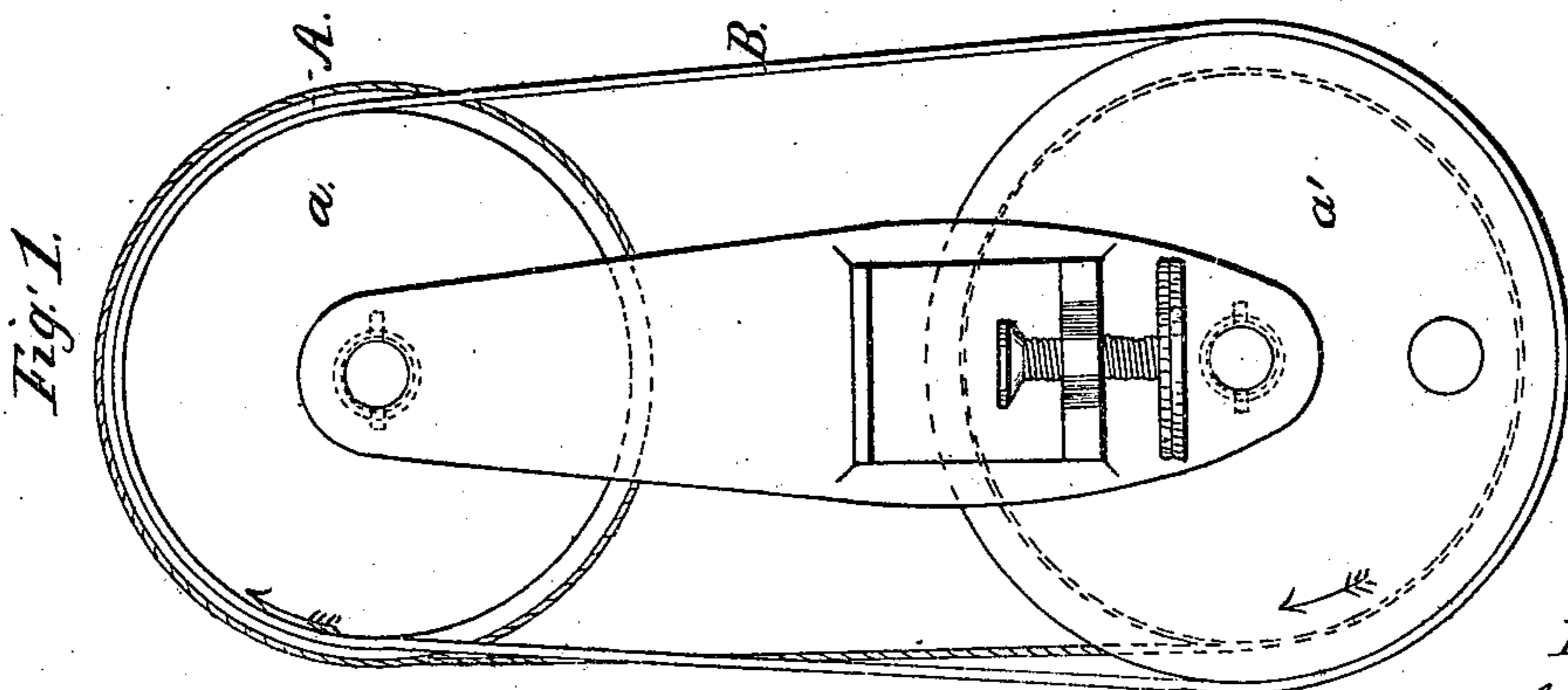
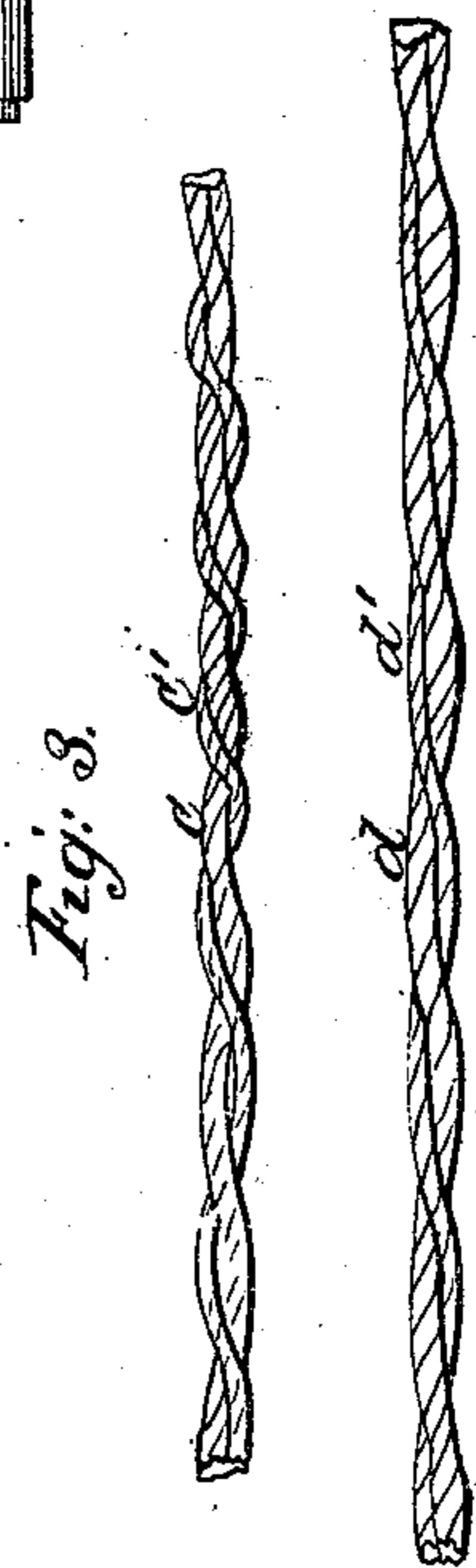
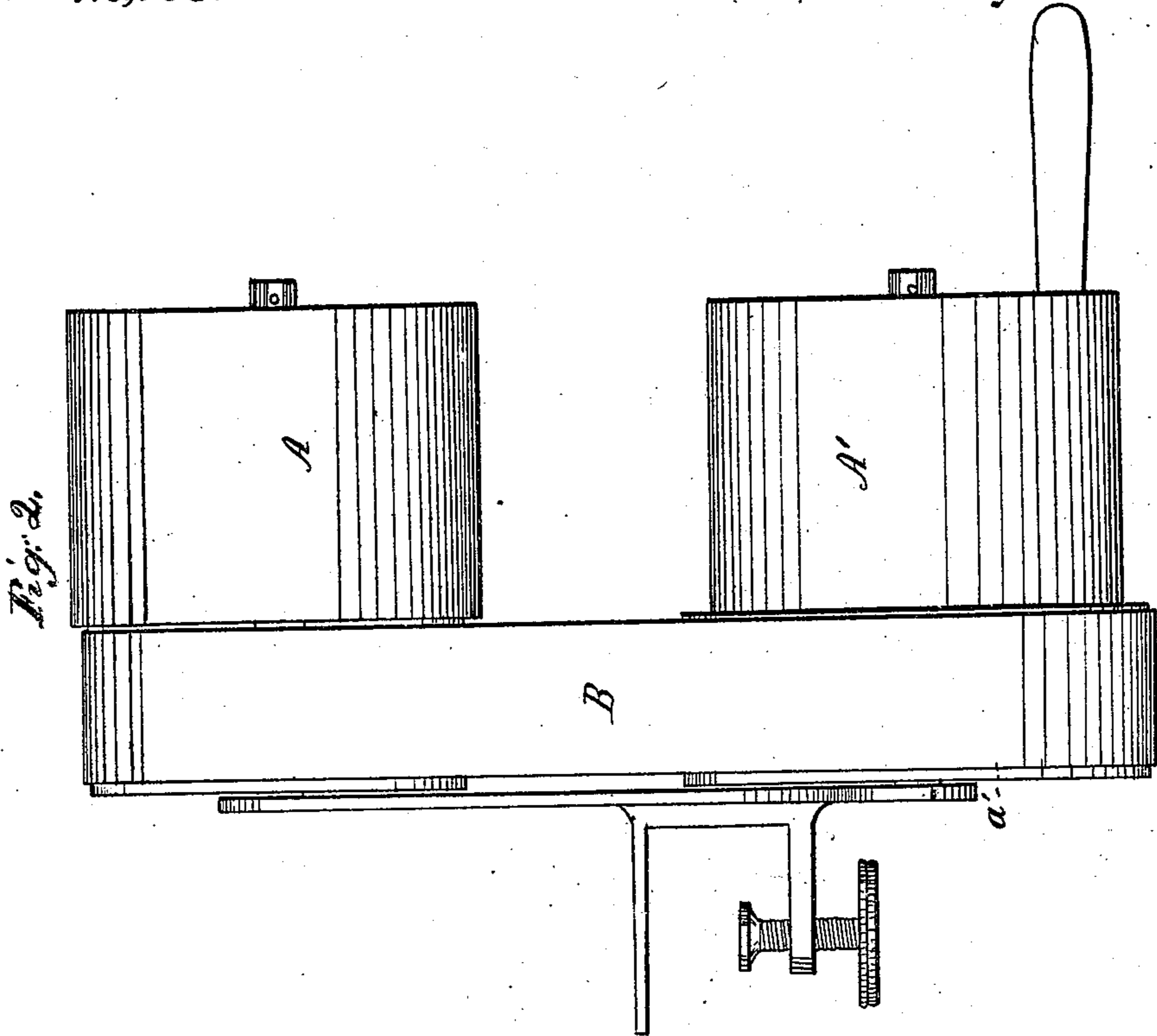


Atwood & Holland.
Sewing Silk Manufacture.

N^o 42,153.

Patented Apr. 5, 1864.



Witnesses.
J. W. Coombs
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UNITED STATES PATENT OFFICE.

J. E. ATWOOD AND G. HOLLAND, OF MANSFIELD, CONNECTICUT.

IMPROVEMENT IN THE MANUFACTURE OF SEWING-SILK.

Specification forming part of Letters Patent No. 42,153, dated April 5, 1864.

To all whom it may concern:

Be it known that we, J. E. ATWOOD, and G. HOLLAND, of Mansfield, in the county of Tolland and State of Connecticut, have invented a new and useful Improvement in the Manufacture of Sewing-Silk; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side view of the means employed for carrying out our invention; Fig. 2, a front view of the same; Fig. 3, enlarged or magnified views of pieces of sewing-silk, drawn with a view of showing clearly the character of our invention.

Similar letters of reference indicate corresponding parts in the several figures.

In the manufacture of sewing-silk it is essential that the strands or cords, while being twisted to form the thread, be of an equal thickness throughout, and the cords or strands also kept at a uniform tension, in order to form an even or uniform twist of the same. This has not hitherto been perfectly done, and the sewing-silk, after manufacture, is necessarily sorted and divided into several qualities, according to the evenness or regularity of the twist. The reason for this imperfectness of the manufactured article is due, in the first place, to the stock—the irregularity in the imported thread, the filaments of which as they are unwound from the cocoons are not watched and kept in an even state, filaments not being added to compensate for breakage and their gradual diminishing thickness as they are unwound from the cocoons. Another reason is carelessness in the matching operation—that is, the twisting of the cords or strands to form the thread of silk.

The duty of the attendant of the matching-frame consists in watching the cords or strands as they are unwound from the spools or bobbins and twisted, and if one cord or strand becomes thinner or thicker than another, to break it off and put another in its place equal in thickness to those on the frame. If this be neglected—and it almost invariably is to a greater or less extent—uneven thread is the result. To obviate these difficulties, we subject the silk, after being twisted and moistened, and before being deprived of its

natural gum, to as great a state of tension as it will bear without danger of breaking, and thereby draw or stretch the several cords or strands so as to form an even and first quality of merchantable thread.

In carrying out this invention the means employed are extremely simple. Two reels or drums, A A', (see Figs. 1 and 2), are employed, the peripheries of which move with unequal speeds, caused either by having the reels or drums connected by gears of different diameters or by having a belt, B, pass over pulleys *a a'* of different diameters, or by having gears or pulleys of equal diameter and one reel or drum smaller in diameter than the other. The silk, properly moistened, is wound upon the reel or drum having the slowest motion, and is then connected to the periphery of that having the quicker motion, and wound upon the latter from the former, the difference in the speed of the reels or drums causing the silk to be stretched or drawn so as to present an even or smooth surface.

By referring to Fig. 3 the end accomplished by our invention will be clearly understood. *c c'* represent the cords or strands of a piece of sewing-silk, one, *c*, being thicker than the other, *c'*. During the twisting of these cords or threads the thicker thread, *c*, will, on account of not being quite so flexible as the thinner one, *c'*, have less twist than the latter, *c'* having the appearance of being wound upon *c*. This not only gives a rough unsightly appearance to the thread, but greatly deteriorates it for actual use. It is liable to cut and injure the fabric which is sewed with it, and does not receive the dye or color as well as if it were smooth, and consequently will lack luster and vividness. This unevenness in the twist is also produced in a greater or less degree by having the cords or threads subjected to an unequal tension while being twisted, one cord or thread being looser than the other, in which case the loose or slack thread will wind upon the taut one. Below this uneven piece of sewing silk there is represented in Fig. 3 an even piece, the strands *d d'* of which are of unequal thickness, but, in consequence of being stretched by our improvement, are made to assume an even and uniform appearance. Thus by this simple means sewing-silk of a poor quality may be

made of the first merchantable class, the care hitherto required in matching avoided, and a great saving thereby effected.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

The process of giving sewing-silk a uniform or evenly-twisted appearance by subjecting the same, after being twisted and moist-

ened, and before being deprived of its natural gum, to a requisite degree of tension, in the manner substantially as herein set forth.

J. E. ATWOOD.
G. HOLLAND.

Witnesses:

JAMES H. HOLLAND,
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