

No. 667,651.

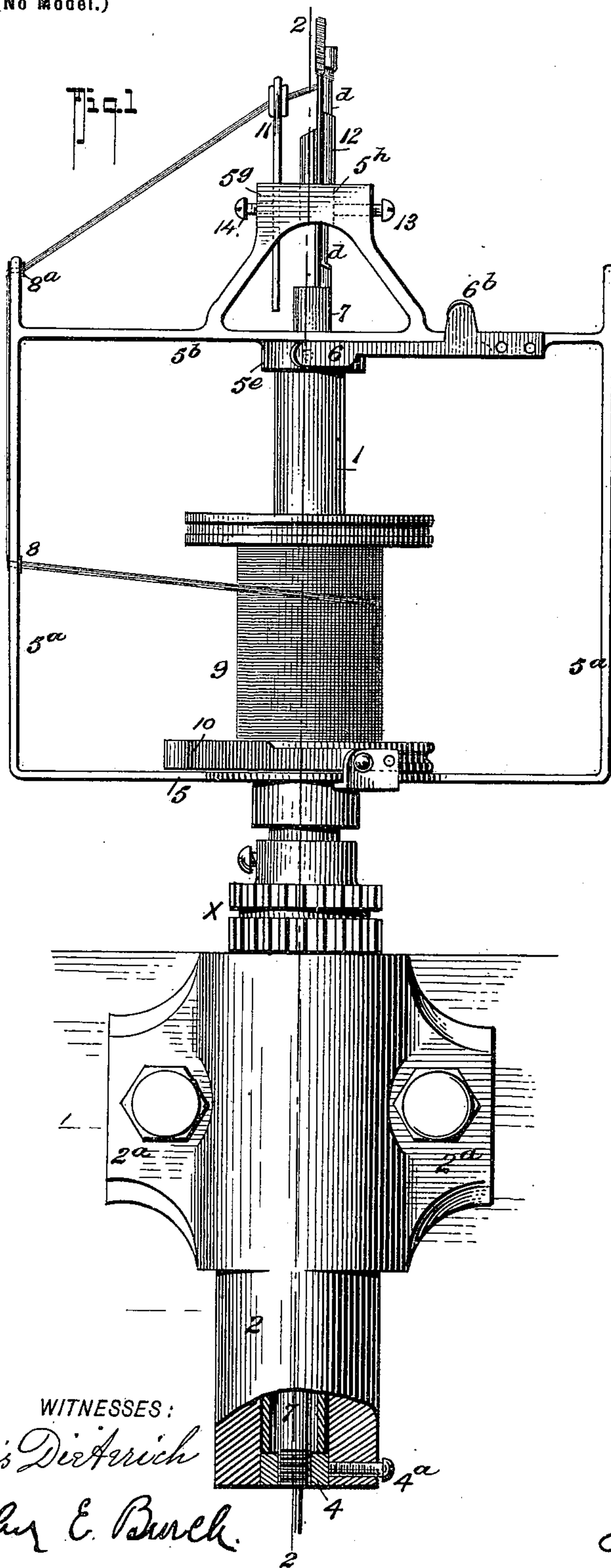
Patented Feb. 5, 1901.

C. J. CURRIER.  
MACHINE FOR COVERING WIRE.

(Application filed Sept. 14, 1900.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

*Louis Dietrich*

*John E. Burch*

INVENTOR  
*Calvin J. Currier*

BY  
*Fred J. Dietrich & Co.*  
ATTORNEYS

No. 667,651.

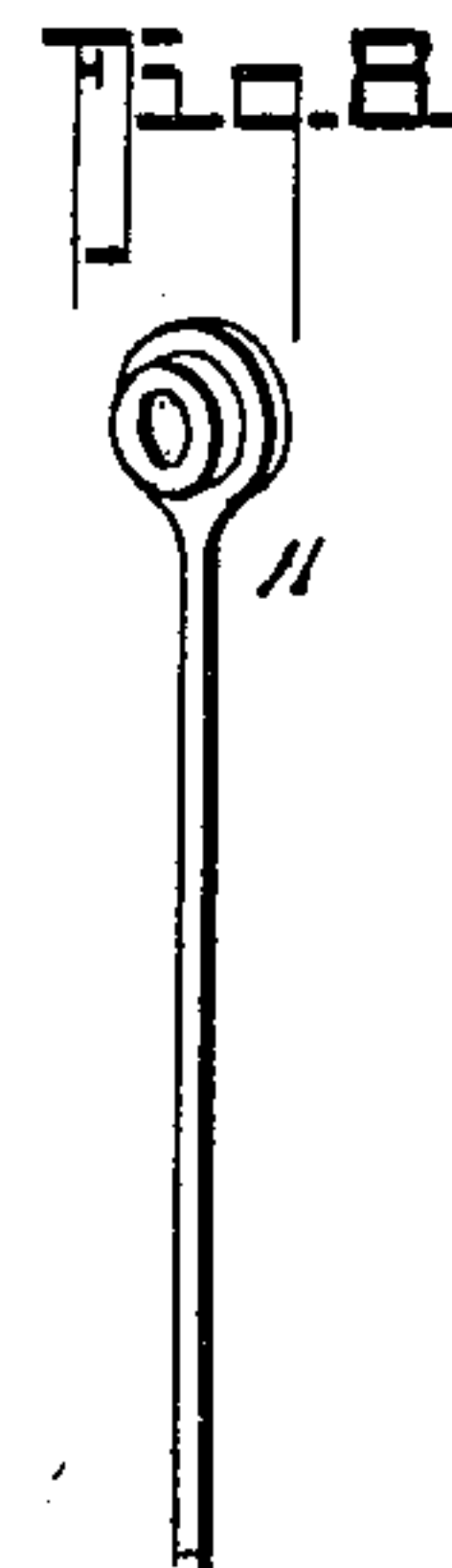
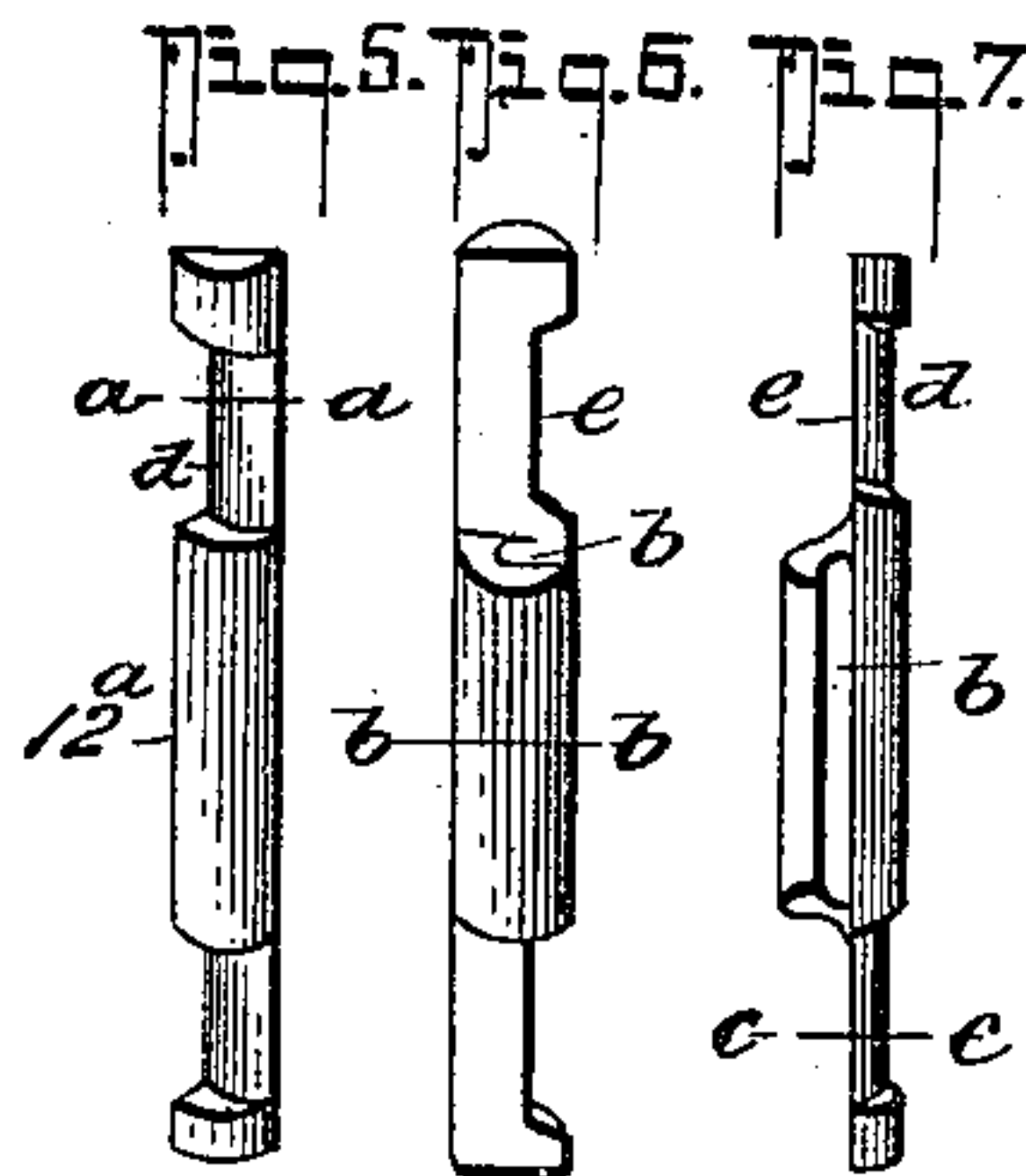
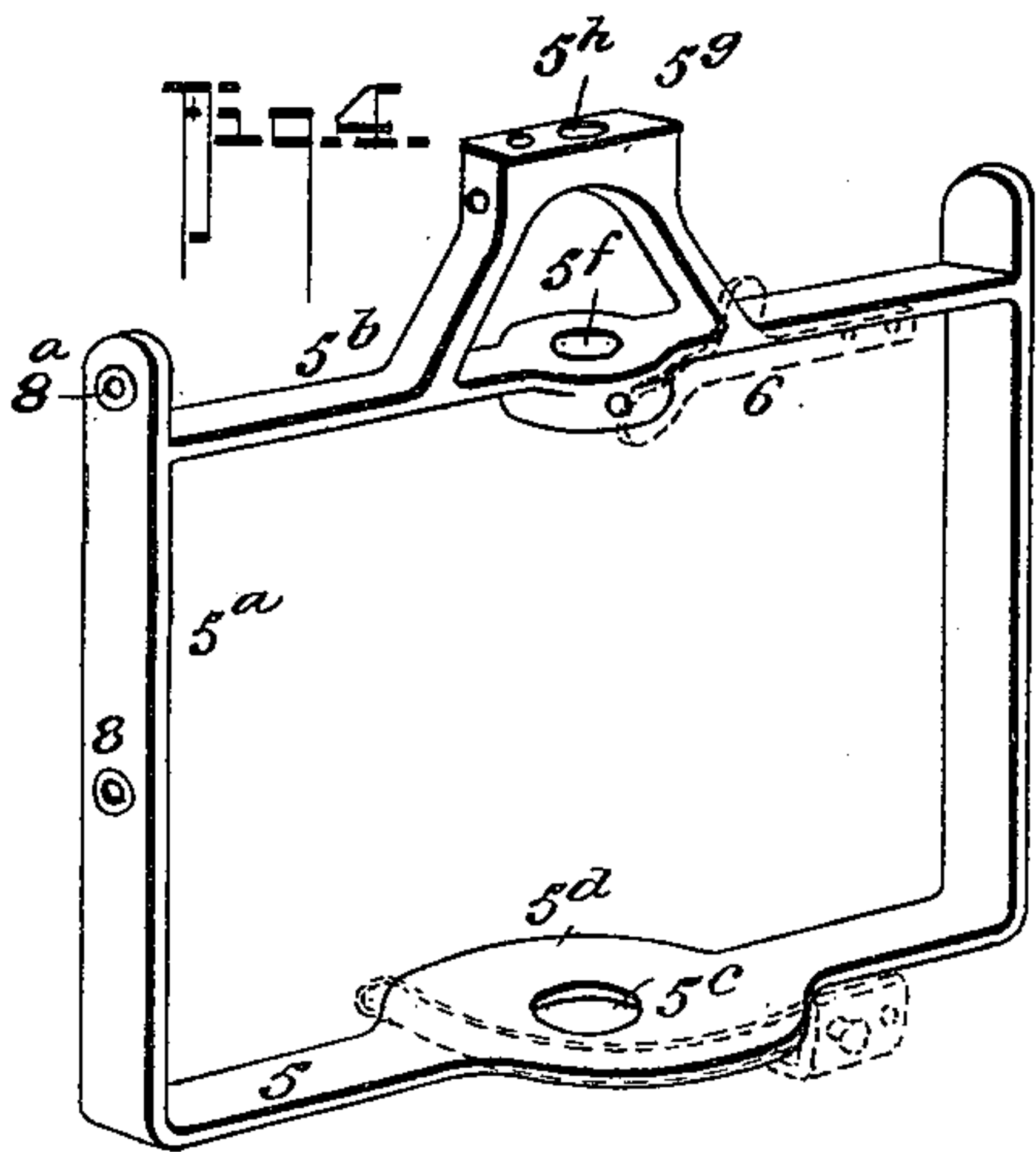
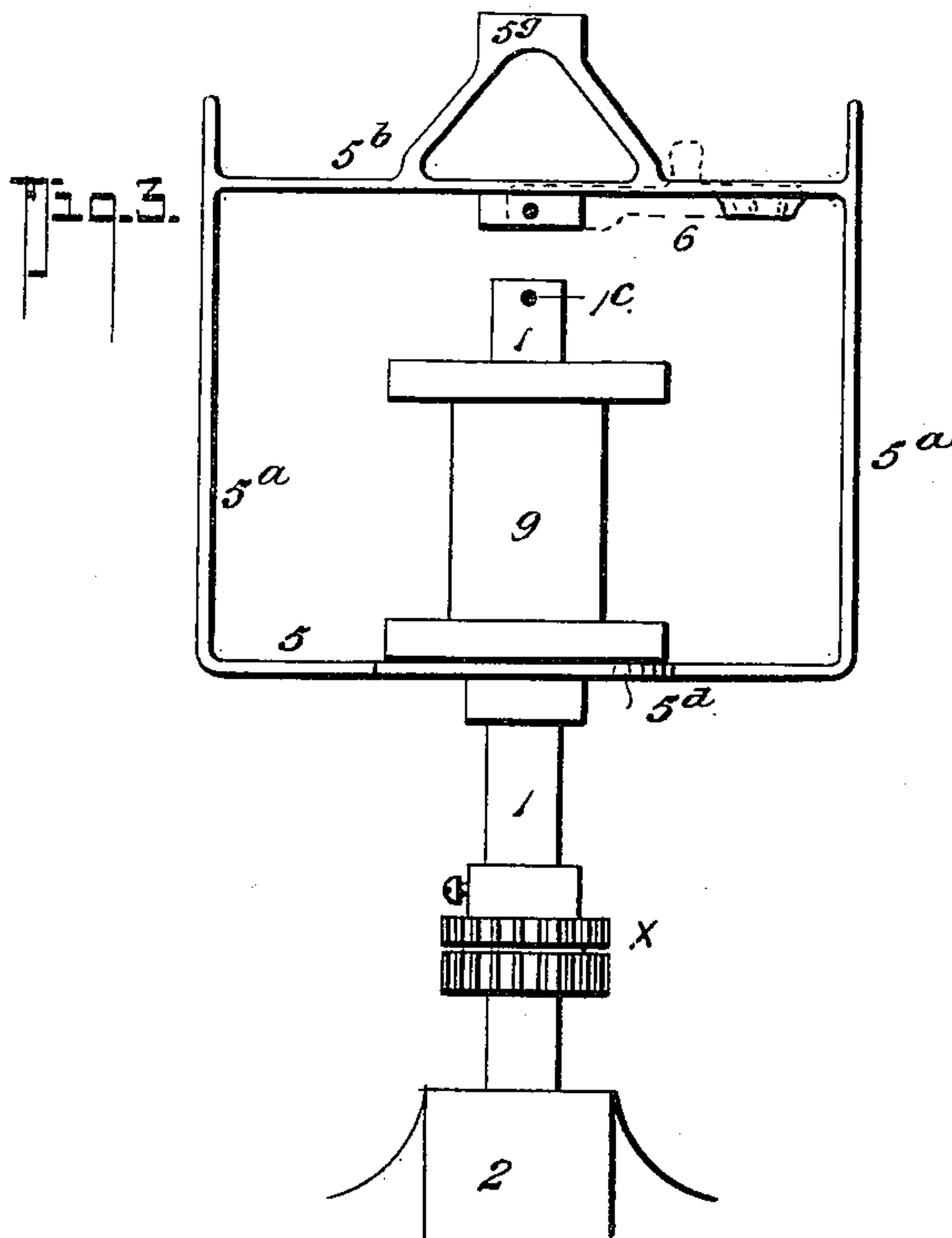
Patented Feb. 5, 1901.

C. J. CURRIER.  
MACHINE FOR COVERING WIRE.

(No Model.)

(Application filed Sept. 14, 1900.)

2 Sheets—Sheet 2.



WITNESSES:  
*Louis Dietrich*  
*John E. Busch*

INVENTOR  
*Calvin J. Currier*  
BY  
*Fred G. Dietrich & Co.*  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

CALVIN J. CURRIER, OF LISBON, NEW HAMPSHIRE, ASSIGNOR TO THE  
GRANITE STATE ELECTRICAL WORKS, OF NEW HAMPSHIRE.

## MACHINE FOR COVERING WIRE.

SPECIFICATION forming part of Letters Patent No. 667,651, dated February 5, 1901.

Application filed September 14, 1900. Serial No. 30,065. (No model.)

*To all whom it may concern:*

Be it known that I, CALVIN J. CURRIER, residing at Lisbon, in the county of Grafton and State of New Hampshire, have invented certain new and useful Improvements in Machines for Covering Wire, of which the following is a specification.

My present invention relates more particularly to that class of machines for winding thread or other material upon a core in the nature of a wirestrand or other material in which a flier-frame is utilized in connection with a bobbin that operates with the flier-frame and has movement relatively to said frame, and in which are included means for properly guiding the thread to wind around the wire as the wire is drawn or fed through the flier-frame.

Primarily my invention seeks to provide a rotary head or flier-frame of a very simple and inexpensive character capable of winding the thread about the wire at a maximum speed without danger of breaking or entangling the thread.

Another and essential feature of my invention lies in the novel correlation of a specially-constructed flier-frame and guide devices for spreading the thread on the core and the novel manner in which the flier-frame spindle and thread-guides are coöperatively arranged, whereby a rapid winding is obtainable and capable of being maintained without exerting undue or uneven tension on the thread during the winding operation.

My invention also comprehends in its complete make-up a special construction of bearing for the flier-frame spindle and means for interlocking the frame and its spindle, whereby the frame can be instantly removed from the spindle and the bobbin from the frame without the necessity of disorganizing any single part of the complete outfit.

This invention also includes a special construction of guide member for leading the thread properly around the wire core and for pressing the threads to wind flatwise and uniformly about the said wire core, said construction providing, as it were, a reversibly-adjustable guide capable of being quickly

set for guiding the thread about the wire core to wind the covering in either direction, as may be desired.

In its subordinate features my invention consists in certain details and novel features of construction, all of which will hereinafter be fully set out in the description and specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my wire-covering machine, parts being broken away to show the manner in which the spindle is journaled in the bearing. Fig. 2 is a vertical section taken practically on the line 2 2 of Fig. 1. Fig. 3 is a detail side elevation illustrating the manner in which the flier-frame and the bobbin are vertically slidable on the spindle. Fig. 4 is a detail view of the flier-frame or head proper. Figs. 5, 6, and 7 are respectively a front, a rear, and a side view of the combined reversible thread-guide and presser member. Figs. *a*, *b*, and *c* are respectively detail sections on the lines *a*, *b*, and *c* of Figs. 5, 6, and 7, and Fig. 8 is a detail view of the supplemental guide member hereinafter referred to.

Referring now to the accompanying drawings, in which like characters indicate like parts in all the figures, 1 designates a hollow spindle, the lower end of which is detachably held to rotate within a tubular casting 2, having suitably-projected apertured ears 2<sup>a</sup> to receive fastening-bolts for securing the casting to a fixed framing. The hollow spindle 1 has fixedly secured thereto the drive-gear *x*, in practice meshed with a large drive-gear 3, driven in any suitable manner.

It will be noticed the lower end of the spindle 1 has a long bearing in the casting 2, and said lower end is held upon a plug-disk 4, fitted in the lower end of the casting and held fast by the clamp-screw 4<sup>a</sup>, such arrangement of parts providing for conveniently fitting the spindle in its bearing and for quickly detaching the same therefrom when necessary, it also providing for conveniently applying a lubricant about the spindle and for housing the lubricant in such way that danger of



the winding-thread coming into contact therewith or in any way entangling about the spindle is entirely overcome.

Fixedly held on the upper end of the spindle, but detachably connected thereto, is the head or flier-frame, which consists of a metal casting of a substantially rectangular shape having a bottom cross-bar 5, the ends of which merge with side bars 5<sup>a</sup>, which in turn merge with the upper cross-bar or bridge-piece 5<sup>b</sup>. The lower cross-bar has a central aperture 5<sup>c</sup> for the passage of the spindle and an enlarged annular portion that forms a seat 5<sup>d</sup> for the bobbin, presently referred to. The upper cross-bar has a pendent hub provided with a socket 5<sup>e</sup> to receive the upper end of the hollow spindle 1. The frame 5 is slidably mounted upon the upper end of the spindle and can be instantly lifted off the spindle when desired, and to provide for quickly locking the frame and spindle, so the two will rotate together, and for instantly removing the frame from the spindle I employ a lock or detent device, automatically engaging the spindle to lock it to the frame, and finger tripped to release the frame from the spindle. To this end the upper end of the spindle has an aperture 1<sup>c</sup>, with which the lug 6<sup>a</sup> on the end of a spring-latch 6 made fast to the upper cross-bar of the frame engages, said spring having a finger-piece 6<sup>b</sup>, whereby the detent can be quickly pushed out of engagement with the spindle.

7 indicates a tubular guide for the wire, the lower end of which is threaded into the plug 4, as seen in Fig. 1, by reference to which and Fig. 2 it will also be noticed the said guide-tube extends up through the spindle 1 and through a central aperture 5<sup>f</sup> in the upper cross-bar of the flier-frame.

One of the side members of the flier has a central thread passage or aperture 8, and said member has its upper end extended and provided with a similar aperture 8<sup>a</sup>.

9 indicates the bobbin or spool held on the spindle to rotate independently thereon for a proper offtake of the threads, it being also frictionally held in contact with the flier-frame to rotate therewith, any suitable tension devices being utilized for such purpose—as, for example, a band-spring 10, made fast to the flier-frame and engaging the bottom head of the bobbin.

Now comes an essential feature of my invention—the special means for guiding the thread to wind about the core in either direction and for pressing and spreading the sliver or threads to wind uniformly and evenly about the said core. One of the ways generally used to lead the thread to the guide held adjacent the wire strand or core is to provide a long needle that extends from the outer thread-guide on the flier-frame to a point near the inner or core guide, the eye of the needle being adjacent the said inner guide. In my construction of thread-guiding means the said

needle is dispensed with, and in lieu thereof I employ a simple eye-guide 11, porcelain-lined to prevent abrasion of the thread, said guide 11 being held for vertical adjustment in the vertical bridge or arch member 5<sup>g</sup> of the flier-frame, which has a central aperture 5<sup>h</sup> for the reception of the combined wire-guide, thread-guide, and thread-presser device 12, the construction of which is shown in detail in Fig. 5. This device consists in a metal (preferably steel) shank having a central solid part 12<sup>a</sup>, formed with a vertical external slot *b*, that serves as a guide for the wire strand or core. From the central part 12<sup>a</sup> the shank is halved, the inner flat faces *c* thereof extending in a plane with the coincident edge of the guide-slot *b*, whereby said faces will be held to bear closely against and lie flatwise on the strand. Each projecting end of the shank has a reduced guideway *d*, which terminates in a clean smooth edge *e*, said edge *e* being at that side of the shank having the wire-guide slot. The shank 12 is adjustably held in the aperture 5<sup>h</sup> by the clamp-screw 13, and the guide 11 is similarly held by the screw 14.

By referring now to Fig. 1 it will be noticed the guide 12 extends above and below the bridge-piece 5<sup>g</sup> and by reason of its flattened ends forms a long flat side bearing for the wire strand and in consequence holds it in a true line and prevents buckling or bending out at the point where it is being wound. Furthermore, by providing a guide having its opposite ends constructed in the manner described the said guide can be almost instantly set by reversing its ends to guide the thread to wind about the wire strand or core in either direction, a result, so far as I know, impossible with the types of guide members heretofore used. The thread-sliver passes from the bobbins through the guide-apertures 8, then up back through the guide-aperture 8<sup>a</sup>, from thence through the guide 11, then around the upper end of the guide 12, leaving it at the edge *e* and winding about the wire strand. By reason of the manner in which the ends of the guide 12 are formed the several threads of the sliver will be properly spread or flattened as they pass off the edge *e* onto the wire, and by reason of the upper flattened end of guide 12 engaging the freshly-wound part of the wire the said sliver-threads will be kept in proper flat relation upon the wire and the winding thereby made uniform and even throughout.

Another and important advantage of making the ends of the guide 12 flat is that owing to the necessity of keeping every part of a guide that engages the thread perfectly smooth and free from such roughness that might abrade the threads the flattened ends make it possible to easily burnish the thread-engaging surfaces to keep the said surfaces in a proper trim.

Having thus described my invention, what



I claim, and desire to secure by Letters Patent, is—

1. A wire-covering means, comprising in combination with a bearing-socket, a tubular spindle having a drive-gear, a flier-frame, detachably held on the upper end of the spindle, said frame including the side arms 5<sup>a</sup>, and the upper cross member 5<sup>b</sup>, said member 5<sup>b</sup>, having a pendent centrally-apertured socket-hub, adapted to fit on the upper end of the hollow spindle, and having a vertically-extending bridge, said bridge having an aperture in line with the aperture in socket-hub aforesaid, a tubular wire-guide held in the spindle and projected up through the said hub-aperture, and a thread-guiding means held in the bridge-piece to receive and guide the sliver around the wire, all being arranged substantially as shown and described.

2. In a wire-covering means of the character described, the combination with the vertically-disposed tubular bearing-socket, the plug 4, detachably secured in the lower end thereof and the tubular wire-guide connected to the said plug; of the tubular spindle held to turn in said bearing-socket, with its lower end resting upon the plug 4, the flier-frame, detachably and slidably held on the upper end of the spindle, and having means for interlocking it with the said spindle to rotate therewith, said flier-frame including an upper cross member 5<sup>b</sup>, centrally apertured for the passage of the wire-guide, and having a centrally-apertured vertically-extending bridge-piece, the bobbin detachably held on the flier-frame and rotatable on the spindle, a combined guide and presser member having a longitudinal groove in line with the wire-guide and supplemental guide members forming a part of the flier-frame for leading the sliver from the bobbin to the said guide and presser member, all being arranged substantially as shown and described.

3. In a wire-covering means of the character described, the combination with a hollow driver-spindle, said spindle having a lock-aperture 1<sup>c</sup>, at the upper end; of a flier-frame slidably mounted on the upper end of the spindle, said frame including a base member 5, having an apertured hub and an upper cross member 5<sup>b</sup>, having a centrally-apertured pendent socket 5<sup>c</sup>, said socket having an aperture adapted to register with the lock-ap-

erture 1<sup>c</sup>, on the spindle end, a bridge-piece projected over the apertured part of the member 5<sup>b</sup>, a combined thread presser and guide detachably and adjustably mounted on the aperture of the bridge-piece, means forming a part of the flier-frame for guiding the sliver to the said combined presser and guide, and the bobbin slidably mounted on the spindle to turn thereon, a brake member secured to the flier-frame adapted to engage the bobbin, substantially as shown and for the purposes described, and a spring-latch secured to the upper member 5<sup>b</sup>, of the flier-frame, having a locking-finger 6<sup>a</sup>, for engaging the locking-apertures in the hub 5<sup>c</sup>, and the spindle end, all being arranged substantially as shown and for the purposes described.

4. In a wire-covering means of the character described, a guide for leading the sliver onto the wire adapted to adjustably seat in the aperture 5<sup>b</sup>, in the bridge-piece 5<sup>g</sup>, consisting of a central or body portion 12, having an external slotway for the wire, its opposite ends each having a flat thread-pressing face and a rounded notched guide portion, arranged substantially as shown, whereby when set in reverse directions, said guide will lead the sliver to wind in opposite directions on the wire, as set forth.

5. In a wire-covering means of the character described, a sliver-guide, adjustably held on the flier-frame, and comprising a body portion vertically slotted externally to guide the wire, and having its opposite ends halved and flattened to bear against the wire, said ends having thread-guiding portions, as set forth.

6. In a wire-covering means as described, the combination of the spindle, the bobbin rotatable thereon, the flier-frame having a side member provided with a pair of sliver-guide apertures 8 8<sup>a</sup>, said frame having a bridge portion centrally apertured for the passage of the wire strand, a combined wire and sliver guide vertically adjustable in said central aperture, and the supplemental sliver-guide 11, vertically adjustable on the bridge portion of the frame, all being arranged substantially as shown and for the purposes described.

CALVIN J. CURRIER.

Witnesses:

FRED G. DIETERICH,  
A. E. DIETERICH.