

A. PUTMAN.
HAND WEAVING DEVICE.
APPLICATION FILED JULY 11, 1910.

983,764.

Patented Feb. 7, 1911.

2 SHEETS-SHEET 1.

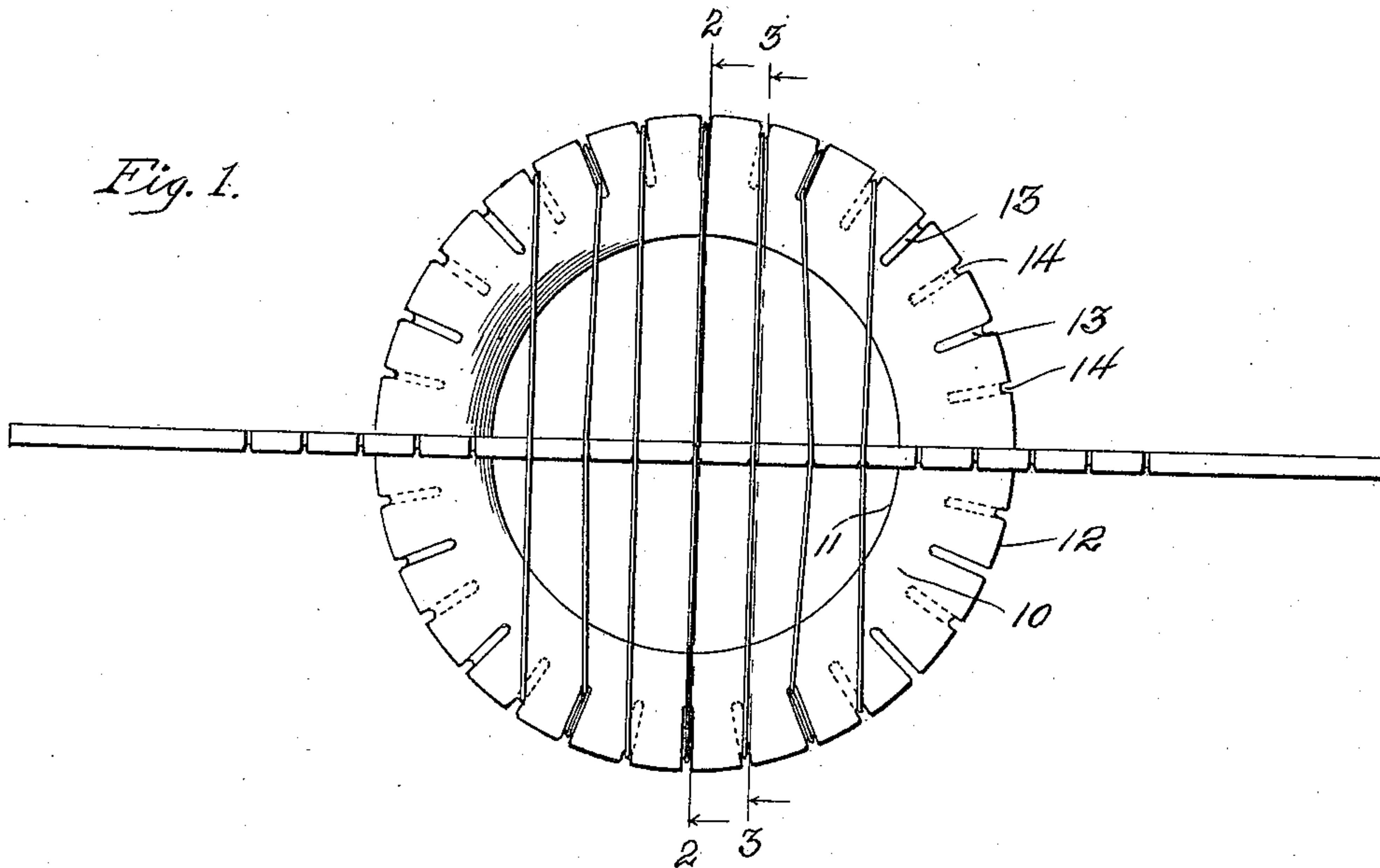


Fig. 2.

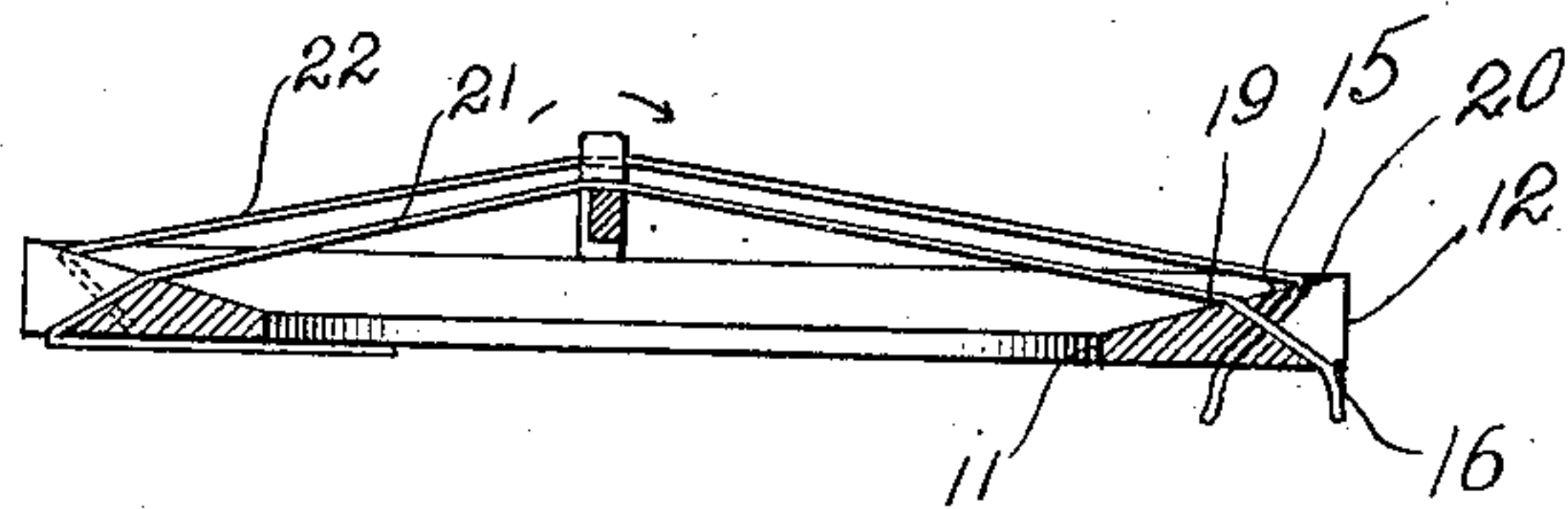


Fig. 3.

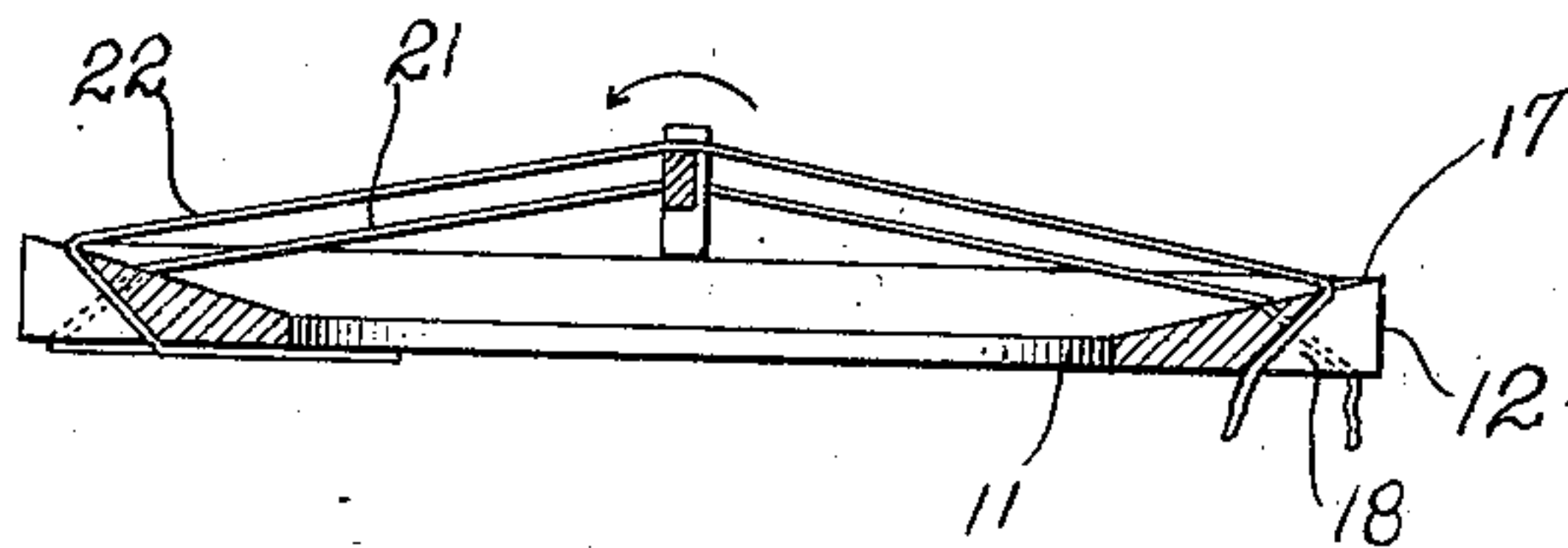
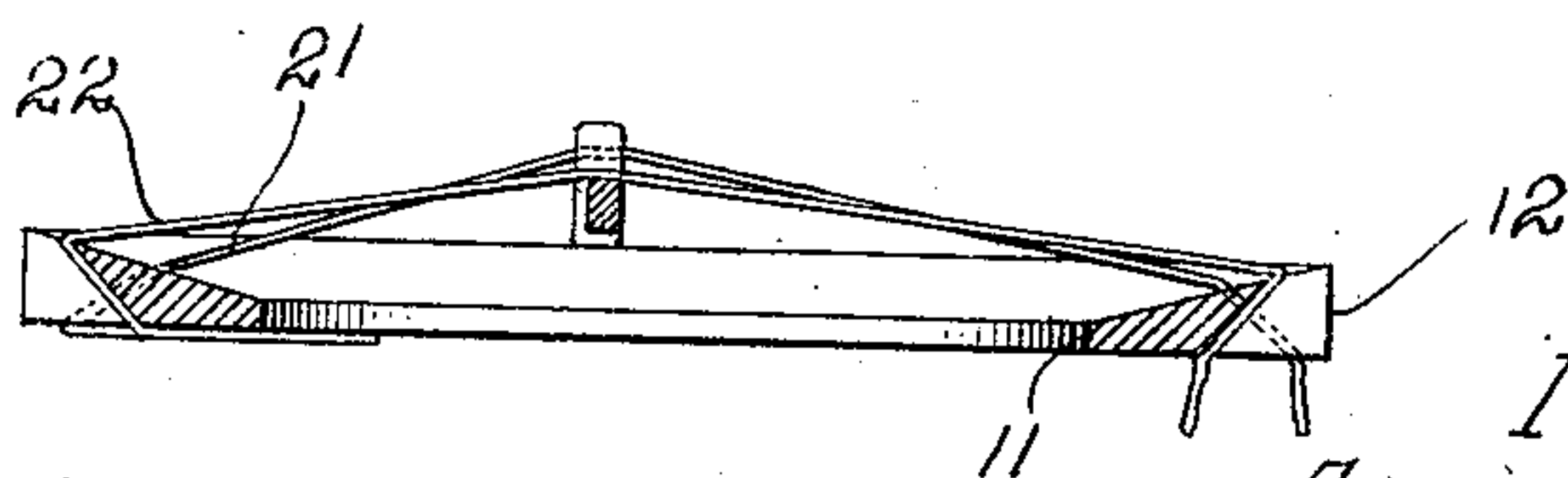


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

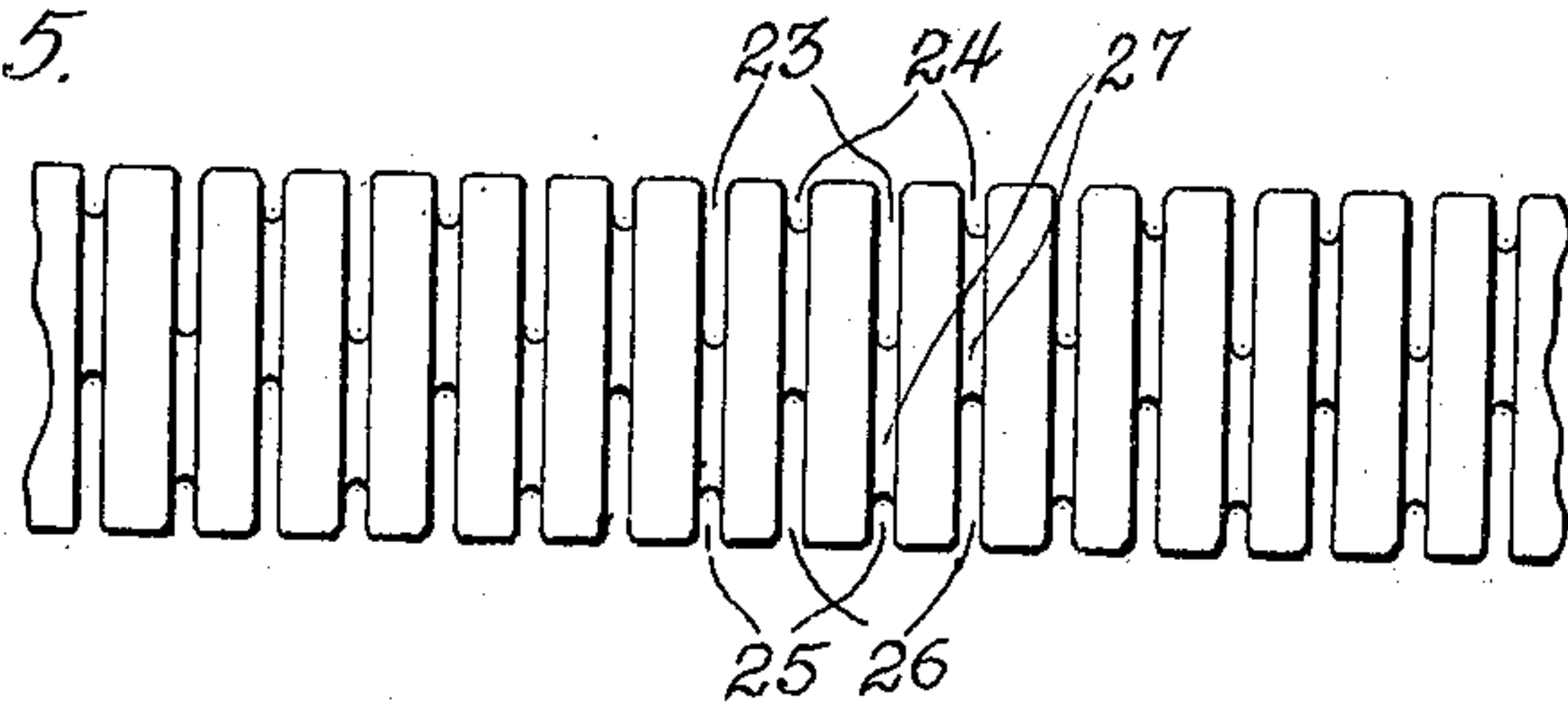


Fig. 6.

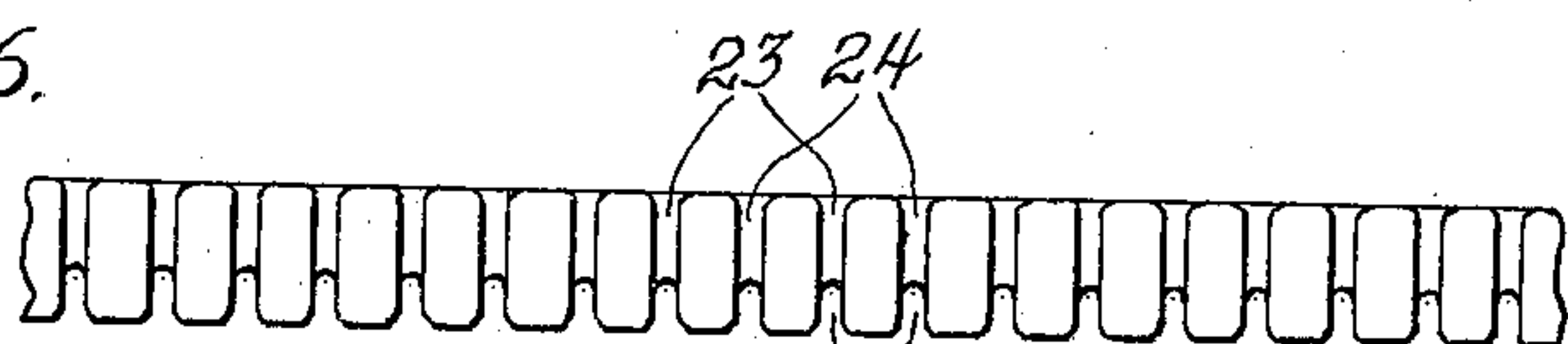


Fig. 7.

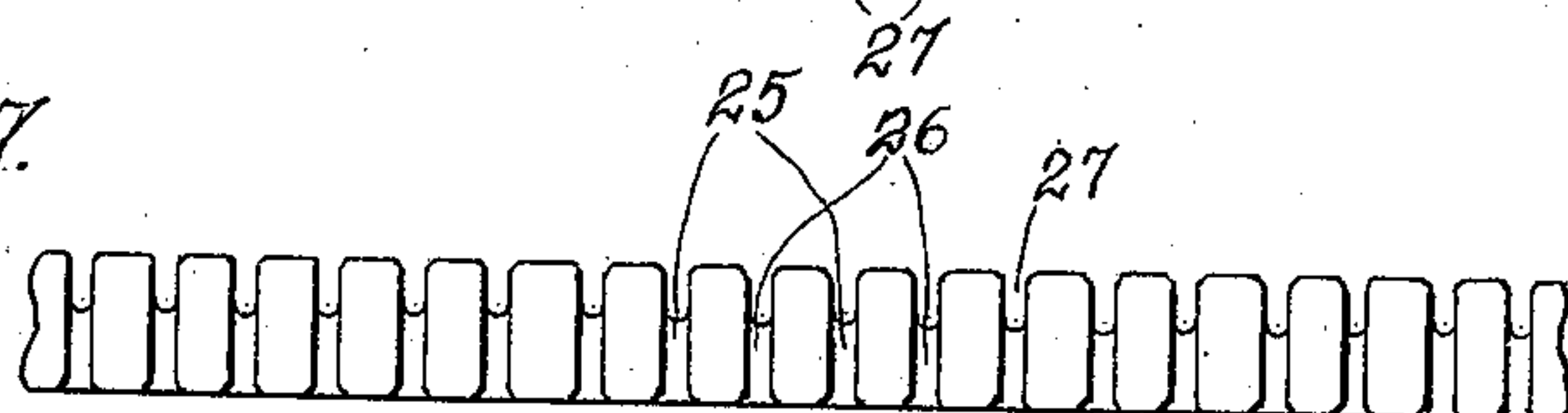


Fig. 8.

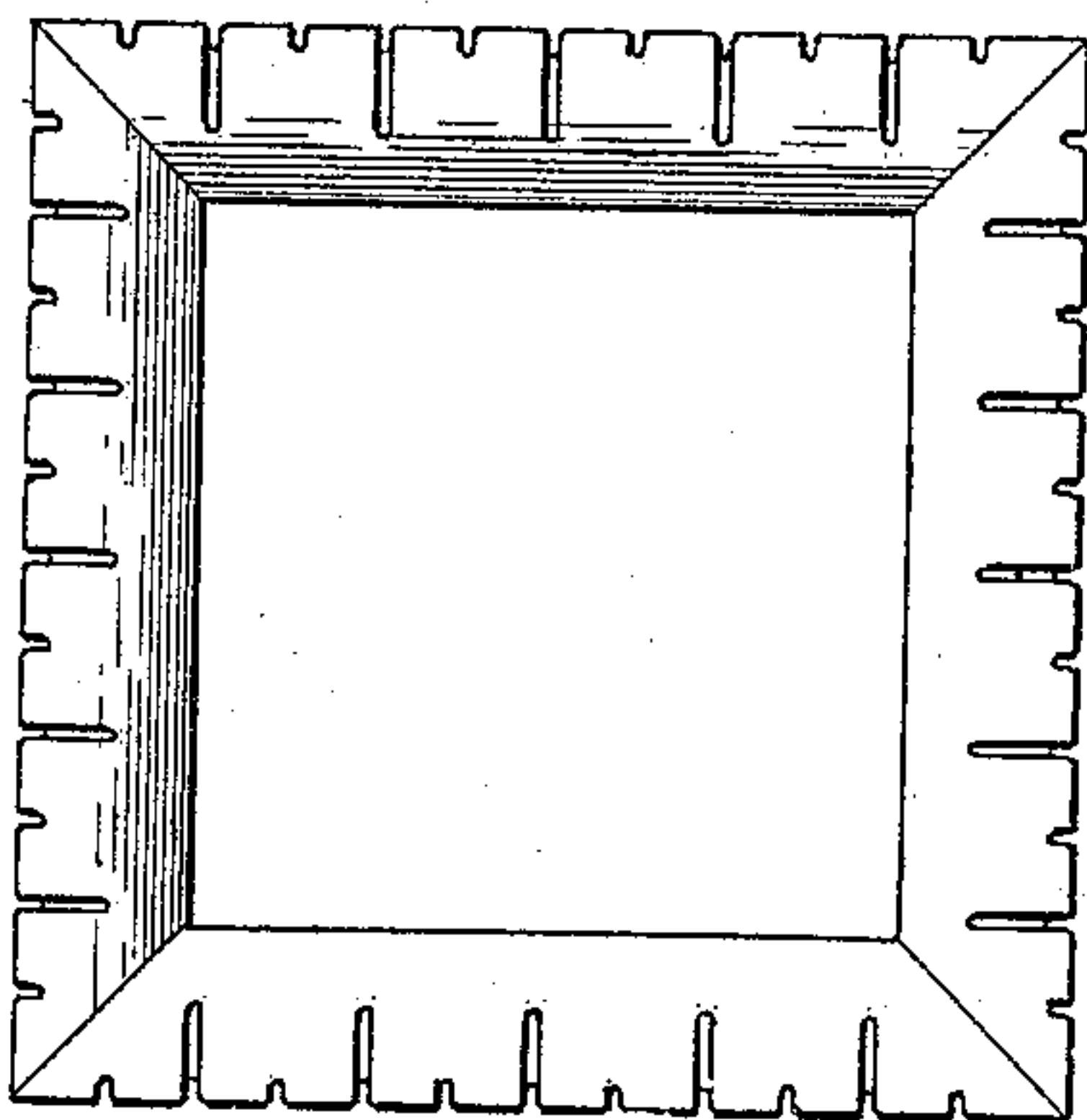
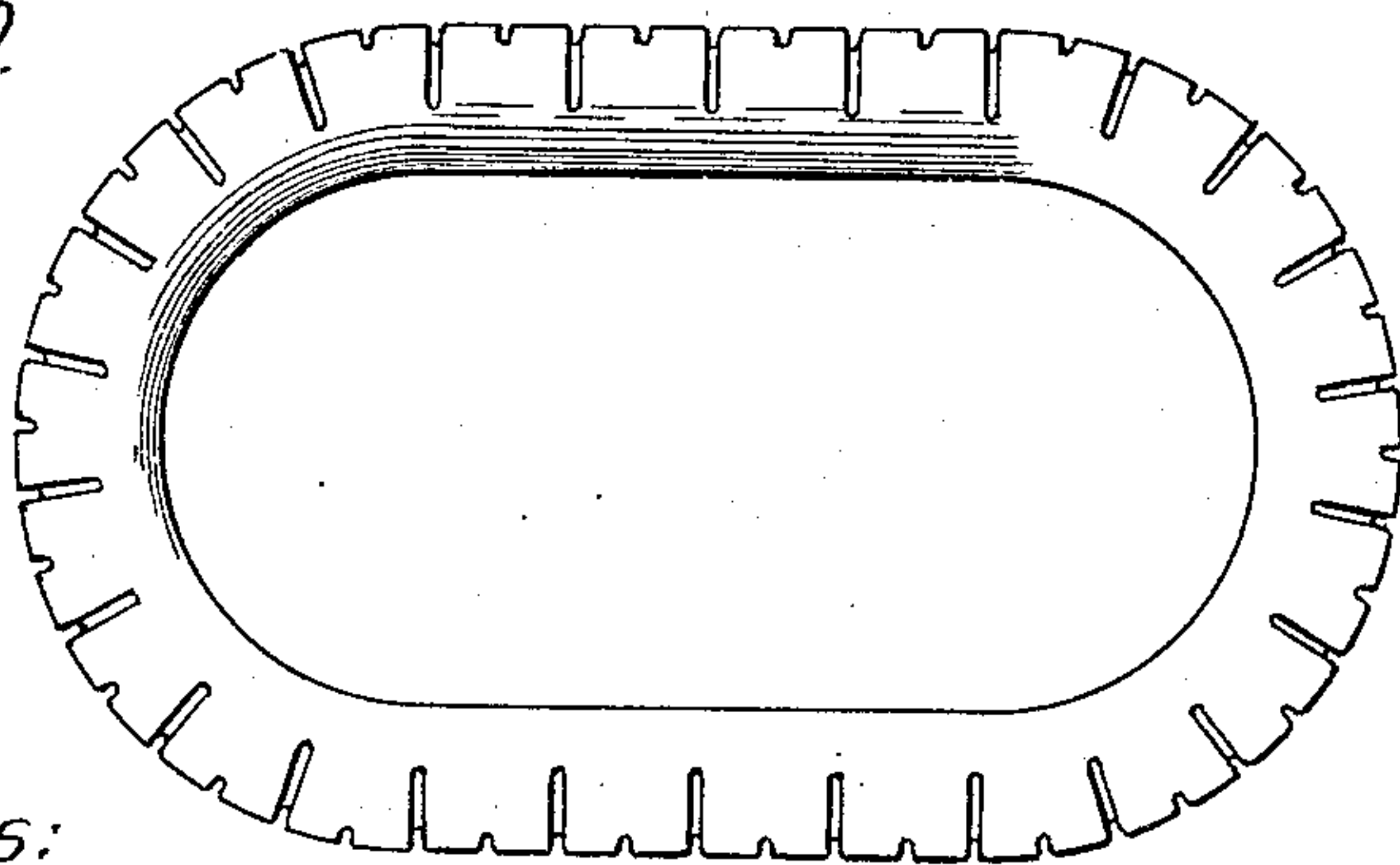


Fig. 9.



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UNITED STATES PATENT OFFICE.

ALICE PUTMAN, OF CHICAGO, ILLINOIS.

HAND WEAVING DEVICE.

983,764.

Specification of Letters Patent.

Patented Feb. 7, 1911.

Application filed July 11, 1910. Serial No. 571,339.

To all whom it may concern:

Be it known that I, ALICE PUTMAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Hand Weaving Devices, of which the following is a specification.

At the present time much attention is being paid to the instruction of small children of graded schools in the mechanical arts and, particularly those arts which train them how to make useful as well as pretty and ornamental things. Considerable attention is thus being given to instruction in the weaving and knitting of small articles, such as caps, gloves, and doilies, toy hammocks, etc. A knitting and weaving device to be entirely successful for use in these lines should be of simple construction, cheaply made, and durable, but it should also operate in such a simple manner that little children can use it, and it should be so devised that they can be easily instructed in its use. At the same time it should not be so automatic in its action as not to require a certain amount of thought and study on the part of the child.

Objects of this invention are to provide a knitting and weaving device of simple construction which can be cheaply made; to provide one in which the threads may be supported in a characteristic manner so that a child can easily identify the threads; to provide means for alternately raising and lowering the threads to facilitate the weaving process; to provide a type of weaving instrument which will be well adapted for weaving small hammocks and similar objects; to provide an instrument of such form that the knitting or weaving process may be carried on even to the last step with great facility; and in other ways and manners to provide an instrument particularly adapted to the class of work above outlined.

Other objects and uses will appear from a detail description of the invention which consists of the features of construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 shows a plan view of my improved knitting and weaving device, the body portion being of circular formation and provided with a heddle such as would be used particularly in a weaving process; Fig. 2 shows a cross section of the instrument taken on the line 2—2, of Fig. 1, looking in the direction of

the arrows, the section being taken through two of the slots which allow the thread to lie low at the frame, and showing by dotted lines the position of the next adjacent thread lying in slots which cause said thread to lie high on the frame-work, the heddle being in a position such that the central portion of the low thread will also be low and such that the central portion of the high thread will also be high; Fig. 3 shows a cross section of the instrument taken on the line 3—3 of Fig. 1, looking in the direction of the arrows, the section being taken through two of the high slots and showing in dotted lines the position of the next adjacent thread which lies in the low slots, the heddle being reversed from the position of Fig. 2; Fig. 4 shows a cross section also taken on the line 3—3, looking in the direction of the arrows, the heddle, however, being reversed back into the position of Fig. 2 so as to reverse the position of the threads in the central portion of the frame; Fig. 5 shows a side view of a portion of the heddle showing the manner in which the slots are cut on one edge alternately shallow and deep while on the other edge they are cut alternately deep and shallow, the cuts on the two edges being joined by means of shallow slots on the side of the heddle; Fig. 6 shows a top view of the heddle of Fig. 5; Fig. 7 shows a bottom view of the same; Fig. 8 shows a frame-work in the form of a square or rectangle, making use, however, of grooves of the type shown in Figs. 1, 2, 3, and 4; and Fig. 9 shows a frame-work provided with straight sides and rounded ends of a formation especially adapted to the weaving of hammocks.

In the embodiment of my invention I provide a frame of suitable material, preferably wood, whose upper surface is beveled inwardly so that the inner edge of the upper face of the frame will be lower than the outer edge thereof. Around the periphery of this frame I provide a plurality of slots for holding the threads, these slots being cut in a peculiar manner so that the threads will be supported on the frame in a peculiar way. When necessary, I further provide a heddle of suitable shape and arrangement, preferably one which when reversed back and forth will alternately raise and lower the threads in such a way that a shuttle or needle may be passed back and forth easily during the weaving process.

Referring now to the drawings, the sim-

plest form or frame-work is shown in Fig. 1. This comprises a circular member 10 beveled on its upper surface, so that its inner periphery 11 is of lesser thickness than its outer periphery 12. The angle of this bevel should preferably be fairly acute, so that there will be an appreciable difference in thickness between the two peripheries. The outer periphery of the frame is provided with a plurality of approximately radial slots 13 and 14, cut in such a way that the slots 13 extend a considerable distance inwardly on the upper face as at 15, (see Fig. 2), and a short distance inwardly on the lower face as at 16. The slots 14 on the other hand are cut in such a way as to extend inwardly only a slight amount on the upper face as at 17, (see Fig. 3), and so that they extend inwardly a considerable distance on the lower face as at 18; that is to say, the alternate slots are of one of the above forms and the intermediate slots are of the other form. The slots should be of even number so that there will be an even number of each kind around the entire periphery.

In order to string the frame for a weaving process the threads should pass straight across parallel to each other as shown in Fig. 1; then one strand will pass into two of the slots 13 while the next strand will pass into two of the adjacent slots 14. Inasmuch as the slots 13 are cut deep on the upper surface, which is beveled downwardly toward the center, it is evident that the point 19 at which these strands pass away from the frame, will be lower down than the point 20 at which the strands lying in the slots 14 will leave the frame. In other words, as shown in Figs. 2 and 3, the strands 21 lying in the slots 13 will lie lower than the strands 22 lying in the slots 14.

The preferred form of heddle is illustrated in detail in Figs. 5, 6, and 7. This comprises a bar of length sufficient to span the entire maximum width of the frame on which it will be used. This bar is provided on one edge with a plurality of slots 23 cut deeply, while the intermediate slots 24 are cut shallow, all of the slots being preferably spaced equally distant. The other edge of the bar is provided with slots 25 in line with the slots 23 and cut shallow, and with slots 26 in line with the slots 24 and cut deep. The shallow slots 27 connect the slots 23 with the slots 25 and the slots 24 with the slots 26. When the heddle is laid across the frame as shown in section in Figs. 2, 3, and 4, the strands are meshed into the slots on the upper edge of the heddle. Evidently, the strands in the slots 23 will lie low at the heddle and those strands in the slots 24 will lie high at the heddle. Referring to Fig. 2, the heddle may be rotated over in the direction of the arrow into the position shown in Fig. 3. Conversely, it may be rotated back

from the position of Fig. 3 in the direction of the arrow into the position of Fig. 2. During this rotating process, the threads in the slots 23 will gradually come into the slots 27 when the heddle is half way over, and will finally work into the slots 25 when the heddle is turned the rest of the distance. In like manner, the strands originally in slots 24 will be worked around through the corresponding slots 27 into the slots 26. In this manner a rotation of the heddle through 180 degrees as from Fig. 2 to Fig. 3 will reverse the strands at the heddle, lowering those which were originally high and raising those which were originally low. In like manner, rotating the heddle back from the position of Fig. 3 to that of Fig. 2 will restore the strands to their original position. Thus the alternate strands can be alternately raised and lowered so that a shuttle may be moved through between the strands so as to weave the woof thread back and forth. The manner in which the threads are reversed is well illustrated in Figs. 3 and 4 which are both sections taken on the line 3—3 of Fig. 1, looking in the direction of the arrows, the heddle in Fig. 4 being reversed from the position of Fig. 3.

I do not limit myself to a circular frame-work but include within the scope of my invention any suitable shape and size thereof. Thus, in Fig. 8 I illustrate a square or rectangular frame such as might be used to advantage in weaving square mats. In Fig. 9 I illustrate a frame comprised of straight sides connected at their ends by rounded end portions. This type of frame is especially well adapted for use in knitting toy hammocks. For such a use the longitudinal strands in the central portion of the hammock should be longer than those near its edges, so that when all of the longitudinal strands are brought together at each end, the hammock will sink down a slight amount in the middle part in the well known manner.

The arrangement of the slots in the frame as used in combination with a frame whose upper surface is beveled provides a construction having a number of peculiar advantages. In the first place the beveled frame permits the operator to work the handle back and forth during the weaving process, even when operated close to the ends of the strands, for the reason that the bevel provides a space between the strands and the surface of the frame even where the strands pass above the frame. This space is large enough so that the weaving needle can be easily worked back and forth during the weaving process. In the second place, beveling and providing slots cut substantially in the manner shown provides a construction such that alternate strands will lie higher than the intermediate strands at points ad-

jacent to the frame-work. This difference in elevation gives the strands a peculiar and characteristic appearance such that a child can easily distinguish between different sets of strands. For example, a child may be instructed to first use the strands which are high at the edge of the frame-work and then to use the ones which are low. As is evident from Figs. 3 and 4, the strands will always be either high or low directly at the frame-work according to the slots which they enter, regardless of the position of the heddle. Thus in these figures the end portions of the strands 22 are always higher than the end portions of the strands 21.

I do not limit my invention to use with any particular kind of weaving or knitting process, but intend that it shall be used in any such process to which it may be adapted.

It is seen that by cutting the slots 13 and 14 alternately long on the top face, and short on the bottom face, and long on the bottom face, and short on the top face of the frame, that inequalities in length of the strands are compensated for so that corresponding strands will be of equal length.

I claim:

1. In a device of the class described, a frame having one side beveled to present a comparatively thick outer periphery and a comparatively thin inner periphery, and provided in its outer periphery with a plurality of substantially radial slots, said slots being alternately cut deep on one side and shallow on the other side, shallow on one side and deep on the other side, whereby strands of thread lying in slots of the first class will lie at a lower elevation than strands lying in slots of the second class, substantially as described.

2. In a device of the class described, a frame-work having one side beveled to present a comparatively low inner periphery of said side and a comparatively high outer periphery of said side, and provided in its outer periphery with a plurality of substan-

tially radial slots, said slots being cut alternately deep on the upper surface of the frame and alternately shallow on said upper surface, substantially as described.

3. In a device of the class described, a framework and a heddle, the framework being provided around its exterior periphery with a plurality of slots for receiving strands of thread and of a formation alternately deep and shallow on the upper surface of the framework, and the heddle being of substantially rectangular cross-section, and provided in one edge with a plurality of alternately deep and shallow slots and provided in the opposite edge with a plurality of alternately shallow and deep slots, whereby strands of thread lying in slots of one character when the heddle is in one position will lie in slots of the other character when the heddle is reversed, substantially as described.

4. In a hand weaving device the combination of a frame work and a heddle, the heddle being of substantially rectangular form and of substantially greater height than width and being provided in one of its narrow edges with a plurality of alternately deep and shallow slots and being provided along the other narrow edge with a plurality of alternately shallow and deep slots opposite the deep and shallow slots of the other edge respectively and being provided along one side with a plurality of comparatively shallow slots connecting the deep slots of one edge with the shallow slots of the other edge and the shallow slots of the first edge with the deep slots of the second edge, whereby strands of thread lying in the slots of one edge will gradually work around through the shallow side slots into the slots of the other edge when the heddle is rotated, substantially as described.

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