

No. 743,830.

PATENTED NOV. 10, 1903.

E. G. CLARK.

ADJUSTABLE SPOOL FOR MUSICAL INSTRUMENT CONTROLLING SHEETS.

APPLICATION FILED AUG. 21, 1903.

NO MODEL.

Fig. 1.

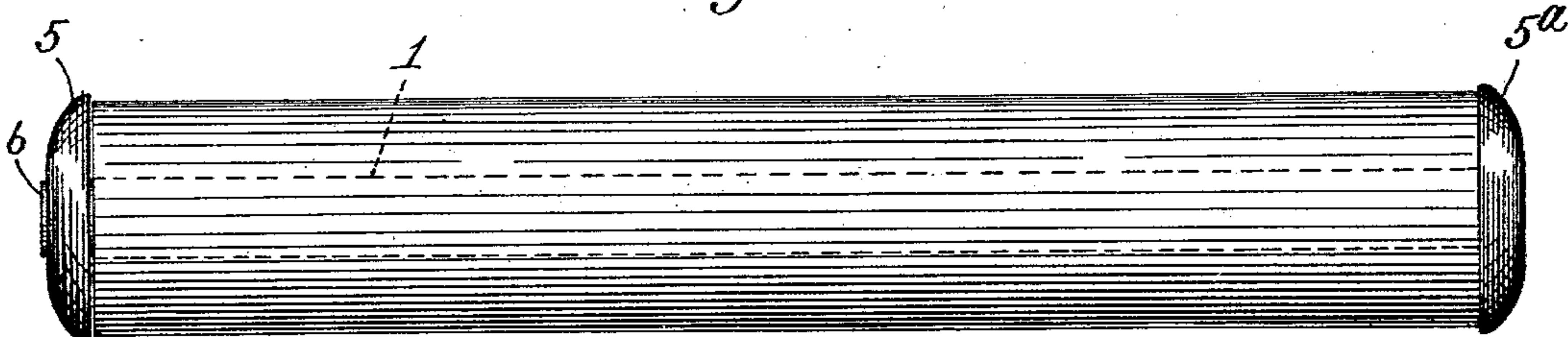


Fig. 2.

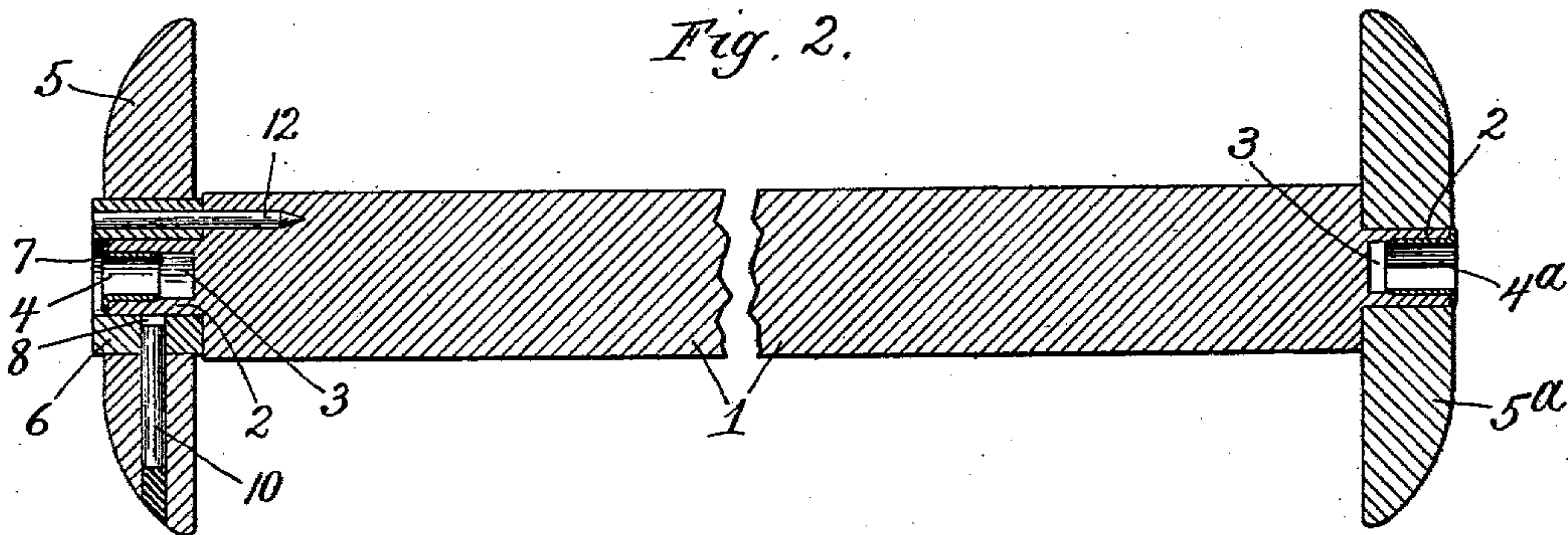


Fig. 3.

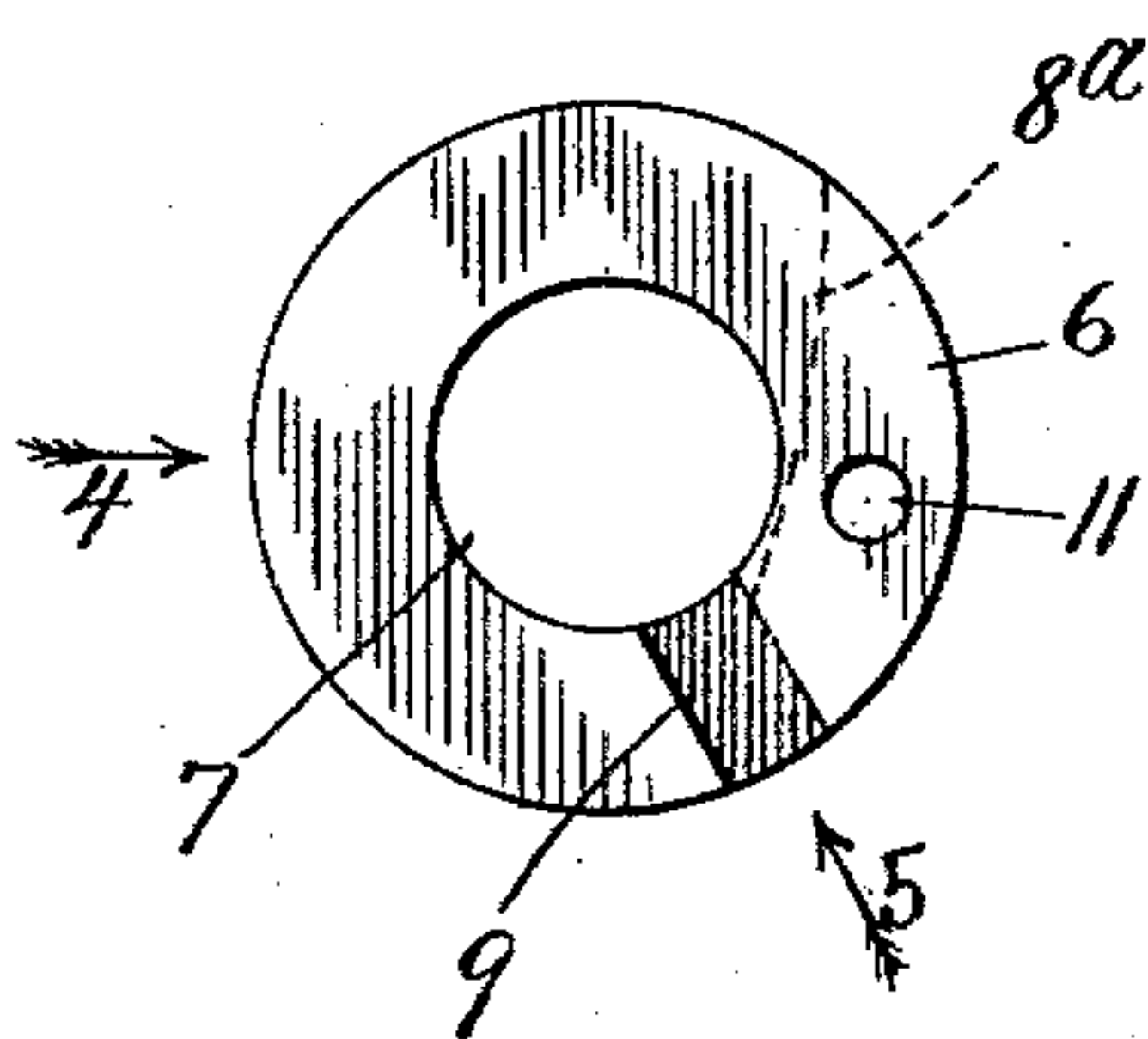


Fig. 4.

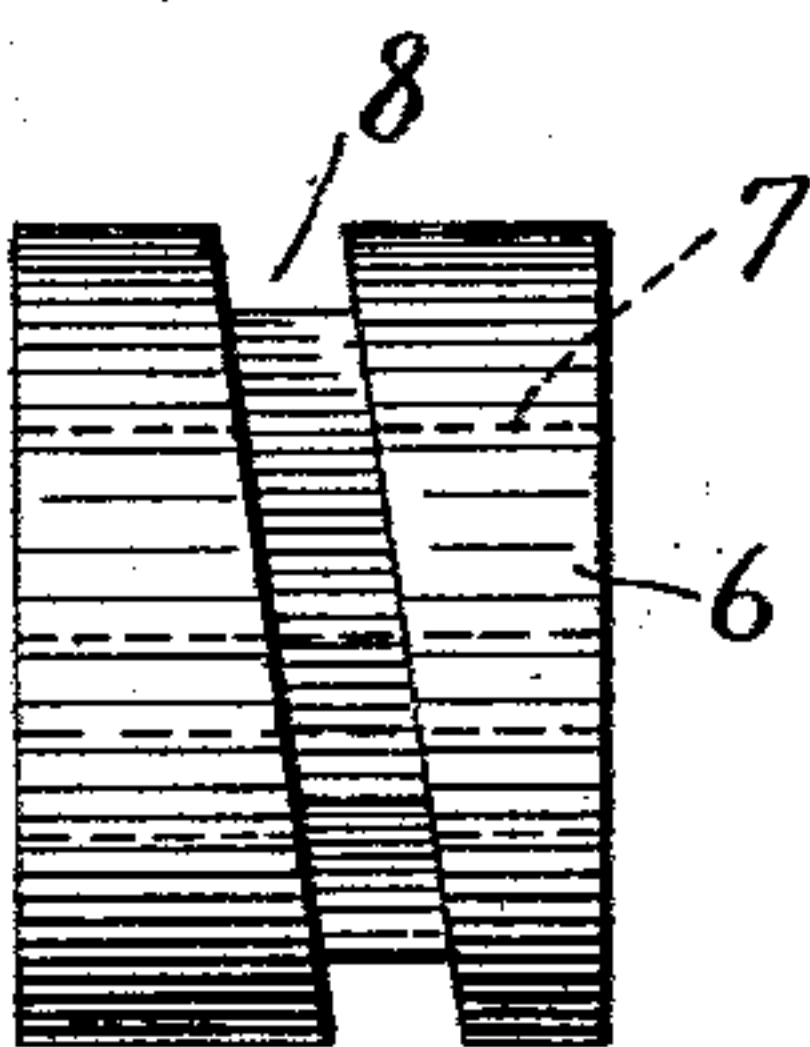
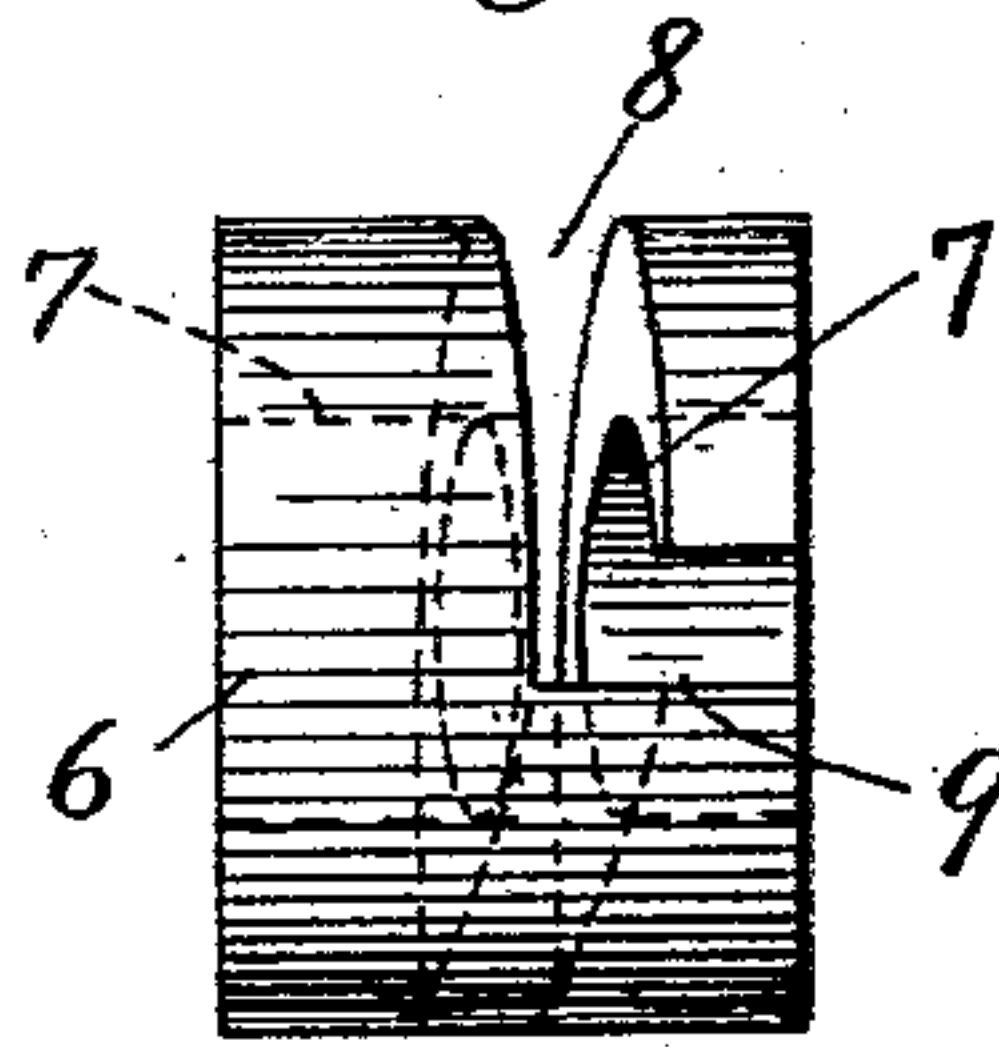


Fig. 5.



Witnesses.

Edward T. Wray.

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By *Burton Burton*
his Atty's.

UNITED STATES PATENT OFFICE.

ERNEST G. CLARK, OF CHICAGO, ILLINOIS.

ADJUSTABLE SPOOL FOR MUSICAL-INSTRUMENT-CONTROLLING SHEETS.

SPECIFICATION forming part of Letters Patent No. 743,830, dated November 10, 1903.

Application filed August 21, 1903. Serial No. 170,275. (No model.)

To all whom it may concern:

Be it known that I, ERNEST G. CLARK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Adjustable Spools for Musical-Instrument-Controlling Sheets, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The purpose of this invention is to provide a spool for carrying the perforated sheets which operate as controllers for automatic musical instruments which shall be adapted to be adjusted with respect to the distance between the two heads to accommodate the slight variation in the width of the sheets which arises either in the manufacture of the same or from changes of atmospheric conditions, causing swelling or shrinking, and incidentally to provide an improved construction in respect to the means of securing the heads of such spools to the shaft with sockets for the bearings of the spool.

It consists in the features of construction set out in the claims.

In the drawings, Figure 1 is an elevation of a spool for the purpose indicated embodying my invention, same being shown with the perforated sheet wound on it. Fig. 2 is an axial section of the spool without the perforated sheet. Fig. 3 is an inner end elevation of a ferrule for securing the adjustable head at one end of the spool. Fig. 4 is a side elevation of the same looking in the direction of the arrow 4 on Fig. 3. Fig. 5 is a side elevation looking in the direction of the arrow 5 on Fig. 3.

The shaft 1 of the spool is designed to be made of wood and is reduced at the two ends to form cylindrical tenons 2 2, which are axially bored, forming sockets 3 3, which receive the bushings 4 4^a, hereinafter more particularly described, which constitute the bearings of the spool on its supporting and actuating spindles. (Not shown.) The right-hand head 5^a is centrally bored to fit the tenon 2. The bushing 4^a at this end is the one by which the spool is driven. It has for that purpose a square aperture, as indicated in Fig. 2. Exteriorly the bushing is slightly larger than the socket 3; but it is tapered at

the end in order to be entered in the socket, and being driven thereinto it expands the tenon 2 tightly into the aperture of the head, and thereby secures it firmly. At the left hand I provide a ferrule 6, of metal, having a central aperture 7, which fits easily on the tenon 2. This ferrule is provided with a peripheral oblique slot or groove 8, which is most conveniently and efficiently made by milling or sawing a slot in the oblique position indicated, such slot being sawn or milled through directly from one side past the entire diameter of the aperture 7 to the dotted line 8^a, Fig. 3. This is merely a convenient mode of construction, for, as will hereinafter appear, the function of the slot does not require that it should be cut through into the central aperture 7. This slot, whether formed in the manner described or in any other convenient manner, terminates at both ends abruptly between the ends of the ferrule—that is, so that it does not extend in its oblique direction to the lateral edges or ends of the ferrule. When formed by sawing through in the manner described, the slot will extend around from two-thirds to three-fourths of the circumference of the ferrule. From one end of this oblique slot a notch 9 is cut to the edge or end of the ferrule, as seen in Figs. 3 and 5. The left-hand head 5 is centrally bored to be entered upon and fits snugly about the ferrule 6 and has a pin 10 embedded or driven into it, so as to protrude into the central aperture and take into the slot 8 of the ferrule, as seen in Fig. 2.

To assemble and secure the parts at the left-hand end of the spool, the ferrule 6 is first inserted into the central aperture of the head 5; the pin 10 being passed in through the notch 9 and the two parts being relatively rotated to engage the pin in the oblique slot. The ferrule is then passed onto the tenon at the left-hand end of the shaft, with the notch 9 at the inner side, so that it is closed by the ferrule abutting against the shoulder which bounds the tenon, and thereby the removal or escape of the head 5 is prevented so long as the ferrule is held on the tenon. The ferrule is thus held on the tenon and made fast by the same means used to secure the head to the tenon at the opposite end—that is to say, the bearing of the bush-

ing 4, which at this end has a circular instead of a square aperture, is exteriorly of greater diameter than the socket 3 and is tapered at the end, so as to be entered in said socket 5 and being driven home expands the tenon 2 tightly into the aperture of the ferrule. For further security the ferrule has a pin-hole 11, through which a securing-pin 12 may be driven into the shoulder of the shaft. (See 10 Fig. 2.) When thus secured, it will be seen that the head 5 may be rotated about the ferrule a distance permitted by the circumferential extent of the slot 8 and in so doing will be moved longitudinally or axially on 15 the ferrule, varying its distance from the opposite head to an extent dependent upon the obliquity of the slot 8, which may be sufficient to cover all ordinary or probable variation in the width of the perforated sheet which 20 may be wound on the spool.

In order that the momentum of the head 5 in the rewinding, which is the more rapid action, shall not tend to withdraw the head from the end of the paper, the direction of 25 obliquity of the slot 8 is such that the momentum would tend to carry the head inward, its movement in this direction, however, being prevented by the presence of the paper, will not occur; but in any event the pin 10 30 taking into the slot 8 so deeply as it may with the construction shown and fitting the slot with comparative snugness prevents by its friction against the sides of the slot any rotation of the head which might be caused by 35 slight force, either momentum or frictional grasp thereon, and it is intended that it shall require considerable force applied to the head to thus turn it to adjust it in or out.

I claim—

- 40 1. A spool for the purpose indicated comprising, in combination with a shaft, an obliquely-grooved ferrule fast on one end of the shaft, and a head at that end, journaled on the ferrule and provided with a projection taking 45 into the oblique groove of the latter.
2. A spool for the purpose indicated com-

prising, in combination with a shaft, a ferrule thereon having an oblique peripheral groove terminating abruptly at both ends between 50 the ends of the ferrule, and a spool-head journaled on the ferrule provided with a projection taking into said oblique groove.

3. A spool for the purpose indicated comprising a shaft having a central end tenon provided with a central socket; a spool-head 55 apertured to receive the tenon, and a centrally-apertured bearing-bushing exteriorly tapered toward the end and adapted to be entered and driven into the socket for expanding the tenon within the head. 60

4. A spool for the purpose indicated comprising a shaft having a central end tenon provided with a central socket; a metal ferrule whose central aperture receives the tenon, 65 and a centrally-apertured bearing-bushing exteriorly tapered toward the end and adapted to be entered into the socket and driven thereinto for expanding the tenon within the ferrule.

5. A spool for the purpose indicated comprising, in combination with a shaft having 70 a central end tenon, a metal ferrule mounted on the tenon, having an oblique peripheral groove terminating between the ends of the ferrule, and a notch leading from one end 75 into such groove, the head having a central aperture adapted to receive the ferrule, and a pin embedded in the head and protruding into the central aperture adapted to take 80 through the notch into the oblique groove, the ferrule being secured on the shaft with the end having said notch abutting at the shoulder about the tenon.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, at 85 Chicago, Illinois, this 5th day of August, A. D. 1903.

ERNEST G. CLARK.

In presence of—

E. F. CLARK, Jr.,
ALBERT A. PAGE.