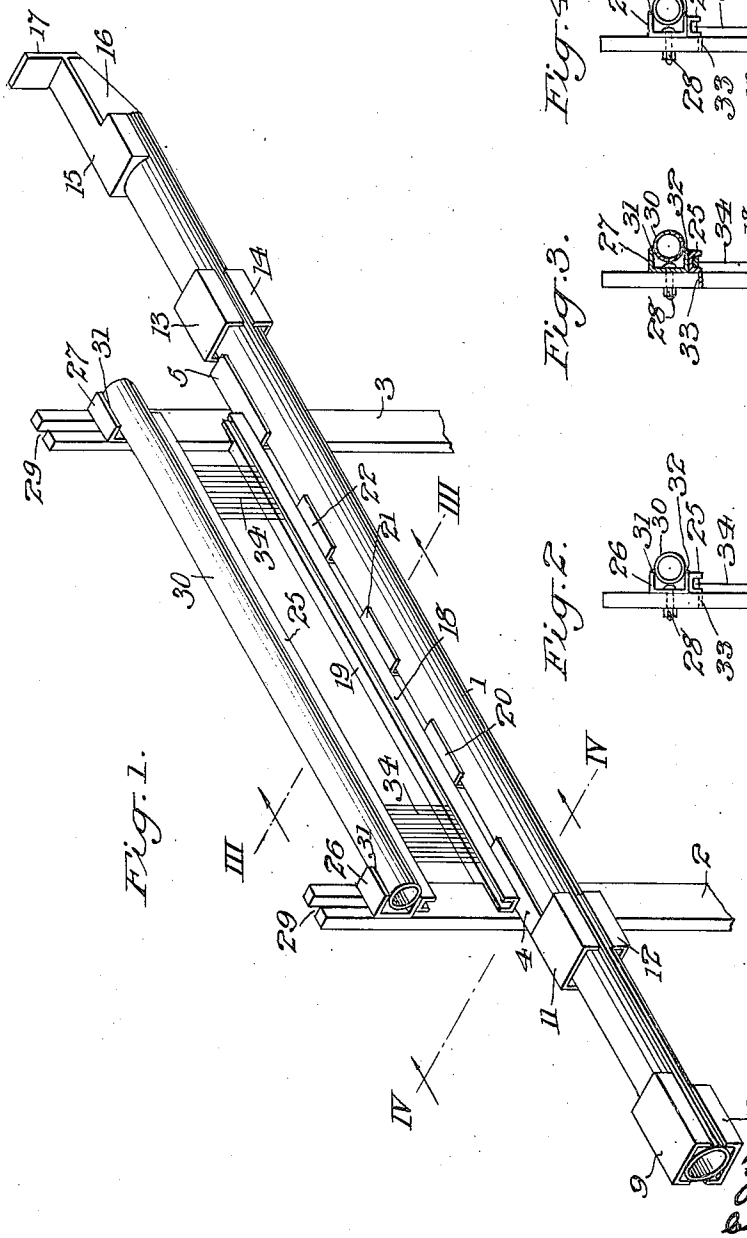
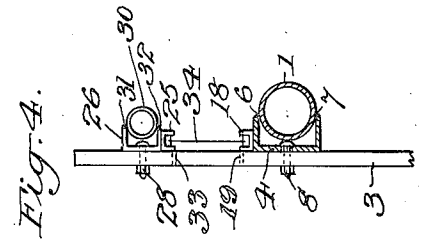
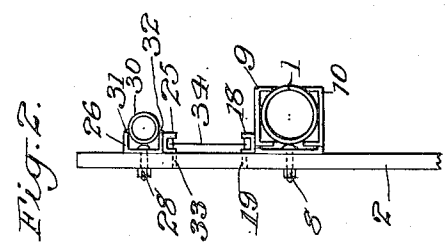
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LAY CONSTRUCTION FOR LOOMS

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LAY CONSTRUCTION FOR LOOMS

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1

This invention relates to lay construction for looms and has for an object to provide such a construction which is much lighter than present forms together with an increase in the desired rigidity in all directions, vertical, horizontal, and in torque resistance.

Another object is to provide such a construction which results in reduced inertia and vibration with consequential reduction in power required for operation and in wear upon the parts.

Another object is to provide such a construction in which the increase in rigidity, particularly in the vertical direction, at the ends of the lay, beneficially cooperates with the proper operation of automatic quill magazines for supplying the shuttles; and in which increased rigidity in the sense of resistance to torque stresses improves the operation particularly as regards the contact of the bumpers carried by the lay with the latch fingers of the quill magazines.

Another object is to provide such a construction which increases the accuracy in the aiming and flight of shuttles across the loom and in their reception by the shuttle boxes.

Another object is to provide such a construction in which the usual raceway is not required, which not only simplifies the structure and reduces weight but also affords opportunity for a shuttle which may be caught in the shed to fall through to the floor under the loom and thus avoid injury to the shuttle on the forward stroke of the lay.

Another object is to provide such a construction in which simplicity of design is emphasized and standard forms of prefabricated structural elements are used, with consequent reduction in the cost of manufacture.

Another object is to provide such a construction which may be secured to the lay swords in standard and approved types of looms without requiring changes in the other parts of the loom or in its normal mode of operation.

A further object is to provide certain improvements in the form, construction, material and arrangement of the several parts whereby the above named and other objects inherent in the construction may be effectively attained.

A practical embodiment of the invention is represented in the accompanying drawing, in which

Fig. 1 represents an isometric perspective view of the lay construction associated with upper parts of the lay swords;

Fig. 2 represents an end view of the parts shown in Fig. 1, looking from left to right;

Fig. 3 represents a vertical section taken in

2

the plane of the line III—III of Fig. 1, looking in the direction of the arrows; and

Fig. 4 represents a vertical section taken in the plane of the line IV—IV of Fig. 1, looking in the direction of the arrows.

In usual practice the loom lay is constructed of wood and iron and is provided with a smooth, level top surface to serve as a raceway for the shuttle in its flight. The construction is heavy and somewhat cumbersome, particularly with respect to the upper parts where, with a view to the attainment of rigidity, at least one heavy iron constructional element is embodied. This involves the necessity of considerable power for the oscillation of the lay in its beat-up function and generates a very substantial inertia in motion with the inevitable concommitants of increased injury in case of a loom "smash" such as may occur in case of faulty shuttle operation, increased wear upon the parts, and increased liability to breakage. The present invention overcomes these previously existing disadvantages, attains the objects hereinabove recited, and, in a general way, serves to improve loom operation and economizes in the cost thereof.

Referring to the drawing, the lay proper is denoted by 1 and is composed of metallic tubing preferably of one of the lighter metals such as magnesium, aluminum, or one of the alloys thereof, although steel may satisfactorily be employed with a reduction in the extent to which the objective of lightness is attained. In the drawing this tubular lay is shown as circular in cross section but it may be of other cross sectional form, such, for instance, as square, oblong, or hexagonal.

The said lay proper is fixed to the swords 2 and 3 by a pair of metal channel section brackets 4 and 5, the edges of which are welded to the top and bottom of the tubular lay 1 as indicated at 6, 7, in Fig. 4; it being understood that while these weld lines 6, 7, are illustrated in the drawing only in connection with the fastening of bracket 4 to lay 1, the bracket 5 is correspondingly welded to the lay.

The said brackets 4 and 5 are each adjustably fastened to the lay swords 2 and 3 by one or more bolts 8 which traverse open ended slots in the brackets and also pass through the swords; thereby permitting a certain amount of horizontal adjustment of the lay in order accurately to position it with respect to other parts of the loom.

Supports for mounting the shuttle boxes are provided in the form of metal pads which, like

the brackets 4 and 5, are of channelled form. The said pads are marked respectively 9, 10, 11, 12, 13, 14 and 15, and each is fixed in position on the lay proper 1 by welding as hereinabove described in connection with the brackets 4 and 5; it being understood that the pads 9, 11, 13 and 15 are welded to the upper part of the lay 1, while pads 10, 12 and 14 are welded to the lower part thereof. It is intended that the shuttle boxes be secured directly to the upper pads 9, 11, 13 and 15, while the lower pads 10, 12 and 14 serve as reinforcement at these points for enhancing the rigidity of the structure. There is no complementary lower pad for the upper pad 15, but the latter is formed with an angular web 16 that supplies the necessary rigidity; and said pad 15 also has an upwardly extending abutment 17 at its outer extremity which serves to prevent outward movement of the long upper shuttle box at this end of the lay, while permitting the usual vertical adjustment thereof for accommodating the loom to the weaving of fabrics of varying pile heights. There is no occasion for such a provision at the opposite end of the lay because the upper shuttle box at that point is the shorter one and is held in position by its fixture to the lower box. Any suitable fastening elements may be employed for securing the boxes to the pads, and we have found bolts or cap screws to be satisfactory. The boxes and the fastening elements are not shown in the drawing because they form no part of the present invention, which is directed to the lay construction.

The lower reed slot is marked 18 and it consists of a metallic channel bar which is provided with a laterally extending flange 19 along its upper rear edge. The ends of the said reed slot are fastened, preferably by welding, to the brackets 4 and 5 and its intermediate portion is secured at intervals to the tubular lay 1 by a series of channel section pads 20, 21, 22, which are similar to brackets 4 and 5 and are welded to the lay proper 1 at its top and bottom as indicated at 23, 24, in Fig. 3, while the said reed slot is likewise welded to the top of the said pads 20, 21, 22. This union of the parts just described provides for a high degree of rigidity and resistance to strains, which is increased to a still higher degree by the flange 19, that not only strengthens the lower reed slot, but also braces the parts by reason of the fact that its ends firmly abut the inside edges of the lay swords 2, 3, as clearly shown in Fig. 1.

The upper reed slot is denoted by 25 and it is a duplicate of the lower slot 18 though it is, of course, reversed in position so that its channel opens downwardly while that of 18 opens upwardly. The ends of the said upper slot 25 are secured, as by welding, to the under side of a pair of metallic channel section brackets 26, 27, which are provided with bolts 28, 28, which extend rearwardly from the brackets and traverse slots 29, 29, fashioned in the upper extremities of the lay swords. A reed cover 30, which consists of a metallic tube of any suitable cross sectional shape, circular being shown, and is preferably composed of one of the lighter metals as mentioned in connection with the lay 1, has its ends mounted in brackets 26, 27, the edges of which are welded to the top and bottom of reed cover 30 as indicated at 31, 32. It will also be understood that the flange on the upper reed slot 25, which is shown in Fig. 3 and marked 33, lies between the swords 2, 3, with its ends firmly abutting their inner edges as hereinabove described in the case of flange 19. This provides a very firm assembly for the upper part of the reed while permitting suitable vertical adjustment to accord with the particular weaving operation under way. Portions of the reed are shown in Fig. 1 and indicated 34, 34.

In the foregoing description it has been mentioned that there is a definite advantage in having the lay proper 1 and reed cover 30 composed of light metal. This is of prime importance because they are the largest elements of the upper lay construction and a substantial reduction in their weight leads to a major reduction in the total weight of the moving parts, with corresponding decrease in power required for operation and in inertia which must be overcome at the end of each oscillation. However, it should be added that it is desirable that the other parts of the construction (except the lay swords which are usually composed of wood) be likewise made from light metal whenever such material suitable to the purpose is available.

It will be evident that the construction herein shown and described is calculated to attain the objects recited at the outset of this specification and it will also be clear that the structure is easily fabricated and is also readily susceptible to repair or replacement of any worn or injured part or parts. In this general connection it should be noted that the rigidity imparted to the end portions of the lay 1 permits the lay swords to be positioned relatively close together and all the shuttle box supports or pads to be located outside the swords. This enables a decrease in the length of the reed cover 30 with associated reduction in its weight and increase in its stiffness.

We desire it to be understood that various changes may be resorted to in the form, construction, arrangement and material of the several parts without departing from the spirit or scope of the invention; and hence we do not intend to be limited to details herein shown or described except as they may be included in the claims or be required by disclosures of the prior art.

What we claim is:

1. A lay construction for looms including a tubular metallic lay, a tubular metallic reed cover, and lower and upper members serving as reed slots secured respectively to the lay and the reed cover, each of said members being composed of a metallic channel bar.

2. A lay construction for looms including a tubular metallic lay, a tubular metallic reed cover, lower and upper members serving as reed slots secured respectively to the lay and the reed cover, each of said members being composed of a metallic channel bar, a pair of lay swords, and means for securing the lay and the reed cover to the swords.

3. A lay construction for looms including a tubular metallic lay, a tubular metallic reed cover, lower and upper members serving as reed slots secured respectively to the lay and the reed cover, each of said members being composed of a metallic channel bar, a pair of lay swords, and means for securing the lay and the reed cover to the swords, the said means for securing the reed cover and lay being adjustable.

4. A lay construction for looms including a tubular metallic lay, a tubular metallic reed cover, lower and upper members serving as reed slots secured respectively to the lay and reed cover, each of said members being composed of

a metallic channel bar, a pair of lay swords, and metallic channel section brackets for securing the lay and reed cover to the swords.

5. A lay construction for looms including a tubular metallic lay, a tubular metallic reed cover, a pair of lay swords, means for securing the lay and the reed cover to the swords, and lower and upper members serving as reed slots secured respectively to the lay and reed cover, each of said members being composed of a metallic channel bar and having flanges lying between and abutting said swords.

6. A lay construction for looms including a pair of lay swords, a tubular metallic lay secured to the swords and projecting laterally outwardly therefrom, and metallic supports for all the loom shuttle boxes fixed to the lay at points laterally outside the swords.

7. A lay construction for looms including a pair of lay swords, a tubular metallic lay secured to the swords and projecting laterally outwardly therefrom, metallic supports for all the loom shuttle boxes fixed to the lay at points laterally outside the swords, and metallic reinforcing elements fixed to the lay beneath said supports.

8. A lay construction for looms including a pair of lay swords, a tubular metallic lay secured to the swords and projecting laterally outwardly therefrom, a tubular metallic reed cover secured to the swords above the lay with its ends substantially in line with the swords, and metallic supports for all the loom shuttle boxes fixed to the lay at points laterally outside the swords.

9. A lay construction for looms including a pair of lay swords, a tubular metallic lay secured to the swords and projecting laterally outwardly therefrom, a tubular metallic reed cover secured to the swords above the lay with its ends substantially in line with the swords, metallic supports for all the loom shuttle boxes fixed to the lay at points laterally outside the swords, and lower and upper metallic channel bars serving as reed slots secured respectively to the lay and the reed cover.

10. A lay construction for looms including a pair of lay swords, a tubular metallic lay secured to the swords and projecting laterally outwardly therefrom, a tubular metallic reed cover secured to the swords above the lay with its ends substantially in line with the swords, metallic supports for all the loom shuttle boxes fixed to the lay at points laterally outside the swords, metallic reinforcing elements fixed to the lay beneath said supports, and lower and upper metallic channel bars serving as reed slots secured respectively to the lay and the reed cover.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
254,027	Knowles	Feb. 21, 1882
495,435	Simoneau	Apr. 11, 1893
789,343	Wattie	May 9, 1905
2,107,877	Schmidt	Feb. 8, 1938
2,157,173	Holland	May 9, 1939
2,346,803	Weltie	Apr. 18, 1944
2,439,688	Gordon	Apr. 13, 1948

FOREIGN PATENTS

Number	Country	Date
604,330	Germany	Apr. 25, 1934

OTHER REFERENCES

The Textile Manufacturer, March 1945, pp. 109–111. (Copy in Div. 21.)