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M. C. MORGAN ETAL

3,428,331

BINDER CONSTRUCTION FOR A LOADED MOBILE BED

Filed Feb. 15, 1968

FIG. 1

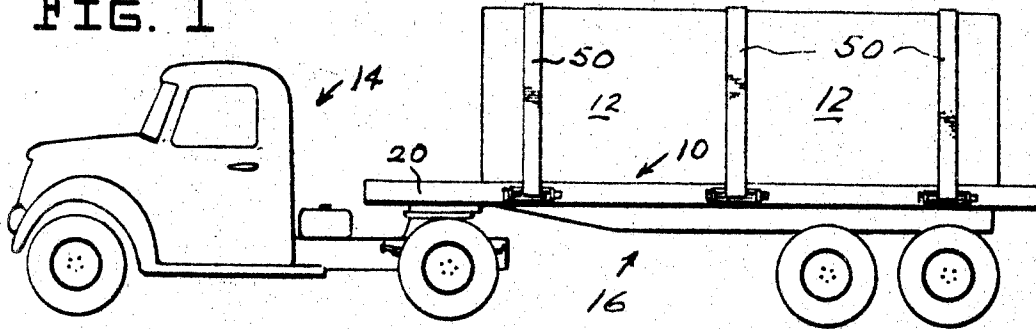


FIG. 2

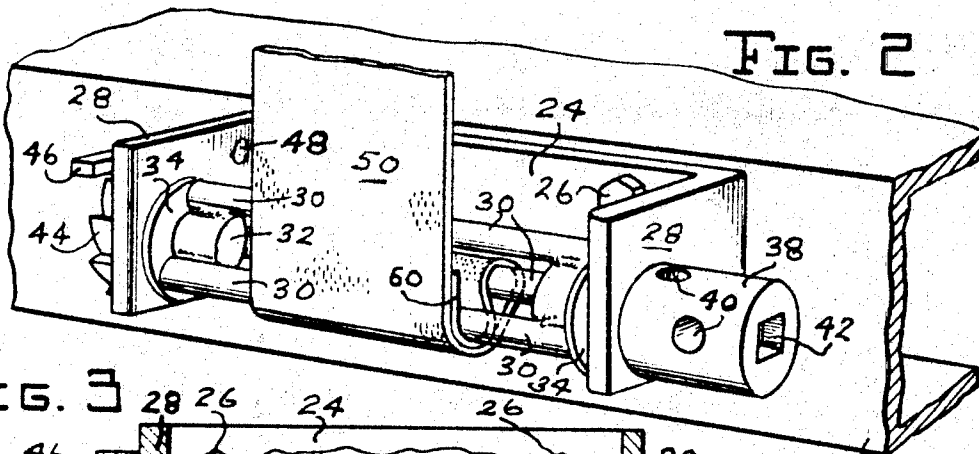


FIG. 3

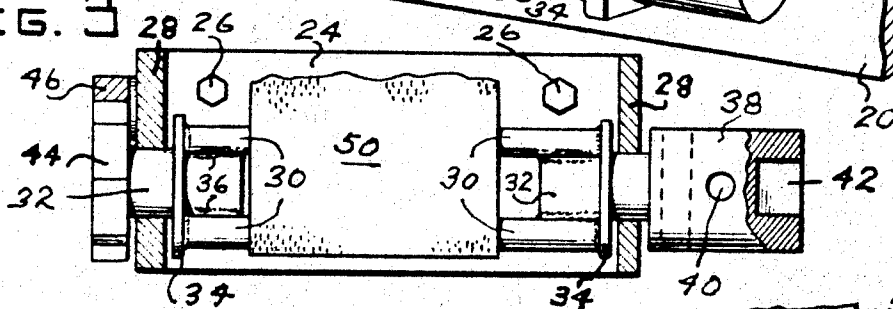


FIG. 4

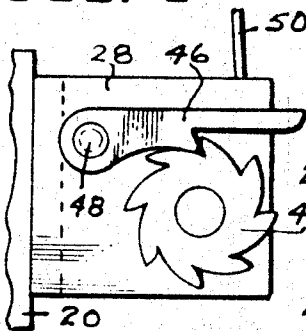


FIG. 5

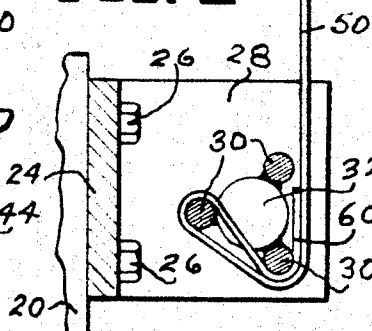
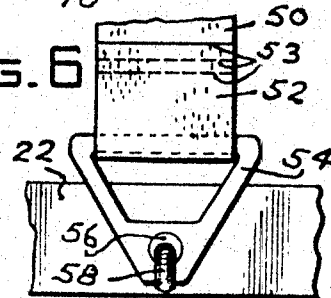


FIG. 6



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1

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BINDER CONSTRUCTION FOR A LOADED MOBILE BED

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ABSTRACT OF THE DISCLOSURE

A loaded mobile bed, as a truck bed, and a load maintaining binder structure in the nature of a wide flexible band detachably hooked to one side rail of the bed, extending over the load, and detachably connected to the opposite side rail of the bed, through a winch. The winch is characterized by a drum thereof comprising a plurality of spaced and longitudinally extending rods, a stub shaft and a circular plate welded to each of the end portions of the rods, and pawl and ratchet means permitting rotation of the drum in one direction and preventing rotation in the other direction.

Specification

Our invention relates to a binder means for securing a load to a wheeled mobile bed.

It is now common practice to transport relatively large loads of commodities, as lumber, plywood, building materials, building panels, and the like, on the beds of wheeled mobile carriers, as trucks, semi-trailers, and full-trailers, and to move such carriers on roads and highways. In order to provide for more economical transportation, these loads are extremely large and high. Thus, binders under relatively extreme tension must be employed to hold the load fixed relative to the bed.

A shortcoming of the prior art is that the binders used will mark or deface the load at the two top corners unless corner pads, as plates, lumber, or the like, are used to protect the load from the binders.

Another shortcoming of the prior art is that even when the binders used were in part a band, that chains and cables were required to connect the binders to a suitable winch to properly tension the binders.

Other shortcomings of the prior art resided in the construction of the winches employed to tension the binders, in that such winches were complicated, bulky, and often strength was sacrificed in the attempt to reduce bulkiness.

It is an object of our invention to overcome the above mentioned shortcomings of the prior art.

It is a further object to provide a binder band, which is relatively wide, and which may be detachably secured to one side rail of a mobile bed, as by hook and eye means.

It is a further object to provide such a binder band which extends over the load on the mobile bed and is secured to the opposite side of the bed by a direct and detachable connection between the binder band and a winch means.

It is a further object to provide such winch means with a winch drum comprising a plurality of spaced rods extending longitudinally of the rails at the opposite sides of the bed, plate means connected with each end portion of the rods, and a stub bearing shaft projecting from each plate means and preferably with a weldment at each end of the rods comprising the ends of the rods, a plate, and a stub shaft.

It is a further object to provide a bracket for rotatably mounting such a winch drum and with the bracket detachably mounted on said rail on said opposite side of the bed.

It is a further object to provide a pawl and ratchet for said winch drum permitting rotation of the winch drum

2

in one direction and preventing rotation thereof in the opposite direction.

It is a further object to provide a hub coaxially connected with said winch drum and which hub has openings in its periphery and at its axis permitting the use of levers and a ratchet driver for rotating said hub and in turn the winch drum and with the desired leverage.

Other objects of our invention, together with those inherent in the same, will become explicit or implicit as the description of the drawings proceeds, wherein like reference numerals will indicate like parts and wherein:

FIGURE 1 is an elevational view of a truck and loaded semi-trailer and with my invention applied thereto;

FIG. 2 is a perspective view of the winch of my invention secured to a fragment of one side rail of a mobile bed;

FIG. 3 is a front view of the winch shown in FIG. 2, parts being shown in section;

FIG. 4 is a side elevational view and with a fragment of the said one side rail being shown;

FIG. 5 is a sectional view of the structure of FIG. 4; and

FIG. 6 is a fragmentary elevational view showing the manner of securing the other end portion of the binder band to the other side rail of the mobile bed.

A wheeled mobile bed 10 for supporting a load 12 is illustrated in the drawings by a truck 14 and a semi-trailer 16 hitched thereto. It is to be understood that such bed 10 may also constitute the bed of a truck or the bed of a full trailer. The bed 10 has side rails 20 and 22 extending longitudinally along its opposite side portions. A winch base 24 is supported by a side rail 20 and preferably the connection is a detachable one and this may be accomplished by bolts 26 detachably engaging the base 24 to a side rail 20. The winch base 24 supports bearing plates 28 extending at right angles to the base 24 and preferably the base 24 and the plates 28 are integrally formed.

A winch drum comprises a plurality of rods 30, as three, and the same are symmetrically positioned about stub shafts 32. The rods 30 are parallel to each other and parallel to the side rail 20. Stub shafts 32 extend through holes in the bearing plates 28 which holes mount the stub shafts 32 for rotary motion on bearing plates 28. Longitudinally spaced circular plates 34 are each connected with rods 30 and with a stub shaft 32. A preferable way of providing such connection is to pass the stub shafts 32 through the openings in the bearing plates 28 and then to provide a weldment 36 at each end of the rods 30 comprising: a plate 34, end portions of the rods 30, and a stub shaft 32. Thus, there is provided a winch drum, comprising longitudinally extending and spaced rods 30, and circular plates 34, and longitudinally spaced stub shafts 32, and said winch drum is mounted for rotary movement by the spaced apart bearing plates 28.

One of the stub shafts 32 terminates in a sleeve 38 having a plurality of peripheral side openings 40 to detachably receive therein, any suitable bar or lever (not shown) to turn the said sleeve 38 and in turn the drum 30, 32, 34 and with the desired leverage. Also, preferably a concentrically disposed patterned opening 42 is provided in the end portion of sleeve 38 so that a ratchet driver (not shown) having a mated patterned stub to interfit said opening 42, may be used to jack and turn the sleeve 38 in the desired direction and with the desired pressure and which in turn will provide the desired rotary motion to the winch drum 30, 32, 34.

To the other stub shaft 32 is rigidly connected a ratchet wheel 44. A releasable pawl 46 is associated with said ratchet wheel 44 to limit the turning motion of the ratchet wheel 44 in one direction, when the pawl 46 is in engaging position (as shown in the drawings) and to permit free motion of the ratchet wheel 44, in either

direction, when the pawl 46 is moved to its release position. The pawl 46 is pivotally supported by a pin 48 carried by the adjacent bearing plate 28.

A plurality of relatively wide bands or binders 50 are employed to secure the load 12 to the bed 10. These bands 50 are relatively wide so that they can directly engage a load 12 (such as lumber, plywood, building panels and the like) and they may be used without the need of protecting corner pads—as plates, lumber, and the like. Such bands 50 are preferably woven bands of about four inches wide and about 1/8" thick and fabricated from a suitable material, as nylon. Such nylon band or binders 50, as used in our invention, often have a tested strength in excess of 24,000 pounds and when under stress, do not tend to materially damage a load 12 of such materials as lumber or plywood.

One end portion of each band 50 preferably terminates in a loop 52 (see FIG. 6) and which may readily be provided by adequate sewing 53 of the free end portion of the band to remainder thereof. One leg of a triangular shaped plate 54, having a suitable opening therein to provide such leg, passes through said loop 52 and is thereby secured to the band 50. The apex portion of the plate 54 (opposite said leg) is provided with an eye 56 which is detachably engaged with a suitable hook 58 carried by the other side rail 22 of the bed 10.

Due to the strength and widths of the binders or band 50, generally no more than three are necessary to properly secure a substantial load of lumber or plywood to a relatively large bed 10. The terms relating to a relatively large load of lumber and a relatively large bed are used in connection with truck loads of lumber or plywood as commonly transported on public highways between cities where relatively large loads are desired to provide for economical transportation.

In use, the end of the band or binder 50, carrying a plate 54, is connected with a hook 58 carried by the said side 22 of the bed 10. Then the band or binder 50 is cast over the load 12 and with the end portion 60 of the band or binder 50 adjacent the winch drum 30, 32, 34. Then the band or binder 50 is inspected and adjusted to be certain that it lies flat on the load, without twist, and is properly aligned crosswise of the load. Then the end portion 60 is disposed between two rods 30 of the winch drum 30, 32, 34. It is not necessary to directly connect said end portion 60 with the said rods 30. The winch drum 30, 32, 34 is then rotated in the proper direction (counterclockwise as respects the showing in FIG. 4) and with the band or binder 50 held by hand against the winch drum 30, 32, 34 until a plurality of wraps of the band or binder 50 obtain on the winch drum 30, 32, 34. Thereafter, as power is applied turning said winch drum 30, 32, 34 in the proper direction, the band or binder 50 will be frictionally held by the winch drum 30, 32, 34. While applying pressure to rotate said winch drum 30, 32, 34, the pawl 46 is permitted to remain in engaging position relative to the ratchet wheel 44 and the turning pressure is continued on the sleeve 38 by levers or bars or a ratchet driver engaging with openings 40 or 42 until the band or binder is under the desired strain or stress. Often pressures in excess of 12,000 pounds are exerted on binders or bands 50 of our invention in order to properly secure the load 12 to the bed 10.

We claim:

1. In combination a wheeled mobile bed having a floor and opposite side rails, the floor being adapted to support a load resting on the floor and extending upwardly therefrom; a relatively wide belt, having one end portion thereof detachably connected to one side rail of the bed,

extending over the load on the bed, and having its other end portion extending to the opposite side rail of the bed; a winch base detachably connected to the said opposite side rail of the bed; a winch drum rotatably mounted by said winch base and comprising a plurality of rods extending parallel to said rail, mounted for rotation on an axis parallel to said rail, and functioning as a drum for wrapping thereon said other end portion of the belt with said end portion substantially wrapping around one of said rods and then passing between one of the other said rods and the belt so as to definitely position said end portion of the belt with respect to the rods; ratchet and pawl means carried by said winch base and said opposite side rail permitting rotating of the drum in one direction and preventing rotation in the opposite direction; and drum actuating means engageable by a lever and carried by said drum for rotating said drum in said given direction.

2. The combination of claim 1 wherein said one end portion of said belt is connected to said one side rail by a hook and eye connection, and the other end portion of said belt is connected with said plurality of rods by being wrapped around the same by a plurality of wraps.

3. The combination of claim 1 wherein said one end portion of said belt is a loop of the belt, a triangular plate has one leg thereof in said loop, and the opposed apex has an eye engageable with a hook carried by said one side rail.

4. The combination of claim 1 wherein the winch drum comprises a plurality of laterally spaced apart parallel rods, and stub shafts and plates welded to the end portions of said rods.

5. The combination of claim 1 wherein said winch drum comprises in addition a hub coaxial with said winch drum and said hub is provided with openings in its periphery and at its axis permitting the use of levers and a ratchet driver for turning said hub and in turn the winch drum.

6. In combination a wheeled mobile bed having a floor, the floor being adapted to support a load resting on the floor and extending upwardly therefrom; a relatively wide belt, having one end portion thereof detachably connected to one side of the bed, extending over the load on the bed, and having its other end portion extending to the opposite side of the bed; a winch base detachably connected to the said opposite side of the bed; a winch drum rotatably mounted by said winch base and comprising a plurality of rods extending parallel to said side and functioning as a drum for wrapping thereon said other end portion of the belt with said end portion substantially wrapping around one of said rods and then passing between one of the other said rods and the belt so as to definitely position said end portion of the belt with respect to the rods; ratchet and pawl means carried by said winch base permitting rotation of the drum in one direction and preventing rotation in the opposite direction; and drum actuating means engageable by a lever and carried by said drum for rotating said drum in said given direction.

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