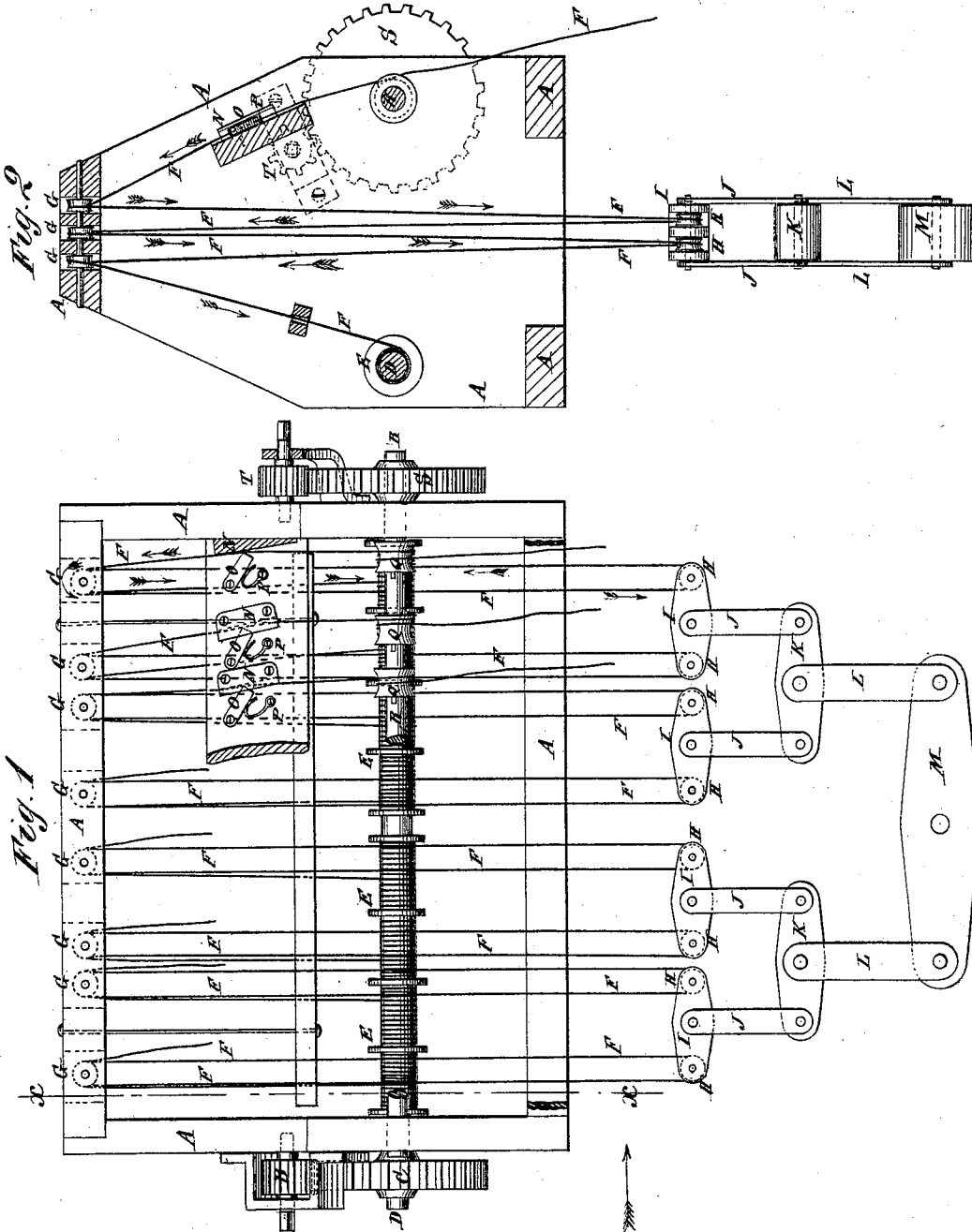


S. WOOLSTON.

STRAIN EQUALIZER FOR PULLEY-ROPES.

No. 177,188.

Patented May 9, 1876.



WITNESSES:

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SAMUEL WOOLSTON, OF VINCENTOWN, NEW JERSEY.

IMPROVEMENT IN STRAIN-EQUALIZERS FOR PULLEY-ROPES.

Specification forming part of Letters Patent No. **177,188**, dated May 9, 1876; application filed April 18, 1876.

To all whom it may concern:

Be it known that I, SAMUEL WOOLSTON, M. D., of Vincentown, in the county of Burlington and State of New Jersey, have invented a new and useful Improvement in Strain-Equalizer for Pulley-Ropes, of which the following is a specification:

Figure 1 is a front view of my improved device, parts being broken away to show the construction. Fig. 2 is a vertical cross-section of the same, taken through the line *xx*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish a device for equalizing the strain upon the ropes of a number of sets of pulleys used together for moving heavy masses vertically or in any other direction, and which shall be so constructed as to enable all the ropes, or one or more of them, to be operated at a time without affecting the equalization of the strain among all of said ropes.

The invention consists in the combination of the blocks, having a set of pulleys pivoted in each end, the coupling-plates, and the pivoted blocks with each other and with the ropes and the sets of pulleys; and in the shaft, provided with a series of capstans or grooved pulleys, in combination with the series of ropes and clamps, to enable the power to be applied to one or more of the ropes of said series, as hereinafter fully described.

A represents the frame-work of the machine, which is made sufficiently strong to sustain or withstand the weight or strain to which it may be exposed.

I will describe the machine as having eight sets of pulleys, and three pulleys in each set; but the number of sets and the number of pulleys in a set may be varied, if desired.

To one end of the frame A is pivoted a small gear-wheel, B, to which the power is applied, and the teeth of which mesh into the teeth of the large gear-wheel C, attached to the end of the shaft D. The shaft D is pivoted to the lower part of the ends of the frame A, near one side, and to it are attached as many spools, E, as there are sets of pulleys used. To each of the spools E is attached the end of a rope, F, which passes up and around the first pul-

ley G of each set, down and around the first pulley H of the set pivoted to the end of the block I, up and around the second pulley G, down and around the second pulley H, and up and around the third pulley G. Each end of each block or bar I is thus supported by four parts of its rope, and the whole weight or strain upon each block I will be supported by eight parts of two ropes, each part sustaining exactly one-eighth of said load or strain.

To the opposite sides of the centers of each of the blocks I are pivoted the ends of two coupling-plates, J, the lower ends of which are pivoted to the opposite sides of the end of the block K, to the other end of which is pivoted the ends of the two coupling-plates J of another block I. The weight or strain upon the block K is thus suspended by sixteen parts of four ropes, each part supporting exactly one-sixteenth of said load or strain.

The centers of the two blocks K are connected by two pairs of coupling-plates, L, with the ends of a single block, M, so that the weight or strain upon the block M may be suspended by thirty-two parts of ropes, each part sustaining exactly the same amount.

The ends of the ropes F pass down across the outer surface of a bar or beam of the frame A, and rest against the inclined sides of the blocks N, attached to said bar, where they are held from drawing back by the cams or buttons O pivoted to said bar, and held against the said ropes by springs P, also attached to said bar. The devices N O P hold the ropes F securely against being drawn back, but allow them to be drawn forward readily.

The end of each rope F makes one or two turns around a capstan or concave pulley, Q, attached to a shaft, R, which revolves in bearings in the ends of the frame A, and has a large gear-wheel, S, attached to one end. The teeth of the gear-wheel S mesh into the teeth of the small gear-wheel T, pivoted to the end of the frame A.

By this construction, by turning the shaft D all the ropes F will be wound up equally. By turning the shaft R, the entire power may be applied to one, two, or more of the ropes F, and the peculiar arrangement of blocks and coupling-plates will keep the strain at all times

evenly distributed, so that no part of any rope will have to sustain more than an equal share.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination of gear-wheels B C, shafts D R, spools E, rope F, pulleys G H Q, blocks

I K M N, plates J L, cams O, and springs P, substantially as and for the purpose specified.

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Witnesses:

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