

(No Model.)

2 Sheets—Sheet 1.

C. HITZL.
ELEVATOR.

No. 515,312.

Patented Feb. 20, 1894.

Fig. 1.

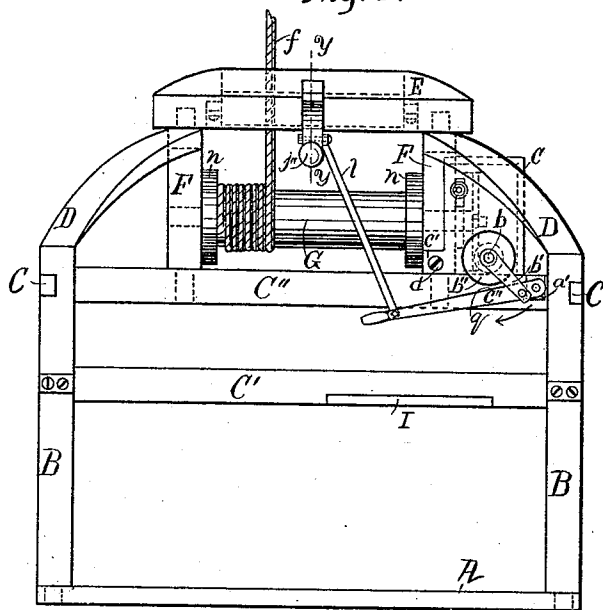
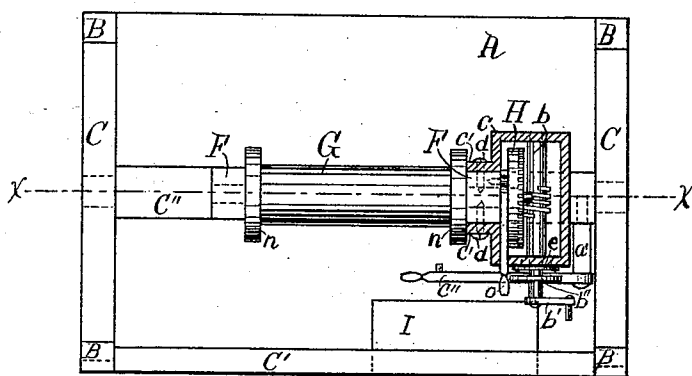


Fig. 2.



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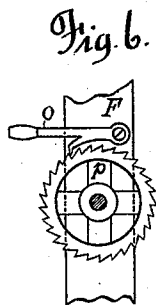
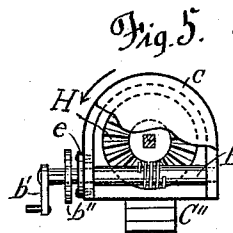
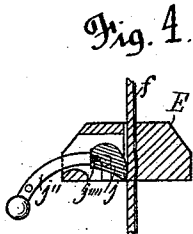
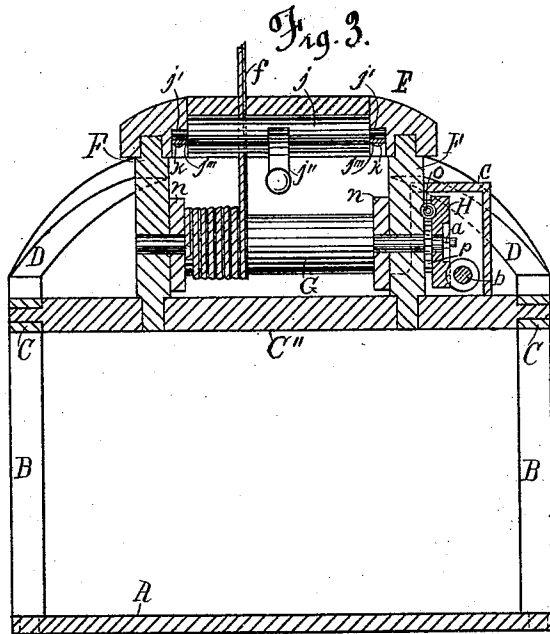
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2 Sheets—Sheet 2.

C. HITZL.
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No. 515,312.

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WITNESSES:

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UNITED STATES PATENT OFFICE.

CARL HITZL, OF ATTERSEE, AUSTRIA-HUNGARY, ASSIGNOR TO HIMSELF,
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ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 515,312, dated February 20, 1894.

Application filed June 1, 1893. Serial No. 476,232. (No model.)

To all whom it may concern:

Be it known that I, CARL HITZL, a subject of the Emperor of Austria-Hungary, residing at Attersee, Austria-Hungary, have invented certain new and useful Improvements in Elevators, of which the following is a description, reference being had to the accompanying drawings, wherein—

Figure 1 is a rear elevation of my improved elevator. Fig. 2 is a top or plan view of same, with cross-head and centrally-inclined portion of standards removed. Fig. 3 is a central, vertical section of my improved elevator on the line $x-x$ of Fig. 2. Fig. 4 is a transverse section of the cross-head on the line $y-y$ of Fig. 1. Fig. 5 is a detailed view showing gearing mechanism and form of hood employed for inclosing the same. Fig. 6 is a detailed view, on an enlarged scale, showing form of ratchet-wheel and pawl which may be used in connection with my improved elevator.

Similar letters of reference indicate corresponding parts in all the views.

My invention relates to that class of elevators intended chiefly for use in conveying from one floor to another within, or from the pavement outside to the cellar or basement of, a building, packages and parcels of more or less weight and bulk; and designed to be operated by physical force.

The object of this invention is to provide an elevator which shall be simple and cheap in construction, and by means of which one person may be able to hoist or elevate an object of very great weight. To this end I make use of ordinary frame work, a drum to which rotary motion may be applied through the medium of a perpetual screw and gear-wheel, and of certain other details to be hereinafter more specifically set forth.

Having reference to the accompanying drawings, the letter A denotes the floor or base, shown in the drawings rectangular in form.

The letter B denotes uprights or standards, the same being secured to the base A, one at the respective corners thereof, and being retained firmly in position by the transverse tie-beams C, and the longitudinal tie-beam C'. The standards or uprights B terminate

in centrally-inclined portions D, which serve to firmly retain in position the cross-head E. The said inclined portion of the standards may consist of a single piece of suitable material, properly shaped and secured to the upper end of the standard in any convenient manner. The cross-head E is primarily supported by the studs F, the latter being supported in turn by the central cross-beam C', which connects the transverse tie-beams C, as is clearly shown in the drawings.

The connections of the various parts described, may be made by mortise and tenon, or in any convenient manner.

The drum G is journaled at either end in the studs F, the journal at one end of the drum G projecting beyond the stud a distance sufficient to admit of a gear wheel H being mounted thereon; and to the end that said gear-wheel may be firmly mounted on said projecting portion of the drum-journal, the latter should be given a quadrangular or many-sided form, and the former should be provided with a central opening of corresponding form, (see Fig. 5.) The journal under consideration terminates in a tap, the same being screw-threaded to receive the nut a , which serves to retain the gear-wheel in place.

The shaft b is screw-threaded in a manner to form a perpetual screw, the screw-threads thereof being adapted to mesh into suitable cogs or teeth formed upon the adjoining face of the wheel H, near its periphery. It will be readily understood, however, that, with but slight deviations from the construction herein set forth, should the said cogs or teeth be formed upon the periphery of said wheel, equally as good results would be obtained.

The gearing mechanism of my improved elevator is inclosed by a hood or housing c , which should be constructed of material, as hard wood or iron, possessing a deal of strength and durability,—particularly that portion thereof in which the shaft b is journaled, as will shortly be explained.

The hood c is provided with extensions c' , formed integral therewith, which lie closely in contact with the adjoining stud F, and through which and into the said stud F, the screws d pass, to secure the hood firmly in place. The

rear side of the hood *c* is provided with an opening, near its base, of sufficient size to allow the shaft *b* to be passed endwise through the same. This opening admits of the ready introduction of the said shaft *b* to place, transversely within the hood *c*, as will be clearly understood; and when so introduced to place, the inner end of the shaft *b* bears in the front side of the hood *c*, at a point near the base, and in transverse alignment with the opening last referred to, in the rear side of the hood. That portion of the shaft *b* which projects rearward of the hood, should be of less diameter than that portion inclosed by the hood, in order that the said shaft may be provided with a shoulder or ridge against which the collar *e*, upon the shaft *b*, may be brought, the said collar being adapted to fit snugly within the opening in the rear side of the hood *c* and provide a bearing for the shaft *b* at that point. The collar *e* is provided with an annular flange, which extends around the opening last referred to; and the said collar *e* is held in place by means of screws passing through the said flange and taking into the hood *c*, as will be clearly understood from Fig. 5. The collar *e*, when thus secured in place, prevents displacement of the shaft *b*. The shaft *b* is provided with a crank *b'*, by means of which the operator rotates said shaft when he desires the elevator to move upward.

A platform *I* extends inwardly from the tie-beam *C'*, and should be occupied by the operator when using the elevator.

For controlling the elevator, when descending, there are provided a wheel *b''*, firmly mounted upon the shaft *b*, at a point adjacent to the hood *c*, and a brake-lever *c''*, pivoted to the projection *a'*, the said brake-lever being adapted to come in contact with the periphery of said wheel *b''*, upon the free end thereof being raised by the operator.

The cross-head *E* is provided with a central longitudinal opening through which the rope or cable *f* passes, one end of said rope or cable being secured to the drum *G*, and the other end thereof to a suitable object above the elevator.

It is essential that means be employed for stopping and holding the elevator at any desired point in its upward and downward travel, and to this end I make use of the clutch *j*, the same being provided with journals *j'* and the gravity-arm *j''*. At either extremity of the longitudinal opening in the cross-head, above referred to, vertical ways or recesses are formed, which extend from the base of the cross-head to a point central thereof, and into which the journals of the clutch *j* take when the clutch is inserted in place. The clutch journals are held in position at the upper extremity of said recesses by means of bed-plates *j'''*, the latter being held in place by means of screws *k* shown in dotted lines in Fig. 1. The gravity-arm *j''* is provided with a screw-threaded tap *j''''* which takes

into a corresponding opening in the rear of the clutch *j*, the said gravity-arm being connected with the said clutch after the latter has been secured in place. I prefer to concave the interior wall of the cross-head facing the clutch *j*, as seen in Fig. 4. The rod *l* is loosely connected, in any convenient and ordinary manner, the one end to the gravity-arm *j''*, and the other end to the brake-lever *c''*, in order that, upon the free end of said brake-lever being raised, the clutch *j* will be caused to release its grasp upon the rope or cable *f*, as will be readily understood.

The drum *G* may be provided with flanges, as *n* which will tend to increase the efficient working of said drum and relative parts.

The construction herein described is specially adapted to interior use, and consequently suitable guides should be employed, as in prior structures of this class, to prevent the elevator from tilting, and to insure a direct upward and downward movement thereof.

Two or more elevators of the form herein described may be readily joined together and advantageously used in painting or cleaning the exterior walls of a building, it being necessary only to observe that, when used for this purpose, the elevators should adjoin each other so that the drums will stand in parallel alignment.

If deemed expedient a ratchet-wheel and pawl, as shown in Fig. 6, may be used in addition to the clutch *j*, for insuring the retention of the elevator at any desired point in its upward or downward travel,—the pawl *o* being pivotally attached to the stud *F*, and adapted to take into the teeth of the ratchet-wheel *p*, which should be firmly mounted upon the drum-journal, at a point intermediate of the stud *F* and the gear-wheel *H*; and the handle of said pawl *o*, which is preferably formed integral therewith, extending outward through an opening, in the form of a vertical slot, in the rear side of the hood *c*, and terminating at a point within convenient reach of the operator.

The operation of my invention, though simple and apparent, may be set forth as follows: The operator, standing upon the platform *I*, rotates, by means of the crank *b'*, the shaft *b*, in the direction indicated by the arrow in Fig. 1, and consequently the drum *G*, through the medium of the gear-wheel *H*, in the direction indicated by the arrow in Fig. 5; which operation causes the rope or cable to wind upon the said drum, and the elevator to move upward. When desirous of descending, the operator liberates the pawl *o*, from the ratchet-wheel *p*, (if these parts be used), and then raises the free end of the brake-lever *c''* quickly, bringing the said brake-lever, at the point *q*, in contact with the wheel *b''*, and holding the same there under strain sufficient to insure a gradual downward movement of the elevator, which descends by its own gravity.

I claim as my improvement—

1. In an elevator, comprising suitable frame-work composed in part of a centrally-open cross-head, the combination of the clutch *j*, disposed within said cross-head and provided with a gravity-arm, as *j'*, the latter extending rearward from said clutch through a suitable opening in said cross-head, the lever *c''*, having a suitable pivotal connection at one end thereof, and the rod *l*, the latter being pivotally connected at its lower end to the lever *c''*, near the free end thereof, and likewise connected at its upper end to the gravity-arm above named, all substantially as described and for the purposes set forth.

2. In an elevator comprising suitable frame-work composed in part of two upright studs, as *F*, in combination, the drum *G*, journaled at either end in said studs, the journal at one end thereof extending through and beyond the stud, the gear-wheel *H*, firmly mounted upon said drum-journal, the hood *c*, so disposed and secured to said frame-work as to inclose said gear-wheel, the endless-screw shaft *b*, journaled in the front side of said hood, and extending rearward thereof through a suitable opening in the rear side of said hood, the said shaft being so disposed within said hood as to mesh at all times with the gear-wheel above named, the flanged collar *e*, fitting in the said opening in the rear side of the hood, and serving as a bearing for the shaft *b* at that point, and the crank *b'*, carried by the shaft *b* at the rear end thereof, all substantially as described and for the purposes set forth.

3. In an elevator comprising suitable frame-work composed in part of two upright studs, as *F*, in combination, the drum *G*, journaled at either end in said studs, the journal at one end thereof extending through and beyond the stud, the ratchet-wheel *p*, firmly mounted upon the drum-journal last named, adjacent to the stud in which the said journal bears, the pawl *o*, pivotally connected to said stud and adapted to engage the teeth of

said ratchet-wheel, the gear-wheel *H*, firmly mounted upon the drum-journal last referred to, and adjacent to the ratchet-wheel *p*, the hood *c*, so disposed and secured to said frame-work as to inclose said gear-wheel, ratchet-wheel and pawl, the endless-screw shaft *b*, disposed within said hood *c* as herein described and carrying at its rear end a crank *b'*, the flanged collar *e*, fitting within a suitable opening in the rear side of the hood *c*, and serving as a bearing for the shaft *b* at that point, and the rope *f*, one end of the latter being secured to the drum *G*, and the other end thereof to a suitable object above the elevator, all substantially as described and for the purposes set forth.

4. In an elevator, comprising suitable frame-work composed in part of two upright studs, as *F*, the drum *G*, journaled at either end in said studs, the journal at one end thereof extending through and beyond the stud, the gear-wheel *H*, firmly mounted upon said drum-journal, the hood *c*, so disposed and secured to said frame-work as to inclose said gear-wheel, the endless-screw shaft *b*, disposed within said hood as herein described, and carrying at its rear end the crank *b'*, the flanged collar *e*, fitting within a suitable opening in the rear side of the hood *c*, and serving as a bearing for the shaft *b* at that point, the wheel *b''*, firmly mounted upon the shaft *b*, between the crank *b'* and the hood *c*, the lever *c''*, having a suitable pivotal connection at one end thereof, and disposed so that the same may be brought in contact with the periphery of the wheel *b''*, upon the free end of said lever being raised, and the rope *f*, one end of the latter being secured to the drum *G* and the other end thereof to a suitable object above the elevator, all substantially as described and for the purposes set forth.

CARL HITZL.

Witnesses:

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W. E. OVERTON.