

No. 706,256.

Patented Aug. 5, 1902.

L. T. PYOTT.
HOISTING MACHINE.

(Application filed Apr. 12, 1901.)

(No Model.)

2 Sheets—Sheet I.

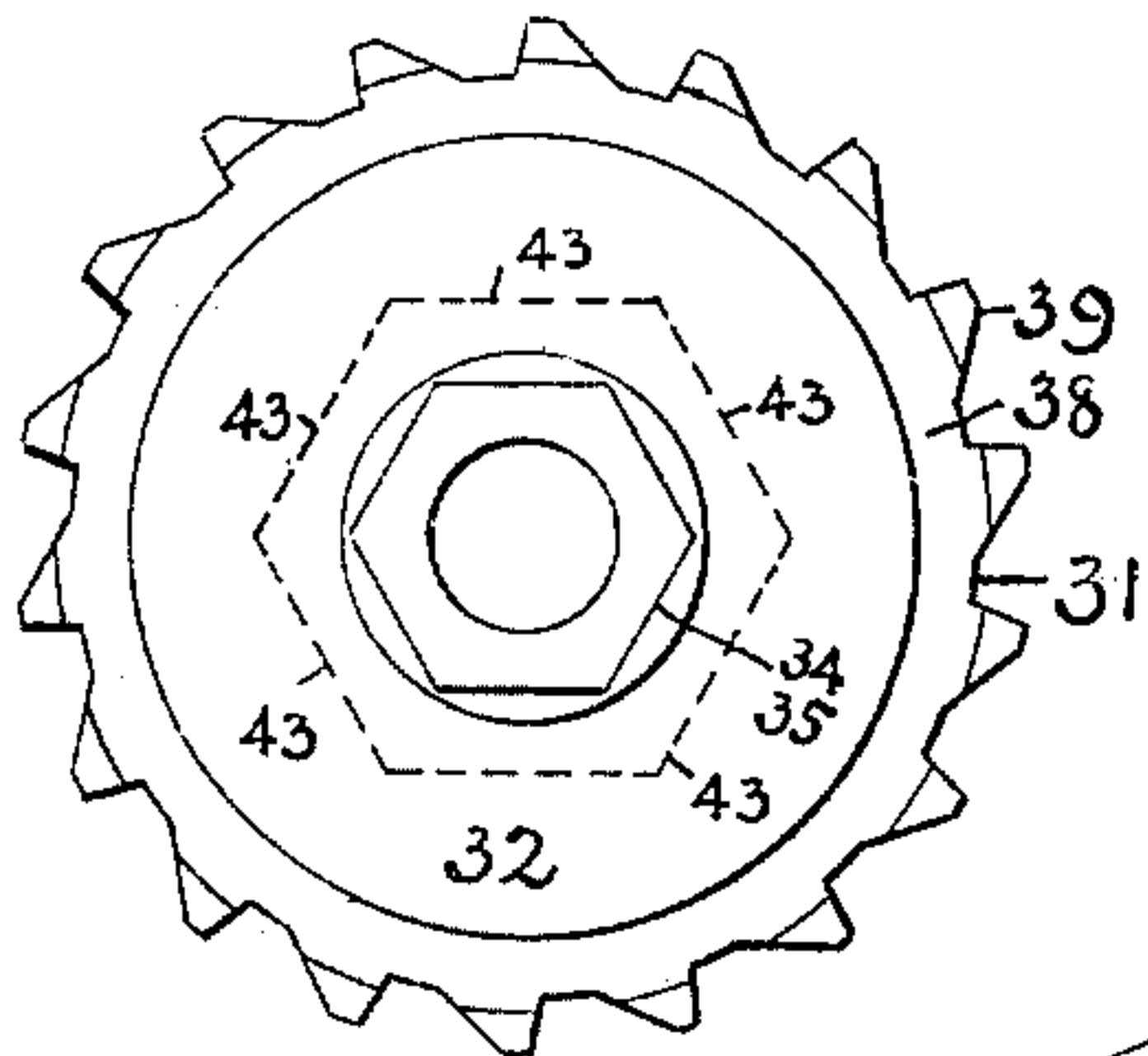


Fig. 4

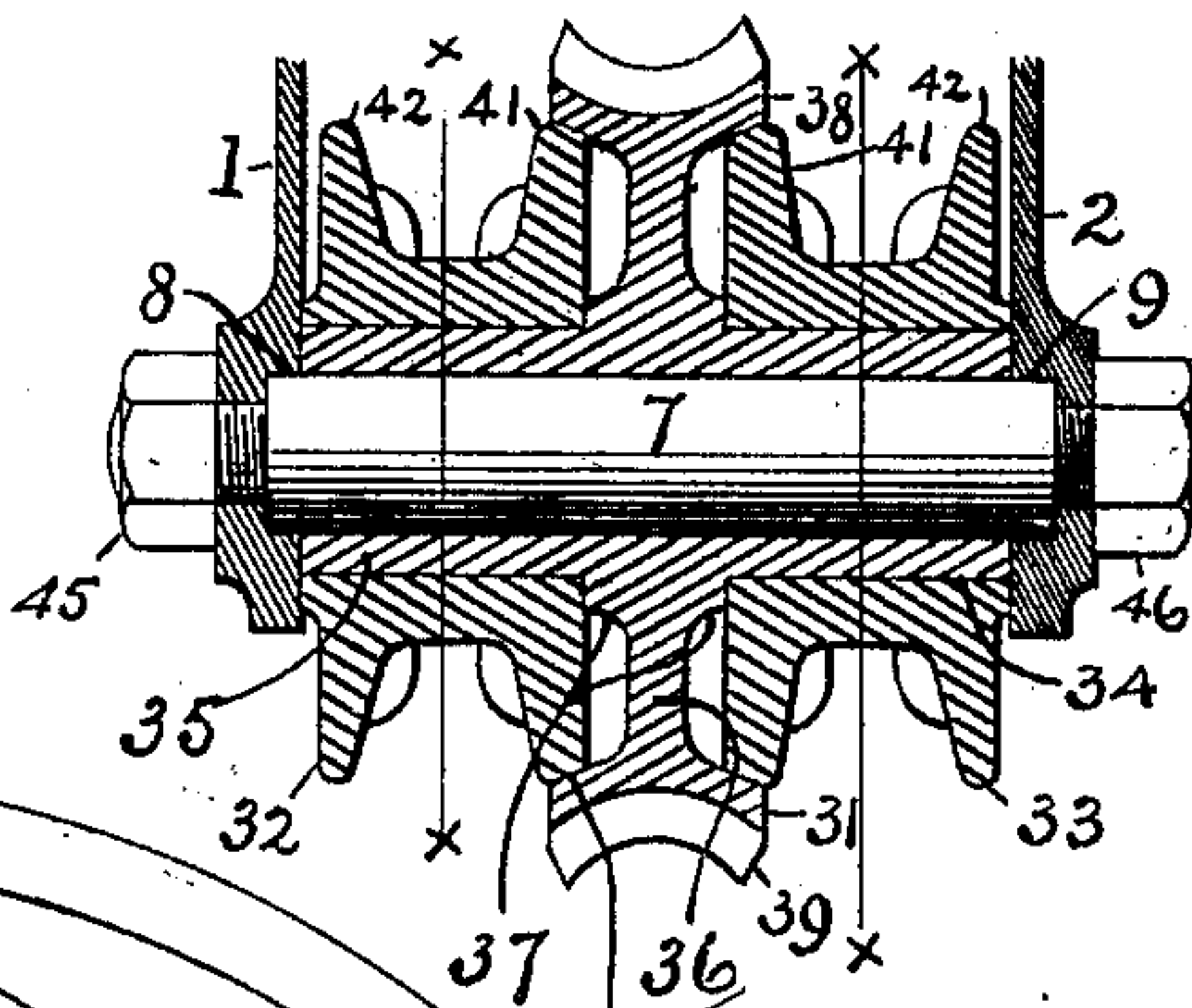


Fig. 3

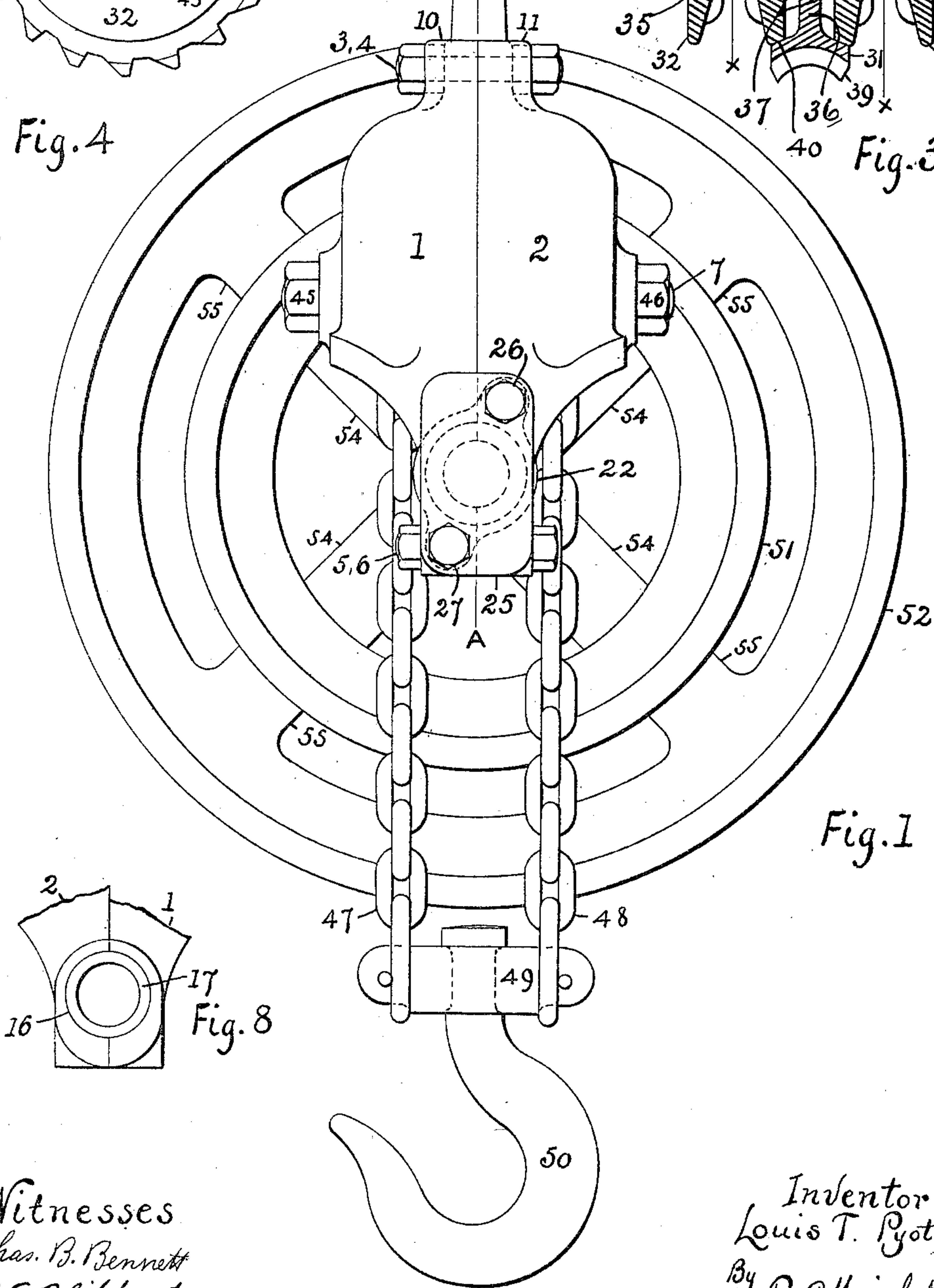
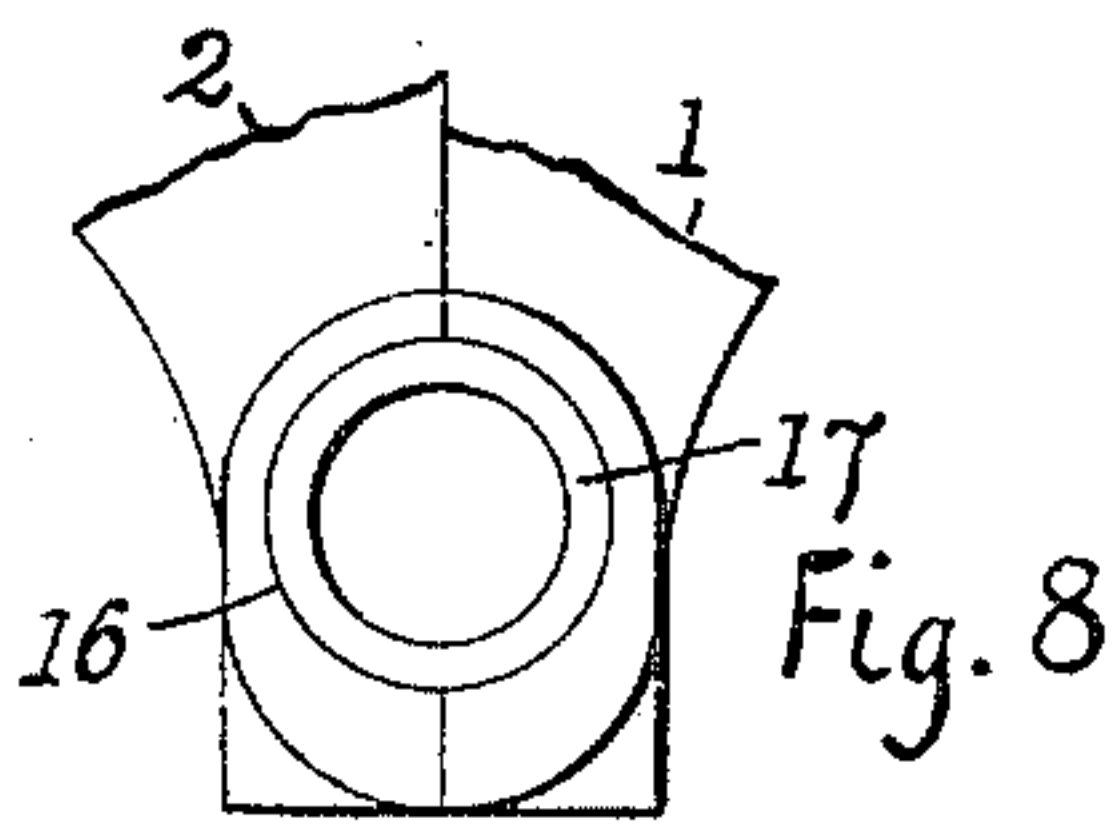


Fig. 1



Witnesses
Chas. B. Bennett
C. C. Clifford

Inventor
Louis T. Pyott
By R. C. Wright
Atty

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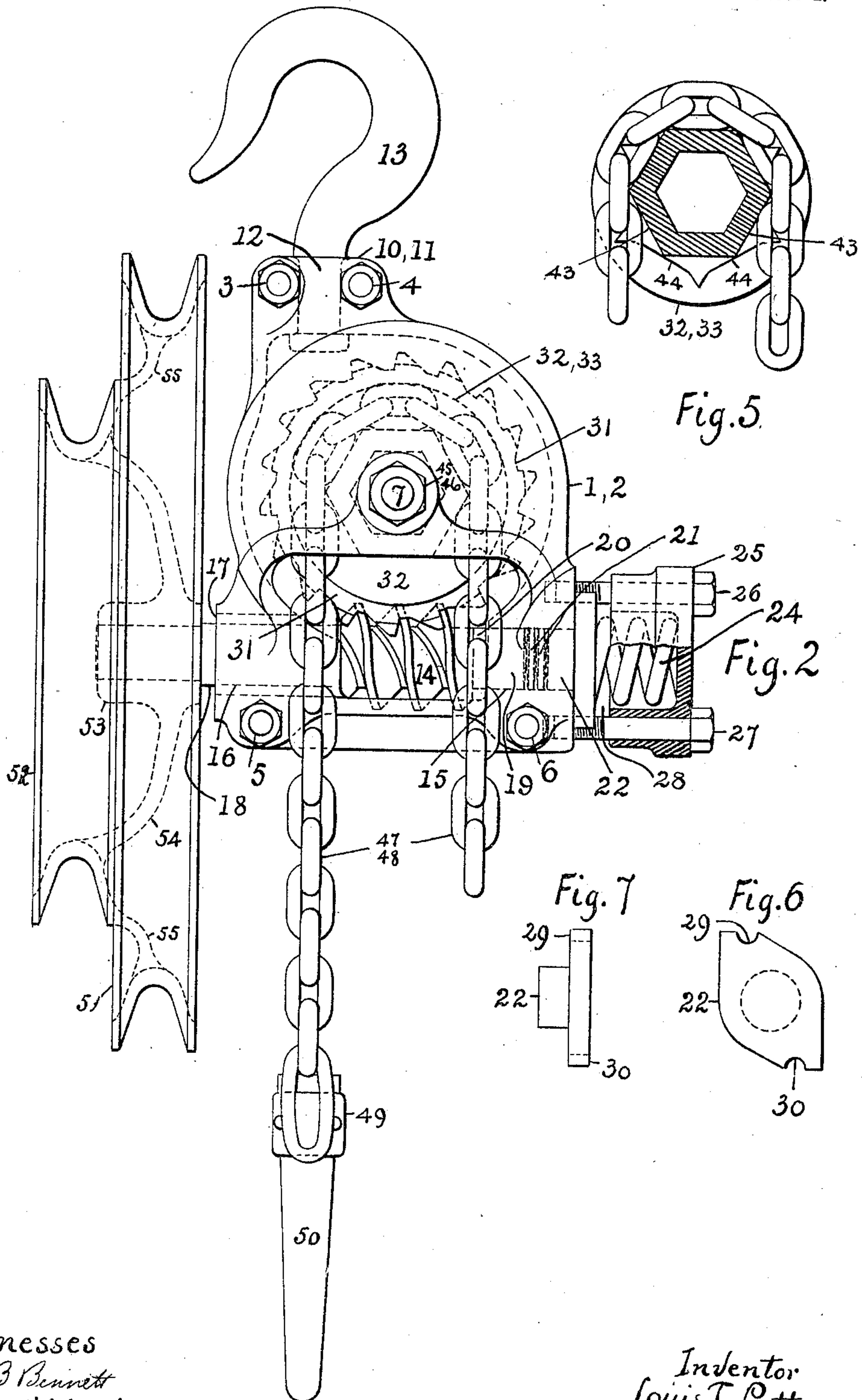
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Witnesses
Chas B Bennett
cc. Clifford

Inventor
Louis T. Pyott
By R. C. Wright
att'y.

UNITED STATES PATENT OFFICE.

LOUIS T. PYOTT, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO JOHN E. REYBURN, OF PHILADELPHIA, PENNSYLVANIA.

HOISTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 706,256, dated August 5, 1902.

Application filed April 12, 1901. Serial No. 55,463. (No model.)

To all whom it may concern:

Be it known that I, LOUIS T. PYOTT, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Hoisting-Machines, of which the following is a specification.

My invention relates to hoisting-machines, and more especially to those employing worms and worm-wheels, and has for its object the introduction of means to cushion the worm or permit it to yield in the line of its greatest resistance, to the end that an otherwise dead load may possess a measure of movement when its inertia is to be overcome, and thereby to a certain extent become a live load, it being well known that it is easier to lift a live load than a dead load. I have introduced other novel features, which will be more fully pointed out hereinafter, and for the purposes of illustration have shown my spring-cushion as applied to a portable hoist, although it may equally well be applied to other similar constructions using a worm and worm-wheel for the transmission of power in hoisting.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is an elevation view from the cushioned end. Fig. 2 is a side elevation. Fig. 3 is a central vertical section of the worm-wheel and chain-wheels, the shaft not being in section. Fig. 4 is a side view of the worm-wheel and chain-wheels. Fig. 5 is a section of the chain-wheels on line X X, Fig. 3. Fig. 6 is an end view of the thrust-plug and spring-seat. Fig. 7 is a side elevation of the thrust-plug and spring-seat. Fig. 8 is an end view of the bushing and a part of the divided case.

Similar figures of reference indicate similar parts throughout the views.

The case or housing within which the working parts are contained is formed in halves 1 2, made in right and left hand parts abutting on line A A, Fig. 1, and secured to each other by bolts 3 4 5 6 and by center shaft 7, which is pocketed in part 1 at 8 and in part 2 at 9. At the upper part of case parts 1 2 are lugs 10 11, having in each the semidiameter of a seat 12, wherein suspension-hook

13 is secured. A worm 14 is secured in bearings 15 16 in the lower part of the case, one half in each half of the case, and bearing 16 has a bushing 17 snugly fitting in the halves of the case, serving to hold the case parts 1 2 in line and forming a bearing for journal 18 of the worm. Opposite journal 18 is journal 19 in bearing 15, but somewhat shorter than bearing 18, and its inner end is removed from the end of worm 14, leaving a space 20, into which the worm moves as it is subjected to lifting strain. Abutting the outer end of journal 19 are antifriction-disks 21, interposed between the bearing and a thrust-plug and spring-seat 22, the disks 21 being free to rotate. The thrust-plug and spring-seat 22 receives the inner end of spring 24, inclosed in a case 25, held to case parts 1 2 by bolts 26 27, a space 28 being between case parts 1 2 and spring-case 25. Bolts 26 27 are screwed into or out of case parts 1 2 to adjust the spring 24 to a proper or desired pressure, and the plug and spring-seat 22 has recesses 29 30, fitting against bolts 26 27, to prevent its turning.

On center shaft 7 is worm-wheel 31, operated by worm 14, and at each side are chain-wheels 32 33, these wheels all being inclosed and covered by case parts 1 2, protecting them from dust and dirt and also preventing the chains from running off of their wheels 32 33.

Worm-wheel 31 has hubs 34 35 extending outward from each side to a free fit inside of case parts 1 2 and is bored to freely run on shaft 7, and upon their outer sides the hubs are hexagonal-shaped, and thereon are seated chain-wheels 32 33, having a central hexagonal hole therethrough, and this formation, while avoiding the expense of machine-fitting, insures the positive rotation of wheels 31 32 33 in unison.

Worm-wheel 31 has a central web 36 extending outward from hubs 34 35, with a widened part 37. The web 36 supports rim 38 of the wheel and its teeth 39, and a beveled surface 40 is formed under rim 38. Chain-wheels 32 33 abut part 37 and fit within bevel 40 on their inner flange 41 and between flange 41 and outer flange 42 are provided with pockets 43 for edgewise-lying chain-

links and pockets 44 for flat-lying chain-links. Central shaft 7 is reduced in diameter at each end, forming shoulders, against which case parts 1 2 are drawn by nuts 45 46. The manner of securing the worm and chain wheels together is intended to facilitate production and be thoroughly efficient without the necessity of employing high-class skill. Hubs 34 35 may be, if desired, of octagonal or other polygonal shape, but hexagonal is deemed best. Chains 47 48 pass over chain-wheels 32 33, one end being united to a cross-bar 49, which carries a hook 50, while the other end is free. Exterior to bearing 18 are placed double sheaves 51 52, having a central hub 53, from which extend arms 54 of sheave 52, and arms 55 from sheave 52 carry sheave 51. A hand-chain (not shown) is employed to operate the sheaves and is used on sheave 51 when a maximum load is to be lifted; but with a lighter load sheave 52 may be employed, as it will give a quicker lift, and the leverage best suited to the work may be employed by en-

gaging one or the other sheaves with the hand-chain. It is well known that a worm and wheel need no brake or other stopping appliance, as they are self-locking when supporting a weight, and with the spring-cushion for the worm to assist in starting the objections to former constructions of worm-hoists are believed to be fully overcome.

I claim—

In a hoisting-machine, a worm, a resilient cushion for the worm, disks interposed between the worm and its resilient cushion, a worm-wheel engaging the worm, chain-wheels thereto removably attached, a divided covering-case, and sheaves of different diameters attached to the worm for its turning.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIS T. PYOTT.

Witnesses:

R. C. WRIGHT,

WILLIAM C. STOEVEER.