said tube, and when turned in the yoke until the lugs 12 register with the depression 15 the tube 9 will move slightly downward because of the action of the spring 21. Thus the balls 19 are accordingly carried downward by the head 16, so as to become wedged between the inner wall of the bushing 7 and the adjacent surface of the stem 20. If pressure is now applied to the upper section 1, so as to force it downwardly upon the section 2, the balls 19 will slip upon the stem 20; but if force is applied in the opposite direction the said balls will become bound between said bushing and stem, and thereby prevent the tube 6 and section 1 connected therewith from rising relative to said stem. If the



tube 9 is turned so that the lugs 12 are moved from said depressions and onto the upper face of the flange 14 of said yoke, the tube 9 and head 16 connected therewith will  
 5 thereby be moved upward relative to the tube 6 and bushing 7, and the balls 19 will accordingly be raised, and thereby prevented from becoming wedged, as hereinbefore stated. When the balls are thus lifted, the  
 10 section 1 may be raised or lowered at will without interference on the part of the locking mechanism; but when the lugs 20 register with said depressions the action of the spring 21 is exerted downward upon said balls,  
 15 which causes the same to bind against the stem 20 and prevent said sections from spreading.

Having described our invention, what we claim as new, and desire to secure by Letters  
 20 Patent, is—

1. In locking mechanism for loose-leaf binders, two binding-sections, one telescoping the other; guide-tubes secured to each of said sections, the guide-tubes of one section  
 25 telescoping the corresponding tubes of the other section; springs within said guide-tubes and acting against said sections to distend the same; a tube secured to the upper section and having a bushing in connection  
 30 with its lower end, the bore of said bushing being tapered downwardly; a yoke secured to said upper section coincident with said tube and having an internal flange provided with diametrically opposite depres-  
 35 sions in its upper face; a revoluble tube extending down through said yoke and the former tube, having an external flange at its top with diametrically opposite slots and also diametrically opposite lugs which de-  
 40 pend from its under face, the said lugs being adapted to enter the said depressions in said yoke; a head fixed at the lower end of the revoluble tube, having a central vertical bore and radial recesses extending through its  
 45 sides into its bore; a series of binding-balls arranged respectively in said recesses; a stem fixed at its lower end to said lower section and extending up through the bore of said head; and a spring surrounding the revoluble tube  
 50 acting to hold the same in its lowermost position relative to said former tube.

2. In locking mechanism for loose-leaf binders, two binding-sections, one telescoping the other; a fixed tube depending from  
 55 the upper of said sections; a bushing secured in the lower end of said fixed tube, the bore of which tapers downwardly; a yoke secured to said upper section coincident with said

fixed tube, and having an internal flange provided with diametrically opposite depres- 60  
 sions in the upper face; a revoluble tube extending down through said yoke and fixed tube, having an external flange at its top with slots and also diametrically opposite  
 65 lugs which depend from its under face, the said lugs being adapted to enter the said depressions in said yoke; a head fixed at the lower end of the revoluble tube, having a central vertical bore; a stem fixed at its lower  
 70 end to the lower of said sections, extending up through the bore of said head; a series of binding-balls in connection with said head adapted to be come bound between said bushing and stem when said revoluble tube is in  
 75 lowermost position relative to said fixed tube; and a spring acting to hold the revoluble tube downward.

3. In locking mechanism for loose-leaf binders, two binding-sections, one being movable relative to the other; a fixed tube 80  
 depending from one of said sections; a stem fixed to the other section and extending centrally into said fixed tube; a bushing having a downwardly-tapered bore in fixed relation with said tube; a revoluble tube within said 85  
 fixed tube with means in connection therewith for adjusting the same longitudinally therein; a head in fixed relation with the revoluble tube extending in said bushing; a series of binding-balls in loose connection 90  
 with said head adapted to become bound between said bushing and stem when the revoluble tube is properly adjusted, and a spring acting against said head tending to force said balls in binding position. 95

4. In locking mechanism for loose-leaf binders, two binding-sections, one being movable relative to the other; a fixed tube depending from one of said sections and hav- 100  
 ing a taper-bored bushing; a stem in connection with the other section and extending through said bushing into said fixed tube; a revoluble tube within said fixed tube having locking means in connection therewith to en- 105  
 gage said stem to prevent said sections from moving from one another; and means to adjust said revoluble tube to thereby release said locking mechanism.

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

ARTHUR I. RISSER.

OTTO F. F. T. REINHARDT.

Witnesses:

ROBT. A. ETIE,

J. E. STOWELL.