

Daniel A. Bolt's
Improved Hoisting Machine

117971

PATENTED AUG 15 1871

Fig. 1

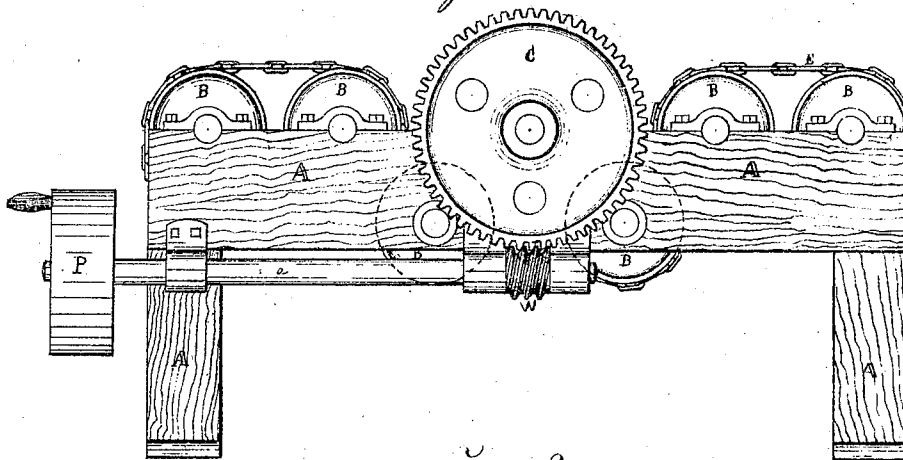


Figure 2

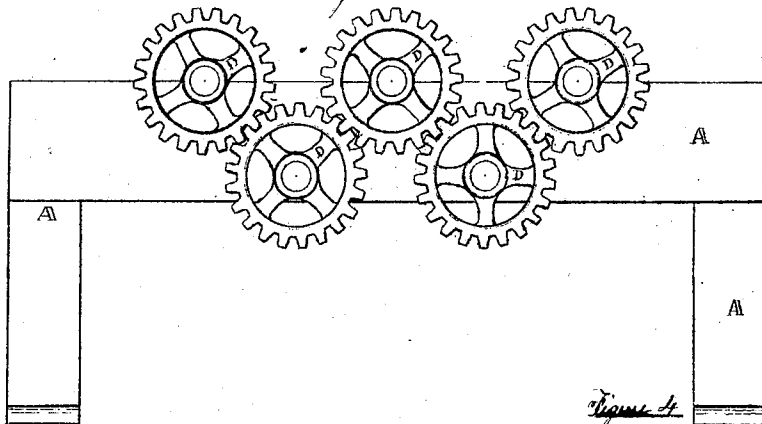


Figure 3

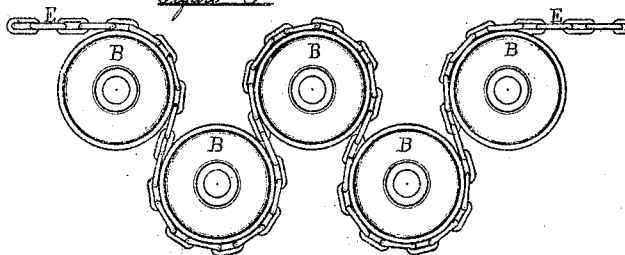
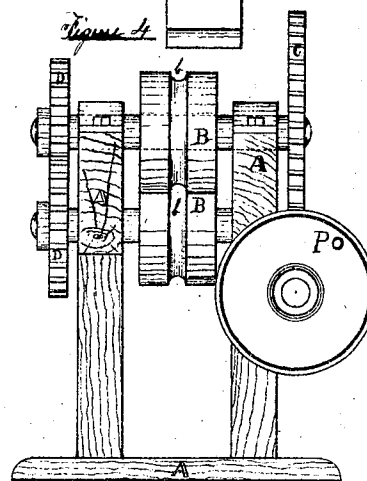


Figure 4



Witnesses { Robt. V. Vaughan
 Saml. C. Woodward.

Inventor
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UNITED STATES PATENT OFFICE.

DANIEL A. BOLT, OF HARRISBURG, PENNSYLVANIA.

IMPROVEMENT IN HOISTING-MACHINES.

Specification forming part of Letters Patent No. 117,971, dated August 15, 1871.

To all whom it may concern:

Be it known that I, DANIEL A. BOLT, of Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented a new and Improved Machine for Hoisting Heavy or Light Weights with either end of the chain, of which the following is a specification:

The nature of my invention consists in gearing together and arranging a series of friction-chain pulleys so that their delivering surfaces shall always travel in the same direction, enabling me to hoist or lower with either end of the chain, and to stop at any desired point without the use of ratchet or break to prevent backward movement.

Figure 1 is a side elevation, designed to show the worm, worm-wheel, driving-pulley shaft, &c. Fig. 2 is a view of the opposite side of the machine, exhibiting the arrangement by which the pulleys are geared together. Fig. 3 is a longitudinal section, showing the manner in which the chain passes over the pulleys. Fig. 4 is a transverse or end view, presenting the sheath or crease in the pulleys for the reception of one-half the chain.

A A A A is the frame of the machine, constructed of either wood or iron, as desired, and substantially, of a strength proportionate to the weights intended to be raised or lowered by its use. Across this frame I place, at proper distances, five shafts, in two rows, one above the other, three in the upper and two in the lower row. On one end of each shaft is keyed a wheel or pinion, D D D, &c., and in their middle is placed the pulleys B B B B. The center shaft of the upper row has on its other end the worm-wheel C. The pinions D D are all of one size and pitch, and the distance at which the shafts

are set apart in the frame is dependent on that size. The pinion of the upper central shaft is made to gear with the two pinions in the lower row, and they again to gear with the two outside pinions of the upper row. In addition I place across the frame at each end a shaft having a pulley on its center as an outside carrier for the chain. Gearing into the worm-wheel C, on the central shaft of the upper row, is the worm W. The shaft on which this worm is placed runs in boxes attached to the frame, and has on its other end the main driving-pulley P.

In constructing my machine care is required to make the pulleys exactly one size, as well as to proportion that size to the size of the pinions, so that when the pinions are in gear there shall be sufficient space between the pulleys for the passage of the chain E. The groove in the pulleys for the reception of one-half the chain is seen at *b*, Fig. 4.

From the above description of my machine, this operation follows: When the driving-pulley P is put in motion the worm W on the other end of its shaft turns the worm-wheel C. This again, through the pinions D D D D D, turns the pulleys B B B, &c., carrying the chain E in either direction at the option of the operator.

What I claim as my invention, and wish to secure by Letters Patent, is—

A series of friction chain-sheath pulleys, driven by gearing, in combination with the worm W, worm-wheel C, chain E, and driving-pulley P, substantially as described, and for the purposes already specified.

DANIEL A. BOLT.

Witnesses:

ROBT. V. VAUGHAN,
SAML. C. WOODWARD.