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Patented July 30, 1901.

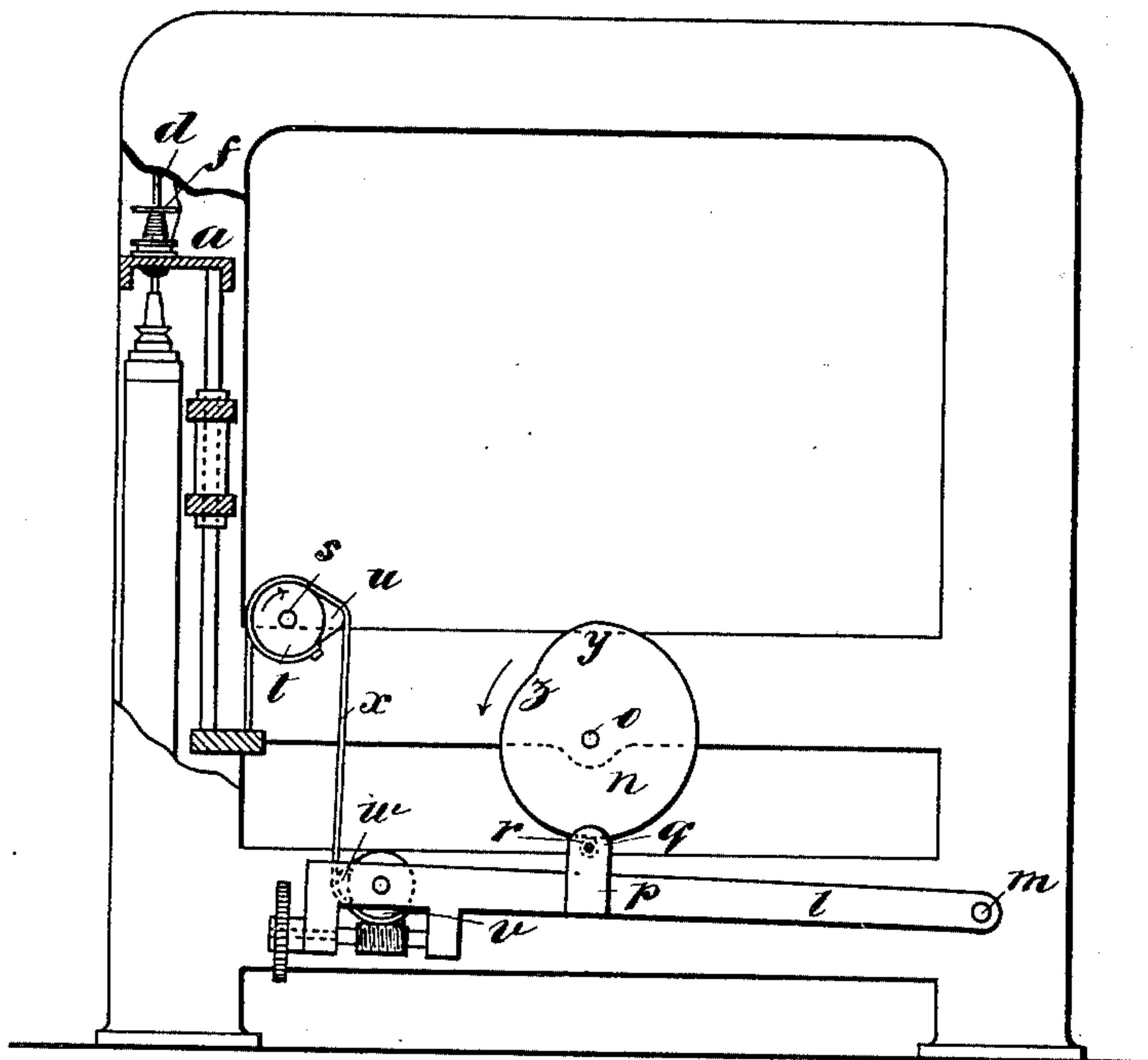
P. P. CRAVEN.

**MACHINERY FOR SPINNING, DOUBLING, AND TWISTING.**

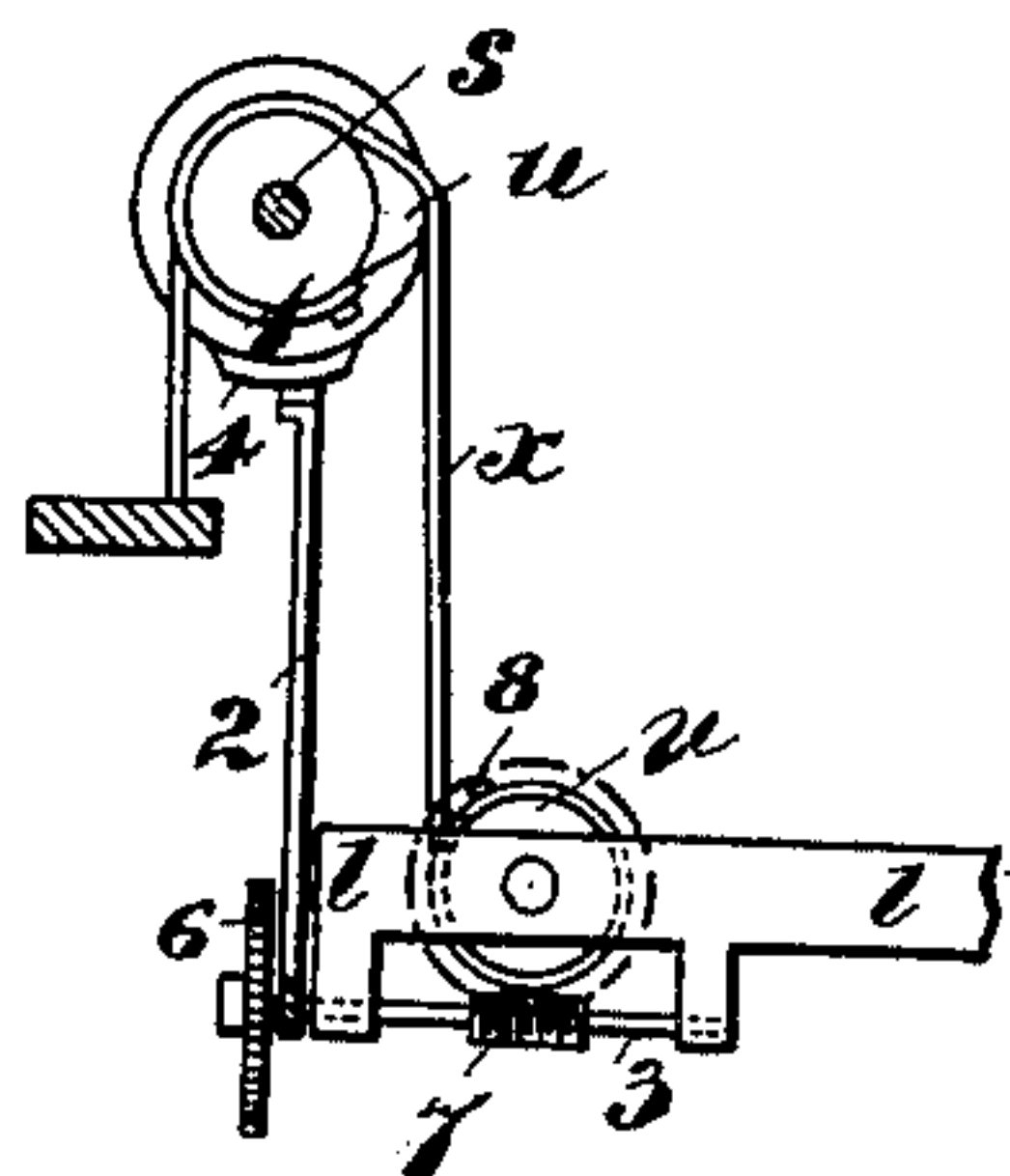
(Application filed Sept. 1, 1900.)

(No Model.)

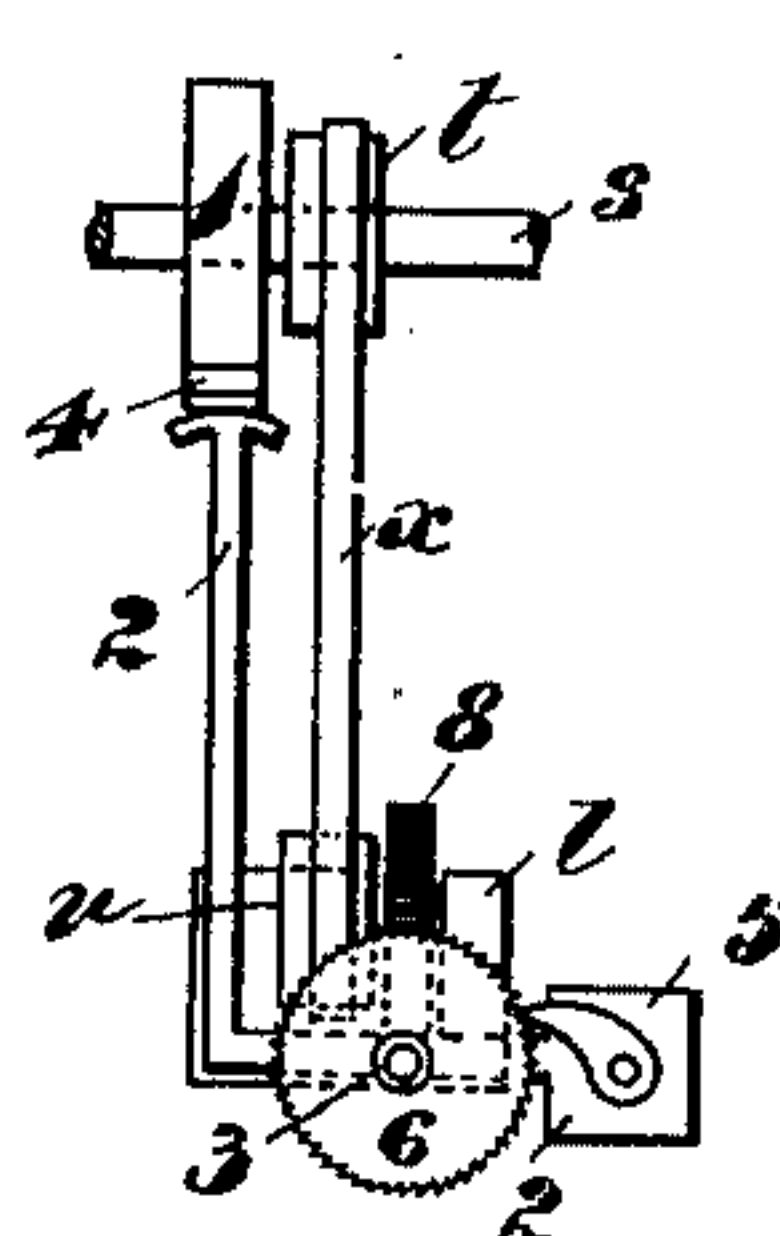
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



WITNESSES.

WITNESSES. INVENTOR  
 Percival William Craven. Phineas Parson Craven  
 Franklin Howard Craven

**INVENTOR**

# UNITED STATES PATENT OFFICE.

PHINEHAS PEARSON CRAVEN, OF MANCHESTER, ENGLAND.

## MACHINERY FOR SPINNING, DOUBLING, AND TWISTING.

SPECIFICATION forming part of Letters Patent No. 679,416, dated July 30, 1901.

Application filed September 1, 1900. Serial No. 28,838. (No model.)

*To all whom it may concern:*

Be it known that I, PHINEHAS PEARSON CRAVEN, gentleman, a subject of the Queen of Great Britain, residing at 16 Devonshire street, Ardwick, Manchester, England, have invented certain new and useful Improvements in Machinery for Spinning, Doubling, and Twisting; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

In spinning, doubling, or twisting onto the bare spindle or onto a thin tube mounted on the spindle with the disk arrangements described in the specification accompanying an application for patent of even date herewith it is desirable to have the chase of the cop as short as is consistent with the building of a proper cop-bottom at the commencement of a cop. The reason for this is quite easy to understand. As there is nothing on the spindle or on the tube, as the case may be, when beginning a new set of cops, the spinning, doubling, or twisting takes place practically on the bare spindle at the very beginning. Therefore the assistance given to the traveler by the disk requires to be given throughout the full length of the chase, and if the chase is of full length at the beginning the disk is too far away from the traveler to give the latter the necessary assistance. When, however, the chase of the cop is kept short, the cop-bottom will thicken very quickly, and if no arrangement were made to counteract that effect the bottom of the cop would be much too thick before the ordinary bottoming-peg ceased to operate. In order to obviate this inconvenience, I use the ordinary bottoming-peg, but of larger size than usual, in connection with other devices which I will now proceed to describe with the help of Figures 1, 2, and 3 of the drawings.

*l* represents part of the ordinary building-motion lever, pivoted on a fulcrum-stud *m*, fixed to the frame of the machine.

*n* is a cam fixed on the secondary shaft *o* of the machine.

*p* is a bracket fixed to the building-motion lever *l* and having fixed to it a stud *q*, carrying a friction-roller *r*, which is acted upon by the cam *n*.

*s* represents one of the shafts which extend the whole length of the machine and carry the rollers and chains which actuate the pokers or lifting-rods and through them the ring or coping rail. This shaft *s* is carried in bearings attached to the frame of the machine as usual.

*t* represents a roller or disk fixed on the shaft *s* and having connected to it the ordinary well-known bottoming-peg *u* above mentioned.

*v* is the ordinary building-motion chain-drum mounted on the building-motion lever *l* and rotated slowly and intermittently by worm-and-ratchet gear in the well-known way.

*w* is a projection somewhat similar to the bottoming-peg *u*, but mounted on the drum *v*.

*x* is a chain fixed at one end to the roller *t* and at the other end to the building-motion chain-drum *v*.

It will now be understood that when the machine is in motion and the cam *n* rotating in the direction of the arrow marked upon it the said cam allows the friction-roller *q*, bracket *p*, and lever *l* to be raised by the weight of the coping-rail *a* and connected parts while the larger arc of the said cam between *y* and *z* is passing the friction-roller *r*, and forces down the said roller, bracket, and lever while the smaller arc of the cam between *z* and *y* is passing the friction-roller *r*, the upward movement of the lever *l* corresponding to the winding of the thread on the chase of the cop from the nose thereof to the base and the downward movement of the lever *l* to the return of the thread from the base of the nose of the cop. The downward movement of the lever *l* causes the chain *x* to turn the roller *t* and shaft *s* in the direction of the arrow marked on the former and to raise the coping-rail, and the upward movement slackens the chain *x* and allows the coping-rail to fall. The bottoming-peg *u* on the roller *t* occupies the same position as the ordinary bottoming-peg, but is larger than that, and the movement given to the shaft *s* which actuates the ring or coping rail is longer or shorter in inverse proportion to the effective length of the said peg *u*. If this peg were alone employed, the cop-bottom would become far too thick before the peg ceased to operate, and it is to obviate



that inconvenience that I employ the projection *w* on the drum *v* of the building-motion lever, and it will be readily seen that as the motion of this drum is in the direction of the arrow marked upon it the chain *x* will be wound onto the drum *v* at a quicker rate while the projection *w* is in operation than when the chain is being wound onto the cylindrical part of the drum, thereby accelerating the gradual rise of the ring or coping rail and preventing the undue thickening of the cop-bottom, while maintaining the proper shortness of the bottom until the latter is fully formed.

In the slightly-modified arrangement shown in Figs. 2 and 3 parts which are similar to those shown in Fig. 1 are indicated by similar letters of reference. 1 is a disk or roller mounted on and secured to the shaft *s*, which is oscillated backward and forward by the up-and-down movements of the building-motion lever *l*, as before. 2 is a bell-crank lever pivoted on the worm-shaft 3. When the cop-bottom is being formed, a projection 4, formed on or fixed to the disk 1, stands immediately over the upper end of the lever 2, so that when the latter is moved upward by the upward motion of the lever *l* it comes in contact with this projection, and the pawl 5 on the other end of the lever 2 is caused to make a longer stroke and therefore to rotate the ratchet-wheel 6, worm-shaft 3, worm 7, worm-wheel 8, and consequently drum *v* farther at each stroke than at times when the cop-bottom is not being formed, at which time the projection 4 is moved out of the path of the lever 2 by the gradual forward rotation of the shaft *s*, and the upper end of the lever 2

then comes against the circular periphery of the disk 1, and the action of the pawl 5 on the ratchet-wheel 6 is normal. It will be seen that the effect of the arrangement is similar to that of the arrangement shown in the drawings, namely, that the winding up of the chain *x* onto the building-motion drum *v* is accelerated while the cop-bottom is being formed, so that the latter is prevented from becoming too thick.

I claim—

1. In ring-spinning, doubling and twisting machines the combination of an enlarged or lengthened bottoming-peg *u* on the ring-rail-lifting drum or roller *t*, a projection *w* on the building-motion drum *v* and the lifting-chain *x* substantially as and for the purpose set forth.

2. In combination in a ring-spinning, doubling or twisting machine, a coping-chain, the disk or roller 1, the ring-rail or coping-rail shaft *s* upon which the disk is mounted, a projection 4 on the said disk or roller, a building-motion drum *v*, a building-motion ratchet-wheel 6 connected with the said drum, a pawl-lever 2 acted on by the said projection 4 on the disk or roller 1 and a pawl 5 on the pawl-lever 2 acting on the building-motion ratchet-wheel to accelerate the winding up of the coping-chain onto the building-motion drum while the cop-bottom is being formed, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

PHINEAS PEARSON CRAVEN.

Witnesses:

ELDON ALFRED KING,  
THOMAS CECIL WALKER.