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WHEELED CRANE

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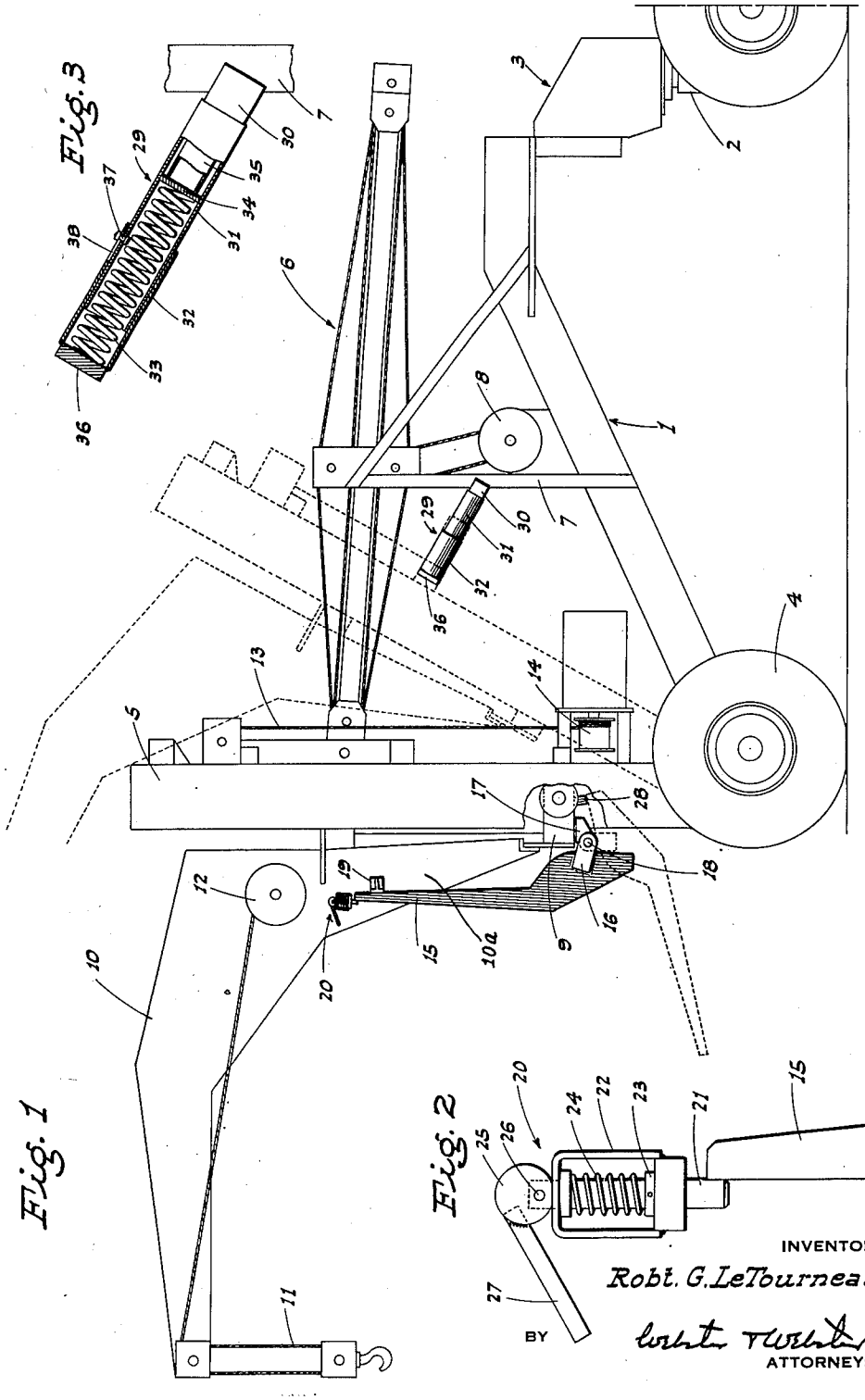

Fig. 1

Fig. 2

Fig. 3

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WHEELED CRANE

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5 Claims. (Cl. 212—8)

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This invention is directed to novel improvements in wheeled or portable cranes of the type which include an upstanding elevator frame tiltable forwardly, and a boom supporting elevator carriage vertically movably mounted on the elevator frame.

One object of the present invention is to provide the elevator carriage with a novel pick-up or lift fork assembly.

A further object of the invention is to mount the lift fork assembly on the elevator carriage for folding from a rearwardly projecting working position, to an upwardly projecting non-working or out-of-the-way position so as to then permit of use of the crane without said lift fork assembly.

An additional object of the invention is to provide novel, releasable latch means, for the lift fork assembly, adapted to hold the latter in folded or non-working position.

It is also an object of the invention to provide the crane with a novel bumper in position for engagement by the elevator frame upon forward tilting thereof; such bumper also serving to limit the maximum forward tilt of said elevator frame.

A further object of the invention is to provide practical and reliable improvements in wheeled cranes, which will be exceedingly effective for the purpose for which they are designed.

These objects are accomplished by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings:

Fig. 1 is a side elevation of a wheeled crane embodying the present invention.

Fig. 2 is an enlarged fragmentary elevation of the latch unit corresponding to one of the fork legs.

Fig. 3 is an enlarged fragmentary elevation, mainly in section, of the bumper unit.

Referring now more particularly to the characters of reference on the drawings, the invention is embodied in a crane which includes a rigid longitudinally extending body 1 connected, at its forward end, to a tractor 2 by means of a power steering and coupling unit, indicated generally at 3.

The body 1 is supported, at its rear end, by means of rear wheels 4.

An elevator frame 5 upstands from the rear end of the crane and is pivotally mounted for tilting movement in a longitudinal vertical plane; the forward limit of such tilting movement of the elevator frame 5 being indicated in dotted lines in Fig. 1.

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Tilting of the elevator frame 5, i. e. its swinging adjustment in a longitudinal vertical plane, is accomplished by means of a cable operated, tilt control assembly 6 connected between said frame 5 and an upstanding A-frame 7 on the body 1. The tilt control assembly 6 is actuated by a winch 8.

The elevator frame 5 is fitted therein with a roller mounted elevator carriage 9, and a boom 10 is fixed in connection with and projects rearwardly from, said elevator carriage. The boom 10 supports a hoist cable 11 operated by a winch 12.

The elevator carriage 9 is vertically adjusted by a control cable system 13 which includes a winch 14.

Under many working conditions it is desirable that the crane be provided with a lift fork assembly, and the present invention contemplates the embodiment of such an assembly, as follows:

The fork unit, which is provided for the crane, comprises a pair of transversely spaced fork legs 15, and as the mounting and operation of each is identical a description of one will suffice for both.

Each fork leg 15 is normaly disposed in an upstanding position to the rear of the elevator carriage 9 and to one side of the inner end portion 10a of the boom 10, and which portion is practically a part of the carriage 9, as will be evident.

Adjacent, but short of, the inner end of the fork leg 15 the latter is pivotally connected by cooperating ears and lugs 16 and 17 on the fork leg 15 and the lower end of the elevator carriage 9, respectively; said ears and lugs 16 and 17 being secured together by a pivot pin 18.

Each fork leg 15, when in its upwardly folded position, as in full lines in Fig. 1, abuts a stop 19 affixed to the adjacent side of the inner end portion 10a of the boom 10. At the same time such fork leg 15 is engaged, from the rear and at its upper end, by a releasable latch unit 20, likewise affixed to the boom portion 10a, but at a point somewhat above and to the rear of the stop 19.

The latch unit 20, which cooperates with each fork leg 15, is shown in detail in Fig. 2, and comprises:

A vertically movable, spring-pressed latch pin 21 extends in guided relation through a yoke 22, which yoke is secured to the boom 10. A stop collar 23 on the latch pin 21 limits the downward motion of the latter; said pin being spring-urged downwardly by a compression spring 24 surrounding the pin between the stop collar 23 and the upper portion of the yoke 22.

An eccentric cam 25 is pivoted, as at 26, to the

latch pin 21 above, and cooperating with, the top of the yoke 22. A hand lever 27 is fixed to and extends from the cam 25 in actuating relation to the latter. By swinging the hand lever 27 in one direction, the eccentric cam 25 pulls upwardly on the latch pin 21, against the spring 24, to release such pin from the upper end of the corresponding fork leg 15.

In this manner each fork leg 15 can be released for downward swinging motion from its normally upstanding, out-of-the-way position, as in full lines in Fig. 1, to a rearwardly projecting working position, as in dotted lines in said figure. In working position each fork leg 15 abuts, at its inner end, upwardly against a corresponding stop 28 on the bottom of the elevator carriage 9. It is thus a very simple manual operation to change the position of each fork leg 15. When the lift fork assembly is in its rearwardly projecting working position, the crane is used in the same manner as a fork lift truck; the working elevation of the legs 15 being adjustable by up and down travel of the elevator carriage 9. Additionally, the elevator frame 5 may be tilted forwardly to cause raising of the lift fork assembly at its rear or outer end.

When the elevator frame 5 is tilted forwardly by the tilt control assembly 6, such motion is limited to a maximum extent predetermined by a bumper unit 29. A cross bar 30 is mounted on the A-frame 7, and is fitted with one or more of the bumper units 29 positioned for engagement with parts of the elevator frame 5 as the latter tilts forwardly. Each such bumper unit 29 is constructed as follows:

A fixed sleeve 31 is rigidly mounted on the cross bar 30 and extends at a rearward and upward incline, and a movable sleeve 32 partially telescopes the fixed sleeve 31 from the free end of the latter. A heavy-duty compression spring 33 is disposed in the sleeve assembly and bears, at the inner end, against a base plate 34 mounted in the fixed sleeve 31 by means including an internal sleeve 35. At its outer end the spring 33 bears against a pad 36 on the outer or free end of the movable sleeve 32. The movable sleeve 32 is held against escape from the fixed sleeve 31 by a bolt 37 secured to sleeve 31 and projecting through a longitudinal slot 38 in sleeve 32. This permits the movable sleeve 32 to work inwardly against the spring 33 within the limits of the slot 38, but said bolt 37, normally in the inner end of slot 38, prevents the movable sleeve 32 from escaping under the action of spring 33.

From the foregoing description it will be readily seen that there has been produced such a device as substantially fulfills the objects of the invention, as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described the invention, the following is claimed as new and useful, and upon which Letters Patent are desired:

1. In a wheeled crane having an upstanding elevator frame, an elevator carriage vertically movably mounted on the frame and from the upper end of which the crane boom projects rearwardly, a lift fork structure, and means mounting the lift fork structure on the elevator carriage for folding from a rearwardly projecting position below the boom to an upstanding out of the way position; a releasable latch fixed with respect to the carriage in position to hold the lift fork structure in said out-of-the-way position; said releasable latch comprising a fixed yoke including spaced portions, a latch pin carried by the yoke and extending in slidable relation through said portions, a collar on the pin within the yoke, a compression spring about the pin between the collar and one of said portions urging the pin in one direction, and manually operated means connected to the pin to urge it in the opposite direction.

2. In a wheeled crane having an upstanding elevator frame, an elevator carriage vertically movably mounted on the frame and from the upper end of which the crane boom projects rearwardly, a lift fork, structure, and means mounting the lift fork structure on the elevator carriage for folding from a rearwardly projecting position below the boom to an upstanding out of the way position; a releasable latch fixed with respect to the carriage in position to hold the lift fork structure in said out-of-the-way position; said releasable latch comprising a fixed yoke including spaced portions, a latch pin carried by the yoke and extending in a slidable relation through said portions, a collar on the pin within the yoke, a compression spring about the pin between the collar and one of said portions urging the pin in one direction, an eccentric cam transversely pivoted on the pin exteriorly of the yoke and working against the outside of said one portion of the yoke, and a lever on the cam to rotate the same.

3. In a wheeled crane including an upstanding elevator frame having an elevator carriage vertically movably mounted thereon, and said carriage being fitted with a rear projecting boom having a depending portion adjacent the carriage; a lift fork structure, a pivotal mount securing the lift fork structure on the elevator carriage for folding from a rearwardly projecting working position to an upwardly projecting out-of-the-way position, alongside said depending portion of the boom, and means to releasably latch the structure in said last named position.

4. In a wheeled crane including an upstanding elevator frame having an elevator carriage vertically movably mounted thereon, and said carriage being fitted with a rear projecting boom; a lift fork structure, a pivotal mount securing the lift fork structure in connection with the elevator carriage for folding from a rearwardly projecting working position to an upwardly projecting out-of-the-way position, and means to releasably latch the structure in said last named position; the boom including a dependent front end portion, and said structure including a fork leg which, when the structure is folded, is disposed alongside said portion, a stop on said portion against which the leg then abuts, and said latch means being mounted on said portion and engaging the leg.

5. In a wheeled crane having an upstanding elevator frame, an elevator carriage mounted on the frame for vertical movement and supporting a member having a depending portion at the rear of the carriage, a lift fork structure comprising fork legs, and means pivoting said structure on the carriage at its lower end for folding of the legs from a rearwardly projecting working position to an upstanding position alongside said depending portion; a stop on said portion to engage one leg and limit upward folding movement thereof and a vertically

movable upwardly releasable latch pin mounted on said depending portion in position to depend behind said leg at its upper end when said leg is engaged with the stop.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
538,186	Wildows	Apr. 23, 1895
1,878,995	Abbe	Sept. 27, 1932
1,895,939	Presbrey	Jan. 31, 1933
1,901,566	Presbrey	Mar. 14, 1933
2,394,314	Le Tourneau	Feb. 5, 1946
2,419,813	Berchtold	Apr. 29, 1947