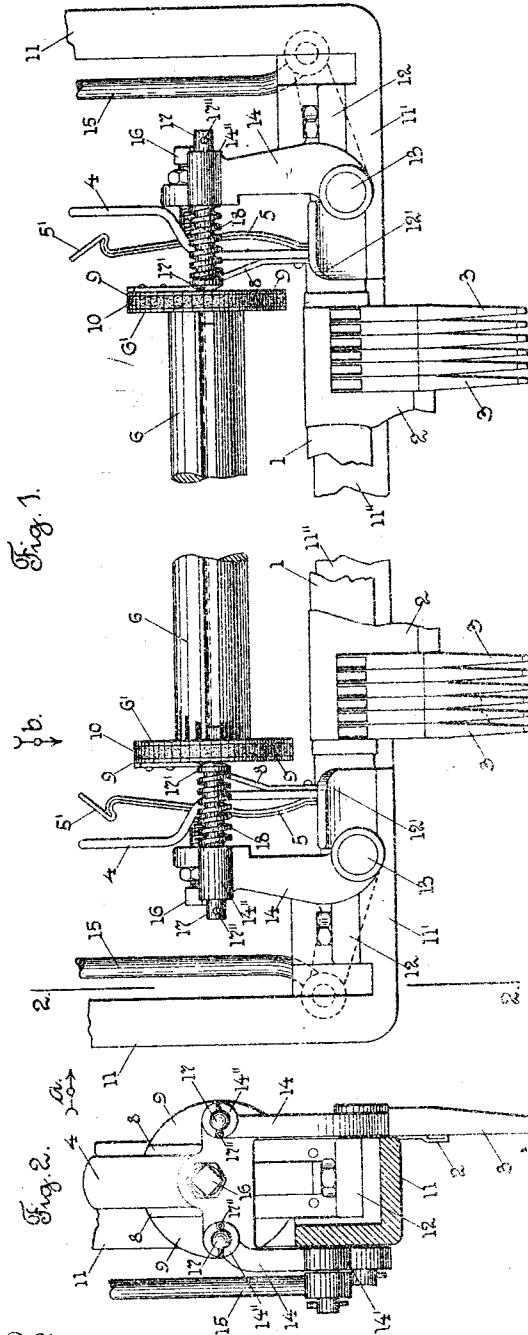


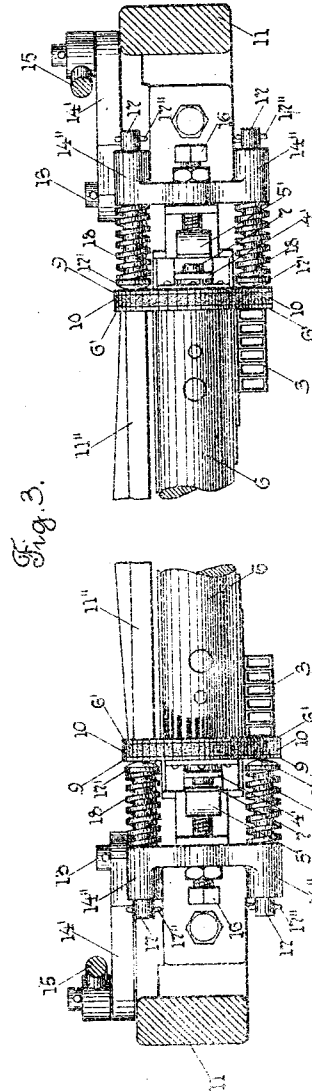
G. F. HUTCHINS.
 LOOM FOR WEAVING TUFTED FABRICS.
 APPLICATION FILED JUNE 18, 1910.

1,033,589.

Patented July 23, 1912.



Witnesses
 M. B. ...
 W. ...



Inventor
 George F. Hutchins.
 By John A. Dewey
 Attorney.

UNITED STATES PATENT OFFICE.

GEORGE F. HUTCHINS, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, A CORPORATION OF MASSACHUSETTS.

LOOM FOR WEAVING TUFTED FABRICS.

1,033,589.

Specification of Letters Patent. Patented July 23, 1912.

Application filed June 18, 1910. Serial No. 587,578.

To all whom it may concern:

Be it known that I, GEORGE F. HUTCHINS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Looms for Weaving Tufted Fabrics, of which the following is a specification.

My invention relates to looms for weaving tufted fabrics of the type shown and described in U. S. Letters Patent, No. 490,237, in which tuft yarn carriers or spools are used which carry the tuft yarn wound thereon.

The spools and the spool frames having the tuft yarn tubes thereon, are carried by an endless chain and each individual spool and frame with one tuft yarn tubes thereon, is taken from said chain by a grip mechanism, and lowered, to carry the tuft yarn tubes down between warp threads, to cause the tuft yarns, extending from the tubes to be inserted between the warps, and then raised out of the fabric, and the tuft yarns cut off to make the pile on the fabric, in the usual and well known way. In this class of looms it is necessary to have a friction device to hold the spool, having the tuft yarn thereon, from rotating.

It has been found in practice that in the case of wide looms of the class referred to, in which long tuft yarn spools are used, that the friction devices heretofore used in connection with the spools have not proved satisfactory, and when the spools and the spool frame carrying the tuft yarn tubes are raised and withdrawn from the fabric, after the tuft yarns have been inserted, preparatory to the cutting of the tuft yarns, there is a too free rotary motion of the spool, causing a greater amount of tuft yarn to be drawn off from the spool, to form the pile on the fabric, than is required.

My invention relates particularly to an improved friction device for the spools carrying the tuft yarn, and the object of my invention is to provide an improved friction device, which will act to hold the spool against rotation, and the friction on the spool will be increased through the operation of the grip mechanism, which removes the spool and spool frame having the tuft yarn tubes thereon from the endless chain, to have the tuft yarns inserted

between the warp threads, and then returns the spool and spool frame having the tuft yarn tubes thereon to their normal position in the endless chain, so that the rotation of the spool, when the tuft yarn tubes are withdrawn from the fabric, after the tuft yarns have been inserted therein, will not be greater than the rotation required for the length of tuft yarn to be inserted into the fabric and cut off to form the pile.

In my improvements in friction device for the tuft yarn spools, which spools are ordinarily provided with metal heads or ends, I provide a flexible device or plate, attached to the spool frame, and located at the outer end of each spool, and having a friction surface thereon to bear against the outer side of the head of the spool, preferably at each end thereof, in the direction of the length of the spool, to hold said spool against rotation.

My friction device is preferably of circular or disk shape at its engaging end, and preferably of the same size as the head of the spool, so that the engaging part of the grip arm of the grip mechanism will bear against said friction device, when said grip mechanism is operated to remove a spool and spool frame with the tubes thereon, from the endless chain, to lower them into a position to carry the tuft yarn tubes between the warp threads, and to raise them to return them to the endless chain. During the removal of the spool and spool frame from the endless chain, and until they are returned to their normal position in the endless chain, the friction on the spool is increased during a part of the time, through the action of the grip arms of the grip mechanism, so that the spool is held more firmly against rotation at this time, as will be readily understood by those skilled in the art.

I have only shown in the drawing a detached tuft yarn carrier and its holding device, with my improvements applied thereto, sufficient to enable those skilled in the art to understand the nature of my invention.

Referring to the drawing:—Figure 1 is a front view of a beam carrier, and my improvements in grip mechanism. Fig. 2 is a section, on line 2, 2, Fig. 1, looking in the direction of arrow *a*, same figure, and, Fig. 3 is a plan view of the parts shown in Fig.

1, looking in the direction of arrow *b*, same figure.

In the accompanying drawing is shown a tuft yarn carrier and carriage, which consists in this instance of a cross bar 1, which has secured thereon the plates 2 carrying the tubes 3, through which the tuft yarn, not shown, passes from the spool. Rigid arms 4 are fastened at each end to the cross bar 1 for the spool gudgeons. The upper ends of the arms 4 are adapted to engage links on the carrier chain, not shown, for the spool frame to be carried thereon, through the cooperation of the spring catches 5, having their upper ends preferably hooked at 5'. The spool 6 on which the tuft yarns are wound is carried with its gudgeons 7 in bearings 4' on the arms 4, and having its heads or ends preferably made in this instance of sheet metal disks 6'. Spring arms 8 are suitably riveted at their lower ends on the arms 1, and carry in this instance a disk or plate 9, which in this instance is provided with flexible material, as leather, or other suitable material 10, which presses against the outer surface of the heads 6' of the spools 6 in the direction of the length of the spools, and acts as a friction to hold the spool against rotation.

The tuft yarn spool 6, and spool frame therefor, are adapted to be seized by the transfer mechanism, or grip mechanism, to be disengaged from the carrier chain, and moved toward the fell of the fabric, for the tuft yarn from the spool, which passes through the tubes 3, to be inserted into the warps in the usual and well known way.

The grip mechanism for the spool frame consists of the transferring arms 11, having an up and down movement communicated thereto from mechanism on the loom, not shown, in the usual way. The lower ends 11' of the arms 11 are turned inwardly, and have the stands 12 secured thereon. The stands 12 have a pocket 12' thereon, to hold at the desired time, the opposite ends of each tuft yarn carrier. The transferring arms 11 are rigidly connected to each other by the transverse bar 11''.

Pivotaly mounted on a bolt 13 on a stand 12, at each end of the tuft yarn carrier, are in this instance the yoke shaped clamping or gripping devices 14, each having an arm 14' on one side thereof, which is pivotaly connected at its outer end to the upwardly extending connector 15, to be operated by mechanism on the loom, not shown, at the desired time. A set screw 16 is adjustably attached to the transverse part of each of the arms 14, and on the inward movement of the yoke shaped arms 14, the inner end of said set screw engages the spring 5, and moves said spring, with its head and 5', toward the head of the tuft yarn spool, and away from the chain, to enable the tuft yarn

carriage to be easily removed from the carrier chain. In this instance each of the yoke shaped arms 14 has at its upper end, two bosses 14'', which in this instance loosely receive a spring actuated pin or plunger 17. Each plunger 17 has a headed end 17', which is adapted to engage with the disk 9 on the spring arm 8, to press the yielding material 10 on the disk 9 against the outer surface of the head or end 6' on the spool 6, when the yoke shaped arms 14 are moved toward the spool, as shown in the drawing. A helically coiled expanded spring 18 encircles each pin or plunger 17, and bears at one end against a boss 14'', and at its other end against the head 17'. A transverse pin 11''' through the outer end of the plunger or pin 17, prevents the pin from passing out of the boss 14''.

When the grip mechanism is operated at the desired time, the spring actuated plungers or pins 17 bear against the disk 9 on the spring arm 8, and press the friction surface 10 against the outer side of the head 6' of the spool 6, to apply friction to the spool and hold it against rotation.

The advantages of my improvements will be readily appreciated by those skilled in the art.

The grip mechanism for the spool and spool frame, acting to grip the spool through the friction surface on the friction device, controls the rotation of the spool when the spool is removed for the yarn to be drawn off from the spool to form the pile on the fabric.

It will be understood that the details of construction of my improvements may be varied if desired.

The spring actuated pins or plunger 17 may be dispensed with, and the arms 14 at their upper end engage directly with the outer surface of the disk 9, forming the friction device at the end of the spool.

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

1. In a loom of the class referred to for weaving tufted fabrics, a spool frame having thereon tubes for the tuft yarn, and bearings for the tuft yarn spool, and said spool, and a flexible device fast on the spool frame, and having a friction surface thereon to bear against the outer surface of the head of the spool, in the direction of its length, to hold said spool against rotation, and grip mechanism to engage said friction device, and increase the friction on said spool.

2. In a loom of the class referred to for weaving tufted fabrics, a spool frame having thereon tubes for the tuft yarn, and a spool carrying the tuft yarn, and bearings for said spool, and a yielding friction device at the end of the spool to hold the spool against rotation, comprising a flexible plate

carried on said frame, and having a friction surface thereon, to cooperate with the end of the spool in the direction of its length, and automatic means for gripping said spool through said friction device, to disengage said spool frame from its support, and carry said spool frame and spool into position to have the tuft yarns inserted between the warps, and return said spool frame and spool to their normal position.

3. In a loom of the class referred to for weaving tufted fabrics, a spool frame having thereon tubes for the tuft yarn, and a spool carrying the tuft yarn, and having metal heads, and bearings for said spool, and a yielding friction device at each end of the spool, to hold the spool against rotation, and comprising a disk or plate having a friction surface thereon to engage the outer surface of the head of the spool, and secured upon the upper end of a flexible arm, and said arm, carried on the spool frame, said friction surface cooperating with the head of the spool, in the direction of its length, and automatic means for gripping said spool through said friction device, to disengage the spool frame from its support, and convey said spool frame and spool into position

to have the tuft yarns inserted between the warps, and return said spool frame and spool to their normal position.

4. In a loom of the class referred to for weaving tufted fabrics, a spool frame having thereon tubes for the tuft yarn, and a spool carrying the tuft yarn, and having metal heads, and bearings for said spool, and a yielding friction device at each end of the spool, comprising a disk or plate of substantially the same size as the head of the spool, to engage the outer surface of the head of the spool, and secured upon the upper end of a flexible arm, and said arm rigidly attached at its lower end on the spool frame, said friction surface on said plate cooperating with the head of the spool, in the direction of its length, and automatic means to grip said spool, through said friction disk, to disengage the spool frame from its support, and convey said spool frame and spool into position to have the tuft yarn inserted between the warps, and return said spool frame and spool to their normal position.

GEORGE F. HUTCHINS.

Witnesses:

JOHN C. DEWEY,
MINNA HAAS.