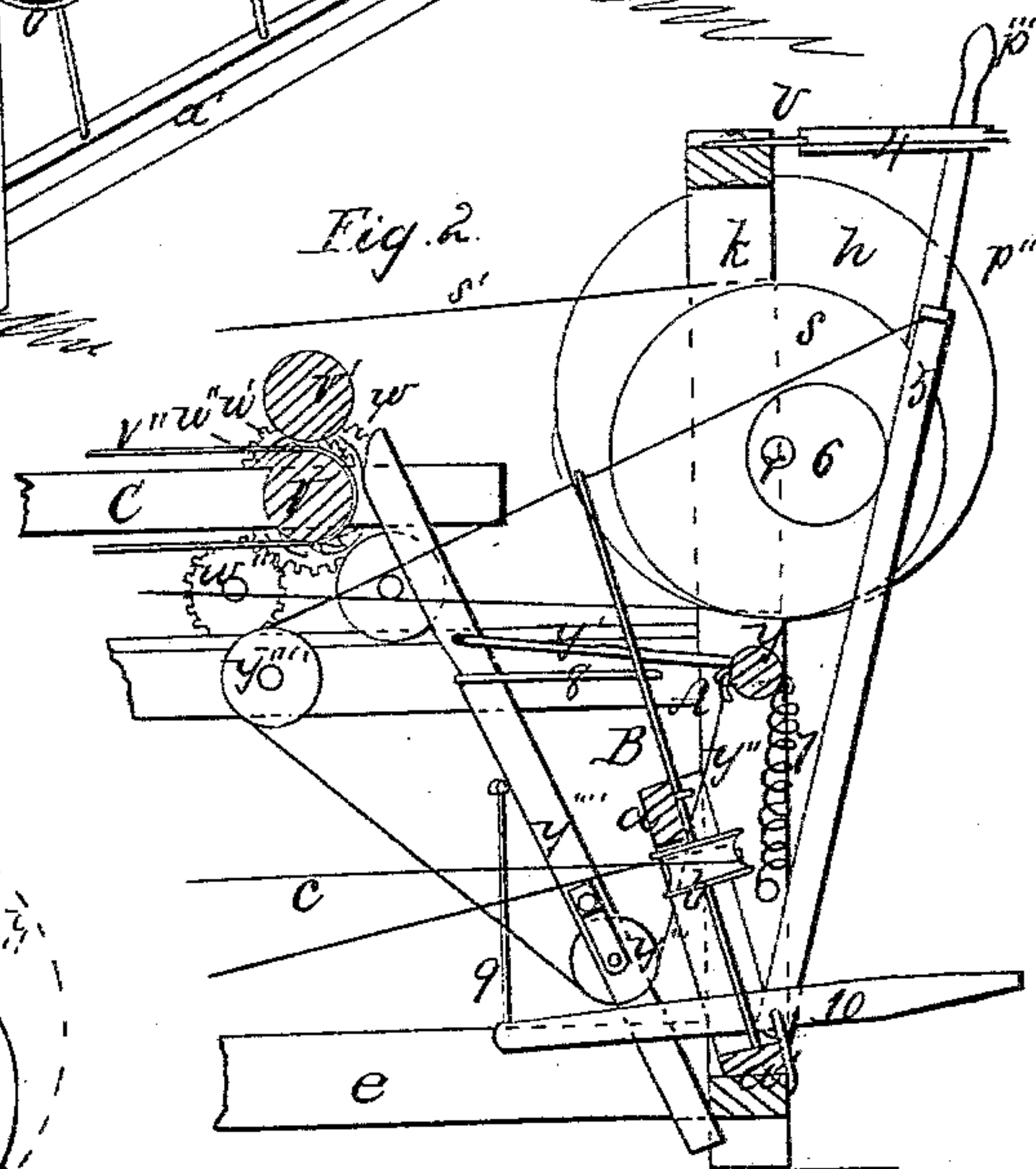
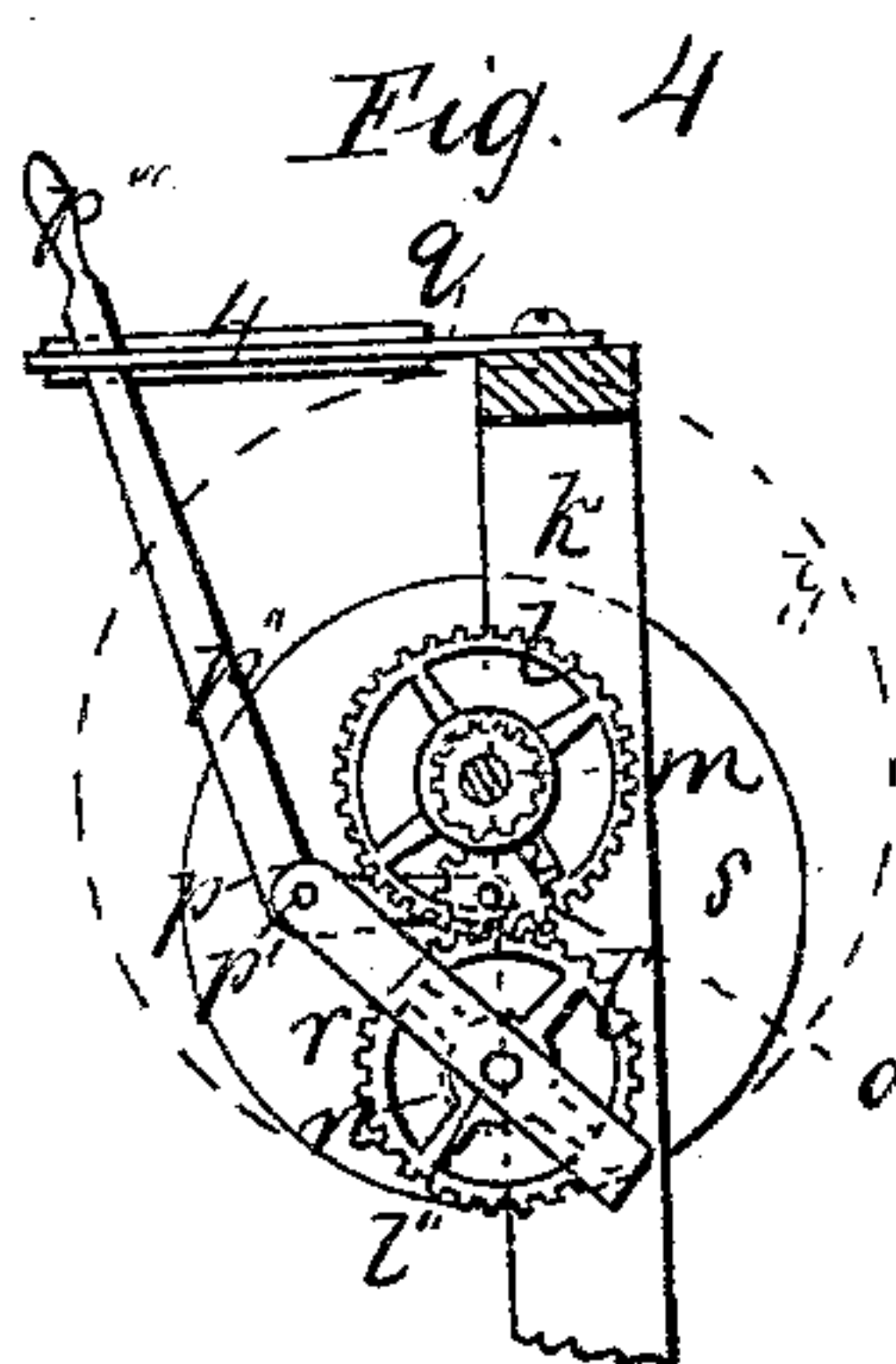
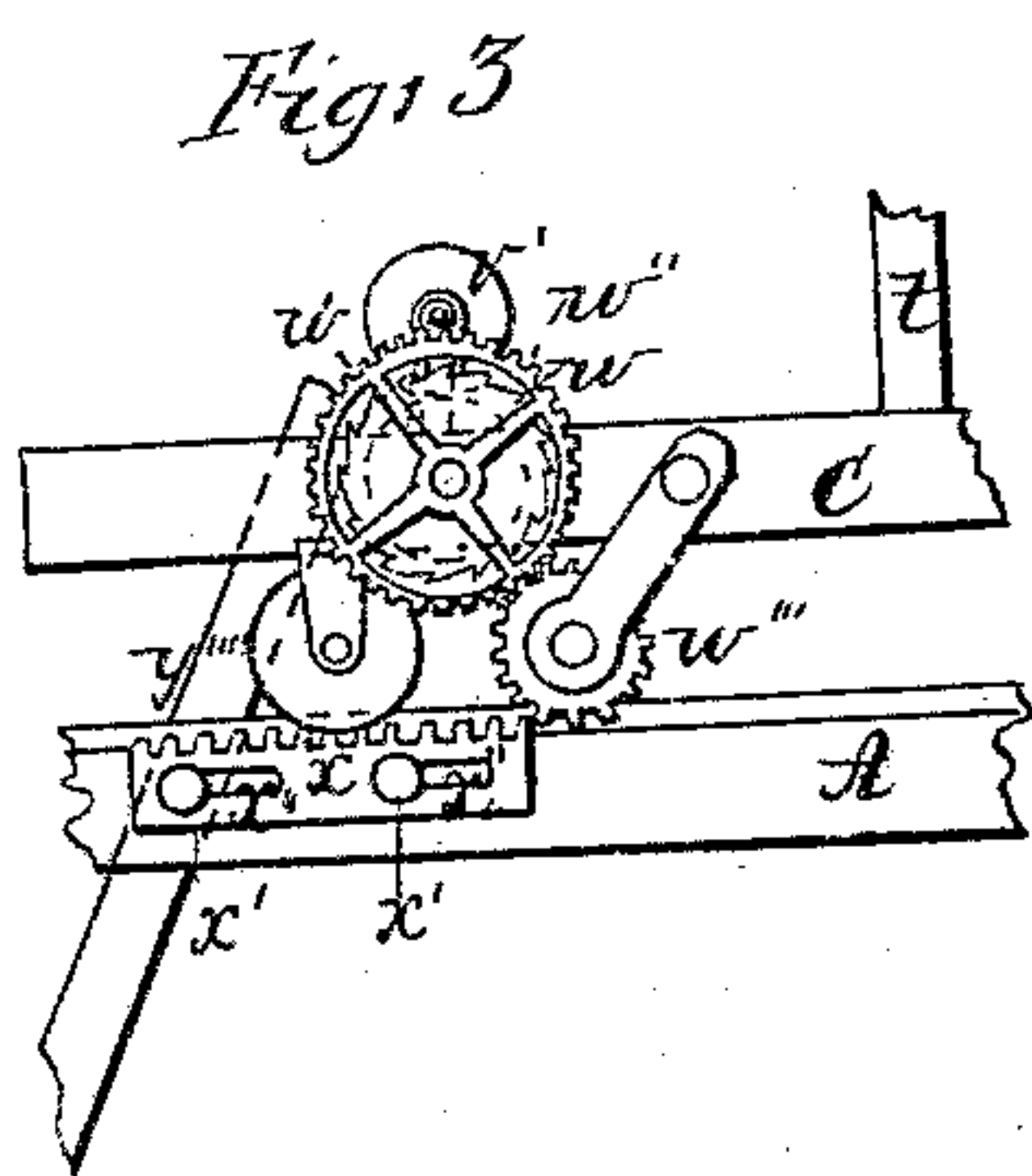
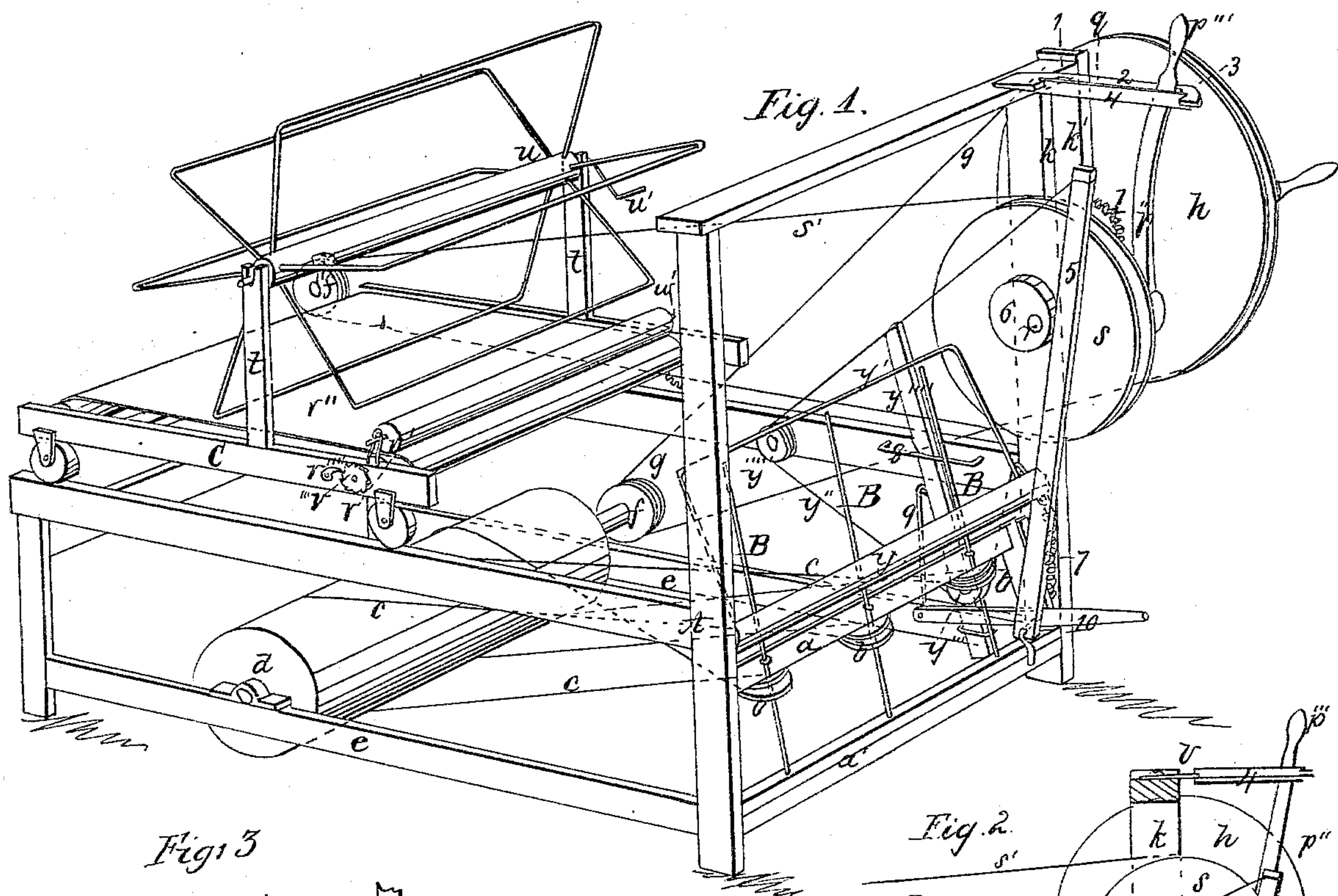


*Mendenhall & Judd.*

*Spinning Mach.*

*N<sup>o</sup> 64,438.*

*Patented May 7, 1867.*



*Witnesses,*

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# United States Patent Office.

NATHAN M. MENDENHALL AND JAMES JUDD, OF TERRE HAUTE, INDIANA.

*Letters Patent No. 64,438, dated May 7, 1867.*

## IMPROVEMENT IN HAND-SPINNING MACHINES.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that we, NATHAN M. MENDENHALL and JAMES JUDD, of Terre Haute, Vigo county, and State of Indiana, have invented a new and improved Spinning Machine, of which the following is a full and clear description, reference being had to the accompanying drawings, making a part of this specification.

Figure 1 is a perspective view of our improved spinning machine.

Figure 2 is a longitudinal sectional elevation of the front end of the machine.

Figure 3 is a detached view, showing an adjustable device for feeding the material from an endless apron on the reciprocating carriage which traverses upon the side rails of the frame of the machine.

Figure 4 is a detached view embracing the device for changing the motion of the reciprocating carriage.

A is the frame of the machine, to the front end rails  $a$   $a'$  of which is journalled the series of spindles B inclining inward at top. They are provided with pulleys  $b$ , which carry the driving-belts  $c$ . The belts  $c$  pass about drum  $d$  journalled upon the lower side rails  $e$  of the frame A at a convenient distance from the front end of the machine. The axle of drum  $d$  is continued outside of the frame A, and bears the pulley  $f$ , about which passes the main driving-belt  $g$ ; it is continued around the crank-wheel  $h$ . The axle  $i$  of crank-wheel  $h$  is journalled to the front corner-post  $k$  and auxiliary post  $k'$ , without yet making a part of frame A. A large gear-wheel  $l$  is secured to the axle  $i$ ; it meshes into a corresponding gear  $l'$  upon the axle  $l''$ , directly beneath axle  $i$ . Each axle  $l''$  and  $i$  is provided with pinions  $m$  and  $n$ . Between them is the reversing pinion  $o$  journalled to the lever  $p$ . The lever  $p$  is pivoted at its elbow  $p'$ . The long arm  $p''$  terminates in the handle  $p'''$ . A bar,  $q$ , having upon one edge the notches 1, 2, 3, for the purpose of receiving the long arm  $p''$  of the lever  $p$ , projects to the front from frame A. The spring 4, secured at either end to the bar  $q$ , confines the long arm  $p''$  in one of the notches 1, 2, or 3. The axle  $r$ , which bears the reversing pinion  $o$ , carries on its extreme end, within the frame A, the pulley  $s$ . A belt,  $s'$ , passing about it, extending to the rear of the machine, is carried over the small roller  $s''$ , and is made fast to the under side of carriage C. The power member of belt  $s'$  passes beneath the carriage C, to which it is also made fast. Two standards  $t$ , erected from the side rails of the carriage C, carry the reel  $u$ , having the crank-handle  $u'$  on the right. The front roller  $v$ , which carries the endless apron  $v''$ , has its axle continued at either end without the side rails of the carriage C. The left-hand end has secured it the ratchet-wheel  $v'''$ , which is engaged by the pawl  $v''''$  pivoted to the frame of the carriage C. The projecting right-hand end of the axle of the front roller  $v$  has secured to it the ratchet-wheel  $w$ , outside of which, upon the same axle, is the loose gear-wheel  $w'$ . It has the ratchet  $w''$  pivoted to its inner face, and engaging the ratchet-wheel  $w$ . The gear-wheel  $w'$  meshes into the pinion  $w'''$ , which is the medium for giving motion to the apron when the carriage C moves backward. The pinion  $w'''$  engages for a limited distance the rack-bar  $x$ , attached to the side rail of the frame A. The bar  $x$  is adjustable, the bolts  $x'$  passing through the slots  $x''$  in the rack-bar  $x$ . Between the front corner posts of the frame A, and at the same height as the side rails upon which the carriage C traverses, is located the freely revolving roller  $y$ , to which is secured the vibrating-bar  $y'$ . From a staple in face of the roller a cord,  $y''$ , is carried about the roller  $y'''$  near the foot of trip-bar  $y''''$ , thence over the roller  $y'''''$  placed on the inside of the right-hand side rail, and is finally secured to the cam-bar 5. Said cam-bar is pivoted at its foot to the lower front rail of the frame A, and it is caused to bear constantly upon the cam 6, secured to the axle  $r$  by the tension of the cord  $y''$ , the spring 7, attached to a staple in the roller  $y$ , and to the corner post of the frame A, producing the desired tension, and elevating the vibrating bar  $y'$  over the tops of the spindles B, when the amplitude of the cam's motion is least. The trip-bar  $y''''$ , to which the roller  $y'''$  is pivoted, is passed between the long loop 8, secured longitudinally to the inner face of the upper side rail of the frame A. The rear edge of the trip-bar is notched to engage the loop 8. The upper end of the trip-bar is rounded off on the inner side at a level with the roller  $v$  of the carriage C. A link, 9, connects the centre of trip-bar  $y''''$  with the inner end of the hand-lever 10, which is pivoted immediately above the lower front rail of the frame A, the handle extending outwards. An adjustable roller  $v'$  is located immediately over front roller  $v$ .

### Operation.

The woollen or other material to be spun, is, after being carded, placed upon the endless apron  $v''$ , the carriage C is drawn to the front of the machine close to the spindles B, the rolls are passed beneath the adjustable roller  $v'$ , and their ends secured to the spindles B, the vibrating bar  $y'$  being elevated above the ends of the



spindles, as shown in fig. 1. Previous to operating, the arm  $p''$  of the lever  $p$  is sprung into outside notch 3 in the bar  $q$ , as shown in the accompanying drawing. The operator, with the handle  $p'''$  of the lever  $p$  in the left hand, gives a forward motion to the crank-wheel  $h$  with the right hand, thereby imparting motion to all the working parts of the machine, and causing the carriage C to move gradually to the rear, feeding out the rolls from the apron  $v''$  only during the first period of backward motion, when the pinion  $w'''$ , which is pivoted to the carriage C, meshes into the rack-bar  $x$ , which permits the formation of a thread of sufficient strength near the spindles B to prevent the rolls parting from them during the balance of the backward movement of the carriage C. In the mean time the spindles have sufficient motion imparted to them from the drum  $d$  to partly twist the attenuated rolls. The carriage C having reached the limit of backward motion remains at rest while the yarn is being spun. In order to more easily increase the speed of the spindles and relieve the balance of the machinery, the arm  $p''$  of the lever  $p$  is sprung into notch 2 of the bar  $q$ . The handle  $p'''$  is moved back until the arm  $p''$  is engaged by the notch 1, the forward motion being still imparted to the crank-wheel  $h$ , thus reversing the motion of the carriage C and bringing it to the front. As the carriage approaches the front, the cam 6 presses out the cam-bar 5, and by means of cord  $y''$  presses down the vibrating bar  $y'$ . The thread is wound upon the spindles from top to bottom. At the same time that the pinion  $w'''$  engages the rack-bar  $x$ , thus causing the apron to feed out the rolls, the free end of the trip-bar  $y''''$  is pressed by the front end of the advancing carriage C, which frees the notched edge of the bar  $y''''$  from the long loop 8, and relieves the tension in cord  $y''$ . The spring 7 is enabled to rotate the roller  $y$ , throwing up the vibrating-bar  $y'$ . The spindles still continuing to rotate, the thread, during the remaining time, since the carriage C struck the trip-bar  $y''''$  until it has reached the extreme front, is wound from the bottom to the top. To put the thread or yarn thus spun into a portable shape, the ends of the threads on the spindles are attached to the reel  $u$  without passing beneath the roller  $v'$ . The operator, by means of crank-handle  $u'$ , rotates the reel until the "hanks" are formed. If heavy yarn or thread is required, the ends of threads from two or more "hanks," while still upon the reel, are carried beneath the roller  $v'$  and secured to the spindle B. The twisting is then proceeded with, as in the operation above described for producing the first thread from the roll.

Having described our improved spinning machine, we claim as our invention, and desire to secure by Letters Patent—

1. The lever  $p$ , notched bar  $q$ , reversing pinion  $o$ , gear-wheels  $l$  and  $l'$ , and pinions  $m$  and  $n$ , pulley  $s$  and cord  $s'$ , in combination with the carriage C, as and for the purpose specified and set forth.
2. The vibrating bar  $y'$ , spring 7, cord  $y''$ , trip-bar  $y''''$ , link 9, lever 10, cam-bar 5, and cam 6, arranged and operating substantially as above described and for the purpose specified.

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JAMES JUDD.

Witnesses:

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W. B. ALVORD.