

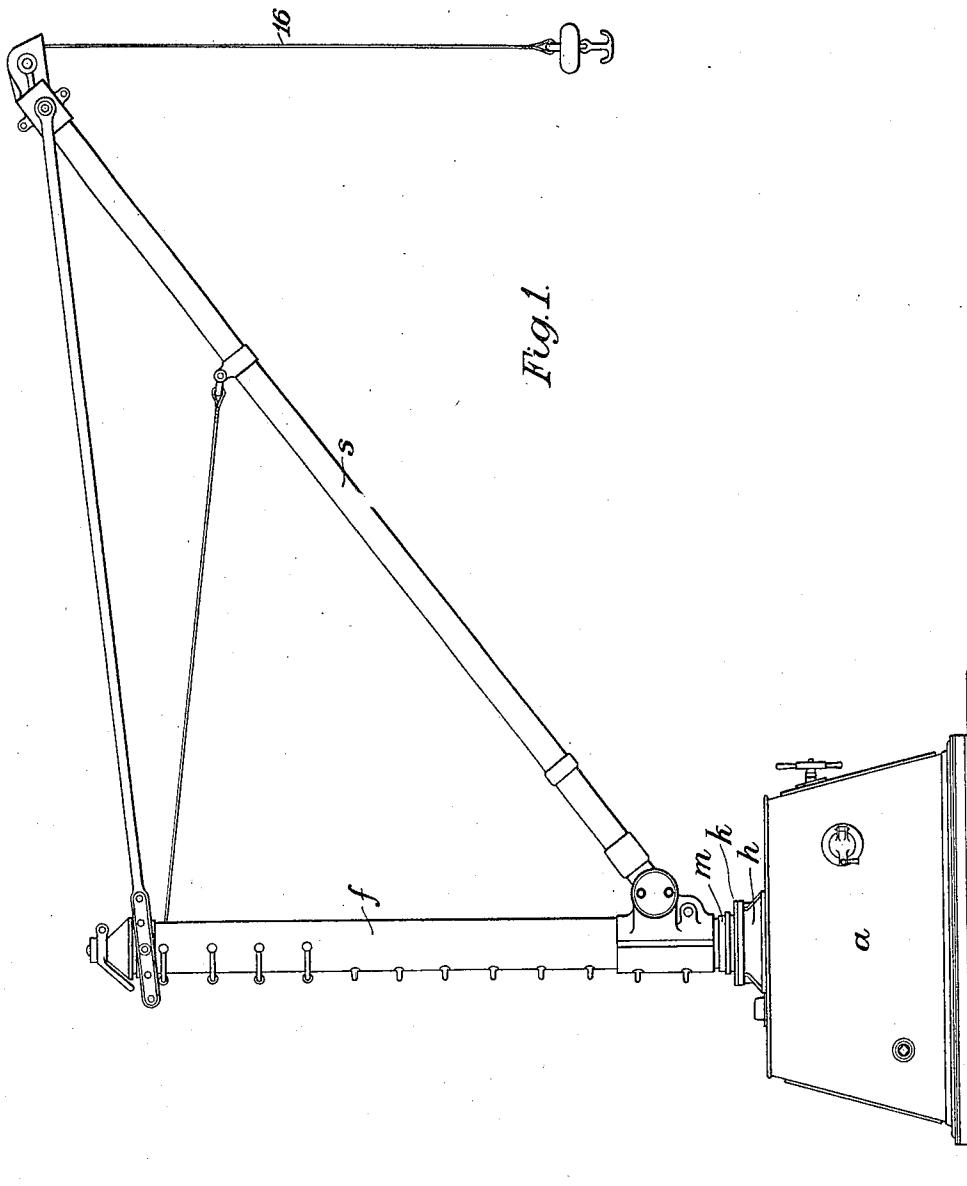
W. HARBINGER.  
CRANE.

APPLICATION FILED NOV. 28, 1919.

1,402,291.

Patented Jan. 3, 1922.

5 SHEETS—SHEET 1.



INVENTOR:  
Waldemar Harbinger  
BY Wm Wallace White  
ATTY.

W. HARBINGER.

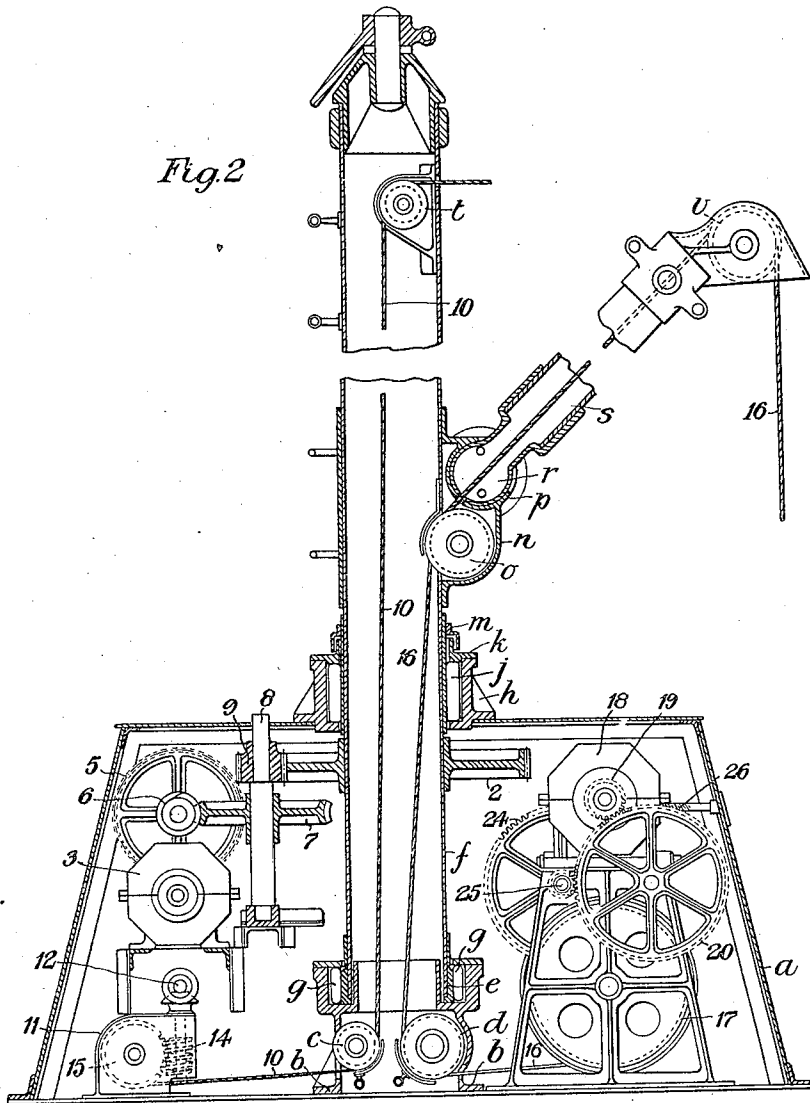
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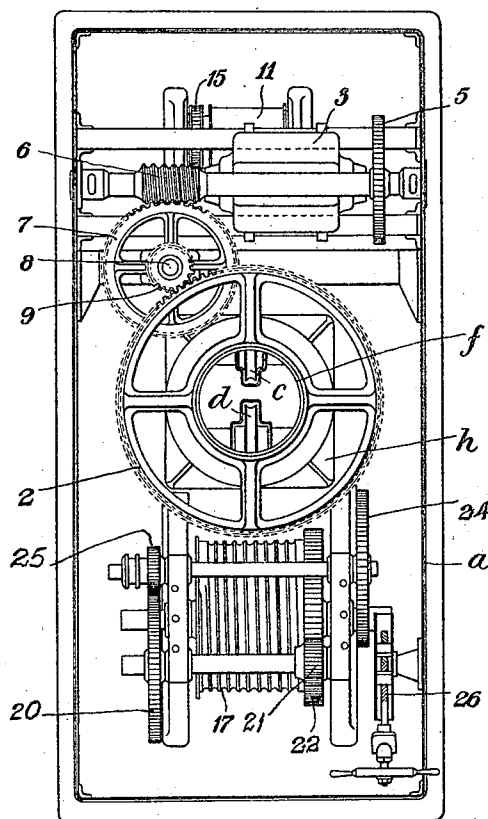
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*Fig. 3.*



INVENTOR:

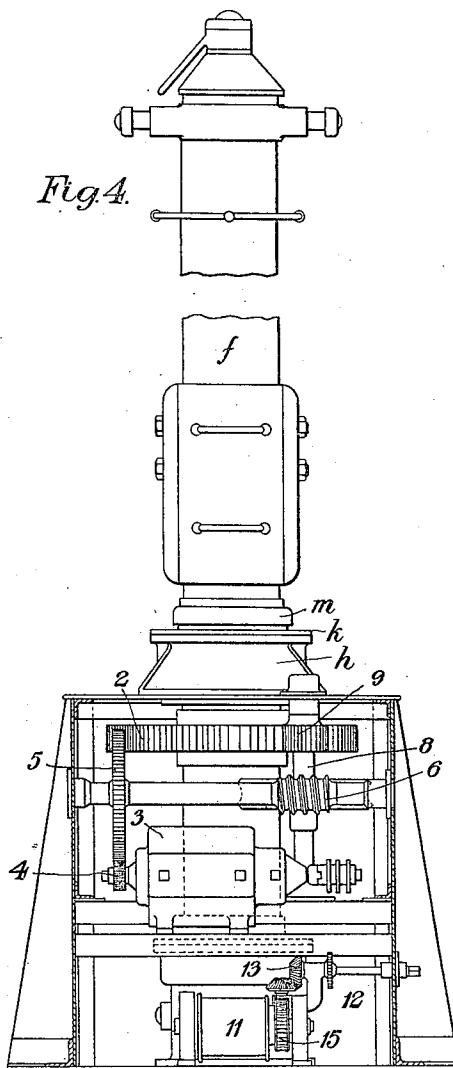
Waldemar Harbinger  
By *M. Wallace White*  
ATTY.

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Waldemar Harbinger  
BY Wm Wallace White  
ATT'Y.

W. HARBINGER.

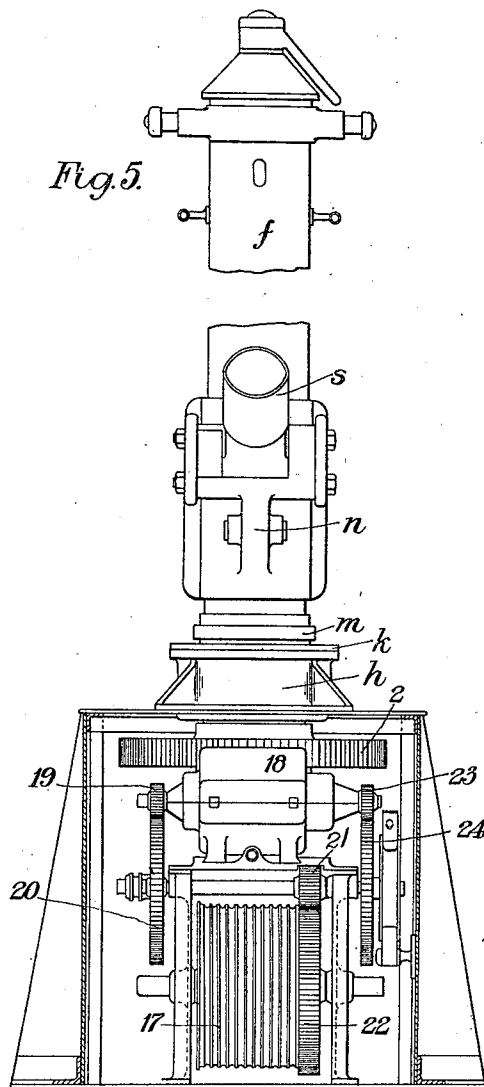
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5 SHEETS—SHEET 5.



INVENTOR:

Waldemar Harbinger  
By *Mr. Wallace White*  
ATTY.

# UNITED STATES PATENT OFFICE.

WALDEMAR HARBINGER, OF LONDON, ENGLAND.

## CRANE.

1,402,291.

Specification of Letters Patent.

Patented Jan. 3, 1922.

Application filed November 28, 1919. Serial No. 341,210.

*To all whom it may concern:*

Be it known that I, WALDEMAR HARBINGER, of London, England, a subject of the King of Great Britain and Ireland, have invented certain new and useful Improvements in Cranes, of which the following is a specification.

This invention relates to cranes. The object of the invention is to provide an improved electric crane for handling general cargo.

A crane made in accordance with this invention comprises a rotatable crane post and jib or derrick, a water tight casing adapted to the housing of the propelling machinery, a thrust bearing fixed relatively to the post and adapted to support the said crane post and which may preferably be an integral part of the said casing, rollers mounted on the said thrust bearing and adapted to take a lateral thrust on the crane post and pulleys likewise mounted on the said thrust bearing and adapted to guide the ropes for raising and lowering the crane hook and the jib, respectively, from the winding drums to the interior of the crane post. The post enters the top of the casing through a watertight collar bearing provided with antifriction rollers which provide lateral support to the said post, and is provided with a knuckle joint socket supporting the jib or derrick and so designed as to act as a water-tight casing for a pulley adapted to guide the hoisting rope to the interior of said jib or derrick. The operating machinery located within the casing consists of two motors, one adapted to rotate the crane post and the other adapted to hoist the load and provided with means for changing the speed of hoisting by sliding the motor as may be required, the raising or lowering of the jib being performed by hand power.

Referring to the drawings filed herewith—

Fig. 1 is a general elevation of one form of crane made in accordance with this invention;

Fig. 2 is a sectional side elevation partly broken away;

Fig. 3 is a sectional plan with the casing removed;

Fig. 4 is a sectional end elevation showing the gear for turning the crane post and raising the jib;

Fig. 5 is a sectional end elevation showing the gear for working the hoisting rope.

*a* is a watertight casing adapted to enclose

the motors and gearing and forming a base or pedestal for supporting the crane structure, *b* is a thrust or footstep bearing fixed relatively to said pedestal and provided with pulleys *c* and *d*. The said bearing is provided with an annular recess *e* adapted to support the crane post *f*, and rollers *g* which take the side thrust of the post. On the casing or pedestal *a* is disposed a collar bearing *h* provided with rollers *j* adapted to give lateral support to the post *f*. The collar *h* is closed by a cap *k* housed in a sleeve *m* which prevents water gaining access to the collar *h*. On the post *f* is mounted a combination bracket *n* carrying a pulley *o* and a knuckle socket *p* adapted to receive the end *r* of the jib *s*. The bracket forms a water tight casing which prevents water gaining access to the socket *p* and pulley *o*. At the head of the post is a pulley *t* and at the head of the jib is a pulley *v*.

On the post is mounted a toothed wheel 2 adapted to be operated by the motor 3 through pinion 4, tooth wheel 5, worm 6, worm wheel 7, shaft 8 and pinion 9.

The means for raising and lowering the jib comprises a rope 10 attached to the jib and passed over the pulleys *t* and *c* to a drum 11 adapted to be operated by hand through spindle 12 bevel pinions 13 worm 14 and worm wheel 15 or in any other suitable manner.

The crane rope 16 passes over the pulleys *v* *o* and *d* to a drum 17 which is adapted to be operated by a motor 18, through the train of pinions and wheels 19, 20, 21, 22 or, if a slower speed be required, through the train 23, 24, 25, 20, 21, 22 the motor 18 being moved horizontally by the screw gear 26 to engage the pinion 19 with the wheel 20 or the pinion 23 with the wheel 24 to change the speed.

With a crane made in accordance with this invention the motor and gear do not rotate about the axis of the crane post when the crane is turned on its axis.

What I claim and desire to secure by Letters Patent is:—

1. In a crane, the combination of a pedestal, a thrust bearing at the base of said pedestal, a collar bearing carried by the pedestal above the thrust bearing, a post mounted for rotation in said bearings and a jib secured to said post by a knuckle joint, said knuckle joint having a hollow, cylindrical element provided with an aperture adapted

to permit the passage of a hoisting rope internally of said hollow element.

2. In a crane, the combination of a pedestal, a thrust bearing at the base of said pedestal, a collar bearing carried by the pedestal above said thrust bearing, a post mounted for rotation in said bearings, and a tubular jib secured to said post by a knuckle-joint enclosed in a water-tight casing, said knuckle joint having a hollow, cylindrical element provided with an aperture adapted to permit passage of a hoisting rope internally of said hollow element.

3. In a crane, the combination of a pedestal, a thrust bearing at the base of said pedestal, a collar bearing carried by the pedestal above said thrust bearing, a tubular post mounted for rotation in said bearings, a tubular jib secured to said post by a knuckle joint enclosed in a water-tight casing, a rope passing through the interior of said post and over guide pulleys for raising and lowering said jib, and a rope passing through the interior of said post and jib and over

guide pulleys for hoisting and lowering the crane hook.

4. In a crane, the combination of a pedestal, a thrust bearing at the base of said pedestal, a collar bearing carried by the pedestal above said thrust bearing, a tubular post mounted for rotation in said bearings, a tubular jib secured to said post by a knuckle joint enclosed in a water-tight casing, a rope passing through the interior of said post and over guide pulleys for raising and lowering said jib, a rope passing through the interior of said post and jib and over guide pulleys for hoisting and lowering the crane hook, a motor disposed within said pedestal for rotating said post, a horizontally slidable motor within said pedestal for hoisting and lowering the crane hook, and means between said motor and crane hook rope for changing the speed of movement of the rope when the motor is slid from one position to another.

In testimony whereof I have signed my name to this specification.

WALDEMAR HARBINGER