

No. 720,197.

PATENTED FEB. 10, 1903.

H. D. VAN DOORN.  
COMBINED WINDLASS AND WINCH.

APPLICATION FILED JULY 7, 1902.

NO MODEL.

3 SHEETS—SHEET 1.

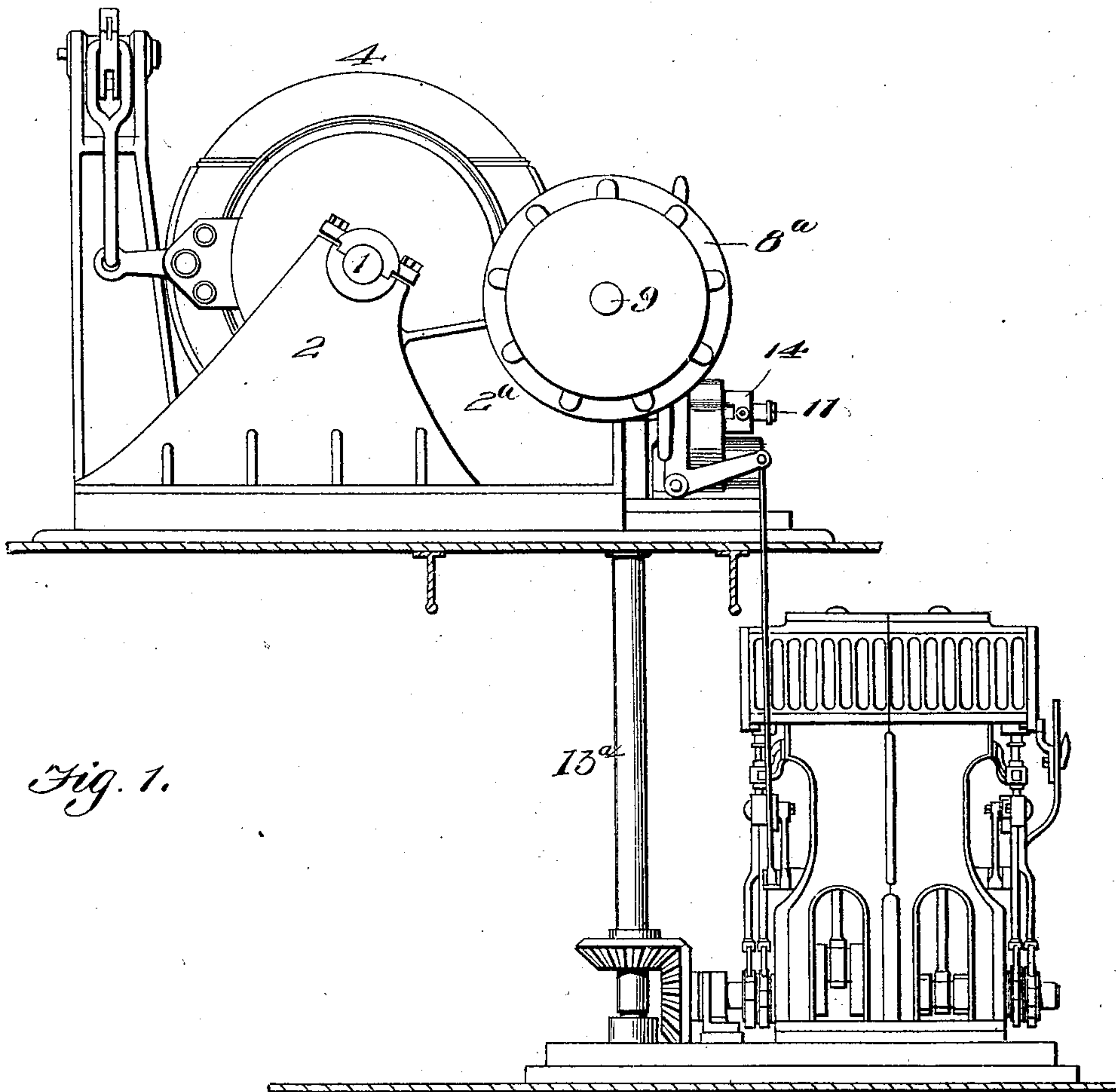


Fig. 1.

Witnesses:

*Catharine H. Trow, Jr.*

*Ella L. Corbett*

Inventor

*Henry Danforth Van Doorn*

by: *Edoorn Bros.*

Attorneys

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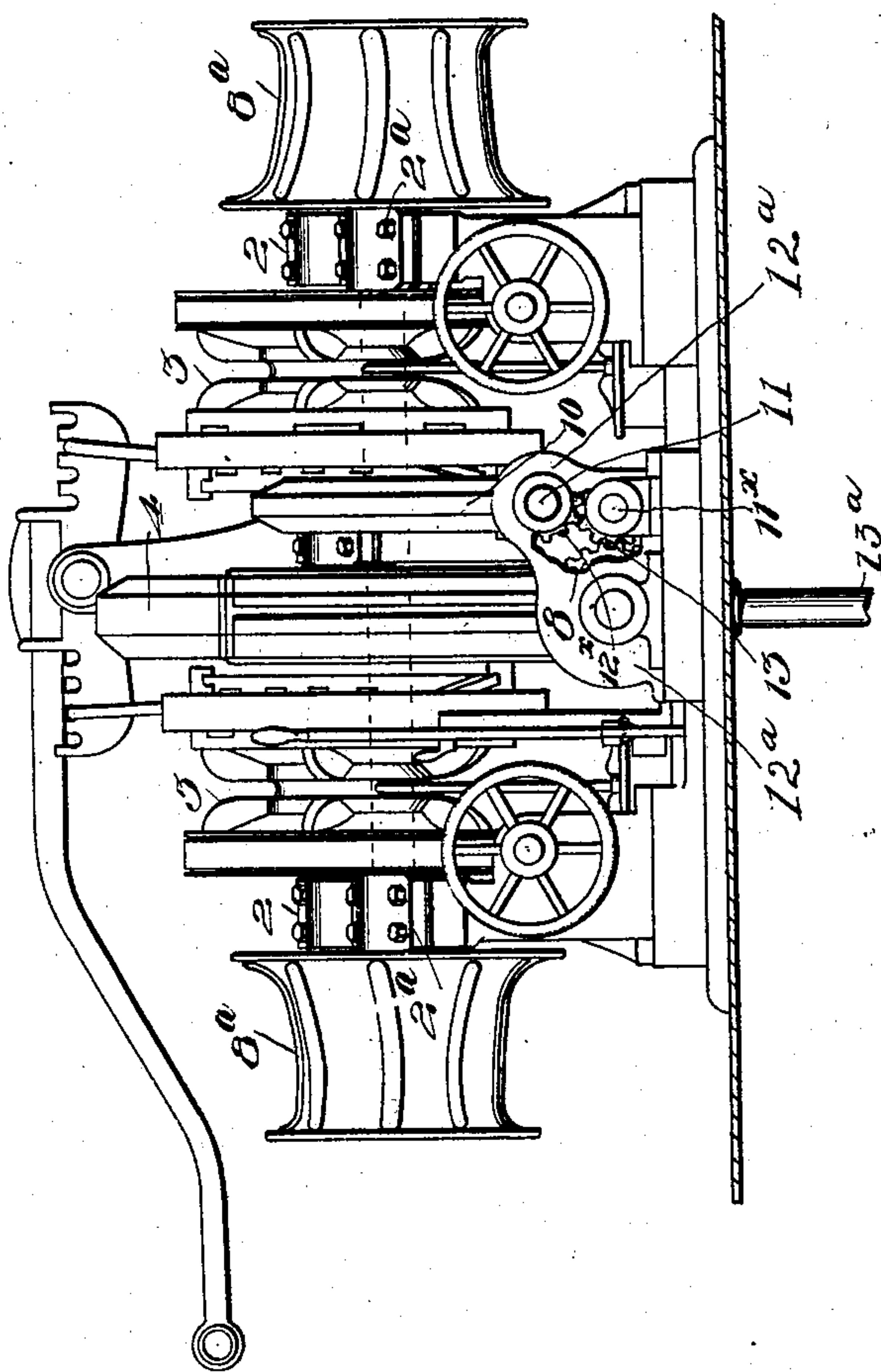
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3 SHEETS—SHEET 2.

Fig. 2



Witnesses:

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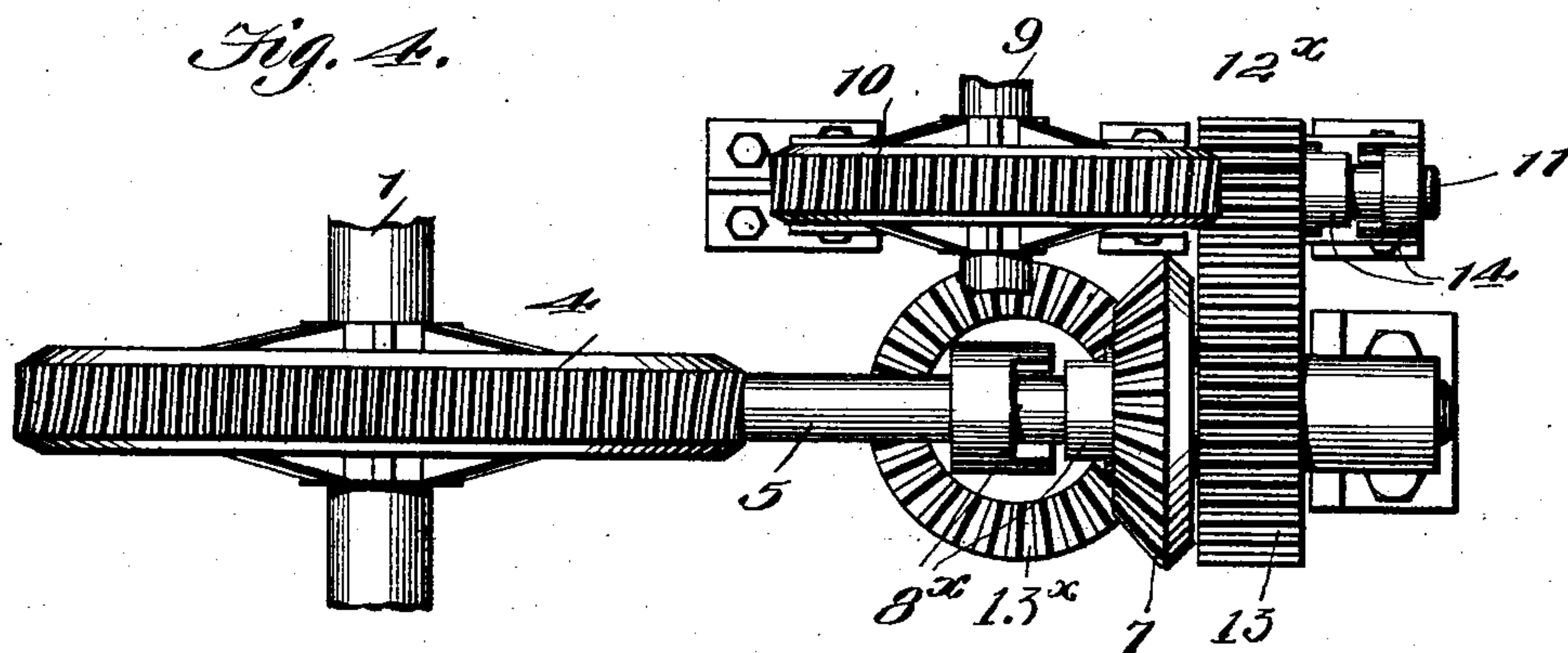
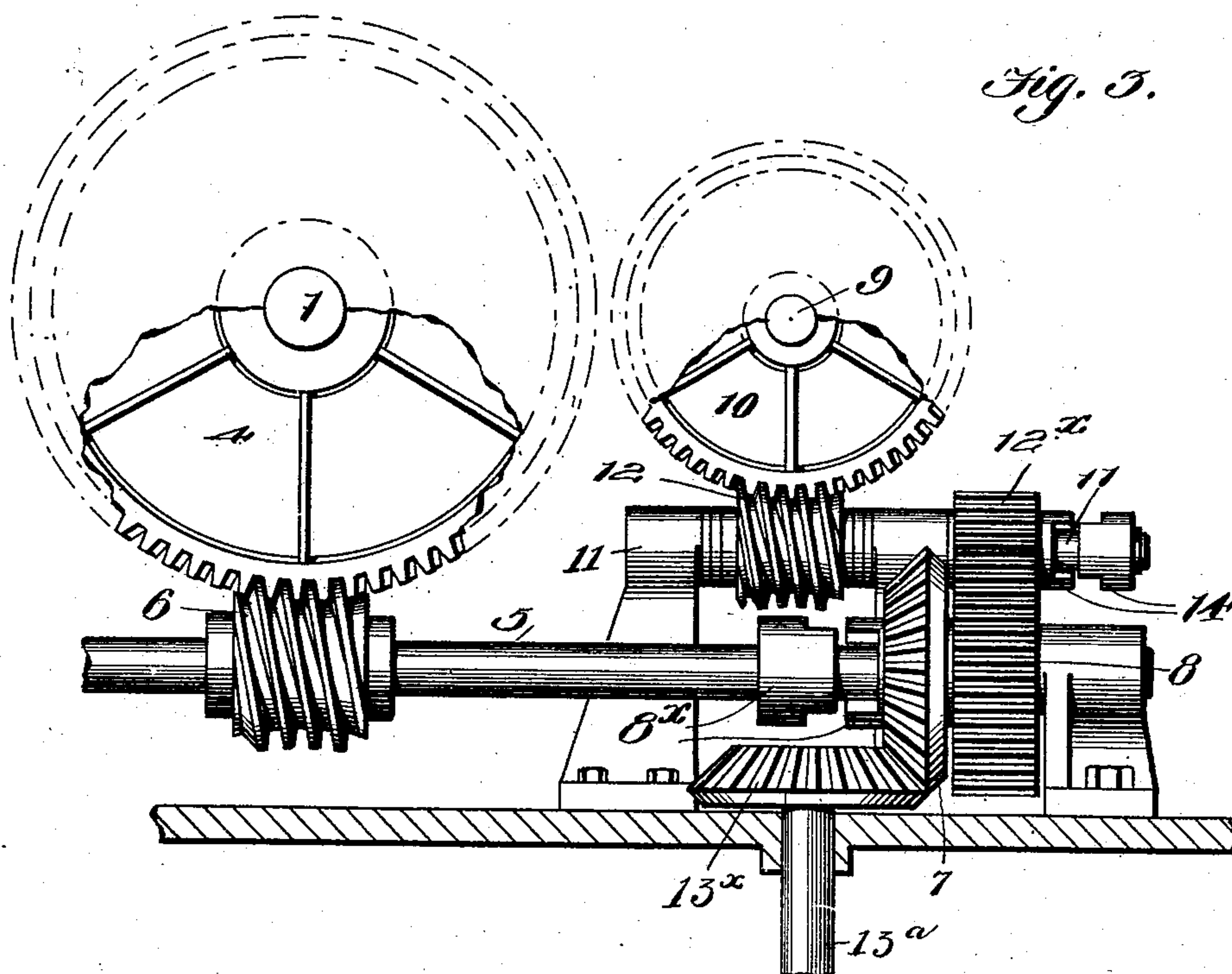
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3 SHEETS—SHEET 3.



Witnesses

*Edwin B. H. Jones, Jr.*

*Ella L. Corbett.*

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# UNITED STATES PATENT OFFICE.

HENRY DANFORTH VAN DOORN, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR  
TO AMERICAN SHIP WINDLASS COMPANY, OF PROVIDENCE, RHODE  
ISLAND, A CORPORATION OF RHODE ISLAND.

## COMBINED WINDLASS AND WINCH.

SPECIFICATION forming part of Letters Patent No. 720,197, dated February 10, 1903.

Application filed July 7, 1902. Serial No. 114,625. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY DANFORTH VAN DOORN, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in a Combined Windlass and Winch; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in combined windlasses and warping-winches.

Heretofore all warping by windlass action has been effected on what are termed "heads" at the ends of the main windlass-shaft. This, however, is greatly unsatisfactory, since the warping could be accomplished only at a rate of speed involved in actuating the windlass or taking in chain, being much too slow for doing the former. I have therefore provided for increasing the speed of the winch-shaft without great cost or complication, effecting the same at minimum outlay.

Said invention consists of windlass mechanism combined with winch or warping mechanism adapted to be operatively connected up to a common driving-shaft and at differential rates of speed, also so as to be actuated or operated each independently of the other.

In the present arrangement of parts herein described I have shown the engine as located upon the deck below that bearing the windlass, &c.; but I do not restrict myself in this particular, it being understood that the engine may be located upon the same deck with the windlass.

In the accompanying drawings, illustrating the preferred embodiment of my invention, Figure 1 is a side elevation thereof, including the engine and driving-shaft. Fig. 2 is an aft or rear elevation. Fig. 3 is a broken detailed view disclosing more especially the speed-gear for the winch mechanism. Fig. 4 is a plan view thereof.

In carrying out my invention I suitably mount or journal in position the windlass-

shaft 1, preferably in boxes or bearings, as usual, secured upon housings or "bitts" 2, arranged upon the upper deck of the ship or boat. Said shaft is equipped with wildcats 3, adapted to be coupled up therewith by suitable mechanism, preferably as shown. These, however, forming no part of the invention, will not be further referred to herein. Said shaft has fixed to it a worm-wheel 4, about centrally of the wildcats, the purpose of which will be presently apparent.

A shaft 5, suitably supported or journaled in position at preferably right angles to the longitudinal section or axis of the windlass, carries a worm-screw 6, gearing with the worm-wheel 4 of the windlass, also loose integral miter-gear 7 and spur-gear 8, further referred to later. Said loose integral gears are adapted to be coupled or clutched up to the shaft 5 by a suitable clutch device 8<sup>x</sup>, arranged in connection therewith, preferably as shown or otherwise, for independently putting into operation the windlass-shaft mechanism, allowing the winch or warping shaft mechanism to remain out of operation.

Suitably mounted in position in a plane parallel with the windlass-shaft is a warping or winch shaft 9, carrying winch-heads 8<sup>a</sup>, said latter shaft being journaled in boxes secured, preferably, in extensions or arms 2<sup>a</sup> of the housings or bitts 2 of the windlass. Said windlass-shaft 9 has secured thereto a worm-wheel 10, and directly below and with its longitudinal axis in the plane of said worm-wheel is a counter-shaft 11, carrying a worm 12, geared to said worm-wheel. Upon the same shaft 11 is a loose spur gear or pinion 12<sup>x</sup>, geared to a corresponding gear or pinion 13, secured upon a shaft 11<sup>x</sup>, in turn meshing or engaging with the gear or pinion 8, the pinion 7, integral with the last-named pinion, being meshed with a corresponding gear 13<sup>x</sup> of the driving-shaft 13<sup>a</sup>. Both the shaft 11 and the shaft 11<sup>x</sup> of the pinion or gear 13 are journaled in supplemental housings or supports 12<sup>a</sup>, suitably secured in place, and upon said shaft 11 is arranged a clutch device 14 for independently connecting up this gearing with the driving-shaft in putting the warping or



winch shaft in action. The action of the worm and worm-wheel between the windlass-shaft and the shaft 5, geared up with the driving-shaft, as stated above, is such as to provide for the necessary rate of speed and power for said windlass-shaft, while by means of the worm and wheel between the winch-shaft and the shaft 11 and the gearing 12 12<sup>x</sup> 13 a differential or greater rate of speed is obtained for said winch or warping shaft than that of the windlass-shaft as required for warping purposes, as will be readily appreciated by those familiar with such contrivances.

The winch or warping shaft mechanism, as shown, is arranged or located aft of the windlass-shaft mechanism to secure, than would otherwise be the case, a more solid or firm bearing or support therefore as relates to the direction of the strain or stress. I do not, however, restrict myself to this arrangement, as said winch-shaft mechanism may be located forward of the windlass-shaft mechanism and carry out the purposes of my invention. Also it will be observed that instead, as heretofore in this class of machines, of the windlass-shaft mechanism and the winch-shaft mechanism both being synchronously or at the same time in operation when one or the other is required for use they are adapted by my invention for coupling or clutching up, each independently of the other, to the driving-shaft, this providing for the actuation of only the one it is desired to bring into requisition, saving unnecessary wear, friction, &c. Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. Combined windlass and winch or warping mechanism whose respective shafts are geared up to separate shafts, adapted to be differentially geared together, and to the driving-shaft, substantially as set forth.

2. Combined windlass and winch or warping mechanism, whose respective shafts are geared up to separate shafts adapted to be differentially geared together and to the driving-shaft, and means for coupling up said former shafts to said last-named shaft, substantially as set forth.

3. Combined windlass and winch or warping mechanism, embracing a driving-shaft, additional shafts geared to the shafts of the former, and adapted to be differentially geared together and to said driving-shaft, and means for effecting the independent coupling up of the gearing of said additional shafts with said driving-shaft, substantially as set forth.

4. Combined windlass and winch or warping mechanism, embracing a driving-shaft, additional shafts geared up with the shaft of the former and adapted to be differentially geared together and to said driving-shaft, and clutch or coupling devices, adapted to operatively connect up said additional shafts with said driving-shaft, substantially as set forth.

5. Combined windlass and winch or warp-

ing mechanism, embracing a driving-shaft, additional shafts geared up with the shafts of the former, a multiple differential-gear mechanism arranged between said additional shafts and said driving-shaft, and clutch devices adapted to connect up said multiple-gear mechanism with said driving-shaft, substantially as set forth.

6. Combined windlass and winch or warping mechanism, embracing a driving-shaft, additional shafts geared up with the shafts of the former, multiple differential-gear mechanism arranged between said additional shafts and driving-shaft, and clutch or coupling devices adapted to operatively and independently connect up said multiple-gear mechanism and said driving-shaft, substantially as set forth.

7. Combined windlass and warping mechanism, embracing a driving-shaft, additional shafts having worm and worm-wheel gearing connection with the shafts of said windlass and warping mechanism, and a clutch or coupling connecting up multiple differential gearing with said additional shafts and effecting the coupling thereof with the driving-shaft, substantially as set forth.

8. Combined windlass and winch or warping mechanism, embracing a driving-shaft, additional shafts geared to the shafts of the former and carrying loose gears or pinions and multiple differential gear arranged between said additional shafts and connecting with said loose gears or pinions, one of said loose gears engaging the driving-shaft pinion, substantially as set forth.

9. Combined windlass and winch or warping mechanism, embracing a driving-shaft, a second shaft geared to the windlass-shaft and carrying a loose gear or pinion, adapted to be geared up with said driving-shaft, multiple differential gear adapted to be operatively connected up with the gear or pinion on said second shaft, and a third shaft geared up with the winch-shaft and said multiple gear, and a clutch or coupling device connecting up said third shaft and said multiple gear, substantially as set forth.

10. Combined windlass and winch or warping mechanism, embracing a driving-shaft, a second shaft geared to the windlass-shaft and carrying loose integral gears one adapted to be geared up with said driving-shaft, a third shaft carrying a loose gear or pinion, and a worm geared to a worm-wheel on the winch-shaft, differential multiple gear connected up with said loose pinions and clutch devices arranged in connection with said loose pinions, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY DANFORTH VAN DOORN.

Witnesses:

HARRY O. SWAN,  
C. E. SAMMIS.