

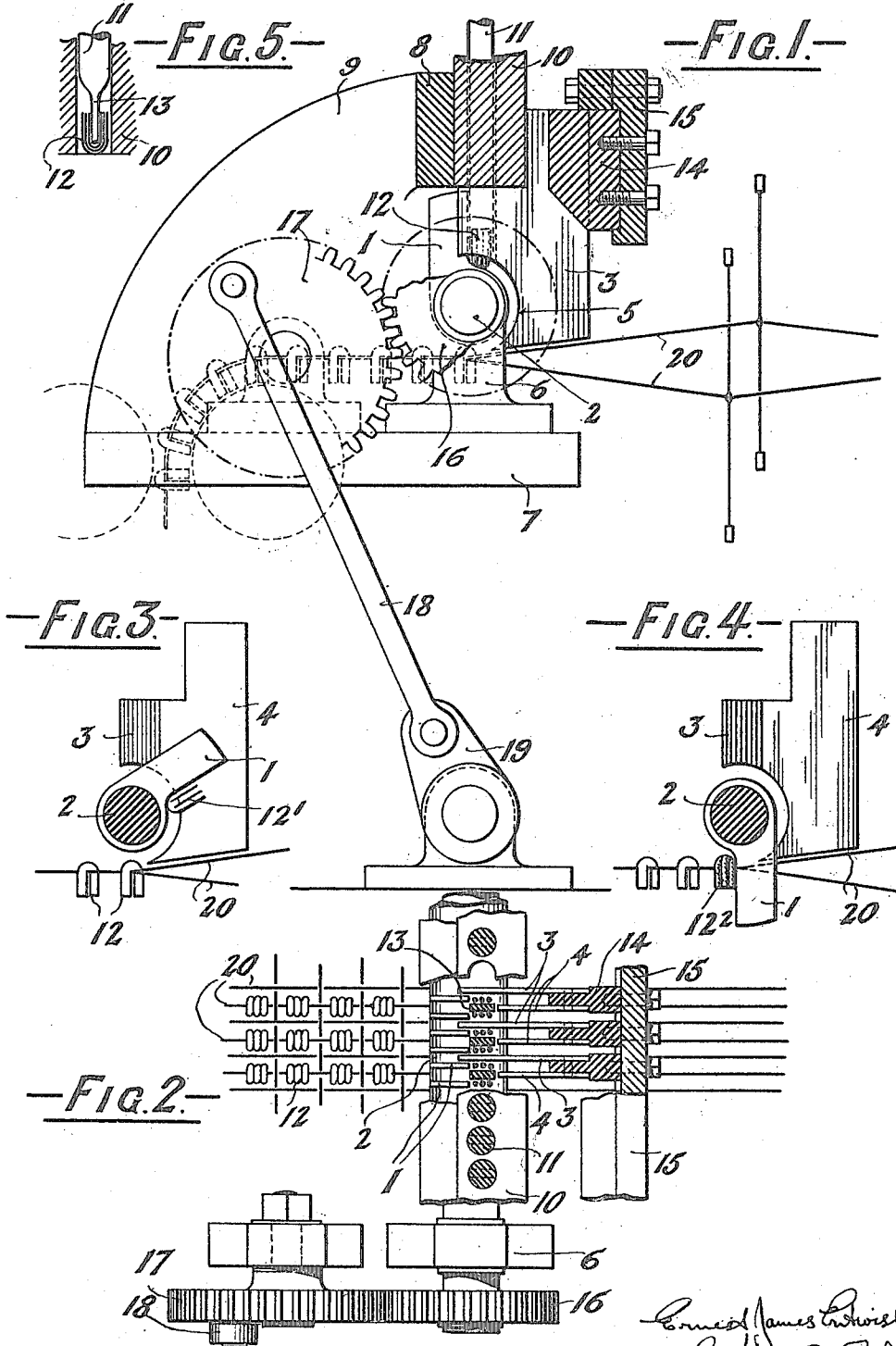
E. J. ENTWISLE.

LOOM FOR THE MANUFACTURE OF MATS OF COIR YARN OR OTHER COARSE MATERIALS.

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Patented Dec. 12, 1916.

1,208,528.



Ernest James Entwisle
By *[Signature]*
Att.

UNITED STATES PATENT OFFICE.

ERNEST JAMES ENTWISLE, OF EAST HAM, LONDON, ENGLAND.

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Specification of Letters Patent.

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Application filed March 21, 1916. Serial No. 85,642.

To all whom it may concern:

Be it known that I, ERNEST JAMES ENTWISLE, subject of the King of Great Britain, residing at 1 Kimberley avenue, East Ham, in the county of London, England, have invented certain new and useful Improvements in Looms for the Manufacture of Mats of Coir Yarn or other Coarse Materials, and of which the following is a specification.

10 This invention relates to the manufacture of mats of coir yarn or other coarse materials, of that kind in which cut lengths of pile yarn, bent into U-shaped formation, are placed astride the ground warp threads, and the invention has particular reference to means for transferring such U-shaped loops of pile yarn from mechanism by which they are formed and delivered, to their required positions astride the ground warp threads.

20 In mechanism which has been employed for a similar purpose, the pile loops, carried into position by delivery plungers with their free ends upward, have been transferred therefrom along wedge-shaped guides extending in the direction of and beneath the respective ground warp threads, each transference being effected by a bar having a motion of translation at right angles to its lengthwise axis, and so the pile loops were carried into position astride the ground warp threads with the free ends of the pile loops uppermost. Such a mode of proceeding possesses certain disadvantages, unnecessary to completely set forth in this specification, but as an instance, should the carrier bar encounter any one-sided resistance, it is likely to "stagger" or bind or be diverted from its correct position of movement and thereby cause uneven action of the machine, and moreover, the ends of the pile loops being uppermost, the back of the mat is not under inspection of the operator during the process of manufacture.

Now according to the present invention, 45 instead of transmitting the U-shaped loops of pile yarn, hereafter generally termed pile loops from the loop-forming delivery mechanism to the ground warp threads by a movement of a carrier bar in a direction parallel to itself, I provide mechanical means for taking the pile loops from the loop-forming mechanism, from which they are delivered with their free ends upward, inverting the said pile loops, and placing the latter astride the ground warp threads with their free ends downward. Such mechanical means

conveniently consists of a member having angular motion about an axis, and adapted during its operative motion in one direction to carry in front of it a series of pile loops from a receiving chamber in which they have been placed with their free ends uppermost, the said angular motion of said member causing the pile loops to become inverted during their transit and placed astride the ground warp threads with their free ends downward. The said angularly movable member may comprise a shaft capable of being rocked about its axis and having separated fingers to carry the pile loops in the path of an arc between and astride a series of separated guide plates; in so doing the pile loops become inverted and are transferred by the angularly movable member from the said guide plates to the said positions astride the ground warp threads with their free ends downward.

The invention will be further described with reference to the accompanying drawings.

Figure 1 is a sectional elevation showing an example of the angularly movable member, the separated guide plates and parts connected therewith, sufficient for the proper understanding of this invention, the said angularly movable member being in a position to receive the pile loops. Fig. 2 is a sectional plan view of the parts shown at Fig. 1. Fig. 3 is a sectional elevation showing the angularly movable member and the separated guide plates detached, the angularly movable member being illustrated in a midway position, and Fig. 4 shows the same member at the moment that the pile loops are placed astride the ground warp threads with their free ends downward. Fig. 5 shows the pile loops about to be formed by a plunger, which formation however of the pile loops does not form part of this invention.

In the example of construction shown at Figs. 1 and 2, the angularly movable member is located over and near the fell of the mat being formed, and consists of a series of projecting male plates or fingers 1, separated from each other, said fingers extending, for instance, radially from the axis, such as the shaft 2, by which they are carried, and said fingers 1 may be either straight, as shown, or other convenient shape; the fingers 1 may be formed by being either cut out of solid metal in a piece with

the shaft 2 with which they are rocked, or the fingers may be separately and adjustably attached to the said shaft 2 to permit of replacement and repair, and extend radially therefrom, but I prefer to form the fingers 1 from the solid, as such construction would permit of the minimum dimensions being used and the peripheral movement of the fingers 1 being of the minimum extent.

The fingers 1 of the angularly transferring member coact with a series of plates 3, 4 the plates 3 being at such a distance apart that two of the fingers 1 will pass between the adjacent faces of each pair of plates 3, while between each pair of plates 3 is located a plate 4, the edge of which does not extend to the acting edge of the fingers, and with this construction two adjacent fingers on the transferring member will pass between two adjacent plates 3, while the said fingers will pass on each side of the intermediate plate 4. Opposite the shaft 2 of the transferring member the plates 3, 4 are formed with a correspondingly suitable curve indicated at 5.

In the example of construction shown at Figs. 1 and 2, the shaft 2 carrying the fingers 1 is shown as being revolvably supported by pedestal bearing brackets 6 mounted upon a frame bracket 7 (not shown at Fig. 2) which is supported on rails at the loom sides as will be well understood. Securely fixed to a bar 8 extending between the side members 9 of the bracket 7 is part of the loop-forming mechanism comprising a transversely extending part 10 through vertical borings in which pass plungers 11.

A series of U-shaped pile loops 12 are to be delivered with their free ends upward between the facing surfaces of the separated guide plates 3, in front of the edges of the guide plates 4, and between the acting edges of the fingers 1; the pile loops can be delivered in such a position by any suitable delivery mechanism, that illustrated in the drawing consisting of the plungers 11 having terminal blades 13 as shown at Fig. 5, which latter view is taken at right angles to the view at Fig. 1, the U-shaped pile loops being carried downward on the ends of the blades 13 into the position indicated at Figs. 1 and 2.

The plates 3 and 4 may be riveted together in pairs to distance pieces 14 as at Figs. 1 and 2, which distance pieces may then be secured by screws to a rail 15 which can be supported from the side members 9 of the bracket 7.

An angular transferring motion is to be given to the transferring member 1 which will carry the arms of the U-shaped pile loops upon opposite sides of the respective guide plates 4 into the position illustrated at 12¹ Fig. 3, so that the arms of the loops become located upon either side of the plates

4 and between the sides of those plates and the adjacent sides of the plates 3, the plungers 11 being withdrawn at a suitable time in the operation.

The angular movement of the transferring ring member 1, that is to say the rotative angular movement of the shaft 2 which carries the said members, can be effected by any suitable mechanism, but in the drawings the shaft 2 is shown as fitted with a toothed pinion 16 engaging a spur wheel 17 mounted on a stud axle from the bracket 7; the spur wheel 17 may be given the requisite motion to effect the rocking of the shaft 2 by means of a connecting rod 18 operated by a crank 19. During the continuance of the angular movement of the transferring member the pile loops so carried will be inverted in position, as can be readily gathered from Fig. 3, and the said loops will leave the terminal edges of the guide plates 3, 4, which are immediately adjacent to and above the ground warp threads 20, and be placed astride their respective ground warp threads with their free ends downward. The continuance of motion of the fingers 1 of the angularly transferring member will carry the pile loops along the ground warp threads into the requisite position as shown by 12² Fig. 4, and after this a reversal of the angular motion of the transferring member takes place, leaving the pile loops in the required position on the warp threads, and the fingers 1 of the transferring member again assume their position, as at Fig. 1, to receive and to act upon the next series of pile loops presented to the fingers 1 by any ordinary or approved form of loop-forming delivery mechanism.

By the arrangement described any extra pressure or force required to transfer the pile loops at one end of the angularly movable member does not tend to interfere with the regular action of such transferring mechanism, and moreover the angularly movable member and transferring mechanism, being located above the ground warp threads, the back of the mat is uppermost and is consequently open to inspection during manufacture.

It is unnecessary to describe the mechanism by which the lengths of pile threads are cut from the continuous length of yarn, and by which the lengths so cut are bent into U-formation and delivered to the transferring mechanism, because such does not form a part of this invention.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In looms for the manufacture of mats of coir yarn or other coarse materials; a loop-forming and delivery mechanism to form and deliver U-shaped pile loops with their free ends upward, an angularly moving member, stationary guides opposed to said

member and between which guides said member can pass, said member and said guides being located above the ground warp threads, means for giving angular forward and return motions to said member to carry the U-shaped pile loops by said forward motion of said member from said forming and delivery mechanism between said guides to deliver said U-shaped pile loops with their free ends downward astride said ground warp threads, said member returning inoperatively preparatory to acting on the next set of U-shaped pile loops.

2. In looms for the manufacture of mats of coir yarn or other coarse materials; the combination of a shaft, bearings to carry said shaft, separated fingers extending radially from said shaft, a series of separated guide plates located in front of said separated fingers said guide plates and said fingers being located above the ground warp threads, means for supporting said guide plates stationary relatively to said fingers in such relative positions that said fingers can pass between said guide plates, means for delivering already formed U-shaped pile loops with their free ends upward in front of the forward acting edges of said fingers, means for giving angular forward and return motions to said fingers to cause the forward acting edges of said fingers during said forward angular motion to contact with the upstanding arms of said U-shaped loops to carry the latter along between the faces of said guide plates to invert said loops and to deliver said loops with their free ends downward astride said ground warp threads, said fingers returning inoperatively to position preparatory to acting on the next set of U-shaped pile loops.

3. In looms for the manufacture of mats of coir yarn or other coarse materials; the combination of a shaft, bearings to carry said shaft, separated fingers extending radially from said shaft, a series of separated guide plates located in front of said separated fingers said guide plates and said fingers being located above the ground warp threads, means for supporting said guide plates stationary relatively to said fingers so that said fingers can pass between said guide plates, the forward edge of each alternate guide plate being at a distance from the opposed acting edges of said fingers while the forward edges of the other extended guide plates overlap the acting edges of said fingers, means for delivering already formed U-shaped pile loops with their free ends upward between the facing surfaces of the extended guide plates and in front of the forward edges of the alternate guide plates, means for giving angular

forward and return motions to said fingers to cause their forward acting edges during said forward angular motion to contact with the upstanding arms of said U-shaped loops to carry the latter upon opposite sides of the alternate guide plates and between the faces of the extending guide plates to invert said loops and to deliver said loops with their free ends downward astride said ground warp threads, said fingers returning inoperatively to position preparatory to acting on the next set of U-shaped pile loops.

4. In looms for the manufacture of mats of coir yarn or other coarse materials; the combination of a shaft, bearings to carry said shaft, separated plates extending radially from said shaft to form separated fingers, a series of separated guide plates located in front of said separated fingers said guide plates and said fingers being located above the ground warp threads, means for supporting said guide plates stationary relatively to said fingers so that said fingers can pass between said guide plates, the lower parts of said guide plates facing the shaft carrying said fingers being cut away to conform with and to clear said shaft, alternate guide plates having their edges extended to exteriorly overlap the acting edges of each pair of said fingers, intermediate guide plates having their forward edges at a distance from the opposed acting edges of said fingers when in position to receive U-shaped loops and arranged to allow said fingers to pass between said guide plates, means for delivering said already formed U-shaped pile loops with their free ends upward between the facing surfaces of the extended guide plates and in front of the edges of alternate guide plates, means for giving angular forward and return motions to said fingers to cause their forward acting edges during said forward angular motion to contact with the upstanding arms of said U-shaped loops to carry the latter upon opposite sides of the alternate guide plates and between the extending faces of the extending guide plates to invert said loops during such motion and to deliver said loops with their free ends downward astride said ground warp threads, said fingers returning inoperatively to position preparatory to acting on the next set of U-shaped pile loops.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

ERNEST JAMES ENTWISLE.

Witnesses:

THOMAS WILLIAM ROGERS,
WILLIAM A. MARSHALL.