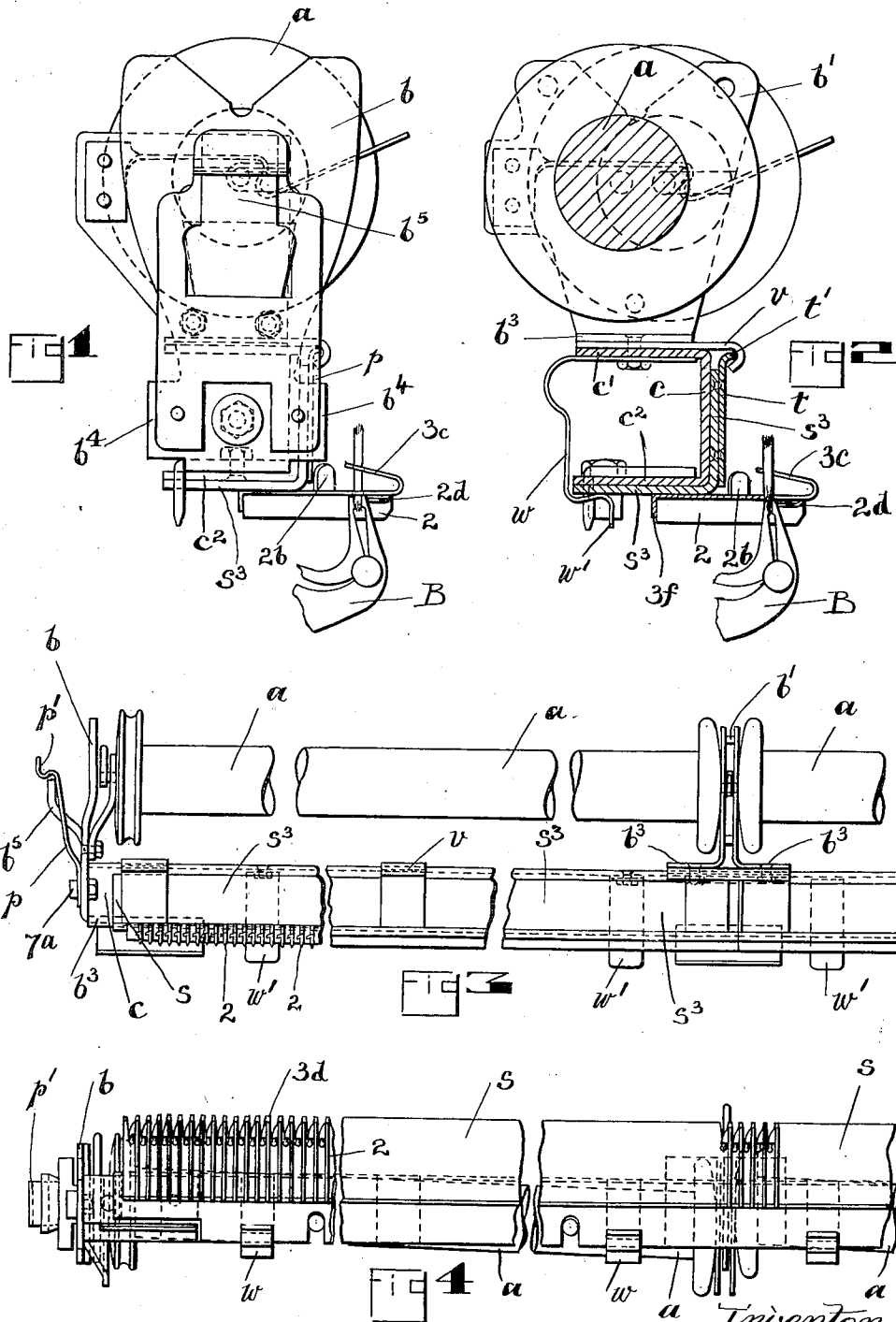


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 THREAD AND GRIPPER GUIDING DEVICE FOR THE SPOOL FRAMES
 OF LOOMS FOR WEAVING TUFTED OR PILE FABRICS
 Filed Oct. 5, 1935

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2 Sheets-Sheet 1



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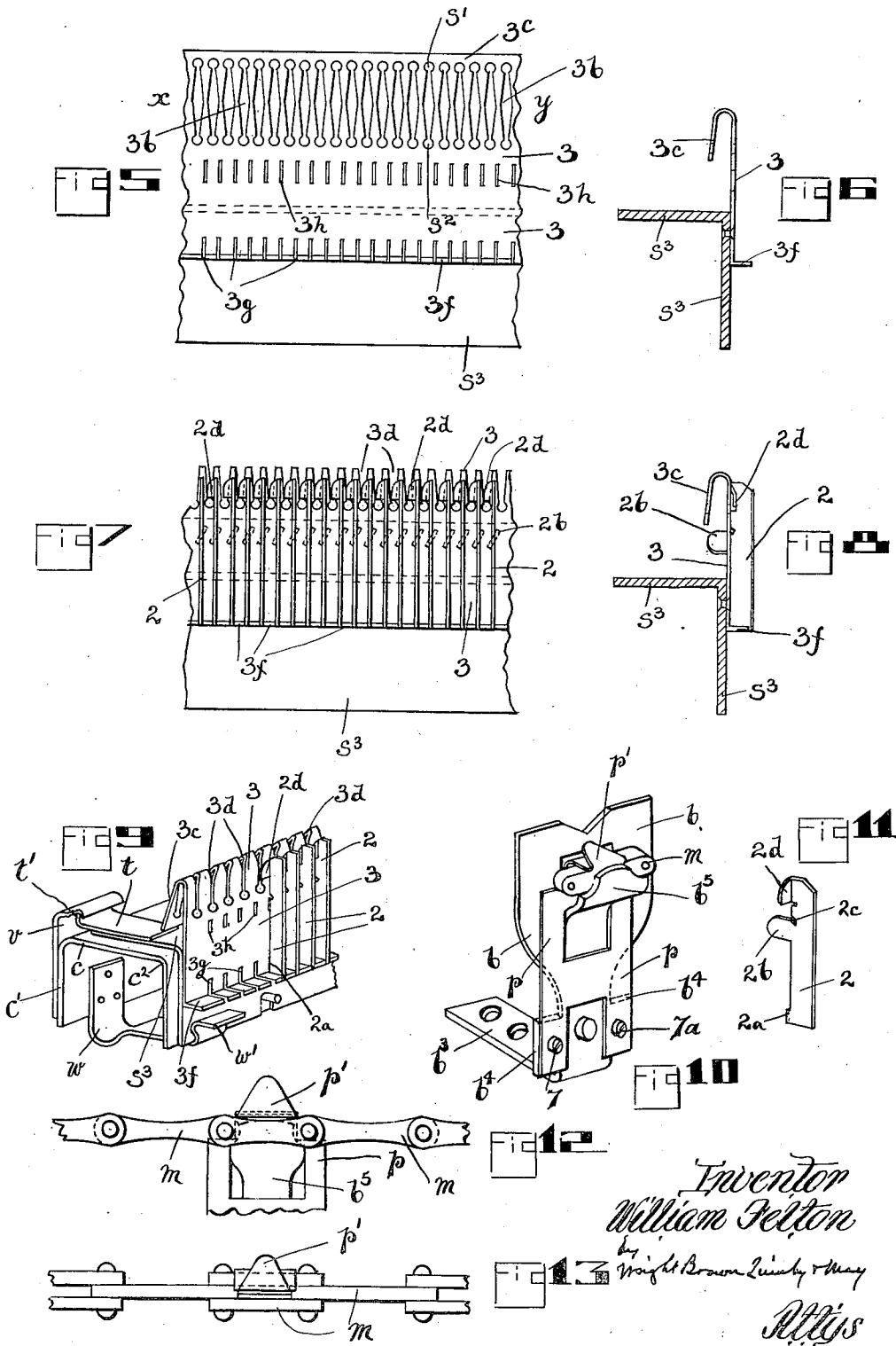
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THREAD AND GRIPPER GUIDING DEVICE
FOR THE SPOOL FRAMES OF LOOMS FOR
WEAVING TUFTED OR PILE FABRICSWilliam Felton, Bradford, England, assignor to
David Crabtree and Son Limited, Bradford,
England, an English companyApplication October 5, 1935, Serial No. 43,702
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4 Claims. (Cl. 139—7)

In spool frames of looms for weaving tufted or pile fabrics of the type or class to which my invention relates, guiding devices for the ends of the jaws of the grippers and for the ends of the pile warp thread are employed in order to enable the sections or portions of threads that are cut-off and gripped to be carried out with precision to produce the woven pile fabric as desired. And my present invention consists in the construction and arrangement of the members which form said guiding devices so that the insertion of the warp threads therein, the repairing and adjusting of said threads, and the guiding of the jaws of the grippers to lay-hold-of same, are more effectively carried out than heretofore, while the renewal, repairing and replacing of any of the threads and the members of the guiding devices is further facilitated.

In order that my said invention may be readily understood I have hereunto appended sheets of drawings illustrative thereof, to which by figures and letters reference is made in the following description:—

Fig. 1 is an end elevation of a spool frame with the spool and other devices mounted thereon in order to operate in known manner.

Fig. 2 is a sectional end elevation of a portion of the framework upon which the spool bearings and the spool are mounted.

Fig. 3 is a side elevation of the parts shown by Fig. 1.

Fig. 4 is a view of the parts shown by Fig. 3 as seen from beneath.

Fig. 5 is a portion of a strip of sheet metal pierced with slots and openings as is hereinafter explained, and which is riveted upon an angular supporting bar.

Fig. 6 is an end elevation of the fragments of parts shown by Fig. 5.

Fig. 7 is a similar view to Fig. 5 but shows the plate with the pierced slots bent into a formation hereinafter explained.

Fig. 8 is a similar view to Fig. 6 but shows the parts as shaped when the devices shown by Fig. 7 are completed.

Fig. 9 is a perspective view of the parts shown by Figs. 5 to 8 inclusive, mounted upon a bent sheet metal bar forming the main support of the spool frame.

Fig. 10 is a perspective view showing the bearings for the spool, and the spring devices for securing the bar and its slotted members shown by Fig. 9.

Fig. 11 is a drawing in detail showing a member hereinafter explained.

Fig. 12 is a side elevation showing how the thread-carrying part of the spool frame is fixed to its carrying chain.

Fig. 13 is a plan of the devices shown by Fig. 12.

Figs. 3, 4, 12 and 13 are drawn to a reduced scale as compared with the other figures.

In carrying my invention into effect I arrange each spool or bobbin *a* to be mounted upon its appropriate supports *b*, *b*¹ at the ends of the rails *c* and midway said outer ends of said rails *c* in known manner. However, I now arrange these supports *b*, *b*¹ to be fixed upon the rail *c* which is of channelled formation with its central part *c* having its side parts *c*¹ and *c*² extending approximately at right angles therefrom in order that I may readily mount upon same the devices which support and carry out thread-guiding members, as is hereinafter explained.

The guiding members *2* which are mounted upon the pierced base-plate *3* (to receive the ends of the gripping jaws in well known manner) where they encounter the ends of the pile warp threads which pass through them by way of the openings *s*, are now formed by arranging the plate *3* to be of a suitable width, and to be pierced, as is hereinafter fully explained.

The base-plate *3* may be made of a sheet metal strip which is taken from its flat straight formation and has the slots *3b* formed through it and at proper distances apart throughout its length.

The length of the slots *3b* is such as will enable the sheet metal to be bent along the line *x—y* in order to form the bent-over or hooked part *3c*, as is shown by Figs. 1, 2, 6, 8 and 9. By this bending over of the edge *3c* of the metal strip, the slots *3b* formed therein are made to produce grooves *3d* as shown by Figs. 4, 7 and 9, and this bending over of the edge *3c* carries the circular parts of the openings *s*¹ and *s*² of same opposite each other, as is shown by Fig. 9. Thus a stretched thread of loop warp may be taken and its body part may be slid laterally down its respective slot *3d* so that it finally reaches its opening *s*¹ in one part of the plate *3*, and *s*² in the other part of said plate *3*, through which openings *s*¹ and *s*² said stretched thread is free to move, as it is withdrawn by the grippers in well known manner.

The rear edge *3f* has a series of slots *3g* cut in it so as to divide said rear edge into sections which are then bent at right angles thereto, and on the opposite side of the plate *3* to that on which the bent-over part or edge *3c* is formed, as is shown by the several drawings. The bent-over portions *3f* are to receive between them a portion

2a of the lower end of the guiding members 2 which guide the outer ends of the jaws of the grippers hereinbefore described, and each member 2 is of the formation shown by Fig. 11, so that its said rear portion at 2a may take through its respective short slot 3g which will locate it in position, while its other projection 2b will take through its respective slot 3h formed in said plate 3, as shown by Fig. 5.

The formation of the part 2b, where it is joined to and forms part of the member 2, has a small notch 2c cut in it, so that after the extension 2b has passed through its slot 3h it may be twisted (somewhat as is shown in broken lines of Fig. 7), thus the notches on the parts 2c will take beneath the plate 3 and retain the member 2 firmly secured upon the said plate 3, while the bent-over portions 3f of said plate 3 will also retain the members 2 firmly as desired.

The formation of the part 2b as described is to enable or permit any one of the members 2 that may become damaged or otherwise requires replacement, to be readily removed from its position by the untwisting of the portion 2b to enable it to be withdrawn from its slot 3h, as will be understood.

On the leading edge of the member 2 is a bent-over portion 2d (Fig. 11) which overhangs a portion of the slot 3d of the plate 3 as is shown by Fig. 9. By means of this bent-over portion taking cross-wise over the slot 3d and by the bent formation of the plate 3 leaving sufficient space between said bent-over portion 2d and the surface of the plate 3, the stretched thread forming the pile warp may be passed down through the slot 3d and laterally beneath the bent-over portion 2d of the member 2, so that it finally reaches the openings s through which it has to be withdrawn by the grippers B, (Figs. 1 and 2), and when in that position the bent-over portion 2d prevents the displacement of the thread under any of the ordinary conditions that it has to be subjected to during the process of its actions while the loom is in operation.

I preferably arrange the actions of the grippers B to be carried out as is explained in the specification of British Patent No. 416,729, although the said grippers B may be of any other well known formation.

The spools a are arranged to be of a length which renders them appropriate for handling during the varied operations to which they have to be subjected, and said length is shorter than the full length of the spool frame from end to end, say from the bearings b at the end of the rail c to a similar bearing at the opposite end thereof, so that two of said spools a may be used, or there may be three of same, according to the width of the loom in connection with which they are employed.

The bearings b, upon which the spools a are mounted at the end of the rail c, are formed by having a base part b³ bent at right angles to the body part, as shown by Figs. 3 and 10, while the central bearing b¹ has a similar base portion b³ shown by Figs. 2 and 3 to fit upon the rail c at a part intermediate its length, in order to suit the axial pin of the roller a of shorter length, as is shown by Fig. 3.

The outer end member b for supporting the spool has near its base b³ a lateral projection b⁴ on each side of it, while its central part is pressed or cut and has its portion b⁵ bent outwardly to form a suitable support for its engagement with the link m of the chain which has to support it.

Fixed by screws 7 and 1a to said lateral portions b⁴ of the member b is a flat spring p which extends over same and has an opening made through it in order to allow the extension b⁵ from the member b to extend as shown by Figs. 3 and 10, while the outer end p¹ of the spring p is made to extend over the link m, as shown by Figs. 3 and 10, for which purpose it is bent into the form shown to act as a catch or retaining member for keeping the member b in perfect and absolute engagement with the links of the chain m.

The formation of the bearing b¹ is of the simple character shown by Fig. 2, and does not require any projections, such as 1, 7a nor any spring p to be used in connection with it, since it has not to operate in conjunction with the chain m as have the members b at the outer ends of the hollow rail c.

The members b and b¹ are fixed upon an angle rail s³ which is to be detachably mounted upon the rail c in order that the parts carried by said angular rail s³ may be removed and used for any other desired purpose of threading up the warps, attending to the arrangement of the spools, and other adjustments that are from time to time required, in well known manner.

The method of detachably mounting the angular rail s³ to the rail c is effected by fixing at the ends of the rail s³ a hooked member t. The hooked end t¹ is for engagement with a hooked member v fixed upon the rail c, as is shown by Fig. 9.

Thus by the rail s³ carrying the spool a and its bearings and fittings, together with the thread-guiding members 2 and 3, said rail s³ may have its hooked part t¹ brought into such a position as to be guided under the hook of the part v to permit said rail s³ then to be folded down to cover or lie in contact with the wall c and the wall c² of said rail s³ as is shown by Fig. 9. When thus folded against the wall c² a flat catch spring w, which is fixed to the part c¹ of the rail c (as shown by Fig. 9) has its outer hooked end w¹ to engage with the lower edge of the rail s³, there to retain said rail and all the parts it carries in its operating position throughout all the actions of the spools and the warps they carry, as desired.

By this arrangement of devices I am enabled to detach the thread-guiding members 2 and plates 3 and the parts carried with the spool a and its bearings, so that same may be placed or mounted in position upon thread-supplying apparatus, known as a "setting machine", upon which the threads supplied thereby are wound upon the spool, and when extending from the supply, over said setting machine, said threads may be laterally placed in position down the thread-guiding slots 3d in the plates 3 in an expeditious manner.

Such being the nature and object of my said invention, what I claim is:—

1. In thread and gripper guiding devices for the spool frames of looms for weaving tufted or pile fabrics, a thread-guiding member comprising a plate having a longitudinal edge portion thereof bent back and having tuft-yarn guiding notches across the bend, and a series of gripper guide elements abutting said plate edgewise between successive notches and individually attached to said plate.

2. In thread and gripper guiding devices for the spool frames of looms for weaving tufted or pile fabrics, a thread-guiding member comprising a plate having a longitudinal edge portion thereof bent back and having tuft yarn guiding notches across the bend, and a series of gripper

per guide elements abutting said plate edgewise between successive notches, each said element having individual means for releasably securing said element to the plate.

5 3. In thread and gripper guiding devices for the spool frames of looms for weaving tufted or pile fabrics, a thread-guiding member comprising a plate having a longitudinal edge portion thereof bent back and having tuft yarn guiding notches
10 across the bend, and a series of gripper guide elements abutting said plate edgewise between successive notches, said plate having a narrow slot for each said element, each said element having a tongue projecting through and fitting in a corresponding slot, the projecting portions of said
15 tongues being twisted to secure the elements in position.

4. In thread and gripper guiding devices for the spool frames of looms for weaving tufted or pile fabrics, a thread-guiding member comprising a plate having a longitudinal edge portion thereof bent back and having tuft yarn guiding notches
5 across the bend, said plate having its other edge portion slotted and bent out to form a slotted flange, said plate also having a row of intermediate slots between the bent portions, and a series of gripper guide elements abutting said plate
10 edgewise, said gripper guide elements having end portions fitted in the slots of said flange and ears projecting through said slots, the projecting portions of said ears being twisted to secure said
15 element in place.

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