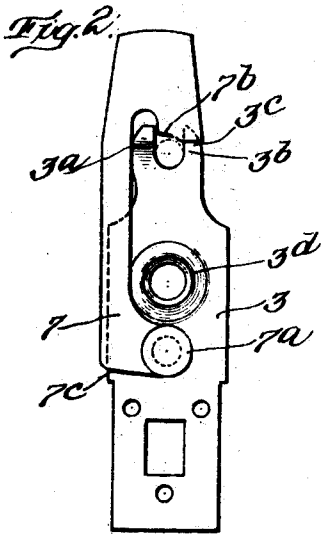
Dec. 18, 1928. 1,696,162

E. F. HATHAWAY

TUBE FRAME

Filed Feb. 24, 1925



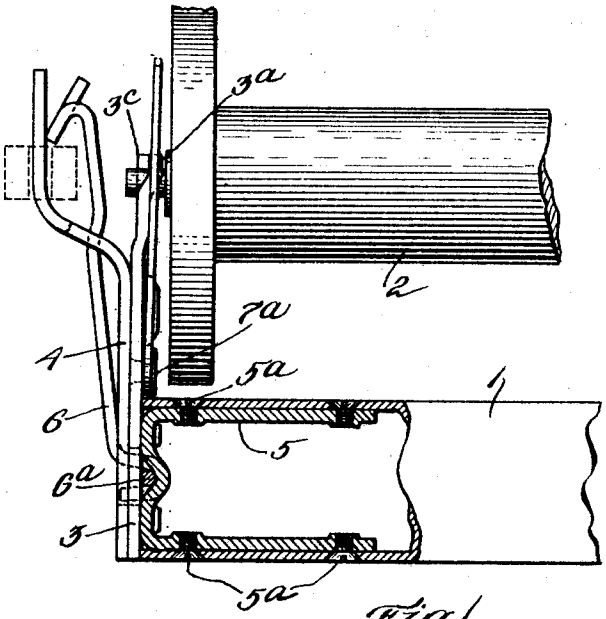


Fig. 1.



Fig. 3.

Fig. 4.

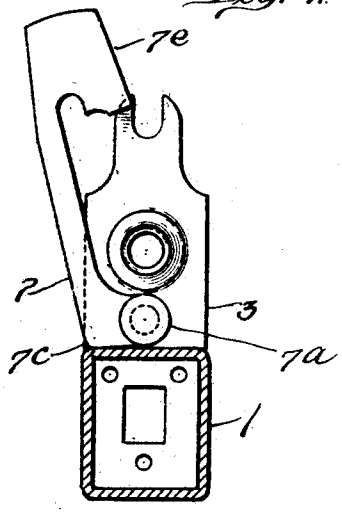




Fig. 5.

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UNITED STATES PATENT OFFICE.

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TUBE FRAME.

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This invention relates to tube frames, and is particularly concerned with the problem of affording a strong, durable construction for the support of the yarn-spool in the tube frame in such a manner as to positively prevent any accidental falling out of the spool under the numerous shocks and jolts to which the tube frame is subjected in its presentation to and removal from the loom.

Heretofore it has been proposed to employ, in connection with the spool-bearing bracket of tube frames, a pivotal latch formed with a sharply out-turned projecting lug arranged to spring into engagement with a recess on the spool-bearing arm which carries it in order to lock the spool-journal in its bearing, but a latch of this kind is not readily made except out of soft metal, spring steel being altogether too hard to lend itself to such formation, and as a soft metal latch becomes permanently sprung or set by repeated flexing to allow it to move to locking position and be released therefrom, such an arrangement was not found to be satisfactory from a practical standpoint.

It is the object of the present invention to provide a construction and arrangement that will meet the practical requirements of the tube frame art and shall be both reliable in operation and durable in service.

To this end the invention comprises a spool-bearing arm or bracket adapted to be secured to a tuft tube frame and notched at its outer end to form a bearing recess bounded by opposite jaws, one of which is offset into the path of a pivotal latch capable of being swung into journal-locking position, and being releasably but positively interlocked with said jaw to prevent accidental opening of the bearing. Another feature of the invention resides in the construction and arrangement of the latch forming a heel portion which limits the opening movement of the latch so that the upper edge portion of the latch is left in position to guide the spool-journal being inserted into its bearing recess, thereby facilitating the insertion of the journal. These and other features of the invention will be described in detail in the following specification and will be defined in the claims hereto annexed.

In the accompanying drawings:

Figure 1 is an assembled view of one end of the tube frame equipped with the suspension and the spool-bearing bracket embodying the present improvements.

Figure 2 is an interior elevation of the spool-bearing bracket and latch in journal-closing position.

Figure 3 is a horizontal cross section through the upper end of the latch and spool-bearing arm.

Figure 4 is an inside elevation showing the latch in open position to receive and guide the spool-journal into its bearing recess.

Figure 5 is a detail view, similar to Figure 3, showing a round cornered offset latch locking jaw.

In the form illustrated in the drawings, the tube frame carrier-bar 1, is shown of tubular construction to receive the U-shaped attaching member 5, which is detachably secured inside the hollow end portion of the carrier-bar by suitable fastening screws 5^a. This attaching member is firmly secured by rivets to the spool-bearing bracket comprising an upright arm 3, preferably of sheet metal, whose outer or upper end is recessed to form a journal-bearing for the journal of the usual yarn-spool 2, which bearing recess is bounded by two jaws 3^a and 3^b on opposite sides of the bearing recess.

To retain the spool-journal positively in its bearing recess, while permitting its release when desired, I provide a pivotal latch 7 preferably of spring steel, which latch, as shown, is fulcrumed on a pivot stud 7^a carried by the arm 3, the latch being cut away or recessed at its upper end to form a hook-like portion 7^b arranged to overhang the journal of the yarn-spool when the latch is in journal-locking position, as indicated in Figure 2.

As shown in Figures 1 and 3, the nearer jaw 3^a, forming the nearer side of the bearing recess, as the latch is moved to locking position, is offset to intersect or project into the plane of movement of the latch 7. The overhanging hook portion 7^b of the latch extends downwardly enough to overlap both jaws, as shown, so that when the latch is forced inwardly the hook portion 7^b rides over and springs beyond the offset jaw 3^a, which is then located between the edges of the hook-defining recess in the latch 7, as shown in Figure 2. The nearer side of the offset jaw 3^a is preferably bevelled, as shown in Figure 3, to give a cam-like action to

spring the outer end of the latch inwardly so that it will pass over the offset jaw with the least resistance. When a spring metal latch is used this spring action can be repeated indefinitely without permanently deforming the latch which thus affords a positive but releasable locking means for preventing the accidental escape of the yarn-spool journal.

The beveling of the jaw 3^a can be accomplished in the same operation of the dies that produces the offset of the jaw 3^a, and instead of a bevel this jaw, as shown at 3^e, in Figure 5, may be rounded to accomplish the same purpose.

At the lower outer corner opposite its fulcral point the latch 7 is formed with a heel portion or corner 7^c, proportioned and arranged so that when the latch is in opened position this heel portion will come into contact with the adjacent part of the carrier-bar 1, and as shown in Figure 4, when stopped or limited to this position of outward movement, the inner edge 7^e of the latch forms an inclined guide aligning with the front edge of the bearing recess to guide the spool-journal directly in to the bearing recess. This guiding of the journal into the open bearing is of considerable practical convenience to the operator as the opposite journal of the spool usually goes into a closed bearing which must be kept in sight in order to properly insert the spool.

Any suitable means for suspending the tube frame from the carrier-chains, shown in dotted lines in Figure 1, may be employed in association with the spool-bearing bracket. In this case I have shown an upwardly extending chain-penetrating arm 4, secured against the outer face of the spool-bearing bracket and carrying a pivot suspension hook 6, fulcrumed on the transverse pivot pin 6^a and normally pressed outward by means of a spiral spring, not here shown, which is seated in a punched out recess 3^d, formed in the spool bearing arm.

It will be understood that the yielding member or latch is substantially flat, that is, without any sharp or abrupt offset and may therefore be made of good spring steel, while the fixed member, that is the bearing arm may be made of soft sheet metal capable of being formed with sharp offsets since it requires no flexing in use.

What I claim is:

1. A spool bearing bracket for a tuft tube frame embracing an arm adapted to be secured to a tube frame, a latch fulcrumed to swing transversely of the tube frame in close proximity to one face of said arm, said latch having its outer portion cut out to form a hook-like portion arranged to overhang a spool-journal, the corresponding portion of said arm being provided with an open bearing recess bounded by opposed jaws, the nearer jaw being offset to intersect the plane of movement of said latch and to interlockingly engage the hook-forming recess of the latch to positively retain the latch in journal overhanging position, substantially as described.

2. In a tube frame, the combination with a carrier-bar, of a spool-bearing arm secured thereto and having in its upper end portion an open bearing recess for the reception and support of a spool journal, a keeper mounted on said arm to be moved to and from journal-retaining position, said keeper being sprung laterally by its inherent resiliency into positively locked engagement with one side of said bearing recess to prevent accidental displacement from such position, said keeper being formed to engage an abutting portion of the tube frame to limit its movement to open position at a point where one edge of said keeper is in line with the open bearing recess to guide the spool-journal into said bearing, substantially as described.

In witness whereof, I have subscribed the above specification.

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