

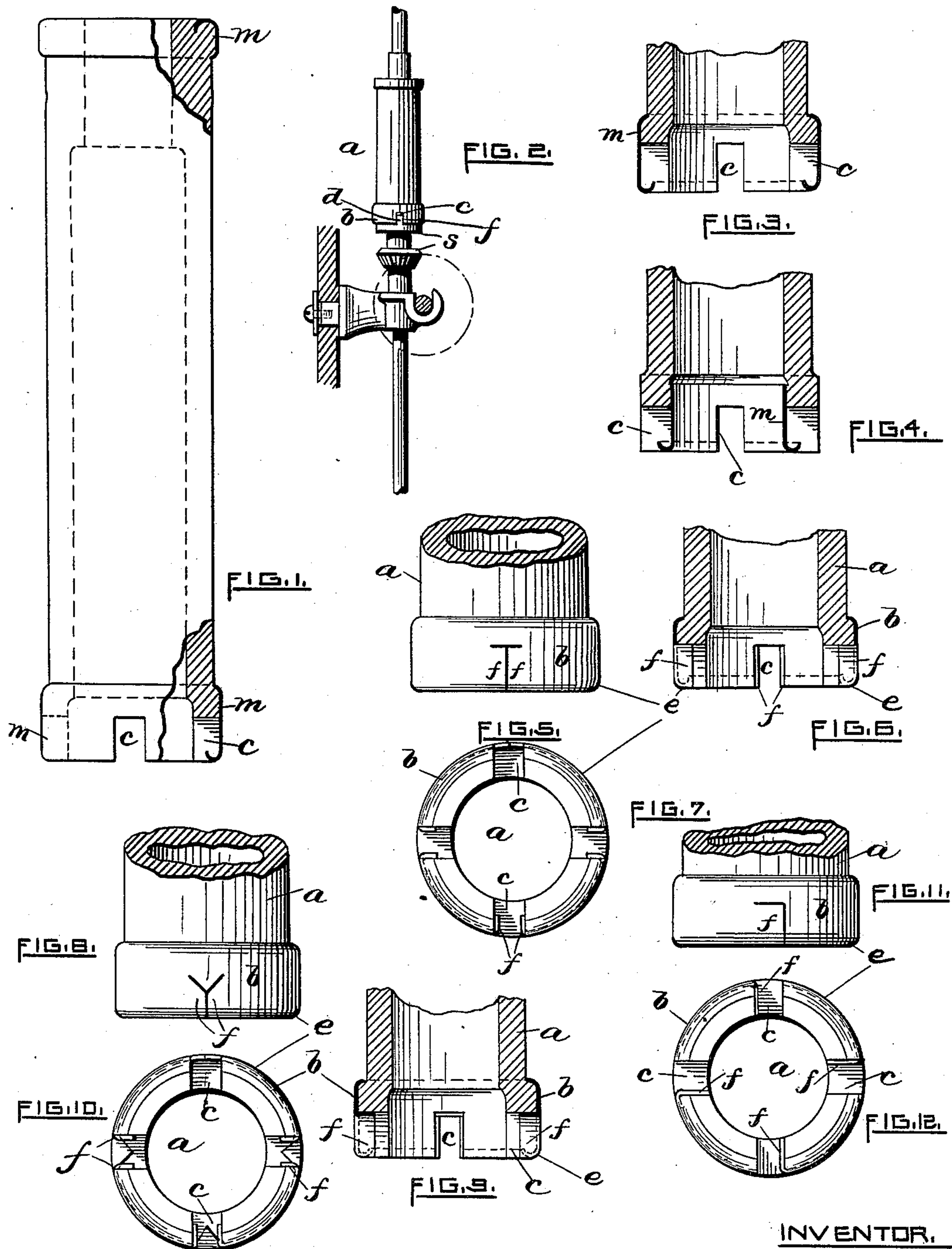
(Model.)

2 Sheets—Sheet 1.

S. D. KEENE.
BOBBIN.

No. 427,877.

Patented May 13, 1890.



WITNESSES.

Charles Harrigan

Herbert F. Tourtellot

INVENTOR.

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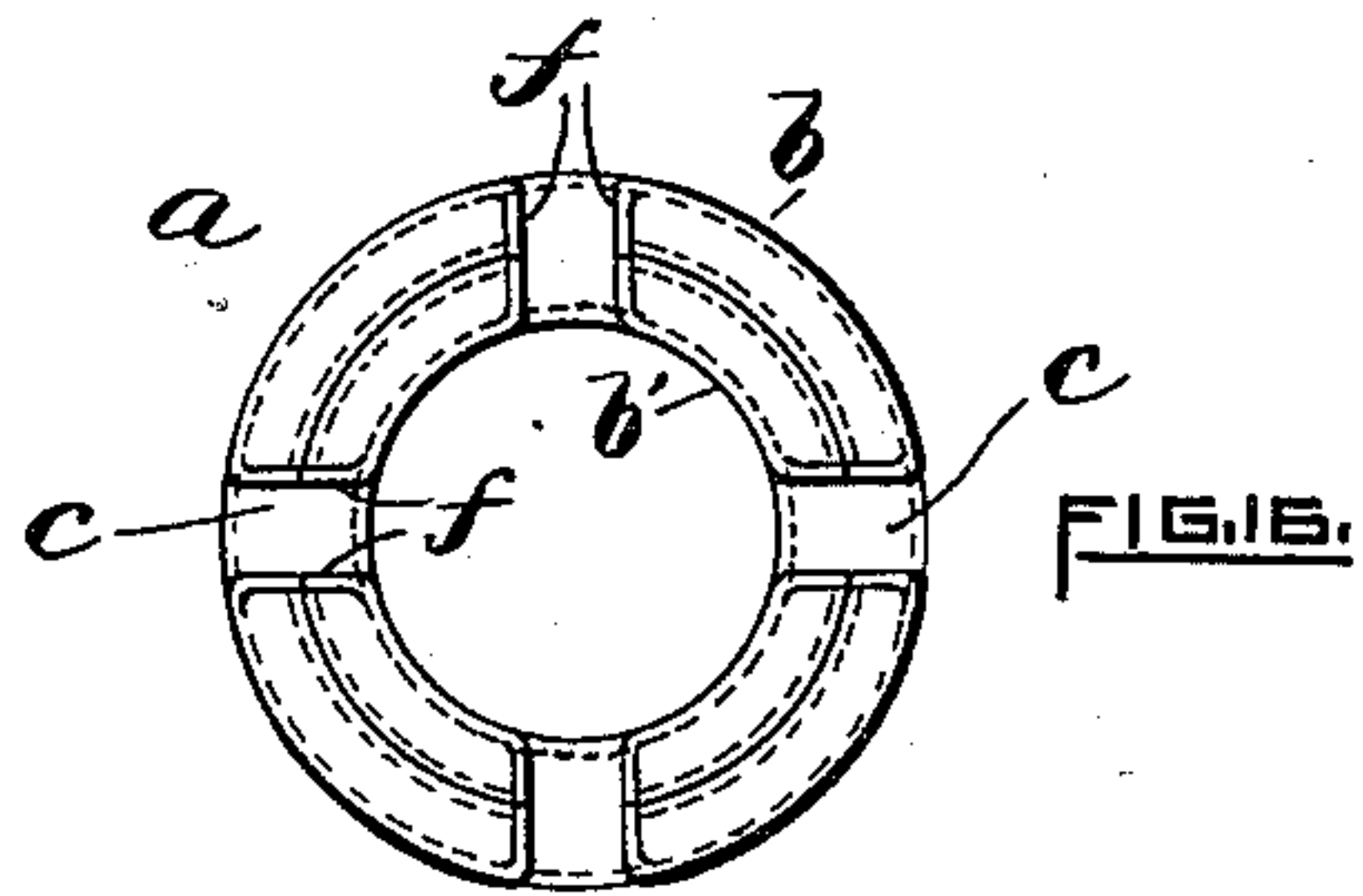
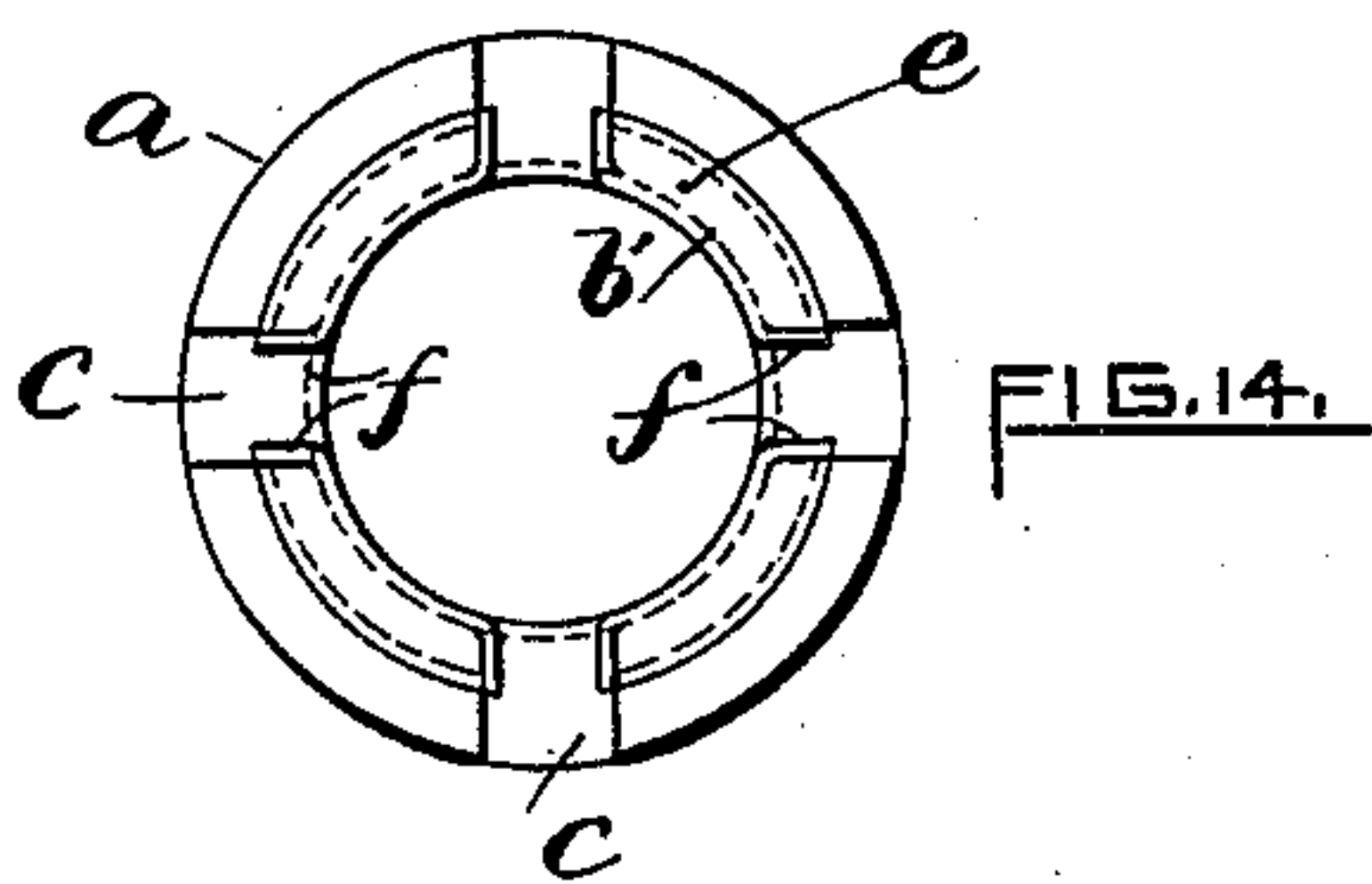
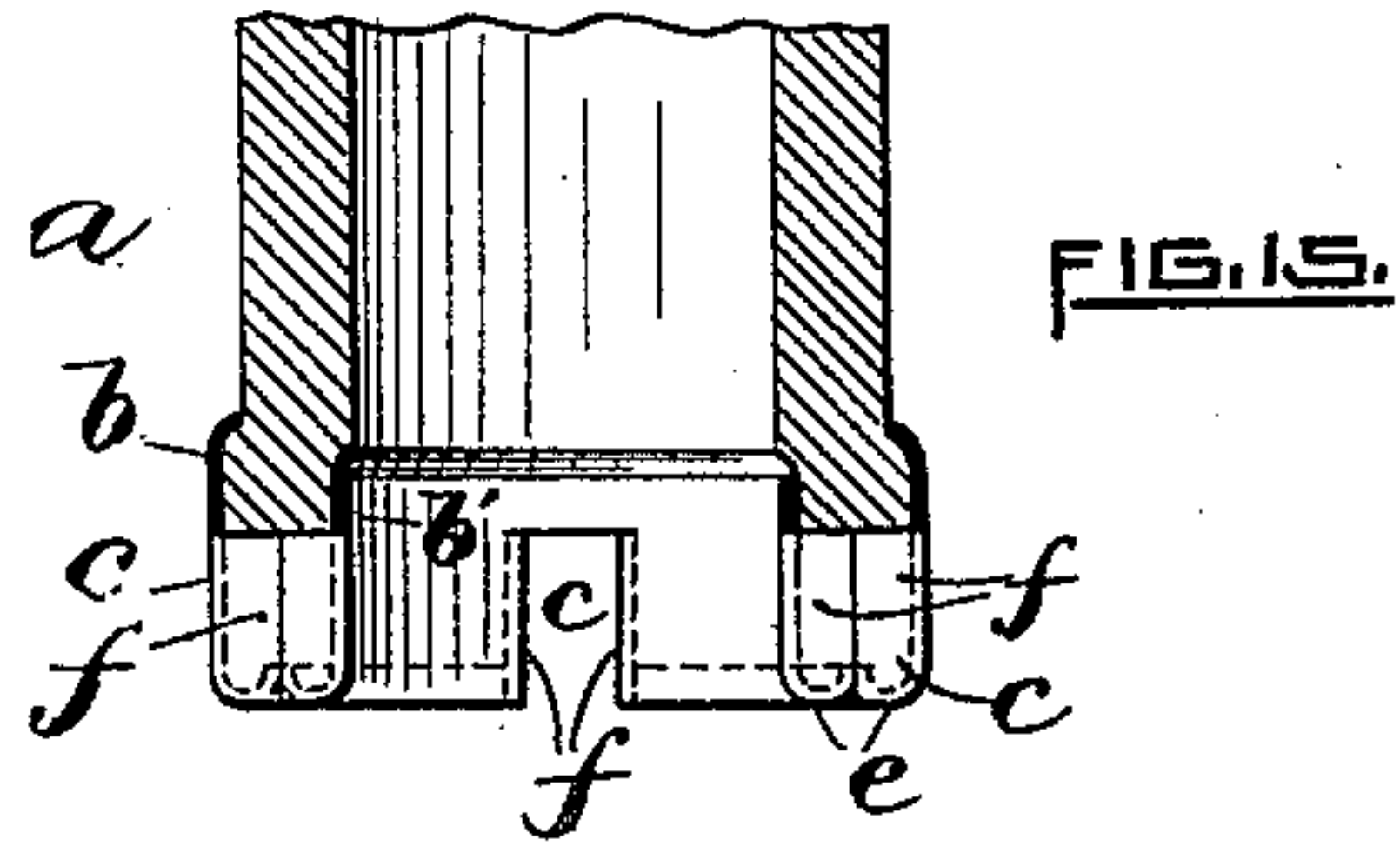
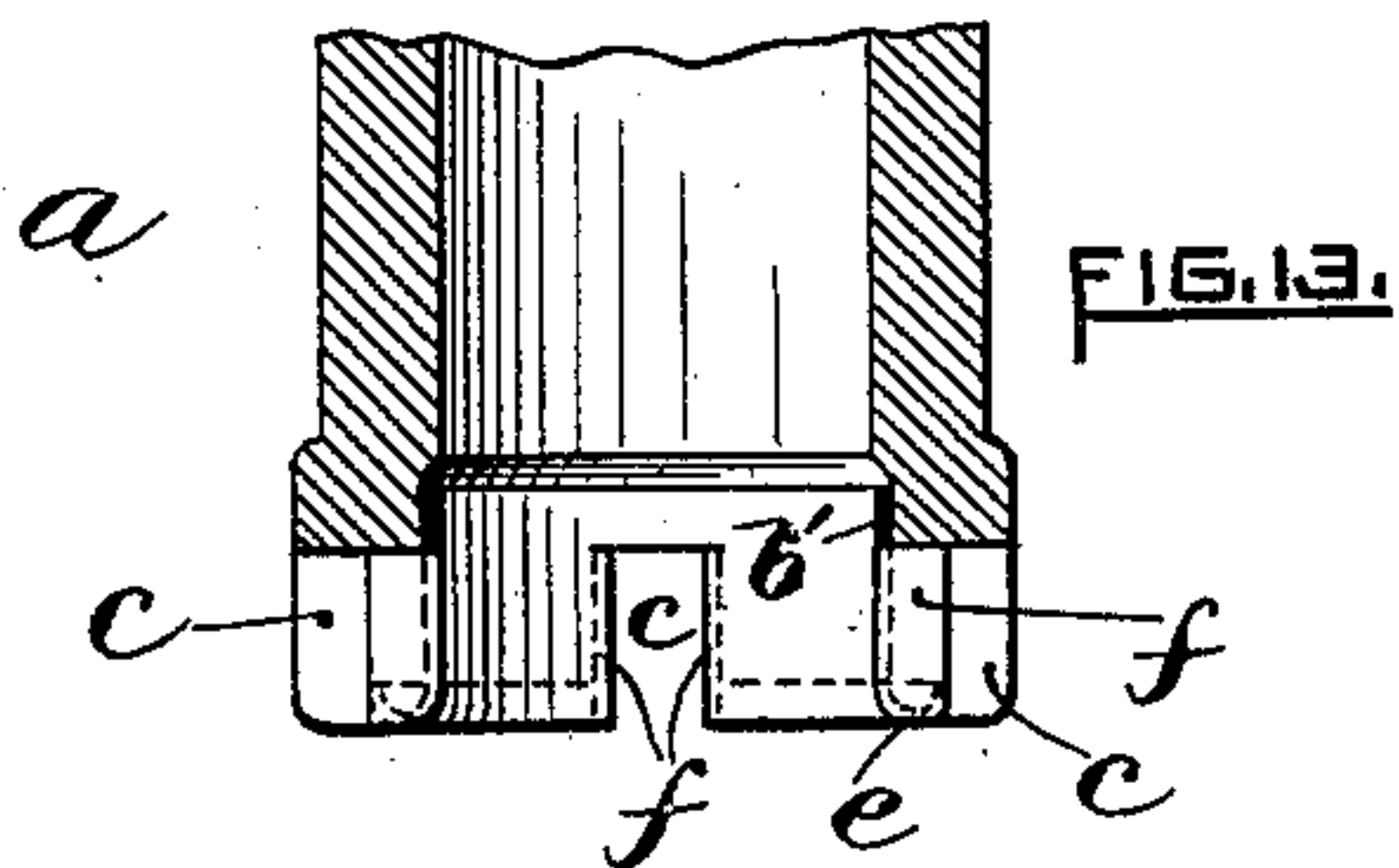
(Model.)

2 Sheets—Sheet 2.

S. D. KEENE.
BOBBIN.

No. 427,877.

Patented May 13, 1890.



WITNESSES.

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UNITED STATES PATENT OFFICE.

SAMUEL D. KEENE, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO JOSHUA HENRY WILSON AND HERBERT WILLIAM WILSON, OF CORNHOLME, ENGLAND.

BOBBIN.

SPECIFICATION forming part of Letters Patent No. 427,877, dated May 13, 1890.

Application filed November 6, 1889. Serial No. 329,434. (Model.)

To all whom it may concern:

Be it known that I, SAMUEL D. KEENE, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Bobbins; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to bobbins, spools, &c., employed in the preparation of textiles, the present invention being an improvement in bobbins provided at their ends with metal ferrules or rings used for strengthening such parts of the bobbins or tubes as are most liable to wear and to become cracked or broken.

My invention consists, essentially, in providing the surfaces of the slots which engage the driver with a metallic face.

The object of my improvement is to prevent the heretofore excessive wear of bobbins due to the action of the driver by means of its engagement with the driver-slot formed in the lower end of the bobbins. To that end I cut the ring or ferrule (made, say, of sheet-brass, steel, &c., spun round the bobbin) so that it may be folded backwardly into the driver-slot to form a lining of metal, against which the driver-dog or lug engages when in use, as will be more fully set forth.

In the appended drawings, Figure 1 represents a side elevation of a bobbin in partial section, showing a metal ferrule as heretofore applied. Fig. 2 shows, in reduced scale, a bobbin mounted on a spindle and in engagement with the driver. Fig. 3 is a central sectional view, enlarged, of the lower portion of the bobbin, shown by Fig. 1. Fig. 4 is a similar view showing the metal ring applied to the interior of the bobbin. Fig. 5 is a side view of the bobbin provided with an exterior ring, showing it cut and adapted to be

bent rearwardly to form a metal lining to engage the driver, according to my improvement. Fig. 6 is a central sectional view of the same after the sides are bent. Fig. 7 is an inverted plan view. Figs. 8, 9, and 10 are views corresponding, respectively, to the last three figures, the ring being cut so that the metal may be bent to protect the three sides of the driver-slots. Fig. 11 is a side view of the lower portion of a bobbin having the ring cut so that it may be bent to cover only one side of the driver-slot, as shown in the inverted plan view, Fig. 12. Fig. 13, Sheet 2, is a vertical sectional view taken through the lower portion of a bobbin, showing the metal ring applied to the inner surface, the ring being cut at the driver-slots and the metal bent to form a lining to the slots. Fig. 14 is a plan or inverted end view of the same. Fig. 15 is a sectional view substantially like Fig. 13, showing the bobbin provided both with an outer and inner ring having portions thereof bent into the driver-slots; and Fig. 16 is an inverted plan view of the same.

A more detailed description of my invention is as follows:

a indicates a bobbin, spool, or tube as a whole provided with my improvement. The bobbins are made of wood, paper, or such other material as is common. Bobbins of this character have prior to my invention been strengthened by means of a ring *m*, made of tin-plate, sheet-brass, or other thin metal, which is stamped, pressed, or spun into form and applied at the end or ends of the bobbin. Such former rings are bent by spinning or pressing upon the surface of it in such manner that it is made to conform to the bobbin, as shown in Figs. 1, 3, and 4. If necessary, the edge of the ring may be pressed into a groove formed in the bobbin. Practically the bobbins thus strengthened are cut through or sawed across the lower ends to produce the driving-slots. Obviously the edge or thickness of the thin metal ring is the only portion which comes in direct contact with the driver-dog *d*, Fig. 2. Therefore the ring is soon upset along the vertical edges of the

cut, thus seriously impairing the efficiency and durability of the bobbin.

By means of my improvement the strengthening-ring *b*, located at the bottom of the bobbin *a*, is cut through transversely at the points where the driver-slots *c* are formed, so as to produce side flaps *f*, which are bent rearwardly into the slots *c* and against the adjacent sides thereof to serve as a lining or metal facing. Such facing, it will be observed, constitutes and presents an enlarged metallic surface to the action of the dog *d* of the driver *s*. Consequently the wear upon the bobbins will be reduced to a minimum.

I would state that it is not necessary to face both sides of the slots *c*, as the wear will practically be on the working or driving side only. Figs. 11 and 12 represent a manner of cutting and bending the ring, so that the slots are thus metal faced on one side; but where the bobbins are used indiscriminately on machines, some running in one direction and others in a reverse direction, I prefer to first cut T-shaped slits in the ring, as shown in Fig. 6, and then to bend the sides or wings *f* rearwardly, so as to protect both sides of the slot *c*, as shown in Figs. 6 and 7. In the latter figure the appearance of the ring at one of the slots before bending is shown. Sometimes I form Y-shaped cuts in the ring, as shown in Fig. 8, the sides *f* of which are bent rearwardly against the vertical sides of the slots *c*, the depending V-shaped portion being bent so as to bear against the upper side of the slot, as clearly shown in Figs. 9 and 10, thereby protecting the three sides of the slot.

In carrying out my invention the bobbin is first grooved across the lower end to the proper depth, usually four or five such grooves being made, thereby producing the driver-slots *c*. The thin metal ring *b* is next placed over the lower portion of the bobbin and spun or pressed into close contact with it, after which the ring, (having been previously cut at the proper points,) or rather the wings or flaps *f*, lying contiguous to the cuts, are bent rearwardly against the sides of the said openings or slots *c* of the bobbin. The result before described may be attained substantially by applying to the interior of the bobbin, at its lower portion, a thin metal ring *b'*, as shown in Figs. 13 and 14, the ring being cut contiguous to the slots *c* and the metal bent back or outwardly to protect the sides of the slots. The lower edge of the ring may be bent and turned or pressed into the under face of the bobbin, as shown.

In Figs. 15 and 16 I have represented a bobbin provided with the outer ring *b* and the inner ring *b'*, thereby obviously not only strengthening the bobbin, but at the same time completely lining or covering both sides of the driver-slots.

Another advantage of my invention is that the thin spring-metal wings *f* when bent into the slots present an elastic or somewhat yield-

ing surface to the dog *d*, thereby relieving the bobbin, when in use, from too great rigidity, which otherwise tends to subject the roving or yarn to unequal tension. By turning the lower edge of the metal ring *b* into the under face of the bobbin a short distance, as at *e*, the bobbin is greatly strengthened in a lateral direction against compression, and also serves to prevent the bobbin from checking.

I would state further that in practice the rings *m* as heretofore made and applied to bobbins very frequently become loose, owing partly to the action of the driver-dogs *d* against the thin edges of the rings contiguous to the slots *c*, and also to the fact that the bobbins shrink somewhat after being put into service. Obviously when the rings become thus loosened they no longer serve the purpose intended—i. e., to preserve the wooden sides or the slot from wear—as the dogs then bear directly against said sides, thereby causing excessive wear.

By means of my improvement the sides or wings *f* serve not only to greatly increase the wearing or bearing surface of the slots *c*, as hereinbefore described, but they also prevent the ring from turning on the bobbin in any event.

I claim as my invention—

1. The bobbin or tube hereinbefore described, provided with driver-slots, and having the exterior lower portion covered with a sheet-metal ring provided with a series of cuts, the adjacent sides of which are bent rearwardly laterally into the driver-slots, substantially as specified, and for the purpose set forth.

2. The combination, with a driver-slotted bobbin, of a sheet-metal ring secured thereto, having cuts therein at intervals, the sides of which are bent rearwardly laterally into the driver-slots to form spring sides, substantially as shown and described, and for the purpose hereinbefore set forth.

3. The driver-slotted bobbin *a*, hereinbefore described, having the lower portion covered with an exterior sheet-metal ring *b*, whose bottom edge is turned or bent into the under face of the bobbin, as at *e*, and having the driver-slots *c*, faced with yielding surfaces *f*, forming a part of said ring, substantially as shown and set forth.

4. The combination, with a mounted spindle and driver *s*, of the driver-slotted bobbin *a*, hereinbefore described, having secured thereto at its lower end the sheet-metal ring *b*, provided with rings *f*, which are bent rearwardly laterally into the driver-slots to form metallic spring sides adapted to engage the dog *d* of said driver, substantially as specified.

5. A bobbin of the class hereinbefore described, provided with driver-slots *c*, having the interior surface of the lower portion of the bobbin provided with a thin metal ring cut adjacent to the driver-slots, and having the cut portions of the ring bent laterally

into the said driver-slots, for the purposes specified.

6. A driver-slotted bobbin of the class hereinbefore described, having the lower portion thereof provided with a cut thin metal ring secured to the interior surface of the bobbin and a similar ring secured to the exterior surface, and having the metal of the rings ad-

jacent to the cuts bent laterally into and lining the sides of the driver-slots.

In testimony whereof I have affixed my signature in presence of two witnesses.

SAMUEL D. KEENE.

Witnesses:

CHARLES HANNIGAN,
GEO. H. REMINGTON.