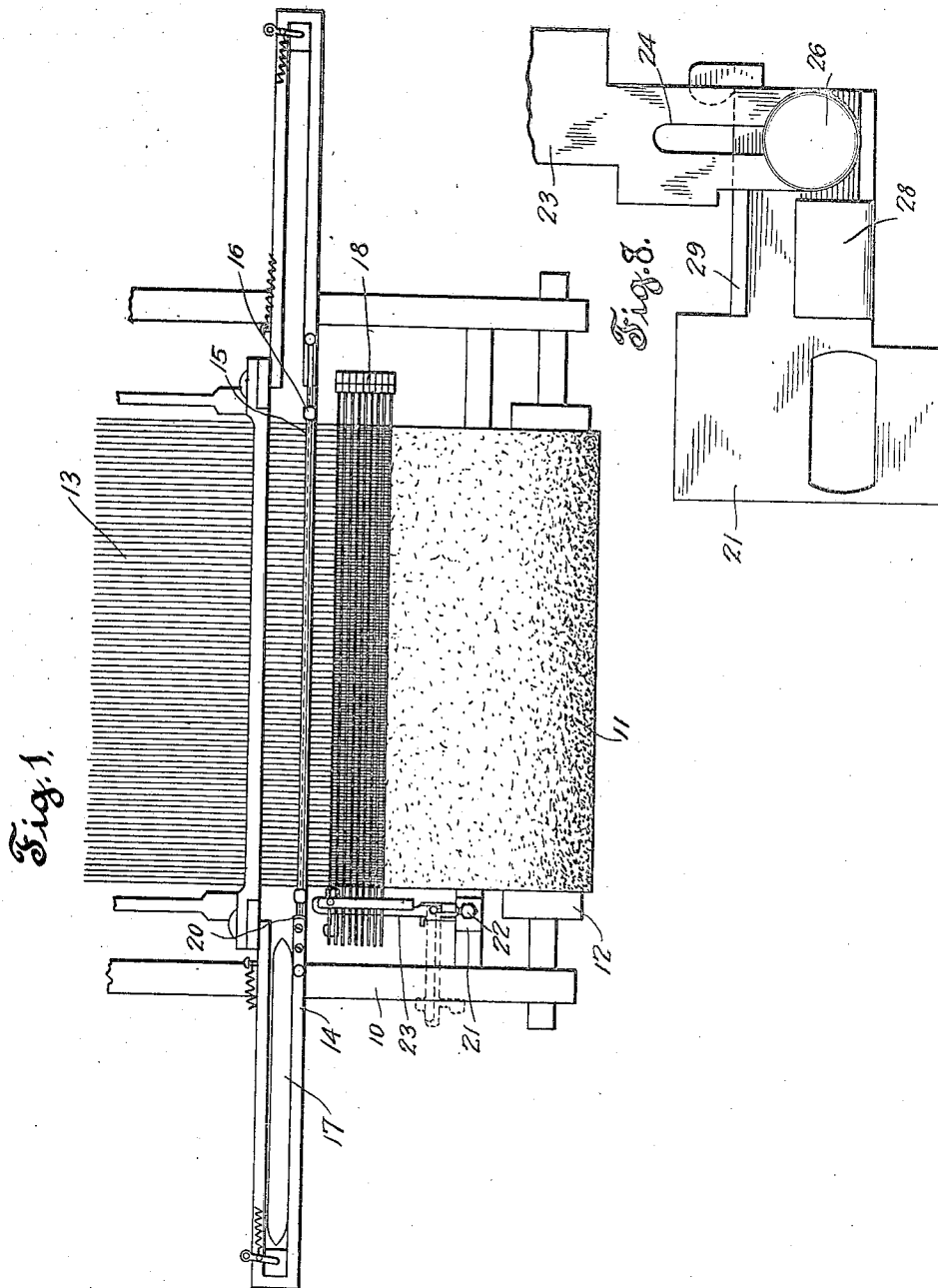


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2 SHEETS—SHEET 1.



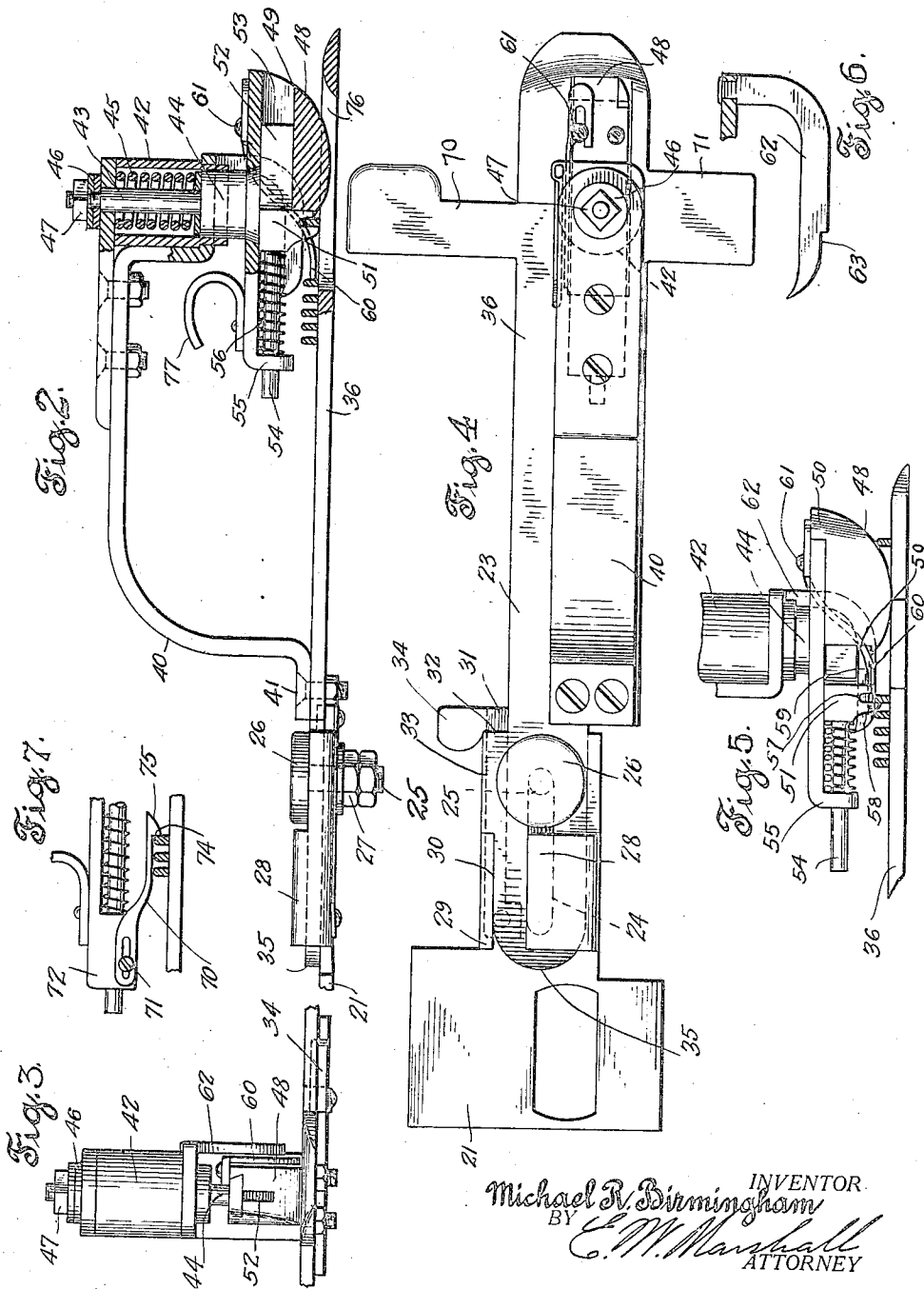
Michael R. Birmingham INVENTOR
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UNITED STATES PATENT OFFICE.

MICHAEL R. BIRMINGHAM, OF YONKERS, NEW YORK.

ATTACHMENT FOR PILE-FABRIC LOOMS.

Application filed February 15, 1922. Serial No. 536,662.

To all whom it may concern:

Be it known that I, MICHAEL R. BIRMINGHAM, a citizen of the United States, and a resident of Yonkers, Westchester County, and State of New York, have invented certain new and useful Improvements in Attachments for Pile-Fabric Looms, of which the following is a specification.

This invention relates to an attachment for pile fabric looms.

In the manufacture of one type of pile fabric the pile is cut by knives or cutting edges of pile wires.

This invention has for its object to provide a simple, inexpensive and effective device which may be easily applied or attached to looms of the type defined and which will render the operation of the loom more certain and efficient.

Another object of the invention is to provide a loom attachment that will positively and effectively position the pile wires and retain them in the proper spaced relation until they are seized and held by a weave of the fabric.

Another object of the invention is to provide an attachment of the character described that will be quick and snappy in its action.

Further objects of the invention will appear from the following specification taken in connection with the drawings which form a part of this application and in which—

Fig. 1 is a top plan view of a portion of a pile fabric loom having my attachment mounted thereon.

Fig. 2 is an elevation, partly in section, of the pile wire positioning attachment.

Fig. 3 is an end elevation of the construction shown in Fig. 2.

Fig. 4 is a top plan view of the attachment shown in Fig. 2.

Fig. 5 is an elevation, partly in section, of one end of the attachment shown in Fig. 2, the parts being shown in Fig. 5 at another stage in the cycle of operation of the device.

Fig. 6 is an elevation showing another form of pile wire retaining member.

Fig. 7 is an elevation showing another modification of a pile wire retaining member and

Fig. 8 is a top plan view showing the attachment swung to inoperative position.

Referring to the drawings, I have shown in Fig. 1 somewhat diagrammatically a portion of the loom, the frame being shown at

10, woven fabric at 11, and take up roll at 12. I have also shown longitudinal fibers or warp threads 13, lay 14, a reed frame 15 mounted on the lay and having posts 16 adapted to engage the pile wires in a manner hereinafter described.

The filling or transverse fiber is supplied by the shuttle 17 which is reciprocated across the frame in the usual manner.

The parts of the loom above described operate in the usual manner and the lay moves back and forth lengthwise of the fabric to beat up the fabric.

In this type of loom a plurality of pile wires 18 is used, these wires being inserted across the weave as shown in Fig. 1. Each wire has formed thereon adjacent one end a cutting edge which cuts the pile as the wire is withdrawn from the fabric. In order to assist the reed frame to position the pile wires and to insure their proper alignment of the pile wires an additional upright bracket 20 is mounted on the lay in a position to engage the free ends of the pile wires on the forward oscillation or movement of the lay and reed frame.

It is essential that the pile wires and knives carried thereby be held in correct position with reference to each other and to the fabric so that when these wires are withdrawn the fibers will be properly severed to give the pile effect to the fabric.

To attain this end I provide a device for receiving, positioning and holding the free ends of the wires. This device is shown in detail in Figs. 2-8 inclusive. The device has been shown as an attachment which consists of a bracket having a plate 21 adjustably secured as shown at 22 to the loom frame and arm 23 having one end slotted as shown at 24 and retained on the plate 21 by a bolt 25 having a head 26 at one end and having its opposite end threaded to receive nuts 27. As clearly illustrated in the drawings, the arm 23 is adapted to slide longitudinally by reason of the pin and slot connection and in its operative position as shown in Fig. 4, the free end of the arm is positioned under an overhanging lug 28 formed on the plate 21. An upstanding lug 29 formed on the opposite side of the plate engages the other edge of the arm 23. In order to prevent endwise movement of the arm 23 in a direction to the right (see Fig. 4) I have provided a latch comprising a resilient or spring strip 30 secured to the

bottom of the plate 21 and having a lug 31 formed on or secured to its free end. This lug is so positioned as to engage an edge 32 of a laterally extending portion 33 of the arm when the arm is in the position shown in Fig. 4. A tab 34 is also formed on or secured to the lug 31 to facilitate the releasing of the latch when the arm is to be swung to inoperative position. In order to provide for the swinging of the arm the end thereof is rounded as shown at 35.

At its free end or the end remote from the portion just described the device has secured thereto means for receiving, positioning and retaining the pile wires in their proper spaced relation. The arm 23 has a portion 36 which forms a track upon which the ends of the pile wires rest and are moved during the operation of the loom and the forward movement of the fabric. A projection 70 from one side of the track 36 affords a ready grip for swinging the arm aside and a projection 71 from the opposite side forms a support under the selvage for the pile wires, to hold the wires when they are first inserted. The positioning means is disposed above the track and is mounted on the free end of the arm 40 which is secured as shown at 41 to the arm 23 and is preferably formed of resilient material or of material having some elasticity. On the free end of this arm is secured a cylindrical or tubular member 42 in which is reciprocally mounted a rod 43 having an enlarged end 44 adapted to engage and be guided by the cylindrical member 42. A spring 45 engages the end 44 and exerts a downward pressure thereon. The downward movement is limited by means of washers 46 and nut 47 carried by the free end of the rod 43.

On the lower end of the member 44 is mounted a foot or shoe 48 having a cam surface 49 on its wire receiving edge whereby the pile wire will raise the shoe during its forward movement with the fabric on the loom. At its rear edge, as shown particularly in Fig. 5, the shoe 48 has formed therein a recess 50 adapted to receive one end of a pile wire receiving and positioning member 51.

The member 51 is reciprocally mounted on the shoe 48 and has a portion 52 disposed in a slot 53 in the shoe and an oppositely extending shank 54 which extends through an opening in a laterally extending lug or flange 55 formed on or secured to the shoe. The portion 52 and the slot 53 may be dove-tailed if desired. A spring 56 is positioned on the shank 54 between the lug 55 and the member 51 and this spring exerts a force in a direction to move the member 51 into engagement with the shoe 48.

The pile wire positioning member 51 has formed therein a notch 57 adapted to receive a pile wire and from the showing in

Figs. 2 and 5 it will be noted that by reason of the fact that a portion of the member 51 seats in the recess 50 in the shoe and also by reason of the contour of the shoe a pile wire in passing beneath the shoe will be guided into and seat in the notch 57. The member 51 has also formed thereon beyond the notch a downwardly extending portion or finger 58 which is so formed, as shown in Fig. 5, as to properly space the pile wires apart.

In order to retain the pile wires in engagement with the track 36 a retaining member 59 is secured to the free end of the arm 40 and extends above the track and substantially in parallel relation thereto for a sufficient distance to properly retain the pile wires until they are held by the weave of the fabric.

In order to retain the pile wires in position after they have passed under the shoe and have been placed in proper position by the member 51 I have provided a resilient latch 60 adjustably secured as shown at 61 to the upper surface of the shoe 48. As the wire is moved forward in the member 51 the latch will be raised up and after the wire has passed beyond the end of the latch the latch will spring down to a position shown in Fig. 2.

Another form of latch for attaining this same end is shown in Fig. 6 and in this figure is shown a member 62 which is secured to the free end of the arm 40 in the place of the member 59. The latch 62 has a notch 63 formed adjacent its free end and this notch is adapted to hold and retain the wires in the same manner as the end of the latch 60. It will be understood that the latch 62 will not move up and down with the foot but will have a certain spring action due to the resiliency of the arm 40.

In Fig. 7 still another form of latch is shown and in this form a resilient member 70 is adjustably mounted as shown at 71 on an extension 72 of the shoe 48. At its free end of the latch 72 has formed thereon a hook 74 having a curved cam edge 75 adapted to be engaged by a pile wire to raise the hook.

It will be noted that the latches 60 and 70 are adjustably mounted so that these latches may be properly positioned with respect to the beat up or extreme forward movement of the lay. The adjustment of the latch will depend on the adjustment of the bracket or attachment on the loom since, of course, the movement of the lay does not vary.

As shown in Fig. 2 the free end of the track 36 is formed therein a recess or opening 76 to receive the lower portion of the foot 48. A finger grip or handle 77 is mounted on the foot to facilitate the manual lifting of the shoe when desired.

The operation of the device may be briefly

described as follows. As will be apparent to those skilled in the art the pile wires are fed into the device or attachment by the action of the loom parts including the reed frame, reed posts, bracket 20, etc. As a wire moves along the track 36 it will engage the edge 49 of the foot 48 and will raise the foot and ride into the notch 57 formed in the positioning member 51. As the wire continues its forward movement with the fabric the member 51 will be moved to the left (see Figs. 2 and 5) against the tension of the spring 56 as shown in Fig. 5 and the positioning member 58 will properly space the wire from the wire in advance thereof. When the wire has been so properly spaced the latch 60 or one of the modified forms of the latch will spring down into the position shown in Fig. 2 and will retain the wire in place. As the next succeeding wire moves along the track and raises the foot 48 the member 51 will also be raised until the finger 58 is free from the wire last positioned thereby whereupon the spring 56 by a quick positive action will return the member 51 to the position shown in Fig. 2 in which position it will receive the wire passing under the foot. During this movement of the wires along the track the retaining member 59 will hold the wires in engagement with the track. In view of the detailed description of the modifications shown in Figs. 6 and 7 a further statement of the operation outlining the functions of these parts is not deemed necessary.

From the above description it will be seen that a simple, practical and effective device has been provided and that the device will effectively perform the objects of the invention. Furthermore it will be evident that the action of the device will be positive and snappy.

Although certain specific embodiments of the invention have been particularly shown and described it will be understood that the invention is capable of further modification and that further changes in the construction and in the arrangement of the various cooperating parts may be made without departing from the spirit or scope of the invention as expressed in the following claims.

What I claim is:—

1. An attachment for pile fabric looms comprising in combination, a bracket, having a track for receiving pile wires, a foot reciprocally carried by the bracket, positioned above said track and engageable by the pile wires, and a wire receiving and positioning member reciprocally carried by said foot.

2. An attachment for pile fabric looms comprising, in combination, a bracket having a track for receiving pile wires, a foot carried by said bracket, vertically reciprocable thereon, disposed above said track and en-

gageable by the pile wires, resilient means exerting a downward pressure on said foot and a wire receiving and positioning member reciprocally carried by the foot.

3. An attachment for pile fabric looms comprising, in combination a bracket having a track for receiving pile wires, a foot carried by said bracket, vertically reciprocable thereon, disposed above said track and engageable by the pile wires, resilient means exerting a downward pressure on said foot, a wire receiving and positioning member reciprocally carried by the foot and reciprocable in a direction transverse to the pile wires.

4. An attachment for pile fabric looms comprising, in combination a bracket having a track for receiving pile wires, a foot carried by said bracket, vertically reciprocable thereon, disposed above said track and engageable by the pile wires, resilient means exerting a downward pressure on said foot, a wire receiving and positioning member reciprocally carried by the foot, reciprocable in a direction transverse to the pile wires, and resilient means for pressing said member toward the foot.

5. An attachment for pile fabric looms comprising in combination, a bracket, having a track for receiving pile wires, a foot reciprocally carried by the bracket, positioned above said track and engageable by the pile wires, a wire receiving and positioning member reciprocally carried by said foot, and means for retaining the wires in engagement with the track.

6. An attachment for pile fabric looms comprising in combination, a bracket, having a track for receiving pile wires, a foot reciprocally carried by the bracket, positioned above said track and engageable by the pile wires, a wire receiving and positioning member reciprocally carried by said foot, and means carried by the bracket for retaining the wires in engagement with the track.

7. An attachment for pile fabric looms comprising, in combination, a bracket having a track for receiving pile wires, a foot carried by said bracket, vertically reciprocable thereon, disposed above said track and engageable by the pile wires, resilient means exerting a downward pressure on said foot, a wire receiving and positioning member reciprocally carried by the foot, and means for retaining the wires in engagement with the track.

8. An attachment for pile fabric looms comprising in combination, a bracket having a track for receiving pile wires, a foot carried by the bracket, disposed above the track and engageable by the pile wires and a wire receiving and positioning member reciprocally carried by said foot.

9. An attachment for pile fabric looms

comprising in combination, a bracket having a track for receiving pile wires, a foot carried by the bracket, disposed above the track and engageable by the pile wires,

5 and a wire receiving and positioning member carried by said foot and reciprocable in a direction transverse to the pile wires.

10. An attachment for pile fabric looms comprising in combination, a bracket having
10 a track for receiving pile wires, a foot carried by the bracket, disposed above the track and engageable by the pile wires, a wire receiving and positioning member reciprocally carried by said foot and means
15 carried by the bracket for engaging and retaining the pile wires in position on the track.

11. An attachment for pile fabric looms comprising in combination, a bracket having
20 a track for receiving pile wires, a foot carried by the bracket, disposed above the track and engageable by the pile wires, a wire receiving and positioning member reciprocally carried by said foot and means
25 for engaging and retaining in position one pile wire when the next succeeding wire is being fed beneath the foot.

12. An attachment for pile fabric looms comprising in combination, a bracket having
30 a track for receiving pile wires, a foot carried by the bracket, disposed above the track and engageable by the pile wires, a wire receiving and positioning member reciprocally carried by said foot and resilient means for
35 engaging and retaining in position one pile wire when the next succeeding wire is being fed beneath the foot.

13. An attachment for pile fabric looms comprising, in combination, a bracket having
40 a track for receiving pile wires, a foot carried by the bracket and disposed above the track, a wire receiving and positioning member reciprocally carried by said foot and resilient means carried by the bracket
45 for engaging and retaining in position one pile wire when the next succeeding wire is being fed beneath the foot.

14. An attachment for pile fabric looms comprising, in combination, a bracket having
50 a track for receiving pile wires, a foot carried by the bracket and disposed above the track, a wire receiving and positioning member reciprocally carried by said foot, and adjustable means for engaging and retaining
55 in position one pile wire when the next succeeding wire is being fed beneath the foot.

15. An attachment for pile fabric looms comprising in combination, a bracket having
60 a track for receiving pile wires, a foot carried by the bracket and disposed above the track, a wire receiving and positioning member reciprocally carried by said foot, means carried by the bracket for engaging
65 and retaining the pile wires in position on

the track, and means for engaging and retaining in position one pile wire when the next succeeding wire is being fed beneath the foot.

16. An attachment for pile fabric looms 70 comprising in combination, a bracket having a track for receiving pile wires, a foot carried by the bracket and disposed above the track, a wire receiving and positioning member reciprocally carried by said foot and a 75 resilient latch for engaging and retaining in position one pile wire when the next succeeding wire is being fed beneath the foot.

17. An attachment for pile fabric looms comprising in combination, a bracket having 80 a track for receiving pile wires, a vertically reciprocable foot mounted on said bracket and engageable by the pile wires, resilient means for moving the shoe downwardly, 85 pile wire engaging and retaining means reciprocally mounted on said foot and having a notch adapted to receive a pile wire and means on the foot for guiding a wire into said notch.

18. An attachment for pile fabric looms 90 comprising in combination, a bracket having a track for receiving pile wires, a vertically reciprocable foot mounted on said bracket and engageable by the pile wires, resilient means for moving the foot downwardly, pile 95 wire engaging and retaining means reciprocally mounted on said foot and having a notch adapted to receive a pile wire, resilient means for moving said means in engagement with the foot, and means on the foot for 100 guiding a wire into said notch.

19. An attachment for pile fabric looms comprising in combination, a bracket having a track for receiving pile wires, a vertically reciprocable foot mounted on said bracket 105 and engageable by the pile wires, resilient means for moving the foot downwardly, pile wire engaging and retaining means reciprocally mounted on said foot and having a notch adapted to receive a pile wire, means 110 on the foot for guiding a wire into said notch, and a portion adjacent the notch for spacing the wire in the slot from the wire in advance thereof.

20. An attachment for pile fabric looms 115 comprising in combination, a bracket having a track for receiving pile wires, a foot mounted on said bracket and engageable by the pile wires, pile wire engaging and retaining means reciprocally mounted on said 120 foot and having a notch adapted to receive a pile wire, means on the foot for guiding a wire into said notch, and a portion adjacent the notch for spacing the wire in the slot from the wire in advance thereof. 125

21. An attachment for pile fabric looms comprising in combination, a bracket having a track for receiving pile wires, a vertically reciprocable foot mounted on said bracket, resilient means for moving the foot down- 130

wardly, pile wire engaging and retaining means reciprocally mounted on said foot and having a notch adapted to receive a pile wire, means on the foot for guiding a wire into said notch, and means for engaging and retaining in position one pile wire when the next succeeding wire is being fed beneath the foot.

22. A pile wire positioning attachment for looms comprising a plate, an arm pivoted thereto, means on the plate for retaining the arm in a position in alinement therewith and a latch for holding the arm against longitudinal movement away from the plate when the arm and plate are alined.

23. A pile wire positioning attachment for looms comprising a plate, an arm con-

nected thereto by a pin and slot pivotal connection, means on the plate for retaining the arm in a position in alinement therewith and a latch for holding the arm against longitudinal movement away from the plate when the arm and plate are alined.

24. A pile wire positioning attachment for looms comprising a plate, an arm pivoted thereto, means on the plate for retaining the arm in a position in alinement therewith and a latch on said plate engageable with the arm for holding the arm against longitudinal movement away from the plate when the arm and plate are alined.

In witness whereof, I have hereunto set my hand this 10th day of February, 1922.

MICHAEL R. BIRMINGHAM.