2 Sheets—Sheet 1.

M. PENNYPACKER.

HOISTING APPARATUS.

No. 189,648. Patented April 17, 1877.

Fig. 1.

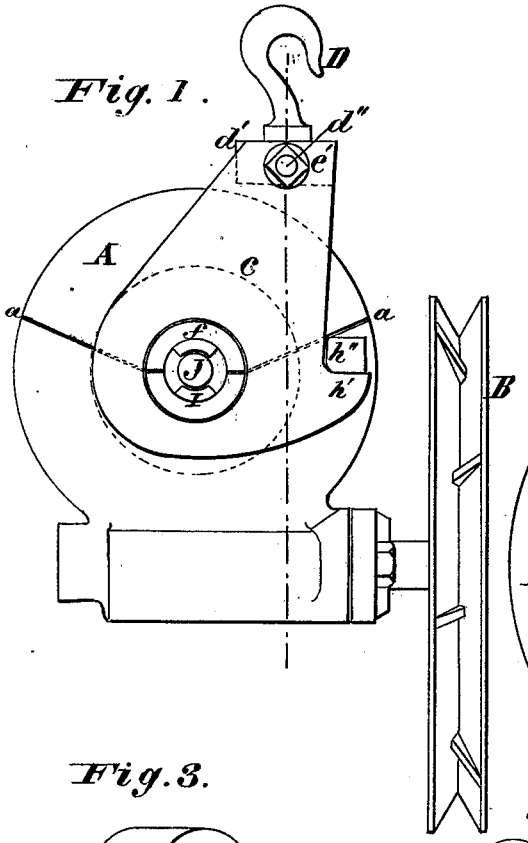


Fig. 2.

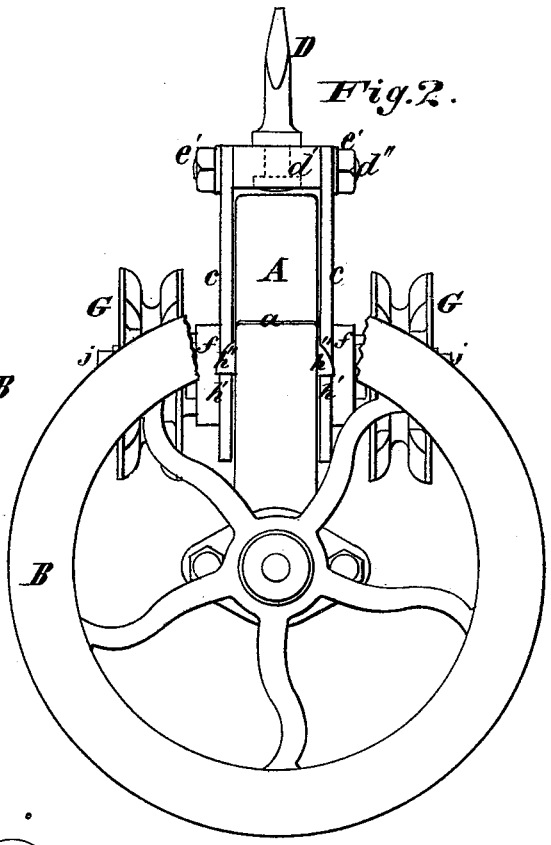


Fig. 3.

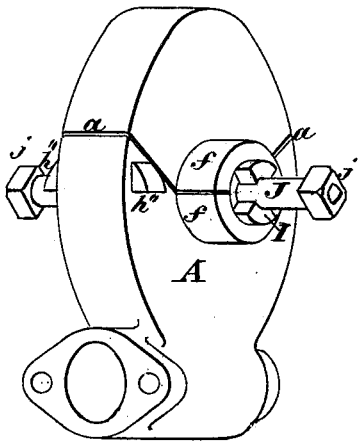
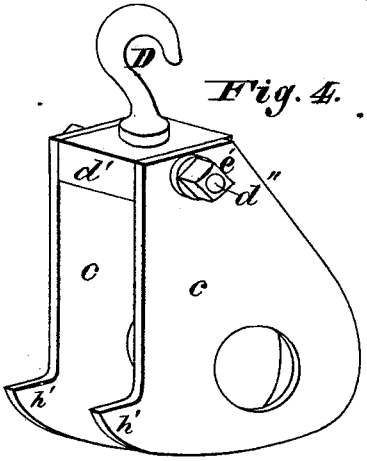


Fig. 4.



WITNESSES

Chas. J. Cooch

L. Blond Gurdett.

INVENTOR

Matthias Pennypacker

By Knight Bros Attorneys

2 Sheets—Sheet 2.

M. PENNYPACKER.

HOISTING APPARATUS.

No. 189,648. Patented April 17, 1877.

Fig. 5.

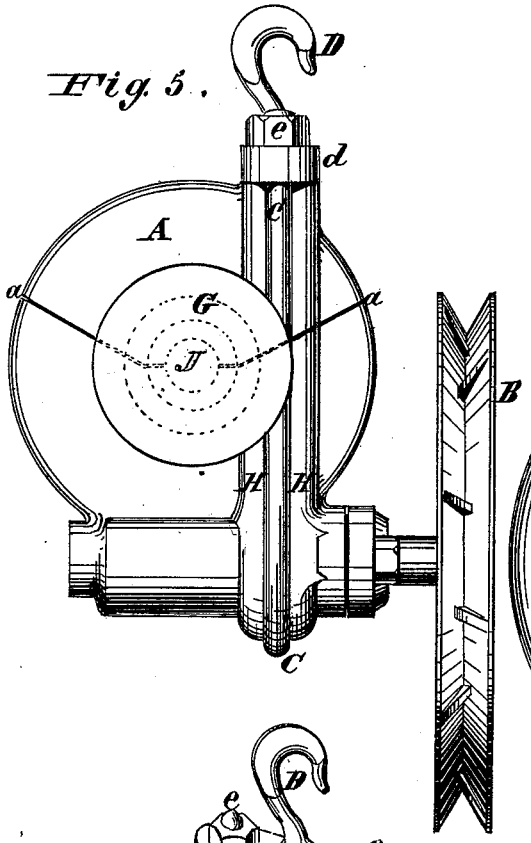


Fig. 6.

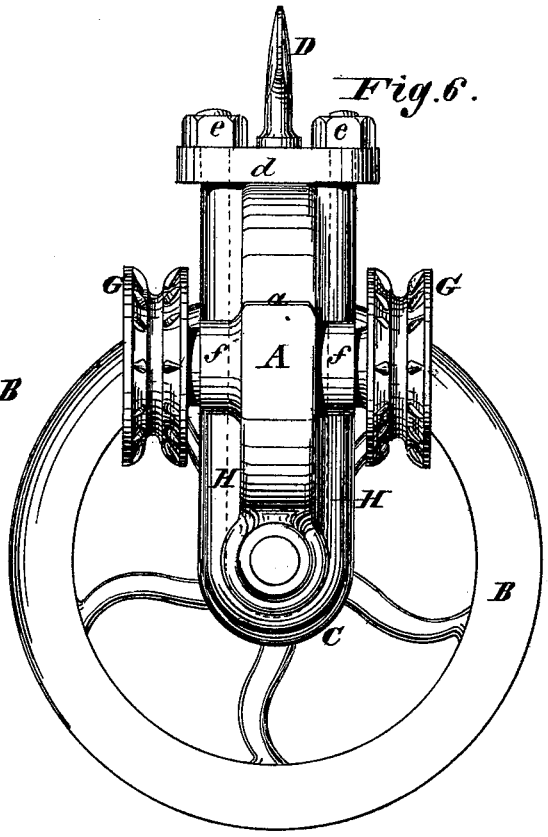


Fig. 7.

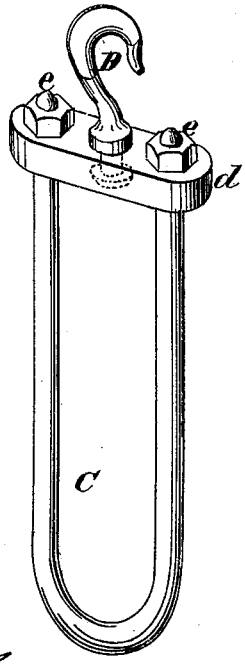
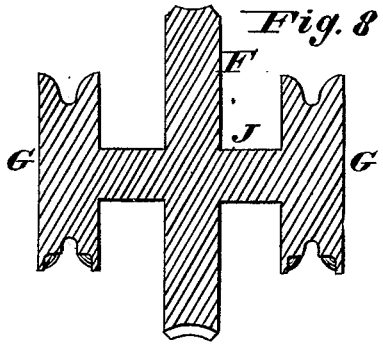


Fig. 8



WITNESSES

Chas. J. Cook

L. Pfond Burdett.

INVENTOR

Matthias Pennypacker

By Knight Bros Attorneys

UNITED STATES PATENT OFFICE.

MATTHIAS PENNYPACKER, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN HOISTING APPARATUS.

Specification forming part of Letters Patent No. **189,648**, dated April 17, 1877; application filed March 2, 1877.

To all whom it may concern:

Be it known that I, MATTHIAS PENNYPACKER, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Hoisting Apparatus, of which the following is a specification:

My invention relates to an improvement in the hoisting apparatus for which Letters Patent No. 171,855 were granted to Louis T. Pyott, and myself as assignee, on the 4th day of January, 1876, and of which Letters Patent I am now sole owner.

My improvement consists, first, in a suspension device for supporting the apparatus at a point in line with the lifting-chain, and intermediate between the driving-wheel and the worm-wheel axis, so that the machine may be evenly balanced.

My improvement consists, further, in combining with the divided box cheek-plates or a yoke for securing it together.

My improvement consists, further, in combining with a screw hoisting apparatus cheek-plates or a yoke, having a swivel-hook adapted to suspend the apparatus at a point in line with the lifting-chain, so that, besides evenly balancing the machine, the apparatus is capable of being turned in every direction.

In the accompanying drawings, Figure 1 is a side elevation of my improved hoisting apparatus. Fig. 2 is a front view thereof. Fig. 3 is a perspective view of the box, the suspension device being removed. Fig. 4 is a perspective view of the suspension device. Fig. 5 is a side elevation of my hoisting apparatus, showing a modified form of suspension device. Fig. 6 is a rear view thereof. Fig. 7 is a perspective view of the suspension device detached. Fig. 8 is a longitudinal section of the worm-wheel, bolt, and chain-sheaves as constructed in one piece.

A represents the central box for the worm-wheel and screw, and B the driving-wheel of a screw hoisting apparatus.

The box A is divided at *a*, forming two sections. Each section is constructed with gudgeons *f*, forming boxes for the journals or bolt J of the main wheel to turn in. On each side of the box A is secured a suspension device, C, so located as to permit its hook D to be in a position directly over the hoisting-chain, as shown in dotted line in Fig. 1, the apparatus being evenly balanced on each side of the hook.

My preferred form of suspension device consists of cheek-plates *c*, whose lower sides fit over the gudgeons *f*. The box A has lugs *h''*, which rest on projections *h'* of the cheek-plates. The swivel-hook D is secured to a block, *d'*, immediately over the hoisting-chain, and between the upper ends of the cheek-plates, by a bolt, *d''*, and nuts *e' e'*, or other fastening.

Instead of the cheek-plates I sometimes use a yoke, as shown in Figs. 5, 6, and 7. This yoke surrounds the box, and consists of a bow, C, secured to the box A between ribs H (formed on the box) by a clamp, *d*, and nuts *e*, or other suitable fastening. In this clamp the swivel-hook is secured.

The worm-wheel may be formed in one piece with its bolt and sheaves, as shown in Fig. 8.

In Figs. 1, 2, and 3 I show the chain sheaves or pulleys G in direct attachment with the worm-wheel F, and secured by means of clutches I and a bolt, J, passing through the hub of the wheel and box. The bolt is secured at each end by means of nuts *j*.

By securing the hook D in the position herein described, the apparatus is supported at a point in line with the lifting-chain at the center of gravity, and intermediate between the driving-wheel and the worm-wheel axis, thus avoiding lateral or indirect strain.

Where the worm-wheel is formed in one piece with the bolt and chain-sheaves, the necessity of clutch or other connections is dispensed with.

The suspension device will be seen to have an additional advantage in holding the box A together, as well as providing means for suspending the apparatus in line with the lifting-chain.

The box A is made tight, so that the worm-wheel and worm-screw can turn in a chamber filled with oil.

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

1. In combination with the box A of a screw hoisting apparatus, a suspension device supporting the apparatus at a point in line

with the lifting-chain, and intermediate between the driving-wheel and the worm-wheel axis.

2. The combination, with the divided box A, having gudgeons *f*, of the cheek-plates or yoke for securing the box together, as and for the purpose set forth.

3. In combination with a screw hoisting apparatus, the cheek-plates or yoke, having a swivel-hook, D, adapted to suspend the apparatus in line with the lifting-chain, as and for the purpose set forth.

M. PENNYPACKER.

Witnesses:
ROSS VANSCIVER,
WM. A. FERGUSON.