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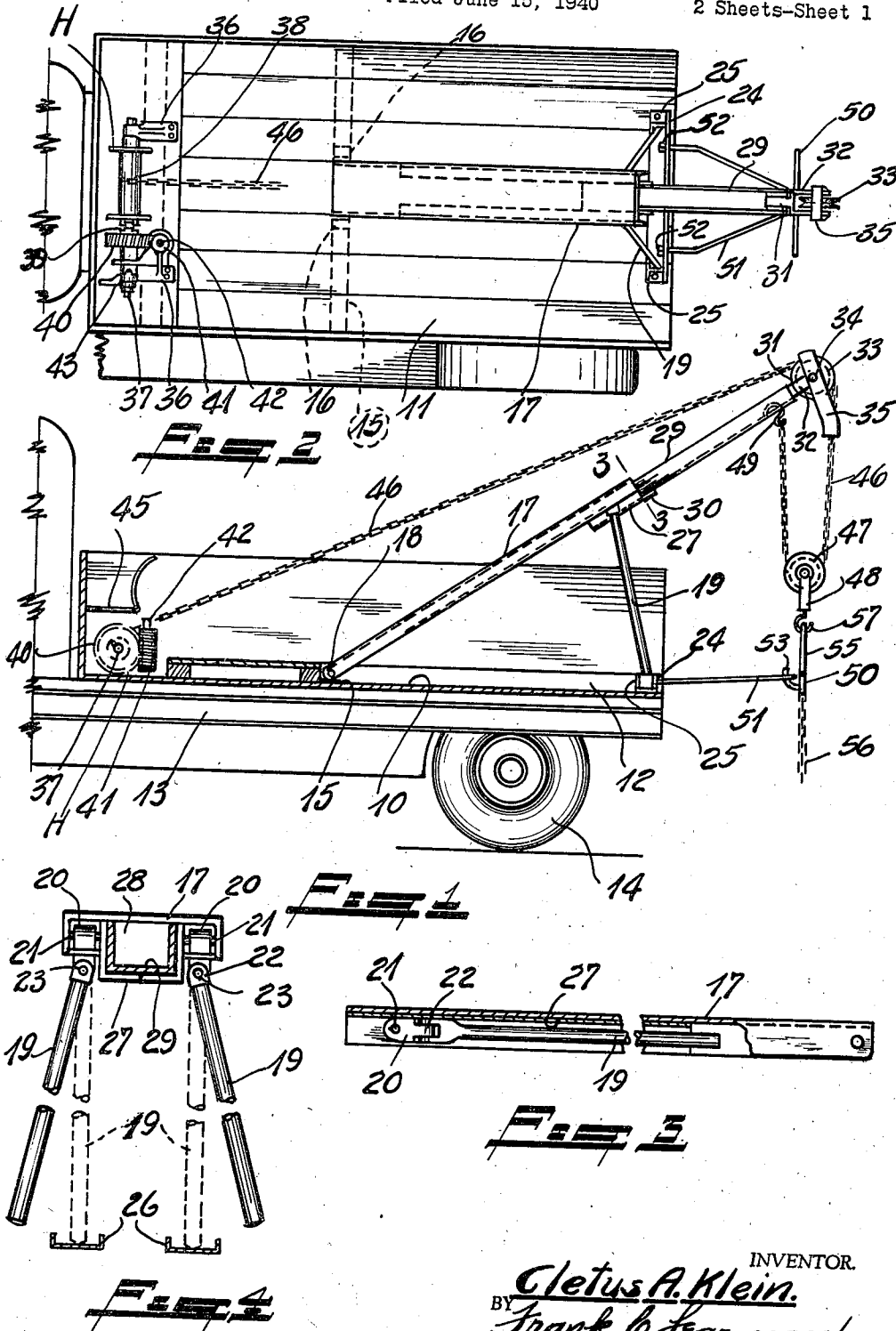
C. A. KLEIN

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WRECKING CRANE

Filed June 15, 1940

2 Sheets-Sheet 1



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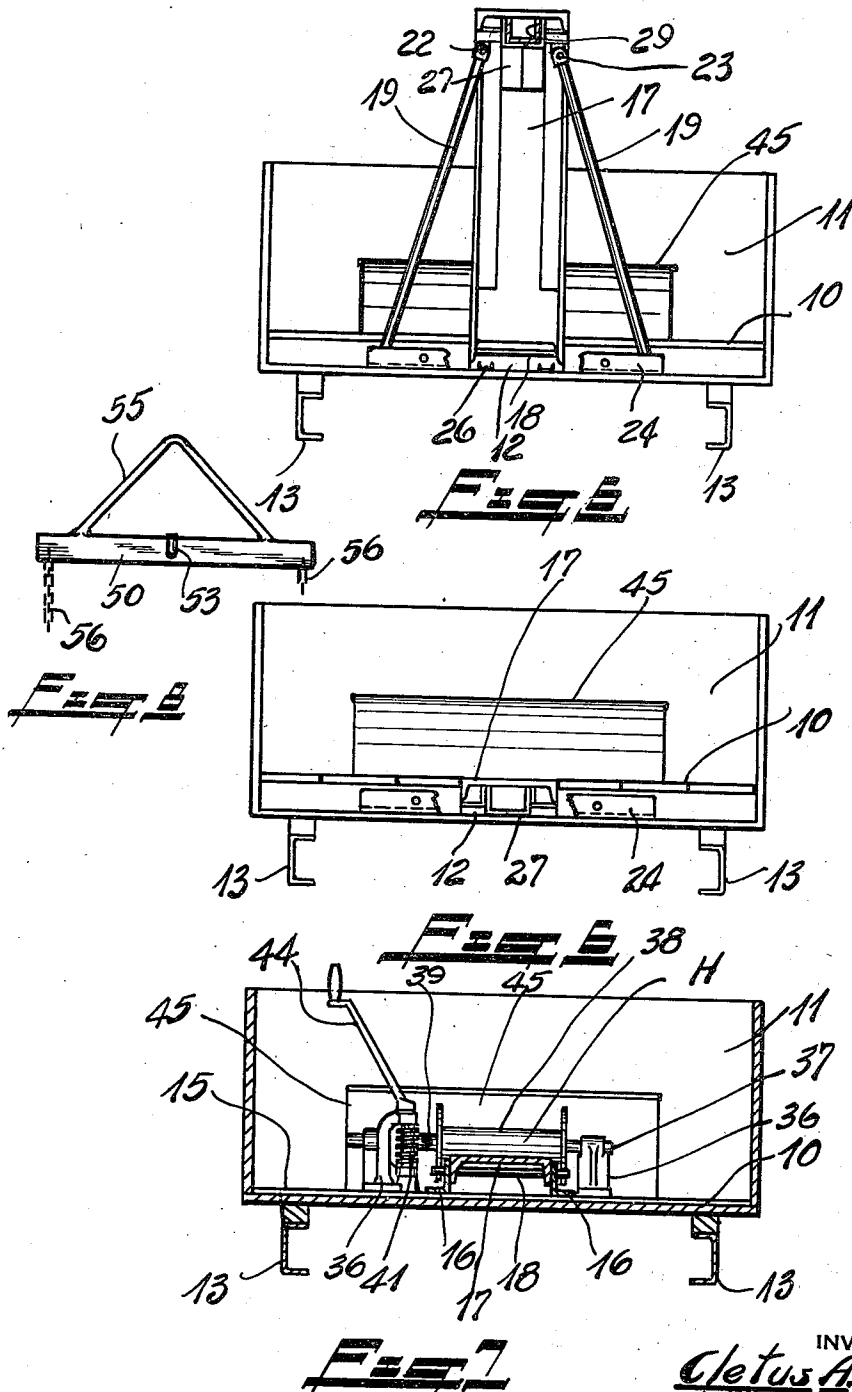
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## UNITED STATES PATENT OFFICE

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## WRECKING CRANE

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Application June 15, 1940, Serial No. 340,826

10 Claims. (Cl. 212-142)

This invention relates to wrecking cranes for general use by garages, for use in lifting, towing, and otherwise serving automotive vehicles which may become disabled on the road.

One of the prime objects of the invention is to design a very simple, substantial, and practical hoisting mechanism and sectional boom provided with hingedly connected foldable legs which fold into the marginal lines of the boom structure proper when the boom is in its lowered 10 folded position, so that the vehicle body is free and clear for use as a pick-up or utility truck for daily use in the ordinary manner of such vehicles.

Another object is to design a sectional boom 15 structure having a smooth upper surface and which when folded forms a smooth level surface with the vehicle floor.

A further object is to provide a boom structure including pivotally mounted, hinged leg members which swing downwardly and outwardly to predetermined position to stabilize and support the boom when raised, and which can be readily swung inwardly and into the boom structure 20 proper when the boom is lowered.

A further object still is to provide a separator bar associated with the boom mechanism for spacing and separating the towed vehicle from the towing vehicle and preventing it from creeping up on the towing vehicle on steep grades and inclines, or when the brakes are suddenly applied on the towing vehicle, thus eliminating the possibility of damaged radiator, fenders, and other parts.

A still further object is to provide a very simple, 25 substantial, and practical hoisting mechanism which is economical to manufacture and assemble, and which can be readily mounted on or removed from a vehicle.

With the above and other objects in view, the present invention consists in the combination and arrangement of parts, hereinafter more fully described, illustrated in the accompanying drawings, and more particularly pointed out in the 30 appended claims, it being understood that changes may be made in the form, size, proportions and minor details of construction, without departing from the spirit, or sacrificing any of the advantages of the invention.

In the drawings:

Fig. 1 is a fragmentary, longitudinal, sectional, elevational view of a truck with my hoisting mechanism and sectional boom mounted in position thereon.

Fig. 2 is a fragmentary, top plan view.

Fig. 3 is an enlarged, transverse, sectional view of the inner boom section taken on the line 3-3 of Fig. 2.

Fig. 4 is a longitudinal, part-sectional view of the boom showing one of the legs in its folded position.

Fig. 5 is an end view of the structure shown in Fig. 2 of the drawings with the vehicle running gear omitted.

Fig. 6 is a similar view showing the boom in folded position.

Fig. 7 is a transverse sectional view through the body and showing a slightly different construction.

Fig. 8 is a front view of the separator bar.

The manner of mounting the boom is a matter of choice; it can be mounted on the floor to rest on the face thereof with all parts concealed therein when in its folded position, it can be mounted in a trough-shaped depression formed in the floor, so that its upper surface is flush with and forms a part of the floor when in its folded position, or a sub-floor can be provided as clearly shown in Figs. 1, 2, 5, and 6 of the drawings. The sub-floor 10 is mounted in the vehicle 25 body 11 and a trough 12 is provided as shown and into which the boom structure is lowered when in folded position so that the upper surface is flush and even with the sub-floor.

The vehicle body is generally indicated at 11 and is mounted on a frame 13, which is in turn supported on ground engaging wheels 14 in the usual manner. A transversely disposed brace 15 spans the vehicle body, and spaced apart angle brackets 16 are mounted thereon and to which the inner end of the boom members 17 is hingedly connected by means of the pin 18.

Legs 19 form a support for the raised end of the boom and are pivotally connected to the outer end of the inner boom section as shown, each leg having a head 20 pivotally connected to the boom by means of the pin 21, the lower end 22 of said head section being connected to the head 25 which is pivoted in the opposite direction by means of a pin 23 so that the lower ends of the leg may be swung laterally from the boom to stabilize the structure.

A transversely disposed angular leg support 24 is provided on the rear end of the body, and a 30 vertically disposed angle 25 is provided adjacent each end thereof and forms a socket for the ends of the leg members 19 when the boom is in its raised position. Shallow channel members 26 35 are provided in the trough 12 and the ends of the

legs 19 are adapted to slide therein when the boom is being raised and/or lowered.

Angles 27 are welded to the lower face of the channel-shaped boom section 17 at the outer end thereof, and form a socket 28 in which the outer end section 29 of the boom is removably mounted, a stop 30 being provided on the lower face of said end section for engaging the end of the angles 27 to limit the inward movement of the outer boom section when the members are placed in assembled relation.

A bearing 31 is provided on the outer end of the boom section 29 and a sheave bracket 32 is revolvably mounted therein, a sheave 33 being mounted on said bracket by means of the pin 34, and a chain guard 35 is also mounted on said pin for preventing over-riding of the chain on the sheave.

The hoist "H" is mounted in the front end of the body and comprises spaced apart brackets 36 in which the shaft 37 is journaled, a winding drum 38 being mounted on said shaft and a jaw clutch 39 is provided as shown, a worm wheel 40 is provided in the shaft 37 as shown, said wheel meshing with a worm 41 which is mounted on the vertical shaft 42. A shifting lever 43 is provided on the shaft 37 for shifting the clutch 39 into and out of engagement with the winding drum, and a suitable crank 44 fits the end of the worm shaft 42 so that the drum can be rotated as desired. The hoist can of course be covered by means of a hinged cover member 45 so that all parts are concealed and protected from the elements and the materials transported by the truck.

The chain 46 is anchored and wound on the drum 38, thence leading over the sheave 33, thence down and around the sheave 47 which is journaled in the sheave cage 48 with the end of the chain anchored to the boom extension 29 at the point 49.

A separator bar assembly 50 is provided at the rear end of the vehicle body and comprises rod members 51, the ends of which are threaded and extend through suitable openings in the member 24, and nuts 52 serve to secure them in position. An upturned leg 53 is provided on the bar 50 and the converging ends of the rods 51 are loosely connected thereto. A bridle 55 is formed integral with the bar 50 and is removably hooked to the sheave cage 48, chains 56 being provided on the opposite ends of the bar 50, so that a vehicle may be readily attached, this separator bar assembly serving to space the towed vehicle from the towing vehicle to eliminate any longitudinally sway or creeping of the towed car toward or away from the towing car during the towing operation.

It will, of course, be obvious that the hook 57 can be attached direct to a vehicle or article to be lifted when desired.

In Fig. 7 of the drawings I have shown a slightly modified construction in which the trough is eliminated and the boom mounted on the floor, the brace 15 is mounted as shown and the boom when folded extends above the surface of the floor, the construction and operation however being exactly the same.

In practice the boom section 17, with the legs 19 folded as shown in Fig. 6 of the drawings, folds into the trough 12 in the vehicle floor with the outer section of the boom stored between the channel legs so that the vehicle floor or sub-floor is absolutely smooth and flat, there are no

obstructions, and the vehicle can then be used for any desired purpose.

To raise and set up the hoisting apparatus for use, the operator first swings the outer end of the boom section 17 upwardly, the lower ends of the legs 19 slide in the channel members 26 and are thence swung laterally to engage the sockets provided by the angles 24 and 25. The extension member 29 is then inserted in the socket 28 and is forced downwardly until the stop 30 engages the ends of the angles 27, after which the hoist chain 46 is trained over the sheave 33, thence around the sheave 47, and thence being attached to the hook member 49 provided on the boom. The separator bar assembly is then hooked on the rod 51 and the crank 44 is fitted to the end of the worm shaft 42, and the hoist can be rotated to raise as desired.

In the foregoing specification, I have set forth the invention in its preferred practical forms, but I am aware that the structure shown is capable of modification, within the range of equivalents, without departing from the invention which is to be understood as broadly novel as is commensurate with the appended claims.

What I claim is:

1. In combination with a truck having a body, a sectional boom channel-shaped in cross section, hingedly mounted in said body and including inner and outer sections, legs pivotally connected to the inner section and foldable into the marginal limits thereof when the boom is in folded position, sockets in the body and adapted to accommodate said legs when the boom is in raised position, a socket in the outer end of the inner boom section and adapted to receive said outer section, and means for limiting the inward movement of said outer section in said socket.

2. In combination with a truck having a body, a sectional boom channel-shaped in cross section hingedly connected to the body, with the outer section removably connected to the inner section, and legs pivotally connected to said inner section at a point adjacent the outer end thereof and foldable into the marginal limits of the boom, the lower ends of said legs being movable laterally to predetermined position to support and stabilize said boom when in extended position.

3. In combination with a truck having a body, a sectional boom channel-shaped in cross section hingedly mounted in the body with the outer section removably mounted in the inner section, legs pivotally connected to the inner section of the boom at a point adjacent the outer end thereof, and leg receiving channels provided in said inner section for accommodating and concealing said legs when the boom is swung down on the floor of said body.

4. In combination with a truck having a body, a two part sectional boom channel-shaped in cross section hingedly connected to the body with the outer end of the inner section arranged to receiveably accommodate the inner end of the outer section, legs pivotally connected to the inner section at a point adjacent the outer end thereof, sockets provided in the vehicle body, and joints in said legs at a point adjacent the pivot point and arranged in a plane opposite to the plane of the first mentioned pivotal connection, the lower ends of said legs being mounted in said sockets when the boom is set up for use.

5. In combination with a truck having a body,

a two part boom pivotally mounted in said body with the outer section removably mounted on the inner section, trough-shaped channels in the lower face of the inner section and legs pivotally secured to the inner section at a point adjacent the outer end thereof, said legs being foldable into said trough-shaped channels and entirely within the marginal limits of the boom when the lower section is in folded position.

6. In combination with a truck having a body, a boom hingedly connected thereto and formed of inner and outer sections with the outer section removably mounted on the inner section, legs pivotally connected to the inner section at a point adjacent the outer end thereof, joints in said legs to permit them to be swung laterally from said boom, sockets on the floor of the body and adapted to accommodate the ends of the legs, and channels in said boom, and into which the legs are swung when the boom is swung down into folded position.

7. In combination with a truck having a body, a sectional boom, spaced brackets on the body, elongated slots in the lower end of said boom and a pin mounted in said brackets and extending through said slots for hingedly connecting the boom to the body, an outer boom section mounted in the outer end of the inner section, a stop for limiting the inward movement thereof, legs pivotally connected to the inner boom section at a point spaced from the outer end thereof, and channels provided in said boom section for receiving and housing said legs when the legs are swung to folded position.

8. In combination with a truck having a body provided with a trough-shaped depression therein, a sectional boom hingedly mounted in said trough with its upper face flush with the surface of the floor when in its folded position, legs connected to said boom and foldable into the marginal limits of said boom when folded, a

winch in the forepart of the body, a cable connected to the winch drum, a sheave on the outer end of the boom and over which said cable is trained, a sheave cage, a sheave journaled therein and around which the cable is led for anchoring to the boom, and means for spacing said sheave cage and sheave from said body.

9. In combination with a truck having a body, a sectional boom hingedly mounted therein, and comprising inner and outer sections, legs pivotally connected to the free end of the outer section and foldable into said boom when in its folded position, a winch including a winding drum mounted in said body, a cable wound thereon, a sheave journaled on the outer end of said boom and over which said cable is trained, a sheave cage, a sheave mounted therein and around which the cable is trained and then anchored to the boom, a separator assembly detachably secured to the body and to the sheave cage for spacing said sheave cage from said body, and chains secured to said separator assembly.

10. In combination with a truck having a body, a sectional boom hingedly mounted in said body and including inner and outer sections, foldable legs pivotally connected to the free end of the inner boom section and accommodated in said boom section when in folded position, a socket in the free end of the inner boom section and in which the outer section is removably mounted, a winding drum mounted on said body, a cable wound thereon, a sheave on the outer end of the boom and over which the cable is trained, a sheave cage, a sheave journaled therein and around which the cable is trained and then anchored to said boom, and a separator assembly detachably connected to said body and to said sheave cage for longitudinally spacing the sheave cage from the body, and chains anchored to said separator member.

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