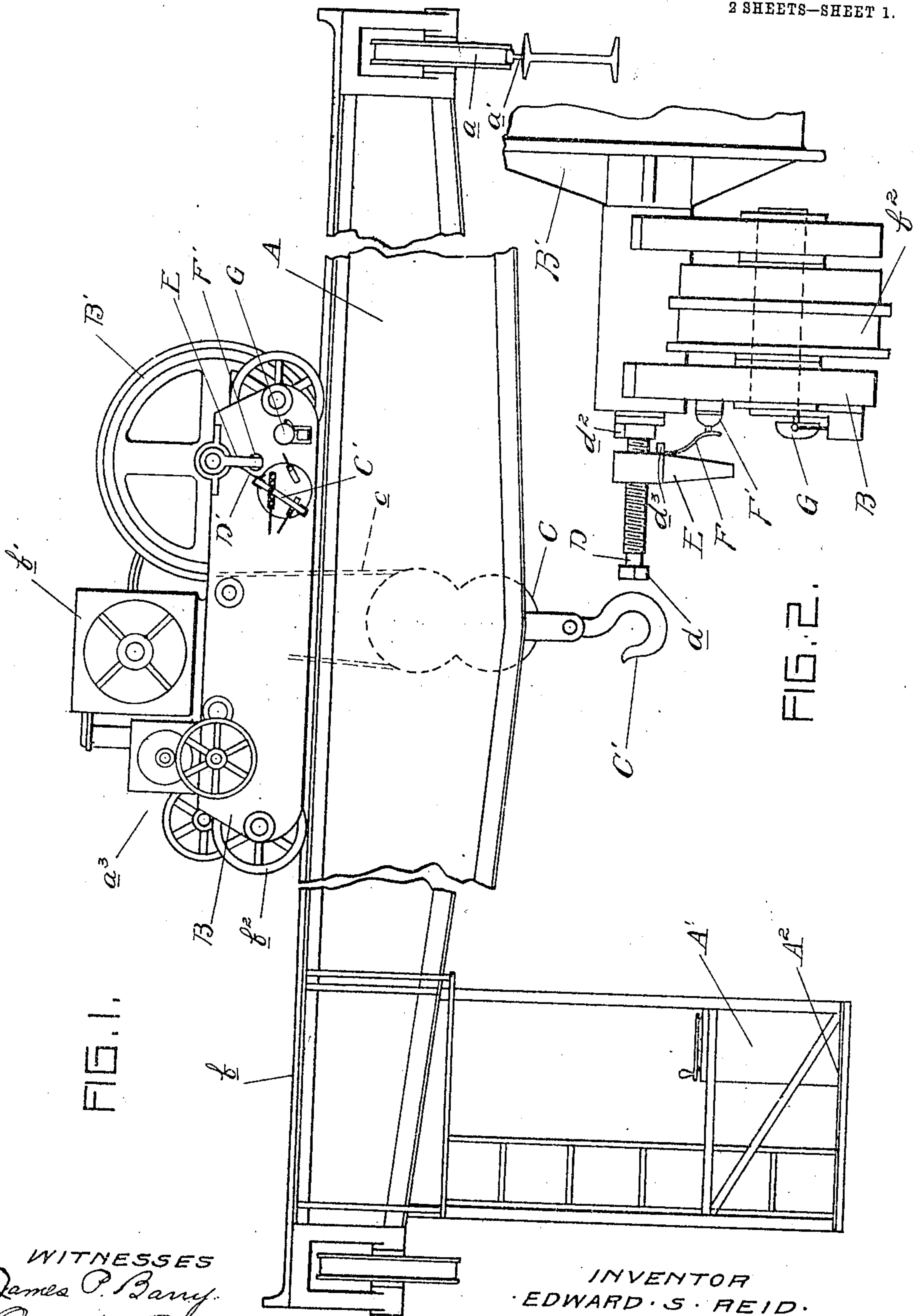


906,561.

E. S. REID.
HOISTING MECHANISM.
APPLICATION FILED APR. 2, 1906.

Patented Dec. 15, 1908.
2 SHEETS—SHEET 1.



WITNESSES
James P. Barry
Geo. H. Gause

INVENTOR
EDWARD S. REID.

BY *Whittemore, Hulbert & Whittemore*
ATTYS.

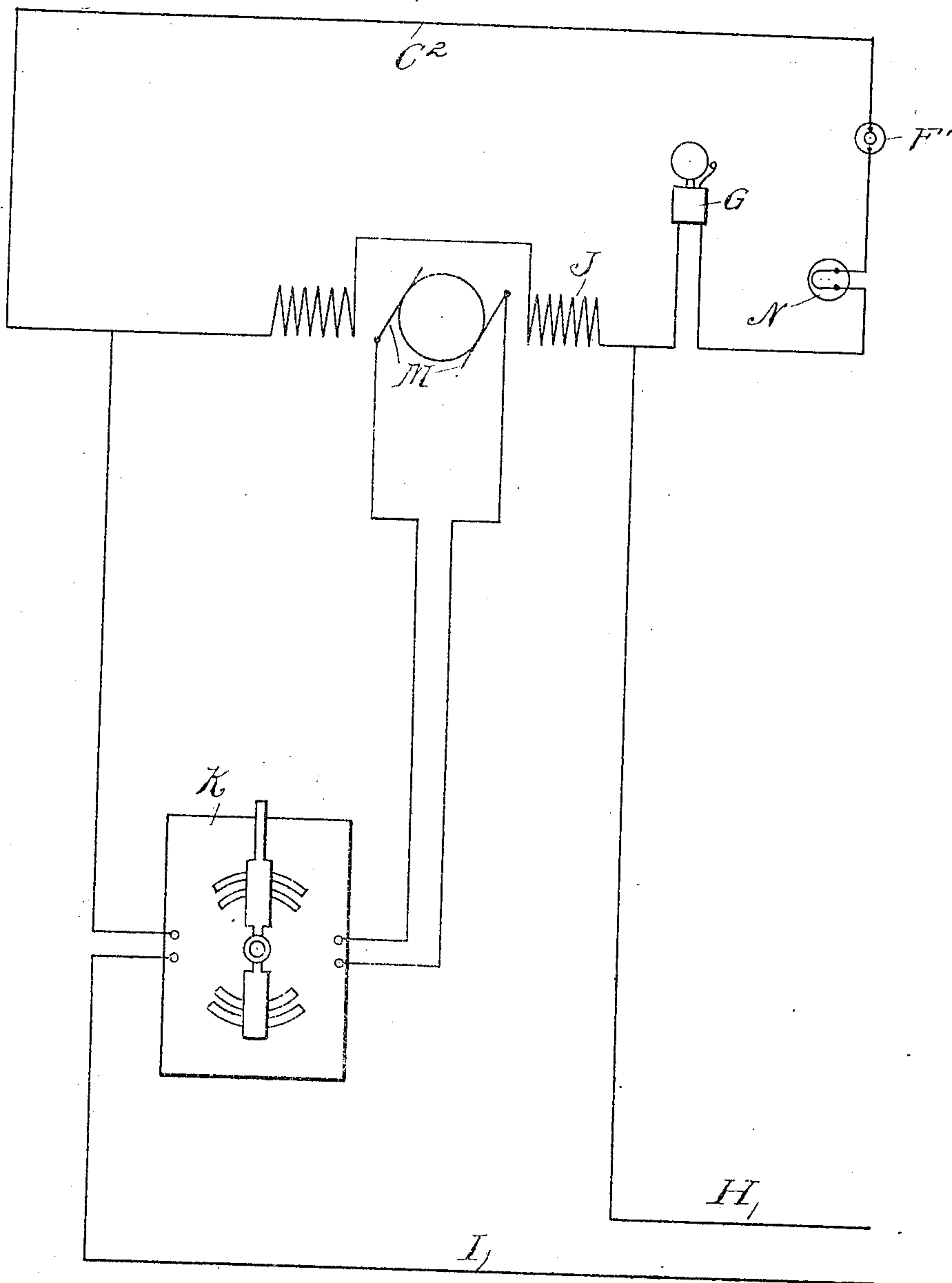
906,561.

E. S. REID.
HOISTING MECHANISM.
APPLICATION FILED APR. 2, 1906.

Patented Dec. 15, 1908.

2 SHEETS—SHEET 2.

FIG. 3.



WITNESSES

James P. Barry

Chas. H. Quinn

INVENTOR

EDWARD S. REID.

BY Whittier, Hubert & Whittier

ATT'YS.

UNITED STATES PATENT OFFICE.

EDWARD S. REID, OF DETROIT, MICHIGAN, ASSIGNOR TO NORTHERN ENGINEERING WORKS,
OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

HOISTING MECHANISM.

No. 908,531.

Specification of Letters Patent.

Patented Dec. 15, 1903.

Application filed April 2, 1906. Serial No. 309,533.

To all whom it may concern:

Be it known that I, EDWARD S. REID, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Hoisting Mechanism, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention has reference generally to hoisting mechanism having means for arresting movement of the load at any predetermined point, and it consists primarily in the association with mechanism of this character of a signal adapted to operate prior to the operation of the arresting means.

The invention further consists in the peculiar arrangement and combination of the various parts of the mechanism, and in various details of construction as more fully hereinafter described and claimed.

The signal is applicable to any form of raising and lowering mechanism, and may operate upon the lifting of the load or upon its lowering movement, as desired.

For the purpose of illustration, I have shown and described a signal as used in connection with an ordinary traveling crane provided with an automatic cutout switch for stopping the load in proximity to the load block in order to prevent damage to the machinery, the signal being designed to operate prior to the automatic actuation of the switch, so that the latter will not operate and will not be required to be reset.

In the drawings,—Figure 1 is a side elevation of a crane, partly broken away, with the signal applied; Fig. 2 is an end elevation, illustrating the hoisting drum and signal; and Fig. 3 is a diagram showing the preferred system of wiring for an electric signal associated with an electrically operated hoist or crane.

A represents an electrically operated crane, provided with wheels *a*, which travel on tracks *a'*.

A' is the usual controller on the operating platform A².

The crane A is provided with tracks *b*, on which travel a hoisting and lowering mechanism proper *a*³ having the usual wheel *b*² running on the tracks *b*. The hoisting mechanism comprises a frame B, a motor *b'*, a winding drum B', together with drive mechanism and other essential parts not herein

shown, as they form no part of the present invention.

C is the usual load block, carrying the hook C', supported by a suitable cable *c* wound upon the drum in the usual manner.

The arresting means for stopping the load at a predetermined point is of the following construction:

D is an extension of the drum shaft projecting through the frame B and externally threaded, as shown.

d is a cap on the end of the extension.

Upon the threaded portion of the shaft depends an arm or nut E, interiorly threaded to engage the shaft thread, the direction of the thread being such that on the operation of hoisting, the arm remaining in a depending position,—due to gravity—it will be carried inwardly eventually into contact with the shoulder *d*² on the shaft extension.

C' represents a safety switch secured to the frame B on one side of the shaft extension and included in the motor circuit in the usual manner and well known to those skilled in the art. It is adapted to be operated by a spring D' on the side of the depending arm E as said arm rotates.

The signal may be of any suitable construction, but it is herein shown as including in its construction a spring F on the side of the arm toward the frame B, and in its path and located on the frame is a push button F' adapted to be operated by the spring upon the inward movement of the arm. The push button or switch is included in an electric circuit C², in which is also included a bell G, preferably mounted upon the frame B, the bell in this instance constituting the signal or alarm proper.

It will be obvious that in place of the bell a lamp N or other form of signal may be used, or if preferred both the lamp and the bell, it being immaterial whether the signal is of the audible or visual type. Also, the signal may be operated mechanically, or may be provided with an independent electric circuit with a battery, or in case of its use with an electric crane it may be included in a branch of the main operating circuit.

In the diagrammatic view shown in Fig. 3, H and I are the line wires, the former connecting through the field J with a controller K, while the line I connects directly with the controller. The motor brushes M are connected respectively to the other posts on the

controller. The bell G and the push button F' are included in a branch circuit C² around the field. This circuit also includes the lamp N, which is preferably used for its resistance, but may, as previously stated, be omitted if desired.

In the operation of the mechanism, the depending nut or arm E is normally at the outer end of the shaft extension. As the winding drum operates to elevate the load, the arm E travels inward toward the frame B. When the load is in proximity to the drum, the spring F engages the push button and sounds the alarm or flashes the light, or both, thus indicating to the operator that the danger point is reached and permitting time to reverse and shut off the current so as to prevent further hoisting. The alarm or signal continues to operate through the spring arm F until the lug d³ on the depending arm E strikes the shoulder d² on the extension D. Upon engagement of the parts d³ and d² the arm is rotated with the shaft, causing the spring D' to strike the switch C', thus breaking the circuit and preventing further operation of hoisting. Through the signal, the automatic cutout switch may be prevented from operating and the necessity of the operator resetting the same obviated.

I have here shown for the purpose of illustration one particular form of apparatus, but it will be obvious that other forms of mechanism can be used and my signal applied wherein the latter will operate before the arresting mechanism, and I do not desire to be limited to the specific form of hoisting mechanism herein shown.

What I claim is,—

1. In a hoisting mechanism, the combination with means for raising and lowering the load, of means for arresting the movement of the load at a predetermined point,

a signal, and means for operating the signal prior to the operation of the arresting means.

2. In a hoisting mechanism, the combination with means for raising and lowering the load, of arresting means acting automatically to stop the load at a predetermined point, a signal, and mechanism for automatically operating the signal upon the near approach of the load to the said point.

3. In a hoist, the combination with mechanism for raising and lowering the load, of a signal, means controlled by the raising and lowering mechanism for automatically operating the signal upon the approach of the load to a predetermined point, and means also controlled by the raising and lowering mechanism for automatically stopping the load upon its arrival at said point.

4. In a hoist the combination with a hoisting drum, of a shaft therefor, a load block, a signal, means controlled by the rotation of the shaft for automatically stopping the load at a predetermined point, and means also controlled by the rotation of the shaft for automatically operating the signal upon the near approach of the load to said point.

5. In a hoist, the combination with a hoisting drum, of a shaft therefor having a threaded extension, a load block, a depending weighted arm threaded on said extension, means automatically operated by said arm for arresting the load at a predetermined point, and a signal also adapted to be operated by said arm upon the near approach of the load to said point.

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

EDWARD S. REID.

Witnesses:

JAMES P. BARRY,
EDWARD S. CULP.