

(No Model.)

2 Sheets—Sheet 1.

G. PERKINS, G. WIMPENNY & J. H. EVANS.  
RING SPINNING MACHINE.

No. 421,359.

Patented Feb. 11, 1890.

Fig. 1.

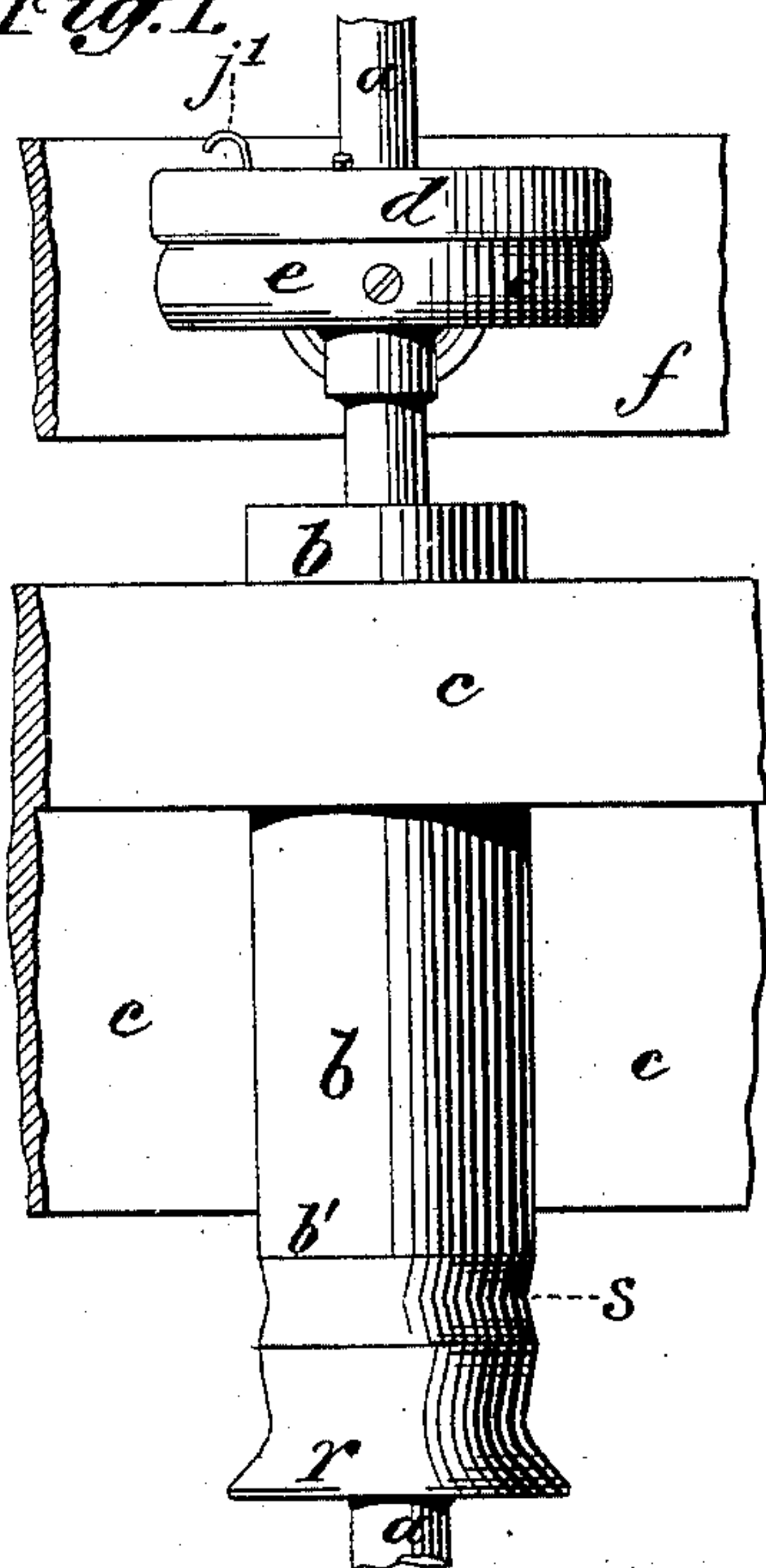


Fig. 2.

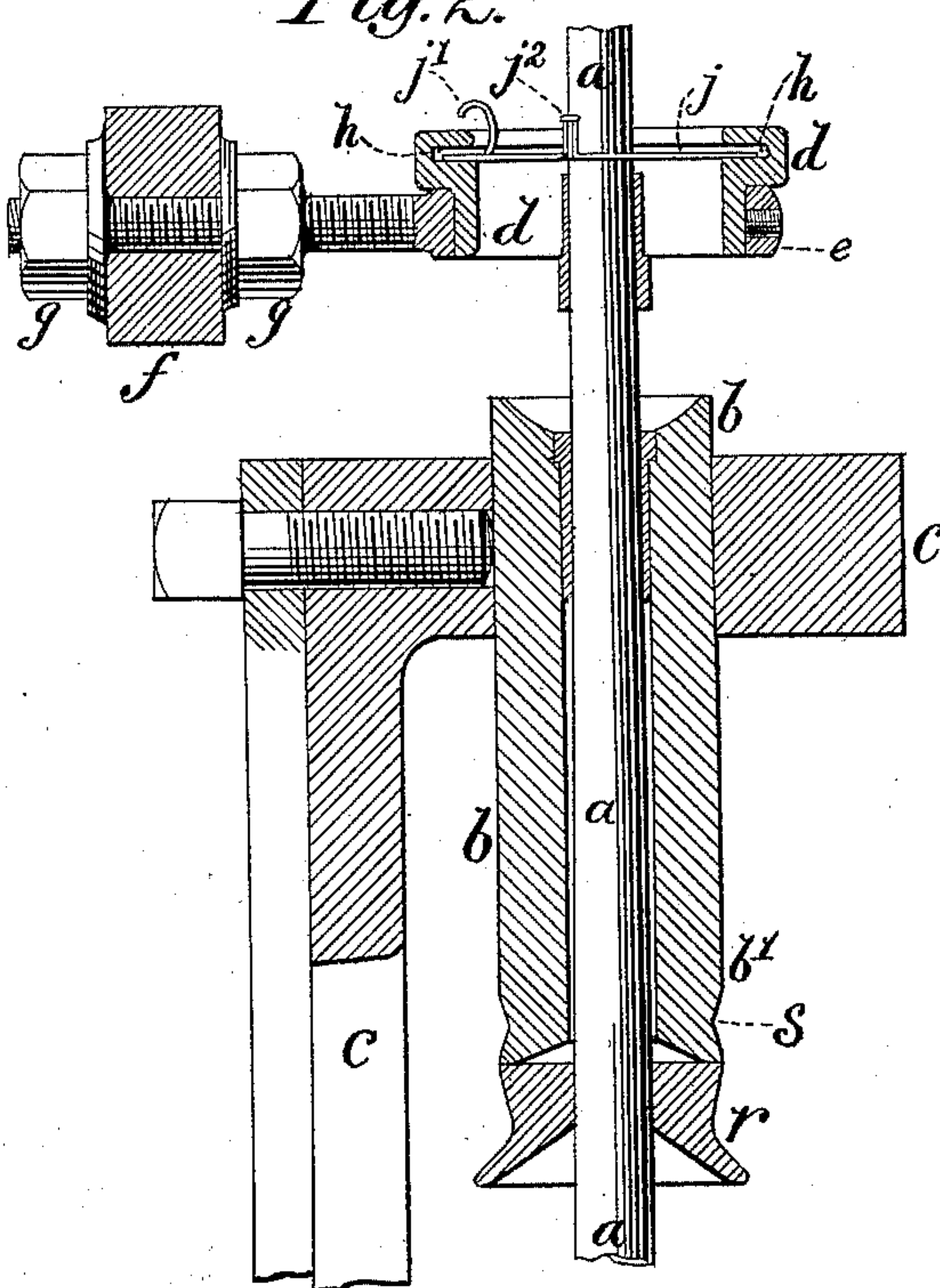


Fig. 3.

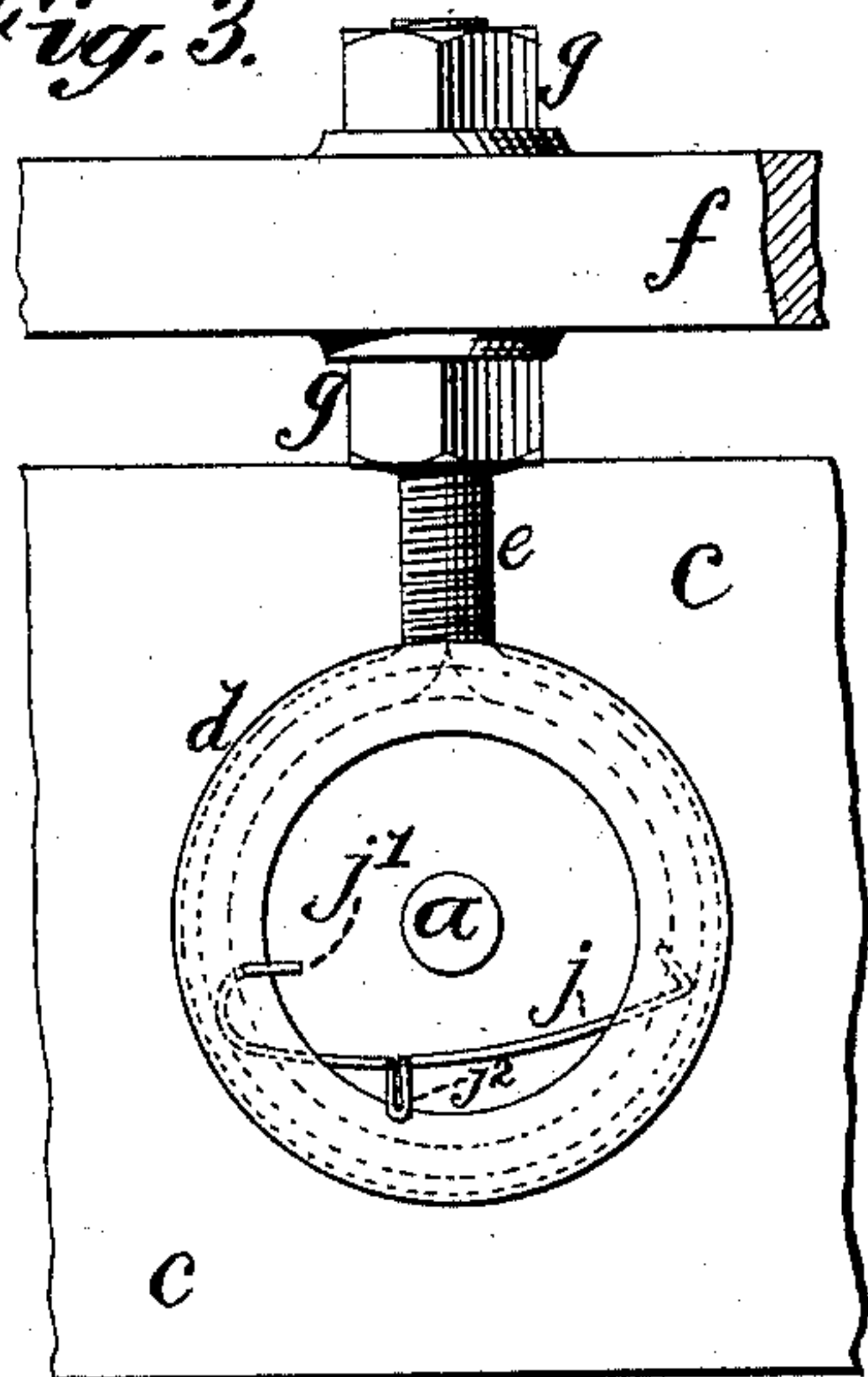


Fig. 6.

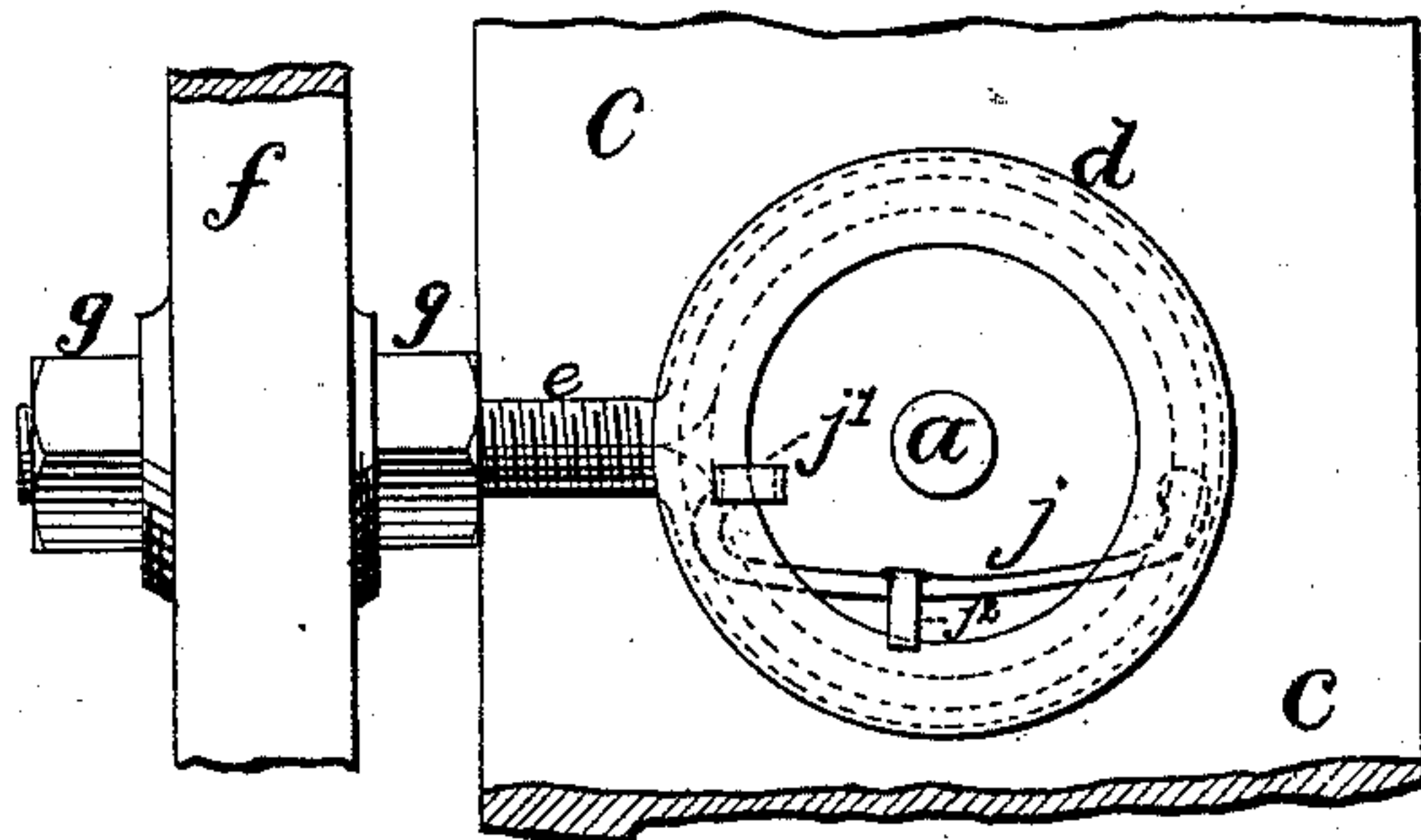


Fig. 4.

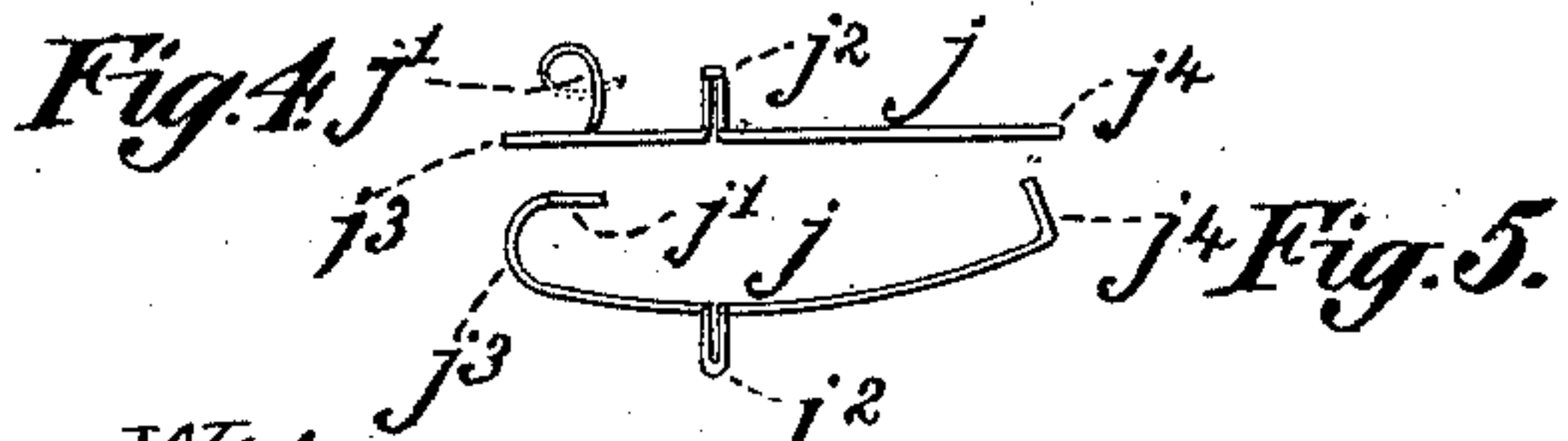
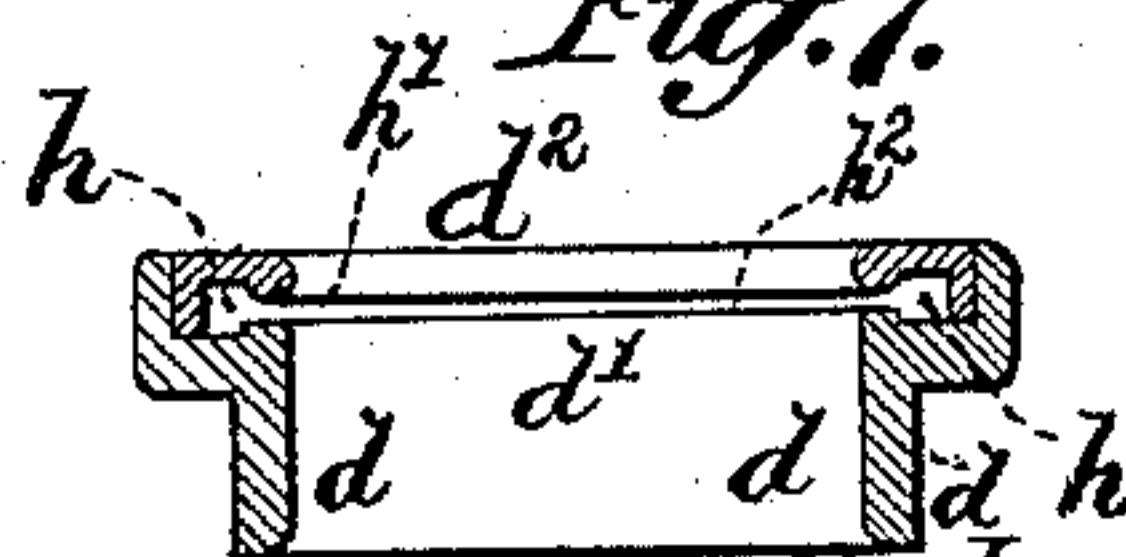


Fig. 5.

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Fig. 7.



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2 Sheets—Sheet 2.

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Fig. 8.

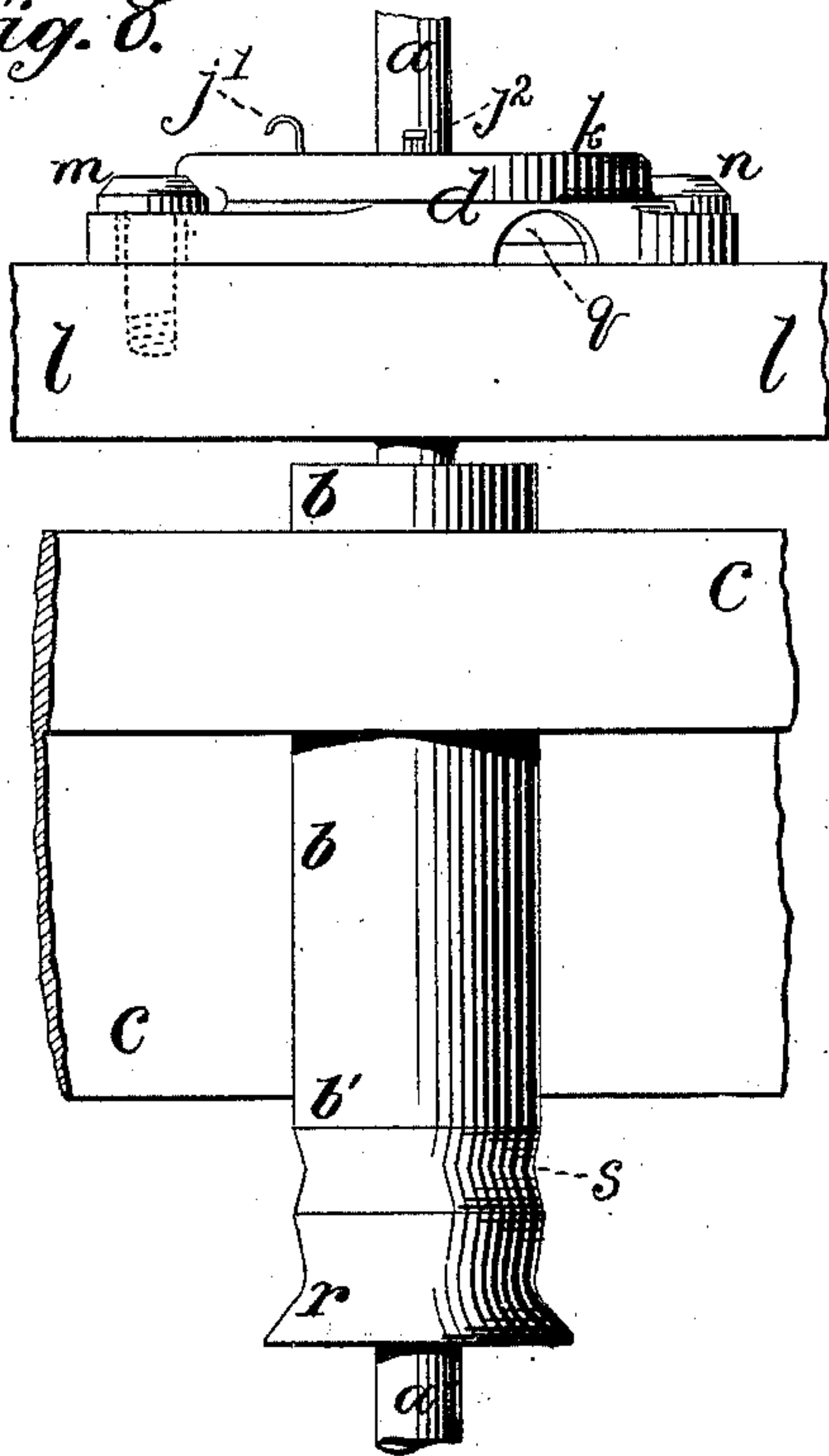


Fig. 9.

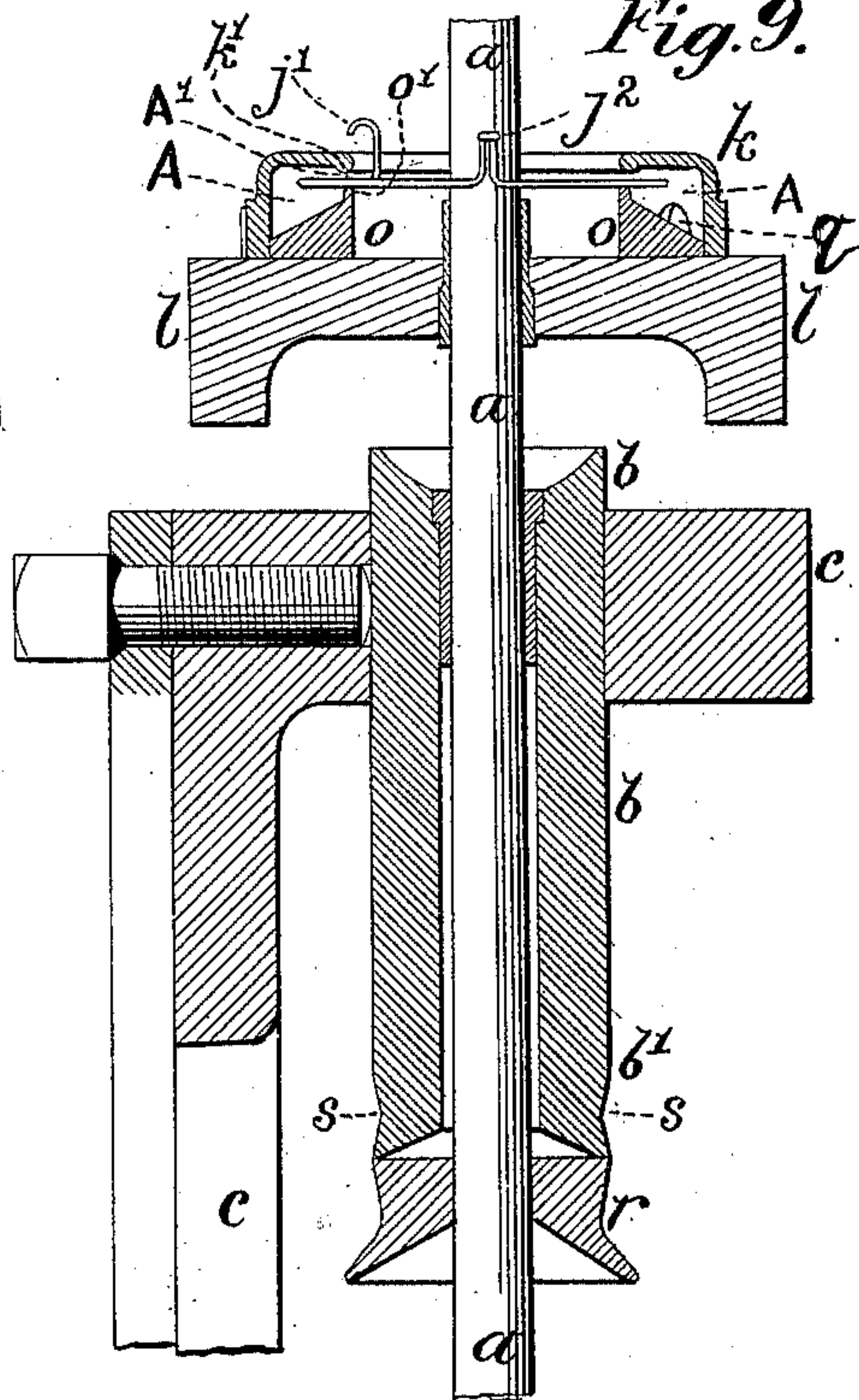


Fig. 10.

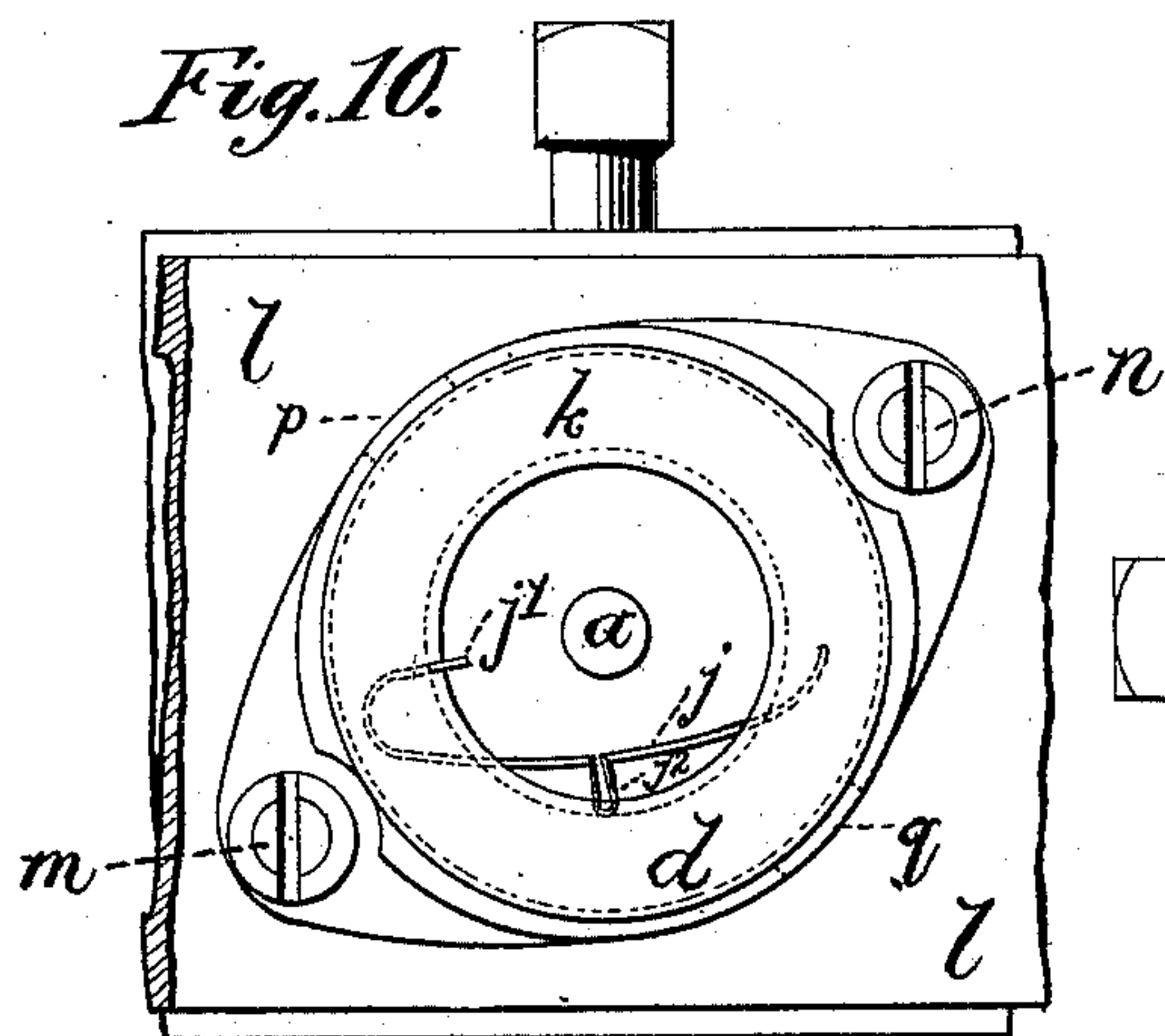


Fig. 13.

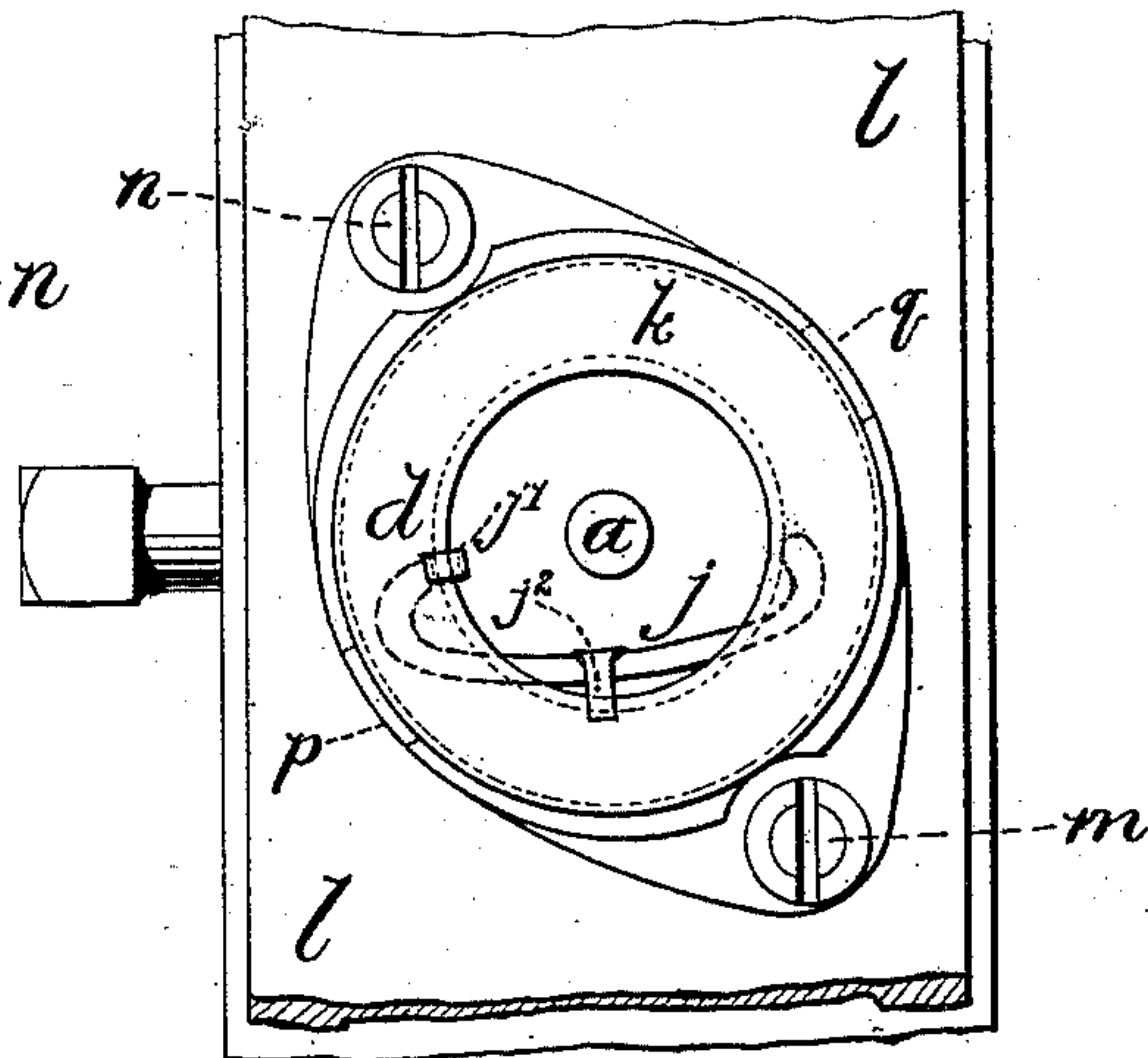


Fig. 11. j^1 j^2 j^3 j^4  
j^1 j^2 j^3 j^4  
j^1 j^2 j^3 j^4

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# UNITED STATES PATENT OFFICE.

GEORGE PERKINS, GEORGE WIMPENNY, AND JOSEPH H. EVANS, OF MANCHESTER, COUNTY OF LANCASTER, ENGLAND.

## RING-SPINNING MACHINE.

SPECIFICATION forming part of Letters Patent No. 421,359, dated February 11, 1890.

Application filed December 6, 1886. Serial No. 220,769. (No model.) Patented in England June 16, 1882, No. 2,838.

*To all whom it may concern:*

Be it known that we, GEORGE PERKINS, GEORGE WIMPENNY, and JOSEPH HAMPSON EVANS, all of Manchester, in the county of Lancaster, England, and subjects of the Queen of Great Britain and Ireland, have invented a new and useful Improvement in Ring-Spinning Machines, of which the following is a specification, reference being had to the accompanying drawings.

We have obtained British Letters Patent thereon, No. 2,838, dated June 16, 1882.

In order that our invention may be understood and carried into effect, we will describe the same by reference to the drawings herewith annexed, in which—

Figure 1 is a front view of such portion of a ring, ring-rail, bolster-rail, bolster, and spindle as is requisite to illustrate our invention. Fig. 2 is a side view, partly in section, of the parts shown in Fig. 1. Fig. 3 is a plan of a portion of the parts shown in Fig. 1. Fig. 4 is a front view, and Fig. 5 a plan, showing a form of traveler constructed according to our invention. Fig. 6 is a plan of a ring with a traveler constructed according to a modification of our invention. Fig. 7 is a section showing a modified construction of a ring. Fig. 8 shows a modification of the construction shown in Fig. 1, and shows a front view of so much of a ring, ring-rail, bolster-rail, bolster, and spindle as is requisite to illustrate our invention. Fig. 9 is a side view, partly in section, of the parts shown in Fig. 8. Fig. 10 is a plan of a portion of the parts shown in Fig. 8. Fig. 11 is a side view of a traveler shown in Fig. 10. Fig. 12 is a plan of the said traveler. Fig. 13 is a plan of a ring with a traveler constructed according to a modification of our invention.

We shall apply the same letters of reference to corresponding parts throughout the whole series of figures.

In Figs. 1, 2, and 3, *a* is a portion of an ordinary spindle, which is mounted so as to be capable of being revolved in a bolster or collar *b*, which is secured to a bolster-rail *c* in the ordinary manner. The ring *d* is shown as mounted in a clip *e*, the ends of which clip *e* pass through the lifting-rail *f* and are se-

cured in the lifting-rail *f* by the nuts *g*; but the rings *d* may be secured to a ring-rail of any suitable form or construction in any suitable manner.

In the ring *d* is formed an internal groove or recess *h*.

The traveler *j* is made of steel wire bent into the form more clearly shown in Figs. 4 and 5, Fig. 4 being a side view of the traveler, and Fig. 5 a plan thereof. One end of the wire forming the traveler is bent into a hook *j'*, and a part intermediate between the ends is bent to form a yarn-guide *j<sup>2</sup>*. The parts *j<sup>3</sup>* *j<sup>4</sup>* of the traveler *j*, which rotate in the groove or recess *h*, are curved or bent, as shown, to impart steadiness to the traveler and to furnish sufficient wearing-surface. The end *j<sup>4</sup>* of the traveler *j*, instead of being curved or bent, as shown, may be made straight. The hook *j'* may be made as a circular eye or curl, and the yarn-guide *j<sup>2</sup>* may also be slightly varied in form. The traveler *j* is sprung into its position within the groove or recess *h*, the insertion of the traveler *j* into the groove or recess *h* being facilitated by the curved form of the traveler *j*.

The sliver or yarn in passing from the drawing-rollers to the spindle first passes under the hook *j'* of the traveler *j*, and then passes on to and partially round the yarn-guide *j<sup>2</sup>* of the traveler *j*, and then passes to the spindle, on which it is wound in the form of a "cop."

From the foregoing description it will be readily understood that the traveler, while rotating in the groove or recess *h* of the ring *d*, is free to adjust itself to or be controlled by the tension of the yarn passing from the traveler *j* to the cop, such varying tension resulting from the varying diameter of the conical part of the cop upon which the yarn is being wound. Thus when winding on the smallest diameter of the cop, at which time the tension of the yarn would otherwise be excessive, the traveler yields to the pull of the yarn, and tends to be pulled nearer to the spindle than when winding upon the largest diameter of the cop. Thus the yielding of the traveler tends to equalize the tension upon the yarn being spun or doubled.



In Fig. 6 is shown a modification of the traveler  $j$ , the traveler being punched or stamped out of sheet metal. By adopting this form of the traveler  $j$  we obtain an increased area of wearing-surface at the parts which run in the groove or recess  $h$ . We prefer to harden both the rings and the travelers.

Fig. 7 illustrates another form of construction of the ring  $d$ . In this example said ring is formed in two parts  $d'$   $d^2$ , the groove or recess  $h$  being so formed that the traveler  $j$  rotates on narrow surfaces or ridges  $h'$   $h^2$ , formed in the part of the ring which is nearest the spindle. By this means the friction due to the rotation of the traveler is reduced.

Figs. 8, 9, 10, and 13 show another modification of the ring  $d$ . The ring is shown as constructed in two portions, of which one  $k$  is a cap formed preferably of steel and secured to the ring-rail  $l$  by means of the screws  $m$  and  $n$ , which pass through holes in the cap  $k$ . In the cap  $k$  we form a circular recess  $A$ , within which and resting upon the ring-rail  $l$  is a ring  $o$ , which forms the other portion of the ring  $d$ . The ring  $o$  is formed of such thickness that a space  $A'$  is left between the upper edge or ridge  $o'$  of the ring  $o$  and the ridge  $k'$  of the cap  $k$ . In this space  $A'$  the traveler  $j$  rotates. We form the upper surface of the ring  $o$  conical, so that any dirt from the ends of the traveler  $j$  may pass to and escape through openings  $p$   $q$ , formed through the sides of the cap  $k$ . The holes in the cap  $k$ , through which the screws  $m$  and  $n$  pass, being larger than the diameters of these screws, permit of the adjustment of the cap  $k$  and ring  $o$  so as to be concentric with the spindle  $a$ , in which position the cap  $k$  and ring  $o$  may be secured by the screws  $m$  and  $n$ . The cap  $k$  and ring  $o$  may be removed from the ring-rail  $l$  and from each other for cleaning or other purpose upon the removal of the screws  $m$   $n$ , and afterward the cap  $k$  and ring  $o$  may be again secured in their working position upon the ring-rail  $l$ .

The cap  $k$  and ring  $o$  together form a ring  $d$ , which supports and guides the traveler  $j$ , placed therein in a manner precisely similar to that in which the ring  $d$ , previously described in reference to and shown by Figs. 1 and 6, inclusive, supports the traveler  $j$  placed therein.

It will be seen on reference to Figs. 1, 2, 8,

and 9 that the lower end  $b'$  of the bolster or collar  $b$  is extended downward to the warve, whirl, or pulley  $r$ , fast on the spindle  $a$ . A groove  $s$  is formed in the outer surface of the end  $b'$  of the bolster or collar  $b$ , and the upper flange of the warve, whirl, or pulley  $r$  is made smaller than usual, so that the driving-band can be readily slipped out of the groove in the warve, whirl, or pulley  $r$  into the groove  $s$ , formed in the lower end  $b'$  of the bolster or collar  $b$ , whenever it is desired to stop the spindle  $a$ . By this means we are enabled to stop a single spindle without arresting the motion of any of the other spindles.

The traveler shown in Figs. 11 and 12 is like that shown in Figs. 4 and 5, except that the portion  $j'$  is not curved, except at its upper end, where it is bent in the form of a hook. In Fig. 13 the traveler is the same as that shown in Fig. 6, with the exception just referred to in describing the traveler shown in Figs. 11 and 12.

We claim—

1. The combination, with a spindle, of an internally-grooved ring through which said spindle extends, a longitudinally-bent traveler having its end portions extending into said groove, one of said end portions being bent round and having an upwardly-extending hook, and a yarn-guide on said traveler, substantially as specified.

2. The combination, with a spindle, of an internally-grooved ring through which said spindle extends, a longitudinally-bent traveler made in one piece and having its end portions extending into said groove, one of said end portions being bent round and having an upwardly-extending hook, and a yarn-guide on said traveler, substantially as specified.

3. The combination, with a spindle, of a bolster through which said spindle passes and a warve upon the spindle below said bolster, said bolster adjacent to the said warve being provided with a circumferential groove, substantially as and for the purpose specified.

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