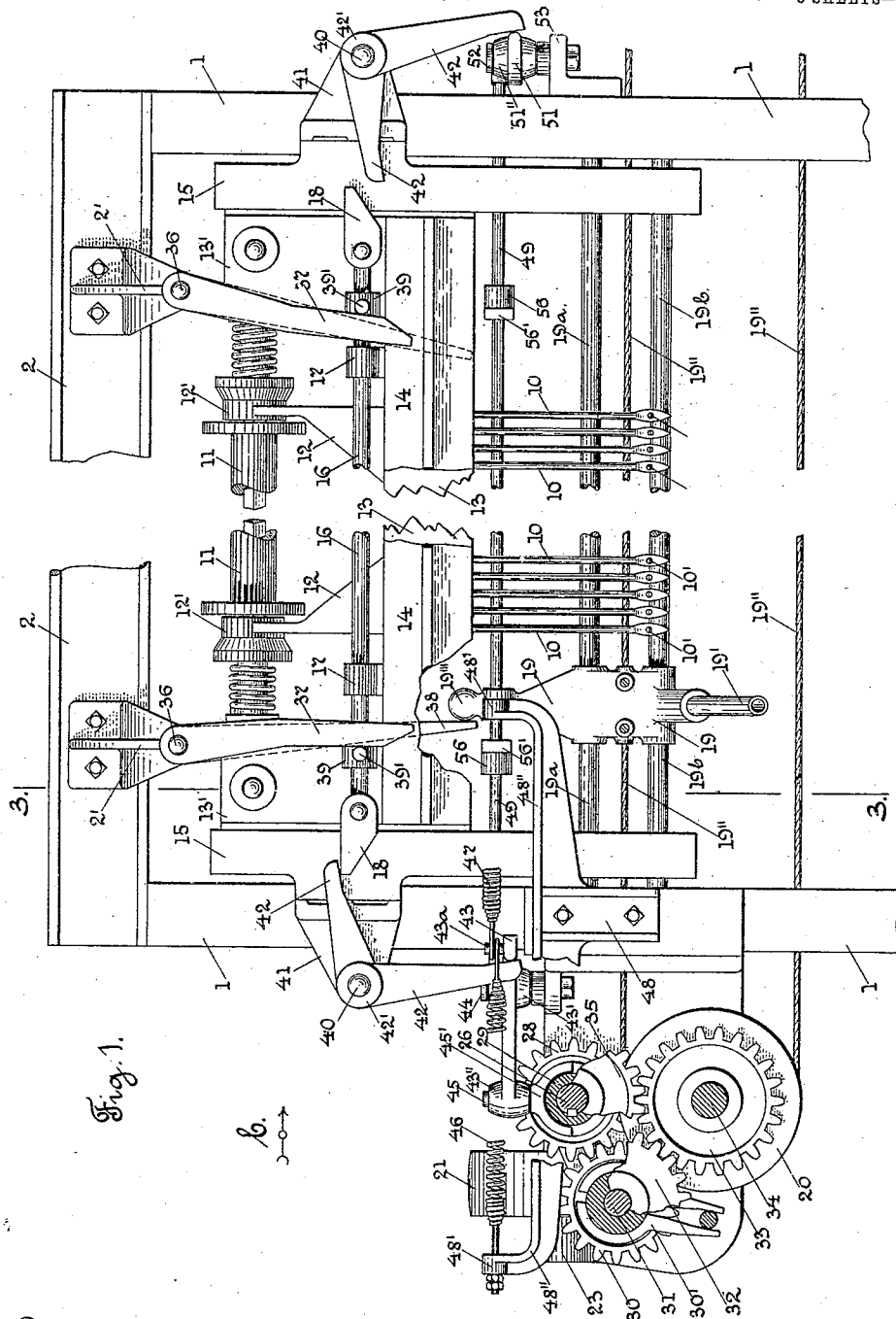


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LOOM FOR MAKING TUFTED FABRICS.
APPLICATION FILED JULY 10, 1908.

941,176.

Patented Nov. 23, 1909.

3 SHEETS—SHEET 1.



Witnesses
M. Bredt.
M. H. Lee.

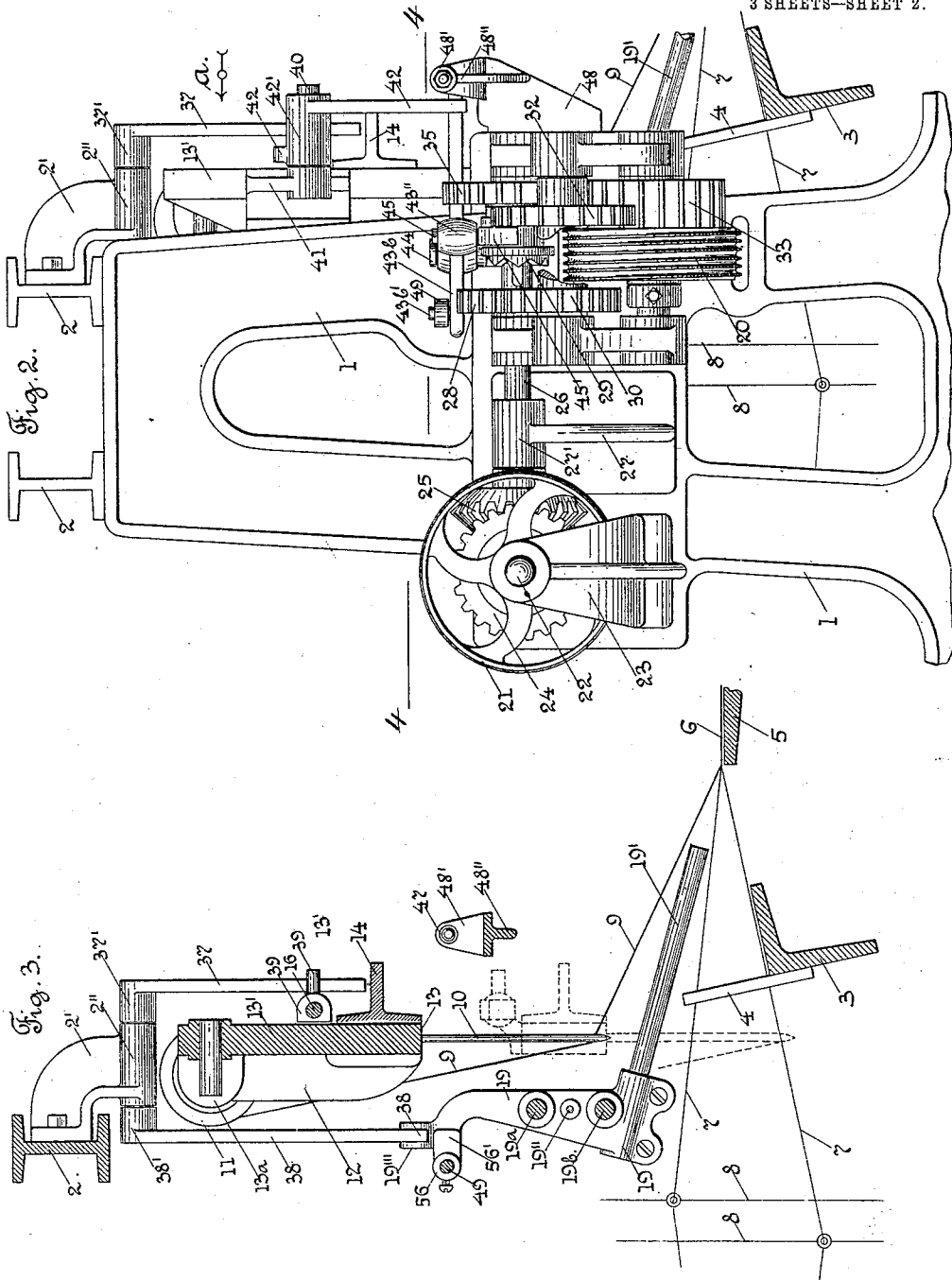
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

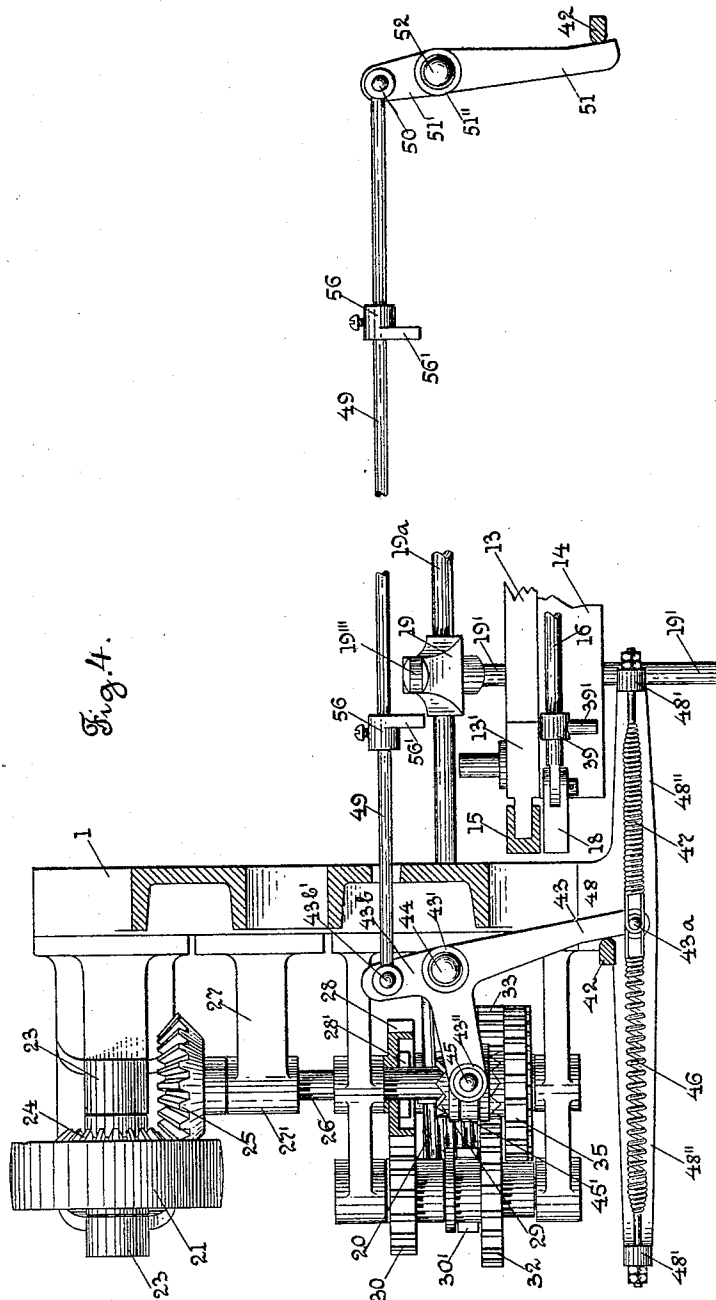


Fig. 4.

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UNITED STATES PATENT OFFICE.

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LOOM FOR MAKING TUFTED FABRICS.

941,176.

Specification of Letters Patent.

Patented Nov. 23, 1909.

Application filed July 10, 1908. Serial No. 442,824.

To all whom it may concern:

Be it known that I, FRED A. WHITMORE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Looms for Making Tufted Fabrics, of which the following is a specification.

My invention relates to looms for making tufted or chenille fabrics, or carpets, generally termed chenille Axminster looms, and my invention relates to improvements in the class of looms referred to, and particularly to improvements in the mechanism which carries the chenille weft through the shed, in the process of weaving the fabric or carpet.

The object of my invention is to improve upon the operating mechanism of the fur or chenille carrier weft, and some other mechanisms in the class of looms above referred to, and my invention consists in certain novel features of construction of my improvements, as will be hereinafter fully described.

In the manufacture of chenille carpets, the chenille, which constitutes the pile of the fabric, is prepared beforehand, and is placed in the fabric in parallel rows transversely across the fabric, in the shed of the binder warps, as a series of chenille wefts. The chenille weft, which is also termed "fur", is sometimes carried into the shed by shuttles, and sometimes, as in my present improvements, by a fur or chenille weft carrier, which consists of a tube suitably supported, through which the chenille weft passes, and mechanism for operating said tube automatically at predetermined intervals, after the shed for the chenille is open, and the binder or catcher warps for the chenille are in their upper position.

I have only shown in the drawings a detached portion of a chenille Axminster loom of the class referred to, with my improvements applied thereto, sufficient to enable those skilled in the art to understand the construction and operation thereof.

Referring to the drawings:—Figure 1 is a front view of the upper portion of a chenille Axminster loom, broken out through the center, and of the fur carrier and operating mechanism, looking in the direction of arrow *a*, Fig. 2. Fig. 2 is a side view of the parts shown in Fig. 1, looking in the direction of arrow *b*, same figure. Fig. 3 is a

section, on line 3, 3, Fig. 1, looking in the direction of arrow *b*, same figure, and Fig. 4 is a section, on line 4, 4, Fig. 2, looking in the direction of arrow *c*, same figure.

In the accompanying drawings, 1 are the loom sides or end frames, which have secured thereon the two I-shaped beams 2, which extend across the loom in the direction of its length. 3 is the lay, see Figs. 2 and 3, and 4 the reed thereon, preferably open at its upper end. 5 is the breast beam plate, over which the woven fabric 6 passes, 7 are the binder warps, raised and lowered by the two harnesses 8 in the usual way. 9 are the catcher warps which bind the chenille weft, and which, from the fell of the fabric, pass through eyes 10' in the lower ends of needles 10, upwardly to the catcher warp spool 11. The spool 11 is carried in bearings or brackets 12, secured to the wooden bar 13, see Fig. 3, which bar extends transversely across the loom and has secured thereon, to stiffen the same, in this instance a T shaped iron bar 14. The wooden bar 13 which forms the needle frame, has the upwardly extending projections 13' thereon, see Fig. 1, which extend into recesses in the frame guides 15 secured to the loom sides. The needle frame 13 has an up and down movement, and is operated by cams on the bottom shaft of the loom, not shown, in the usual way. All of the above mentioned parts may be of the usual and well known construction in the class of looms referred to.

I will now describe my improvements in the fur or chenille weft carrier mechanism, and the mechanism for operating the same.

A rod 16 is mounted in bearings 17 on the upper side of the needle frame 13, to have a longitudinal sliding movement in said bearings. To each end of the rod 16 is pivotally attached a trip 18, which is so attached as to be held in its horizontal position, shown in Fig. 1, and prevented from having any downward movement, but may be raised on its pivotal support. 19 is the fur or chenille weft carrier, having extending therefrom, toward the breast beam, a tube 19', through which the chenille weft passes in the usual way. The fur carrier 19 is mounted on two rods 19^a and 19^b, which extend through the loom in the direction of its length, to have a sliding movement on said rods, in the usual way. An endless

cord 19" is attached to the fur carrier 19, and passes around a drum 20 at one end of the loom, having grooves in its periphery, and around a grooved wheel or pulley at the other end of the loom, not shown, in the usual way. The drum 20 is rotated, first in one direction, and then in the opposite direction, through a system of driving gears and pinions, and a clutch mechanism, to move the fur carrier 19 first in one direction, to carry the fur through the shed, and then in the opposite direction, to carry the fur through the shed in the opposite direction.

A belt pulley 21 is fast on a shaft 22 mounted in a stand 23 secured to the loom side 1, see Figs. 1, and 2. On the shaft 23 is fast a bevel pinion 24, which meshes with and drives a second bevel pinion 25 fast on a shaft 26 mounted in bearings 27" on a stand 27, see Fig. 2. On the shaft 26 is loose a gear 28, which is clutched or attached to the shaft 26 to turn therewith, by the engagement of the clutch member 29, having V-shaped teeth thereon, with similar V-shaped teeth 28' on the gear 28, see Fig. 5. The gear 28 meshes with and drives a gear 30, provided with a friction device 30' and mounted on a shaft 31, supported in suitable bearings 31'. On said shaft 31 is a second gear 32, which is adapted to mesh with and drive a gear 33 fast on a shaft 34 carrying the drum 20, so that when the gear 28 is clutched to the shaft 26, through the clutch mechanism, the revolution of said gear 28 will cause the revolution of the gear 30 and the gear 32, to rotate the drum 20 in one direction. On the shaft 26 is a second gear 35, which is loose on said shaft but is clutched thereto by the clutch 29, which has V-shaped extensions thereon which extend into the V-shaped extensions on the gear 35, as shown in Fig. 5. The gear 35 is in mesh with the gear 33 attached to the drum 20, and when the gear 35 is attached to the shaft 26 by the clutch mechanism 29, the drum 20 will be revolved in the opposite direction, all as will be fully understood by those skilled in the art.

I will now describe my improvements in mechanism for automatically operating the clutch of the driving mechanism for the fur carrier 19, to cause the fur carrier to have a movement in the direction of the length of the loom at a predetermined time, to carry the fur or chenille weft through the shed in opposite directions.

There are two brackets or hangers 2' secured to the loom arch 2. Said brackets have a bearing 2" at the lower end thereof, see Figs. 2 and 3, in which is loosely mounted a shaft 36. Fast on the front end of the shaft 36 is the hub 37' of a depending lever or arm 37, and fast on the rear end of the shaft 36 is the hub 38' of a depending lever or arm 38, see Fig. 3. The lower end of each lever or

arm 37 extends in the path of and is adapted to be engaged by a pin or stud 39' on a collar 39, adjustably mounted on the longitudinally moving rod 16. The lower end of each lever 38 extends in the path of and is adapted to be engaged by an upward extension 19'" on the fur carrier 19; see Figs. 1 and 3. At each end of the loom on a stud 40 on a stand 41, is loosely mounted the hub 42' of a lever 42, having its upper arm extending inwardly and in the path of the trip 18 on each end of the rod 16. The other arm of the angle lever 42 extends downwardly and is adapted to engage one arm of an angle lever 43, see Fig. 5, which has its hub 43' loosely mounted on a stud 44 suitably supported. The other arm of the angle lever 43 has a hub or boss 43'" thereon, in which loosely extends a stud or pin 45 having fast on its lower end a yoke shaped extension 45', see Figs. 1 and 2, which extends loosely into an annular recess in the clutch 29, to move said clutch longitudinally on the shaft 26. The forwardly extending arm of the angle lever 43 carries a pin 43^a, to which is attached one end of two helically coiled equalizing springs 46 and 47, see Fig. 5. The other ends of said springs 46 and 47 are adjustably attached to the upward extensions 48' on the oppositely extending arms 48" of a stand 48, secured to the loom side, see Fig. 1.

On an extension 43^b on the hub 43' of the shipper lever 43, is a pin 43^b" on which is pivotally mounted one end of a rod 49. The other end of the rod 49 is connected to a pin 50 on an extension 51' on a lever 51, which has its hub 51'" loosely mounted on a stud 52 carried on a stand 53 secured to the loom side or end 1, see Fig. 1. The end of the lever 51 extends in the path of and is adapted to engage the downwardly extending arm of the angle lever 42 at the opposite end of the loom, see Fig. 1. On the rod 49 are secured, by set screws 55, two adjustable collars 56, having an extension 56' thereon. The extension 56' on each collar 56 extends in the path of and is adapted to be engaged by the upper end 19'" of the fur carrier 19. The engagement of the fur carrier 19 with the extensions 56' on the rod 49, will move said rod longitudinally, and with it the clutch lever 43, to move said clutch lever to its inoperative position, in case the levers 37, and intermediate connections to the clutch lever 43, fail to move said clutch lever.

From the above description in connection with the drawings, the operation of my improvements will be readily understood by those skilled in the art, and briefly is as follows:—The two harnesses 8 are raised and lowered at regular intervals, for the insertion of the jute weft, which is carried into the shed by ordinary fly shuttles, and the needle frame 13 is raised and lowered at regular intervals, to carry the needles 10

and the catcher warps 9, passing through said needles, above the tube 19' for the fur or chenille weft, which passes through said tube 19', as shown by full lines in Fig. 3, and down into the shed, as shown by broken lines in Fig. 3, to bind the fur or chenille weft in the fabric, in the usual way. The operating mechanism for the fur carrier is preferably operated through a belt on the pulley 21, and the bevel pinions 24 and 25. Suppose the fur or chenille weft carrier 19, Fig. 1, to be moved to the right, carrying the fur or chenille weft through the shed, the several parts of the operating mechanism being in the position shown in Fig. 1, the extension 19'' on the carrier 19 will strike the lower end of the lever 38 on the right hand side of the loom, and will move said lever, and will also move the lever 37 to the right, which lever is fast on the shaft 36, carrying the lever 38. The lever 37 will engage the pin or stud 39' on the collar 39 on the right hand end of the rod 16, and move said rod to the right, a sufficient distance to carry the trip 18 on the left hand end of said rod 16, away from and out of the path of the upper arm of the angle lever 42, on the left. This movement of the rod 16 will release the upper arm of the angle lever 42 on the left, and allow the equalizing springs 46 and 47 to act, to move the clutch lever 43, and move the clutch 29 to its inoperative position, intermediate the two gears 28 and 35, leaving the drum 20 of the fur carrier 19 at rest. The downward movement of the needle frame 13, to carry the needles 10 down into the shed, and also the catcher warps 9, see broken lines in Fig. 3, to bind the fur or chenille weft, will carry down the rod 16 and with it the trips 18. After the shuttle has passed through the shed on top of the catcher warps 9, the needle frame 13 is raised, and the raising of the rod 16 on said frame, will cause the trip 18 on the right hand end of the rod 16, to engage the upper arm of the angle lever 42 at the right, and move said angle lever, and cause it to move the clutch lever 43, to carry the clutch 29 into engagement with the gear 28, and cause the revolution of the drum 20, and the movement of the cord 19'', to carry the fur carrier 19, and the fur or chenille weft passing through the tube 19', to the left hand end of the loom. The carrier 19 on approaching the left hand end of the loom will engage the lower end of the lever 38, and rock the lever 37 on the left hand end of the loom and cause it, through its engagement with the pin 39' on the collar 39, to move the rod 16 to the left, Fig. 1, and carry the trip 18, on the right hand end of said rod, out of the path of the upper arm of the angle lever 42 on the right hand end of the loom. The trip 18 on the left hand end of the rod 16, will be carried over

the upper arm of the angle lever 42 on the left hand end of the loom. The needle frame 13 is now moved downwardly, and the trip 18, on the left hand end of the rod 16, is turned upon its pivot, by the upper arm of the angle lever 42, leaving said angle lever 47 in its intermediate position until the frame 13 is raised, when the operation will be repeated, as described above. The two harnesses 8 are changed every time the frame 13 is raised. In case, for any reason, the clutch lever 43 is not properly operated, as above described, the movement of the fur carrier 19 from right to left, and left to right, will cause the upper end thereof to engage with the extension 56 on the collars 56', fast on the rod 49, to move said rod longitudinally, and move the clutch lever 43 and the clutch 29 into their inoperative position.

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

When the shuttle, with the usual jute filling, has been thrown across the shed, the lay will be beaten up, and then the needle with the catcher warp will move down, so that the shuttle will go over this catcher warp. As soon as the shuttle has arrived at the opposite end of the lay, the catcher warp needles moved up and out of the reed, to carry the catcher warps high enough to leave room for the fur carrier tube to pass over the top of the reed, as shown in Fig. 3, and under the catcher warps. As soon as the catcher warps pass out of the reed, the mechanism which is carried on the needle frame, causes the starting of the mechanism for moving the fur carrier, so that at the time the fur carrier tube gets to the selvage of the fabric the needles are in their extreme upper position.

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

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 described, a needle frame carrying a series of needles and having a vertical reciprocating movement, a fur or chenille weft carrier, gearing, and clutch mechanism, and mechanism carried on the needle frame, and connections, intermediate said mechanism on the needle frame and said clutch mechanism, to move the fur carrier, and connections, intermediate the fur carrier and said clutch mechanism, to stop the movement of the fur carrier.

2. In a loom of the class described, a needle frame carrying a series of needles and having a vertical reciprocating movement, a rod carried on said needle frame and having a longitudinal movement, said rod having a pivotally mounted trip or latch at each end,

connections intermediate said rod and the fur or chenille weft carrier, and said chenille weft carrier, adapted to have a reciprocating movement, and to move said rod longitudinally at each end of the movement of said chenille weft carrier, through said intermediate connections.

3. In a loom of the class described, a needle frame carrying a series of needles and having a vertical reciprocating movement, a rod carried on said frame and having a longitudinal movement, said rod having a pivotally mounted trip or latch at each end, a lever to engage and move said rod longitudinally, a second lever connected with said first mentioned lever and adapted to be engaged by the fur or chenille weft carrier, and said fur or chenille weft carrier having a traverse movement.

4. In a loom of the class described, a needle frame carrying a series of needles and having a vertical reciprocating movement, a rod carried on said needle frame and having a longitudinal movement, said rod having a pivotally mounted trip or latch at each end, a lever to engage and move said rod longitudinally, a second lever connected with said first mentioned lever, and adapted to be engaged by the fur or chenille weft carrier, and said fur or chenille weft carrier having a traverse movement, gearing mechanism for moving the chenille weft carrier, clutch mechanism for putting into operation the

gearing mechanism to move the fur carrier in one direction, and then in the opposite direction, connections intermediate said clutch mechanism and the trip or latch on each end of said longitudinally moving rod.

5. In a loom of the class described, a needle frame carrying a series of needles and having a vertical reciprocating movement, a rod carried on said needle frame and having a longitudinal movement, said rod having a pivotally mounted trip or latch at each end, a lever to engage and move said rod longitudinally, a second lever connected with said first mentioned lever and adapted to be engaged by the fur or chenille weft carrier, and said fur or chenille weft carrier having a traverse movement, gearing mechanism for moving the chenille weft carrier, clutch mechanism for putting into operation the gearing mechanism to move the fur carrier in one direction, and then in the opposite direction, connections intermediate said clutch mechanism and the trip or latch on each end of said longitudinally moving rod, and a second longitudinally moving rod adapted to be moved by the chenille weft carrier, to put the clutch mechanism into its intermediate or inoperative position.

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Witnesses:

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