No. 752,974. PATENTED FEB. 23, 1904.

E. HOLLINGWORTH.

WIRING MOTION OF LOOMS FOR WEAVING CARPETS.

APPLICATION FILED MAY 19, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

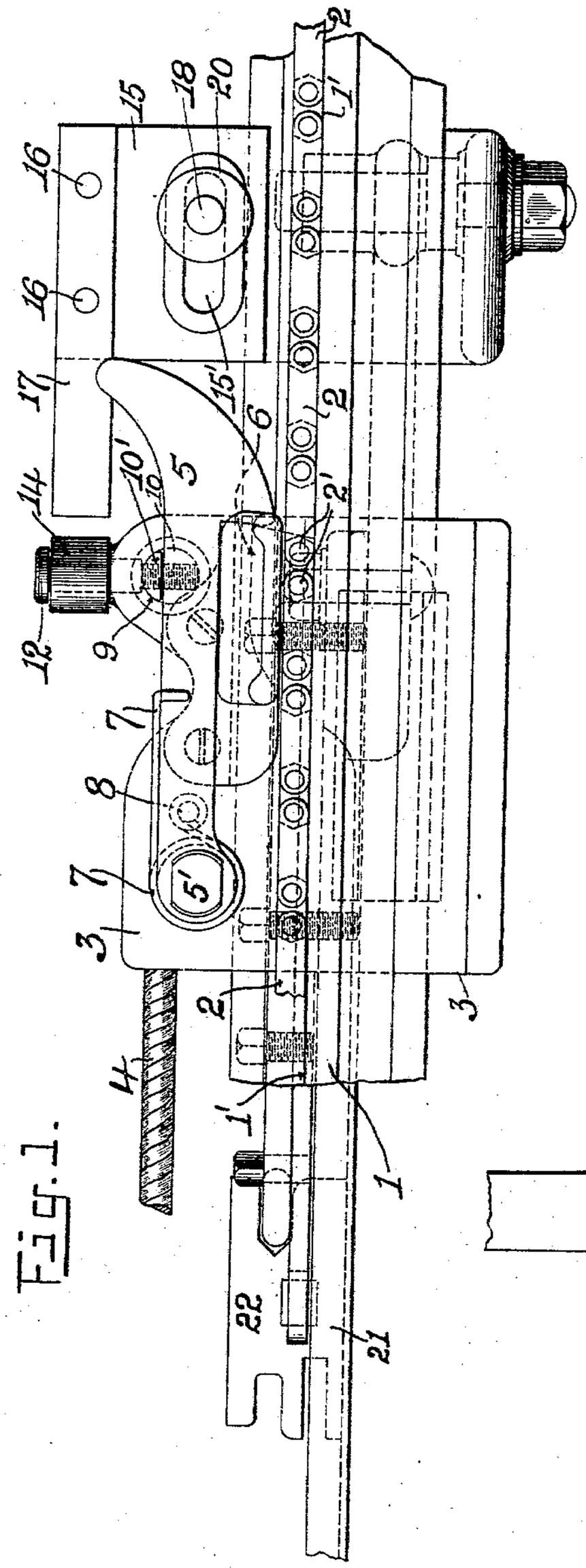

Fig. 1.

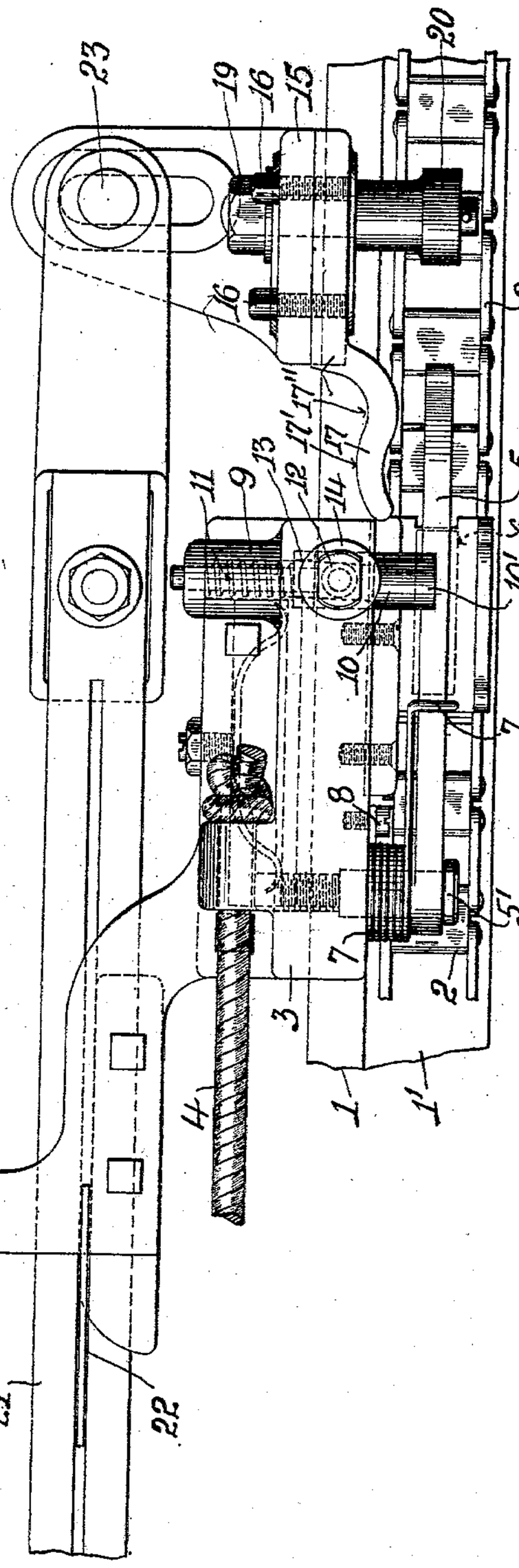

Fig. 2.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

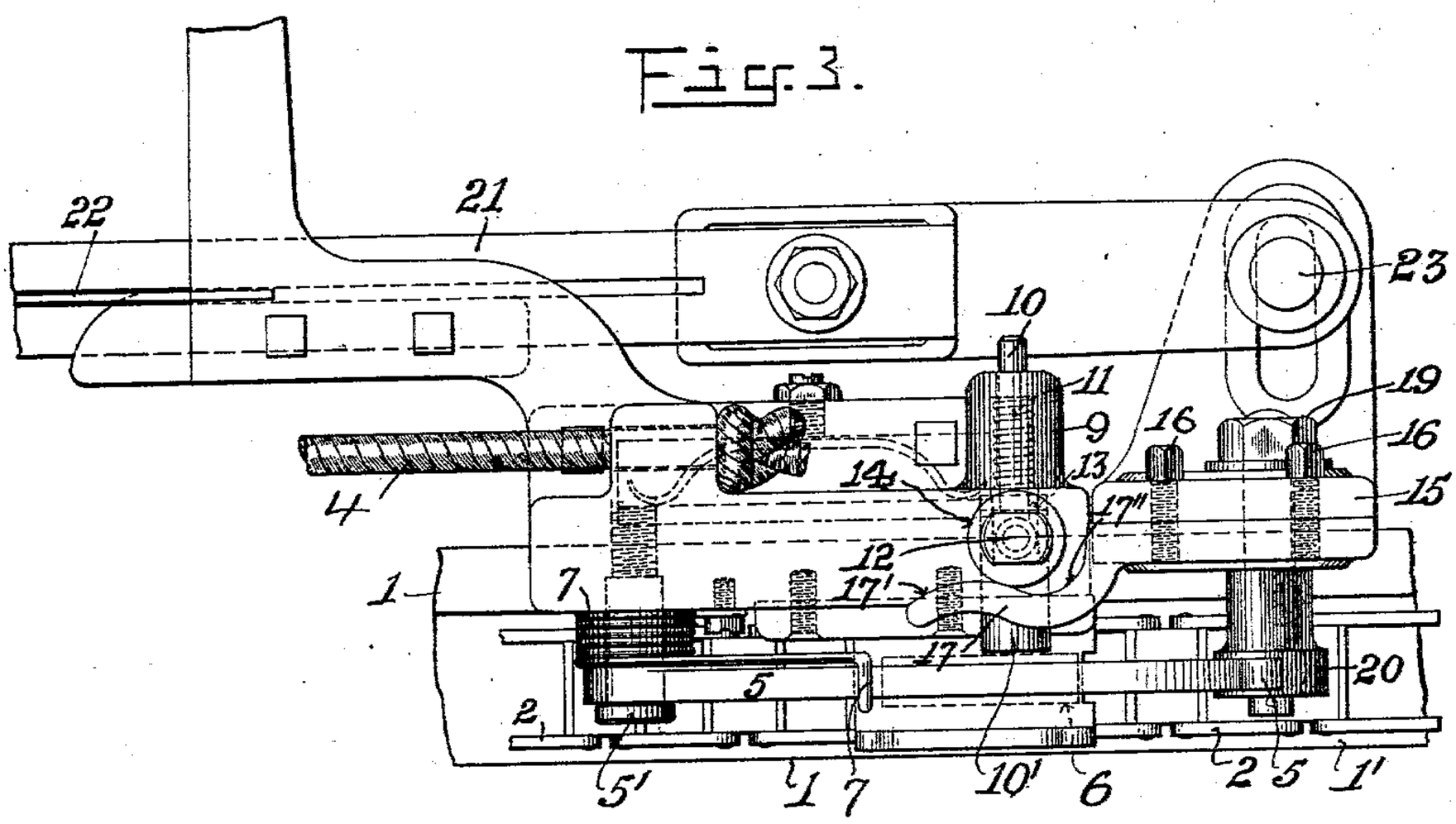


Fig. 4.

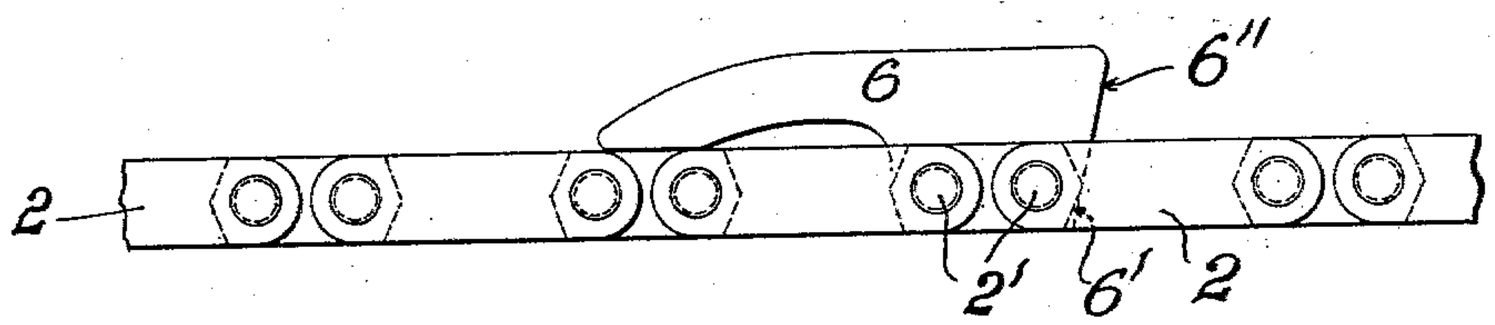
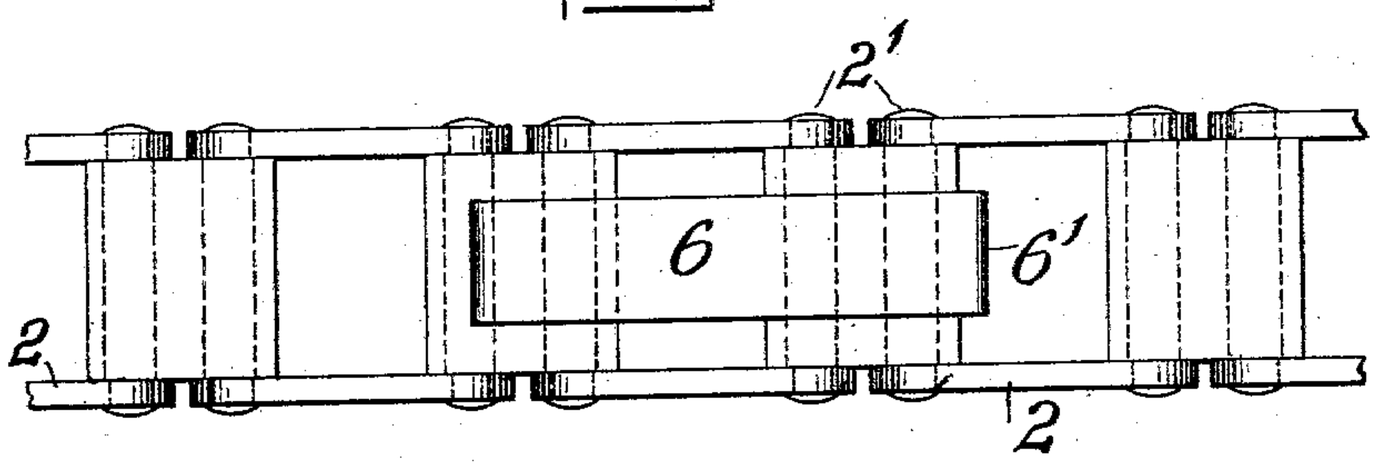


Fig. 5.



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No. 752,974. Patented February 23, 1904.

UNITED STATES PATENT OFFICE.

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

WIRING-MOTION OF LOOMS FOR WEAVING CARPETS.

SPECIFICATION forming part of Letters Patent No. 752,974, dated February 23, 1904.

Application filed May 19, 1903. Serial No. 157,762. (No model.)

To all whom it may concern:

Be it known that I, EDWARD HOLLINGWORTH, residing at Dobcross, in the county of York, England, have invented certain new and useful Improvements in the Wiring-Motion of Looms for Weaving Carpets, of which the following is a specification.

This invention relates to the wiring-motion of looms for weaving pile-carpets or like goods, and particularly to the hook-box of said wiring-motion, which is traversed outward away from the loom after each insertion of a wire by means of an endless traveling chain and drawn inward again toward the loom to insert the wire by means of a cord actuated by a scroll-motion, as is well understood.

The object of my present improvements is to provide simple and efficient means for self-actingly locking the hook or catch in engagement with and releasing it from the endless traveling chain at the proper times and to obtain the connection of the hook or catch with the chain clip or lug centrally of the chain transversely, whereby there is less strain and wear on the parts and a more simple, direct, and easy action obtained. Heretofore the hook on the box has been arranged to one side of the chain and engaged to carry the box to its outer position by projections extending from the chain to one side thereof, the hook being maintained in engagement with the lug, projection, or stud on the chain by a longitudinal guide extending over the chain-race nearly the full length of the traverse of the hook-box and released at the end of its outer movement by a fixed stud or bowl extending into the path of the hook or catch. The parts in such previous constructions of the wiring-motion were subject to considerable strain and wear and tear apart from other disadvantages appertaining to such construction which I intend to obviate.

My invention consists of certain novel features of construction of my improvements, as will be hereinafter fully described.

Referring to the drawings, Figure 1 is a front elevation of part of the wiring-head of a carpet-loom embodying my improvements, the hook-box being shown nearly at the limit of its outward movement and engaged with a clip or lug on the traveling chain. Fig. 2 is a plan of Fig. 1. Fig. 3 is a plan view similar to Fig. 2, but showing the parts in a different position. Fig. 4 is a side elevation of a detached portion of the endless traveling chain, showing an engaging clip or lug attached thereto according to my invention; and Fig. 5 is a plan of Fig. 4.

In the accompanying drawings, 1 is the chain-rail, secured at the upper side of the framing, (not shown,) supporting the parts of the wiring-motion in the usual way.

2 is the endless traveling chain, which in its traverse outward away from the side of the loom rides along the chain-slide 1′ on the rail 1 and from the end thereof is guided back to the loom side over suitable guide-pulleys, and 3 is the hook-box adapted to slide in and out on the rail 1 to and from the loom to insert and withdraw the pile-wires, said hook-box being drawn inward toward the loom when released from the chain by the rope or cord connections 4, actuated by the usual scroll-motion (not shown) and carried outward again by the traveling chain 2, all in the well-known manner.

My improvements consist, primarily, in arranging and constructing the parts so that the hook or catch 5 on the hook-box 3 will lie centrally over the traveling chain and engage with clips or lugs 6, (one only being shown,) secured between the links of the chain at the ordinary distances apart to carry the hook-box outward at the proper times.

The hook or catch 5 is mounted on a pin or stud 5′, projecting from the side of the hook-box, and it is held down in a horizontal position by a spring 7, coiled at one end around the pin or stud 5′ and secured at its extremity to the hook-box by screw 8 and the opposite end extending alongside the hook or catch 5 for a portion of its length and being bent over at right angles to engage with the upper edge of said hook or catch and turned down vertically at right angles at the opposite end thereof to hold the spring in position.

The clips or lugs 6 are secured at their forward ends 6′ on adjoining pins 2′ 2′ of the chain 2 at the predetermined positions on said chain, as usual, to engage with and carry the hook-box outwardly at the proper times, the said forward ends being slightly inclined at 6″ to admit of the hook 5 having a firm hold when engaged therewith. The opposite ends of the lugs or clips 6 are inclined or rounded or beveled off and rest upon the upper side of the chain 2, with which they are unconnected, so that they will the more readily adapt themselves to the curvature of the pulleys around which they have to pass.

Supported in a bearing 9 in the forward end of the hook-box 3—that is to say, in a position between the center on which the hook 5 is pivoted and the free end of said hook—is a horizontal locking stud or spindle 10, capable of being slid endwise in its bearing against the pressure of a spring 11, encircling the reduced end of the spindle and confined between a shoulder thereon and the end of a recess in the bearing. A vertical stud or pin 12 is secured to the spindle 10 and extends upward through a longitudinal opening or slot 13 in the hook-box 3 and is provided at its upper end with a small friction bowl or roll 14.

On a stand 15, secured to the rail 1, is secured by set-screws 16 a finger 17, extending inwardly toward the loom in the same plane as the bowl or roll 14 and having a cam-surface 17′ at the end thereof and a semicircular recess 17″ of approximately the radius of the bowl or roll 14.

The outer end of the spindle 10 has a cut-out or is offset to form a projecting lip or extension 10′ at the upper side thereof, which normally extends over and engages the upper side of the hook or catch 5, being held in this position by the action of the spring 11.

Mounted on a stud 18, passed through a slot 15′ in the stand or bracket 15 and secured by nut 19, is a roll 20, extending into the path of the hook or catch 5 at the outer end of its traverse and with which the nose of the said hook is adapted to engage and to ride over same, to raise it on its pivot and place the catch or hook clear of the clip or lug connected to the chain and disengage the hook-box from said chain.

The guide-rail 21 for the wire-head 22 is pivoted on a stud 23, secured to the stand or bracket 15, and said rail is oscillated backward and forward in the usual way in the working of the loom by levers and connections from a cam or eccentric.

From the above description, in connection with the drawings, the operation of my improvements will be readily understood by those skilled in the art. Each time the hook-box is drawn back toward the loom by the cord 4 to insert a wire and it has completed its movement in that direction a lug or clip 6 is brought by the chain in the ordinary timing of the wiring-motion into the plane of the hook or catch 5, with which the heel of said clip engages and immediately commences to traverse the hook-box forward to the outward limit of motion, the pressure of the hook or catch holding the lug firmly in position during the time the box 3 is being slid outward and the spindle 10 locking the hook 5 when engaged therewith. As the hook-box 3 approaches the end of its traverse the bowl or roll 14 on the vertical stud 12 contacts with the finger or projection 17 and riding over the cam-surface 17′ is forced back a little way and slides the spindle 10 in its bearings along with it, whereby the projecting end or lip 10′ is carried back clear of the hook 5 and releases it just before the nose of the hook abuts against the roll 20, so that it may be raised by its engagement with said roll to place the catch or hook clear of the lug or clip 6 on the traveling chain and bring the hook-box to a standstill. The roll 14 after leaving the cam-surface enters the curved or semicircular recess 17″ and is held thereby to retain the hook-box at the limit of its outward motion until drawn back toward the loom by the cord 4 under the action of the scroll, the liberation of the hook 5 as the hook-box is moved away from the stand 15 permitting the spring 7 to act to return it to its normal position in readiness for engagement with the next clip or lug on the traveling chain and the spring 11 returning the locking-spindle 10 to its normal position to engage and lock the hook.

It will be understood that the details of construction of my improvements may be varied, if desired, from what is shown and described.

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

1. In a wiring-motion for carpet-looms, the combination with a sliding hook-box, and an endless traveling chain, for traversing the hook-box away from the loom to its full extent, of a pivoted catch or hook-lever mounted on a stud projecting from the hook-box, lying in a plane over the traveling chain centrally thereof, and in the path of engaging clips or lugs carried by the chain, said lugs or clips each being secured at its forward end on two adjacent connecting-pins of the chain and between the side links thereof, the rear end of the clip being free, and the forward end adapted to engage the catch or hook-lever, means for depressing the hook-lever and holding it in its normal position, means for locking and releasing said hook-lever, substantially as set forth.

2. In a wiring-motion for carpet-looms, the combination with a sliding hook-box and an endless traveling chain carrying devices for engaging a connection of the hook-box, to carry it outward at the predetermined times, of a catch or hook-ended lever pivotally con-

nected to the hook-box, and occupying a position over the chain, and centrally thereof, a spring secured at one end to the hook-box, then coiled around the pivot-pin and engaging at its opposite free end with the catch or hook-lever to hold it in its normal position, a clip or engaging device mounted at its forward end on two adjacent coupling-pins of the endless chain, between the respective side links, and free at its rear end, the forward end being shaped to engage securely with the hook or catch on the pivoted lever, a transverse horizontal sliding locking bar or spindle mounted in bearings in the hook-box, and having a projection or lip on its outer end, adapted normally to extend over and engage the upper side of the hook-lever, means for returning the said sliding locking-spindle to, and holding it in its normal position, means connected with the sliding spindle and lying in the same plane as a fixed cam-surface over which said means will ride and move the spindle backward against the pressure of a spring, to withdraw the projection or lip clear of the hook-lever at the proper time, and the means for raising the hook-lever clear of the clip or lug on the endless traveling chain, substantially as set forth.

3. In a wiring-motion for carpet-looms, an endless traveling chain, and a sliding hook-box, carrying a pivoted catch or hook-ended lever, which lies in a plane directly over and centrally of the endless traveling chain, and in the path of lugs or clips secured to the traveling chain between the side links of same, and adapted to engage successively with said hook-lever to slide the hook-box outward to its full extent away from the loom, the said lugs or clips attached at their forward ends to the chain, means for holding the hook-lever in its normal position, a sliding locking-spindle carried in bearings in the hook-box, a spring encircling a part of same and confined between the head of the spindle and the end of a recess in the bearings, and acting to maintain the spindle in its outer extended position to lock the pivoted hook-lever, a vertical member connected to said spindle and extending through a longitudinal slot in the hook-box, a roll secured on the upper end of said vertical member, a fixed finger or extension having a cam-surface thereon which lies in the path of a roll, and over which said roll is adapted to ride when the hook-box approaches the limit of its outward traverse, and to be actuated thereby to withdraw the sliding spindle and release the hook-lever, and a semicircular recess in said finger to receive the roll as it passes away from the cam-surface and hold the hook-box in position until the scroll-band operates to draw back the hook-box, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD HOLLINGWORTH.

Witnesses:

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THOMAS H. BARRON.