

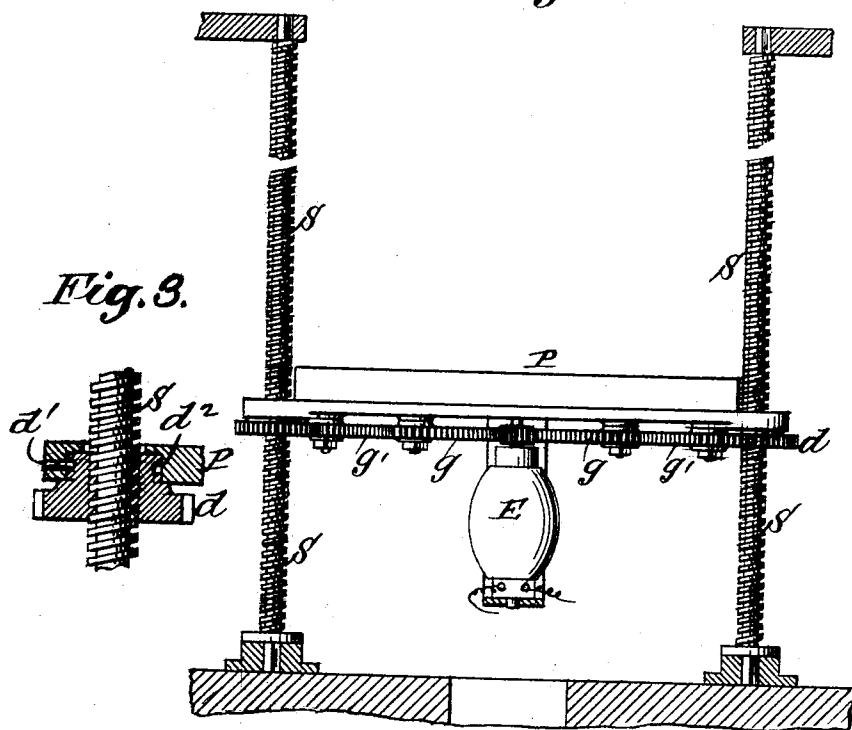
No. 765,347.

PATENTED JULY 19, 1904.

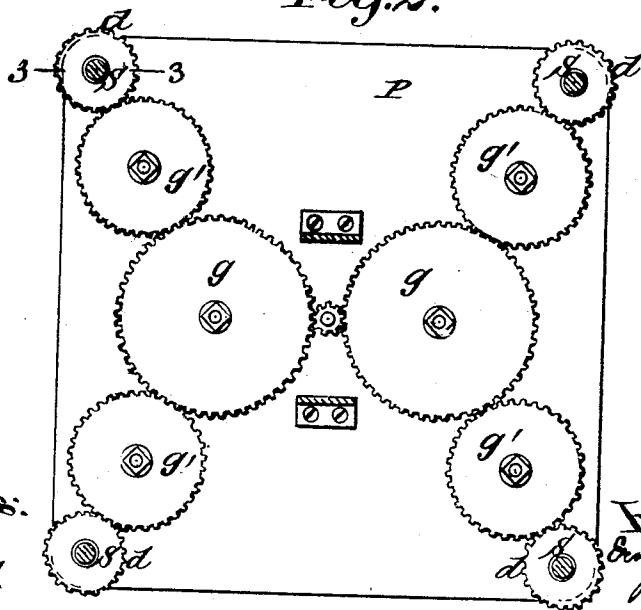
E. H. VOGEL.  
LIFTING APPARATUS.  
APPLICATION FILED OCT. 16, 1903.

NO MODEL.

*Fig. 1.*



*Fig. 2.*



Witnesses:  
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Frank B. Roach

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# UNITED STATES PATENT OFFICE.

ERNEST H. VOGEL, OF NEW YORK, N. Y.

## LIFTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 765,347, dated July 19, 1904.

Application filed October 16, 1903. Serial No. 177,260. (No model.)

*To all whom it may concern:*

Be it known that I, ERNEST H. VOGEL, a citizen of the United States, residing in the city of New York, borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Lifting Apparatus, of which the following is a specification sufficient to enable others skilled in the art to which the invention appertains to make and use the same.

My invention relates more particularly to the class of elevators known as "lifts," used principally for raising or lowering goods and merchandise from one level to another; and it consists in the special construction and arrangement of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a sectional elevation showing the power applied directly to the under side of the platform, the latter being operated by rotatable nuts engaging the supporting-screws. Fig. 2 is a view of the under side of the car-platform. Fig. 3 is a section, upon an enlarged scale, upon plane of line 3 3, Fig. 2.

In carrying out my invention practically I prefer to use four supporting and elevating screws S S S S in connection with the platform P, although two or any plurality of such screws may be employed, as may be desired, arranged at equidistant points, so as to oppose and balance each other in action.

The electric motor E is attached directly to the platform P, the screws S S S S being mounted in such manner that they are held stationary, rigid, and non-rotatable. This may be accomplished by making the ends of the screws of square or other polygonal form in cross-section, the ends fitting in correspondingly-formed sockets in rigid socket-pieces above and below, as indicated in Fig. 1.

The motor E and intermediate gearing *g g'* rotate driving-pinions *d d'*, formed with internal screw-threads which engage with the male screw-threads S S, so that the driving-

pinions constitute in this case screw-nuts by which the platform P may be raised or lowered, it being understood that such screw-nut pinions are mounted on the platform by means which will allow them to rotate thereon. In Fig. 3 a pinion *d* is shown as held to the platform by a pin *d'*, engaging with an annular groove *d''* in the hub of the pinion.

It will be seen that by my invention I attain an even balance and support for the platform that insures operation with the minimum of friction and resistance and at the same time increases the power and capacity of the apparatus for raising heavy weights when necessary. In other words, I attain a light-running lift which is economical in the power required for the work to be performed and which is equally adapted to the raising of light or heavy loads.

What I claim as my invention, and desire to secure by Letters Patent, is—

In lifting apparatus of the character described, the combination of a platform, a plurality of non-rotatable screws one at each corner of the platform, a motor supported by and beneath said platform, a vertical motor-shaft disposed at the center of the platform, a small gear on said shaft, large gears disposed upon opposite sides of and meshing with said small gear, driving-pinions forming screw-nuts engaging said screws and rotatably mounted on the platform, and gears intermediate said screw-nuts and said large gears and meshing directly therewith, said intermediate gears being of less diameter than the said large gears and the said large and intermediate gears and the screw-nuts disposed in a line extending from the corner inward toward the center and all arranged and operating substantially as and for the purpose specified.

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Witnesses:

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