

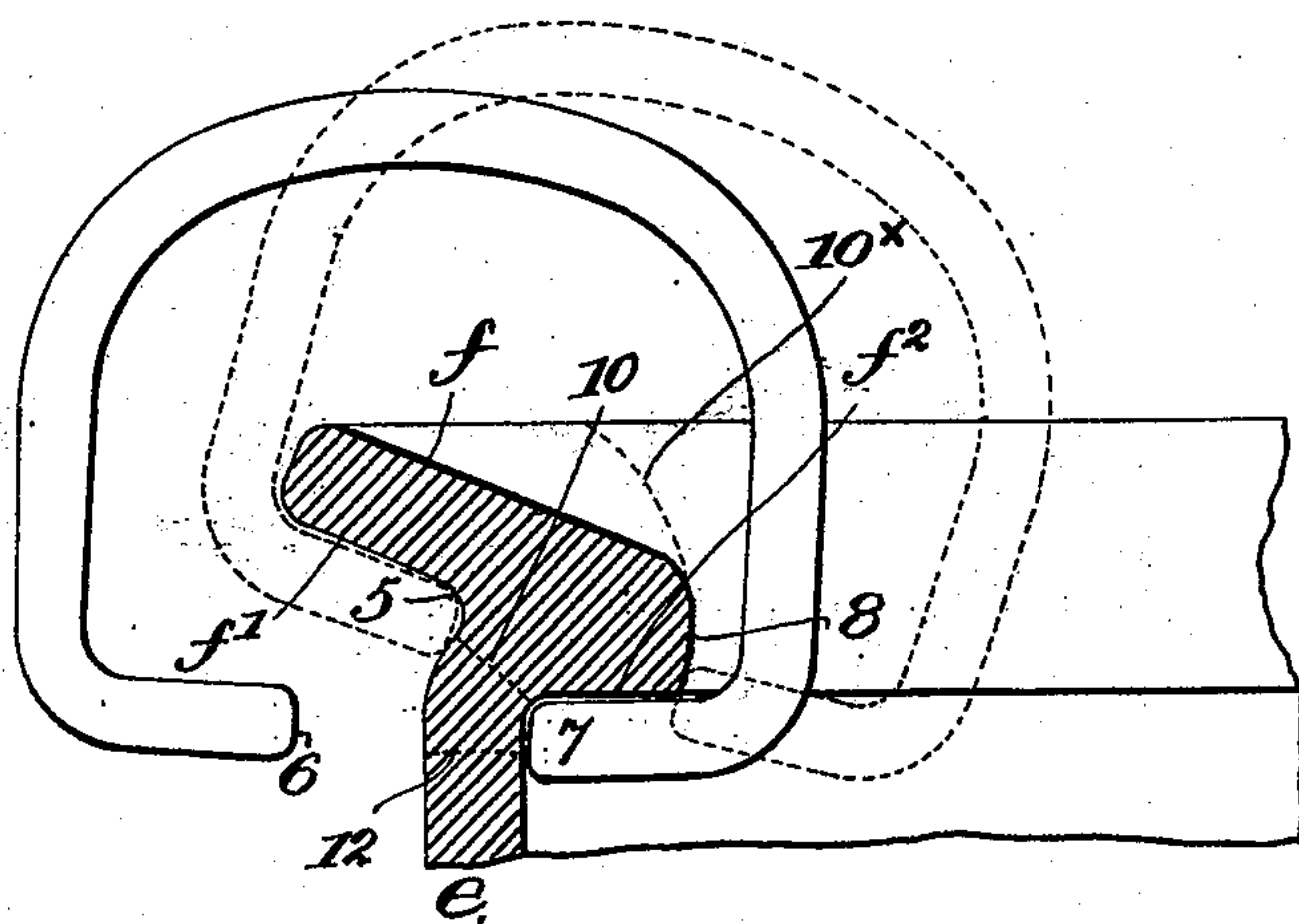
(No Model.)

G. O. DRAPER.  
SPINNING RING.

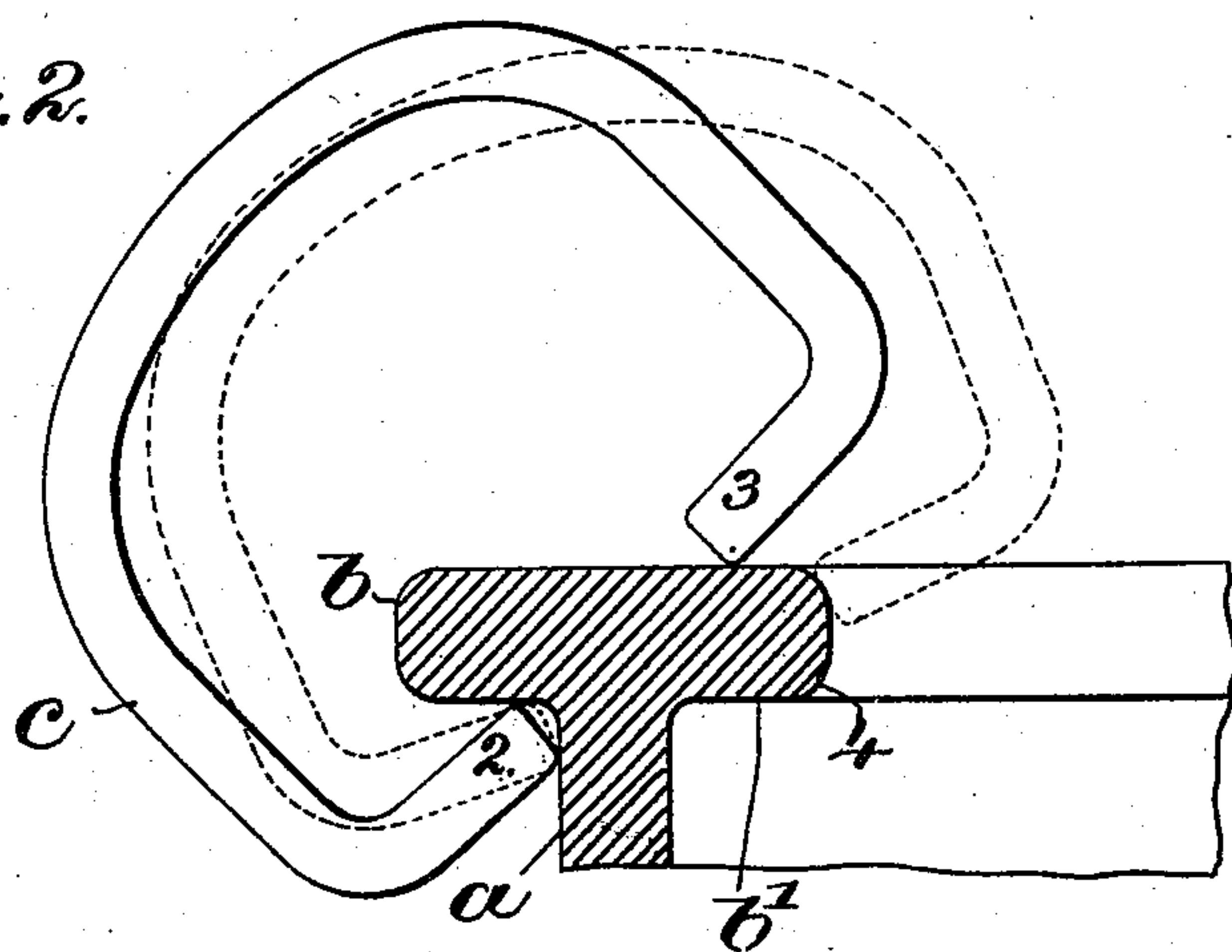
No. 500,999.

Patented July 4, 1893.

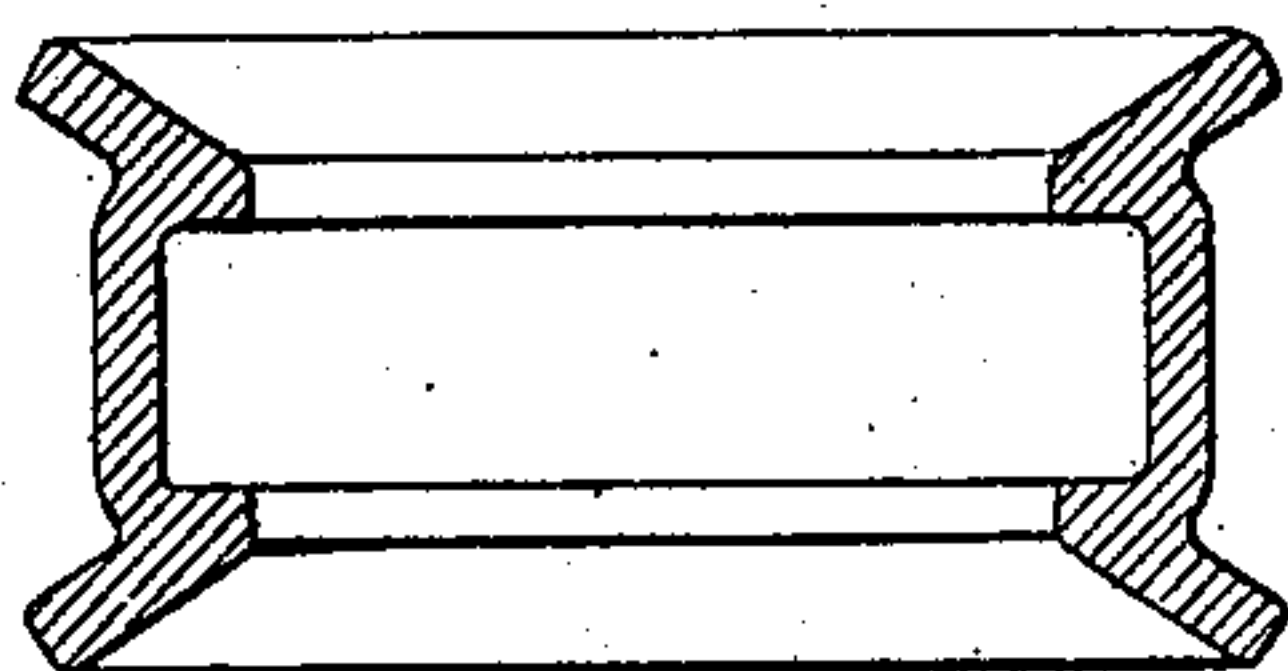
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



*Witnesses.*

*Louis W. Howell*

*John F. C. Printkott*

*Inventor.*

*George O. Draper.*

*by Crosby & Gregory, Attys.*

# UNITED STATES PATENT OFFICE.

GEORGE O. DRAPER, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO GEORGE DRAPER & SONS, OF SAME PLACE.

## SPINNING-RING.

SPECIFICATION forming part of Letters Patent No. 500,999, dated July 4, 1893.

Application filed March 24, 1893. Serial No. 467,433. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE O. DRAPER, of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Spinning-Rings, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

Spinning rings in practical work constitute races or guides for the travelers by which the yarn is retarded in the rotation of the spindle in order that the yarn being spun may be wound on the bobbin as is well understood. The travelers are driven about the rings at high speed, and the harder the traveler the longer it will last without injurious wear. In practice, however, it has been found that the travelers cannot be made as hard as desired because when applying them to the rings they have to be sprung open partially before they can be put onto the rings, and in doing this very many travelers are broken, which results in considerable loss not only as to the value of the travelers but also loss in the use of the machine. To obviate the breaking of travelers they are necessarily made soft enough so as not to break when being put on to the ring, and necessarily such soft travelers wear rapidly and have frequently to be renewed. Rings most commonly in use are made with as thin a web as possible so that the travelers may have a larger surface or flange on which to run.

In practice observation has taught me that the rings wear almost wholly on the under side of the inner flange of the ring and at the junction of the inner flange with the web, the outer end of the traveler moving in space, it scarcely ever touching the outer flange, the function of the outer flange being simply to prevent the traveler from being drawn off the ring by obstructions in the yarn, or when starting to run. It will be remembered, of course, that the centrifugal tendency of the traveler keeps its inner end in contact with the under side of the inner flange of the ring.

In embodying my invention in practical form I have aimed to keep the ring of standard strength, that is, I have aimed not to weaken the web or reduce the thickness of the material uniting the web with the flange,

and in my invention I have been enabled to increase rather than to decrease the strength of the ring.

In my invention the traveler remains in substantially horizontal position throughout its rotation about the ring when the yarn is in normal condition.

One part of my invention consists in providing the ring with a groove between the upper part of the web and the under side of the outer portion of the flange, said groove receiving temporarily the outer end of the traveler, when the latter is being applied to the race of the ring, said groove obviating the necessity of springing open or expanding the usual space between the ends of the traveler, but it will be understood that my invention would not be departed from if, when in putting the traveler upon the race, it should spring the traveler so slightly as not to break it.

Other features of my invention will be hereinafter described and pointed out in the claims at the end of this specification.

Figure 1 shows in section, much enlarged, the upper end of the ring embodying my invention, said figure showing by full lines a traveler applied thereto and substantially in the position it will occupy when traveling about the race of the ring, the dotted lines in said figure showing the position of the traveler when being applied to the ring race. Fig. 2 shows a like section of one of the most common forms of ring, the full lines showing the traveler in its natural position, and the dotted lines showing the position to which it must be sprung in order to apply it to the race of the ring, and Fig. 3 represents my invention as embodied in connection with a double raced ring.

I will refer first to the common form of ring represented in Fig. 2. In that figure *a* represents the body or web of the ring, and *b* the race-way made as a double flange and joined with the web.

In Fig. 2, *c* represents the usual traveler, and it will be noticed that when the end 2 of the traveler abuts against the outer side of the web close to its junction with the flanged part of the ring that the end 3 of the ring will rest on the top of the race-way, and to apply the traveler to the ring the traveler must be



sprung open, as represented in dotted lines, so that it may pass the corner 4 at the inner edge of the race-way and get under the flange  $b'$ . During this process of applying travelers many of them are broken, and they cannot be made as hard as they ought to be because of this straining and being made soft they wear rapidly, and it is this excessive expansion of the traveler that I wish to avoid in my invention, for if the traveler does not have to be sprung open sufficiently to break hard tempered steel then it is possible to temper the traveler as hard as desired.

Referring now to Fig. 1,  $e$  represents the web or body of the ring and  $f$  the race-way or flange, at its upper end said flange being, in this instance of my invention, inclined, and the under side of the outer flange  $f'$ , is it will be noticed, at a higher level than the under side  $f^2$  of the inner flange, such construction making it possible for me to preserve the web of the ring of its full width, thus leaving the web, which is supposed to be reduced to its least possible thickness, of full strength.

In my invention the ring, between the under side of the outermost flange  $f'$  of the race and the exterior of the web, is provided with a groove 5 which is of such depth that when the traveler is being applied to the ring the outer end 6 of the traveler will enter said groove, and the inner end 7 of the traveler will pass readily the curved inner edge 8 of the inner flange of the ring or will readily move down around the inner edge of the flange in the curve represented by the dotted lines  $10^x$ , and in such movement, or in the application of the traveler to the ring it need not necessarily be sprung open, yet slight expansion is always permissible without any liability of breaking the traveler even though hard tempered.

The traveler, when applied to my improved ring and while being carried about the race of the ring by the yarn, will act by its inner end 7, as shown by the full lines, against the underside of the inner flange and against the inner side of the web or body of the ring at a junction with the said inner flange, the outer end of the traveler moving substantially in space and maintaining its position by centrifugal action, said inner end moving about at some distance below the outer flange of the ring, as represented by full lines in Fig. 1.

Fig. 3 shows, on a small scale, my invention applied to both ends of a ring, the figure being, however, considerably enlarged over the actual size of a working ring, especially as to the thickness of the web or body and of the race.

My improved ring is peculiarly constructed in another particular, viz:—The under side of the inner flange is in a substantially horizontal plane, and the under side of the outer flange starts from the body or web of the

ring at a higher level and so also it will preferably be inclined upwardly from its starting point, as a ring of that shape besides enabling the outer end of the traveler to have better opportunity to run in free space, may be more easily made than when the undersides of both flanges are in the same horizontal plane, as in the ordinary ring, and also is of advantage when putting the traveler on as shown in Fig. 1. It will also be noticed in my improved ring that the thickness of the web drawn from the groove to the inner side of the flange in the line 10, Fig. 1, is substantially as great as the thickness of the web in the line 12.

I am aware that notches have been cut at certain points in the circumference of the outer surface of a ring web to enable a traveler to be put on without breaking it, but such notches weaken the ring and are not so convenient as my form in which the ring is not weakened, and better adapted to the use to which it is put. In my construction I am also enabled to make the inner flange which receives nearly all the wear, of a greater thickness than the outer flange, without sacrificing any other quality of advantage.

In my invention the inner flange of the ring is in a horizontal plane, and the body of the ring opposite the said inner flange is of the same thickness as the body of the ring below the said inner flange.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A spinning ring composed of a body having a race at its end, the under side of the inner flange of the race being substantially horizontal, while the under side of the outer flange is inclined from a horizontal plane, the under side of the outer flange starting from the body of the ring at a higher plane than that at which starts the under side of the inner flange from the said body, substantially as and for the purposes set forth.

2. A spinning ring composed of a body terminated with a race-way extended inwardly and outwardly from the said body, said body being provided externally with a groove for the reception of the outer end of the traveler, the under side of the flange adjacent to said groove being inclined, while the under side of the inner flange is in a substantially horizontal plane and starts from the body of the ring at a lower level, considering the top of the ring, than the said inclined flange and groove, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE O. DRAPER.

Witnesses:

GEO. W. GREGORY,  
LAURA MANIX.