F. J. DUTCHER.

TRAVELERS FOR RING SPINNING-FRAMES.

No. 172,402. Patented Jan. 18, 1876.

Fig. 1.

Fig. 3.

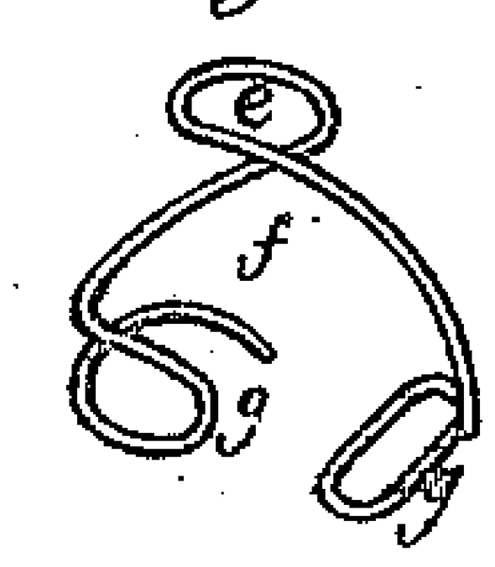


Fig. 2.

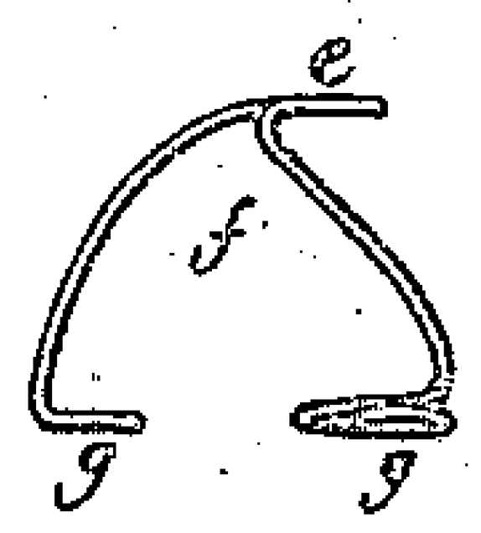


Fig. 4.

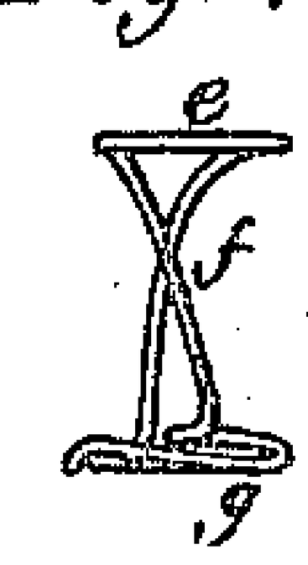
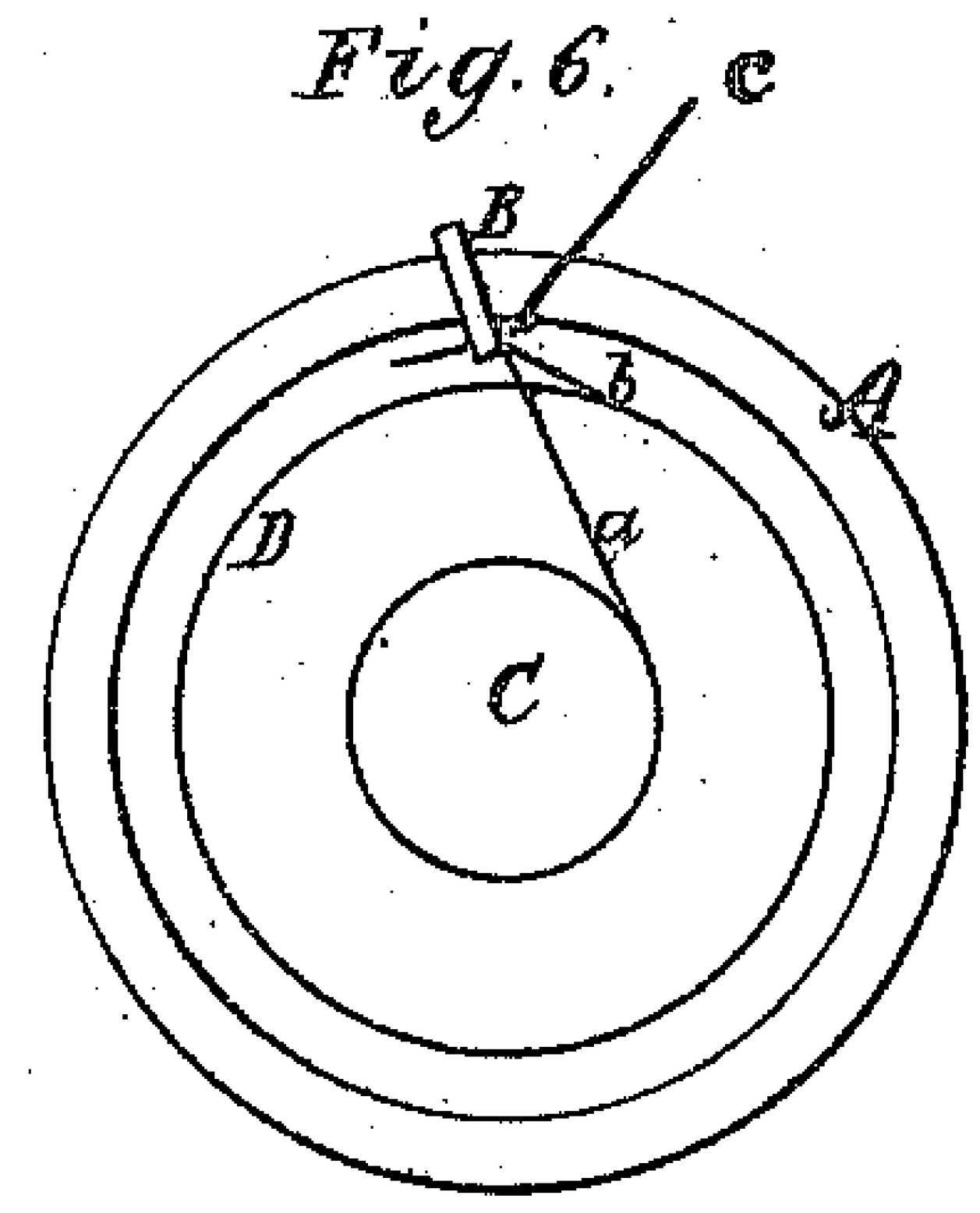


Fig. 5.

Fig. 6.



Witnesses.
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Frank J. Dutcher
by his attorney.
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UNITED STATES PATENT OFFICE.

FRANK J. DUTCHER, OF HOPEDALE, MASSACHUSETTS.

IMPROVEMENT IN TRAVELERS FOR RING SPINNING-FRAMES.

Specification forming part of Letters Patent No. **172,402**, dated January 18, 1876; application filed October 5, 1875.

To all whom it may concern:

Be it known that I, FRANK J. DUTCHER, of Hopedale, of the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Travelers for Ring and Traveler Spinning-Frames; and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a top view, Fig. 2 a side elevation, Fig. 3 a perspective view, and Fig. 4 an end view, of a traveler with my improvement. Fig. 5 is a bottom view of it. Fig. 6 will be hereinafter explained.

The principal objection urged against ring and traveler spinning, as compared with those of the mule and flier frame, is the difference in tension of the yarn at the commencement and end of the formation of the load of the bobbin. This difference is so great that yarn of, say, No. 30 will size a number finer at commencement than at termination of the load without change in the roving and draft of rolls. From this difference in tension or draft of traveler the yarn wound upon the bobbin at the beginning of the load has proportionally less twist, and, being stretched more, it becomes weaker, and makes more poor work in the after processes of manufacture. There is great difficulty in adjusting the ordinary traveler to render it approximately right for a proper production of the load. If right at termination of the load, the tension is so much more at the commencement of it that the ends are liable to break down; and if right for the commencement of the load, the ends will throw out and strike each other when the bobbin is full. In practice it is customary to take a traveler that is heavier than it should be for spinning on the empty, and lighter than it should be for spinning on the full bobbin, in order to average the two difficulties. This want of uniformity in size of the yarn is, for obvious reasons, objectionable. The cause of this difference in tension is due to the difference between the angles formed by the line of the yarn and the side of the traveler at the commencement of the load and that which they form at the termination of the load, (see Fig. 6,) from which it will be seen that, at the commencement of the load, the yarn has the position indicated by the line *a*, and at termination of the load that denoted by the line *b*. With the flat-wire traveler in common use the yarn, in passing from it to the completely-loaded bobbin, makes with the plane or line of the traveler at the point of departure, *c*, Fig. 6, a very obtuse angle, and, consequently, causes less tension or drag, while as it passes to the empty bobbin it ranges nearly in the plane or line of the side of the traveler, and, consequently, produces more tension. Then, again, as the yarn obtains more frictional hold upon the traveler in the latter case, the twist tends to draw the outer foot of the traveler hard against the ring, thereby increasing the tension; but when the bobbin is about full the yarn passes through the traveler very nearly at a tangent to it, and, consequently, in a great measure avoids this difficulty. The digging in or pressure of the outer foot of the traveler also causes an increased wear, both of the traveler and the ring.

To overcome the difference in tension I construct the traveler with an eye, curve, or recess parallel, or about so, with the top of the ring, whereby the yarn is delivered to the bobbin with but a single bend in going through the traveler, and, as may be stated, from a surface parallel, or about so, with the plane of the top of the ring. My improved traveler may be varied in form somewhat without changing the principle of the eye or mass. I usually construct it of wire, preferring "round wire" for the purpose, and so that the eye part may, when the traveler is in operation, be kept in a horizontal position, or about so, by one or more feet bent one or both ways. The wire may be so bent as to bring both ends upon one side of the ring, and the middle part upon the opposite side, the eye being upon either half or leg. This traveler is so constructed that the yarn will thread with it as well as with the old kind.

With this traveler the angle formed by the yarn, instead of being with the side of the traveler, and, consequently, subject to variation caused by the amount of yarn on the bobbin, is with the eye, and must remain the same, or about so, whatever the condition of the bobbin, and the amount of frictional surface between yarn and traveler will in each case be

the same. Instead of the yarn having two bends in going into, through, and out of the traveler, it has but one, as it stands generally in, or about in, one plane, and in going into, through, and out of the traveler.

In Fig. 6 of the accompanying drawings, A represents the top or race of a ring, and B a traveler of the kind heretofore in use. C denotes the barrel of a bobbin, and D a yarn-load thereof. The positions or directions of the yarn, in going from the traveler at the commencement and termination of the load, are exhibited by the lines *a b*.

In the remaining figures of the drawings, or in such thereof as it may be seen, the eye or recess, heretofore described, is represented at *e*, it opening laterally out of the crown of the arch *f*, and being arranged in one side of such arch, and horizontally, or so as to extend from it, in manner as shown. The arch springs from feet *g g*, formed by bending the wire around such feet or projections, being to bear against the under surface of the race of the ring. When the arch of the traveler is in a vertical plane the eye stands in a horizontal one, or thereabout.

I make no claim to a traveler composed of a bar or wire bail and two ordinary split rings or travelers, all being arranged and applied as shown in the United States Patent No. 136,719, as my invention does not involve two travelers or rings and any such bar, but is a single arched wire, constructed to embrace the ring-race as an ordinary traveler does, and to have a recess or eye to its arch, all as hereinbefore explained. Therefore,

What I claim as my invention is—

The new or improved spinning-ring traveler, constructed or provided with the recess or eye *e*, arranged with the arch *f* and feet *g g*, substantially as shown and described.

FRANK J. DUTCHER.

Witnesses:

R. H. EDDY,

J. R. SNOW.