Dec. 16, 1952 W. TAYLOR 2,621,803

MOBILE CRANE

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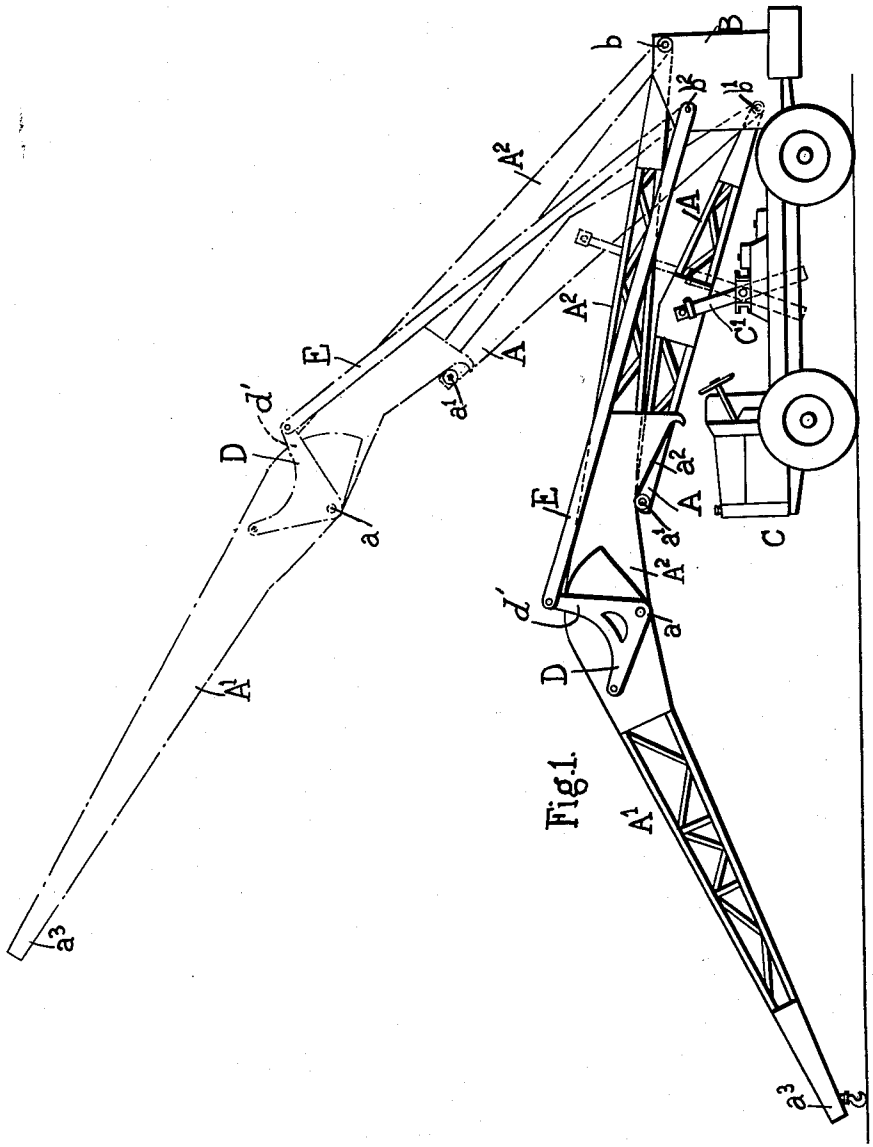


Fig. 1.

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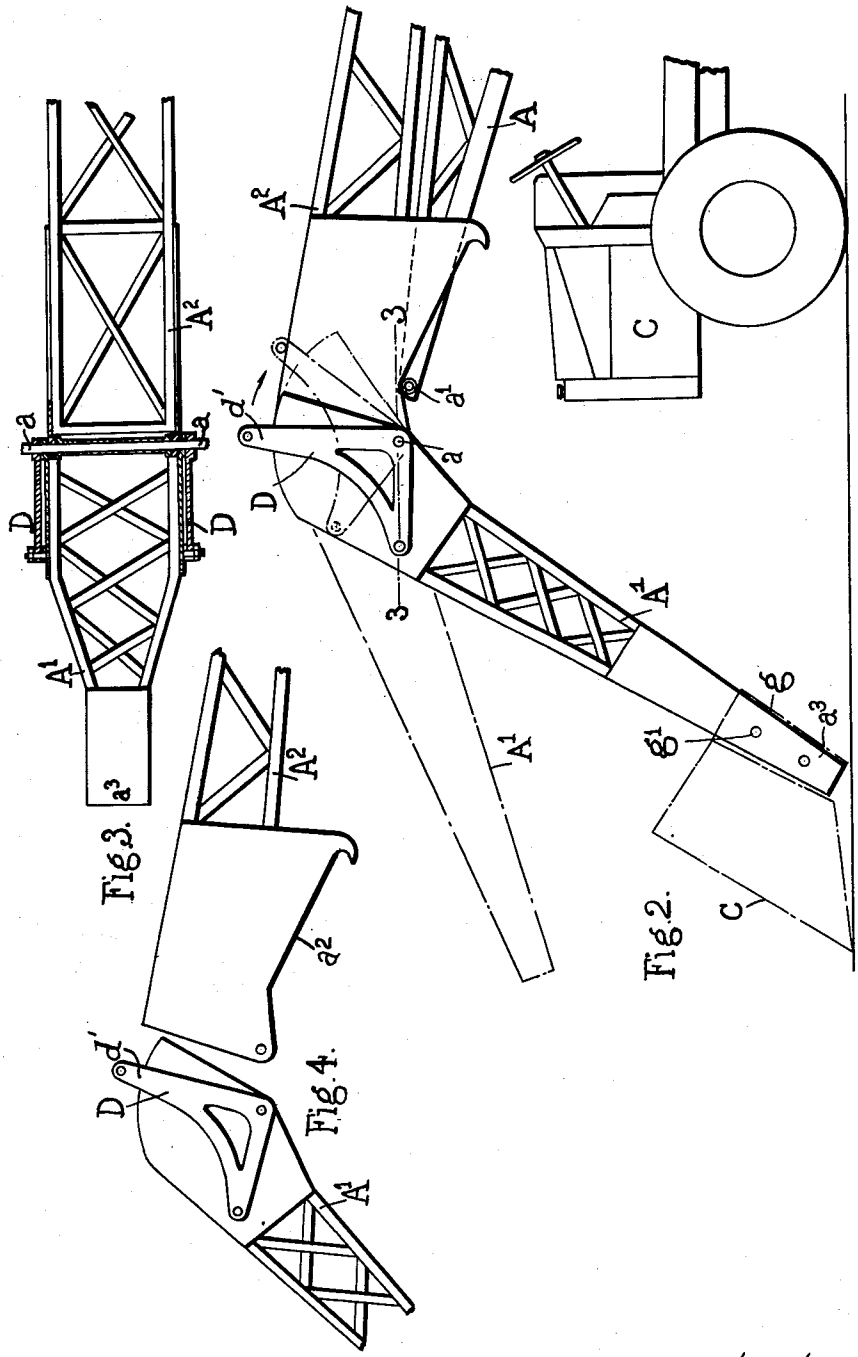


Fig.2.

Fig.3.

Fig.4.

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MOBILE CRANE

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3 Claims. (Cl. 212—8)

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This invention relates to improvements in mobile cranes of the type having a mechanically or hydraulically operated jib.

The object of the invention is to provide means for enabling the end of the jib to be brought down to or below the level of the vehicle on which the crane is mounted.

According to the invention the jib is formed in two parts pivotally connected together, the means for raising and lowering the jib operating on the rear part and the front part being so controlled that it pivots about the rear part as the latter is raised and lowered.

The invention is illustrated in and will be described with reference to the accompanying drawings in which:

Fig. 1 is a side elevation showing the jib in the lowered and in the raised positions;

Fig. 2 is a side elevation drawn to a larger scale of the front part and a portion of the rear part of a slightly modified form of jib adapted to carrying an excavating bucket or other device on the free end of the front part;

Fig. 3 is a section on the line 3—3 of Fig. 2; and

Fig. 4 is a side elevation of the adjoining ends of the two parts of the jib separated from one another.

The main jib of the crane is formed in two parts A^1 and A^2. The rear end of the front part A^1 is pivotally mounted on a bar a at the front end of the rear part A^2.

The rear part A^2 is pivoted at b on a balance box B mounted at the rear of a motor vehicle C and is raised or lowered by a hydraulic ram or rams C^1 or by other mechanical means preferably operated by the engine of the vehicle. The ram or rams C^1 or other means may act directly on the rear part A^2 of the jib but it is preferred, as shown in Fig. 1, to employ a secondary jib A below the main jib, the secondary jib A being pivoted at b^1 on the balance box B. The ram or rams C^1 act on the secondary jib A and the latter carries at its free end a roller or rollers a^1 which engages an inclined surface a^2 on the underside of the front end of the rear part A^2 of the main jib. By this means a greater lift is given to the part A^2 for a given movement of the ram or rams than if the latter acted directly on the part A^2.

A bell crank or two armed lever D is bolted on each side of the rear of the front part A^1 so that the levers D and the front part A^1 will pivot together in relation to the rear part A^2

The end d^1 of each lever D is pivotally connected to one end of rod E the other end of which is pivoted at b^2 on the balance box B. The pivotal point b^2 is in front of and below the point b at which the rear part A^2 is pivoted so that the length of the rod E is less than the distance between the bar a and the pivot point b about which the rear portion A^2 of the main jib turns.

When the main jib is in its raised position, i. e. the upper position shown in Fig. 1, the two parts A^1 and A^2 are substantially in alignment but as the jib is lowered the rods E cause the front part A^1 to pivit about the rear part A^2 so that when the rear part has reached or almost reached its lowest position, i. e. the bottom position shown in Fig. 1 or Fig. 2, the front part A^1 is at an angle to the rear part with its front end level with the ground or if desired below the level thereof if there is a hole or trench to receive it.

As the jib is raised the front part A^1 is constrained by the rods E to pivot about the front end of the rear part A^2 so that when the jib is raised to its top position the two parts A^1 and A^2 are again in substantial alignment.

A jib of a mobile crane constructed according to this invention has the advantage that its front end can be brought down to ground level thereby in many cases facilitating the connection of the work to be raised to the weight hook and it has the further advantage also resulting from the fact that its front end can be brought down to or below ground level that it can be used as an excavating or like device.

When it is intended that the crane should be employed for excavating or other purposes instead of or in addition to its normal function of raising and transporting work, the front end a^3 of the front part A^1 is as shown in Fig. 2 of tapered form to receive the tapered socket g of an excavating bucket G or of any other devised device, the socket g being secured to the tapered end a^3 by one or more transverse pins or bars g^1.

I claim:

1. A mobile crane including a motor chassis forming a mobile support; a main jib formed of a rear jib portion pivotally mounted at the rear end thereof upon the motor chassis and a forward jib portion pivotally connected at the rear end of the same to the forward end of the said rear jib portion movable between a raised and a lowered position; an auxiliary jib also pivotally mounted at the rear end thereof upon the chassis independently of the pivot mounting of the rear jib portion and having a roller thereon engaging the underside of said rear jib portion; a ram

mounted on said chassis and engageable with the auxiliary jib for raising and lowering the auxiliary jib whereby to raise and lower the rear jib portion and thereby also the main jib; and link means at one end operatively connected to the rear end of said forward jib portion eccentrically of the pivot connection between said forward and rear jib portions, and at its other end operatively connected to the chassis at a point spaced from the pivot mounting of said rear jib portion thereon and causing said forward jib portion to pivot on said forward end of the rear jib portion to its raised position when said main jib is raised, and to its lowered position when said main jib is lowered.

2. A mobile crane including a motor chassis forming a mobile support; a main jib formed of a rear jib portion pivotally mounted at the rear end thereof upon the motor chassis and a forward jib portion pivotally connected at the rear end of the same to the forward end of said rear jib portion; an auxiliary jib also pivotally mounted at the rear end thereof upon the chassis independently of the pivot mounting of the rear jib portion and having a roller thereon engaging the underside of said rear jib portion; a ram mounted on said chassis and engageable with the auxiliary jib for raising and lowering the auxiliary jib whereby to raise and lower the rear jib portion and thereby also the main jib; and at least one rod forming a link pivotally connected at one end to said chassis at a point below and spaced from the pivot mounting of said rear jib portion thereon and operably connected at its forward end to the forward jib portion eccentrically of the pivot connection between said forward and rear jib portions in order to control the latter and enable the forward end of said forward jib portion to be brought down below ground level while the forward end of said rear jib portion is disposed

above ground level when said main jib is lowered by said ram.

3. A mobile crane including a motor chassis having a balance box; a main jib formed of a rear jib portion pivotally mounted at the rear end thereof upon the balance box and a forward jib portion pivotally connected at the rear end of the same to the forward end of said rear jib portion; an auxiliary jib also pivotally mounted at the rear end thereof upon said balance box forwardly of the pivot mounting of said rear jib portion thereon and at a lower level than the latter pivot mounting and having a roller at the forward end engaging beneath the rear jib portion; at least one rod forming a link pivotally connected at the rear end thereof to the balance box intermediate the pivot mounting of said rear jib portion and auxiliary jib and pivotally connected at the forward end thereof to the rear end of the forward jib portion eccentrically and independently of the pivot connection between said forward and rear jib portions; and a ram pivotally connected at one end to said chassis and engageable with the auxiliary jib for raising and lowering said auxiliary jib and thereby raising and lowering said main jib.

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