Fig. 1.

Fig. 2.

Fig. 3.

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This invention relates to a chain release for a load binder and has for an object to provide means for readily releasing the chain on a load binder after the load binder has released the tension on the chain.

There is shown in U. S. Patent No. 1,911,194, dated May 30, 1933, a typical load binder used for tightening or releasing a chain about a big load, which load may be pipes or logs of large diameter. Such a load binder is used for taking up the tension on opposite ends of the chain which has been passed around the load and secured on hooks forming part of the load binder. A handle is provided which may be oscillated between the release position and the tightened position. When in the release position, the original tension has been loosened on the chain but due to the nature of the load, there may be some shifting of the pipes or logs constituting the load, thus placing tension on the chain even though in release position and making it extremely difficult to secure sufficient slack so that one end of the chain may be released from its hook. It is an object of this invention to eliminate the necessity for securing such slack in the release position in order to remove the chain and instead provide means whereby one end of the chain may be automatically disengaged from the load binder by the normal operation of the load binder handle as it is moved to its utmost release position.

A further object of this invention is to provide a chain release for a load binder which has a chain link holding and releasing latch and operating means therefor which takes the place of one of the hooks in the conventional load binder and which holds the chain link just as securely as does the conventional hook of the load binder when in fastened position, yet automatically releases the chain when such is desired by merely operating the load binder handle lever to the utmost release position.

With the foregoing and other objects in view, as will hereinafter become apparent, this invention provides a construction, combination and arrangement of parts hereinafter set forth, claimed and disclosed in the accompanying drawing, wherein

Fig. 1 is a plan view of the load binder in operative fastened position;
Fig. 2 is a similar view in operative release position;
Fig. 3 is a top edge view of the load binder in the position of Fig. 1;
Fig. 4 is a similar view on a larger scale of the latch and latch operating mechanism;
Fig. 5 is a front plan view of Fig. 4;
Fig. 6 is a perspective view of the chain holding latch;
Fig. 7 is a perspective view of the latch holding and releasing lever;
Fig. 8 is a sectional view on line 8—8 of Fig. 5;
Fig. 9 is a sectional view on line 9—9 of Fig. 5.

There is shown at 10 a handle lever for expanding the load binder mechanism to release position or contracting it to the tightened position. Pivotted by means of a bolt 11 at the end of the somewhat curved nose 12 of the lever handle 10 is a bifurcated link 14 to whose other end is pivotted a clevis 15 with the usual swivel ring 16 and link 17 to which is attached a chain receiving hook 18 for receiving a link of a load binding chain 20. For securing the opposite end of the chain, there is provided a pair of arms 21 pivotted at 22 to the handle lever 10 at a point somewhat spaced from the pivoting bolt 11 at the end of its nose. At the other ends of the arms 21, there is pivotted a clevis 24 to which is secured the swivel ring 25 and an attaching link or links 26. In a conventional load binder, a chain receiving hook similar to the hook 18 would be secured to the end link 26, and the load binder as thus far described is substantially the conventional load binder as typified by the above mentioned patent.

This invention consists of a chain securing and releasing latch means shown generally at 30 and secured to the end link 26 in place of the usual chain attaching hook. This chain releasing and attaching means 30 consists of a base member 31 having an aperture 32 at one corner thereof through which the end link 26 is secured for attaching the base 31 to the load binder mechanism. At the other end, the base 31 is bifurcated at 33 and 34 so as to provide an indented chain receiving throat 35 therewith. Each bifurcation 33 and 34 is provided with a bolt receiving aperture adjacent its end. A latch 36 is pivotted on the bolt 37 extending therethrough and through the aperture in the bifurcation 34, this latch 36 being of substantial strength and of a length to extend across the throat 35 onto the bifurcation 33.

Pivoted on the bifurcation 33 by means of a pivot bolt 38 extending therethrough is a latch holding and releasing lever 40 shown in Fig. 7 and shaped substantially as shown. This latch holding and releasing lever 40 is provided with a
protruding latch engaging toe 41 at one side thereof adapted to engage in a complementary shaped notch 42 provided in the free end of the latch 36.

As a result of the complementary shaping of the latch engaging toe 41 and the complementary latch notch 42 and the spacing of this toe and notch from their respective pivots and from each other, the latch 36 is locked in position transversely across the throat 35 so long as the toe 41 extends into the notch 42 and any pressure tending to pull the latch 36 away from the throat 35 merely tightens the latch against the latch-engageing lever 40. The latch 36 cannot rotate in counterclockwise position as viewed in Fig. 5 until the latch-engaging and releasing lever 40 has been pivoted in counterclockwise position from the engaged position shown at 40 in Fig. 5 to the disengaged position shown in dotted outline at 40°.

Attached to the curved end of the latch engaging and releasing lever 40 is a flexible cable 43 which extends through a tube guide 44 secured to the side of the base 31, a compressible coil spring 45 being biased between the end of lever 40 and the adjacent end of the tube guide 44 and extending about the end of the flexible cable 43. It will be apparent that the compressible coil spring 45 normally holds the lever 40 in the latch engaging position shown in full in Fig. 5 except when it is compressed by having the cable 43 pulled thereagainst. The other end of cable 43 is provided with a steel washer 46 and this steel washer 46 is mounted on the pivoting bolt 11 at the end of the nose of the handle lever 10.

A link 41 at the other end of the load binding chain 20 may be passed over the latch 36 and extended into the throat 35 as the latch 36 is pivoted in clockwise direction. Pivoting of the latch 36 in clockwise direction causes its notch 42 to engage with the lever toe 41, the lever 40 yielding against the compression spring 45 until the latch notch and toe are in engageable position and then returning under pressure of the compression spring 45 to engage the toe in the latch notch. Tension of the chain on the latch 36 causes the lever toe 41 to engage and hold it all the more securely.

3. Operation, one end of the chain 20 may have its link 47 engaged by the latch 36 as just described. The chain is then passed around the load and its other end is attached to the hook 18 in the usual manner with the handle lever 10 in load releasing position although not at the utmost point of load releasing position. To bind the load, the handle lever 10 is oscillated to the load binding position shown in Fig. 1. To release the load, it is oscillated in the opposite direction, but not fully to the utmost load releasing position unless it is also desired to release the chain. If so, the handle lever 10 is brought fully around to the utmost load releasing position, thereby causing the pivot bolt 11 to exert a slight pull on the flexible steel cable 43 sufficient to compress the spring 45 and pull on the end of lever 40 moving it to the position shown in dotted outline at 40°. This disengages the toe 41 from the latch notch 42 and permits the latch 36 to move in a counterclockwise position to the position shown at 35°, thus permitting the end link 47 of chain 20 to be released and disengaged, irrespective of whether there is any slack on the chain 20.

This invention thus makes it possible to use the load binding mechanism in the usual manner and to release it in the usual manner and when desired, to simultaneously release one end of the load binding chain without the necessity of first providing sufficient slack for it to be drawn up and then up to the end of the hook.

While the preferred form of this invention has been shown and described, it will be understood that this invention is not restricted to the particular details of construction and arrangement hereinbefore set forth but that changes in such detail of construction may be made without the scope of what is hereinafter claimed.

Having thus set forth and disclosed the nature of this invention, what is claimed is:

1. In a load binder mechanism including a handle lever and load binding chain engaging means operatively mounted on said handle lever, a chain release means forming part of said chain engaging means, said chain release means comprising a base member having a pair of extending bifurcations providing a chain link receiving throat therebetween, a chain link holding latch pivoted on one of said bifurcations and arranged to extend across said throat to the second of said bifurcations, a latch engaging and releasing lever pivotable on said second bifurcation, complementary toe and notch means on said latch engaging and releasing lever, yieldable means urging said latch engaging and releasing lever toward toe and notch engaging position and a flexible member secured to said latch engaging and releasing lever at one end and arranged to be secured to the handle lever at its other end whereby operation of said handle lever in load unbinding direction pulls said flexible member to pivot said latch engaging and releasing lever to toe and notch disengaging position, thereby releasing said chain link holding latch to chain link disengaging position.

2. In a load binder mechanism including a handle lever and load binding chain engaging means operatively mounted on said handle lever, a chain release means forming part of said chain engaging means, said chain release means comprising a base member having a pair of extending bifurcations providing a chain link receiving throat therebetween, a chain link holding latch pivoted on one of said bifurcations and arranged to extend across said throat to the second of said bifurcations, a latch engaging and releasing lever pivotable on said second bifurcation, complementary toe and notch means on said latch engaging and releasing lever, yieldable means urging said latch engaging and releasing lever toward toe and notch engaging position and a flexible member secured to said latch engaging and releasing lever at one end and arranged to be secured to the handle lever at its other end whereby operation of said handle lever in load unbinding direction pulls said flexible member to pivot said latch engaging and releasing lever to toe and notch disengaging position, thereby releasing said chain link holding latch to chain link disengaging position.

3. In a load binder mechanism including a handle lever and load binding chain engaging means operatively mounted on said handle lever, a chain release means forming part of said chain engaging means, said chain release means comprising a base member having a pair of extending bifurcations providing a chain link receiving throat therebetween, a chain link holding latch pivoted on one of said bifurcations and arranged
to extend across said throat to the second of said bifurcations, a latch engaging and releasing lever pivoted on said second bifurcation, complementary toe and notch means on said latch and said latch engaging and releasing lever, said notch being located in said latch and said toe being located on said latch engaging and releasing lever, an expansion spring urging said latch engaging and releasing lever toward toe and notch engaging position and a flexible cable secured to said latch engaging and releasing lever at one end and arranged to be secured to the handle lever at its other end, a cable guide on said base, said cable passing through said guide, said spring being biased between said guide and latching engaging and releasing lever whereby operation of said handle lever in load unbinding direction pulls said flexible cable to pivot said latch engaging and releasing lever to toe and notch disengaging position, thereby releasing said chain link holding latch to chain link disengaging position.

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