

No. 775,690.

PATENTED NOV. 22, 1904.

S. SYKES.

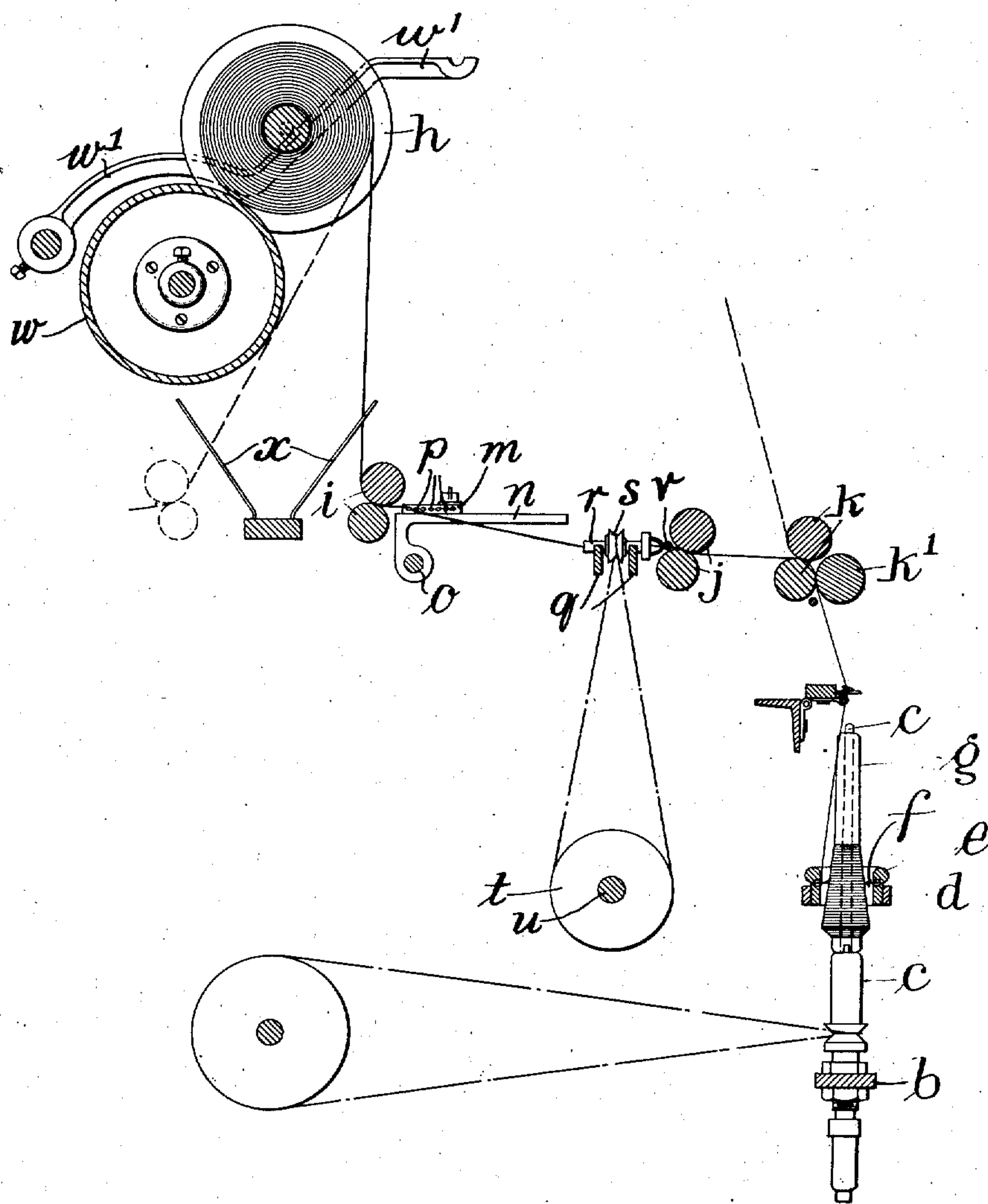
MECHANISM FOR DRAWING AND TWISTING OR SPINNING WORSTED
OR OTHER YARNS.

APPLICATION FILED MAR. 3, 1904.

NO MODEL.

2 SHEETS—SHEET 1

Fig. 1.



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NO MODEL.

2 SHEETS—SHEET 2.

Fig. 2.

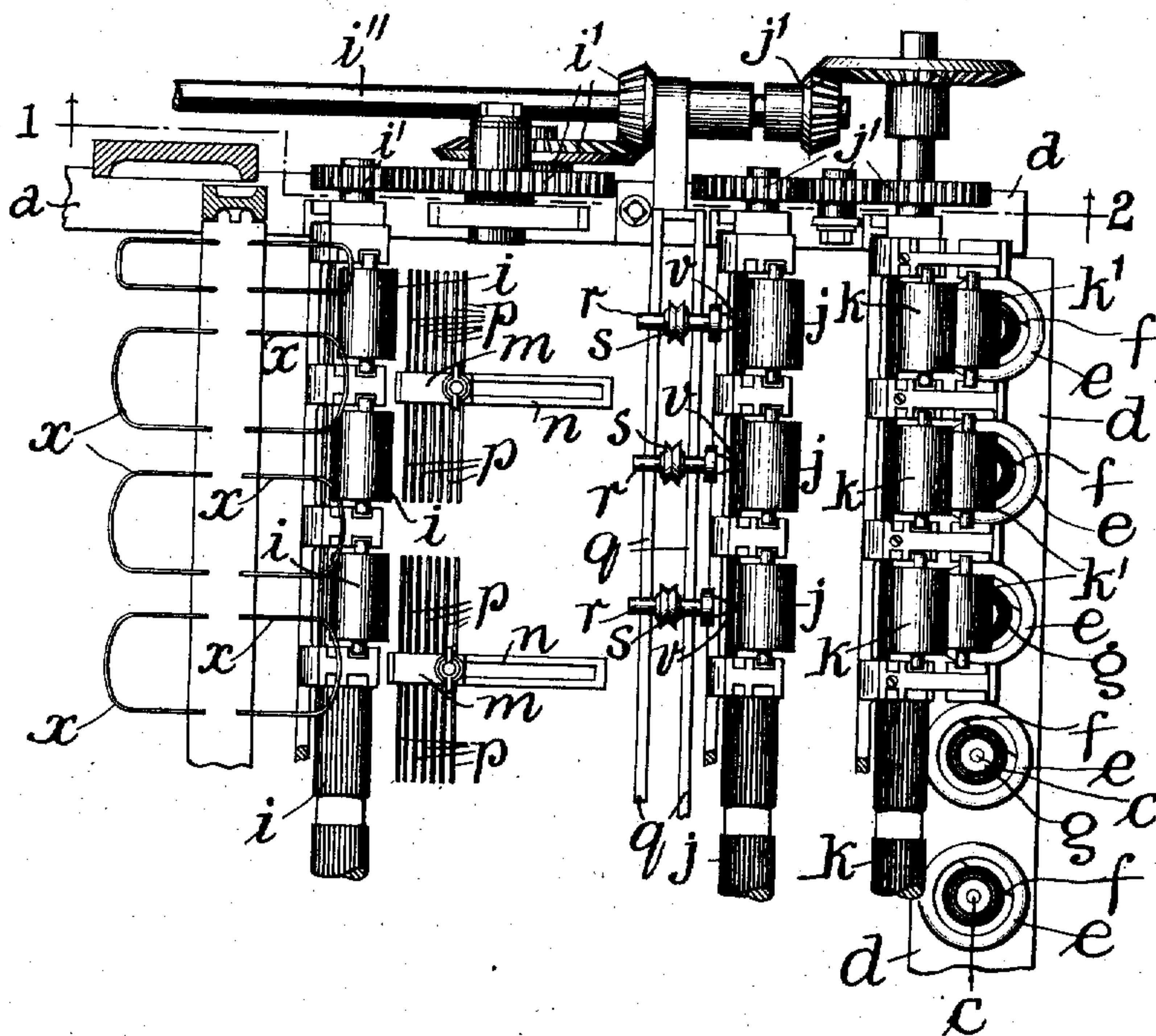
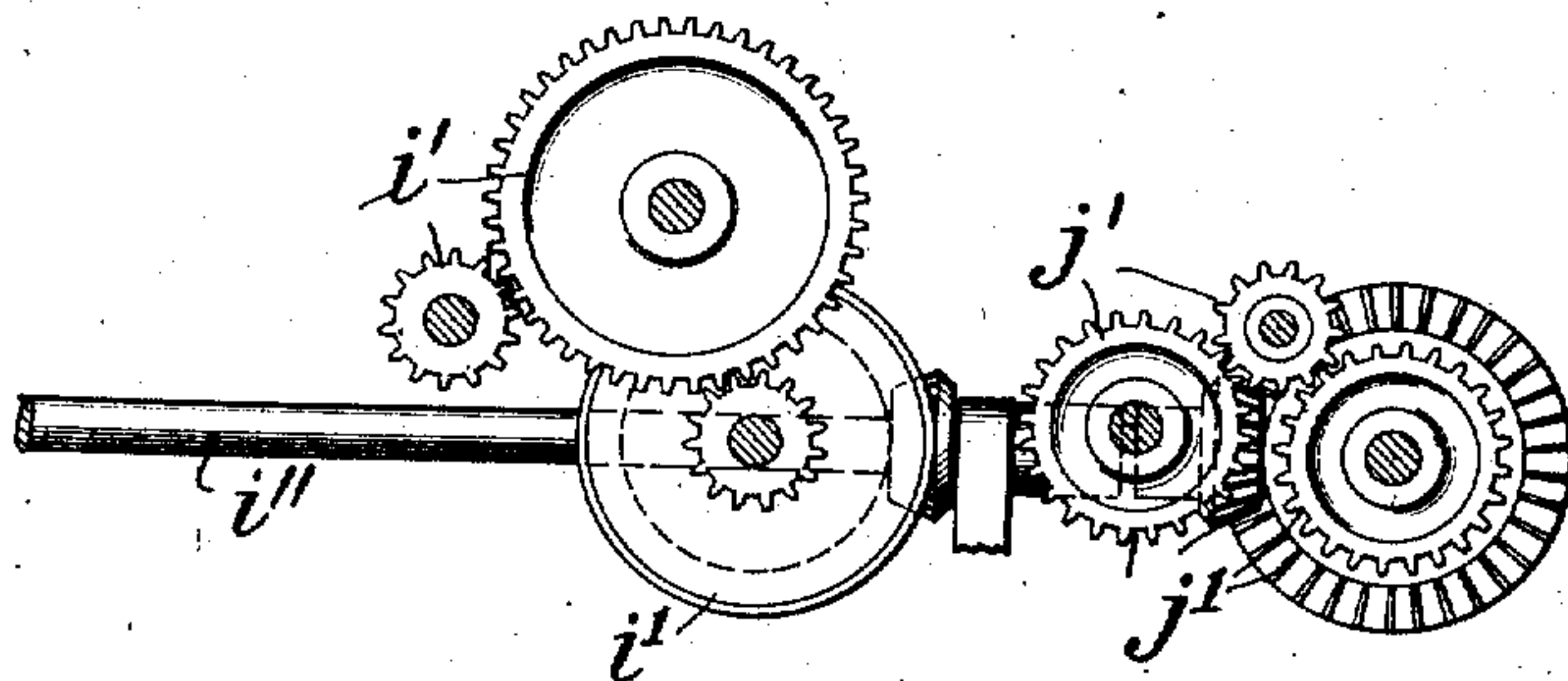


Fig. 3.



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UNITED STATES PATENT OFFICE.

SAMUEL SYKES, OF DEWSBURY, ENGLAND.

MECHANISM FOR DRAWING AND TWISTING OR SPINNING WORSTED OR OTHER YARNS.

SPECIFICATION forming part of Letters Patent No. 775,690, dated November 22, 1904.

Application filed March 3, 1904. Serial No. 198,387. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL SYKES, a subject of the King of Great Britain and Ireland, residing at Dewsbury, in the county of York, England, have invented certain new and useful Improvements in the Mechanism for Drawing and Twisting or Spinning Worsted, Woolen, Cotton, Silk, or other Yarns or Threads, of which the following description, in connection with the accompanying drawings, is a specification.

This invention relates to the drawing and twisting or spinning of worsted, woolen, and other yarns or threads, and comprises a new or improved mechanism for drawing and twisting or spinning the yarn simultaneously in one operation and continuously or drawing and spinning yarn and twisting with the spun yarn another yarn or thread or threads to produce a mixed twisted yarn or thread or a yarn or thread with a cotton or other thread forming the core or center, the primary object of my invention being to effect in said machine all that is now done upon the self-acting mule and by drawing and twisting continuously on a stationary frame save labor and time, increase production, and economize floor-space.

In the accompanying drawings, Figure 1 is a cross or diagrammatical section of one-half of a machine embodying my improvements for drawing and twisting or spinning yarns or threads, the framework and gearing being omitted. Fig. 2 is a plan view of a portion of the machine; and Fig. 3 is a sectional elevation taken on line 1 2, Fig. 2, showing the system of gears for driving the bottom roller of each pair of rollers employed.

Referring to the drawings, letter *a* designates the end frame of the machine, *b* the fixed rail provided with bearings or bolsters in which are journaled the spindles *c*, and *d* is a lifter-rail carrying the internally-grooved rings *e* and needles *f*, by which and the rising and lifting motion of the rail *d* the yarn is delivered to and built up on the tubes or spools *g*, placed on the spindles *c*, in the same way as in ordinary twisting-frames, the aforesaid parts being well known and common to twist-

ing-machines and forming no part of my invention.

My invention consists in providing for each end of sliver or cord of fiber delivered from the condenser or unwound from the condenser-bobbin *h* two sets of drawing-rollers set at a suitable distance apart, the rear set of rollers *i* comprising the receiving-rollers and the front set *j* the delivery-rollers, to nip the thread to enable it to be twisted by the rotary action of the spindle and wound upon the tubes *g*. In this instance I show two rollers in the delivery set *j*, and in lieu of adding a third roller thereto I have arranged a supplementary set of rollers *k* at the front of the machine, in which set a third roller, *k'*, answers the same purpose as if applied to the set *j*, such supplementary set of rollers being employed solely to afford a convenient gap between the rollers *j* and the point where the yarn is twisted for joining or tying up broken ends. If the supplementary set of rollers *k* be not employed, the set of rollers *j*, with the third roller added, would be arranged to occupy a similar position to same relatively to the spindle *c*.

At the delivery side of the receiving-rollers *i* I mount in adjustable sliding pieces *m*, secured to slotted brackets *n*, fast on a longitudinal rod or rail *o*, a series of longitudinal bars or rods *p*, spaced at suitable distances apart in a horizontal plane grate fashion, the said rods in this instance projecting a convenient distance beyond each side of the sliding piece *m* to serve for two drawing or spinning heads; but they may be made longer to serve for more than two spinning-heads, if desired. The first bar or rod of the series is brought as close up to the nip or point of contact between the two rollers *i* as is possible in order to get the space between said bar and the nip of the rollers less than the shortest fiber which is spun into yarn.

Between the two sets of drawing-rollers *i* and near the rear of the delivery-rollers *j* I mount in suitable bearings in longitudinal rails or in frames *q* twisters or twisting-heads *r*, each provided with a whirl or grooved pulley *s*, adapted to be driven by cord or the like

from a drum or pulley, such as *t*, fast on a driven shaft *u*. On the front end of each twister *r*, which in this case is enlarged or provided with a collar, is secured an eyelet or guide-eye *v*.

The cord or sliver or end or ends of fiber to be drawn out and twisted or spun is or are unwound from the condenser-bobbin *k*, which in this instance rests upon a driven drum *w* and is supported at each end on the upwardly-inclining ends of fixed arms *w'*, (one only of which is shown,) so as to remain constantly in contact with the drum as the mass of fiber decreases in diameter and to revolve by frictional contact therewith. Each end of fiber unwound from the bobbin is guided between adjacent staples or guide-hoops *x* to its respective pair of rollers *i* at each side of the machine, one half of the ends of fiber or sliver being dealt with at one side of the machine and the other half at the opposite side of the machine, (not shown,) to which they pass, as indicated by dotted line in Fig. 1.

After leaving the first or receiving set of rollers *i* the sliver, according to its quality or length of staple, is passed over one of the longitudinal bars *p* of the respective series—as, for instance, if the fiber is very short the sliver or end is passed over the first bar or rod or over one of the rods nearest to the receiving-rollers and under the remaining bars or rods, and for longer fiber the sliver or end is passed over any of the bars or rods farther removed from said rollers and under the remaining bar or bars or rods in order that the distance between the rod over which it is guided, and the nip of the rollers may be varied or lengthened or shortened to suit the length of staple of the fiber being dealt with. To attain further variation in the increase of the distance between the nip of the rollers *i* and the bar or rod *p*, over which the end of fiber is passed, the sliding piece *m*, carrying the bars or rods *p*, may be adjusted to any position on the slotted bracket *n*. The end of the sliver or fiber after leaving the rod over which it is guided is carried forward and threaded through the twister or twisting-head *r*, then through the eyelet carried by said spindle or tube, and subsequently passed between the pair of rollers *j* and supplementary rollers *k*, from whence it travels direct to the spindle *c*.

The bottom roller of the pair of receiving-rollers *i* is driven by bevel and spur gearing *i''* from the shaft *i'''*, and the bottom rollers of the sets of rollers *j* and *k* are driven through bevel and spur gearing *j''* also from the shaft *i'''*, as will be seen more clearly at Fig. 3, the shaft *i'''* being driven direct from the main driving-shaft of the machine.

The speeds at which the receiving-rollers *i* and delivery-rollers *j* are driven are adjusted in any ordinary way to give the draft re-

quired, the increased speed at which the delivery-rollers *j* are driven drawing out the cord of fiber between the two sets of rollers, the elongation really taking place between the nip of the rollers *i* and rod *p*, around which it is guided, and the rotary action of the hollow spindle and eyelet putting a false twist into the yarn which enables it to bear the desired elongation, the twist being put in only from the particular longitudinal rod *p*, over or under which the fiber is guided, and the point of contact with the eyelet *v*, the said rods being employed, essentially, for this purpose and comprising one of the principal features of my invention. The false twist is taken out on leaving the eyelet *v*, and from the nip between the bottom roller of the supplementary pair of rollers *k* and the angle-roller *k'* the desired twist is given by the action of the revolving spindle *c*, on which the spun yarn is then wound as in ordinary twisting-machines.

For twisting a thread with a yarn spun on the machine, as above described, I bring the thread from its containing bobbin or creel, supported in any convenient position above the machine, and join it with the spun yarn at the supplementary rollers *k*, as indicated by dotted line in Fig. 1, between which and the spindle *c* the two threads are twisted together, or it could be joined with the sliver at the particular rod *p* around which the sliver is guided.

Any variation may be made in the order of arrangement in twisting two or more threads together to suit individual requirements. The threads or ends can be taken up most conveniently between the delivery-rollers *j* and supplementary rollers *k* without stopping the machine, and any ordinary known stop-motion may be employed in conjunction with each drafting and twisting or spinning head to stop the spindle on the breakage or failure of an end or ends of fiber or yarn. The fiber or cord of sliver may be passed under any individual rod or bar *p*, instead of, as shown and hereinbefore described, in the event of the front drawing-rollers being located at a higher level, which would cause the fiber to travel at a slight angle in an upward direction instead of in a downward direction; but if the traverse were substantially in a straight line the fiber could be passed either under or over any of the bars, as preferred.

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

1. In mechanism for drawing and twisting, or spinning yarns or threads, the combination with a pair of receiving-rollers, and the delivery-rollers located in front of said receiving-rollers, of two or more parallel rods or bars located in front of the receiving-rollers, and adjustable toward and from the receiving-rollers, and a twister or twisting-head in-

intermediate said bars and the delivery-rollers, substantially as shown and described.

2. In mechanism for drawing and twisting, or spinning yarns or threads, the combination
5 with the receiving-rollers, and the delivery-rollers located in front of said receiving-rollers, and two or more parallel rods or bars located in front of said receiving-rollers, and adjustable toward and from said receiving-rollers, and a twister or twisting-head intermediate said bars, and said delivery-rollers, of a

supplementary set of rollers in front of the delivery-rollers, substantially as shown and described.

In testimony whereof I have signed my name 15 to this specification in the presence of two witnesses.

SAMUEL SYKES.

Witnesses:

THOMAS H. BARRON,
ERNEST HUSTWICK.