S. ZIED.

DERRICK FOR VEHICLES.

APPLICATION FILED SEPT. 22, 1919.

1,345,304.

Patented June 29, 1920.

3 SHEETS—SHEET 1.

Fig. 1.

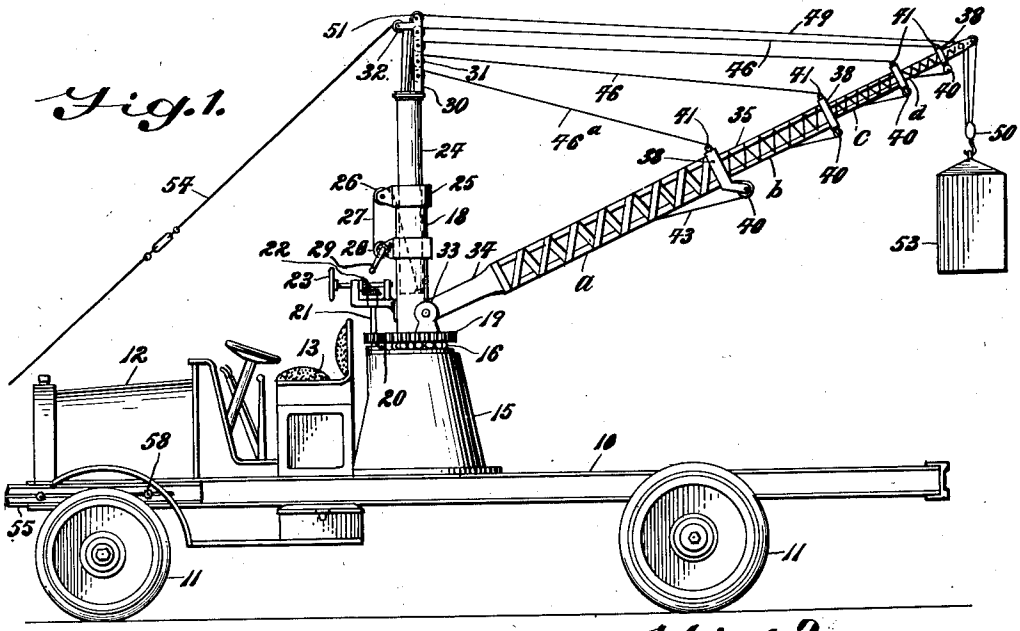

Fig. 2.

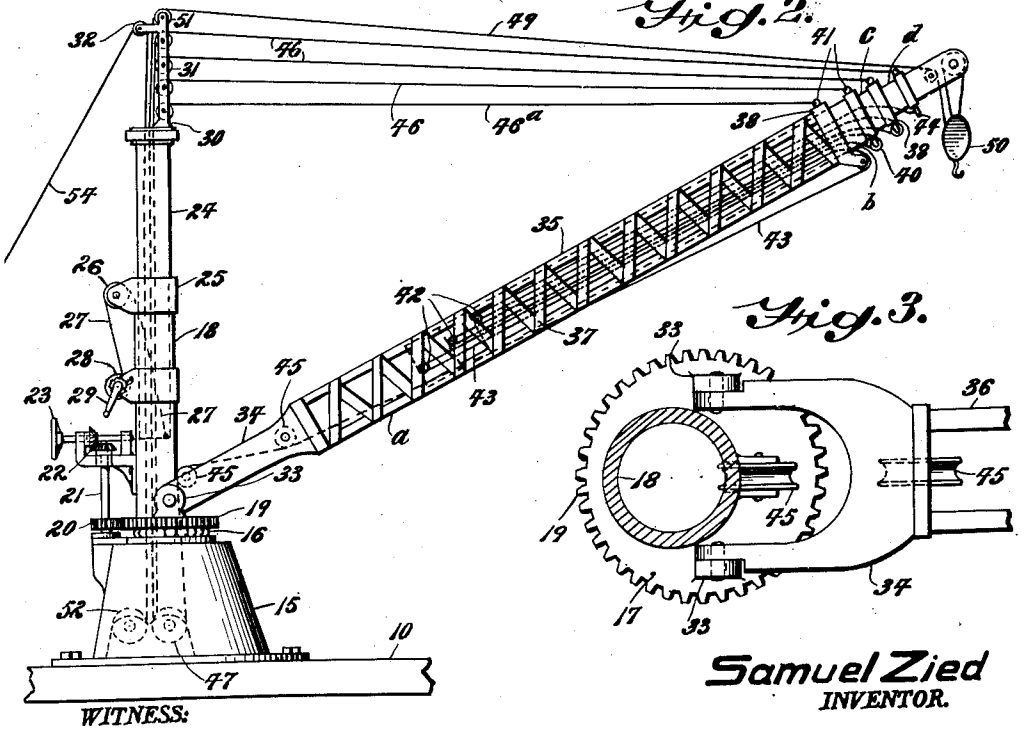

Fig. 3.

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3 SHEETS—SHEET 2.

Fig. 4.

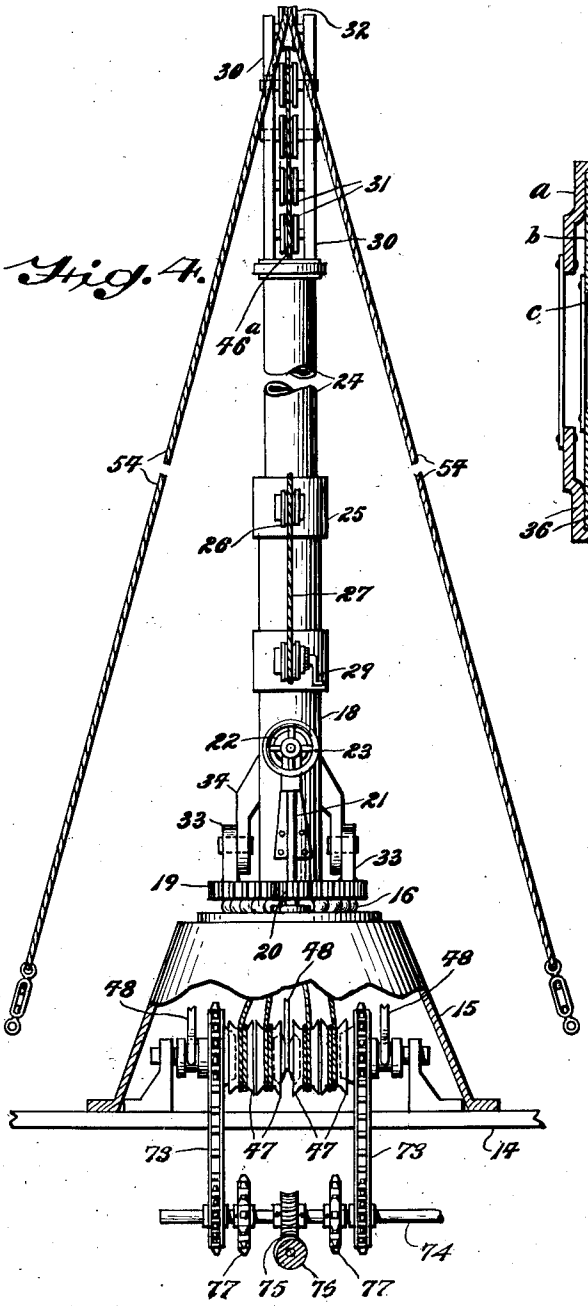

Fig. 5.

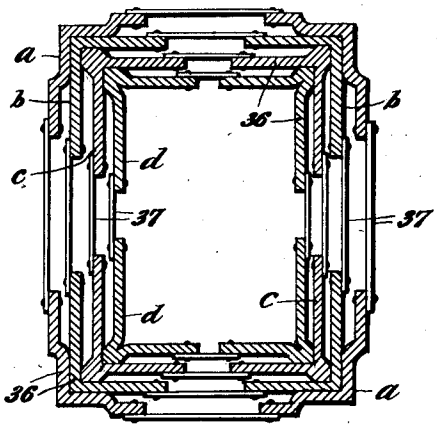

Fig. 6.

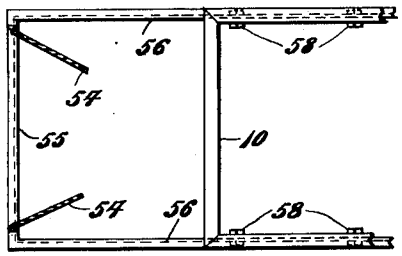

Fig. 7.

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3 SHEETS—SHEET 3.

Fig. 8.

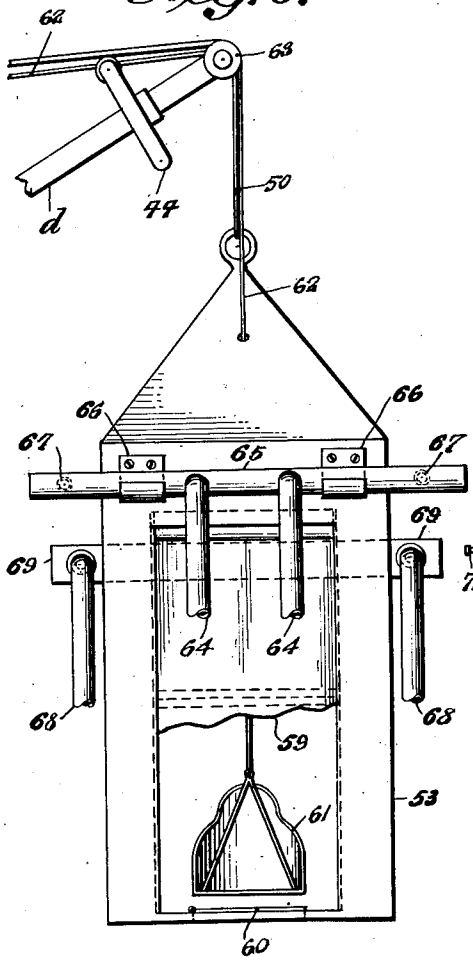


Fig. 9.

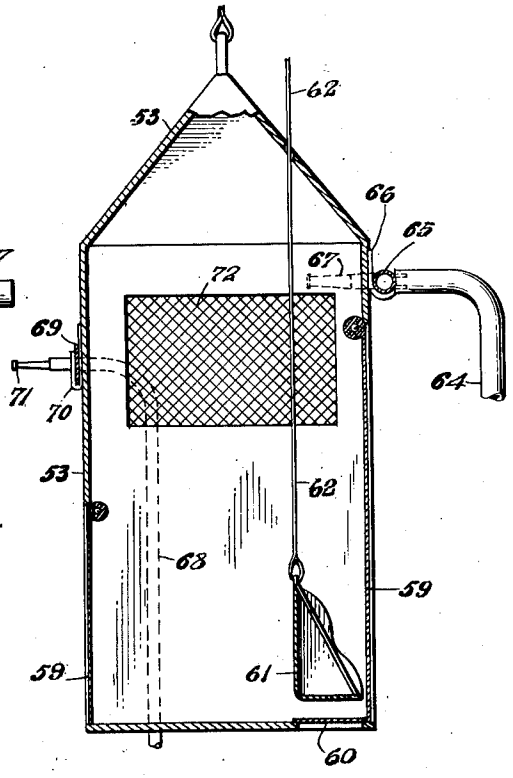


Fig. 10.

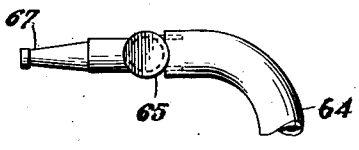
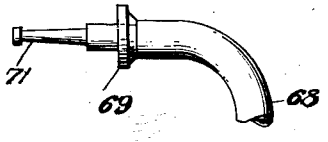


Fig. 11.



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UNITED STATES PATENT OFFICE.

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DERRICK FOR VEHICLES.

1,345,304. Specification of Letters Patent. Patented June 29, 1920.

Application filed September 22, 1919. Serial No. 325,364.

To all whom it may concern:

Be it known that I, SAMUEL ZIED, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Derricks for Vehicles, of which the following is a specification.

This invention relates to derricks for hand or power vehicles and it has more particular reference to that type or class of derrick for use upon motor driven trucks and it has for its main object to provide a derrick having a telescoping boom for use upon a motor truck which is capable of extension to different heights without in any way jeopardizing its stability.

Another object of this invention is to provide a derrick of the type referred to having a telescopic supporting part and means whereby the braces or guys can be easily adjusted to more effectively support the load raised.

A further object of the invention is the provision of a derrick for use upon fire hose-wagons or trucks fitted with means whereby the hose can be expeditiously raised near to a burning building and the nozzle or nozzles thereof manipulated while the fireman is effectively prevented from injury due to his close proximity to the conflagration.

A still further object of this invention is the provision of a simple and efficient portable derrick for use upon power driven vehicles.

With these and other objects in view as will hereafter be more apparent my invention consists essentially in the features of construction, combination and arrangement of parts hereinafter fully described, and more specifically pointed out by the appended claims.

In the further disclosure of the invention reference is to be had to the accompanying drawings constituting a part of this specification and in which like characters of reference designate the same or similar parts in all the views.

Figure 1—is a side elevation of an autotruck having my improved construction of derrick and hose elevating cage applied thereto, the telescoping sections of the boom being shown in partly extended position.

Fig. 2—is an enlarged detail elevation of the derrick with the telescoping sections thereof illustrated in collapsed position.

Fig. 3—is a detail plan of the boom supporting mechanism.

Fig. 4—is an enlarged detail elevation of the supporting standard or column of the derrick and the clutch mechanism for operating the boom sections and raising and lowering mechanism.

Fig. 5—is a transverse section of the boom showing the several telescoping sections and drawn to an enlarged scale.

Fig. 6—is a fragmentary detail plan view of the guy or brace adjusting means.

Fig. 7—is a side view of the same.

Fig. 8—is a fragmentary side elevation of the fireman's protecting and hose elevating cage with part broken away to disclose the underlying structure.

Fig. 9—is a vertical section of the same, and taken at right angles to the preceding figure.

Fig. 10—is a detail of one of the hose nozzles; and,

Fig. 11—is a similar view of a slightly modified form of nozzle.

Referring to the drawings, the numeral 10, designates the chassis of a motor truck of any approved type, 11 the wheels thereof, and 12 the motor and associated parts all of which are in accordance with generally accepted pattern, and which form no part of my present invention.

The driver's seat is designated by the numeral 13, and immediately in the rear thereof I construct a suitable supporting base or platform 14, which extends transversely of the chassis 10, and integral with or mounted on this platform 14, is a truncated housing 15 for the clutch and winding mechanism hereinafter more specifically referred to. Mounted on top of the housing 15, as for example on an antifriction ball bearing 16, is a turntable 17, Fig. 3— which supports the lower section 18, of the derrick standard. This turntable 17, is provided with a toothed peripheral edge 19, with which engages a pinion 20, carried by a vertical shaft 21, supported in appropriate bearings and adapted for rotation by a miter gear 22, and hand-wheel 23 so that the derrick can be swung from side to side of the truck as desired. Fitting in the aforesaid section 18 and adapted for raising or lowering therein is a second, or upper section 24, and in

order to provide a simple and effective means for raising and lowering the same I fit a collar 25 on the upper end of the lower section 18, provided with a bearing for a sheave 26, over which passes a cable 27, one end whereof is attached to the lower end of the section 24, and the other end is secured to a winding drum 28, carried by a suitable bracket on the lower section 18, a crank handle 29, and ratchet and dog being provided for the operation of the drum 28.

Integral with or securely mounted on the top of the telescoping section 24, are spaced standards 30, supporting spaced sheaves 31, 32, for the purpose hereafter explained.

Formed on or secured to the platform 17, are upstanding bearings 33, between which is hingedly mounted the forked end 34, of a boom 35. This boom 35, preferably includes a series of telescopic sections *a*, *b*, *c*, and *d*, the section *a*, having the forked end 34, and the sections *b*, *c*, and *d*, being adapted to telescope within one another and the said section *a*. Each section *a*, *b*, *c*, and *d* is made up of angle sections 36; Fig. 5—braced by lattice work 37 into box formation, and each said section is provided at its outer end with a collar 38, having opposed sheaves and eyes 40, 41, respectively mounted thereon, the former for example being disposed on the lower side of the boom 35. At the lower inner end of each of the sections *b*, *c*, and *d* there is revolubly mounted a sheave 42, and over said sheaves 40, 42, there is passed a cable 43, zigzag fashion the upper end whereof is secured at 44, to the upper end of the section *d*, and the lower end is conducted over sheaves 45, down to a winding drum 47,—Fig. 2—located in the housing 15.

Connected with the aforesaid eyes 41, on the sections *b*, *c*, and *d*, are cables 46, which pass over the three uppermost sheaves 31, at the top of the section 24 and down through the same to a series of clutch operated winding drums 47, adapted to be thrown into and out of action by suitable levers 48,—Fig. 4—under the control of the driver. These drums 47 may be controlled in any of the well known ways step by step and they serve in use to collapse the boom 35, or, in other words to move the sections *b*, *c*, and *d*, longitudinally into telescoped relation with respect to the section *a*.

A fourth cable 46^a is connected to the eye 41, at the outer end of the boom section *a* and passing over the lower sheave 31, downwardly through the supporting sections or post 24, 18, to another winding drum 47, serves in use to raise and lower the boom 35 from a substantially horizontal to the vertical or other desired inclination.

A cable 49, supports at its outer end a block and tackle 50, and the other end thereof passes over a pulley or sheave 51, revolubly mounted at the upper end of the spaced standards 30, thence downwardly through the supporting sections 24, 18 to a winding drum 52—Fig. 2—and this cable 49, serves to raise or lower a cage or the like 53, as the case may be and according to the service conditions of the derrick. Stay or guy ropes or cables 54, are attached to the forward ends of a substantially U-shaped channel section 55, the parallel limbs 56 whereof are adapted for sliding movement longitudinally of the chassis 10, and in order to provide a simple means for adjusting same to the requisite position they are provided with slots 57, through which bolts or studs 58 are passed and threaded into the chassis 10. Thus it will be readily seen that when the supporting sections 24, 18 are fully extended the guy ropes or stays 54 may be correspondingly adjusted so that the proper stability of the derrick is effectively maintained.

Referring now more particularly to Figs. 8 to 11, inclusive, I illustrate thereby a convenient form of hose elevating cage and fireman's protective cage 53, said cage being provided with swing doors 54, 54, through which ingress and egress may be effected, as well as a trap door 60 in the floor thereof through which an emergency seat 61 can be lowered or raised by a cable 57 in case of accident or when a rescue is to be effected from a burning building, the cable 57, being passed over a sheave or pulley 63, and connected to a winding drum—not shown—in the aforesaid housing 15. Hose connections 64 are coupled to a transversely disposed pipe 65 conveniently supported on hangers 66, bolted or riveted to the cage 53 and having adjustable nozzles 67, attached therein by means of which water can be played on to a burning building, at any desired angle. Additional hose connections 68 may be attached to a plate bar 69, supported on hangers 70, at the front of the cage and having fixed nozzles 71, attached thereto by means of which water or chemical can be played directly onto a fire.

A suitably screened fireproof window or windows 72 is, or are, provided in the cage 53, so that the person or persons therein may have a clear vision to operate the nozzles 67, 71, as and where required, or to effect any other requisite duty.

The winding drums 47, may be conveniently operated by chain drive 73,—Fig. 4—from a counter-shaft 74 suitably mounted beneath the chassis 10, and driven by a worm gear 75, on the engine or motor shaft 76, additional chains — not shown — passing from the sprocket wheels 77 to the winding drums 52 for effecting their operation as and when required.

From the foregoing description it will be readily seen that by my invention I provide

an extremely simple and effective derrick for the purposes briefly outlined, said derrick having a boom and supporting member or part both of which may be longitudinally adjusted during the operation of the apparatus, all of the operations being controlled from a single motor or engine shaft without the driver leaving his seat on the machine. Furthermore a derrick embodying the foregoing described features will be seen to be extremely effective when applied to a fire-hose truck while a fireman or firemen may be transported to any desired height to effect a rescue or play water on to a fire rapidly without the necessity and encumbrance of hauling up the hose.

Finally while I have outlined one practical and convenient embodiment of my invention it will be readily seen that various changes may be made in the particular form and arrangement of the several parts without departing from the essential features set forth, and hence I do not limit myself to the precise details specifically described, but consider myself at liberty to make such other changes and combinations as fairly fall within the spirit and scope of the appended claims.

Having thus described my invention what is claimed as new is:—

1. In a derrick crane, the combination of a telescopic supporting post, means for extending said post longitudinally of its axis, guys or braces connected with the upper end of said post and adjustable relative to the base thereof, a turntable about the lower section of the supporting post, means for moving said turntable when desired, a boom hingedly connected to the turntable and including a series of rectangular telescoping sections, means for extending the boom longitudinally of its axis, and means for retracting the telescoping sections.

2. In a derrick crane, the combination of a telescopic supporting post, means for extending said post longitudinally of its axis, guys or braces connected to the upper end of said post and to an anchor frame adjustable relative to the base thereof, a turntable about the lower section of the supporting post, means for moving said turntable when desired, a boom hingedly connected to the turntable and including a series of rectangular telescoping sections, each of said sections comprising angle sections braced by lattice-work, means for extending the telescoping sections longitudinally and consecutively, and means for retracting the telescoping sections.

3. In a derrick crane, the combination of a telescopic supporting post, means for extending said post longitudinally of its axis, guys or braces connected to the upper end of said post and to an anchor frame adjustable relative to the base thereof, a turntable about the lower section of the supporting post, means for moving said turntable when desired, a boom hingedly connected to the turntable and including a series of rectangular telescoping sections, each of said sections comprising angle sections braced by lattice-work, a cable connecting at one end with the outer end of the innermost telescoping section and passing zig-zag fashion through the boom to a winding drum whereby said telescoping sections may be extended longitudinally and consecutively, and a separate cable connection to each telescoping section for supporting same during retraction.

4. In a derrick crane, the combination of a telescopic supporting post, means for extending said post longitudinally of its axis, guys or braces connected to the upper end of said post and to an anchor frame adjustable relative to the base thereof, a turntable about the lower section of the supporting post, means for moving said turntable when desired, a boom hingedly connected to the turntable and including a series of rectangular telescoping sections, each of said sections comprising angle sections braced by lattice-work, a cable connecting at one end with the outer end of the innermost telescoping section and passing zig-zag fashion through the boom to a winding drum whereby said telescoping sections may be extended longitudinally and consecutively, a load raising and supporting cable operable independently of the boom extending and retracting mechanism, and a separate cable and operating mechanism for moving the boom angularly up and down.

5. In a derrick crane the combination of a telescopic supporting post, means for extending said post longitudinally of its axis, guys or braces connected to the upper end of said post and to a substantially U-shaped anchor frame adjustable horizontally relative to the base thereof, a turntable about the lower section of the supporting post, means for moving said turntable when desired, a boom hingedly connected to the turntable and including a series of rectangular telescoping sections, each of said sections comprising angle sections braced by lattice-work, a cable connecting at one end with the outer end of the innermost telescoping section and having zig-zag fashion operative connection with the series of sections, said cable being connected to a winding drum for extending the boom, a separate cable connection to each telescoping section for supporting same during retraction, means for angularly raising and lowering the boom, a load raising and lowering cable operable independently of the boom, and means for supporting hose connections and

nozzles as well as serving as life preserver adapted for suspension from the load raising and lowering cable.

6. In a derrick crane, the combination of a telescopic supporting post, means for extending said post longitudinally of its axis, a boom hingedly connected to a turntable movable about the base of said supporting post, said boom including a series of telescoping sections, means for extending the telescoping sections longitudinally, means for retracting the telescoping sections, a protective cage suspended from a separate raising and lowering connection on the outer end of the boom, said cage having hose supporting connections and nozzles, and means operable independently of but associated with the cage for effecting a rescue when necessary.

7. The combination with a self propelled vehicle of a derrick crane including a telescopic supporting post, means for extending said post longitudinally of its axis, guys or braces connected to the upper end of said post and to a substantially U-shaped anchor frame adjustable horizontally relative to the base thereof, a turntable about the lower section of the supporting post, means for moving said turntable when desired, a boom hingedly connected to the turntable and including a series of rectangular telescoping sections, each of said sections comprising angle sections braced by lattice-work, a cable connecting at one end with the outer end of the innermost telescoping section and having zig-zag fashion operative connection with the series of sections, said cable being connected to a winding drum for extending the boom, a separate cable connection to each telescoping section for supporting same during retraction, means for angularly raising and lowering the boom, a load raising and lowering cable operable independently of the boom, and means for supporting hose connections and nozzles as well as serving as a life preserver adapted for suspension from the load raising and lowering cable.

In testimony whereof I affix my signature.

SAMUEL ZIED.