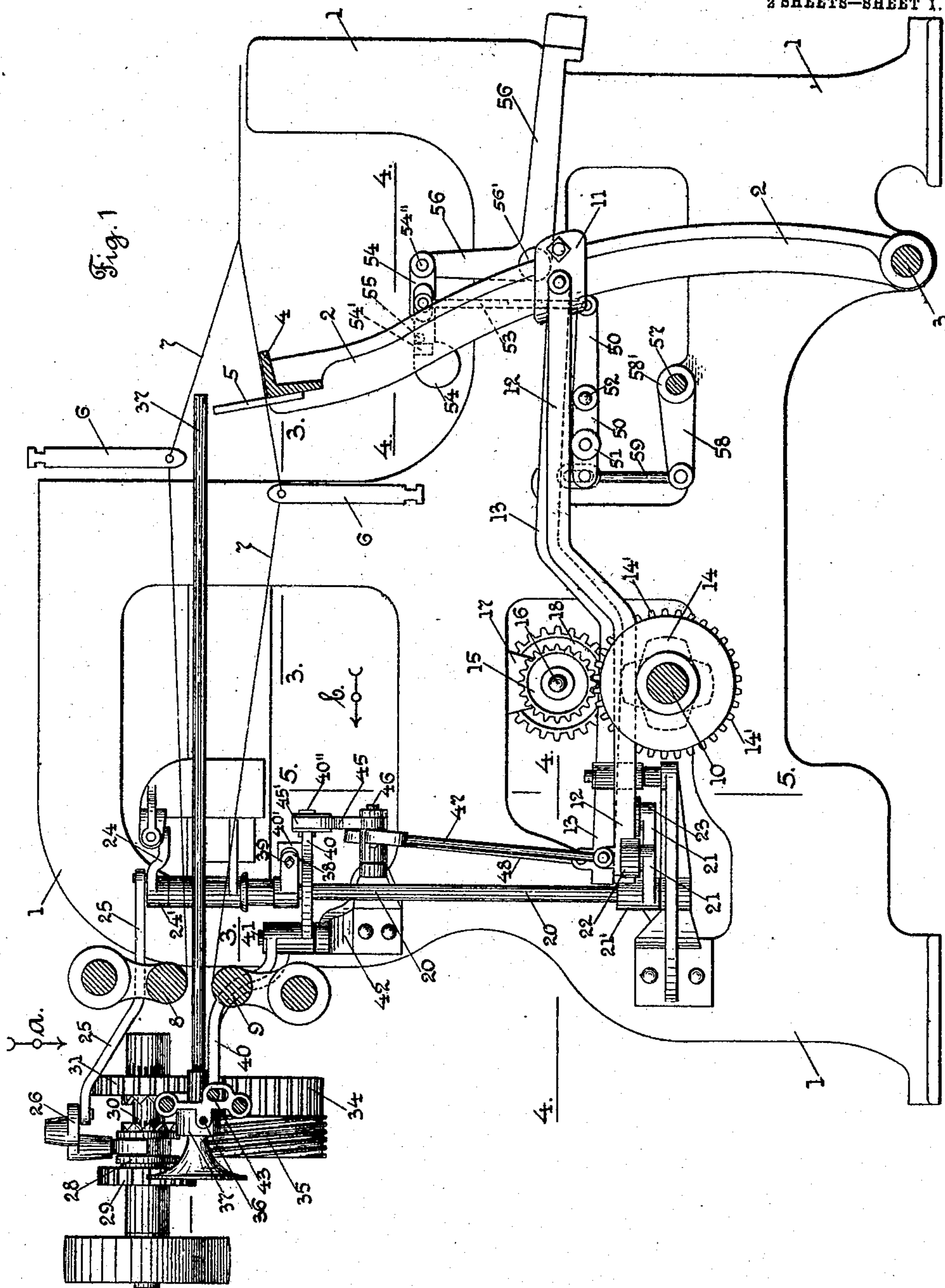


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Patented Mar. 23, 1909.

2 SHEETS—SHEET 1.



Witnesses  
 M. Bredt.  
 M. Claus.

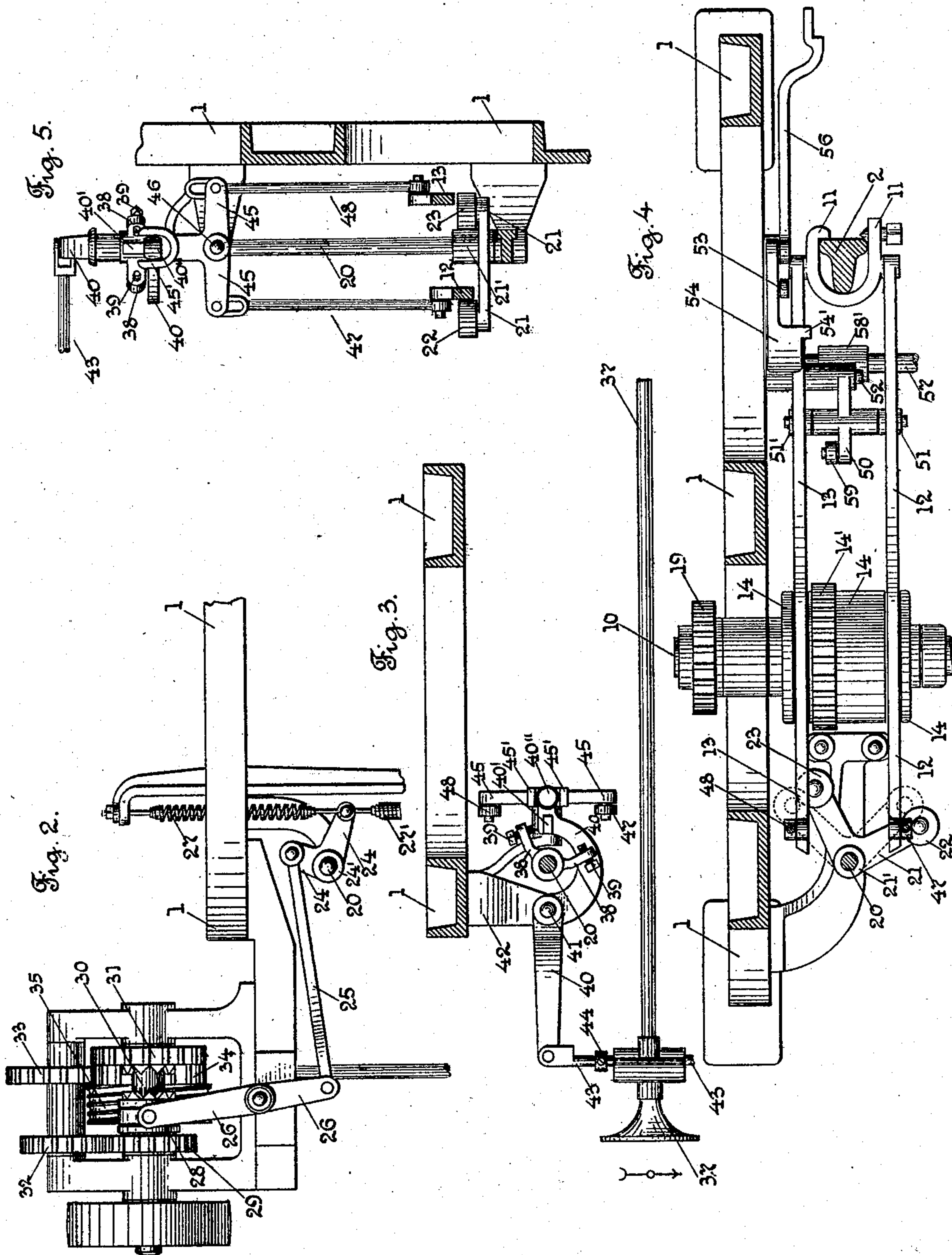
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M. Bredt.  
 W. O. O'Leary.

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# UNITED STATES PATENT OFFICE.

FRED A. WHITMORE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, A CORPORATION OF MASSACHUSETTS.

## LOOM FOR WEAVING TUFTED OR CHENILLE FABRICS.

No. 916,077.

Specification of Letters Patent.

Patented March 23, 1909.

Application filed October 10, 1908. Serial No. 457,088.

*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 Weaving Tufted or Chenille Fabrics, of which the following is a specification.

My invention relates to looms for weaving tufted or chenille fabrics, and particularly to that class of looms termed Smyrna rug looms.

My invention relates to improvements in the class of looms referred to, and particularly to improvements in the mechanism which carries the chenille weft or fur through the shed in the process of weaving the fabric.

The object of my invention is to improve upon the mechanism which carries the chenille weft or fur through the shed in the class of looms referred to, and my invention consists in certain novel features of construction of my improvements as will be hereinafter fully described.

I have shown in the drawings a detached portion of a loom of the class referred to, with my improvements combined therewith, sufficient to enable those skilled in the art to understand the construction and operation of the same.

Referring to the drawings:—Figure 1 is a cross section through a loom of the class referred to, with my improvements combined therewith. Fig. 2 is a plan view of the upper portion of the loom shown at the left in Fig. 1, looking in the direction of arrow *a*, same figure. Fig. 3 is a section, on line 3, 3, Fig. 1, looking in the direction of arrow *a*, same figure. Fig. 4 is a section, on line 4, 4, Fig. 1, looking in the direction of arrow *a*, same figure. Fig. 5 is a section, on line 5, 5, Fig. 1, looking in the direction of arrow *b*, same figure.

In the accompanying drawings, 1 is the loom side or end frame, 2 is the lay sword, pivotally mounted at its lower end at 3, and carrying the lay beam 4, with the reed 5 preferably open at its upper end. The lay sword 2 is operated in the usual way by mechanism, not shown, 6 are the needles which carry the binder warps 7, which are raised and lowered in the usual way by mechanism, not shown. The binder warps 7 pass around the whip rolls 8 and 9, respectively, 10 is the bottom shaft.

All of the above mentioned parts may be of the usual and well known construction and form no part of my present improvements.

I will now describe my improvements.

On the lay sword 2 is adjustably fastened a clamp 11 on which are pivotally mounted, in this instance on opposite sides thereof, two rods 12, and 13, termed starting rods, which are adapted to move back and forth with the lay sword 2. The opposite ends of the rods 12 and 13 extend downwardly, and in a lower plane, and into annular grooves on a drum or double cam 14, which is loosely mounted on the bottom shaft 10, see Fig. 4.

The cam 14 is provided with the tooth portion 14', which meshes with and is driven by a gear 15 on a shaft 16, suitably mounted in a stand 17, secured to the loom side, see Fig. 1. The other end of the shaft 16 has mounted thereon a gear 18, which meshes with a pinion 19 fast on the bottom shaft 10, see Fig. 4, so that the double cam 14 revolves half as fast as the bottom shaft 10, and is adapted to raise and lower the rear ends of the starting rods 12, and 13, and if one rod is down the other one is raised. As shown in the drawings, Fig. 1, the rod 12, at the front, is lowered, and on the rearward movement of the lay sword 2, the rod 12 is adapted to put the fur carrier mechanism into operation.

The lower end of a vertically extending shaft 20 has secured thereon the hub 21' of an angle lever 21; one arm of the angle lever 21 carries a roll 22, and the other arm carries a roll 23, see Fig. 4. By the rearward movement of the lay, the lower rod 12 will be pushed behind the roll 22, and move the lever 21 from the position shown by dotted lines to the position shown by full lines in Fig. 4, to revolve the vertical shaft 20 a predetermined amount in one direction. The upper end of the shaft 20 has secured thereon the hub 24' of an angle lever 24, see Figs. 1 and 2. One arm of the angle lever 24 is connected by a rod 25 with the clutch shipper lever 26. The other arm of the lever 24 is held by the equalizing springs 27 and 27', see Fig. 2. The two equalizing springs 27 and 27' are adapted to hold the vertical shaft 20 in its central position, so that when the starting rod 12 is raised up from behind the roll 22 on the lever 21, the spring 27 will pull the



vertical shaft and the angle levers thereon to their central position, and also the clutch lever 26.

As long as the vertical shaft 20 is held in position, as shown in the drawings, the clutch 28 will be held in engagement with the clutch teeth on the side of the gear 29. The gear 29 is loose on the main driving shaft 30 of the fur carrier mechanism, and a second gear 31 is also loose on said shaft 30. The clutch 28 slides on a key on the shaft 30, so that said clutch will revolve with said shaft, and may be moved on said shaft into mesh with the clutch teeth on the sides of the gears 29 and 31.

As shown in Fig. 2, the clutch 28 is in mesh with the gear 29, which meshes with and drives a gear 32 mounted on the same shaft with a gear 33, which meshes with and drives a gear 34 fast to the hub of the drums 35, see Fig. 1. On the drum 35 is wound a cord 36, see Fig. 1, which is secured to the fur carrier 37. Both ends of the cord 36 are secured to the drum 35, and also pass across the loom and around a sheave on the opposite side of the loom, not shown, which sheave is used as a tightener. As shown in the drawings, Fig. 3, the fur carrier in this instance starts to go from the right of the loom to the left of the loom, as indicated by the arrow in said figure.

The fur carrier mechanism herein shown is of the same construction and operation as that shown in my pending application, Serial No. 442,824.

The vertical shaft 20 has mounted thereon a lever 38, see Figs. 3, and 5, having two arms, each of which is provided with a set screw 39, adapted to be engaged by a lug 40' on one arm of a lever 40, which lever is centrally and pivotally mounted on a stud 41, on a bracket 42 secured to the loom side. The other arm of said lever 40 is connected to a rod 43, which passes loosely through the fur carrier 37 and extends across the loom.

On either end of the rod 43 is a collar 44, (only one end of the rod 43 is shown in the drawings). When the fur carrier 37 has moved through nearly its full travel, it will engage the collar 44 on the rod 43. The carrier 37 continues to move in the direction of the arrow in Fig. 3, and moves the rod 43 with it, and also operates the lever 40, having an extension 40'' thereon which extends between the forked end 45' of a three-armed lever 45, see Fig. 5, which lever has its hub loosely mounted on a stud 46. The two horizontally extending arms of the lever 45 are connected by rods 47, and 48, with the starting rods 12, and 13, respectively.

By operating the lever 40 as above described, and through the operation of the lever 45 and connector 47, the end of the starting rod 12 will be raised and disengaged

from the roll 22 on the lever 21, to allow said lever 21 to move back to its central position from the action of the equalizing springs 27, and 27' and remove the clutch 28 from the gear 29 to stop the motion of the fur carrier 37. If the equalizing springs 27 and 27' fail to operate the upright shaft 20 and disengage the clutch, the lug 40' on the lever 40 will in the further movement of the fur carrier 37 engage one of the set screws 39 on the lever 38, and cause the rock shaft 20 to rock and bring the same into its central position. When the starting rod 13 is lowered by the action of the cam 14, and engages the roll 23 on the lever 21, every part will work in an opposite direction to that above described, and the clutch 28 of the fur carrier mechanism will move into engagement with the gear 31; said gear 31 meshes directly with the gear 34 on the drum 35 to revolve said drum in the opposite direction, until the fur carrier 37, which is moved from the opposite end of the loom, engages the collar 44, to move the rod 43 and operate the lever 40 in the opposite direction, and cause the three-armed lever 45 to be rocked, and through the connecting rod 48 lift the starting rod 13 out of engagement with the roll 23, to stop the motion of the fur carrier 37 in the same manner as above described.

While the fur carrier is in motion, the loom has to be stopped every second pick in the manner to be hereinafter described. As the cam 14 revolves at one-half of the speed of the bottom shaft 10, it will bring only one of the starting rods 12 and 13 into operation every second pick. When either of said rods 12 and 13 is allowed to drop it moves the inside end of a lever 50 with it, by traveling over rolls 51 and 51' mounted on the arm of said lever, see Figs. 1, and 4. The lever 50 is loosely mounted on a stud 52, and the outer arm of said lever 50 will be raised through the connector 53 to the lever 54, and will cause the lever 54 to be raised into the position shown by the drawings. The lever 54 is pivotally mounted on an angle lever 56 which is pivotally mounted at 56'. The lug 54' on said lever 54 will be engaged by a stud 55 on the lay sword 2, see Fig. 1, as the lay sword 2 moves rearwardly, and the stud 55 will move the lever 54 with it, and will also operate the angle lever 56, suitably supported to operate mechanism, not shown, to stop the loom. In order to throw the fur carrier mechanism out of operation to weave the plain heading on a finished rug, there is a shaft 57, see Figs. 1, and 4, which extends across the loom, which is operated and rocked by any ordinary means, not shown. The shaft 57 has mounted thereon the hub 58' of a lever 58, which is connected through connector 59 with the lever 50, to cause the lever 50 to be raised to lift either one of the starting rods 12 and 13,



and as long as the starting rods are held in their raised position, they cannot start the fur carrier mechanism.

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:—

10 1. In a loom of the class described, two levers having a reciprocating movement, a rock shaft adapted to be moved in one direction by one lever, and in the opposite direction by the other lever, mechanism for raising and lowering the ends of said levers alternately, a chenille weft or fur carrier, mechanism to operate said carrier, connections intermediate said carrier and said reciprocating lever, to move one of said levers out of operative position, and allow the other lever to be moved into operative position.

25 2. In a loom of the class described, two levers having a reciprocating movement and connected to the lay sword of the loom, a rock shaft adapted to be moved in one direction by one lever, and in the opposite direction by the other lever, mechanism for raising and lowering the ends of said levers alternately, a chenille weft or fur carrier, mechanism to operate said carrier, connections intermediate said carrier and said reciprocating lever to move one of said levers out of operative position, and allow the other lever to be moved into operative position.

35 3. In a loom of the class described, two levers having a reciprocating movement, a rock shaft adapted to be moved in one direction by one lever, and in the opposite direction by the other lever, mechanism for raising and lowering the ends of said levers alternately, a chenille weft or fur carrier, mechanism to operate said carrier, connections intermediate said carrier and said reciprocating lever to move one of said levers out of operative position, and allow the other lever to be moved into operative position.

nately, a chenille weft or fur carrier, mechanism to operate said carrier, connections intermediate said carrier and said reciprocating lever to move one of said levers out of operative position, and allow the other lever to be moved into operative position, and mechanism for holding said two reciprocating levers in an inoperative position.

4. In a loom of the class described, two levers having a reciprocating movement, a rock shaft, adapted to be moved in one direction by one lever, and in the opposite direction by the other lever, mechanism for raising and lowering the ends of said levers alternately, a chenille weft or fur carrier, mechanism to operate said carrier, connections intermediate said carrier and said reciprocating lever to move one of said levers out of operative position, and allow the other lever to be moved into operative position, and mechanism for holding said two reciprocating levers in an inoperative position, and mechanism for stopping the loom at predetermined periods, said mechanism operated by either one of said levers.

5. In a loom of the class described, two levers having a reciprocating movement, a rock shaft adapted to be rocked in one direction by one lever, and in the opposite direction by the other lever, and connections from said rock shaft to a clutch mechanism, and said clutch mechanism, and a chenille weft or fur carrier, and connections from said carrier to said rock shaft to positively rock said shaft, and release the clutch mechanism.

FRED A. WHITMORE.

Witnesses:

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WILLIAM B. PHELPS.