

J. HIGGINSON, Jr. & H. ARUNDEL.
YARN OR THREAD WINDING AND LIKE MACHINE.
APPLICATION FILED JUNE 2, 1909.

951,396.

Patented Mar. 8, 1910.

2 SHEETS—SHEET 1.

Fig. 1

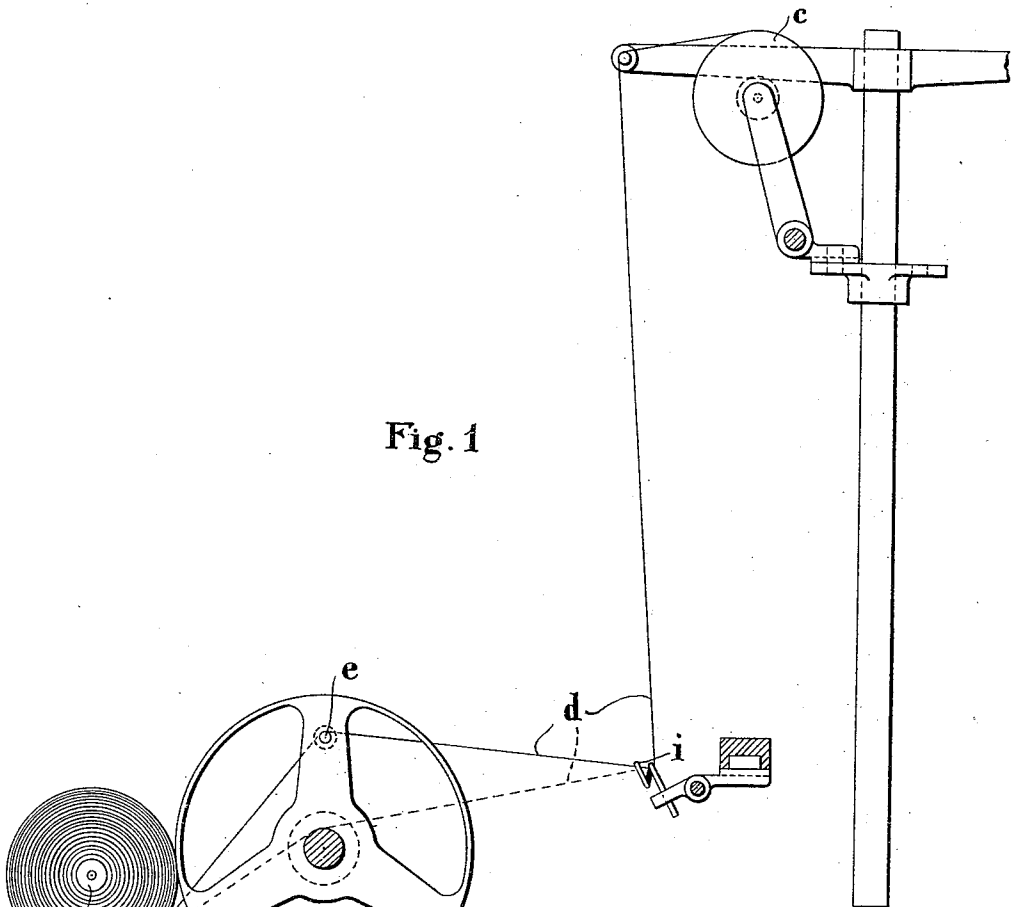
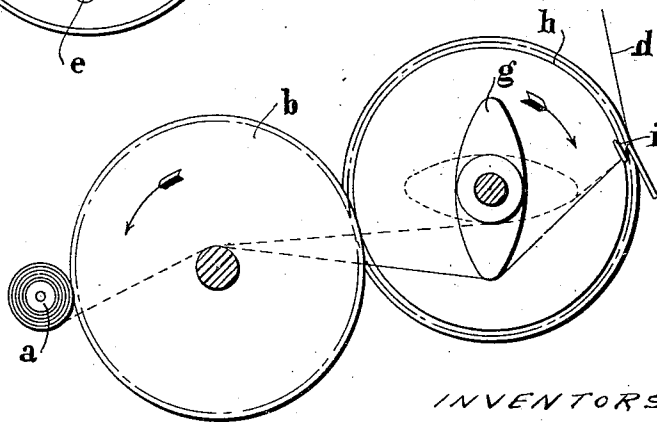


Fig. 3



WITNESSES

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INVENTORS

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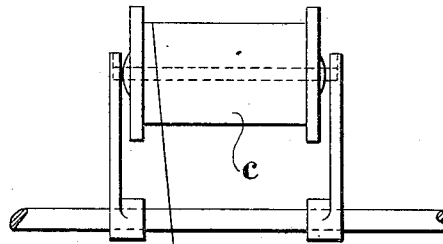


Fig. 2

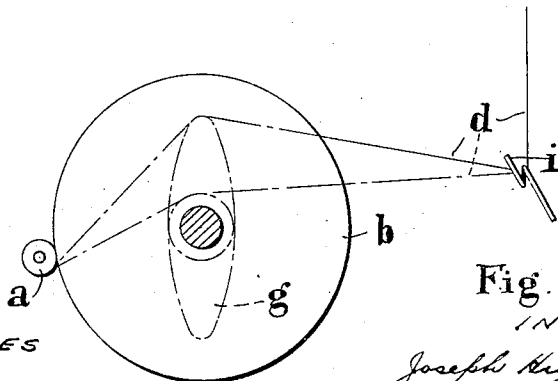
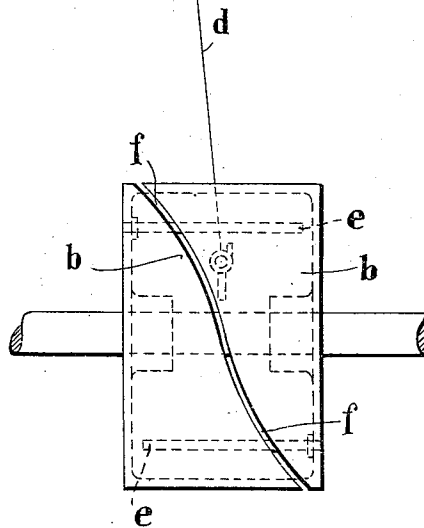


Fig. 4

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1910

UNITED STATES PATENT OFFICE.

JOSEPH HIGGINSON, JR., AND HUBERT ARUNDEL, OF STOCKPORT, ENGLAND.

YARN OR THREAD WINDING AND LIKE MACHINE.

Specification of Letters Patent.

Patented Mar. 8, 1910.

951,396.

Application filed June 2, 1909. Serial No. 499,685.

To all whom it may concern:

Be it known that we, JOSEPH HIGGINSON, Jr., and HUBERT ARUNDEL, subjects of the King of Great Britain and Ireland, residing at Sovereign Works, Stockport, in the county of Lancaster, England, have invented new and useful Improvements in Yarn or Thread Winding and Like Machines, of which the following is a specification.

This invention relates to yarn or thread winding and like machines of the type in which the yarn is guided on to the bobbins or cheeses being wound by split drums or their equivalent.

In the winding operation it is found that when the yarn or thread is drawn off a rotating cheese, bobbin or its equivalent for rewinding purposes, it frequently breaks between the unwinding and winding elements so rendering it practically impossible to carry on the operation, the trouble being most marked when fine yarn is being wound.

By investigation and experiment we have found that the difficulty arises owing to the length of yarn between the unwinding and winding elements continually increasing and diminishing due to the change in the angles (produced by the guiding slit in the split drum) at which the yarn or thread is passed on to and withdrawn from said elements. Such change in the length of the yarn as aforesaid causes corresponding changes in the rate of rotation of the unwinding element, and as said rotation is produced by the yarn being withdrawn therefrom the tension upon said yarn is being continually altered.

Our invention comprises the provision of automatic means for insuring that the yarn between the winding and unwinding elements shall always be of the same or practically the same length, and the tension thereon therefore uniform.

Referring to the accompanying sheet of explanatory drawings:—Figure 1 is an end view, and Fig. 2 a front view, of part of a split drum winding frame having our invention applied thereto in one convenient form. Figs. 3 and 4 are end views of modified applications of our invention.

The same reference letters in the different views indicate the same or similar parts.

In the illustrated application of our invention, we mount the cheese or bobbin *a* being wound, the split guiding drum *b* and the cheese *c* being unwound in any usual and ordinary manner, and provide means (not

shown) for inserting the yarn *d* into the split drum *b* and for bringing the cheese *a* being wound into, or removing it from, contact with the said drum.

Within the drum and extending parallel with the axis thereof we provide two arms *e* or their equivalent at diametrically opposite points (see Figs. 1 and 2) upon which the yarn *d* as it passes through the drum *b* can bear. Said arms *e* which are in the form of pins screwed into the end plate or boss like support of the drum *b* rotate with or in unison with the drum and are so positioned with respect to the guiding slit *f*, that when the latter is deflecting the yarn *d* at the largest angle (that is when the greatest length of yarn is extended between the winding and unwinding elements *a* and *c* respectively) they are clear of the yarn, which then assumes the position shown by a dotted line in Fig. 1, but as the amount of such deflection gradually decreases, said arms engage the yarn and deflect it to an increasing extent. By this means we insure that the amount of yarn extended between the winding and unwinding elements is practically constant and so provide for a uniform tension upon the yarn as it is wound.

i is a stationary thread guide.

Instead of arranging the auxiliary deflecting arms or their equivalent within the split drum *b* as before described, we may place the same external to the drum, means being provided for moving them in unison with the drum for producing the effect before described. In the example illustrated at Fig. 3, a cam *g* carried by the shaft of a drum *h* driven from the split drum *b* is employed for effecting the desired object. Fig. 4 illustrates a similar cam disposed within the split drum.

We do not limit ourselves to any particular form of, or means for actuating, the aforesaid auxiliary deflectors *e* and *g* nor to any particular position of same with respect to the split guiding drum *f* but we may modify the details of our invention to suit any particular requirements.

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

1. In yarn or thread winding and like machines, in combination, an unwinding element, a winding element, a drum having a slot therein for guiding the yarn or thread on to said winding element, and means neu-

tralizing the effect of the variations in deflection of the yarn or thread, produced by said guiding slot, upon the length of yarn or thread between the winding and unwinding elements, as set forth.

2. In yarn or thread winding and like machines, in combination, an unwinding element, a winding element, a drum having a slot therein for guiding the yarn or thread on to said winding element, and means producing a uniform tension upon the yarn or thread between the winding and unwinding elements, as set forth.

3. In yarn or thread winding and like machines, in combination, a winding element, an unwinding element, a drum having a slot therein for guiding the yarn on to said winding element, and means maintaining a uniform length of yarn or thread between the winding and unwinding elements, as set forth.

4. In yarn or thread winding and like machines, in combination, a winding element, an unwinding element, a drum having a slot therein for deflecting the yarn or thread and guiding it on to said winding element, and auxiliary means operating in unison with said guiding slot for maintaining a uniform length of yarn between said winding and unwinding elements, as set forth.

5. In yarn or thread winding and like machines, in combination, a rotating unwinding element, a drum, a winding element rotated by said drum, said drum having a yarn guiding slot deflecting the yarn

or thread and guiding it on to said winding element, and auxiliary means operating in unison with said guiding slot for maintaining a uniform length of yarn between said winding and unwinding elements, as set forth.

6. In yarn or thread winding and like machines, in combination, a rotating unwinding element, a drum, a winding element frictionally rotated by contact with said drum, said drum having a slot therein for deflecting the yarn or thread and guiding it on to said winding element, and auxiliary means within said drum deflecting the yarn between said winding and unwinding elements, as set forth.

7. In yarn or thread winding and like machines, in combination, a rotating unwinding element, a drum, a winding element frictionally rotated by contact with said drum, said drum having a slot therein for deflecting the yarn or thread and guiding it on to said winding element, and screwed pins supported within and by said drums at diametrically opposite points and extending parallel with the axis thereof, as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOSEPH HIGGINSON, JR.
HUBERT ARUNDEL.

Witnesses:

ARTHUR HUGHES,
ELDON A. KING.