

(No Model.)

G. & F. DRIVER.  
DERRICK.

No. 348,726.

Patented Sept. 7, 1886.

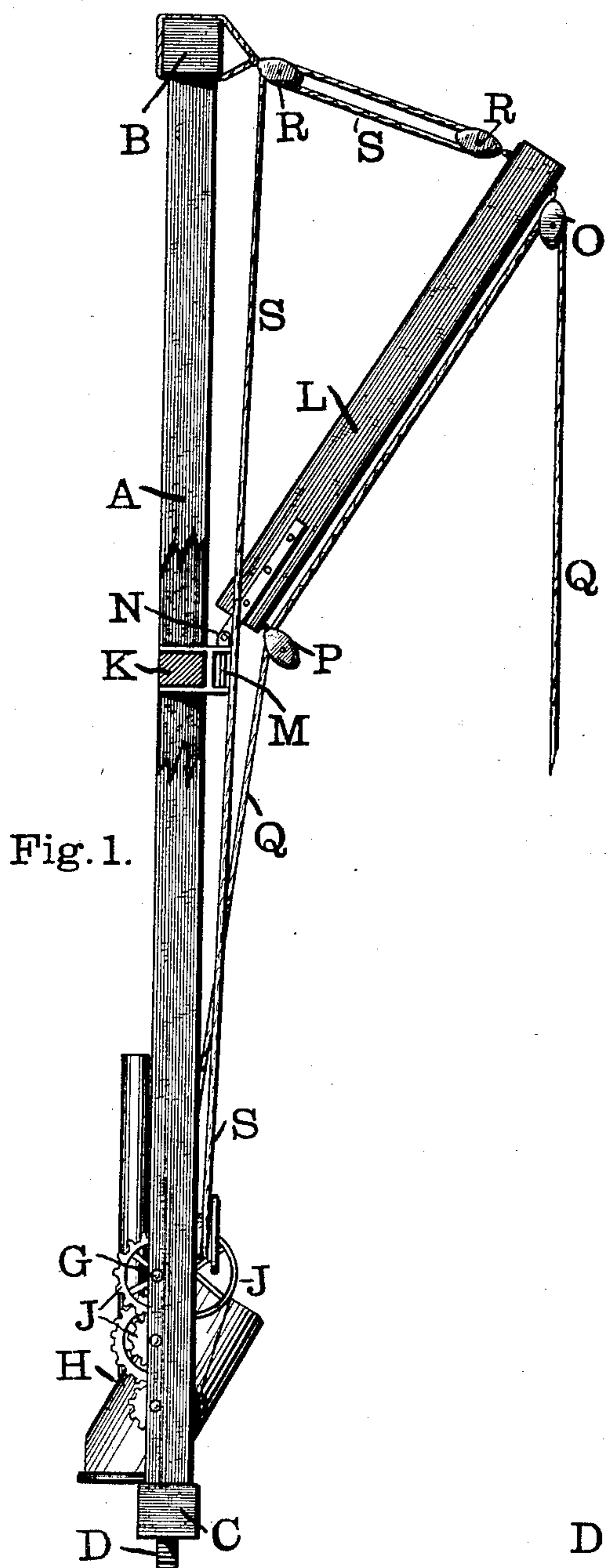


Fig. 1.

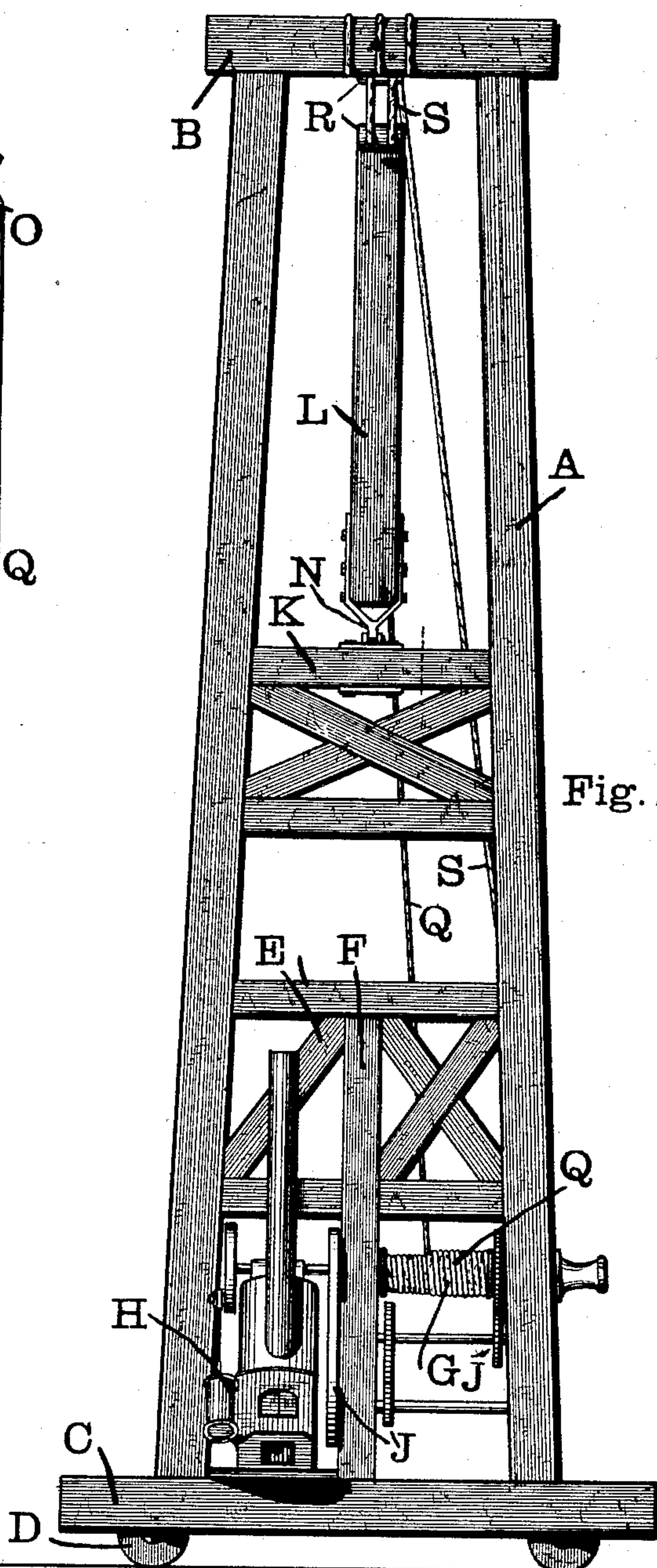


Fig. 2.

Witnesses:

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# UNITED STATES PATENT OFFICE.

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## DERRICK.

SPECIFICATION forming part of Letters Patent No. 348,726, dated September 7, 1886.

Application filed May 5, 1886. Serial No. 201,225. (No model.)

*To all whom it may concern:*

Be it known that we, GEORGE DRIVER and FRANK DRIVER, of Toledo, Lucas county, Ohio, have invented certain new and useful Improvements in Derricks, of which the following is a specification.

Our improved derrick will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of our derrick, showing a portion of one of the side timbers broken away, in order to develop the gaff-bridge in vertical section; and Fig. 2, a rear view of the same, the hoisting-face of the derrick being assumed as the front. In the drawings, many of the usual and essential accessories—such as guy-ropes, track-boards, &c.—are omitted.

In this specification we apply the term “gaff” to the outwardly-swinging element of the derrick. Such an element might, probably, with propriety be termed either a “gaff” or a “boom,” both terms being often employed. We have preferred to use the term gaff as more appropriate to an element which serves in suspending a load from above.

In the drawings, A indicates the vertical side timbers of the derrick; B, the cap-piece of the derrick-frame; C, the sill of the derrick-frame; D, foot-wheels, housed, as usual, below the sill, the axes of these wheels being at right angles to the general plane of the derrick-frame; E, cross-framing disposed between the side timbers near the base of the derrick-frame; F, a vertical timber disposed between the side timbers of the derrick-frame and reaching from the sill to the cross-framing; G, a winding-reel journaled in the derrick frame near its base and extending from the vertical piece F to one of the side pieces, and provided, preferably, with a spool-head; H, an engine and boiler mounted on the derrick-frame below the cross-framing and between the vertical timber F and one of the side timbers; J, transmitting machinery—as belting and gearing—by which the motion of the engine is transmitted to the winding-reel; K, a horizontal gaff-bridge disposed between the two side timbers of the derrick-frame, and firmly connected thereto and supported thereby; L, a gaff

with its foot supported by the gaff-bridge; M, a substantially vertical pivot borne by the gaff-bridge, and serving as a means by which the gaff-bridge supports the gaff; N, a horizontal pivot uniting the gaff and said vertical pivot; O, a block slung at the head of the gaff; P, a block slung at the foot of the gaff; Q, a hoisting-rope leading from the hoisting-reel through the blocks O and P, its hanging end being intended for attachment to the load to be hoisted; R, a pair of blocks, one slung at the cap of the derrick and the other slung at the head of the gaff, and S the gaff supporting rope, running through these blocks and then brought below to the base of the derrick, being shown in the drawings as belayed to the derrick-frame, and adapted for engagement with the spool-head of the hoisting-reel.

The derrick-frame is to have the usual guy-ropes, and in use the derrick will incline forward somewhat, the strains coming, in the usual manner, upon the rear guys. The load is hoisted by means of the rope Q, the hoisting-reel being operated by the engine. The drawings show the hoisting-rope as falling vertically from a single block, O, but obviously multiple sheave blocks may be employed and should be employed for heavy hoisting. The derrick-frame is moved edgewise in the usual manner, traveling upon the wheels D. The engine and boiler, setting inward between the side timbers, enables the side movement of the derrick to take place in a very restricted passage-way. The head of the gaff may be adjusted toward and from the derrick-frame by means of the rope S, and the load may thus be deposited at various distances from the foot of the derrick, these distances not being limited in extent by the length of the gaff, as the top of the derrick itself may be dropped forward by the usual manipulations of the rear guys. As the head of the gaff is adjusted inwardly and outwardly, the gaff oscillates upon the pivot N. The head of the gaff may be swung in an arc, the pivot M forming the axis of this swinging motion, the radius of the arc being dependent upon the outward position of the head of the gaff. The gaff is at liberty to sweep through about half a circle upon the pivot M without being interfered with by the derrick-frame. The hoisting-rope may thus



receive and deliver loads anywhere within half a circle whose radius is represented by the length of the gaff plus the permissible lean of the derrick-frame at the gaff-pivot point, and at the same time the derrick-frame may be moved sidewise through an extremely narrow passage-way, thus enabling the hoisting-rope to receive and deliver its loads at any point within a rectangular area whose width is measured by the length of the gaff plus the permissible lean of the derrick-frame at the gaff-pivot point, and whose length is measured by the side travel given to the derrick-frame. The transverse outward strain upon the derrick-frame, due to the thrust of the gaff, finds a compensation in the inward pull upon the block P, thus permitting the handling of very heavy loads with a comparatively light derrick-frame.

When the gaff is projecting outward from the face of the derrick, as in Fig. 1, and supporting a load, there will be tensional strains upon the usual rear guy-ropes of the derrick; but as the gaff is swung around the direction of strain is not so materially changed as to at all interfere with the steadiness with which the derrick supports its load. This is due to the fact that side steadiness is given by the broad wheel-base, little or no strain coming upon any side guys while the gaff is swinging. Our derrick is thus peculiarly adapted for the operations of the stone-setter in the construction of buildings, and in a very extended practice with the derrick in this work we have found it possessing a steadiness and a certainty of delivery of load at a predetermined spot not found in other structures.

We claim as our invention—

1. In a derrick, a derrick-frame formed of two side timbers, a cap, and a sill, foot-wheels journaled in the sill with their axes at right angles to the general plane of the derrick-frame, a gaff-bridge reaching from side timber to side timber of the frame, a gaff with its foot supported by the gaff-bridge and articulated thereto by a vertical and horizontal pivot, a block at the top of the derrick-frame, a gaff-supporting rope leading from the head of the gaff through said block and thence to the foot of the derrick, a block at the head of the gaff, a block at the foot of the gaff, a winding-reel at the base of the derrick-frame, and a winding-rope engaging said two last-mentioned blocks and said reel, combined substantially as and for the purpose set forth.

2. A hoisting mechanism comprising a derrick-frame formed of two side timbers, a cap, and a sill, cross-framing between the side timbers above the sill, a vertical timber disposed between the side timbers and reaching from the sill to said cross-framing, a winding-reel journaled in the derrick-frame, an engine and boiler disposed upon the sill of the derrick-frame between one of the side timbers and the said vertical timber, mechanism adapted for the transmission of motion from the engine to the winding-reel, a block supported at the upper part of the derrick, and a hoisting-rope engaging said block and said winding-reel, substantially as and for the purpose set forth.

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