

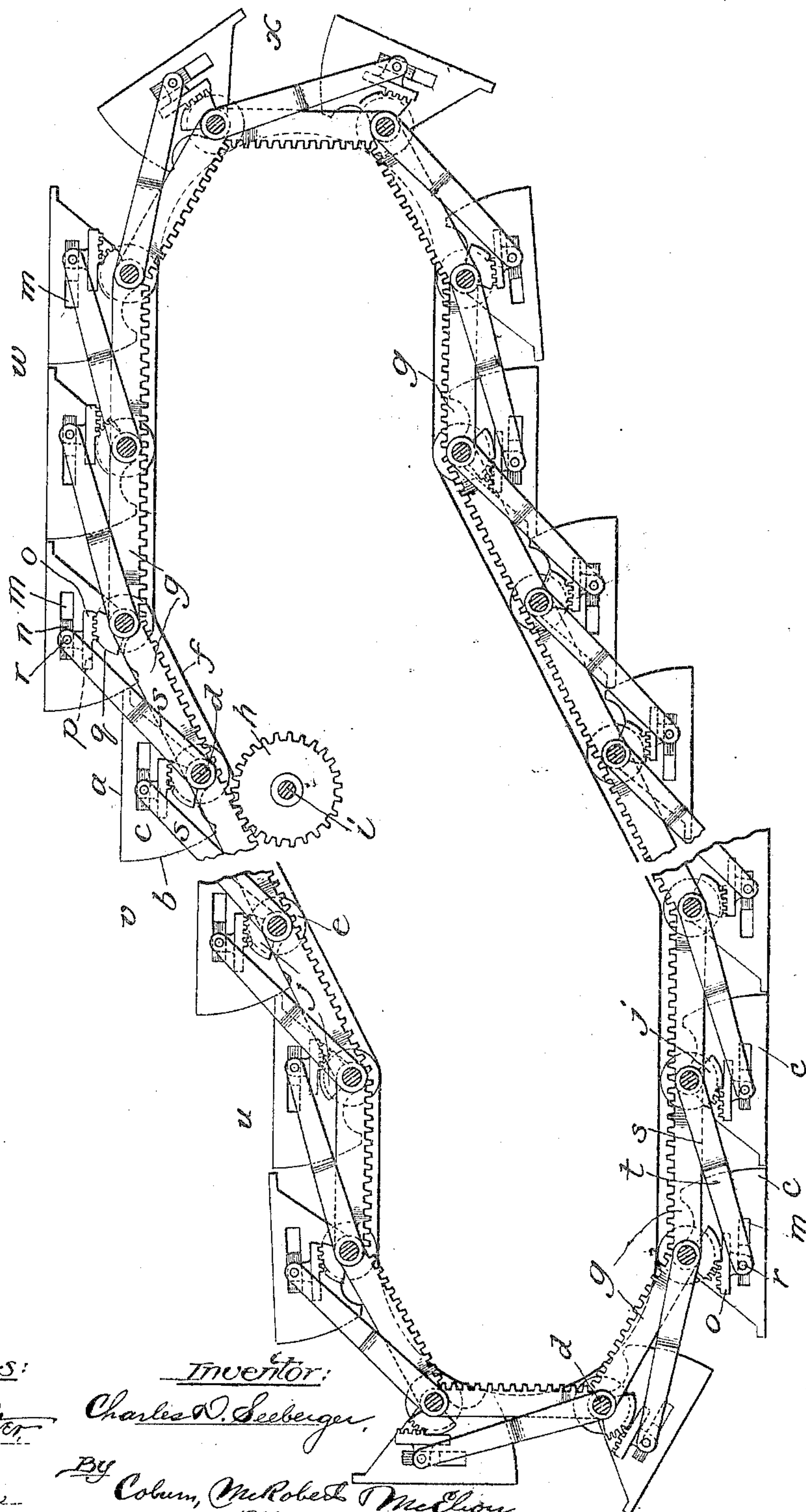
C. D. SEEBERGER.

ELEVATOR.

APPLICATION FILED JAN. 20, 1903. RENEWED FEB. 27, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

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No. 804,560.

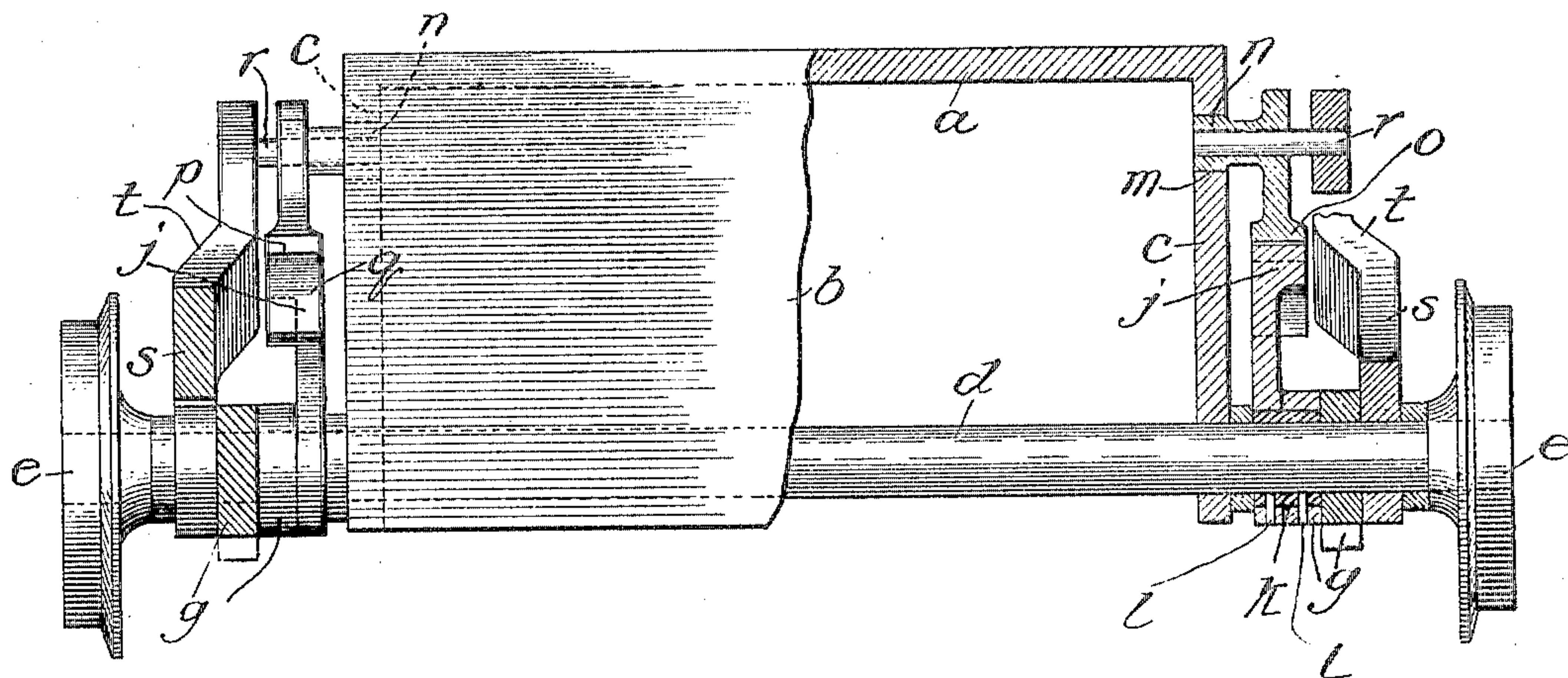
PATENTED NOV. 14, 1905.

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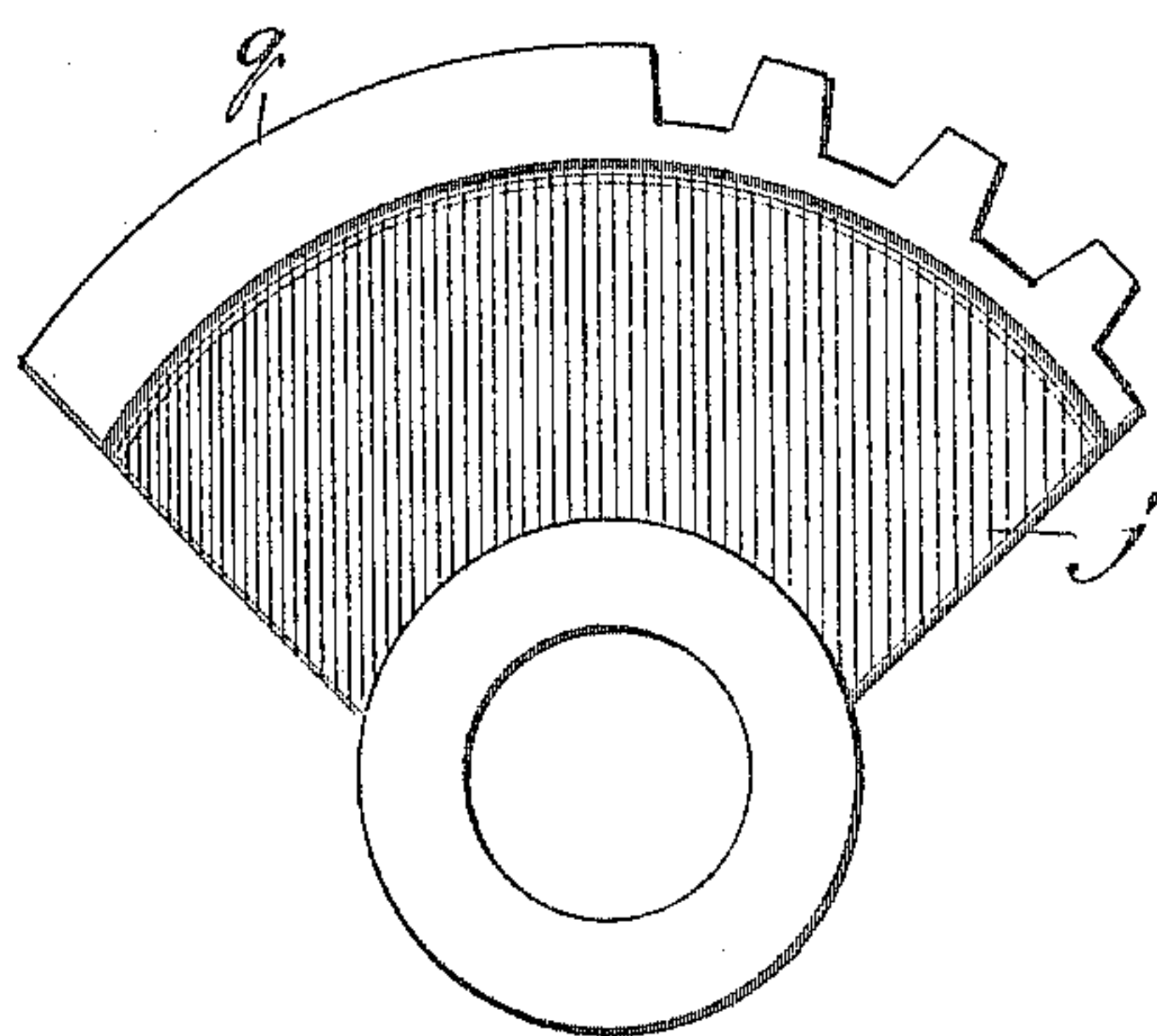
APPLICATION FILED JAN. 20, 1903. RENEWED FEB. 27, 1905.

2 SHEETS—SHEET 2.

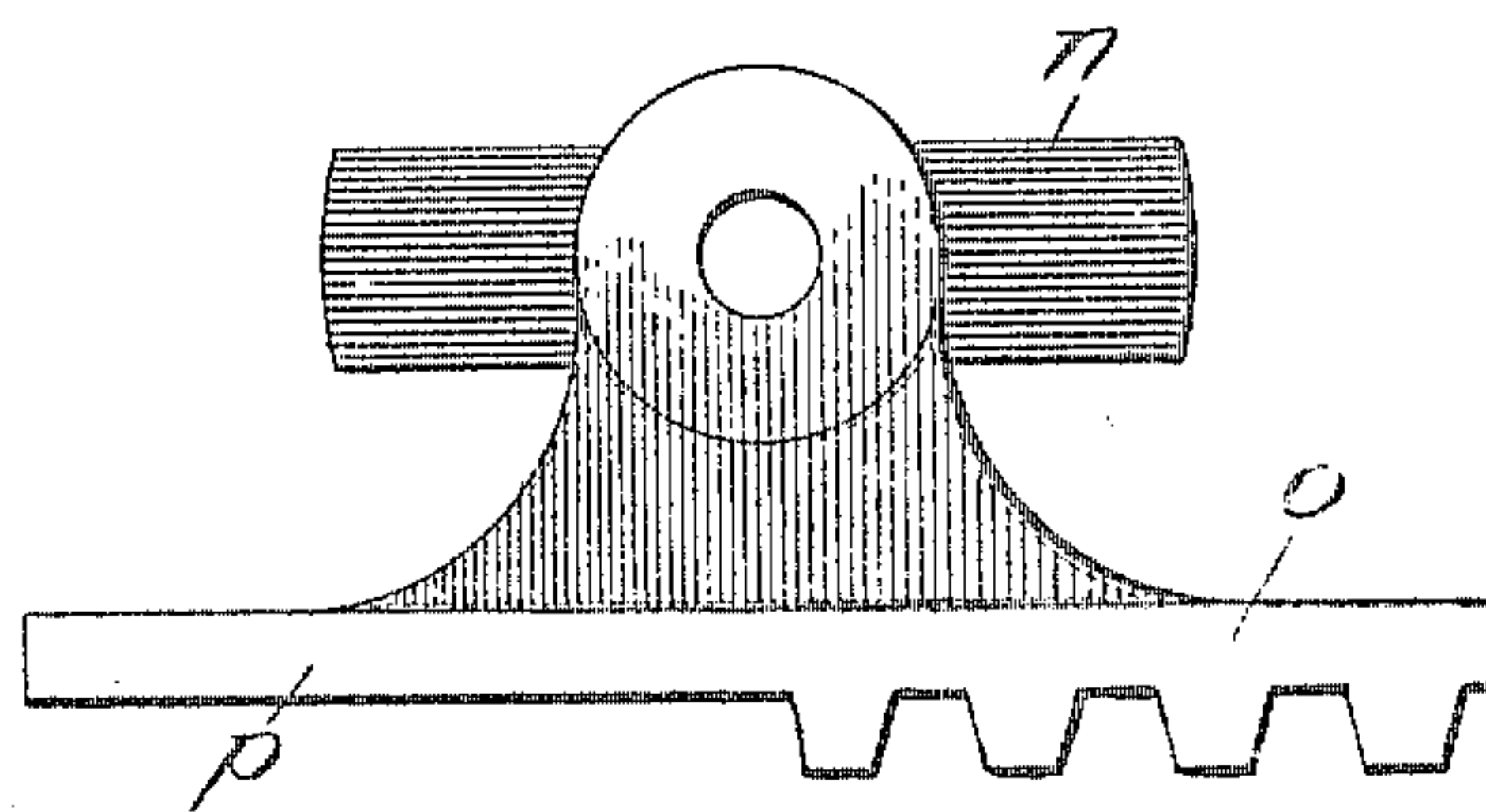
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

CHARLES D. SEEBERGER, OF YONKERS, NEW YORK.

## ELEVATOR.

No. 804,560.

Specification of Letters Patent.

Patented Nov. 14, 1905.

Application filed January 20, 1903. Renewed February 27, 1905. Serial No. 247,538.

*To all whom it may concern:*

Be it known that I, CHARLES D. SEEBERGER, a citizen of the United States, residing at Yonkers, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Elevators, (Case No. 13,) of which the following is a specification.

My invention is concerned with a certain novel structure in the two-wheeled type of elevators, such as moving stairways or similar conveying apparatus, and is designed to produce a simple and efficient system of connections between the steps or carriers by which they will be held with their tread or carrying surfaces horizontal and uppermost on the landings and on the inclines.

To illustrate my invention, I annex hereto two sheets of drawings, in which the same letters of reference are used to designate identical parts in all the figures, of which—

Figure 1 is a side elevation, somewhat diagrammatic in its nature, of an elevator containing my invention with the wheels on the near side removed. Fig. 2 is a front elevation of one of the steps on the landing with one-half thereof in central vertical section. Fig. 3 is a side elevation of one of the gear-segments employed in the connections, and Fig. 4 is a similar view of the rack-bar coöperating therewith.

The steps proper are of the customary construction and consist of the tread-surfaces *a* and the customary risers *b*, preferably curved, and the side or end pieces *c*, these parts of the step being carried by and supported on the axle bar or rod *d*, which may be mounted to rotate in bearings carried by the step and have the wheels *e* rigidly secured on the ends thereof or which may be rigidly secured in the step and have the wheels *e* journaled thereon, or it might be free to rock in the step and also have the wheels journaled thereon. These wheels run on the customary tracks as employed in the two-wheeled system, the location and design of the tracks being indicated by the line *f*. The parts thus far described may be of the ordinary construction.

Connecting the axle-bars *d* at each end and outside of the ends *c* of the steps are the links *g*, the under surfaces of which are preferably provided with rack-teeth, with which mesh the driving-gears *h*, secured upon the shaft *i*, to which power may be applied in any desired manner to drive the elevator. Of course it will be understood that the chain of steps or

carriers might be driven by any other desired mechanism. The links *g* have rigidly secured to their forward ends the gear segments or quadrants *j*. These parts might be formed integrally or they may be rigidly connected to each other by means of the sleeve *k*, upon which they are both mounted and to which they are secured by means of the pins *l*, as shown in Fig. 2. The links *g* are preferably offset, as at *y*, in order that all the forward ends to which the quadrants *j* are secured may be in the same vertical plane, so that a uniform design may be employed for the coöperating elements. Formed in each side, near the top thereof, is the horizontal elongated slot *m*, in which is mounted to slide the block *n*, to which is rigidly secured the rack-bar *o*, which has the teeth at one end thereof meshing with the teeth formed on the corresponding portion of the quadrant *j*, and having the toothless portion *p* adapted to coöperate with the corresponding raised toothless portion *q* of the quadrant *j*. The rack-bar *o* and block *n* have pivotally mounted thereon, as by means of the pintle *r*, the upper end of the universal lever *s*, the other end of which is pivoted on the axle-bar *d* of the succeeding step outside of the links *g*. The universal lever *s* is preferably offset, as at *t*, in order to bring the upper end as close as possible to the rack-bar *o*.

The operation of the connections as thus far described will be apparent from Fig. 1, where it will be seen that where the steps form the lower landing *u* the block *n* at the end of each step is in the forward end of its slot *m*, and the teeth of the associated quadrant *j* and bar *o* are practically disengaged, but said parts are held in proper relationship by reason of the engagement of the surfaces *p* and *q*. As each step passes from the lower landing *u* to the ascending portion *v* the forward ends of the links *g*, connecting such step with the succeeding step, are swung upward, thereby rocking the quadrants *j*, associated with such step. This movement of the quadrants serves to slide the rack-bars *o* and blocks *n* of the step back to the rear ends of its slots *m*, in which position they remain until the upper landing *w* is reached. There the links *g* are again brought to horizontal, and the resulting movement of the quadrants *j* and the rack-bars *o* serves to bring the blocks *n* to the forward ends of the slots *m* of the step, so as to still maintain the tread-surface of the step horizontal and at the same level with the other steps traveling along



the landing. From the foregoing it is apparent that in each position of the step the parts form a lock to prevent the step from tilting and to maintain the same with its tread-surface horizontal. When the steps swing around the end *w*, the proper relationship of the parts is maintained, and so on throughout the return portion of the tracks and until they reach the lower landing *u*.

10 In the present case I make no claim to a construction wherein the steps or carriages are connected by parallel links for maintaining them in predetermined relationship to each other, with rack-teeth on the links in the same  
15 vertical plane and a driving-pinion engaging said rack-teeth, nor to a construction in which connecting linkage is provided with rack-bars having their pitch-line substantially on the level of the axle-bar of the steps, nor to a construction in which each rack-bar is slightly  
20 shorter than the distance between the axle-bars of the two steps, so that the space between the adjacent ends of the racks corresponds to the recess between the two teeth, these features of construction being shown and described in a copending application, Serial No. 149,951, filed by me March 28, 1903 and forming parts of the subject-matter thereof.

30 From a consideration of the mechanism herein shown and described it will be apparent that I have devised a simple and positive system of link connections for a two-wheeled type of moving stairway or conveying system that cannot get out of order and which will serve  
35 to hold the steps in the desired position with the utmost rigidity.

While I have shown and described my invention as embodied in the form which I at present consider best adapted to carry out its purposes, it will be understood that it is capable  
40 of modifications and that I do not desire to be limited in the interpretation of the following claims except as may be necessitated by the state of the prior art.

45 What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a device of the class described, the combination with the tracks, of the carriers having bearings on said tracks, and connections for  
50 holding the carriers horizontal on the inclined and horizontal portions of the tracks, said connections consisting of the links connecting said steps, the universal levers pivoted to said steps at one end and having movable bearings  
55 therein at the other end, and means for automatically moving said bearings as the carriers pass from the horizontal to the inclined portions of the tracks and vice versa.

2. In a device of the class described, the combination with the tracks, of the carriers having  
60 bearings on said tracks, links connecting said steps, gear-segments secured to said links at one end thereof, the universal levers pivoted to said steps at one end and having movable  
65 bearings therein at the other end, and rack-

bars secured to said movable bearings and meshing with said gear-segments; substantially as and for the purpose described.

3. In a device of the class described, the combination with the tracks, of the carriers having  
70 bearings on said tracks and the horizontal slots formed therein, movable bearing-blocks in said slots, the links connecting said steps, the universal levers pivoted to said steps at one end and pivoted to said movable bearing-blocks  
75 at the other end, gear-segments secured to one end of said links, and rack-bars meshing therewith secured to the movable blocks.

4. In a device of the class described, the combination with the tracks, of the carriers having  
80 bearings on said tracks and the horizontal slots formed therein, movable bearing-blocks in said slots, the links connecting said steps, the universal levers pivoted to said steps at one end and pivoted to said movable bearing-blocks  
85 at the other end, gear-segments secured to one end of said links, and rack-bars meshing therewith secured to the movable blocks, said gear-segments and rack-bars being provided with the cooperating toothless bearing por-  
90 tions.

5. In a device of the class described, the combination with the tracks, of the carriers having bearings on said tracks, connections for hold-  
95 ing the carriers horizontal on the inclined and horizontal portions of the tracks, said connections consisting of the links connecting said steps, the universal levers pivoted to said steps at one end and having movable bearings there-  
100 in at the other end, and means for automatically moving said bearings as the carriers pass from the horizontal to the inclined portions of the tracks and vice versa, and means for driving said carriers.

6. In a device of the class described, the combination with the tracks, of the carriers having  
105 bearings on said tracks, connections for holding the carriers horizontal on the inclined and horizontal portions of the tracks, said connections consisting of the links connecting said  
110 steps, the universal levers pivoted to said steps at one end and having movable bearings therein at the other end, and means for automatically moving said bearings as the carriers pass from the horizontal to the inclined portions  
115 of the tracks and vice versa, and means for driving said carriers consisting of a gear-wheel meshing with teeth formed on said links.

7. In a device of the class described, the combination with the tracks, of the carriers having  
120 bearings on said tracks and the horizontal slots formed therein, movable bearing-blocks in said slots, the links connecting said steps, the universal levers pivoted to said steps at one end and pivoted to said movable bearing-  
125 blocks at the other end, gear-segments secured to one end of said links, rack-bars meshing therewith secured to the movable blocks, and means for driving said carriers.

8. In a device of the class described, the com- 130



5 bination with the tracks, of the carriers having  
bearings on said tracks and the horizontal  
slots formed therein, movable bearing-blocks  
in said slots, the links connecting said steps,  
10 the universal levers pivoted to said steps at  
one end and pivoted to said movable bearing-  
blocks at the other end, gear-segments se-  
cured to one end of said links, rack-bars mesh-  
ing therewith secured to the movable blocks,  
15 and means for driving said carriers consisting  
of a gear-wheel meshing with teeth formed  
on said links.

9. In a device of the class described, the com-  
bination with the tracks, of the carriers having  
15 bearings on said tracks, and connections com-  
prising links and universal levers for holding  
the carriers in predetermined relation on the  
inclined and horizontal portions of the tracks.

10. In a device of the class described, the  
20 combination with the tracks, of the carriers  
having bearings on said tracks, and connec-  
tions comprising links and levers and means  
to lock the levers for holding the carriers in  
predetermined relation on the inclined and  
25 horizontal portions of the tracks.

11. In a device of the class described, the  
combination with the tracks, of carriers hav-  
ing bearings on said tracks, links connecting  
the carriers, levers pivoted at one end to one  
carrier and having moving connection with 30  
an adjacent carrier at the other end, and  
means to lock the levers.

12. In a device of the class described, the  
combination with a way having inclined and  
horizontal portions, of two-wheeled carriers 35  
adapted to the way, means for connecting the  
carriers, and automatically-adjustable connec-  
tions between the carriers for maintaining  
the treads of the latter in predetermined rela-  
tion on the inclined and horizontal portions 40  
of the way and comprising levers pivoted to  
one carrier and having sliding engagement  
with an adjacent carrier, and means to lock  
the levers.

In testimony whereof I affix my signature in 45  
presence of two witnesses.

CHARLES D. SEEBERGER.

Witnesses:

W. H. BRADY,

THOS. M. LOGAN.