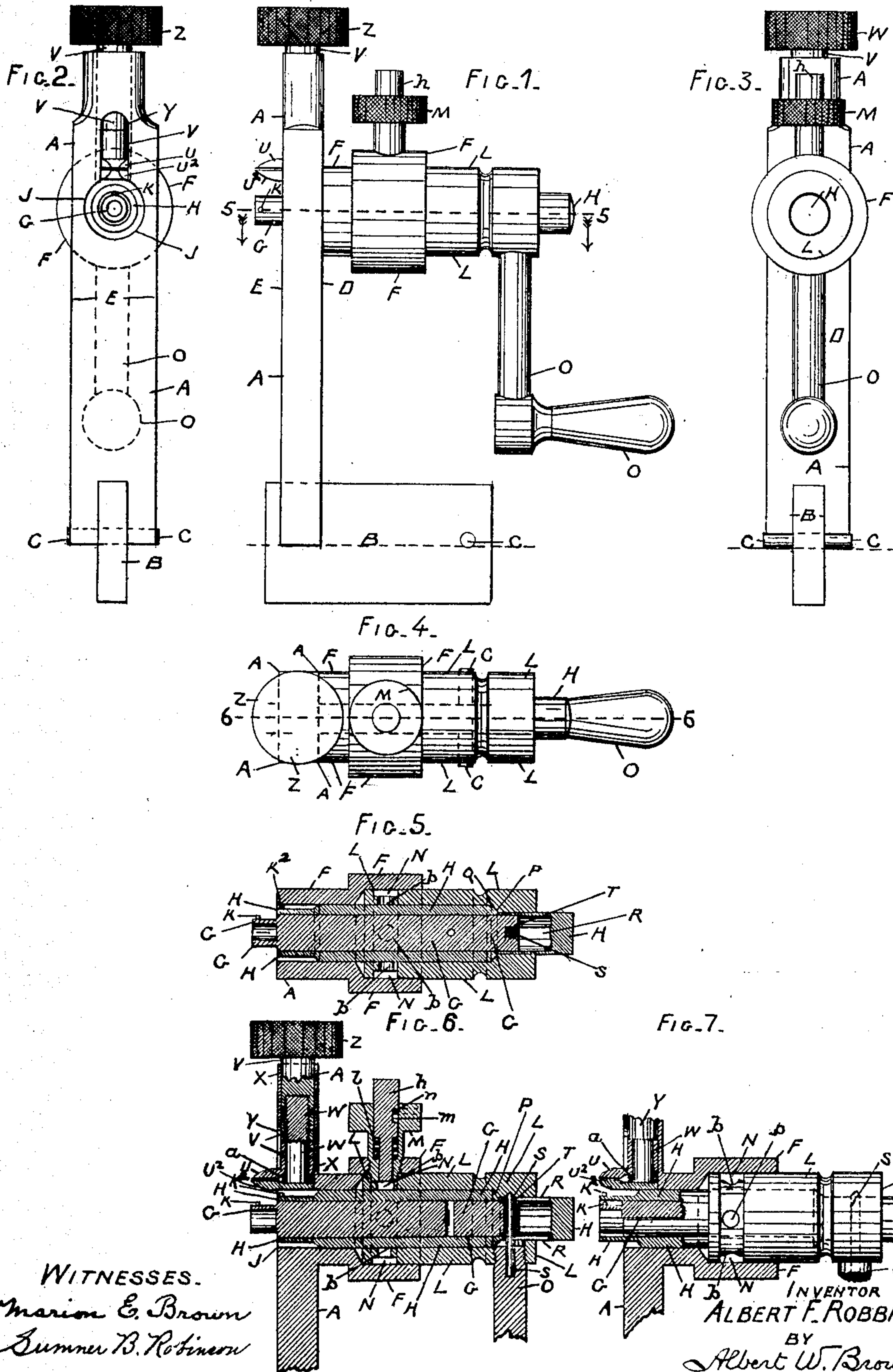


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MAIN SPRING WINDER.  
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916,197.

Patented Mar. 23, 1909.



WITNESSES.  
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# UNITED STATES PATENT OFFICE.

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## MAINSRING-WINDER.

No. 916,197.

Specification of Letters Patent.

Patented March 23, 1909.

Application filed March 30, 1908. Serial No. 424,274.

*To all whom it may concern:*

Be it known that I, ALBERT F. ROBBINS, a citizen of the United States, residing at the city of Waltham, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improved Mainspring-Winder, of which the following is a specification.

This invention relates to an improved tool for the winding of mainsprings of watch, clock and other like movements, preparatory to their being placed in the mainspring barrel, or otherwise in position in the watch, clock or other movement which is to be run thereby.

The mainspring winder of this invention in its preferable form comprises a stock and two axially coincident rotatory-arbors, the one adapted to be moved, within a given limit, lengthwise on the other, and each adapted for a mainspring, at one end-portion to be detachably attached to it and both adapted to be conjointly rotated, means to rotate said arbors, opening and closing gripping-jaws to grip and to release the mainspring at its end-portion opposite to that attached to the arbor, and means to hold said arbors against and to release them to rotation, as hereinafter fully described and pointed out in the claims.

In the accompanying drawings, a tool or mainspring winder of this invention and suitable for winding mainsprings of watch movements is illustrated, but on a scale double its proper size.

Figure 1 is a side elevation of the tool. Fig. 2 is a front elevation view and Fig. 3 is a rear elevation view. Fig. 4 is a plan view. Fig. 5 is a horizontal sectional view taken on dotted line 5—5, Fig. 1. Fig. 6 is a central vertical sectional view taken on dotted line 6—6, Fig. 4. Fig. 7 is in part a central vertical sectional view and in part a side elevation, in detail, as will hereinafter appear.

In the drawings, A is a vertical narrow and flat rectangular shaped bar and B is a vertical flat and rectangular shaped plate which is fixed to and crosses, at a right angle, the lower end-portion of said bar and projects from the opposite side faces D and E thereof.

One outer end-portion of the plate B has fixed horizontal pins C and these pins project from its opposite sides. The bar A, plate B and pins C, as one whole, constitute the stock of the tool of this invention and this stock, by its plate B, is placed in a vise to hold it and so as to rest by the lower end face of the bar B and the cross-pins C upon the top of the jaws, and in this position it is secured by tightly closing the jaws of the vise on the portion of the bar B which is then between them.

F is a horizontal tubular-hub projecting at a right angle from the rear face D of bar A at its upper end-portion. This hub F is open throughout its length and at both ends and within and axially coincident with it are two horizontal arbors G and H, the one G being inside of the other H. Each arbor G, H, at a corresponding end-portion which is toward the opening J of the bar A, has a radial hitch-pin K, K<sup>2</sup>, respectively, and each of these pins is suitable for one end of a mainspring, by means of the usual hole therein, to be attached to it. The outer arbor H, within given limits and as will hereinafter appear, is capable of a forward and backward movement upon and lengthwise of the arbor G and of the hub F. In such movements of the arbor H its end-portion having the hitch-pin K<sup>2</sup> passes into and out of the open end J of the bar A and over the hitch-pin K of the inner arbor G, and each arbor is suitably reduced in external diameter and also the extent of the radial projection of its hitch-pin is such as to freely admit of said movements of the arbor H, all as plainly shown, Figs. 2, 5, 6 and 7.

L is a horizontal rotatory-sleeve projecting from an open end of the hub F and the end which is opposite to the end-opening J of the bar A. This rotatory-sleeve L is axially coincident with the hub F and it loosely surrounds the outer arbor H for a portion of its length and, at one end-portion, it is entered into the hub F and detachably attached thereto by a cross-pin having a milled-head M. The milled headed cross-pin screws into and through the hub and enters, at its inner



end, into a peripheral way or groove N of said sleeve L and so that it will hold said sleeve to, and against lengthwise movement in the hub while permitting it to be freely rotated within the hub.

O is a crank-handle detachably attached to sleeve L for rotating it.

The outer-arbor H, near its end-portion which is opposite to its end-portion having a hitch-pin K, has an outer peripheral shoulder P, which, on a lengthwise movement of the arbor H in a direction to project it from the stock A at the opening J, abuts against an inner shoulder Q of the rotatory-sleeve L and thus its said movement in that direction is limited. The lengthwise movement of the arbor H, in a direction opposite to that just above mentioned, is limited by the length of the slots R of the arbor H acting in cooperation with a diametrical-pin S, which passes through said slots and through a diametrical-hole T of the inner-arbor G. This pin S, at its opposite end-portions, is carried by and engaged with the rotatory-sleeve L, as shown in Fig. 6.

The bar A, at its end-portion having the arbors G and H, has two horizontal gripping-jaws U, U<sup>2</sup>, one over the other. These jaws both project from the front face E of the bar A and above the plane of the arbors G, H, at their end-portions having the hitch-pins K, K<sup>2</sup>, and they are arranged to cooperate with each other so as to hold the end-portion of the mainspring which is opposite to that end-portion attached to an arbor G, or H, as aforesaid. Further both jaws U, U<sup>2</sup>, extend through a rectangular vertical slot Y at the front side of the bar A, and their heel-ends are within a vertical tubular-socket X of the bar A, and into this socket said slot Y opens and the jaws normally rest on the lower end thereof, at which end the slot joins the opening J, before referred to, of the bar A. The socket X contains an axially coincident and solid vertical inner stem W, which carries, at its lower end, the lower jaw U<sup>2</sup> of the jaws U, U<sup>2</sup>, and is surrounded by an axially coincident vertical tubular-stem V, which, between its upper and lower ends, is horizontally divided into upper and lower sections or parts, (Figs. 6 and 7) and the lower section carries, at its lower end, the upper jaw U of the jaws U, U<sup>2</sup>. The upper section of the outer tubular-stem V and the upper end-portion of the inner solid-stem W are relatively adapted for the former to be screwed on and off of the latter and so, in the one instance, to secure a movement of the upper jaw U toward the lower jaw U<sup>2</sup> of the jaws U, U<sup>2</sup>, and thus a closing of the two upon each other, or upon whatever may be placed between them, and, in the other instance, to open the upper jaw U from the lower jaw U<sup>2</sup>, or from whatever may be and is

held between the jaws, and thus secure its release. In both the opening and closing of the jaws U, U<sup>2</sup>, as above stated, the jaws are, by the vertical side edges of the slot Y, held against sidewise or lateral movement, and, if desired, to assist in the opening movement of the jaws U, U<sup>2</sup>, as aforesaid, or, in other words, to secure an automatic lifting of the upper jaw U as the upper section of the stem V is screwed off of the stem W, a coiled-spring a may be applied and confined on the stem W between the jaws, Fig. 6. This spring a, however, is not necessary.

Z is a milled-head at the upper end of the outer stem V, for convenience in turning said stem to screw it off of the inner stem.

The rotatory-sleeve L of the hub F, at its peripheral-groove N, has a series of four equi-distant radial openings b; the screw-pin with the milled-head M which fastens said hub F to said sleeve L, as has been described, has a radial spring push-pin h which, when it is pushed in against the tension of its spring l, engages, by its inner end, the aperture b of the sleeve L which is then in line with it, and so thereby not only is the outer arbor H held but also the inner arbor G, because of the connection of the two with each other and with said sleeve as has been described, against rotation in either direction. The spring l of the push-pin h, which is a coiled-spring, surrounds the push-pin h and is confined, end to end, between a shoulder thereof and a shoulder of the screw-pin carrying the push-pin, as before stated, (Fig. 6), and the push-pin has a peripheral vertical slot m engaged by a radial-pin n of said screw-pin, and these in cooperation serve to limit the in and out movements of the push-pin h. The inward movement of the push-pin h is secured as is also its said engagement maintained by pressing on its outer and projecting end. The outward movement of the push-pin h is produced by the reaction of the spring l, and both of these movements of the pin are limited by the slot acting in cooperation with the pin n, as before mentioned.

In the use of the tool described, according as may be desired or requisite, either the outer H or inner arbor G may be used, first having properly adjusted the outer arbor as before explained therefor. The spring to be wound is then attached, at one end, as before explained, to the hitch-pin K of the arbor being used, and the other end is made fast between the jaws U, on which, through the crank-handle O, the arbor is rotated, whereby, as is plain, the spring is wound on and about the arbor, and when the winding is completed the spring push-pin h is pressed into and held in engagement with a hole b of the sleeve L and the tool is then removed from the vise, and it and the so-wound spring



are then properly presented to the barrel which is to hold the spring, and the push-pin then being released, the wound-spring is left free to open out and spring into position against the inner wall of the barrel, on which the spring is unhitched from the hitch-pin of the arbor and the tool thus freed is removed leaving the wound-spring in the barrel as desired.

10 Having thus described my invention, what I claim and desire to secure by Letters Patent is,

1. A mainspring winder, comprising a stock, and two axially coincident rotatory-arbors, the one adapted to be moved, within a given limit, lengthwise on the other, and each adapted for a mainspring, at one end-portion, to be detachably attached to it, and both adapted to be conjointly rotated, means to rotate said arbors, opening and closing gripping-jaws to grip and to release the mainspring at its end-portion opposite to that attached to the arbor, and means to hold said arbors against and to release them for rotation.

2. A mainspring winder, comprising a stock adapted to be held in and by the jaws of a vise, or other suitable implement at one end-portion, and at the other end-portion having a fixed stationary tubular-hub which is open at both ends and is at right angles to said stock, and a rotatory-sleeve in continuation of and projected from one open end of said hub and contained and made fast against lengthwise movement within, and axially coincident with said hub, a rotatory-arbor contained within and axially coincident with and rotating with said sleeve, and, at one end-portion, projected from an open end of said hub and from said stock, and at such projected end-portion adapted for one end-portion of a mainspring to be detachably attached to it, means to conjointly rotate said sleeve and its said contained arbor, opening and closing gripping-jaws to grip and to release the end-portion of the mainspring opposite to the end attached to the arbor, and means to hold said sleeve and arbor against and to release them for rotation.

3. A mainspring winder, comprising a stock adapted to be held in and by the jaws of a vise, or other suitable implement, at one end-portion, and at the other end-portion having a fixed stationary tubular-hub which is open at both ends and is at a right angle to said stock, and a rotatory-sleeve in continuation of and projected from one open end of said hub and contained and made fast against lengthwise movement within, and axially coincident with said hub, two axially coincident rotatory-arbors contained within and axially coincident with and conjointly rotating with said sleeve, the inner arbor at one end-portion projected from the open end

of said hub at said stock, and the other, or outer arbor free to be moved, within a given limit, lengthwise of said inner arbor and said sleeve, and both adapted, at a corresponding end-portion of each, for one end-portion of a mainspring to be detachably fastened to it, means to conjointly rotate said sleeve and said arbors, opening and closing gripping-jaws to grip and to release the end-portion of the mainspring opposite to that attached to the arbor, and means to hold said sleeve and said arbors against and to release them for rotation.

4. A mainspring winder, comprising a stock adapted to be held in and by the jaws of a vise, or other suitable implement, at one end-portion, and at the other end-portion having a fixed stationary tubular-hub which is open at both ends and is at a right angle to said stock, and a rotatory-sleeve in continuation of and projected from one open end of said hub, and contained and made fast against lengthwise movement within, and axially coincident with said hub, two axially coincident rotatory-arbors contained within and axially coincident with said sleeve, the inner arbor, at one end-portion, projected from the open end of said hub at said stock, and at its opposite end-portion provided with a diametrical hole, and the other, or outer arbor, free to be moved lengthwise of said inner arbor and said sleeve, and at its end-portion, corresponding to the end-portion of said inner arbor having said diametrical-hole, provided with diametrically opposite longitudinal slots, and both arbors adapted at their other and opposite end-portions for one end-portion of a mainspring to be detachably attached thereto, a diametrical-pin passing through said diametrical-hole of said inner arbor and said slots of said outer arbor, and engaged and held by said sleeve, means to rotate said sleeve and through it, said arbors, opening and closing gripping-jaws to grip and to release the end-portion of the mainspring opposite to the end attached to the arbor, and means to hold said sleeve and said arbors against and to release them for rotation.

5. A mainspring winder, comprising a stock, adapted to be held in and by the jaws of a vise, or other suitable implement at one end-portion, and at the other end-portion having a fixed stationary tubular-hub, which is open at both ends and is at a right angle to said stock, and a rotatory-sleeve in continuation of and projected from one open end of said hub and contained and made fast against lengthwise movement within, and axially coincident with said hub, a rotatory-arbor contained within and axially coincident with and rotating with said sleeve and having one end-portion projected from an open end of said hub and from said stock,



such projected end-portion adapted for one  
end-portion of a mainspring to be detachably  
attached to it, means to conjointly rotate  
said sleeve and its said contained arbor,  
5 opening and closing gripping-jaws to grip  
and to release the end-portion of the main-  
spring opposite to that attached to the arbor,  
and means to hold said sleeve and arbor  
against and to release them to rotation, the  
10 same consisting of a radial push-pin carried  
by said hub, and a radial-opening in said

sleeve for the inner end of said pin to enter  
into and so to be engaged with, and to be  
drawn out of and so to be disengaged from  
said sleeve.

In witness whereof, I have hereunto set  
my hand in the presence of two subscribing  
witnesses.

ALBERT F. ROBBINS.

Witnesses:

ROBERT ROGERSON,  
SAMUEL GRIFFIN.