

(No Model.)

C. H. RICHARDSON.
DOUBLING AND TWISTING FRAME.

No. 574,941.

Patented Jan. 12, 1897.

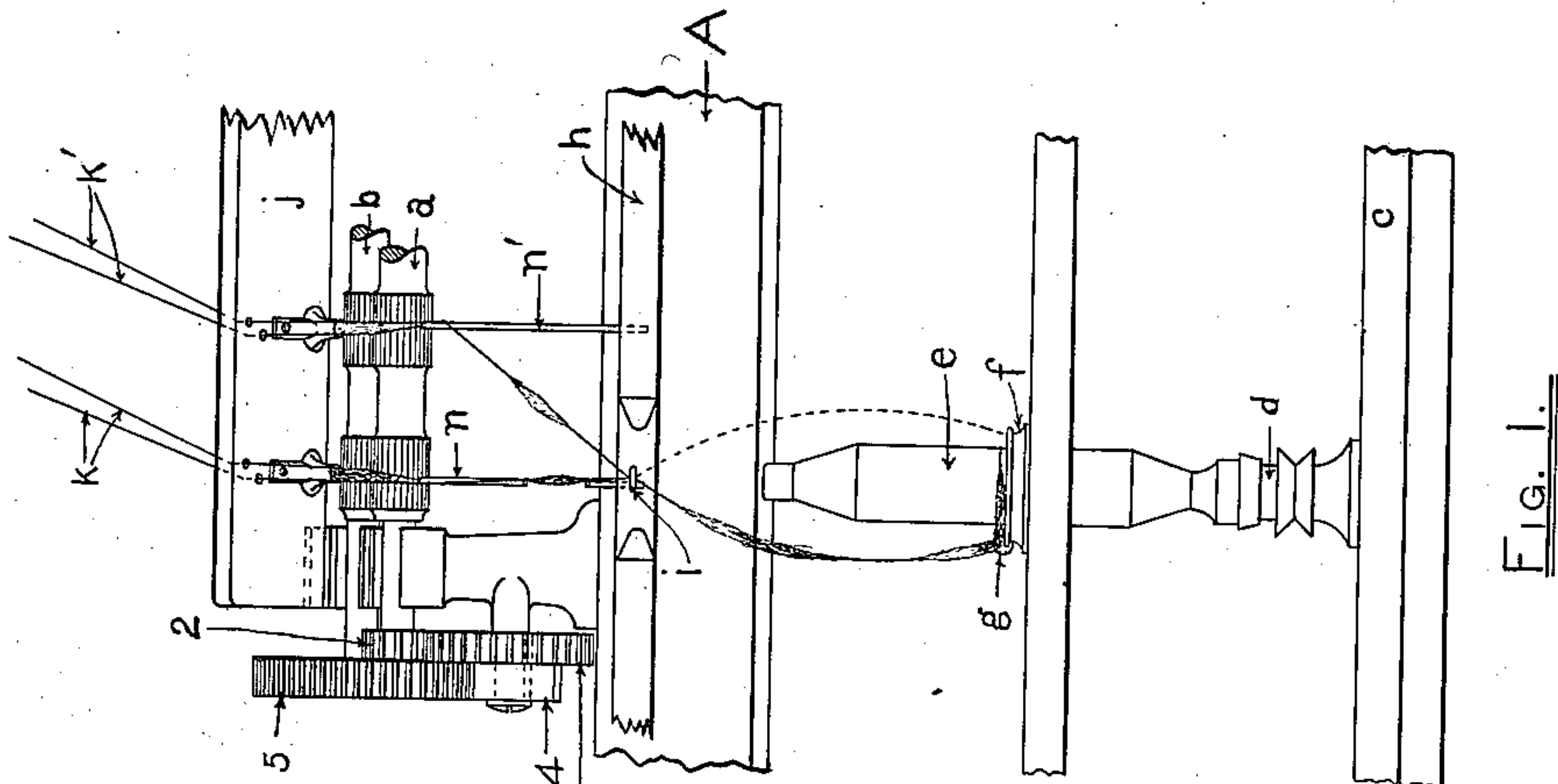


Fig. 1.

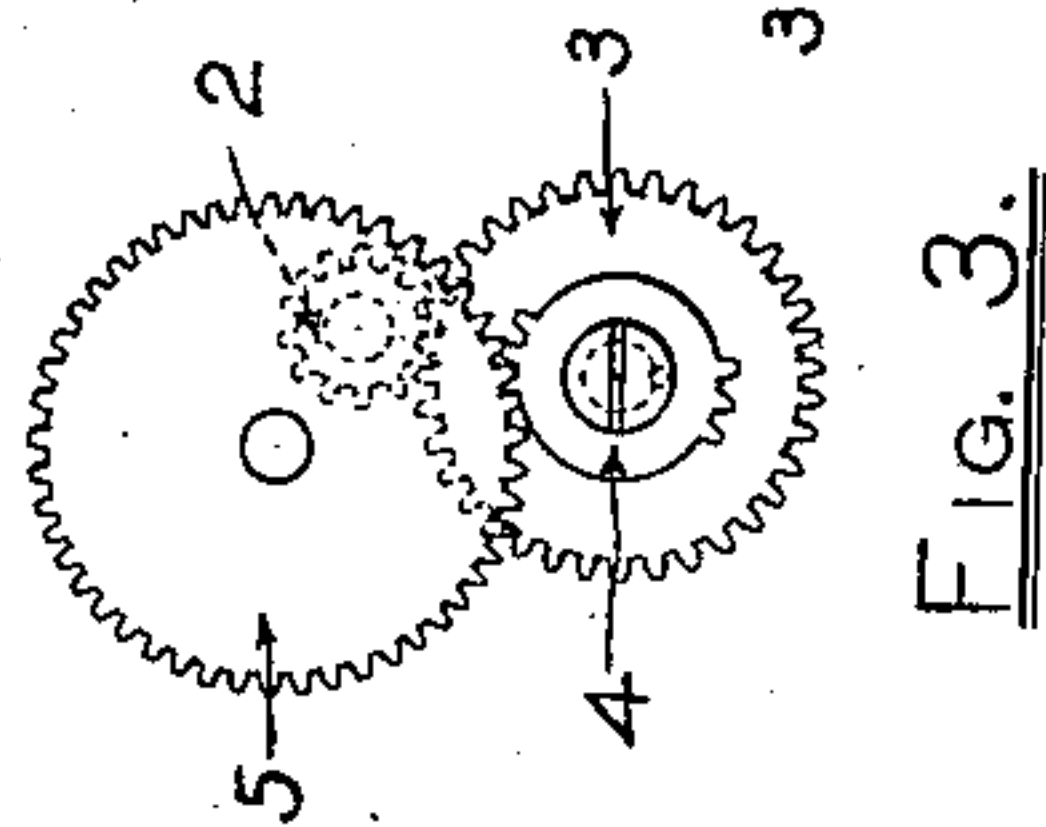


Fig. 3.

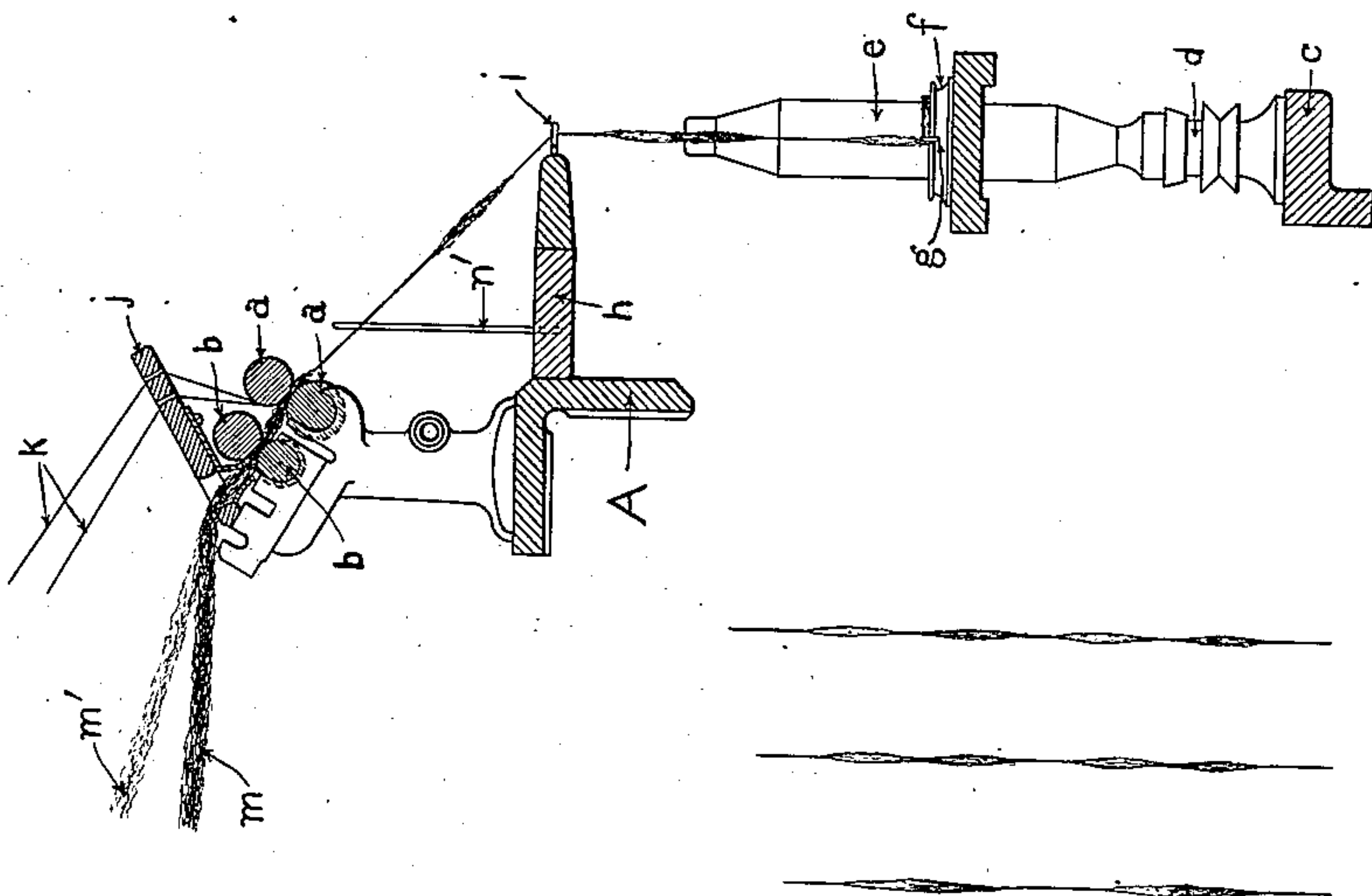


Fig. 2.

Fig. 4.

WITNESSES.

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DOUBLING AND TWISTING FRAME.

SPECIFICATION forming part of Letters Patent No. 574,941, dated January 12, 1897.

Application filed October 16, 1896. Serial No. 609,072. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. RICHARDSON, a citizen of the United States, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Doubling and Twisting Frames, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention has for its object to provide a mechanism by means of which a thread having at intervals tufts or enlargements each of two different colors or materials may be produced.

In carrying my invention into effect I provide, in combination with a twisting device of any suitable or well-known construction, means for delivering thereto two pairs or sets of yarns, means for delivering to each of said sets or pairs of yarns tufts or fragments of rovings, the color or character of the tufts or fragments of roving delivered to one set or pair of yarns differing from the color or character of the tufts or fragments of rovings delivered to the other set of yarns, and guiding means whereby the said two pairs or sets of yarns are brought together and delivered to said twisting device with the tufts or fragments of roving in one set of yarns immediately in succession to the tufts or fragments of roving of the other set of yarns to form a completed compound yarn having enlargements, each of two different colors or materials, at intervals throughout its length.

In the accompanying drawings, Figure 1 is a front elevation of a portion of a doubling and twisting frame embodying my invention. Fig. 2 is a sectional view of the same. Fig. 3 is a detail view of the gearing shown in Fig. 1. Fig. 4 is a conventional representation of compound threads which may be produced by the use of my invention.

Referring to the drawings, A represents the roller-beam, on which is suitably mounted a pair of continuously-rotating delivery-rolls *a*, which may be driven in any suitable manner and rearward of which is mounted a pair of intermittingly-driven rolls *b*.

In the form of my invention shown herein the back rolls *b* are intermittingly driven from the front rolls *a* through the pinion 2, mounted on the shaft of one of the front rolls,

a gear-wheel 3, with which the said pinion meshes, a mutilated gear 4, rotating with said gear-wheel 3, and a gear-wheel 5, attached to the shaft of one of the said back rolls.

My invention may be carried into effect by means of any well-known form of twisting device, but I have herein illustrated the same in connection with a portion of a doubling and twisting frame of well-known construction, in which *c* represents the spindle-rail; *d*, the spindle; *e*, the bobbin on said spindle; *f*, the ring, and *g* the traveler. The roller-beam A is provided with a thread-board *h*, which is to have in practice a thread-guide *i* for each of the spindles employed.

Suitably supported above the rolls *a* and *b* is a guide-board *j*, which will have suitable guides for the two pairs or sets of threads or yarns *k* and *k'* to be delivered to each spindle. To each pair or set of yarns *k* or *k'* I deliver tufts or fragments of roving *m* or *m'* of different or contrasting colors or characters by passing the two rovings through the intermittingly-rotated back rolls, the positions of said rovings coinciding with the positions of the said sets of yarns, so that as fragments or tufts of roving are broken off by the continuously-rotating front rolls *a* said fragments or tufts will be delivered to their respective pairs or sets of yarns *k* *k'* and will pass with the latter to the twisting device. In order that these fragments of rovings delivered to the two different pairs or sets of yarns *k* or *k'* may be brought together in immediate succession to each other, to form an enlargement of two different colors in the completed yarn, I locate the thread-guide *n'* for the said pair or set of yarns *k'* in such position relative to the thread-guide *i* that the said pair or set of yarns *k'*, with their tufts of roving *m'*, will travel a greater distance after leaving the front delivery-rolls *a* and before reaching the thread-guide *i* than will the pair or set of yarns *k*.

The guide *n'* may be moved lengthwise of the rolls to a limited extent, and the positions of the holes in the guide-board *j* through which the threads *k'* pass can be correspondingly changed to vary the product.

The operation of my invention is as follows: When the machine is in operation and is supplied with threads and rovings, as represented in the drawings, the two pairs or sets of yarns

k or k' will be carried forward continuously by the front delivery-rolls a and will pass with the fragments or tufts of rovings which are delivered thereto to the spinning device, and these two pairs or sets of yarns may be brought together at the thread-guide i with their fragments or tufts of rovings of different colors immediately succeeding each other, and will be twisted into a compound thread having enlargements at intervals of two different colors. Supposing the roving m to be black and the roving m' to be yellow, each enlargement of the completed compound thread will consist of a black fragment or tuft of roving immediately succeeded by a yellow fragment or tuft of roving, so that as the compound thread is twisted together it will consist of separated enlargements, each consisting of two different colors.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination with a twisting device, of means for delivering two pairs or sets of yarns thereto, means for delivering to each of said sets of yarns, at intervals, tufts or fragments of roving, and guiding means whereby the said two pairs or sets of yarns with their

tufts are brought together and delivered to said twisting device.

2. The combination with a twisting device, of a pair of continuously-driven delivery-rolls, guides for directing two pairs or sets of yarns to said rolls, a pair of intermittingly-driven back rolls for delivering tufts or fragments of roving to two pairs or sets of yarns passing between the said continuously-driven rolls, a guide through which both of said pairs or sets of yarns with their fragments of rovings pass to said twisting device, and a second guide, removed from the first-named guide, and by means of which one of said pairs or sets of yarns with its tufts or fragments of roving is caused to travel in an indirect path in passing from the continuously-driven delivery-rolls to the said first-named guide, so that its tufts will be caused to succeed the tufts carried by the other pair or set of yarns in passing to the said twisting device.

In testimony whereof I affix my signature in the presence of two witnesses.

CHAS. H. RICHARDSON.

Witnesses:

D. E. STIMPSON,
H. H. PRESSEY.