No. 834,420. PATENTED OCT. 30, 1906.

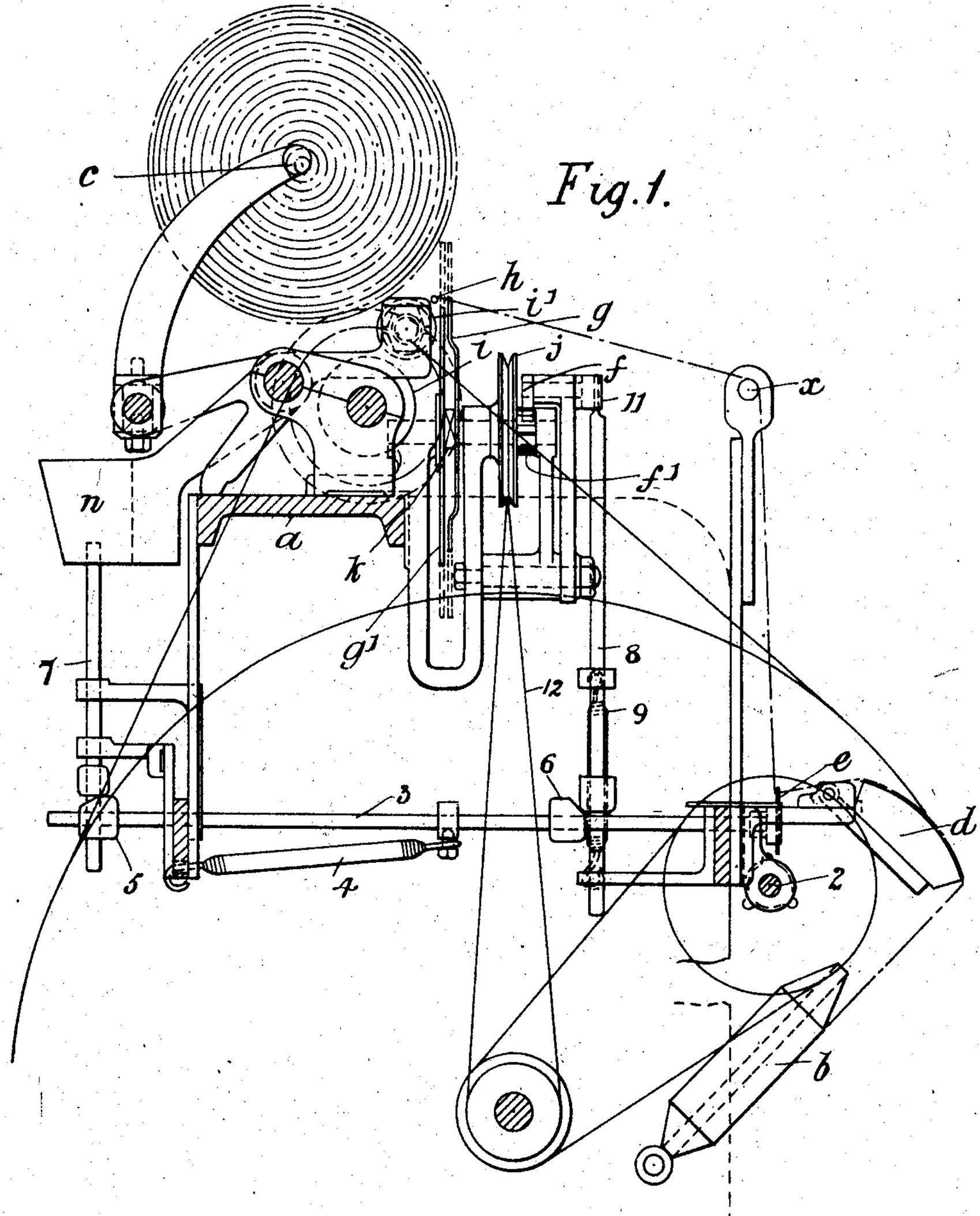
C. D. TAYLOR.

QUICK TRAVERSE WINDING FRAME, &c.

APPLICATION FILED NOV. 5, 1904.

4 SHEETS—SHEET 1.

Fig. 1.




Witnesses
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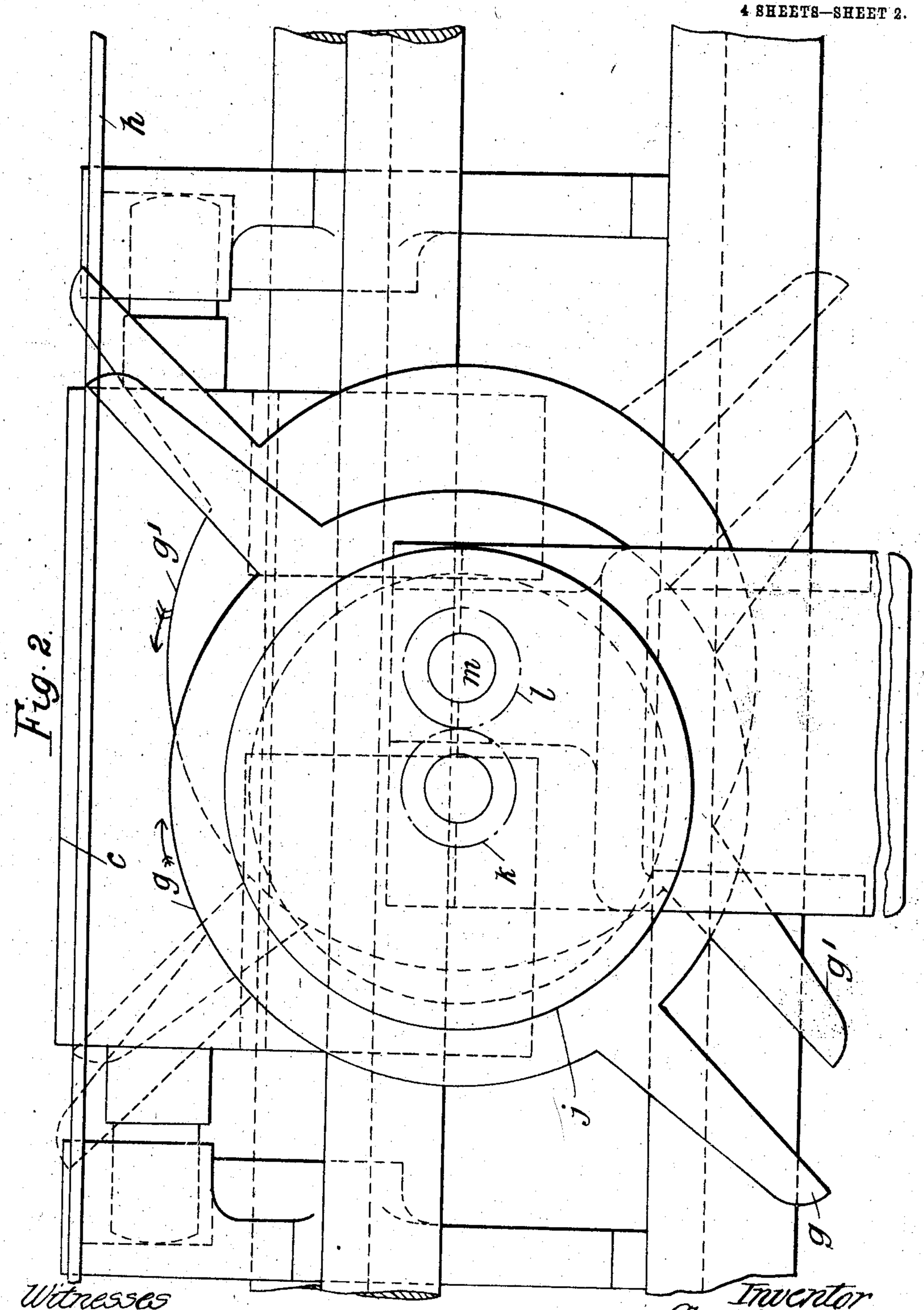


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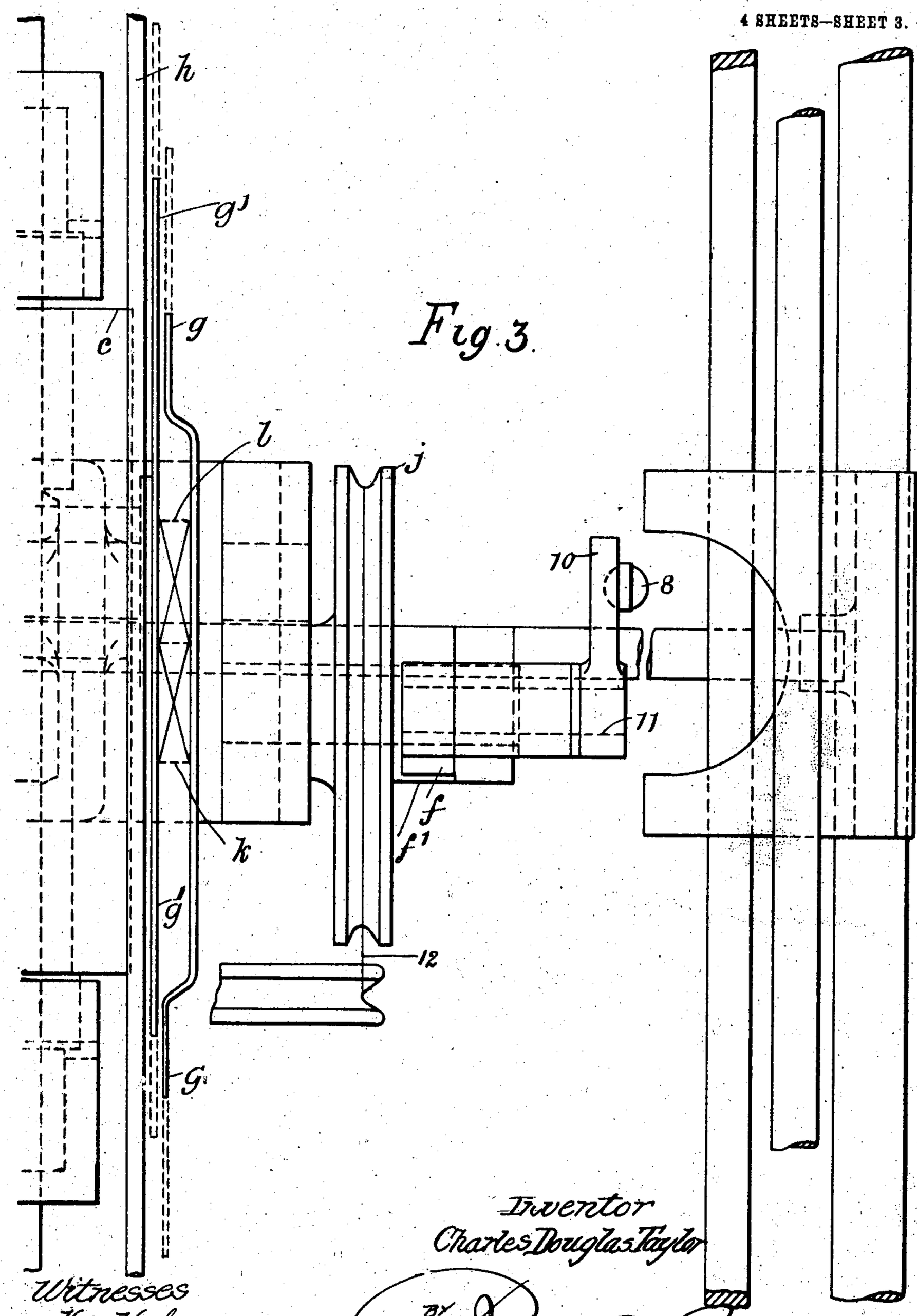


Fig. 3.

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4 SHEETS—SHEET 4.

Fig. 4.

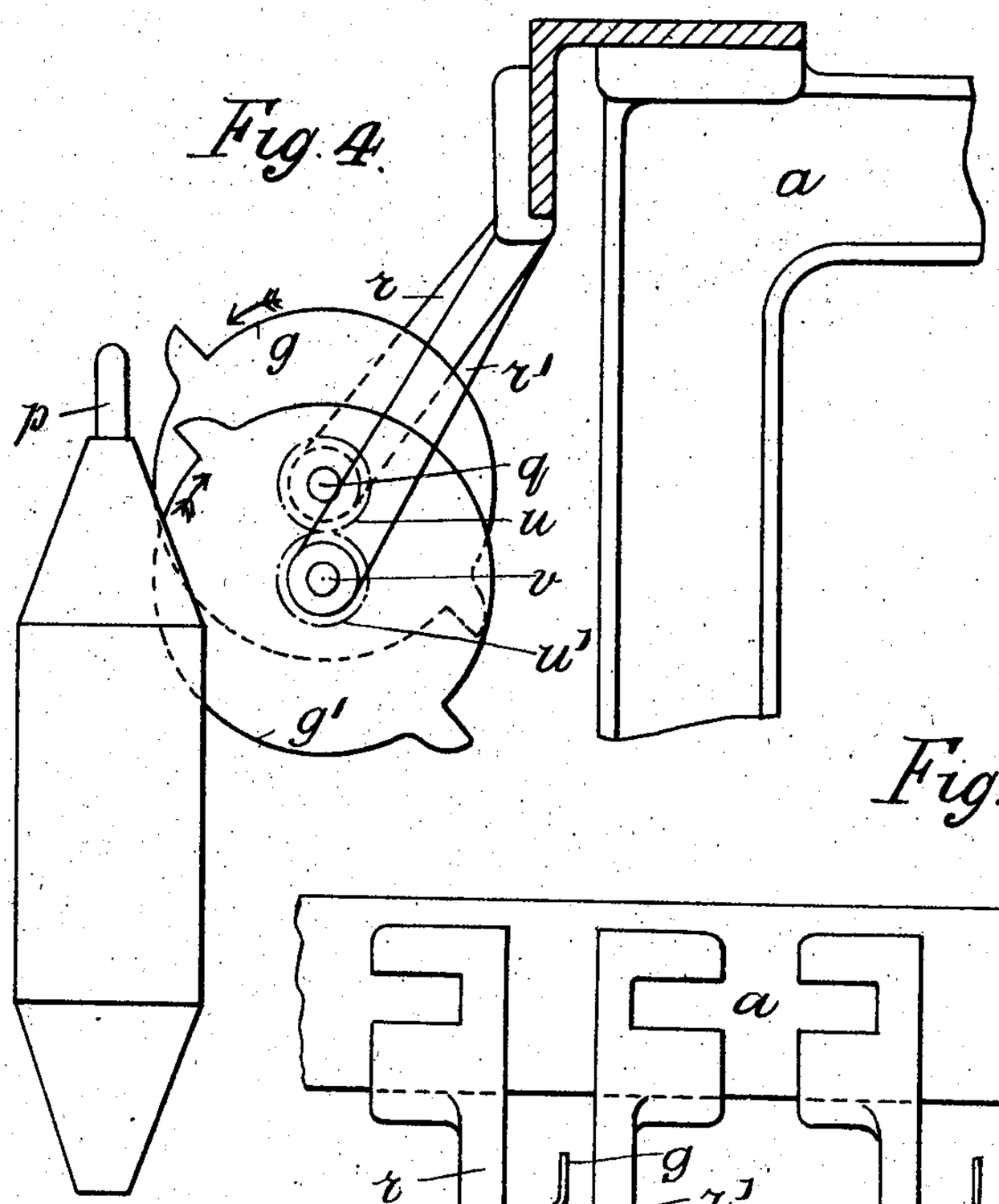
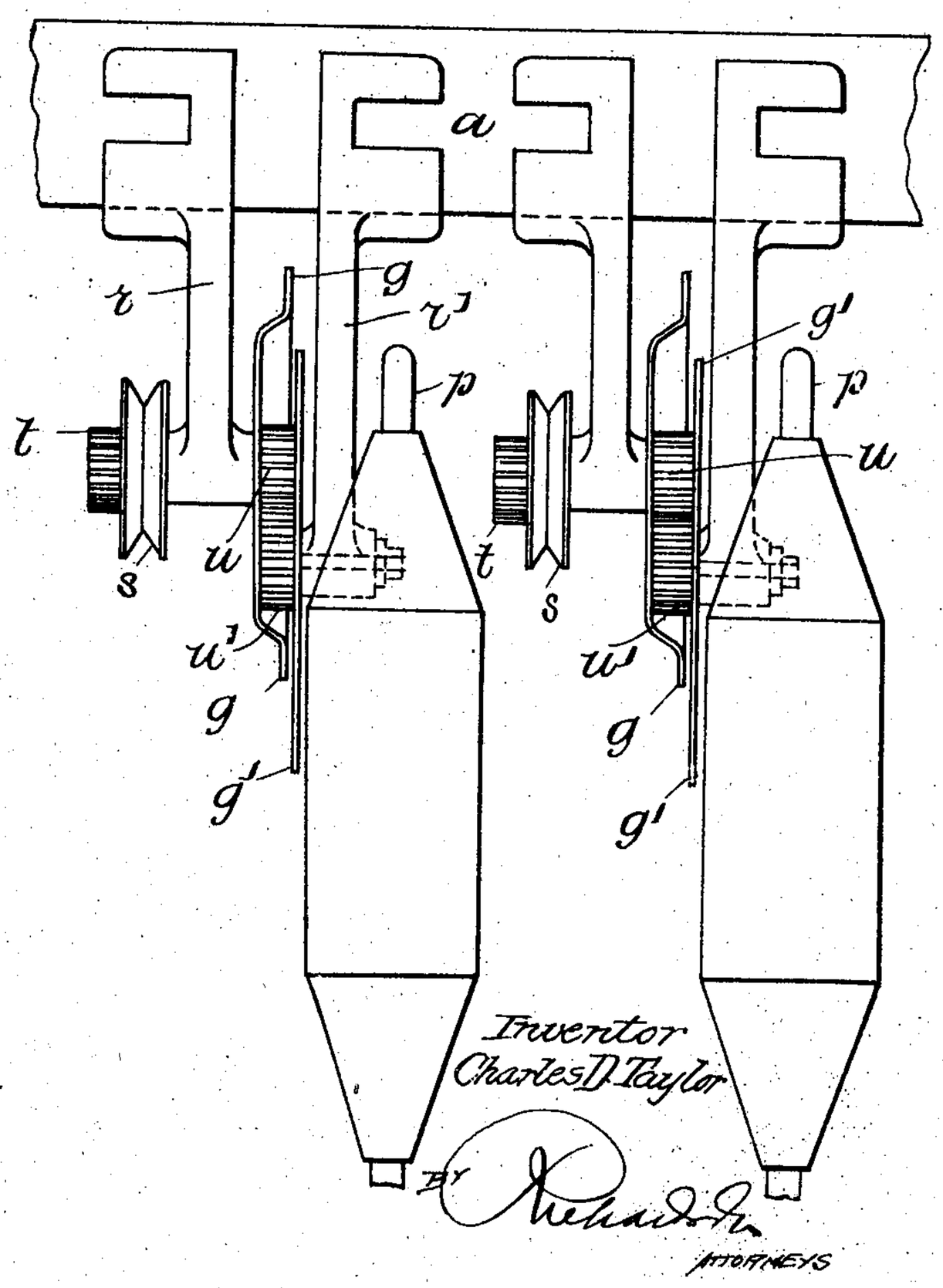



Fig. 5.

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# UNITED STATES PATENT OFFICE.

CHARLES DOUGLAS TAYLOR, OF SALE, ENGLAND.

## QUICK-TRAVERSE WINDING-FRAME, &c.

No. 834,420. Specification of Letters Patent. Patented Oct. 30, 1906.

Application filed November 5, 1904. Serial No. 231,518.

*To all whom it may concern:*

Be it known that I, CHARLES DOUGLAS TAYLOR, clerk, a subject of the King of Great Britain, residing at 9 Moorfield Grove, Sale, in the county of Chester, England, have invented new and useful Improvements in Quick-Traverse Winding-Frames and Gassing-Frames, of which the following is a specification.

My invention relates to an improvement in quick-traverse winding-frames and gassing-frames for yarns or threads of any material.

The said invention, which has reference to the machinery employed in winding yarns, consists, in the first place, of an improved method for guiding the yarn onto the bobbins or spools in such a manner that it retains its shape on the bobbins upon which it is wound after the latter are taken from the machine, and they are firm enough for packing and transportation in this form. In order to get this "guiding" or "crossing" motion, as it is called, I propose to dispense with the usual forms of traverse motions worked by cams, &c., and employ instead two disks made of tin, steel, or suitable material of some other description, which are geared together, so that when one of them receives first motion in any convenient manner the other revolves in the opposite direction. On the outer edge of these disks are two or more projections or lugs which are used to guide the yarn the given distance or length of the bobbin required.

The yarn coming from the cops, bobbins, or hanks to be wound first passes over the usual drag or tension board through the needles for the stop-motion and over the disks. When these disks begin to revolve, one of the lugs or projections engages with the yarn and moves it along until the lug becomes disengaged with the yarn, which is immediately brought back to the other end of the traverse by one of the lugs or projections on the other disk moving in the opposite direction. By this means I get the rapid traverse backward and forward which is necessary for cross winding. Ordinary plain winding may also be obtained by running the disks slower, so as to give sufficiently slow traverse to the yarn.

The invention may also be employed for winding onto a vertical bobbin, and it can also be arranged so that a progressive movement either of the spindle or guide-rod, or both, can be used in order to build a cop-shaped bobbin or spool.

In the accompanying four sheets of drawings, Figure 1 is a side sectional elevation; Fig. 2, a front elevation, and Fig. 3 a plan, of a winding-frame to which my improvements have been applied, Figs. 2 and 3 being drawn upon a larger scale than Fig. 1. Figs. 4 and 5 are side and front elevations, respectively, of part of a winding-machine, illustrating my improvements as applied to a machine for winding cops or cop-shaped bobbins.

Referring first to Figs. 1 to 3, the winding-machine illustrated is of the usual construction for winding cheeses on horizontal bobbins or spools, except, of course, so far as the means for traversing and guiding the yarn is concerned. In these views, *a* represents part of the frame of the machine; *b*, a cop from which the yarn is taken to be wound upon a spool *c*; *d*, a tension or drag board; *e*, a detector-needle of an ordinary needle-box stop-motion, which when a thread fails falls and being caught by the rotating wiper-shaft 2 in the usual way draws forward the rod 3 against the resistance of a coiled spring 4. On the rod 3 are two inclines 5 and 6, and when the rod 3 is drawn forward the incline 5 being withdrawn from under a vertical rod 7 allows the weight *n* to descend and lift the intermediate roller *i'* out of contact with the revolving friction-driving-drum *i*, and thus stop the rotation of the spool *c* in the usual way. The other incline 6 when the rod 3 is drawn forward raises a vertically-sliding rod 8 against the resistance of a coiled spring 9 and raises one arm 10 of a lever 11, which carries a pawl *f*. A ratchet-wheel *f'* is secured upon the axis of one of a pair of disks *g g'*, each of which is provided with two projections or lugs. Between the disks *g g'* and the spool *c* I prefer to place a guide rod or wire *h*.

Upon the axis of the disk *g* is secured a grooved pulley *j*, and a spur-pinion *k* upon this axis, fixed to the disk *g*, gears into and drives a pinion *l*, fixed upon the disk *g'*, mounted upon a stud *m*. The grooved pulley *j* is driven by a band 12 from any convenient shaft of the machine, and in this manner the disks *g g'* are driven continuously in opposite directions so long as the machine is running; but when the stop-motion comes into action and draws forward the rod 3 and the spool *c* is stopped by the intermediate drum *i'* being

lifted out of contact with the driving-drum *i*, as described, the vertically-sliding rod 8 being raised, the pawl *f* is put into gear with the ratchet-wheel *f'*, and thus stops the rotation of the pair of disks *g g'*. I prefer to make the disks as shown; but, if preferred, straight fingers on bosses could be employed.

The other parts of the winding-machine are of any convenient construction and form no part of my invention.

In operation the yarn to be wound onto the bobbins or spools *c* is taken from the cops *b*, as shown, or it might be from bobbins or hanks. The yarn passes over the tension or drag board *d*, through the detector-needles *e* of the stop-motion and over the guide-rod *x* to the disks *g g'*, and thence over the rod *h* to the spool *c*. As the disks *g g'* are rotated one of their projections or lugs engages the yarn and moves it in one direction the length of the bobbin to be wound until this projection passes away with the rotation of its disk *g* or *g'* and leaves the yarn. At this moment one of the projections upon the other disk, revolving in the opposite direction, engages the yarn and carries it back over the previous layer upon the bobbin until this projection passes away clear of the yarn, when the second projection upon the first disk again comes into operation and reverses the direction of the yarn, and so on until the bobbin or spool is full.

By imparting a quick rotary motion to the disks *g g'* the rapid traverse backward and forward of the yarn which is necessary for cross-winding is obtained, and I am thus enabled to build flangeless bobbins or spools of yarn which are firm enough for packing and transporting without injury.

In case an end of yarn breaks the pawl *f* engages with the ratchet-wheel *f'* and stops the rotation of the disks *g g'*, and simultaneously the weight *n* is released, which throws the roller *i'* out of contact with the driving-drum *i*, and so stops the spool *c*, as already explained.

Ordinary plain winding may also be performed by running the disks *g g'* slower, so as to give the required slow traverse to the yarn.

In Figs. 4 and 5 only the parts necessary to make it clear how my invention can be applied to a vertical winding-machine for winding cops or copped-shaped bobbins is illustrated. In these views, *a* is a portion of the frame of the machine; *p*, the upper portion of the spindles upon which the yarn is to be wound in the form of a cop. *g g'* are the two disks, of which the disks *g* are secured upon studs *q*, carried in brackets *r*, and the disks *g'* are secured upon studs *y*, carried in brackets *r'*. Upon the other ends of these studs *q* are secured grooved pulleys *s* and ratchet-wheels *t*, and these pulleys *s* may be conveniently driven by bands (not shown) from a tin drum in the ordinary way. The disks *g'* are driven by pinions *u'*, which gear into and are driven by similar pinions *u*, secured upon the studs *q*.

The yarn from the cops or bobbins passes over a tension or drag board and through a detector-needle of a stop-motion, as in the first arrangement, and is wound in cop form on the spindles *p*, which are raised and lowered by any suitable building motion, the yarn being traversed by passing over the disks *g g'*, the projections upon which lay the yarn, in the manner previously described.

In case an end of yarn breaks the stop-motion acts as in the first arrangement to bring a ratchet-pawl (not shown) into gear with one of the ratchet-wheels *t*, and so stops the disks *g g'* simultaneously with the spindle.

The yarn is wound upon the spindles *p* in the form of cops or cop-shaped bobbins or spools by the combined action of the disks *g g'* and a suitable building motion.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. In combination in a winding or gassing frame a pair of rotating disks each having a pair of peripheral projections, and geared together so as to rotate in opposite directions and carry the yarn backward and forward across the face of the bobbin being built.

2. In combination in a winding or gassing frame, a pair of disks geared together and driven in opposite directions, a pair of peripheral projections on each disk a frictionally-driven spool, and a stop-motion for stopping the rotation of both spool and disks on the failure of yarn substantially as herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES DOUGLAS TAYLOR.

Witnesses:

HENRY BERNOULLI BARLOW,
HERBERT ROWLAND ABBEY.