July 22, 1924. 1,502,218

C. F. VAN HOOK

LOCKING DEVICE FOR SPOOLS

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Fig. 1.

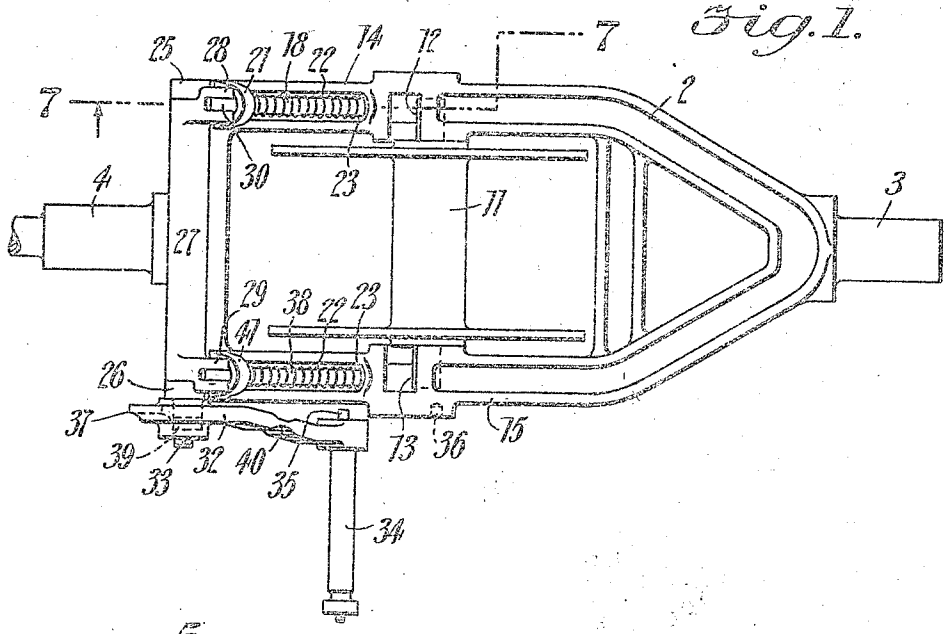


Fig. 2.

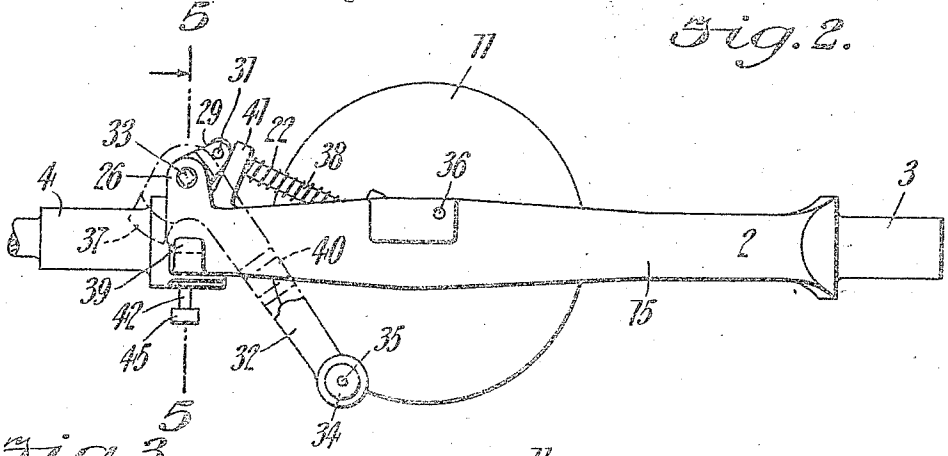
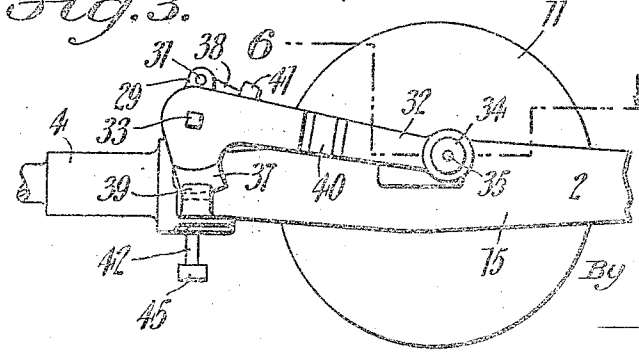


Fig. 3.



Inventor,
Charles F. Van Hook;
By Chrisbee M. Stone.
his Attorney.

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Fig. 4.

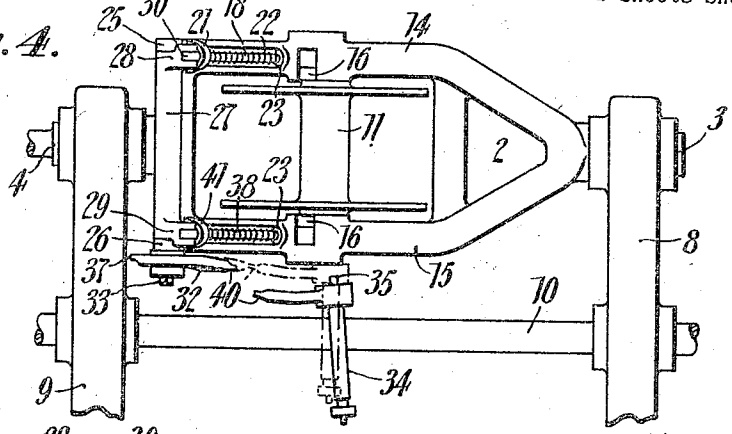


Fig. 5.

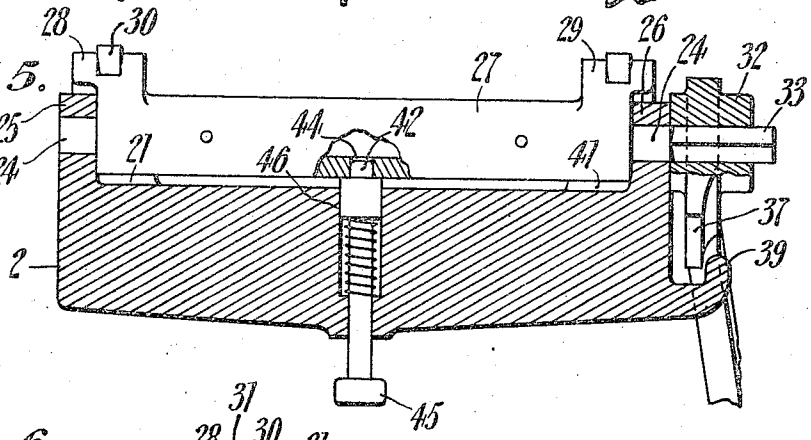


Fig. 6.

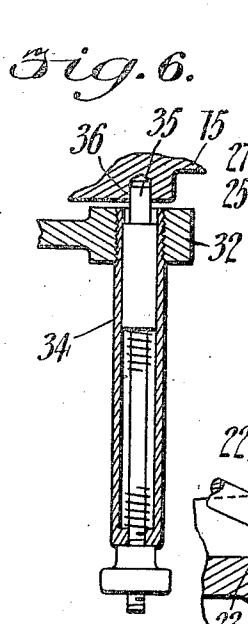


Fig. 7.

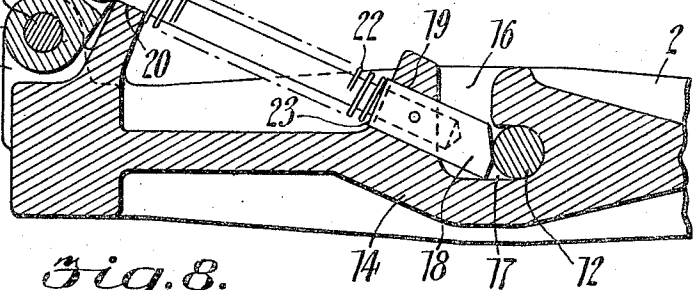
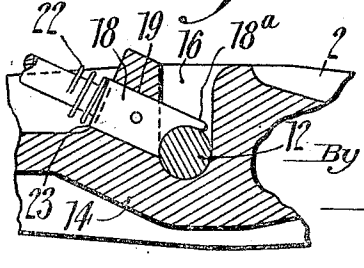


Fig. 8.



Inventor,
Charles F. Van Hook;
By Wilbur M. Stone.
his Attorney.

Patented July 22, 1924. 1,502,218

UNITED STATES PATENT OFFICE.

CHARLES F. VAN HOOK, OF PATERSON, NEW JERSEY, ASSIGNOR TO THE WATSON MACHINE COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

LOCKING DEVICE FOR SPOOLS.

Application filed August 17, 1923. Serial No. 657,840.

To all whom it may concern:

Be it known that I, CHARLES F. VAN HOOK, a citizen of the United States, and a resident of Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Locking Devices for Spools, of which the following is a specification.

This invention relates to locking devices for spools, and the object thereof is to provide a device of the class specified simple in construction and efficient in operation. Other objects will appear later herein.

My improvements, while adapted for use in a wide range of machinery are, for purpose of illustration, shown as applied to the locking of spools in cradles or flyers of cordage or wire machines. In the drawings accompanying this specification my improvements are shown in their preferred embodiment, and therein:

Figure 1 is a plan view of a wire machine cradle in which my improved spool locking device is incorporated. Fig. 2 is a front elevation corresponding with Fig. 1. Fig. 3 is a front elevation similar to that of Fig. 2, showing some of the parts of different relative positions from those of Fig. 2. Fig. 4 is a plan view of the cradle of Fig. 1, assembled in the rotating frame of the machine and illustrating the operation of a portion of my improvements. Fig. 5 is a cross sectional elevation on line 5, 5 of Fig. 2. Fig 6 is a horizontal section on line 6, 6 of Fig. 3. Fig. 7 is a vertical section on line 7, 7 of Fig. 1. Fig. 8 is a section similar to a portion of Fig. 7, showing a modification of my improvements. The scale of Figs. 1, 2 and 3 is the same; the scale of Fig. 4 is about two-thirds that of the earlier figures; and the scale of Figs. 5, 6, 7 and 8 is about twice that of Figs. 1, 2 and 3.

Cradle 2 is in general outline of known character and is provided with opposite end trunnions 3, 4 mounted for rotation in opposite heads 8, 9 respectively of the rotating frame of the machine, and which frame is carried by shaft 10 mounted in the usual fixed bearings, not shown. Trunnion 4 and shaft 10, said shaft mounted in bearings in heads 8, 9, may be geared together by known means, not shown, for imparting rotary motion to cradle 2 while the whole cradle revolves about shaft 10. Spool 11 is mounted for rotation in said cradle and to that end is provided with opposite trunnions 12, 13 which are seated in bearings in the opposite side members 14, 15 of cradle 2. These bearings are releasable pocket bearings wherein trunnions 12, 13 are entered in a direction transverse to their common axis, and preferably said bearings are provided with an undercut portion whereby said trunnions, after being dropped into the bearings, may be moved sideways into said undercut portions. This construction is best shown in Fig. 7 wherein downwardly reaching pocket 16 penetrates to about midway the width of side member 14 and is provided with offset undercut extension 17 adapted to the reception of trunnion 12.

Each of said bearings is provided with means for locking its respective trunnion within said undercut extension. Said locking means comprises reciprocating bolt 18, preferably angularly disposed relatively to the axis of the cradle and directed downwardly to the right for forcing and retaining trunnion 12 within the undercut portion of said bearing. One end of said bolt slides in bearing 19 in side member 14 adjacent pocket 16, and the other end slides in bearing 20 in ear 21 upstanding at the left hand end of side member 14. Bolt 18 is urged toward trunnion seat 17 by spring 22, between shoulder 23 of said bolt and ear 21.

Fixed to transverse shaft 24 mounted for oscillation in opposite ears 25, 26 at the left hand end of cradle 2 is rock sleeve 27 having opposite upstanding arms 28, 29. The left hand end of bolt 18 comprises eye 30 having a transversely elongated hole therethrough for the reception of pin 31 fixed in the bifurcated upper end of arm 28. Bolt 38 in side member 15 is similarly mounted and connected with arm 29 of rock sleeve 27. Arms 28, 29 preferably rest against ears 21, 41, respectively, when bolts 18, 38 are in locking positions, so as to relieve trunnions 12, 13 from the pressure of the bolt spring.

Said rock sleeve 27 and its arms may be oscillated to withdraw bolts 18, 38 by means of crank 32 removably mounted on the square end 33 of shaft 24. Said crank is provided with operating handle 34 having slidably mounted therein spring impelled

lock pin 35. Said lock pin when said crank is in the position of Fig. 3, engages hole 36 in side member 15 for holding bolts 18, 38 in retracted positions, respectively. For preventing said crank from accidental withdrawal from the squared end of shaft 24 when the bolts are withdrawn, ear 37 extending downwardly from the hub of said crank, is locked behind horn 39 projecting from the left hand end of side member 15.

In case the machine should be started while crank 32 is in engagement with shaft 24 and locked in the position of Fig. 3, with bolts 18, 38 withdrawn, said crank handle will collide with shaft 10 and stop the machine. Or said crank may be made sufficiently frail or may be weakened as at 40, so that, immediately following the commencement of rotation of cradle 2, handle 34 will collide with shaft 10 and said crank broken in two, thereby releasing bolts 18, 38, which thereupon are forced by their springs to engage trunnions 12, 13 and hold them in their bearings, respectively. Spool 11 will thus be prevented from moving out of the cradle.

While in most cases the bolt springs are efficient for holding the bolts in their inner positions for retaining the spool trunnions in their bearings, added means of security are provided in locking pin 42 for rock sleeve 27. Said locking pin is mounted in a suitable bearing 46 in the left hand end of cradle 2 and is spring impelled to engagement with hole 44 in the under side of said rock sleeve. Pin 42 may be retracted by grasping its head 45.

In the modification of Fig. 8, the undercut portion of the trunnion bearing has been omitted and the engaging end of bolt 18 provided with an overhanging lip 18^a for retaining said trunnion in its bearing. This permits a more facile withdrawal of the spool from the cradle, but in most cases the form of Fig. 7 is preferred.

The operation of the device will be readily understood from the foregoing description. Suffice it to state that when crank 32 is raised from the position of Fig. 2 to that of Fig. 3 and pin 35 entered in hole 36, bolts 18, 38 are thereby withdrawn and spool 11 may be freely removed and replaced in its bearings. Then, by withdrawing pin 35 from hole 36 and permitting crank 32 to swing downwardly under the urge of the bolt springs to the position of Fig. 2, ear 37 is swung from behind horn 39 and said crank may be withdrawn from the squared end of shaft 24. In the meantime lock pin 42 has entered hole 44 in sleeve 27, thereby locking said sleeve against rotation and bolts 18, 38 in their operative positions, see bolt 18 Fig. 7. In case crank 32 should be left in the position of Fig. 3 and the machine started, handle 34 will strike shaft 10 and the machine stopped or the crank broken, as shown in Fig. 4. Bolts 18, 38 will thereupon be released and their springs will impel them to engage the spool trunnions. When that occurs lock pin 42 will enter hole 44 and automatically lock sleeve 27 and bolts 18, 38 in place.

I claim:

1. In a device of the character specified the combination of a member having a trunnion, a member having a pocket bearing for said trunnion, a rock sleeve pivotally mounted on said bearing member, an arm upstanding on said sleeve, a bolt pivotally connected at one end thereof with said arm, the other end of said bolt being adapted for entering said bearing, means for urging said bolt toward said bearing, and hand operated means for withdrawing said bolt.

2. In a device of the character specified the combination of a member having a trunnion, a member having a pocket bearing for said trunnion, a rock sleeve pivotally mounted on said bearing member, an arm upstanding on said sleeve, a bolt pivotally connected at one end thereof with said arm, the other end of said bolt being adapted for entering said bearing, means for urging said bolt toward said bearing, means for locking said sleeve against rotation, means for releasing said locking means, and hand operated means for withdrawing said bolt.

3. In a device of the character specified the combination of a member having opposite trunnions, a member having releasable pocket bearings for said trunnions, means for releasably holding said trunnions in said bearings, and means for simultaneously withdrawing said holding means.

4. In a device of the character specified the combination of a member having opposite trunnions, a member having pocket bearings with undercut portions respectively for said trunnions, a reciprocating bolt for releasably holding each of said trunnions in its bearing, means for maintaining said bolts against said trunnions in said bearings, and means for simultaneously withdrawing said bolts.

5. In a device of the character specified the combination of a member having opposite trunnions, a member having pocket bearings with undercut portions respectively for said trunnions, a spring urged reciprocating bolt for releasably holding each of said trunnions in its bearing, supplemental locking means for said bolts, means for releasing said locking means and means for simultaneously withdrawing said bolts.

6. In a device of the character specified the combination of a member having opposite trunnions, a member having releasable pocket bearings for said trunnions, a spring urged reciprocating bolt for releasably hold-

ing each of said trunnions in its bearing, and means for simultaneously withdrawing said bolts.

7. In a device of the character specified the combination of a member having opposite trunnions, a cradle having opposite side members, each of said members having a pocket bearing for the reception of one of said trunnions, a rock sleeve pivotally mounted on said cradle, opposite upstanding arms on said rock sleeve, opposite bolts mounted for reciprocation in opposite sides respectively of said cradle, said bolts being pivotally connected at one end with said arms respectively, means for urging said bolts toward said bearings, and means for rocking said rock sleeve.

8. In a device of the character specified the combination of a member having opposite trunnions, a cradle having opposite side members, each of said members having a pocket bearing for the reception of one of said trunnions, a rock sleeve pivotally mounted on said cradle, opposite upstanding arms on said rock sleeve, opposite bolts mounted for reciprocation in opposite sides respectively of said cradle, said bolts being pivotally connected at one end with said arms respectively, the other ends of said bolts respectively being adapted for entering said bearings, means for urging said bolts toward said bearings, means for rocking said rock sleeve, and means for locking said sleeve for holding said bolts in their inner positions respectively.

9. In a device of the character specified the combination of a member having opposite trunnions, a cradle having opposite side members, each of said members having a pocket bearing for the reception of one of said trunnions, a rock sleeve pivotally mounted on said cradle, opposite upstanding arms on said rock sleeve, opposite bolts mounted for reciprocation in opposite sides respectively of said cradle, said bolts being pivotally mounted at one end with said arms respectively, the other ends of said bolts respectively being adapted for entering said bearings, means for urging said bolts toward said bearings, means for rocking said rock sleeve, and an automatic spring actuated pin for locking said sleeve against rotation.

10. In a device of the character specified the combination of a member having opposite trunnions, a cradle having opposite side members, each of said members having a pocket bearing for the reception of one of said trunnions, a rock sleeve pivotally mounted on said cradle, opposite upstanding arms on said rock sleeve, opposite bolts mounted for reciprocation in opposite sides respectively of said cradle, said bolts being pivotally connected at one end with said arms respectively, the other ends of said bolts respectively being adapted for entering said bearings, a crank removably attached to said rock sleeve shaft, and means for locking said crank to the adjacent side member of the cradle.

11. In a device of the character specified the combination of a member having opposite trunnions, a cradle having opposite side members, each of said members having a pocket bearing for the reception of one of said trunnions, a rock sleeve pivotally mounted on said cradle, opposite upstanding arms on said rock sleeve, opposite bolts mounted for reciprocation in opposite sides respectively of said cradle, said bolts being pivotally connected at one end with said arms respectively, the other ends of said bolts respectively being adapted for entering said bearings, a crank removably attached to said rock shaft, means for locking said crank to the adjacent side member of the cradle, and means for retaining said crank on the rock sleeve shaft when said crank is in locked relation to said cradle, said retaining means being ineffective when said crank is swung out of locking relation with said cradle.

12. In a device of the character specified the combination of a member having opposite trunnions, a cradle having opposite side members, each of said members having a pocket bearing for the reception of one of said trunnions, a rock sleeve pivotally mounted on said cradle, opposite upstanding arms on said rock sleeve, opposite bolts mounted for reciprocation in opposite sides respectively of said cradle, said bolts being pivotally connected at one end with said arms respectively, the other ends of said bolts respectively being adapted for entering said bearings, a crank removably attached to said rock shaft, means for locking said crank to the adjacent side member of the cradle, means for retaining said crank on the rock sleeve shaft when said crank is in locked relation to said cradle, and a projecting handle on said crank adapted for engaging a relatively fixed member of the device for stopping the machine or for breaking said crank and releasing said bolts to lock said trunnions in their bearings.

In witness whereof, I hereby affix my signature this 15th day of August, 1923.

CHARLES F. VAN HOOK.