

(No Model.)

T. HADDOW.  
HOISTING APPARATUS.

No. 594,619.

Patented Nov. 30, 1897.

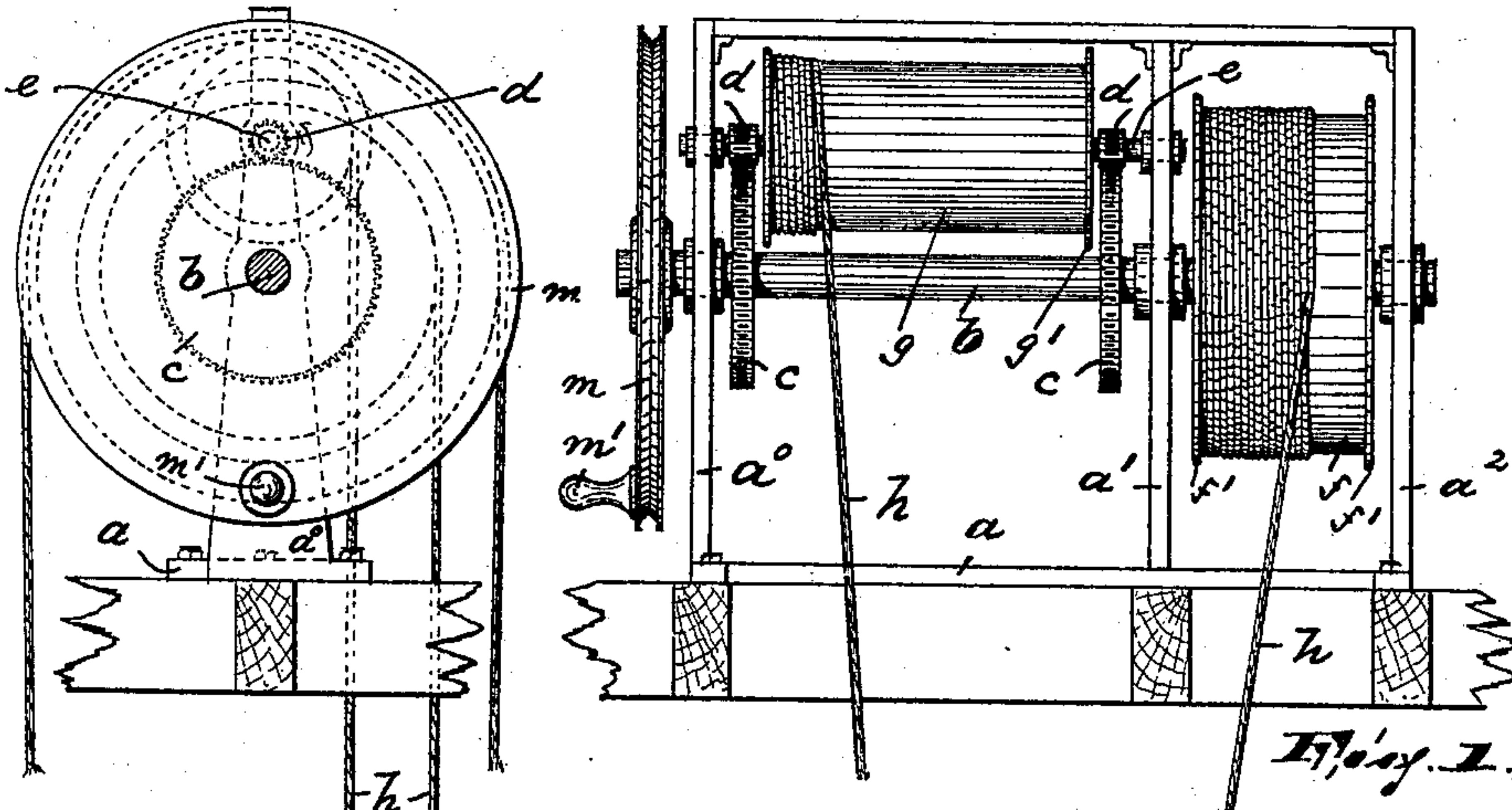


Fig. 1.

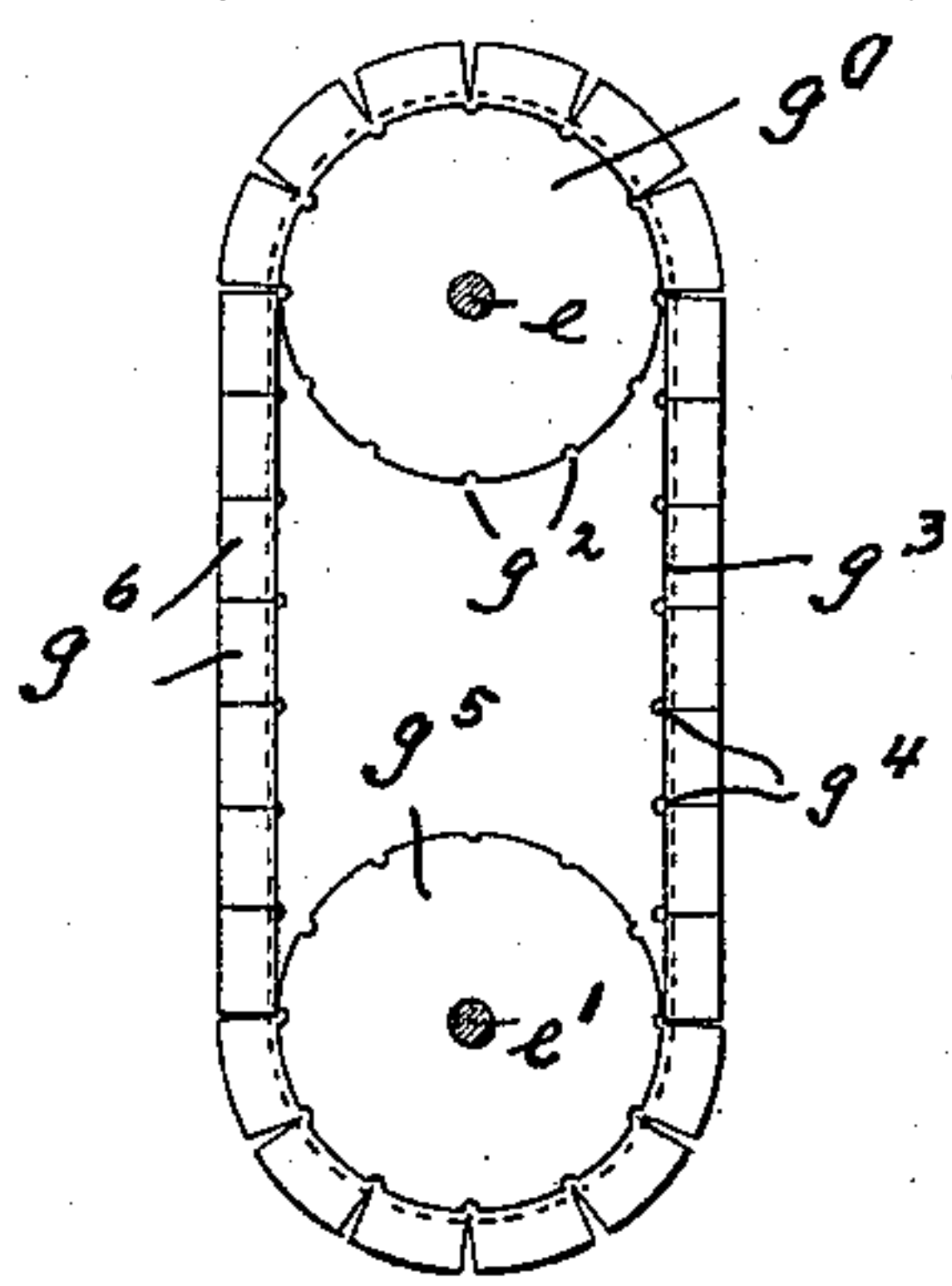
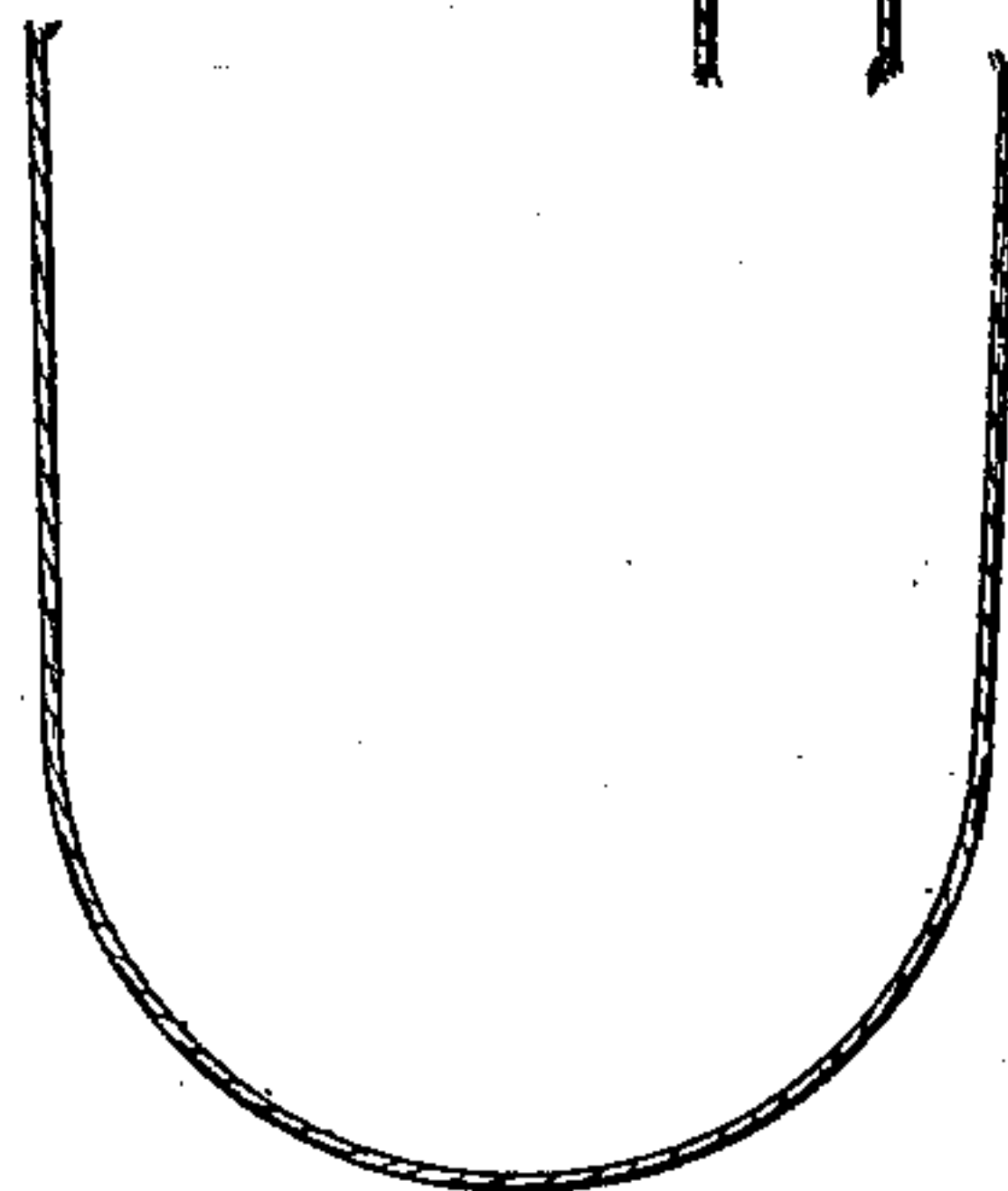


Fig. 3.

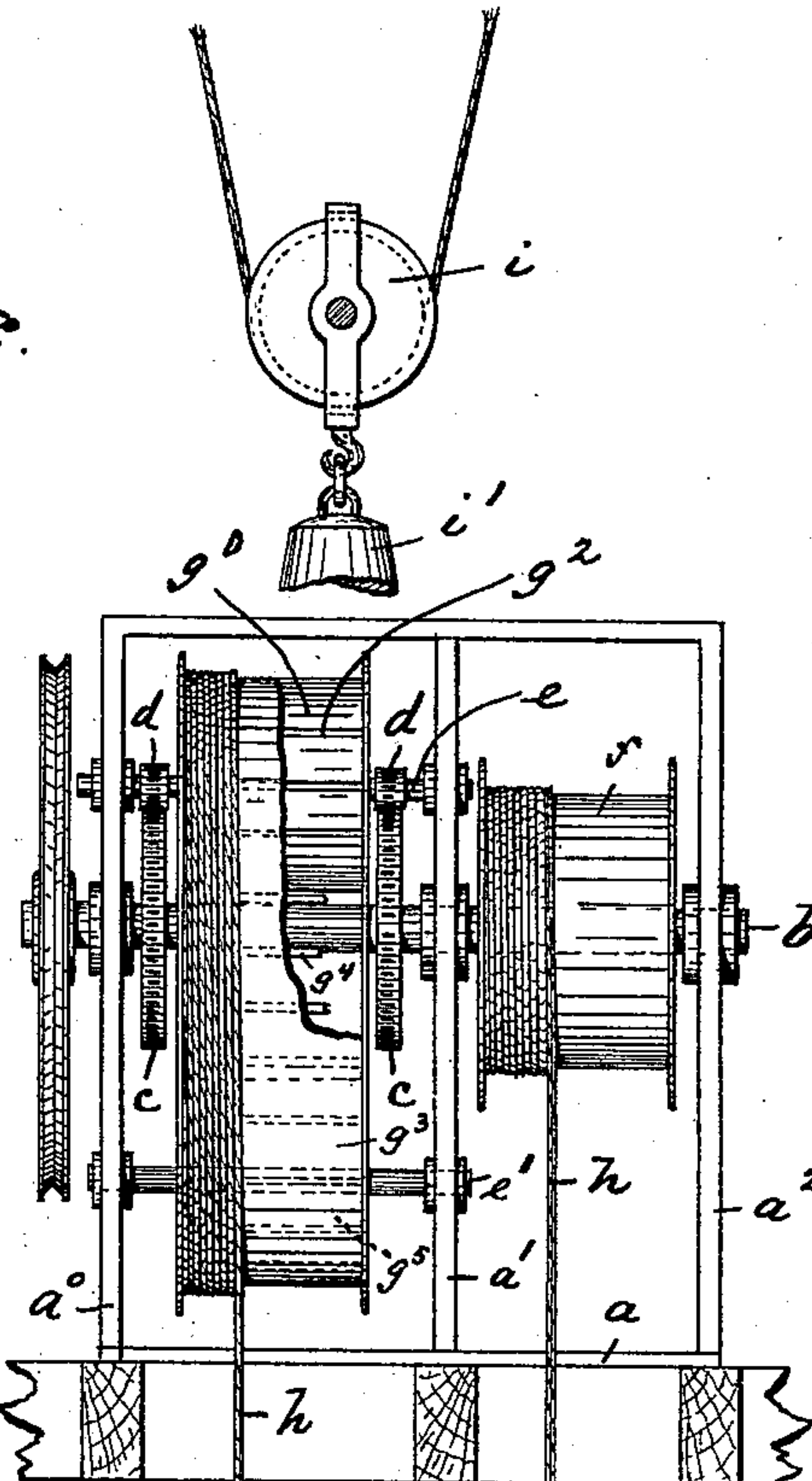


Fig. 4.

WITNESSES:

Wm D. Bell.  
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INVENTOR

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# UNITED STATES PATENT OFFICE.

THOMAS HADDOW, OF WEST HOBOKEN, NEW JERSEY.

## HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 594,619, dated November 30, 1897.

Application filed February 5, 1897. Serial No. 622,143. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS HADDOW, a citizen of the United States, residing in West Hoboken, Hudson county, and State of New Jersey, have invented certain new and useful Improvements in Hoisting Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in hoisting devices such as are used in hoisting-engines, elevators, (especially of the dumb-waiter class,) &c., and its object is to provide devices of the above character of simple, strong, and durable construction, reliable in operation, easily handled, and in which the weight to be lifted can be maintained at any height desired without the use of brakes, catches, or similar contrivances.

The invention consists in the improved hoisting apparatus, its coöperative drums, carrying and operating the lift-ropes and in the combination and arrangement of the various parts thereof, substantially as will be hereinafter more fully described, and finally embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several views, Figure 1 is a front elevation of my improved hoisting apparatus; Fig. 2, a side elevation of Fig. 1; Fig. 3, a front elevation illustrating a slightly-modified form of what is shown in Fig. 1, and Fig. 4 a detail side elevation of a certain endless chain or belt and of the drum carrying the same and used in connection with the modification illustrated in Fig. 3.

In said drawings,  $a$  represents a bed-plate having the upwardly-projecting standards  $a^0$ ,  $a'$ , and  $a^2$ , forming the bearings for the parallel shafts  $b$  and  $e$ , as clearly shown. On the shaft  $e$  and at or near its bearings are securely mounted the pinions  $d$  and between them the drum  $g$ , having the annular flanges  $g'$ . Said pinions mesh into the gear-wheels  $c$ , arranged on the shaft  $b$ , which latter ex-

tends beyond the bearing in the standard  $a'$  into the bearing in the standard  $a^2$  and carries a drum  $f$  with annular flanges  $f'$  on its extended portion—that is to say, on the portion between the bearings in the standards  $a'$  and  $a^2$ . One end of the lift-rope  $h$  is secured to the drum  $g$ , while the other end is fastened on the drum  $f$ . The lift-rope, which is arranged on both drums in the same direction, passes over a sheave  $i$ , which latter is connected to the weight to be lifted in the usual and well-known manner.

On one of the parallel shafts (in the drawings  $b$ ) is secured a grooved wheel  $m$ , adapted to be operated either by a crank-handle  $m'$  or through an endless rope passing over said wheel and descending to within reach of the operator.

When space is limited, (in width,) the modified form illustrated in Fig. 3 is used. In that construction the drum  $g$  is replaced by a drum  $g^0$ , having on its periphery a series of parallel grooves or channels  $g^2$ , adapted to be engaged by the rods or bars  $g^4$ , arranged on the endless belt or chain  $g^3$ , which latter also passes over a drum  $g^5$ , arranged on the parallel shaft  $e'$ , having its bearings in the standards  $a^0$  and  $a'$  and below the bearings for the shaft  $e$ . The endless belt or chain  $g^3$  is provided at or near its edges with sectional portions  $g^6$ , forming flexible flanges, to prevent the slipping off of the lift-rope  $h$ . The proportions of the gear-wheels  $c$  and pinions  $d$  and also of the drum  $g$  and  $f$  must be such that at any phase of operation the one drum and its gear-wheel acts as a brake for the other drum and its pinion, and vice versa—that is to say, that no matter what weight may be suspended by the lift-rope  $h$  the mechanism will not be started by said weight except when one of the shafts is operated.

From the foregoing it is obvious that very little power is required for operating the hoisting apparatus irrespective of the weight to be lifted. Supposing the drums  $g$  and  $f$  were in proportion six to twelve and the pinions  $d$  and gear-wheels  $c$  in proportion one to eight, (these figures to be calculated as inches.) In this case the retaining or balancing power would be about the highest obtainable and the weight would be carried during one revolution of the shaft  $b$  a distance of about thirty-



nine inches, and the power necessary to operate the said shaft would have to be slightly greater than the combined friction in the apparatus.

5 I do not intend to limit myself to the precise construction shown and described, as various alterations can be made without changing the scope of my invention; but

10 What I claim as new, and desire to secure by Letters Patent, is—

1. In a hoisting apparatus, the combination with a frame, comprising a bed-plate and three standards, of two parallel shafts mounted in said standards, one of said shafts having its bearings in two of said standards, while the other shaft extends beyond the central standard to and into the third standard, in which latter an additional bearing is formed for said shaft, a cylindrical drum secured on the shorter one of said shafts, a cylindrical drum of larger diameter secured on the extended portion of the other shaft, a pinion on the first-mentioned shaft on each side of the drum, gear-wheels on the other shaft and

meshing with said pinions, a lift-rope secured 25 with one end to one of said drums and with its other end to the other drum and coiled in the same direction, on said drums, and means such as a crank, for operating one of said shafts, substantially as described. 30

2. In a hoisting apparatus, comprising two drums, means for operating said drums at different speeds and in opposite directions, one of said drums having the form of an endless belt stretched over two drums of smaller diameter than the independent drum, and a lift-rope secured with one end to the independent drum and with its other end to the belt-drum, and coiled around said drums in the same direction, substantially as and for 40 the purposes described.

In testimony that I claim the foregoing I have hereunto set my hand this 1st day of February, 1897.

THOMAS HADDOW.

Witnesses:

ALFRED GARTNER,  
WM. D. BELL.