

No. 772,586.

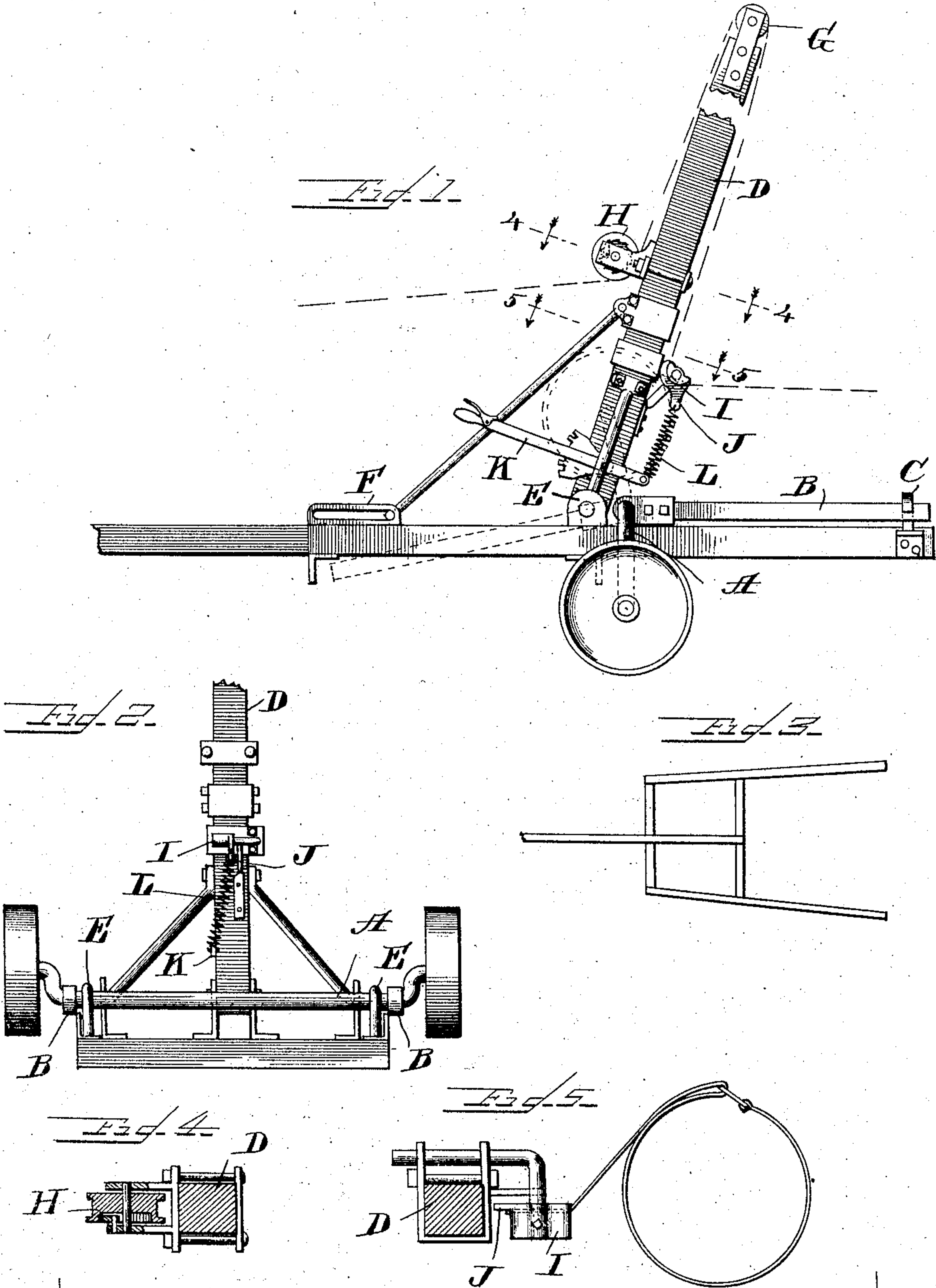
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H. C. STONE, SR. & H. C. STONE, JR.

LIFTING DERRICK.

APPLICATION FILED JULY 30, 1903.

NO MODEL.



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UNITED STATES PATENT OFFICE.

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LIFTING-DERRICK.

SPECIFICATION forming part of Letters Patent No. 772,586, dated October 18, 1904.

Application filed July 30, 1903. Serial No. 167,595. (No model.)

To all whom it may concern:

Be it known that we, HENRY C. STONE, Sr., residing at 919 Hinman avenue, Evanston, Illinois, and HENRY C. STONE, Jr., residing at 829½ Sutter street, San Francisco, in the county of San Francisco and State of California, have invented a new and useful Improvement in Lifting-Derricks, of which the following is a specification.

This invention relates to that class of machines intended for lifting burdens and depositing them upon some vehicle for transport or placing them at some higher elevation, as in storage, &c.

The accompanying sheet of drawings, to which reference will be made, is hereby made part of this specification.

Figure 1 is a side elevation of the machine with the anterior part of the tongue broken off and also a medial portion of the mast or spar broken out. Fig. 2 is a detail portion of the lower mast and of the axle and wheels, showing the connection of these with the ground-frame. Fig. 3 is a vertical view of the ground-frame, with part of the tongue broken off. Fig. 4 is a detail of the ratcheted pulley shown on the mast with its attachment to the same. Fig. 5 is a detail of the rope-guide, and the rope, showing such rope as in position about some burden to be compressed before being raised, together with the attachment of such rope-guide to the mast.

The construction of the bed-frame, Fig. 3, is preferably of angle-steel—say two and a half inches by two inches by one-fourth inch—the two side sills being bolted above the two cross-sills, a flat face of each in contact with the other, so that the cross-sills will rest with one of their sharp edges upon the ground and more or less cut into it, so resisting the sliding of the machine when in operation. Just behind the posterior cross-sill and over the side sills is mounted a crank-axle held in place by U bolts or clips bolted through the side sills and kept from endwise movement by a pair of set-screw collars (not shown) mounted upon the axle just inside of the U-bolts. This crank-axle is made of, say, one-and-a-half-inch round steel and has a crank of about eight inches in

length at either end, then extends again straight to receive the hub of a transport-wheel of, say, two feet in diameter, all as shown at *a* in Figs. 1 and 2. The rotation of the axle is controlled by a lever *B*, Fig. 1, mounted at right angles upon the axle and retained in place when the wheels are depressed by the retaining-hook *c*, Fig. 1. When this lever is thrown half around, it will rest forwardly upon the ground, raising the wheels from the ground, as indicated by the dotted lines in Fig. 1, so permitting the bed-frame of the derrick to rest upon the ground.

The proportional dimensions of the machine as here shown are about as follows: height of mast, fifteen feet; length of side sills, eight feet; projection of side sills beyond rear cross-sill, five feet; distance apart of rear ends of side sills, about six feet; distance apart at front cross-sill, about five feet; total length of tongue, about thirteen feet.

Above the middle of the rear cross-sill is erected a mast *D*, Figs. 1 and 2, in such a manner as to swing freely back and forward, braced against side movement by two hinged braces attached firmly to the mast about two feet above its foot and rotatably fixed to the side sills, as shown at *E* in Fig. 2. The back-and-forth swing of the mast is limited by a brace with a sliding foot attached to the mast, at about three feet above its foot, at right angles to the other two braces and its foot or lower end retained, by means of a cross-pin, in a slideway about eight inches in length erected upon the upper surface of the tongue, about over the front cross-sill of the derrick, as shown at *F*, Fig. 1. The adjustment is such as to permit the mast to stand vertically or assume an inclined position rearwardly to the extent that its apex shall be vertically above a line connecting the rear ends of the two side sills. At the apex of this mast is located a grooved wheel or pulley *G*, Fig. 1, to carry the hoisting-rope. At about three and one-half feet above the lower end of the mast there is attached to it another pulley of peculiar construction and function. This pulley *H*, Fig. 1, is ratcheted against turning backward. The rope in descending from the

pulley at the top of the mast makes one complete turn or more about this pulley, for the purpose of absorbing power by rope friction when the weight is to be lowered, so insuring that the mast which swings to its most erect position when the weight is being raised will first swing to its most rearward position before the weight will descend by the relaxation of the rope, so insuring the deposition of the burden about five feet to the rearward of its point of suspension while being raised, this for depositing upon an adjacent vehicle or platform.

As it is the case that a certain class of burdens to be lifted are in their nature loose and ill-compacted and require for their being raised that they should be encircled by a cord or rope and first compressed horizontally, so that the rope should have a sufficient hold and not slip off upwardly, therefore a device for accomplishing this end—a "rope-guide," as we term it—is attached to the side and rear face of the mast at a point about two and one-half feet above its foot, as shown at I, Fig. 1, and in detail in Fig. 5. This rope-guide consists of a piece of round steel—say three-fourths inch in diameter, about fourteen inches long—bent at right angles, its longer arm mounted in bearings furnished by a clip bolted to the mast, permitting a turning movement of the free arm, which lies behind the mast and which carries at its free end the rope-guide casting, preferably of brass, under and behind which the rope is to be passed, so that for the time being its upward pull will be converted into a horizontal pull until the hold of the rope upon the burden has been suitably tightened and the burden compressed. In order to release the rope at a proper time in the operation, this rope-guide is held down yieldingly by a spring of proper strength, coiled helically, of a length of about sixteen inches, the upper end of which engages the flange extension of the rope-guide casting below J, Fig. 5, and the lower end of which spring is held adjustably by the set-lever and ratchet K, Fig. 1. The spring itself and its connections are shown at L, Fig. 1. When the upward tension of the rope exceeds the resistance of this spring, the rope-guide will rotate upwardly, liberating the rope and permitting the burden to be raised by the pull of the team on the rope to any height desired within the limit of the machine. By means of this set-lever holding the lower end of the spring the resistance of the rope-guide can be regulated at will.

It is to be noted that all the attachments to the mast, except the side braces and the pulley at its apex, are attached adjustably, the

spring set-lever, while it is bolted to the mast, the latter has a series of holes bored in it to permit of the lever being shifted up or down on the mast to correspond with change of position in the rope-guide above. There also is a heavy iron stop bolted to the rear face of the mast to receive the impact from the recoil of the rope-guide when the rope is released. This also can be raised or lowered, as required, by means of a suitable series of bolt-holes bored in the mast.

We do not limit ourselves to the precise construction shown, especially in the matter of the axle, as a straight axle depressible in its entire length could easily be substituted for this crank-axle, and also the mechanism for controlling the position of the wheels could easily be varied by any ordinary mechanic.

The derrick may also easily be adapted to be worked by a single animal instead of a team of two by simply substituting a pair of thills for the tongue.

Having so sufficiently described and explained our invention, what we claim as new and useful, and what we wish to secure by Letters Patent, is as follows:

1. In a lifting-derrick, a swinging mast, limited in its swing by the sliding brace, and provided with the rope guide or tightener and ratcheted pulley, in combination with transport-wheels adjustable in position, in such a manner as to permit the derrick to rest upon the ground, or upon the wheels.

2. A rope guide or tightener, firmly held against horizontal pull, and yieldingly held against upward pull.

3. In a lifting-derrick, the combination of the rope guide or tightener and spring, with means for adjusting the tension of the spring.

4. In a lifting-derrick, the combination of the mast and lifting-cord, with the ratcheted pulley.

5. In a lifting-derrick, an automatically back and forth swinging mast provided with a ratcheted pulley.

In testimony whereof we have signed our names to this specification in presence of two witnesses for each one of us.

HENRY C. STONE, Sr.

HENRY C. STONE, Jr.

Witnesses as to signature of Henry C. Stone, Sr.:

G. A. PAUBERSCHMIDT,

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GEORGE PATTISON,

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