June 20, 1933. W. DE W. LEINBACH 1,915,233

WARP BEAM

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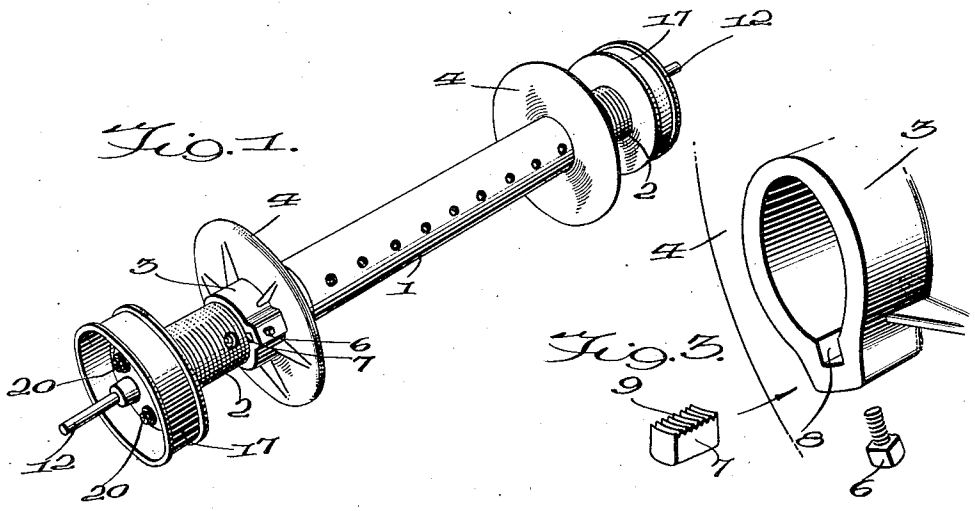
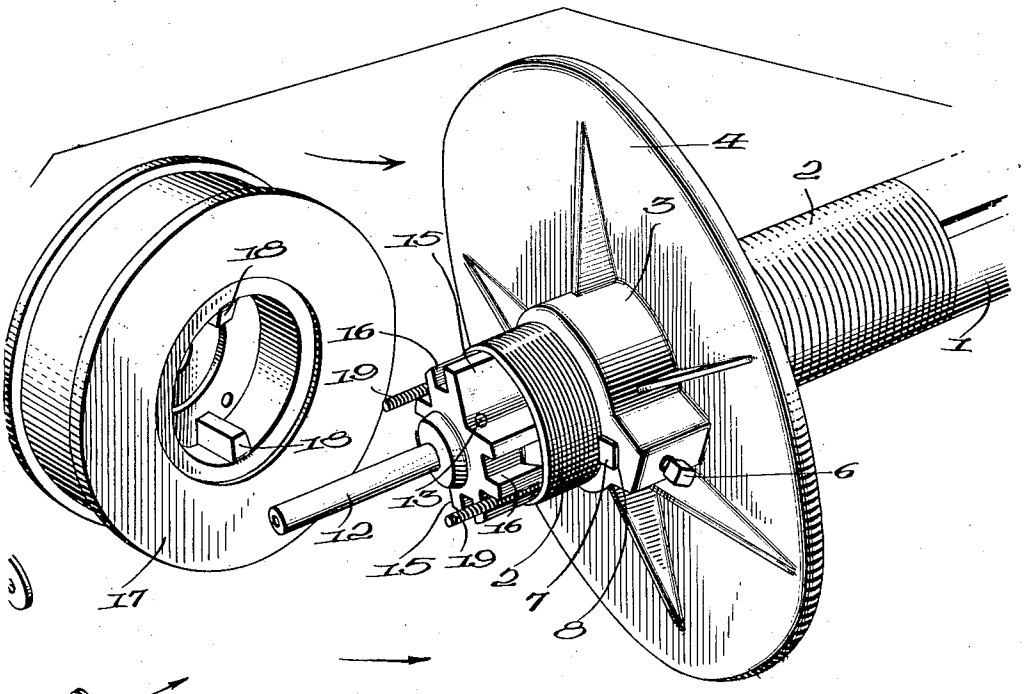


Fig. 1.

Fig. 3.



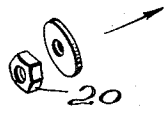


Fig. 2.

Inventor

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WARP BEAM

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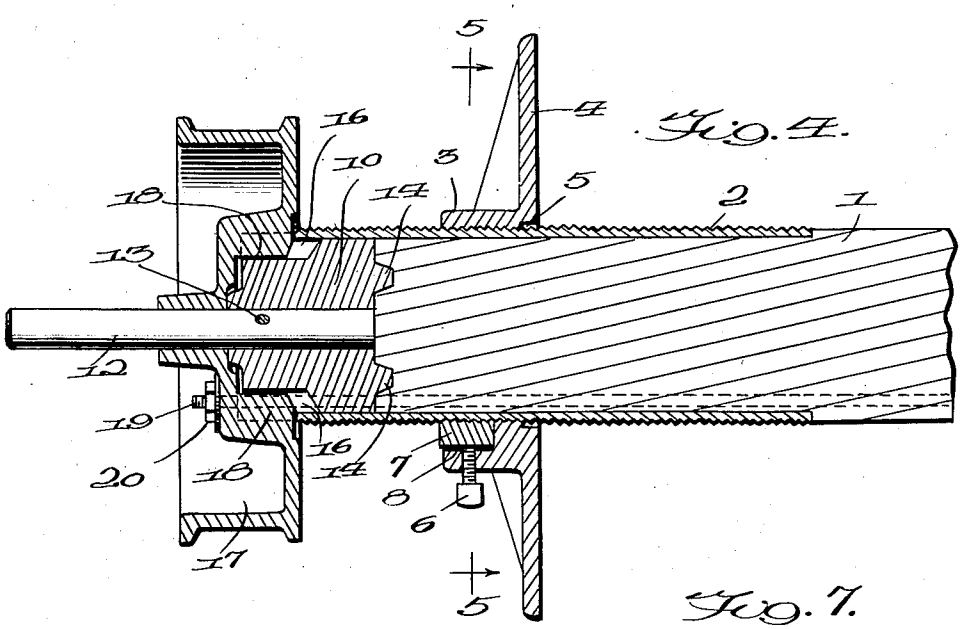


Fig. 4.

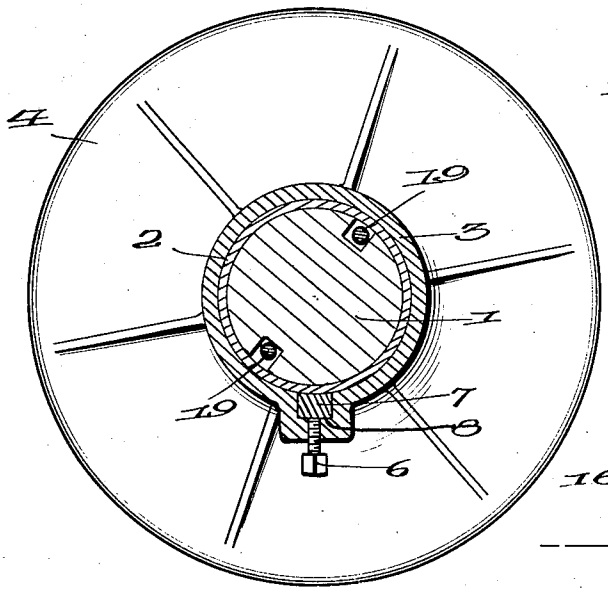


Fig. 5.

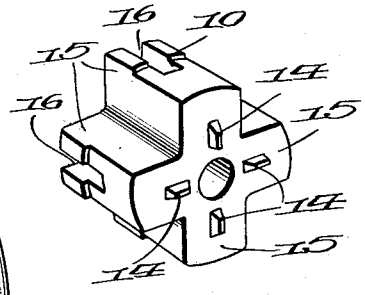


Fig. 7.

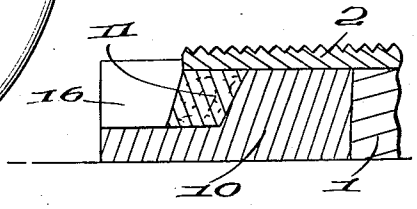


Fig. 6.

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Patented June 20, 1933 1,915,233

UNITED STATES PATENT OFFICE

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WARP BEAM

Application filed November 21, 1931. Serial No. 576,595.

This invention relates to an improvement in warp beams.

Some of the silk mills which have been in business for a number of years, are still using what are known as the old-fashioned warp beams, and where it is desired to modernize those it has been a very expensive practice if the old beams have to be entirely discarded and replaced with the new type of beams; and some of the new type of beams are also ineffective because of a bending of the stub-shafts or indenting of the threaded sleeves carried by the wooden barrel, when a conventional set-screw is used.

My invention has been developed to provide an inexpensive manner of modernizing the old-fashioned warp beams without discarding them and at a comparatively small cost, resulting in tremendous savings to the mills, and at the same time to develop a modern type of beam in which many defects will be cured. However, the invention is not limited to the modernizing of old beams, but is equally applicable to the manufacture of new beams, wherein the features of my invention may be incorporated.

One of the features of my invention relates to the manner of attaching the stub-shafts to the wooden barrel in order to permit ready removal of the stub-shafts in the event that they become bent as very often happens, and, in order that they may be strengthened or replaced, the stub-shafts are removably attached by means of pins or the like to the end portions of spiders or castings, which are securely welded or otherwise fastened in the ends of the threaded sleeves. When the stub-shafts become bent, it is easy to remove them merely by driving out the pins and then straightening the shafts, or replacing them by new ones. At the same time, the spider or casting has a drive connection directly with the end of the wooden barrel through small lugs formed on one end of the casting, which project into the end of the wooden barrel.

Another feature of my invention is the protecting of the threads of the sleeve from the end of the set-screw used to adjust each of the flanges, and which set-screw has heretofore engaged a portion of the sleeve. After several adjustments, the set-screw may be caused to engage the threads instead of the smooth places intended to be engaged thereby, which results in injury to the threads. I have provided a pressure-bar which may be threaded to mate with the threads on the sleeve, and disposed in a notch in the hub of the flange to be engaged by the adjusting-screw in order to prevent any injury to the threads by the set-screw in tightening the flange in an adjusted position.

Still another feature of my invention is the provision of a counterbore on the inside of each flange to admit the end of warping-paper under the beam flange, thus doing away with the buckling of the paper at the outside of the warp, and also making it unnecessary to carefully and accurately cut the edges of the paper used to surround the wooden barrel and sleeves thereon.

In the accompanying drawings:

Fig. 1 is a perspective view of my improved warp beam;

Fig. 2 is a disassembled perspective view of an end portion thereof, showing the friction-head removed;

Fig. 3 is a disassembled perspective view of the hub of the flange and its locking-screw and pressure-bar;

Fig. 4 is a longitudinal sectional view through an end portion of the warp beam;

Fig. 5 is a transverse sectional view thereof on the line 5—5 of Fig. 4;

Fig. 6 is a detail sectional view through a portion of the spider or casing in place in the threaded sleeve; and

Fig. 7 is a detached perspective view of the spider or casting.

The usual wooden barrel 1 is provided with threaded sleeves 2 on the opposite ends thereof, each of which threaded sleeves is adapted to receive the hub 3 of a flange 4.

As shown in Fig. 4, the threaded sleeve 2 forms a continuation of the surface of the wooden barrel 1, and by reason of the threaded connection between the hub 3 and the sleeve 2, each flange 4 may be adjusted inwardly or outwardly on the threaded sleeve

to decrease or increase the space between the flanges. A layer of beaming paper is usually wrapped around the barrel between the flanges in starting the warp, and in order to receive this paper and to permit it to extend under the flanges I have provided a counterbore 5 in the central opening of each of the flanges, so that the edges of the paper need not be exactly true, and also doing away with a buckling of the paper at the outside of the warp.

To securely fasten each flange 4 in an adjusted position, the usual set-screw 6 is employed, threaded radially through the hub 3; but instead of directly engaging the surface of the barrel or the threaded sleeve 2, I have provided a pressure-bar 7 disposed within a notch 8 in the hub 3, and interposed between the end of the set-screw 6 and the periphery of the threaded sleeve 2, the inner face of the pressure-bar 7 being threaded as at 9 (see Fig. 3) to mate with the threads of the sleeve 2. This prevents the set-screw from directly engaging the threads and distributes the pressure over a plurality of threads which thus prevents injury thereto. The provision of mating threads 9 on the inner face of the pressure-bar permits the latter to turn in the threads of the sleeve when the flange is rotated for adjustment, thus holding the bar against displacement, but where the bar is of soft metal or the like, the threaded inner face may be omitted and the bar held in place by the set-screw or the hub.

As shown in Fig. 4, each end of the wooden barrel 1 terminates in spaced relation from the outer end of the sleeve 2, so that the latter projects over the end of the wooden barrel. In modernizing the old-fashioned warp beam, this is accomplished merely by sawing off the ends of the barrel and applying the improvements thereto. I have a spider or casting 10 fitted within the sleeve 2 and welded thereto, as at 11 in Fig. 6, but this spider projects outwardly from the end of each of the threaded sleeves 2, and receives one of the stems or stub-shafts 12 therein, which is held in place by a locking-pin 13 extending through the spider 10 and the stem 12 to removably secure the two together. This pin may be driven out when it is desired to remove the stem for straightening or replacement.

The inner end of each of the spiders or castings 10 has a plurality of driving-lugs 14 formed thereon, and which project into the end of the wooden barrel 1, forming a driving connection therebetween.

I have shown the spider 10 generally in the shape of a cross, although this may be of any other desired shape for the purpose; but in the form shown the sides are designated 15, and each has a peripheral notch or groove 16 therein.

A friction-head 17 is fitted over the end of each of the castings or spiders 10, and its stem or stub-shaft 12, and, as shown in Fig. 2, has lugs 18 extending into diametrically opposite notches or grooves 16, forming a connection between the friction head 17 and its casting 10.

Bolts 19 extend longitudinally through the wooden barrel 1, between arms 15 of the castings 10, and through the friction heads 17, having nuts 20 on the outer ends thereof for securely holding the friction-heads to the ends of the barrel and castings.

The warp beam is used in the usual way to receive the warp-threads which are wound thereon.

While I have shown the features of my invention as having particular shapes, nevertheless the shapes of these parts may be varied or modified as found desirable, and I do not wish to be limited as to the particular shapes of the parts, although the forms shown have proved very satisfactory in use.

I claim:

1. A warp beam comprising a barrel having sleeves at the ends thereof, a spider disposed in the end of each of the sleeves and bearing against the inner wall thereof, said spider having a portion projecting outwardly from said end, a friction head mounted on said projecting portion, means for securing the friction head to the projecting portion, a stem received in said projecting portion, and means carried by the projecting portion of the spider, for detachably connecting the stem and spider together.

2. A warp beam comprising a barrel having sleeves at the opposite ends thereof, a spider fixed to each of the sleeves in bridging relation therein, and having a portion thereof projecting outwardly from the extreme end of its sleeve, a friction head removably mounted on said projecting portion, means for securing the friction head to the projecting portion, a stem extending into the spider, and a pin extending through the projecting portion of the spider and into the stem for connecting the same together.

3. A warp beam comprising a barrel having a sleeve portion at an end thereof, a spider fixed in the end of said sleeve portion and extending cross-wise in said end in bridging relation with the walls thereof, a stem extending into the spider, means connecting said stem with the spider, a friction head removably mounted on the spider in longitudinal alignment with the sleeve portion, and means for holding the friction head on the spider.

4. A warp beam comprising a barrel having a sleeve at an end thereof, a spider fixed in said sleeve, a stem extending into the spider, interfitting means between the spider and stem connecting the same together, a friction head, and interfitting means between the friction head and spider.

5. A warp beam comprising a barrel having a sleeve at an end thereof, a spider fixed in said sleeve, and having a portion projecting outwardly from the extreme end of the sleeve, a stem extending into the spider, a pin extending through the projecting portion of the spider and into the stem and connecting the same together, a friction head, and interfitting means between the friction head and the spider.

6. A warp beam comprising a barrel having sleeves at the opposite ends thereof, a spider fixed to each of the sleeves, and having a portion thereof projecting outwardly from the extreme end of its sleeve, a stem extending into the spider, a pin extending through the projecting portion of the spider and into the stem for connecting the same together, a friction-head and interfitting means between the friction-head and the spider.

7. A warp beam comprising a barrel having sleeves at the opposite ends thereof, a spider fixed to each of the sleeves, and having a portion thereof projecting outwardly from the extreme end of its sleeve, a stem extending into the spider, a pin extending through the projecting portion of the spider and into the stem for connecting the same together, a friction-head fitted over the projecting portion of the spider, said spider having peripheral notches therein, and lugs carried by the friction-head and entering the notches to prevent relative turning movement.

8. A warp beam comprising a wooden barrel having a sleeve at an end thereof, a spider disposed in said sleeve, and means connecting the spider directly with the extreme end of the wooden barrel.

9. A warp beam comprising a wooden barrel having sleeves at the opposite ends thereof, and a spider projecting into each of the sleeves and having lugs engaging the extreme end of the wooden barrel.

10. A warp beam comprising a wooden barrel, sleeves secured to the opposite ends thereof and projecting from the extreme ends of the wooden barrel, and a spider fitted into each of the sleeves approximately into abutting relation with the extreme end of the wooden barrel, and having lugs projecting into the extreme end of the barrel.

11. A warp beam having an externally threaded portion, a flange having a hub threaded onto said threaded portion, a locking-screw for the hub, and a pressure-bar interposed between the locking-screw and the threaded portion of the beam to distribute the pressure of the screw over a substantial area of the threaded portion, and said pressure bar having the inner face thereof conformable to the threads of the sleeve for for holding the pressure-bar against displacement, during adjustment of the flange on the threaded portion.

12. A warp beam having an externally threaded portion, a flange provided with a hub threaded on to said threaded portion, a set-screw extending into the hub, and a pressure-bar interposed between the inner end of the set-screw and the threaded portion of the beam and having a threaded inner surface mating with the said threaded portion.

13. A warp beam comprising a barrel, a sleeve fitted thereto and having an externally threaded portion, a flange provided with a hub screw-threaded over said sleeve, the said screw extending into the hub for holding the flange in an adjusted position, and a pressure-bar interposed between the inner end of the screw and the threaded portion of the sleeve, and having the inner face thereof threaded and mating with the threaded portion of the sleeve.

14. A warp beam comprising a barrel, one or more flanges adjustably mounted thereon, each flange having a counterbore in the central portion thereof to receive the edge of a layer of paper wrapped around the beam.

15. A warp beam comprising a barrel and one or more flanges having a central opening therein adjustably receiving the barrel and fitted thereto, said opening being counterbored at the inner face of the flange, providing a recess around the barrel at said inner face to receive a layer of paper wrapped around the barrel.

16. A warp beam comprising a barrel, a pair of flanges spaced apart on the barrel and having central openings therein adjustably receiving the barrel, said openings being counterbored at opposing faces of the flanges, providing opposing recesses around the barrel at the opposing faces of the flanges to receive the edges of a layer of paper wrapped around the barrel.

17. A warp beam including a barrel having a threaded sleeve, a flange having a threaded bore threaded onto the threaded sleeve, the bore of the flange having a radial notch or recess formed therein, a pressure bar substantially fitting and housed in the notch or recess, the pressure bar having threads on its inner surface fitting the threads of the flange and adapted to turn and travel, with the flange when turned upon the threads of the sleeve, and a set screw threaded through a hole in the flange against the pressure bar whereby when turned in one direction to hold the flange fixedly at any circumferential point on the threaded sleeve without impairing the screw threads of either the sleeve or the pressure bar.

In testimony whereof I affix my signature.

WILLIAM DE WITT LEINBACH.