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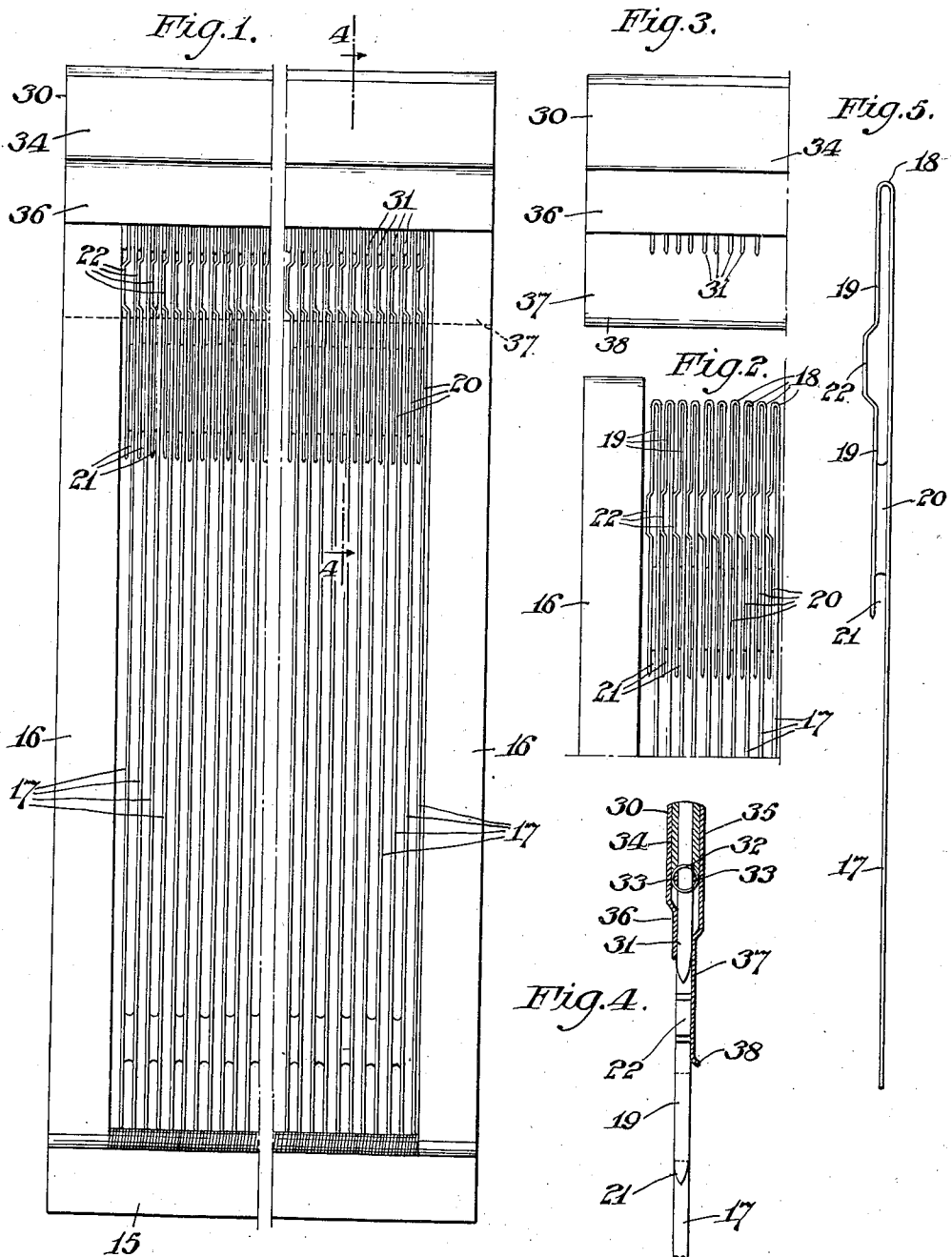
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COMB AND REED FOR TEXTILE MACHINES

Filed Feb. 17, 1936

2 Sheets-Sheet 1



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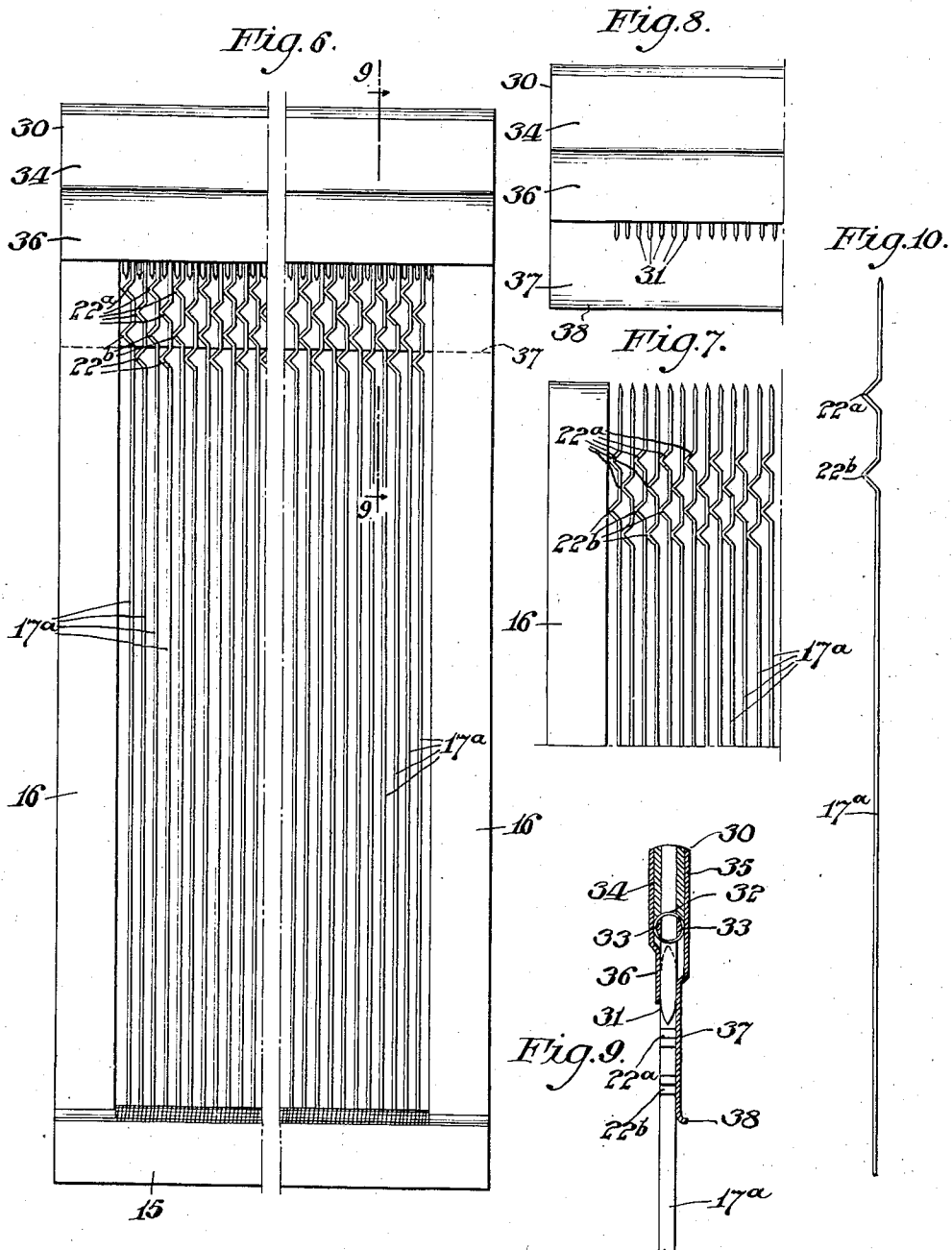
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UNITED STATES PATENT OFFICE

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COMB AND REED FOR TEXTILE MACHINES

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This invention relates to combs and reeds for textile machines, and it relates more particularly to the construction and arrangement thereof.

In various kinds of textile machines there are used combs or reeds for separating, guiding, and manipulating the warp. For example, combs are ordinarily used in warping and leasing machines, the open end of the comb being disposed upwardly to facilitate the entering of the warp, whereby the proper number of threads can be readily disposed in each dent space or split thereof. On the other hand, reeds, in which both ends of the dents are fixedly secured in the frame, are customarily used for beating up the weft into the fell of the cloth, this by reason of the greater stiffness obtained when both ends of each of the dents are thus secured.

The principal object of the present invention is to provide a device of the nature of a comb or reed for use in textile machines, in the use of which facility of entering the warp afforded by a comb is obtained, and at the same time the stiffness and rigidity of the dents of a reed are secured.

With the foregoing object in view, the present invention contemplates the provision of a comb-like structure comprising a frame, within which is mounted a series of dents rigidly fixed at their lower ends and provided near their upper ends with suitable offset portions for maintaining a uniform spacing of said dents.

The invention further contemplates the provision of means removably mounted in the upper portions of the structure for fixedly positioning the upper ends of the dents in their spaced relationship.

The invention further contemplates, in a specific embodiment thereof, a novel form of hook reed for leasing purposes.

It should, of course, be understood that the description and drawings herein contained are illustrative merely and that various modifications and changes may be made in the structure disclosed without departing from the spirit of the invention.

The nature and characteristic features of the present invention will be more readily understood when taken in connection with the accompanying drawings forming part hereof, in which:

Figure 1 is a front elevation of a hook reed for leasing purposes embodying the main features of the present invention;

Fig. 2 is a fragmentary detail of a portion of said reed with the device for fixedly positioning

the upper ends of the dents removed from the frame;

Fig. 3 is a front elevation of a fragmentary portion of the dent positioning device, complementary to the portion of the structure shown in Fig. 2 but removed therefrom;

Fig. 4 is a transverse section taken approximately on the line 4—4 of Fig. 1;

Fig. 5 is a front elevation, enlarged, of the upper portion of one of the dents of the structure shown in Fig. 1;

Fig. 6 is a view similar to Fig. 1 illustrating a form of warp manipulating comb or reed particularly adapted for use in connection with the hook reed shown in Fig. 1 for effecting a leasing operation;

Fig. 7 is a view similar to Fig. 2 likewise illustrating a fragmentary portion of the structure of Fig. 6, but with the device for fixedly positioning the upper ends of the dents removed from the frame;

Fig. 8 is a view similar to Fig. 3 illustrating a similar portion of the structure of Fig. 6;

Fig. 9 is a transverse section taken approximately on the line 9—9 of Fig. 6; and

Fig. 10 is an enlarged view of the upper portion of one of the dents of the structure shown in Fig. 6.

Referring now more particularly to Figs. 1 to 5 of the drawings there is illustrated a form of construction of a hook reed particularly adaptable for leasing. As there shown, said device comprises a suitable frame 15 having side struts 16. Disposed between the side struts 16 are the dents 17 suitably spaced and rigidly secured at their lower ends in the frame 15 in the usual manner of construction of soldered reeds, the dents 17 being thus uniformly spaced, and fixedly and permanently secured in the frame 15 at their lower ends.

Each of the dents 17 there shown comprises a thin flat strip of metal which is bent over at the top as at 18 and thence extends downwardly, the bent-over tongue 19 thus provided being located in the middle of the space between the body portion of the dent and the body portion of the next adjacent dent.

A metallic block 20 preferably made of solder is positioned between the lower portion of the tongue 19 and the body portion of the dent 17 (see Fig. 5), but being located a short distance above the lower end of the tongue 19, there is thus provided a hook-like structure 21 for the engagement of certain of the warp ends during the leasing operation.

The tongue portion 19 is also provided above the upper end of the block 20 with an offset portion 22 which extends to and bears against the body portion of the next adjacent dent 17. The offset portion 22 is so positioned in the tongue portion 19 as to bear against the part of the body portion of the next adjacent dent 17 which is located above the upper end of the metallic block 20, whereby advantage may be taken of the normal resiliency of the metal of the dent 17, to permit the entering of the warp in the dent spaces of the device, yet serving normally to maintain the upper ends of the dents 17 uniformly spaced in the frame 15.

Removably mounted on the upper portions of the frame 15 is a device 30 for fixedly positioning the upper ends of the dents 17 after the warp has been entered in the several dent spaces thereof. This device 30 consists essentially of a plurality of relatively short auxiliary dents 31 uniformly spaced complemental to the spacing of the main dents 17. The preferred form of construction of this device 30 contemplates the employment of a spacing coil 32 similar in character to a spiral spring, such as is commonly used in soldered reed construction, each convolution of said coil 32 extending between adjacent dents 31, being locked in position with respect to said dents 31 by means of longitudinal rods 33 sector-shaped in cross section, the whole being soldered together in the usual way by a dipping process or in any other preferred manner. The dent positioning device 30 is also provided on each face thereof with suitably shaped plate members 34 and 35, each of which is also soldered to the structure at the upper portion thereof. The plate member 34 on the front is offset inwardly so that the lower portion 36 thereof bears against and supports the front edges of the auxiliary dents 31. The plate 35 on the rear face is also offset in a similar manner to provide a portion 37 bearing against the rear edges of the auxiliary dents 31 at the lower portion thereof, and also extends downwardly beyond the lower ends of the auxiliary dents 31. The downwardly extending portion 37 of the plate member 35 is provided at its lower edge with a lip portion 38, which serves as a limit for lining up, in a uniform sheet, those warp ends which are not engaged by the hook-like portions 21 provided at the lower ends of the bent-over tongues 19 of the main dents 17 of the device. This will serve to prevent said warp ends from passing up to and being gripped by the offset portions 22 of the tongues 19 when the leasing operation takes place.

In the use of the device as illustrated in Figs. 1 to 5, when it is desired to enter the warp, the device 30 for fixedly positioning the upper ends of the main dents 17 is removed from the frame, whereupon the operator may readily select and place the proper warp ends in the respective dent spaces in the same manner as is done with ordinary combs. The warp ends will readily pass the offset portions 22 of the bent-over tongues 19 as it will be understood that the same may be easily separated a sufficient distance to allow the threads to freely pass, as but a relatively small amount of deflection of each of the individual dents 17 will be necessary for this purpose.

After the warp has been entered in the dent spaces of the structure, the device 30 for fixedly positioning the upper ends of the main dents 17 may be replaced. As the spacing of the auxiliary dents 31 is complemental to that of the main dents 17, said auxiliary dents 31 will enter the

spaces between the upper ends of the main dents 17 and locate the same in fixed positions. In the replacing of the positioning device 30, the downwardly depending portion 37 of the plate member 35 on the rear thereof may be first brought against the rear edges of the upper ends of the main dents 17, serving to arrange the same in a uniform plane as they are engaged by the auxiliary dents 31 passing between the dent spaces thereof. As the positioning device 30 is pushed to its final position, the lower end 36 of the plate 34 on the front face thereof will engage the front edges of the main dents 17 and thus prevent the displacement thereof out of the proper plane. The upper ends of the main dents 17 will then be held in fixed positions and said dents 17 will thereafter be securely and fixedly held the same as if they were soldered or otherwise permanently secured at their upper ends as in the ordinary reed construction.

In Figs. 6 to 10 of the drawings there is shown another form of the device, which is adapted for use as a manipulating reed to assist in leasing operations. In this instance, the device is substantially similar to that shown in Figs. 1 to 5 of the drawings, with the exception that the main dents 17^a are somewhat differently formed.

The bent-over tongue portions are omitted, as the same are not required for the purpose to which this form of the device is to be put. There is also provided a different form of spacing means. Each of the dents 17^a is provided near its upper end with offsets 22^a and 22^b, preferably two or more in number, as the provision of a plurality of such offsets 22^a and 22^b in each dent 17^a will serve to prevent distortion of the individual dents. Furthermore, the offsets of each dent are staggered with relation to the offsets of adjacent dents, so that said offsets will in each instance bear against a portion of the adjacent dent which lies in the main plane thereof, and which is resilient to a sufficient extent.

It will be noted that in each instance the dents are made of thin flat strips of metal and that the spacing offsets thereof are formed by pressing the same out of the main plane of the strip. Furthermore, the offsets bearing against sufficiently resilient portions of adjacent dents, the requisite separation of the dents for the insertion of the warp ends is quite possible. On the other hand, when the dent positioning device is in place, the dents will be held sufficiently rigid for their intended purposes.

I claim:

1. In a warp separating device, a frame, a series of dents mounted in said frame, one end of each of said dents being fixedly and permanently secured in said frame, each of said dents being provided with an offset portion near its free end bearing against a resilient portion of an adjacent dent thereby to space the free ends of the dents, and a device removably mounted on the frame and having auxiliary dents fixedly mounted therein and extending into the dent spaces at the free ends of the main dents.

2. In a warp separating device, a frame, a series of dents mounted in said frame, one end of each of said dents being fixedly and permanently secured in said frame, each of said dents being provided with an offset portion near its free end bearing against a resilient portion of an adjacent dent thereby to space the free ends of the dents, and a device removably mounted on the frame having fixed auxiliary dents extending into the dent spaces at the free ends

of the main dents, and plates engaging the front and rear edges of the free end portions of the main dents.

3. In a warp separating device, a frame, a series of dents mounted in said frame, one end of each of said dents being fixedly and permanently secured in said frame, each of said dents being provided with an offset portion near its free end bearing against a resilient portion of an adjacent dent thereby to space the free ends of the dents, and a device removably mounted on the frame and having auxiliary dents fixedly mounted therein and extending into the dent spaces at the free ends of the main dents, and plates engaging the front and rear edges of said auxiliary dents.

4. In a warp separating device, a frame, a series of dents mounted in said frame, one end of each of said dents being fixedly and permanently secured in said frame, each of said dents being provided with an offset portion near its free end bearing against a resilient portion of an adjacent dent thereby to space the free ends of the dents, and a device removably mounted on the frame having fixed auxiliary dents extending into the dent spaces at the free ends of the main dents, and plates engaging the front and rear edges of said auxiliary dents and the front and rear edges of the free end portions of the main dents.

5. In a warp separating device, a frame, a series of dents mounted in said frame, one end of each of said dents being fixedly and permanently secured in said frame, each of said dents comprising a thin flat strip of metal and being provided with an offset portion near the free end pressed out of the plane of the strip and bearing against a resilient portion of an adjacent dent thereby to space the free ends of the dents, and a device removably mounted on the frame and having auxiliary dents fixedly mounted therein and extending into the dent spaces at the free ends of the main dents.

6. In a warp separating device, a frame, a series of dents mounted in said frame, each of said dents comprising a thin flat strip of metal one end of which is fixedly and permanently secured in said frame and the other end of which is bent over to provide a tongue extending parallel to the body portion, a part of the strip at the tongue end being offset and bearing against a part of the adjacent dent, and a device removably mounted on the frame having fixed auxiliary dents extending into the spaces between the tongue portions of each dent and the body portions of adjacent dents.

7. In a warp separating device, a frame, a series of dents mounted in said frame, each of said dents comprising a thin flat strip of metal one end of which is fixedly and permanently secured in said frame and the other end of which is bent over to provide a tongue extending parallel to the body portion, a metallic block positioned between the lower portion of the tongue and the body portion of the dent a short distance above the lower end of the tongue thereby to provide a hook-like structure for engaging the warp, a part of the strip at the tongue end being offset and bearing against a part of the adjacent dent.

8. In a warp separating device, a frame, a series of dents mounted in said frame, each of said dents comprising a thin flat strip of metal one end of which is fixedly and permanently secured in said frame and the other end of which

is bent over to provide a tongue extending parallel to the body portion, a metallic block positioned between the lower portion of the tongue and the body portion of the dent a short distance above the lower end of the tongue thereby to provide a hook-like structure for engaging the warp, a part of the strip at the tongue end being offset and bearing against a part of the adjacent dent, and a device removably mounted on the frame having fixed auxiliary dents extending into the spaces between the tongue portions of each dent and the body portions of adjacent dents.

9. In a warp separating device, a frame, a series of dents mounted in said frame, each of said dents comprising a thin flat strip of metal one end of which is fixedly and permanently secured in said frame and the other end of which is bent over to provide a tongue extending parallel to the body portion, a metallic block positioned between the lower portion of the tongue and the body portion of the dent a short distance above the lower end of the tongue thereby to provide a hook-like structure for engaging the warp, a part of the strip at the tongue end being offset and bearing against a part of the adjacent dent, and a device removably mounted on the frame having fixed auxiliary dents extending into the spaces between the tongue portions of each dent and the body portions of adjacent dents, and plates engaging the front and rear edges of the dents, one of said plates extending beyond the offsets in the dents.

10. In a warp separating device, a frame, a series of dents mounted in said frame, each of said dents comprising a thin flat strip of metal one end of which is fixedly and permanently secured in said frame and the other end of which is bent over to provide a tongue extending into the dent space parallel to the body portion and in spaced relationship with respect thereto, and a part of the strip at the tongue end being offset and bearing against a part of the adjacent dent.

11. In a warp separating device, a frame, a series of dents mounted in said frame, one end of each of said dents being fixedly and permanently secured in said frame and the other end being a free end provided with a resilient portion, each of said dents comprising a thin flat strip of metal and also being provided with an offset portion near the free end pressed out of the plane of the strip, the offset portion of one dent bearing against the resilient portion of an adjacent dent to maintain the uniform spacing of the free ends of the dents, and the resiliency at the bearing portion permitting the warp threads to be freely placed in the dent spaces.

12. In a warp separating device, a frame, a series of dents mounted in said frame, one end of each of said dents being fixedly and permanently secured in said frame and the other end being a free end provided with a resilient portion, each of said dents comprising a thin flat strip of metal and also being provided with a plurality of offset portions near the free end pressed out of the main plane of the strip, each of said offset portions bearing against resilient portions of an adjacent dent to maintain the uniform spacing of the free ends of the dents, and the resiliency at the bearing portion permitting the warp threads to be freely placed in the dent spaces.

13. In a warp separating device, a frame, a series of dents mounted in said frame, one end

of each of said dents being fixedly secured in said frame and the other end being a free end, and a device removably mounted on the frame having members fixedly mounted therein for spacing the free ends of the main dents.

14. In a warp separating device, a frame, a series of dents mounted in said frame, one end of each of said dents being fixedly and permanently secured in said frame and the other end being a free end, and a device removably mounted on the frame having members fixedly mounted therein and extending into the dent spaces at the free ends of the main dents.

15. In a warp separating device, a frame, a series of dents mounted in said frame, one end of each of said dents being fixedly and permanently secured in said frame and the other end being a free end, and a device removably mounted on the frame having members fixedly mounted therein and engaging the free ends of the main dents for spacing said free ends of the main dents.

16. In a warp separating device, a frame, a series of dents mounted in said frame, one end of each of said dents being fixedly and permanently secured in said frame and the other end being a free end, and a device removably mounted on the frame and enclosing the free ends of the main dents, said device having means for spacing the free ends of each of the main dents.

17. In a warp separating device, a frame, a series of dents mounted in said frame, each of said dents comprising a thin flat strip of metal one end of which is fixedly and permanently secured in said frame and the other end of which is bent over to provide a tongue extending downwardly along and in spaced parallel relationship to the body portion, and a metallic block positioned between the lower portion of the tongue and the body portion of the dent a short distance above the lower end of the tongue thereby to provide a hook-like structure for engaging the warp.

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