

No. 731,903.

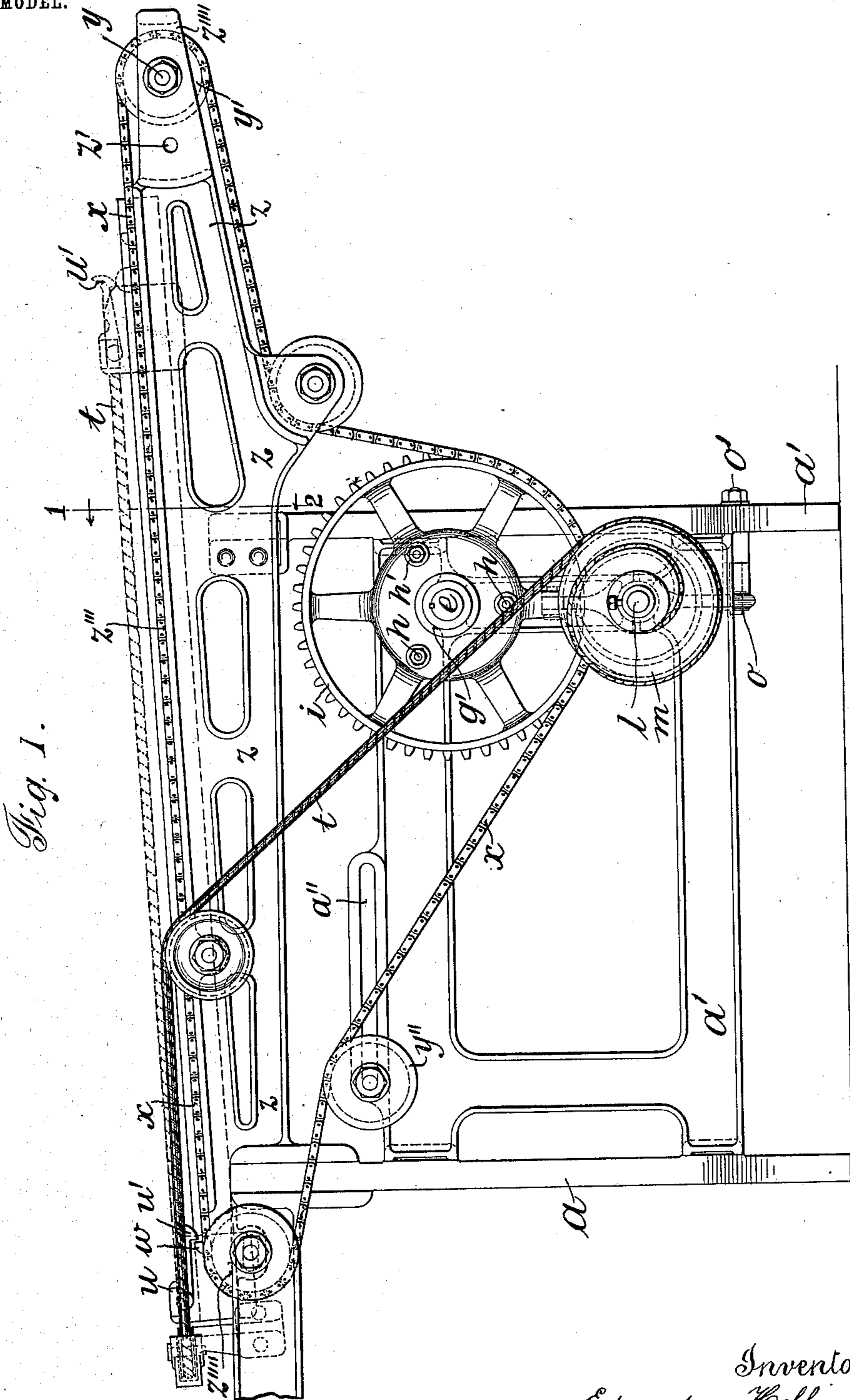
PATENTED JUNE 23, 1903.

E. HOLLINGWORTH.
WIRING MOTION FOR LOOMS.

APPLICATION FILED JULY 5, 1902.

2 SHEETS—SHEET 1.

NO MODEL.



Witnesses.
H. M. Rugg
A. S. Cowan

Inventor.
Edward Hollingworth
By J. C. Dewey Attorney

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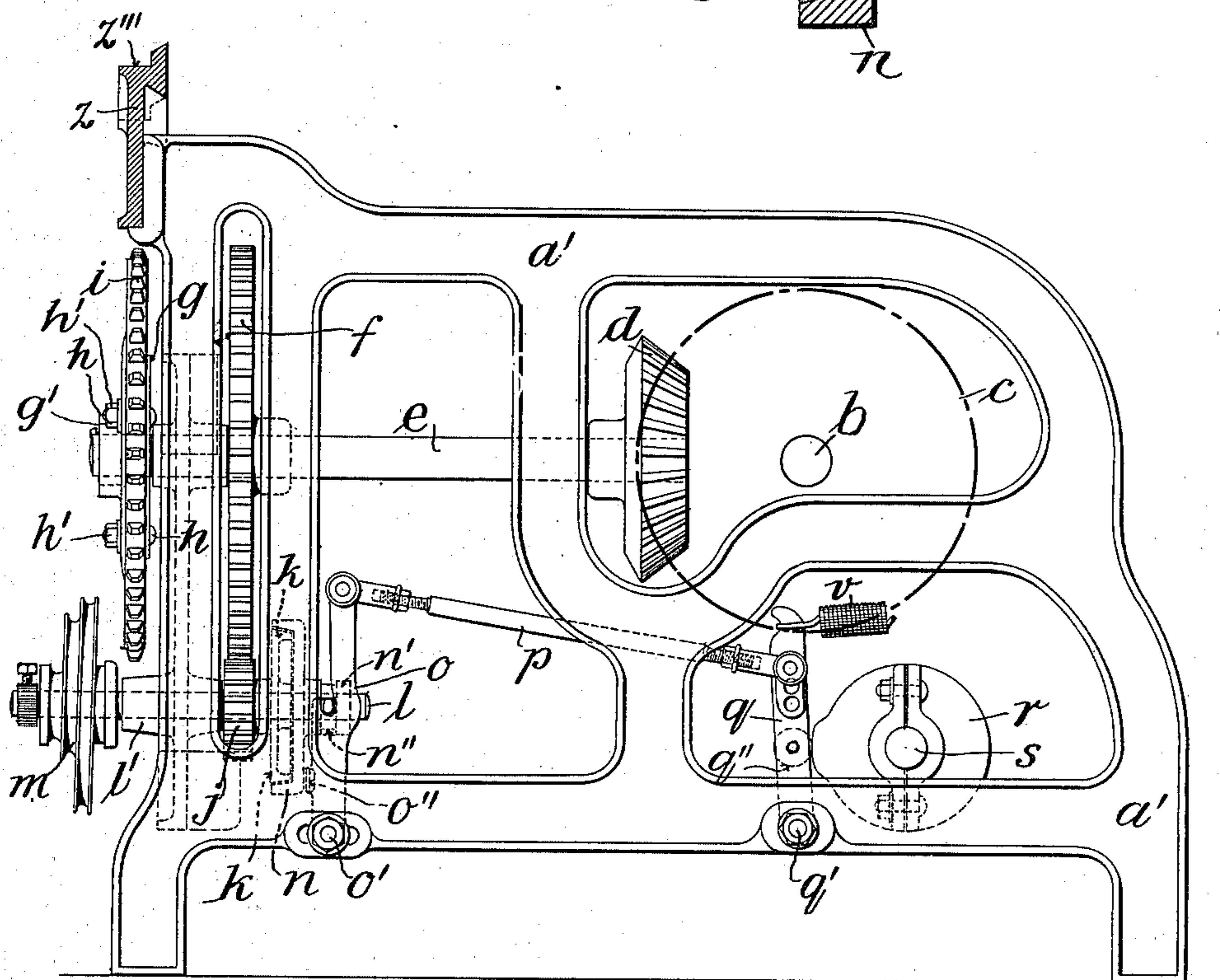
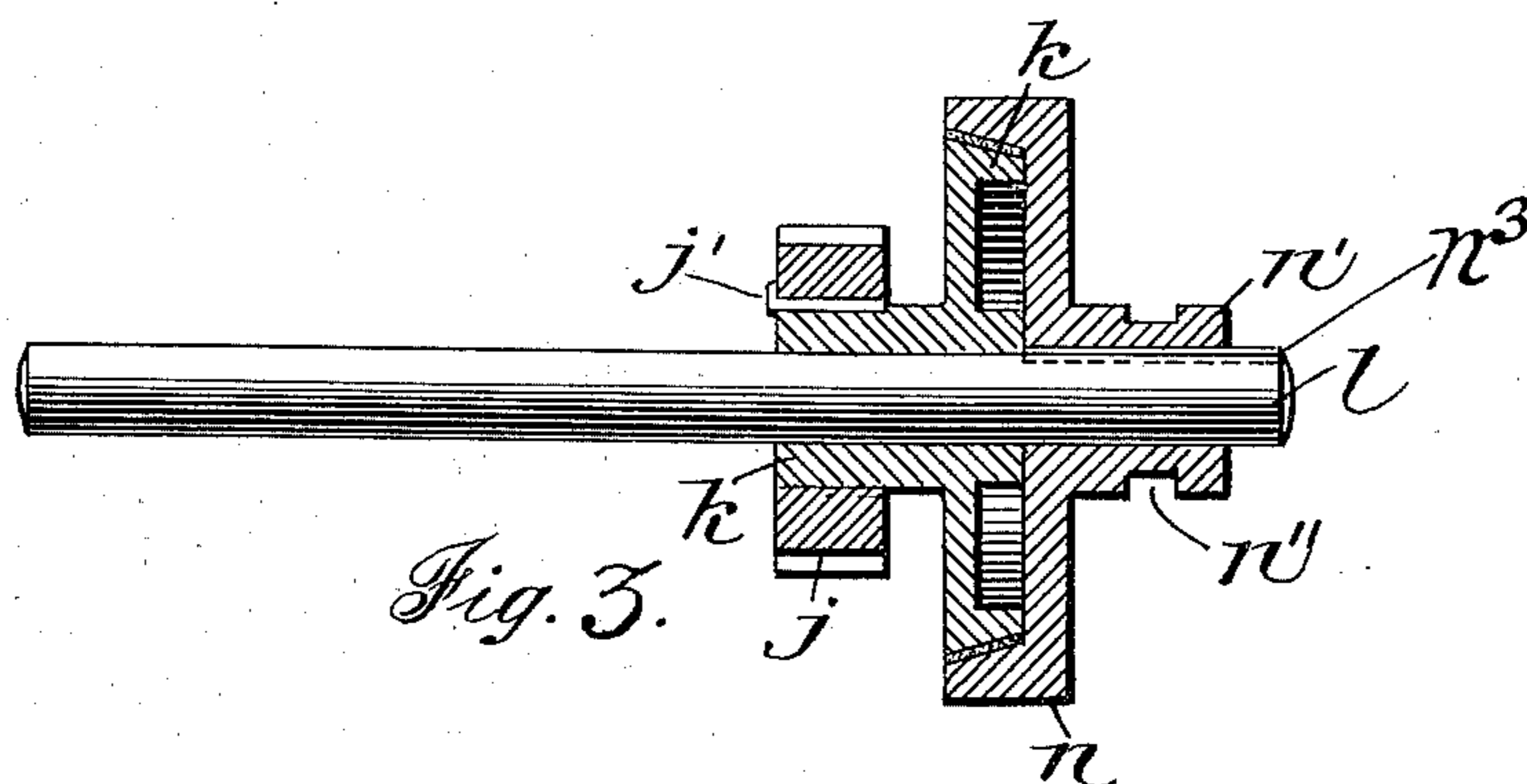
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

EDWARD HOLLINGWORTH, OF DOBCROSS, ENGLAND, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

WIRING-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 731,903, dated June 23, 1903.

Application filed July 5, 1902. Serial No. 114,389. (No model.)

To all whom it may concern:

Be it known that I, EDWARD HOLLINGWORTH, a subject of the King of Great Britain, residing at Dobcross, in the county of York, England, have invented certain new and useful Improvements Relating to the Wiring-Motions of Looms for Weaving Carpets and the Like, (for which I have obtained Letters Patent in Great Britain, No. 25,133, dated December 10, 1901,) of which the following is a specification.

This invention relates to carpet-loom, and particularly to the mechanism or motion for putting in the wire every two, three, or other number of picks, the object of my present improvements being to provide a positive and effective motion for the introduction of the wire as called upon and to simplify some of the parts.

In the motion at present in use the "scroll" for actuating the band or cord which traverses the wire box or head forward toward the "shed" to insert the wires is driven by engagement of a friction-pulley with a large driving-disk, the said pulley being carried by an arm and brought at the proper moment into abutment with the driving-disk by levers operated from a cam or similar motion and moving said arm upon its fulcrum. This motion is objectionable by reason of the great strain put upon the parts in placing and holding the friction-pulley in gear with the driving-disk, and more especially in consequence of the liability of the friction-drive to slip and render the loom unreliable, there not being sufficient friction-surface to insure the amount of bight required.

The object of my invention is to avoid uncertainty and unreliability in communicating motion to the scroll, and my improvements comprise certain new and novel features for the aforesaid purposes and the provision of a self-contained frame or bracket for carrying the chain-pulleys and forming a race for the chain, as will be fully explained hereinafter with reference to the drawings.

In the accompanying drawings, Figure 1 is a front elevation of so much of a wiring-motion for a carpet-loom as is essential to show my improvements applied thereto, the said

wiring-motion being located at one side of the loom. (Not shown.) Fig. 2 is an end elevation of the parts shown in Fig. 1, taken on line 1 2; and Fig. 3 is a sectional detail to be hereinafter described.

Referring to the drawings, letter *a* designates the side frame of the loom; *a'*, the end framing bolted thereto for supporting the wiring-motion.

b designates one of the shafts of the loom, from which the wiring-motion is ordinarily driven. Fast on said shaft *b* is a bevel-wheel *c*, which meshes with a bevel *d*, fast on a short cross-shaft *e*, journaled in bearings in the framing *a'*, and also having fast thereon a spur-wheel *f* and a face plate or disk *g*. The motion transmitted to the shaft *e* is a known constant motion, and by my improved arrangement and construction of mechanism no change of gearing is required, as heretofore, when adjusting the speed of the motion to adapt it for a different designation of cuts, the only change that is requisite being the substitution of one sprocket-wheel for another of a different diameter, as will be hereinafter described. The face plate or disk *g*, fast on shaft *e*, has a hub *g'* thereon and has a series of holes through same to receive bolts *h*.

i is the sprocket-wheel, which is bored centrally to fit over the hub *g'* on the face plate or disk *g*, and said sprocket-wheel is secured to said face-plate by the bolts *h*, which are passed through holes in the sprocket-wheel corresponding to those in the face-plate and have nuts *h'* screwed onto same to nip the parts together. The said sprocket-wheel *i* is interchangeable with a sprocket-wheel of different diameter, which is substituted therefor when desiring to alter the chain-drive to adapt the motion for a different number of given cuts to the number previously put in, this being the only change that is necessary with the exception of the adjustment of one or more of the guide-pulleys to take up or pay out the chain, according to whether the change of sprocket-wheel is from a larger diameter to a smaller diameter, or vice versa.

The spur-wheel *f* meshes with a pinion *j*, which is keyed by a key *j'* on the hub *k'* of

a cone friction-disk k , mounted loosely on a shaft l , journaled in a bearing l' in the frame a' (see Fig. 3) and carrying the usual scroll m , which is fast on the said shaft l . The cone friction-disk k is faced with leather, and adapted to be engaged with same and to be driven by frictional contact therewith is a female cone friction-disk n , having a boss or collar n' , in which is an annular groove n'' , the said female friction-disk n being secured rotatively to the shaft l by a sliding key or spline n^3 to admit of it being moved endwise on the shaft l to put it into or out of engagement with the disk k . (See Fig. 3.)

The means for sliding the cone driving-disk n into and out of engagement with the disk k comprise a clutch-fork lever o , embracing the grooved collar or boss n' and pivoted at its lower end, as at o' , to the frame a' and connected at its upper end by the pitman or adjustable connecting-rod p to a lever-arm q , pivoted at q' to the frame a' and carrying an antifriction-bowl q'' . A cam r , fast on the low shaft s of the loom, is timed to actuate lever-arm q and through rod p and lever o to place the friction-disk n into frictional driving contact with driven disk k to give the necessary motion through shaft s to the scroll m to take up the rope t and traverse the wire box or head u forward toward the shed to insert the wire. A spring v , connected at one end to the hooked end of lever-arm q and at its opposite end to a fixed stud or bracket, (not shown,) holds the friction-bowl q'' in engagement with the cam r and serves to withdraw, through the operative connections, the disk n from engagement with disk k immediately the shorter radii of the cam is presented. When the disk n is withdrawn from engagement with disk k , the motion of shaft s ceases, a brake-shoe o'' on lever o engaging disk n , and the scroll m , fast on said shaft, is thereupon free to be rotated by the pull of the cord or rope t as the hook w on the chain x abuts against the hooked catch u' on the wire box or head u , to which one end of said rope is attached, and carries said head away from the loom to take up its outermost position for receiving and inserting another wire.

It will be understood that in providing a drive comprising the spur-wheel f and pinion j for giving intermittent motion to the scroll m a positive motion is imparted to said scroll without strain on the parts and free from all liability of slipping, both serious objections in the frictional drive heretofore employed, and I am also enabled to employ a spur-wheel and pinion of much smaller diameters than the ordinary friction driving disk and pulley, by which means less space is occupied on the loom and the positive drive is located conveniently within the frame a' and out of the way. In addition to these advantages it will also be understood that the drive of the wiring-motion from the shaft e , as described, is a constant drive and requires no adjustment or change in making a change in

the insertion of the wires from one given number of cuts to another, the only alteration that is necessary for such purpose being the substitution of a sprocket-wheel of smaller or larger diameter, as the case may be, for the wheel i and the removal of the stud y , on which the chain-guide pulley y' is mounted, from, say, the opening in the chain-frame z , in which it is in this instance located, to the opening z' in said frame z , or vice versa, to pay out or take up the chain. The chain may also be taken up or tightened by the adjustment of the guide-pulley y'' along the slot a'' in the frame a' .

My improvements further relate to a special bracket or derrick for carrying the chain-pulleys and to act also as a chain-race, the provision of such bracket enabling me to dispense with a part of the end framing and make this part of the wiring-motion self-contained. This bracket or support consists of a casting or derrick z , having a chain-race z''' mitered or formed on the upper edge thereof. The chain-pulleys at each end of the said chain-race are located within yoked or bifurcated extensions z'''' and mounted on studs or spindles passed through said yokes and journaled in the sides thereof, as shown at Fig. 1, the upper peripheries of the said pulleys being linable with the chain-race z''' . The said bracket or support z is bolted centrally to the frame a' and also to the loom side a , and the strain on the guide-pulleys at each end of the chain-race or on the studs or spindles carrying same is thus equally distributed through the bracket, thus giving increased strength, permitting a lighter frame to be employed, and doing away with the brackets previously employed.

The rotation of the spur-wheel f is stopped on the stoppage of the loom by a brake-shoe, (not shown,) as ordinarily, but the brake-shoe in this instance bears against the face or rim of the spur-wheel and is either actuated by the ordinary knocking-off lever or by hand.

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

1. In a carpet-loom, the combination, with the wiring-motion, and gear for imparting a constant rotary motion to the sprocket-wheel shaft carrying the sprocket-wheel for traversing the chain of the wiring-motion, and said sprocket-wheel shaft, and said chain, of a spur-wheel fast on said shaft meshing with a pinion loose on the scroll-shaft, and said scroll-shaft, and scroll therein, and said pinion, and means for transmitting the motion of said pinion to the scroll-shaft at the proper time for inserting the wire, and disconnecting the parts to allow of the shaft and scroll being rotated by the pull of the rope and the wire box or head being drawn out away from the loom by the chain, substantially as herein shown and described.

2. In a loom of the class described, the combination, with the wiring-motion, bevel-gear

deriving motion from the loom, and impart-
ing a constant motion to the sprocket-wheel
shaft, and a sprocket-wheel mounted on the
hub of a face-plate on the said shaft, and
5 bolted thereto, of a spur-wheel fast on the
said shaft, a pinion in mesh with the spur-
wheel and keyed on the hub of a cone friction-
disk mounted loosely on the scroll-shaft, a
corresponding cone friction-disk fast on the
10 scroll-shaft, but adapted to be slid endwise
thereon to engage the other friction-disk or
clutch member, and means for sliding said
friction-disk on the scroll-shaft at the re-
quired time, said means comprising a cam
15 driven from a low shaft of the loom, a piv-
oted lever-arm carrying an antifriction-bowl
and having a spring connected at one end to
the extremity of the lever-arm and at the
other end to a fixed stud to hold said friction-
20 bowl in contact with the cam, an adjustable
connecting rod or pitman connected at one
end to the lever-arm and at its opposite end

to a lever or clutch-fork adapted to engage
an annular recess in a boss or collar on the
sliding friction-disk to move the friction-disk 25
along the scroll-shaft substantially as set
forth.

3. In a carpet-loom, the combination, with
the wiring-motion and chain-pulleys, of a
bracket or derrick frame ε provided along its 30
upper edge with a chain-race and with yokes
or bifurcated ends in which the chain-pulleys
are located and mounted on studs or spindles
 journaled in the sides of the yokes or bifur-
cated ends, and additional openings, to per- 35
mit of adjustment of one or more of the guide-
pulleys to take up or pay out the chain and
maintain its tension, substantially as set
forth.

EDWARD HOLLINGWORTH.

Witnesses:

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