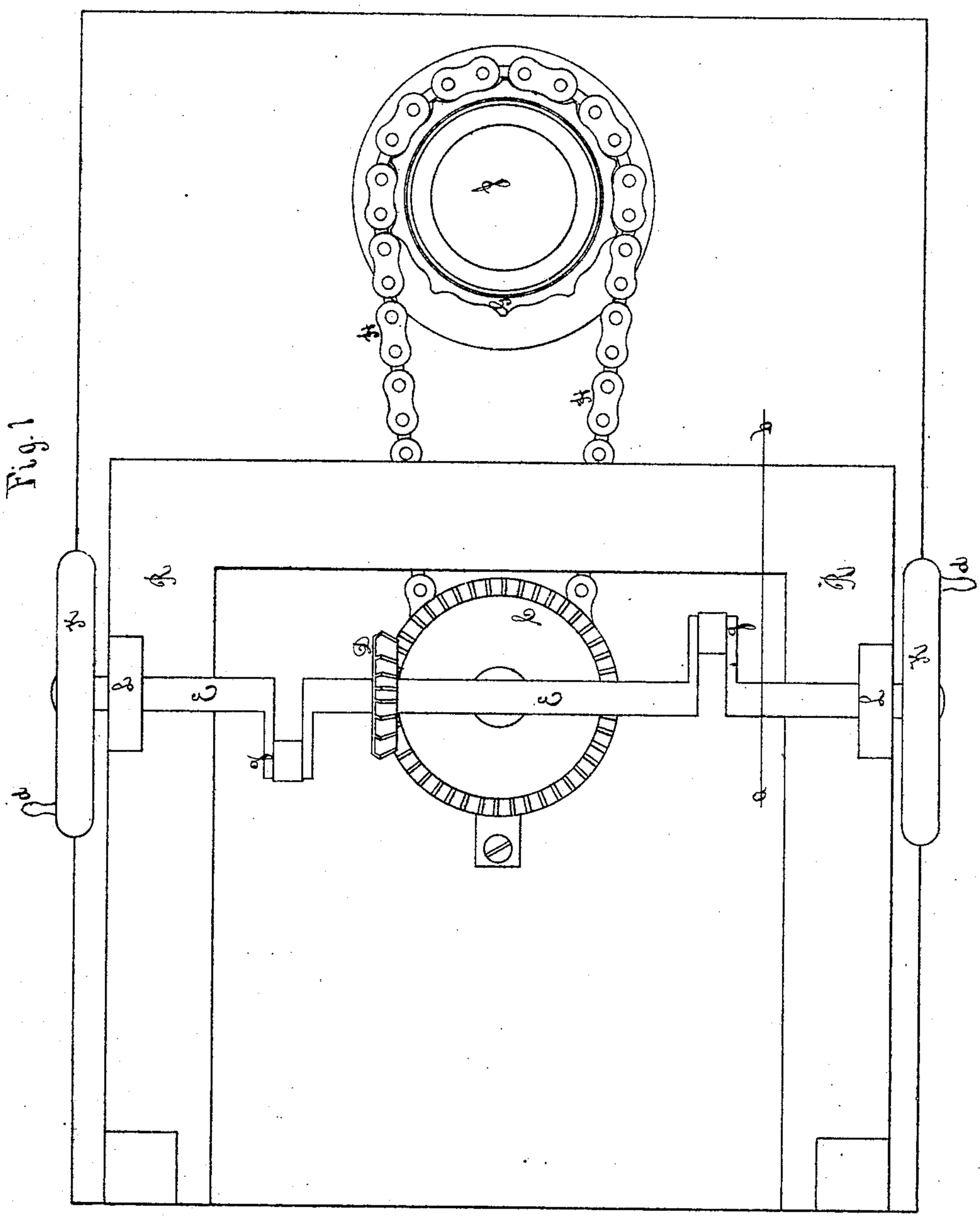
2 Sheets--Sheet 1.

B. DUTTON.
Pumping Apparatus.

No. 146,995. Patented Feb. 3, 1874.

Fig. 1



Witnesses.
John E Levine
Nathan Brown

Inventor.
Benjamin Dutton

2 Sheets--Sheet 2.

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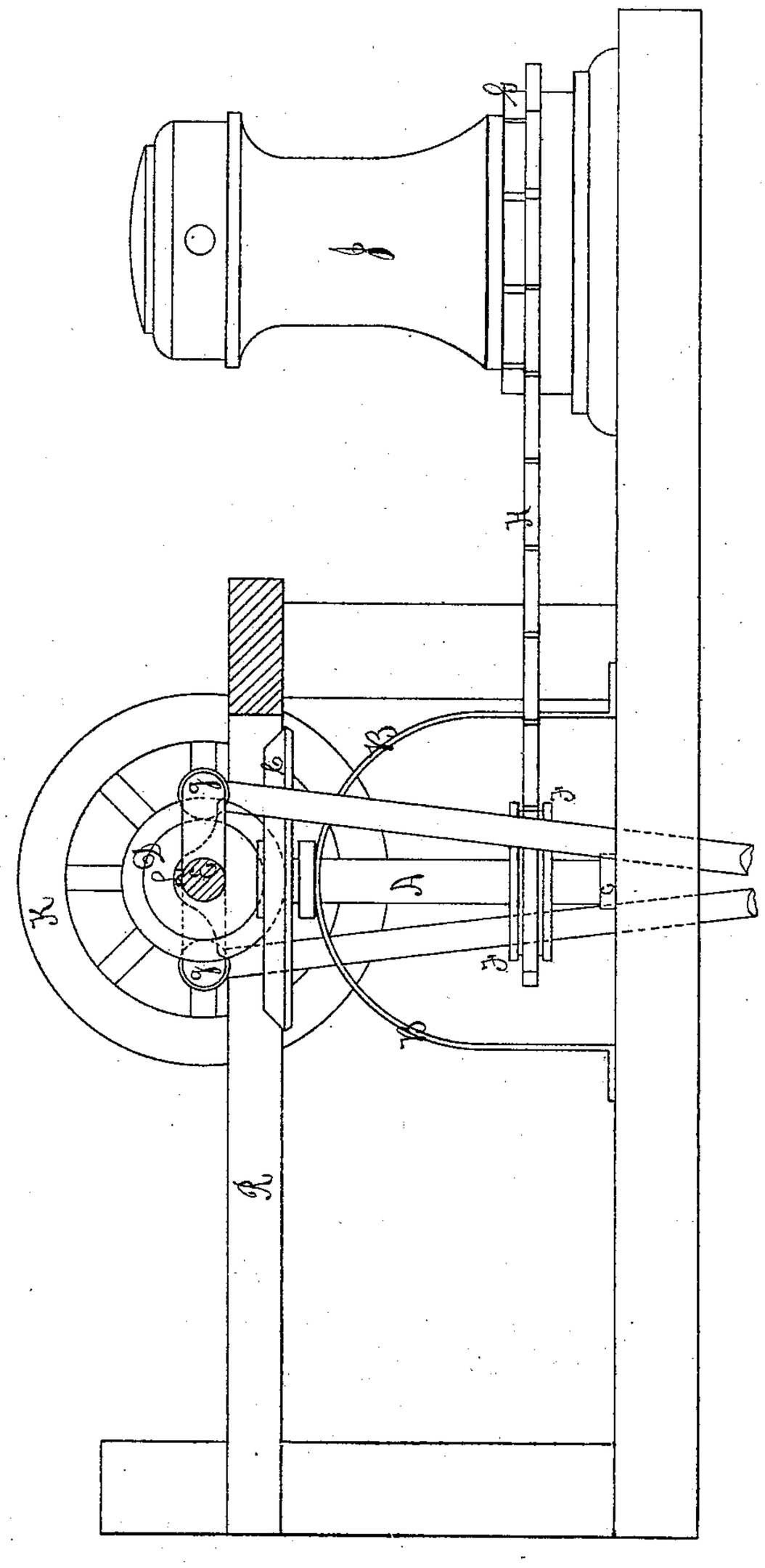

Fig. 2

Witnesses.
John E. Crane
Nathan Brown

Inventor.
Benjamin Dutton

UNITED STATES PATENT OFFICE.

BENJAMIN DUTTON, OF CHARLESTOWN, MASSACHUSETTS.

IMPROVEMENT IN PUMPING APPARATUS.

Specification forming part of Letters Patent No. **146,995**, dated February 3, 1874; application filed June 13, 1873.

To all whom it may concern:

Be it known that I, BENJAMIN DUTTON, of Charlestown, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Machinery or Apparatus for Operating Pumps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1 is a plan or top view; and Fig. 2 a side elevation, partly in section—say, on the line *a b* of Fig. 1.

This invention relates to certain new and useful improvements in machinery or apparatus by which the pump-shaft E is connected with, and operated by, a capstan, J. This invention has for its object to utilize the manual power or force employed to operate pumps which receive their motion from a rotating shaft, having a crank or cranks, or other equivalent means for working the pump or pumps; as, also, to make the labor required for pumping easier, and less fatiguing or exhausting to the operators. This invention consists in the combination of a vertical shaft, A, supported by a step, C, and by a yoke or stand, B, and having a bevel-gear, C, on its upper end, and engaging with a bevel-gear, D, on the pump-shaft E, a chain-wheel, F, on the lower part of the shaft A, a similar chain-wheel, G, on the base of the capstan, and an endless chain, H, passing around both chain-wheels, thereby connecting or combining the pump-shaft with the capstan, which, by its rotary motion, operates the pumps with a steady motion.

When the pumps are operated by manual power applied to the wheels K, or to projecting cranks *d*, the strength of the men is expended only about one-half of the time, first on one wheel K, and then on the other, alternately, as the opposite cranks *g* pass their centers; and, besides this, the labor is very tiresome and exhausting to the men.

When my improvements are applied, as shown, and the pump-shaft is combined with the capstan by their connecting mechanisms, and the pumps are operated by the capstan, such pumps are worked with a steady motion, and always with the same power or force, the men walking round the capstan with their hands on the bars, in the usual way, and such labor in operating the pumps is much easier and less fatiguing to the men than the old method before described.

It will be obvious that an endless rope may be substituted for the chain H, by using appropriate wheels on the shaft A and on the base of the capstan.

My said improvements are adapted for operating a rotary force-pump by a capstan, by simply applying the gear D to the rotating shaft of said force-pump, and then by working the capstan.

My said improvements are intended for use on steamers, ships, and other vessels, many of which are provided with capstans, and with pumps which are worked with a rotating shaft like, or similar to, that shown in the drawings; but my said improvements are not confined in their use to ships. They may be advantageously employed in other places, even though the capstan, or the pumps, or both the pumps and the capstan, (both of which are old,) were furnished expressly to be combined by my connecting mechanisms.

On ships, the crank-shaft E is usually arranged in bearings L, secured to the top of the fife-rail R around the mainmast, and nearly all large vessels have a capstan but a few feet from the mast.

When the capstan is wanted for other purposes than for pumping, the chain is lifted from the chain-wheel on the base of the capstan, which gives slack chain enough to throw it off from the wheel F and below it, and this produces sufficient slack chain to throw it off from the wheel G, where it may lie on the deck around the capstan; or, if preferred, the chain may have one or more removable rivets, to disconnect between two links, and wholly remove the chain.

I claim as my invention—

The combination, substantially as described, of the step-and-yoke supported shaft A, gears C and D, wheels F and G, and the chain H, with the shaft E and the capstan, all arranged and operating in the manner and for the purpose specified.

BENJAMIN DUTTON.

Witnesses:

JOHN E. CRANE,

NATHAN BROWN.