

S. GRAY.

TWIN STAIRS ELEVATORS AND LIGHT SHAFT.

Patented March 7, 1876.

Fig. 1.

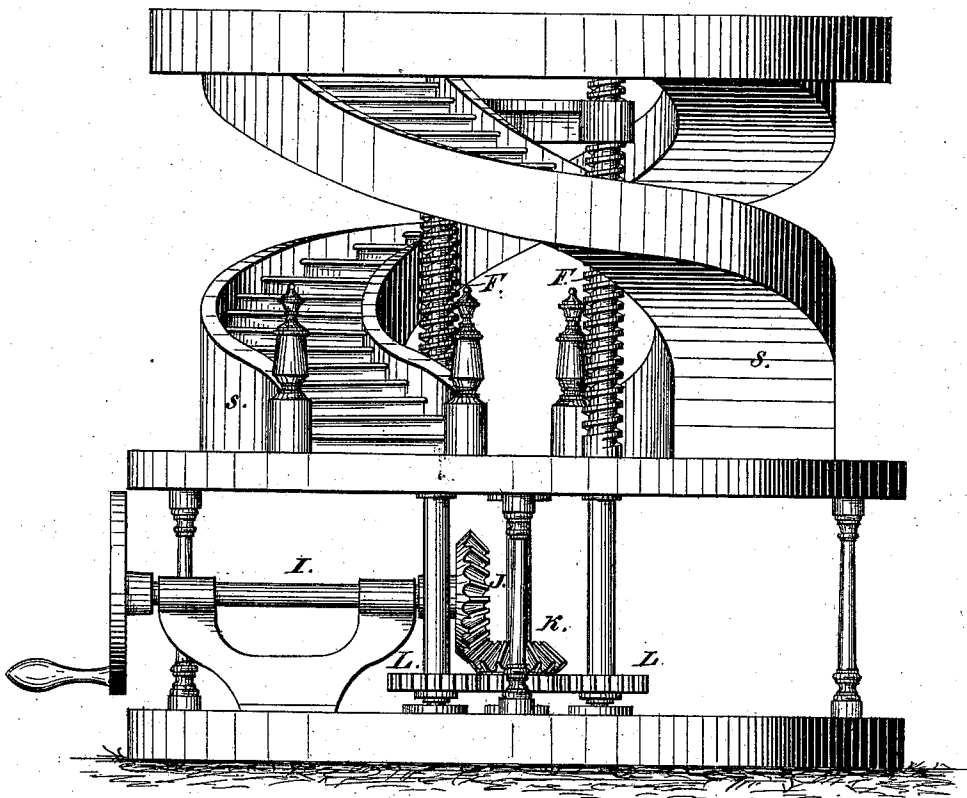
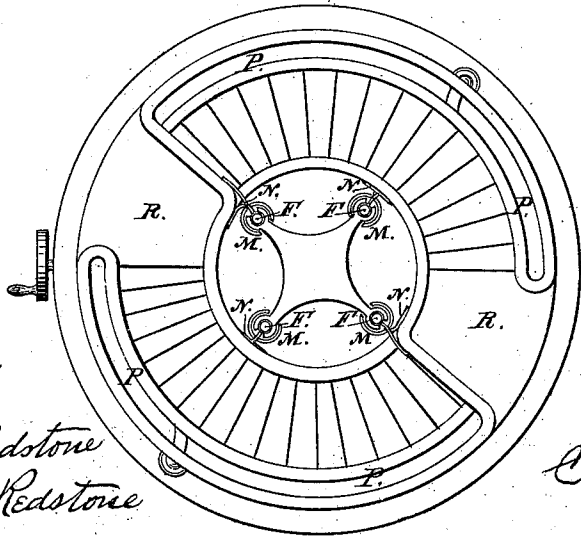


Fig. 2.



Witnesses:

John H. Redstone
Albert E. Redstone

Inventor:

Samuel. Gray.

S. GRAY.

TWIN STAIRS ELEVATORS AND LIGHT SHAFT.

No. 174,519.

Patented March 7, 1876.

Fig. 3.

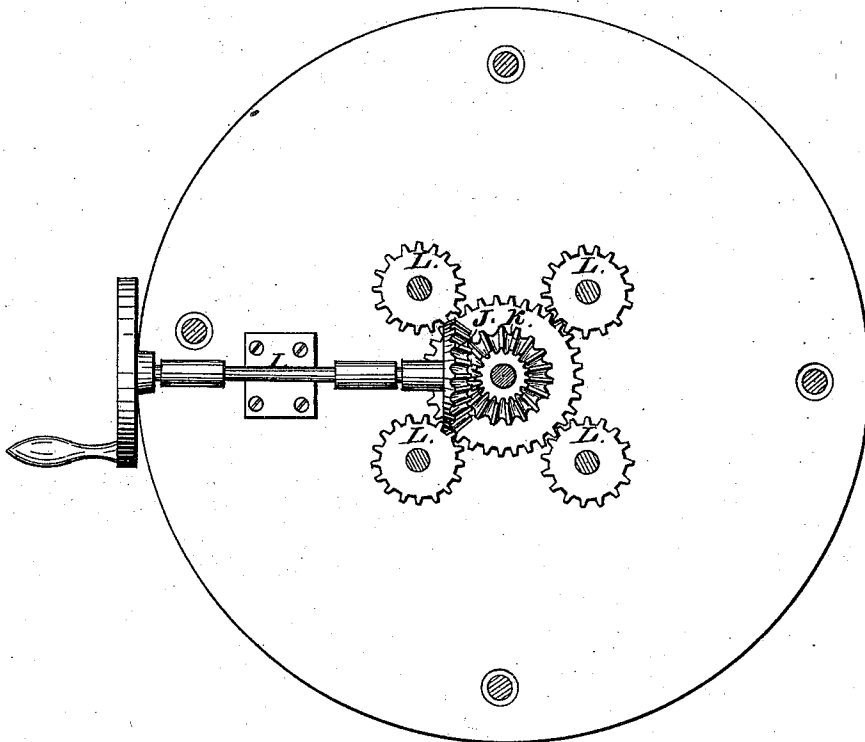
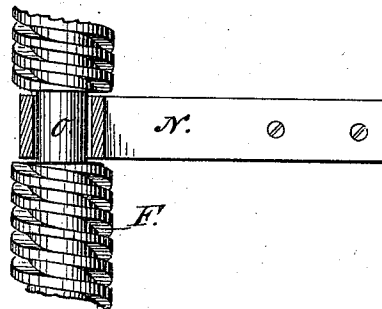


Fig. 4.



Witnesses:

John H. Redstone
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UNITED STATES PATENT OFFICE.

SAMUEL GRAY, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN TWIN STAIRS, ELEVATORS, AND LIGHT-SHAFTS.

Specification forming part of Letters Patent No. **174,519**, dated March 7, 1876; application filed November 17, 1875.

To all whom it may concern:

Be it known that I, SAMUEL GRAY, of San Francisco, in the State of California, have invented certain new and useful Improvements in the Construction and Arrangement of Twin Stairs, Elevator, and Light-Shaft, of which the following is a specification:

The object of my invention is to secure perfect safety, combined with beauty and comfort, by the construction of twin stairs, elevator, and light-shaft combined, and to economize space, so as to require no more than that required for the ordinary well-hole for spiral stairs, thus adapting it to those already constructed without cutting or destroying any part of the building except the basement-floor.

The following is the construction of the same: The stairs are made self-supporting, requiring no walls, partitions, or iron columns to secure sufficient stiffness and strength. I construct the risers to extend to the bottom of the stringers at each end, and down to the ceiling, where they are attached at the bottom edge, the risers are attached to the front of the steps, to the back edge of the next lower step, and at each end of the same to the stringer, as well as at the bottom. The inside line of the stringers being of steeper ascent than the outside stringer, and being of the same width, a perpendicular line across the same is longer; hence the inside of the attachment of the riser is broader than that to the outside stringer, giving the effect of a bracket, and giving superior strength to the structure of the stairs.

It will be seen that the space occupied by the twin stairs is no more than that required for a single flight of spiral stairs, and a great advantage is secured in avoiding the obstruction caused by having to ascend and descend upon the same flight of stairs. The elevator is operated by four perpendicular screws, which operate in the platform or frame which supports the same.

The following is the operation of the same: The driving-shaft I being revolved by a small engine or other suitable motive power, motion

is given to the screws F by means of the bevel-gear J and K and the spur gear L. The guard-sleeves M have mortises, through which the hangers N project, which hold the journals O of the screws F, and have an inner slot running the whole length, to allow the connection with the elevator and the same to move up and down. P is the light-shaft.

The advantages of my invention are seen in the economy of space, in beauty of construction, in pleasantness, being well lighted and airy, and perfectly safe, as it avoids all accidents so common to the elevators of ordinary construction.

It will be seen that it is best to place the braces on hangers N, which support the journals of the screws at different heights, so as to secure the bearing of the full thread of at least half of the screws at all times, and while the others are being passed by the female screws at their journals O. A different number of screws may be used to operate the elevator; but I find four to be the best number and more convenient in practical working. The light and ventilating shaft P is constructed by throwing an extra cylinder around and concentric with the stair-cylinder, with space between to admit sufficient light and for ventilation. The light-shaft extends around the well-hole, except at the landings R, where the elevator-car is entered at each floor.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

The construction and arrangement of the combined twin stairs, elevator, and light-shaft, when operated by means of the driving-shaft I, the bevel-gear J and K, the spur-gear L, the screws F, having the journals O, supported in the hangers N, the sleeves M, in combination with the twin stairs S and light-shaft P, the whole being constructed and operated substantially as and for the purposes set forth.

SAMUEL GRAY.

Witnesses:

JOHN H. REDSTONE,
ALBERT E. REDSTONE.