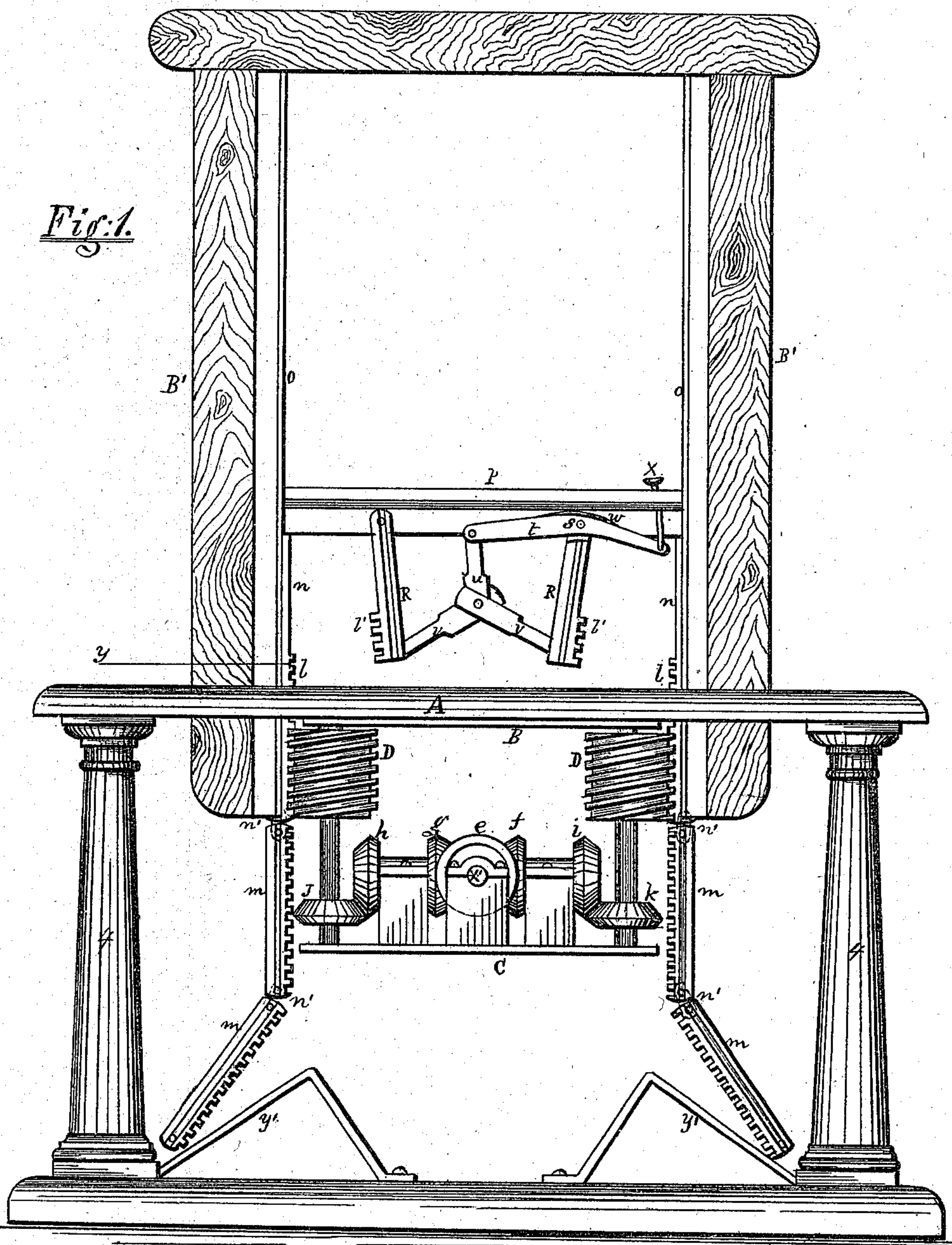


W. HAMILTON.
ELEVATOR.

No. 104,731.

Patented June 28, 1870.

Fig. 1.



Witnesses.

A. C. Johnston
John P. Thompson

Inventor.

William Hamilton

W. HAMILTON.
ELEVATOR.

No. 104,731.

Patented June 28, 1870.

fig. 3.

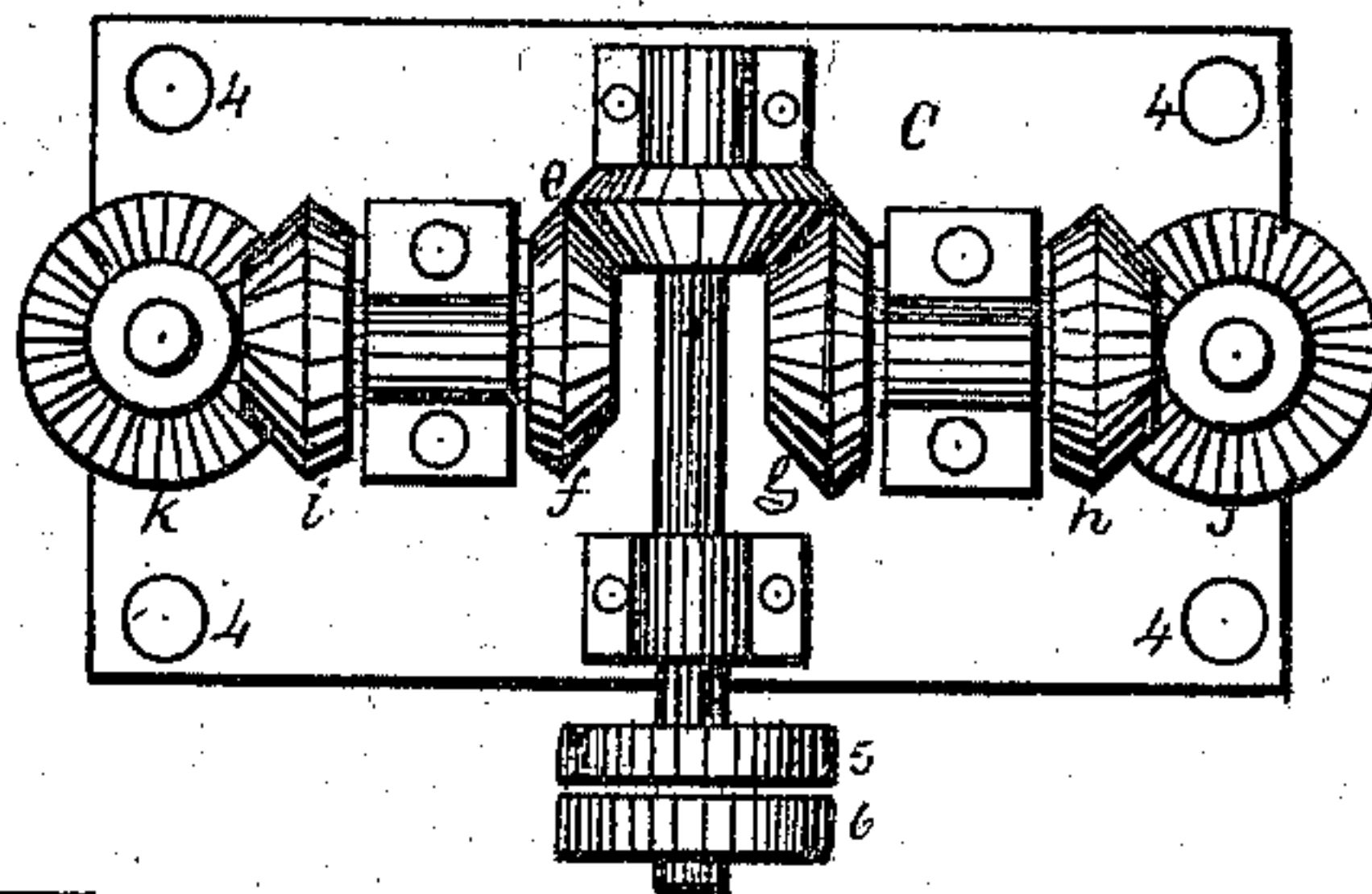


fig. 5.



fig. 4.

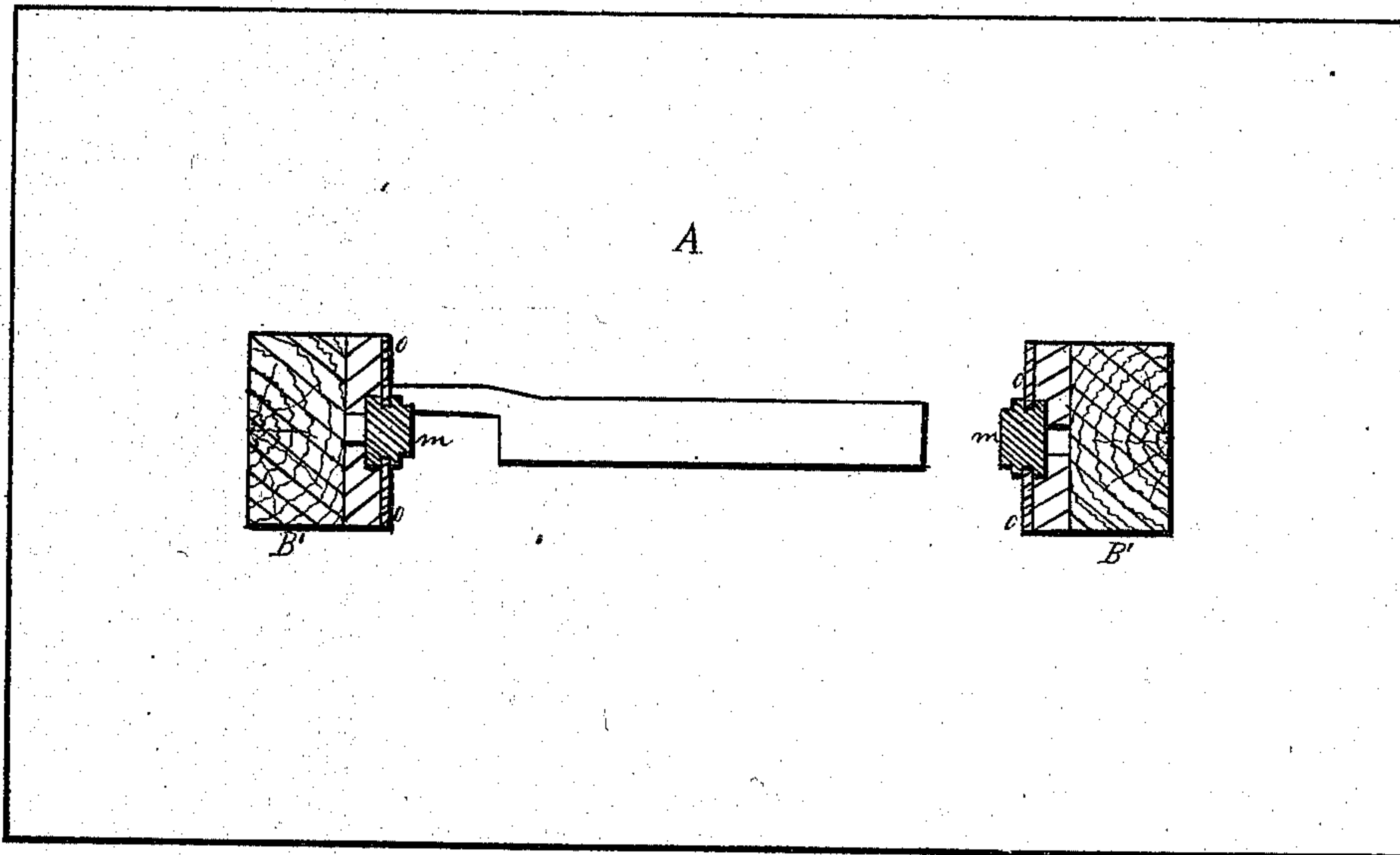
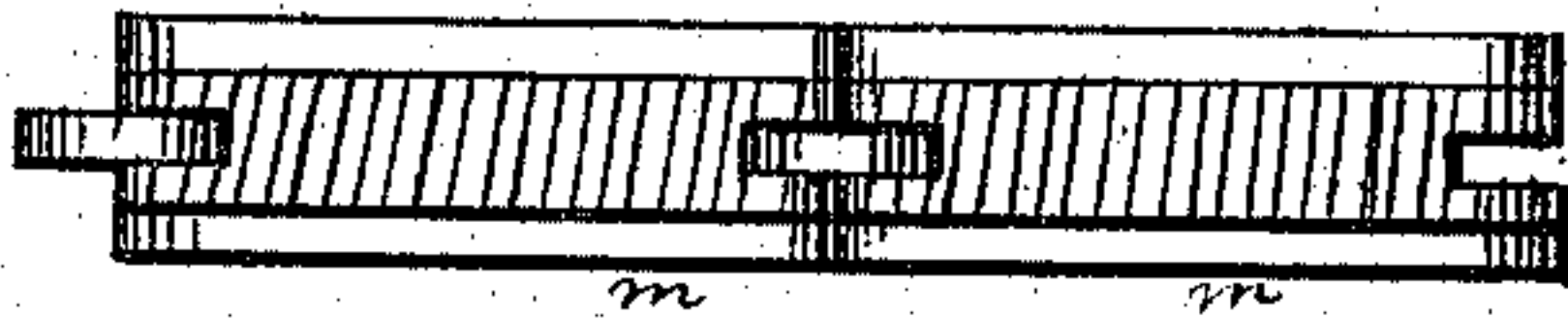


fig. 2.

United States Patent Office.

WILLIAM HAMILTON, OF ALLEGHENY CITY, PENNSYLVANIA.

Letters Patent No. 104,731, dated June 28, 1870.

IMPROVEMENT IN ELEVATORS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WILLIAM HAMILTON, of the city and county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in "Elevators;" and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon.

The nature of my invention consists in raising and lowering the platform of an elevator through the medium of a rack made in sections, and endless screws, operated by suitable driving-gear.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawing, which forms part of my specification—

Figure 1 is a side elevation of my improvement in elevators.

Figure 2 is a transverse section, at line *y* of fig. 1, of the timbers to which are attached the slides for the racks and platform, representing, also, a transverse section of the slides and racks, with the slides, racks, and timbers arranged in juxtaposition.

Figure 3 is a top view or plan of the driving-gear used for operating the endless screws.

Figure 4 is a face view of two sections of the rack.

Figure 5 is a transverse section of the rack.

In the accompanying drawing—

A represents the floor of the building, provided with the elevator.

Below the floor A are arranged the endless screws and their driving-gear, all of which are supported in a frame consisting of plates B C and columns 4.

The timbers B', to which are attached the slides *o*, for the racks *m*, are properly secured between the floors of each story of the building, and may extend from the first to the upper story when so desired.

The rack *m* is made in sections, and pivoted together, as shown at *n'* in figs. 1 and 4, and are provided with grooves, *o'*, into which are fitted the slides *o*, as shown in fig. 2.

The teeth *l* of the racks *m* are arranged at an angle corresponding to the inclination of the thread of the endless screws D.

The two sections of the rack *m* directly attached to the platform P have blank surfaces, *n*, which are equal to the length of the endless screws D. These blanks are for the purpose of causing the endless screws to become unshipped from the racks *m*, and the driving-gear to continue in motion without liability of injury to it or the platform P.

The arrangement of the driving-gear, which consists of bevel-wheels *e f g h i J K*, and a tight pulley, 5, and loose pulleys 6, and the relation that said gear

bears to the endless screws D, and their connection with racks *m* and platform P, is all clearly shown in figs. 1 and 4, and will readily be understood by the skillful mechanic.

To the under side of the platform P are pivoted, at S, two starting-racks, R, to which are attached toggle-levers *v*, *u*, *t*, and *x*, which are operated upon by the spring *w*, so as to hold the pivoted racks R out of gear with relation to the endless screws D.

As the construction and arrangement of the several parts of my improvement in elevators will be readily understood from the foregoing description, and by reference to the accompanying drawing, I will, therefore, proceed to describe the operation.

The platform being lowered, so that the teeth *l* of the two racks directly attached to the platform have passed below and out of gear with the endless screws D, so that they will be opposite to the blanks of the racks, now, by revolving the shaft *x'* through the medium of suitable belts, which are arranged, with relation to the pulleys 5 and 6, so as to reverse the motion of said shaft *x'*, which arrangement of belts and pulleys for that purpose is well understood by skilled mechanics, the shaft *x'* will revolve the wheel *e*, which will revolve wheels *f* and *g*, which will revolve wheels *h* and *i*, which will revolve wheels J and K, which will revolve the endless screws D both in the same direction. Now, by drawing upon lever *x*, it will raise up one end of the lever *t*, and force downward the other end of it, which, pressing on the levers *u* and *v*, will bring the teeth *l* of the pivoted racks R into gear with the threads of the lower end of the endless screws D, and the rotating of the endless screws will cause the platform to commence ascending, and thereby bring the teeth *l* of the rack *m* into gear with the threads of the endless screws D. The operator then releases his hold on the lever *x*, and the spring *w* will force the racks R and the levers connected thereto into the position shown in fig. 1, and the rotating of the endless screws D will cause the platform P to ascend until the upper threads of the endless screws have passed the last tooth in the last sections of the racks *m*. The platform P descends by reversing the driving-gear, which is accomplished by shifting the driving-belts. The lower sections of the racks *m*, in their descent, coming against the guides *y'*, will cause them to slide off to the right and left of the elevator; or the sections may be folded up, one upon the other.

The advantage of constructing an elevator as herein described consists—

First, in making the hoisting-racks in sections, whereby the platform P may be elevated to any desired height, and requires but little room below the first floor of the building for the racks *m*.

Second, in arranging the two sections of the racks

m, attached directly to the platform *P*, so that they will become unshipped when the platform has descended to its lowest point, allowing the driving-gear to continue its motion without injury to any part of the elevator, or its driving mechanism.

Third, in so constructing the driving-gear as to obtain any desired speed for the ascent or descent of the platform *P*.

Having thus described the nature, construction, operation, and advantages of my improvement,

What I claim as of my invention is—

1. Constructing the rack *m* with grooves *o'*, made in sections, and pivoted together, substantially as herein described, and for the purpose set forth.

2. The use of the pivoted racks *R*, in combination with the endless screws *D*, substantially as herein described, and for the purpose set forth.

3. The combination and arrangement of the levers *x t u v* and spring *w* with the pivoted rack *R*, as herein described, and for the purpose set forth.

4. Providing the two upper sections of the rack *m* with blank spaces *n*, arranged, with relation to the endless screws *D*, so that the teeth of said section of the rack shall become unshipped from the threads of said screws, substantially as herein described, and for the purpose set forth.

5. The arrangement of the beveled wheels *e f g h i j k* and endless screws *D*, constructed, arranged, and operating, with relation to the racks *m*, substantially as herein described.

WILLIAM HAMILTON.

Witnesses:

A. C. JOHNSTON,
JAS. G. THOMPSON.