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W. WERNER

JORDAN SHELL LINER

Original Filed Oct. 10, 1923

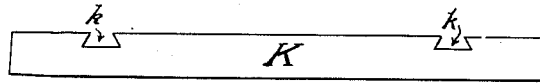


Fig. 3.

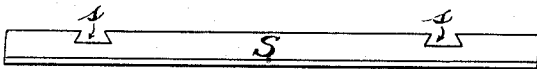


Fig. 4.

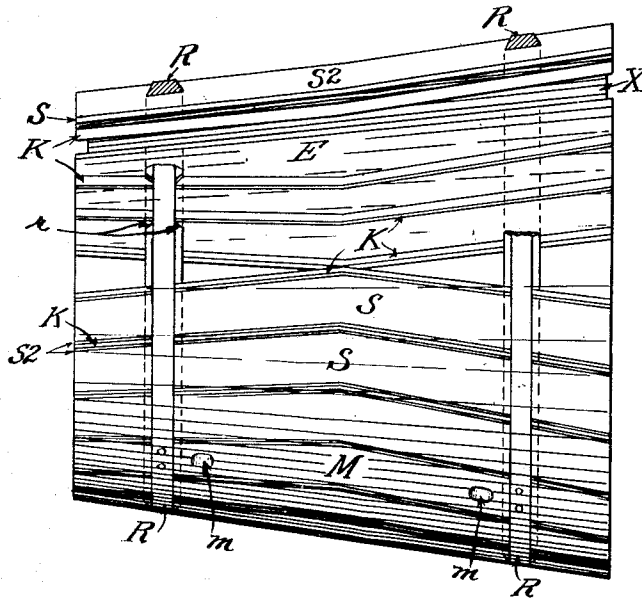


Fig. 2.

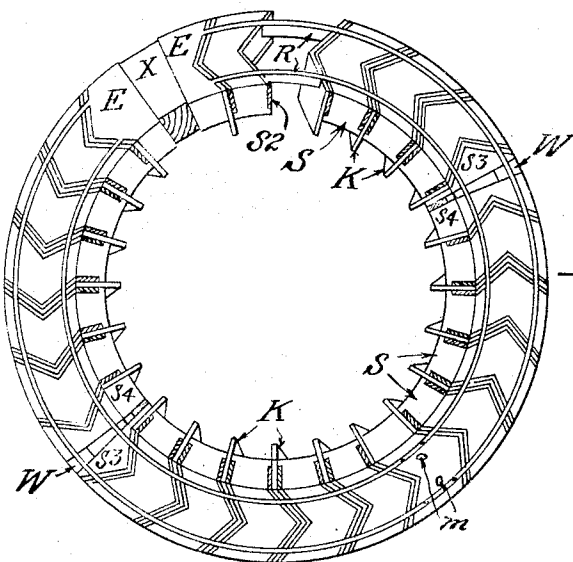


Fig. 1.

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UNITED STATES PATENT OFFICE.

WALTER WERNER, OF HOOSICK FALLS, NEW YORK, ASSIGNOR TO THE NOBLE & WOOD MACHINE CO., OF HOOSICK FALLS, NEW YORK, A CORPORATION OF NEW YORK.

JORDAN SHELL LINER.

Continuation of application Serial No. 667,738, filed October 10, 1923. This application filed June 4, 1925. Serial No. 34,996.

To all whom it may concern:

Be it known that I, WALTER WERNER, a citizen of the United States of America, residing at Hoosick Falls, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Jordan Shell Liners, of which the following is a specification.

This invention relates to shell liners for Jordan engines and the object of this invention is to provide a quickly and easily removable liner built up of shell knives and shell woods or other spacers so assembled together that they may be handled as a unit; the knife and spacer parts of which may be easily and quickly removed from and replaced in the liner frame when necessary; which unit may be stored for long periods without danger of the parts thereof becoming displaced to any appreciable degree by reason of shrinkage in the shell woods, wedges or other spacers; and which unit may be easily and quickly put in place in and secured to the engine shell.

I accomplish my object by means of a shell liner unit constructed and arranged substantially as illustrated in the accompanying drawing, in which:

Fig. 1 is a front end view of my improved shell liner unit, parts omitted.

Fig. 2 is a side elevation partly in section.

Fig. 3 is a side view of a typical knife bar of my improved type.

Fig. 4 is a side view of a spacer or of a shell wood of my improved type.

The same reference characters refer to the same parts throughout the several views.

My improved shell liner unit comprises: a substantial liner frame consisting of a number of split rings which are held in spaced relation to each other by having the ends thereof strongly secured to suitable end pieces adapted to have a wedge driven therebetween so as to wedge the frame into an engine shell, and by one or more rib bars likewise strongly secured to said rings at a point or points intermediate the ends thereof, said rib bars preferably provided with bolt holes which may be utilized to fasten the frame to the engine shell; and the requisite number of knife bars and spacers or shell woods, the knife bars and spacers being connected to the frame in a manner which permits any

one of them to be removed or replaced in the liner frame with comparative ease.

Referring to the drawings, which are in a certain sense illustrative only, R, R, indicate the split rings which are of substantial size and material, and are broader on their inner than on their outer sides. E, E, indicate the end pieces, M the rib bar, and *m* bolt holes therein. W indicates the wedges which are adapted to tighten the knife bars and spacers in the liner frame, and X indicates the main wedge which is adapted to wedge the liner tightly in the engine shell.

The rings R, as before stated, are wider or broader on their inner than on their outer sides, except at the points *r, r*, where the tapered edges are notched away to provide a loading point at which the bars K and spacers S may be threaded onto the rings.

My improved knife bars K and spacers S, have a number of undercut or dovetail notches *k, k*, and *s, s*, formed in their back or outer edges and adapted to fit slidably on the rings R. While I have shown the rings R as having straight tapered edges, the backs of the knife bars and of the spacers being notched to fit, it is of course obvious that other forms could be substituted without departing from the spirit of this invention.

In the drawings I have shown the spacers S, as being built up or formed of three pieces, a pair of straight sided pieces S² which are preferably of wood, and one wedge shaped piece S³, which may be of metal or a composition. This form or combination is preferable when handling some classes of stock. In most cases the usual shell wood, but made in my improved form, will be used.

In the drawings I have illustrated a short or sectional lining such as are more generally used on account of the ease in handling such sections, but my improved lining unit is so strongly constructed that it is perfectly feasible to make use of full length liner when the same is desirable.

In making a long liner as one unit I may use a plural number of pairs of end pieces E, E, and a main wedge X. Such an arrangement permits the staggering of the splits in pairs of rings and end pieces so as to eliminate a continuous wide space between

the first and last knife bars of the different longitudinal sections.

This application is a continuation of application 667,738, filed Oct. 10, 1923.

5 I claim:

1. In a lining unit for a Jordan shell, a liner frame comprising a plurality of metal split rings; end pieces securely attached to the ends of said rings so as to hold said rings in spaced relation to each other; a bar, with bolt holes therein, secured to said rings at points intermediate the ends thereof; a plurality of knife bars with undercut notches in the back thereof; and a plurality of spacers with undercut notches in the back thereof; said knife bars and said spacers slidable on said split rings.

2. In a lining unit for a Jordan shell, a liner frame comprising a plurality of split bevel edged rings; end pieces securely attached to the ends of said rings so as to hold said rings in spaced relation to each other; a bar, with bolt holes therein, secured to said rings at points intermediate the ends thereof; a plurality of knife bars with undercut notches in the back thereof; said knife bars and said spacers alternating and both slidable on said rings.

3. A liner frame for a Jordan shell liner,

comprising a plurality of split rings of 30 varying diameters; end pieces secured to ends of said split rings and adapted to hold said rings in spaced relation to each other; and a bar secured to said split rings at points intermediate the ends thereof, said bar also 35 holding said rings in spaced relation to each other.

4. A liner frame for a Jordan shell liner, comprising a plurality of bevel edged split metal rings of varying diameters, said rings 40 having notches at points in the edges thereof; end pieces secured to the ends of said split rings and adapted to hold said rings in spaced relation to each other; and a bar secured to said rings at points intermediate 45 the ends thereof and also holding said rings in spaced relation to each other.

5. A spacer for a Jordan shell liner, comprising a tapered bar of metal with undercut notches crossing the back thereof; and a pair 50 of thin wood strips adapted to be interposed between said metal bar and the knife bars in the Jordan shell when said spacer is put in place.

In testimony whereof I have affixed my 55 signature.

WALTER WERNER.