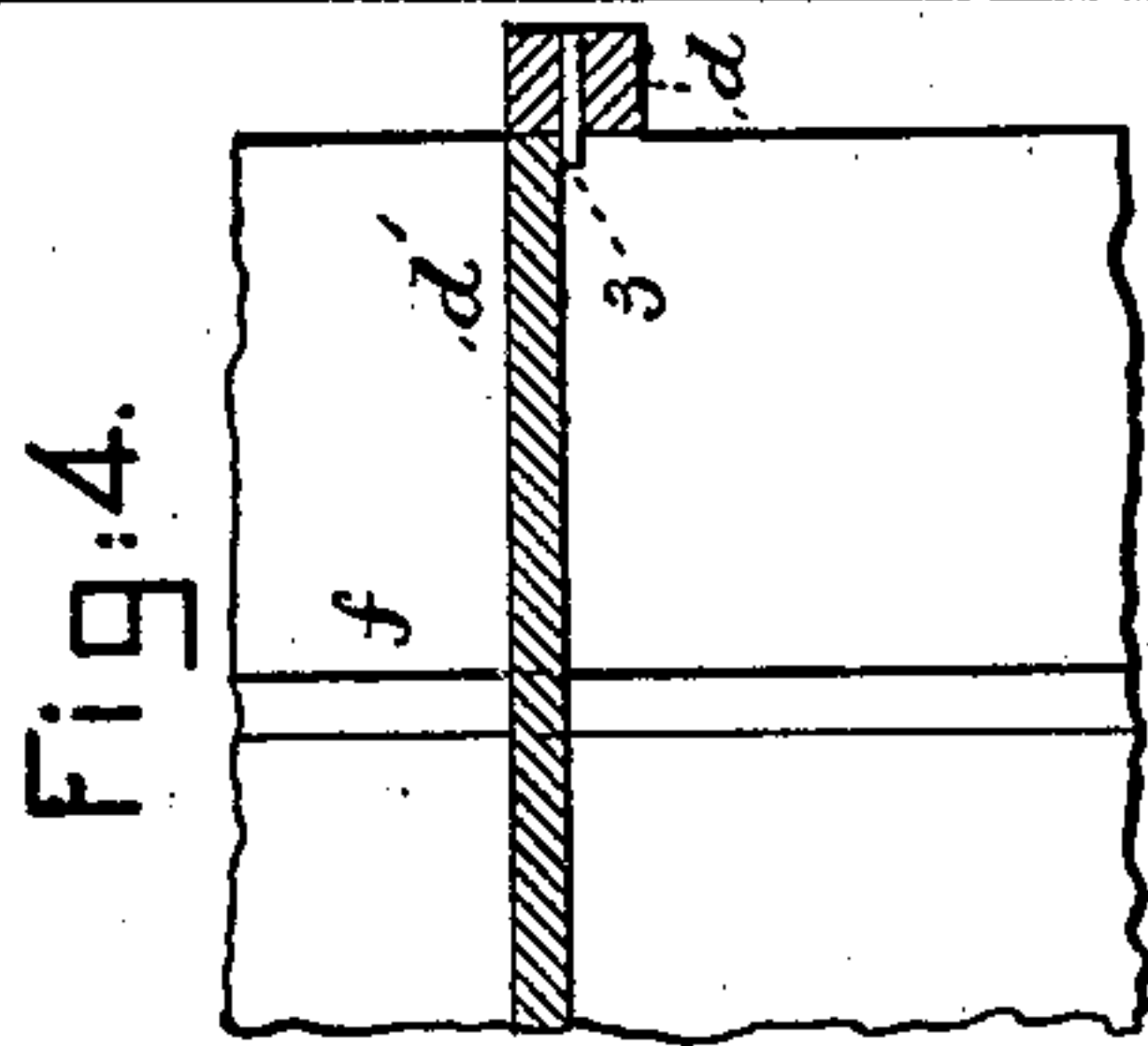
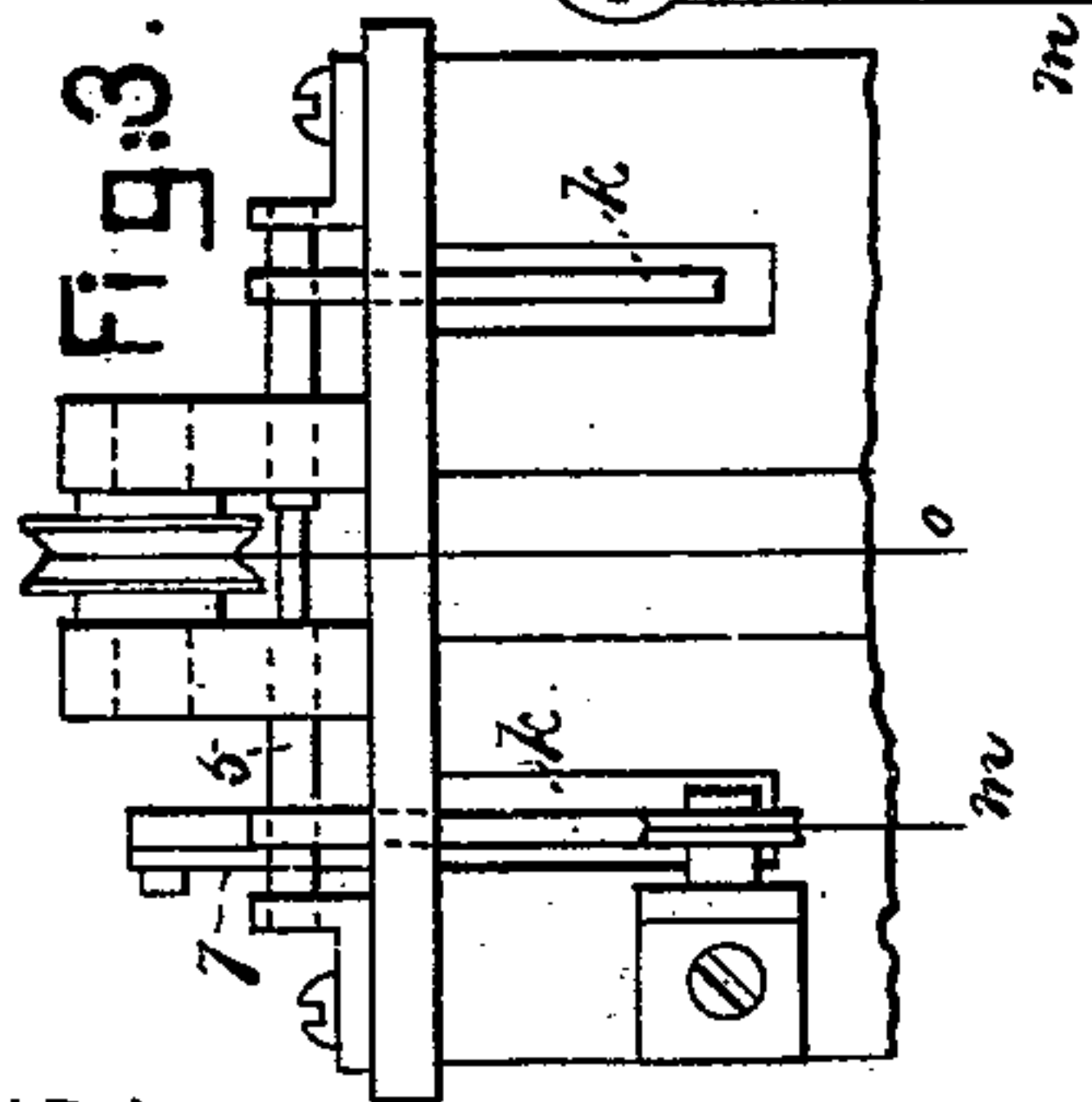
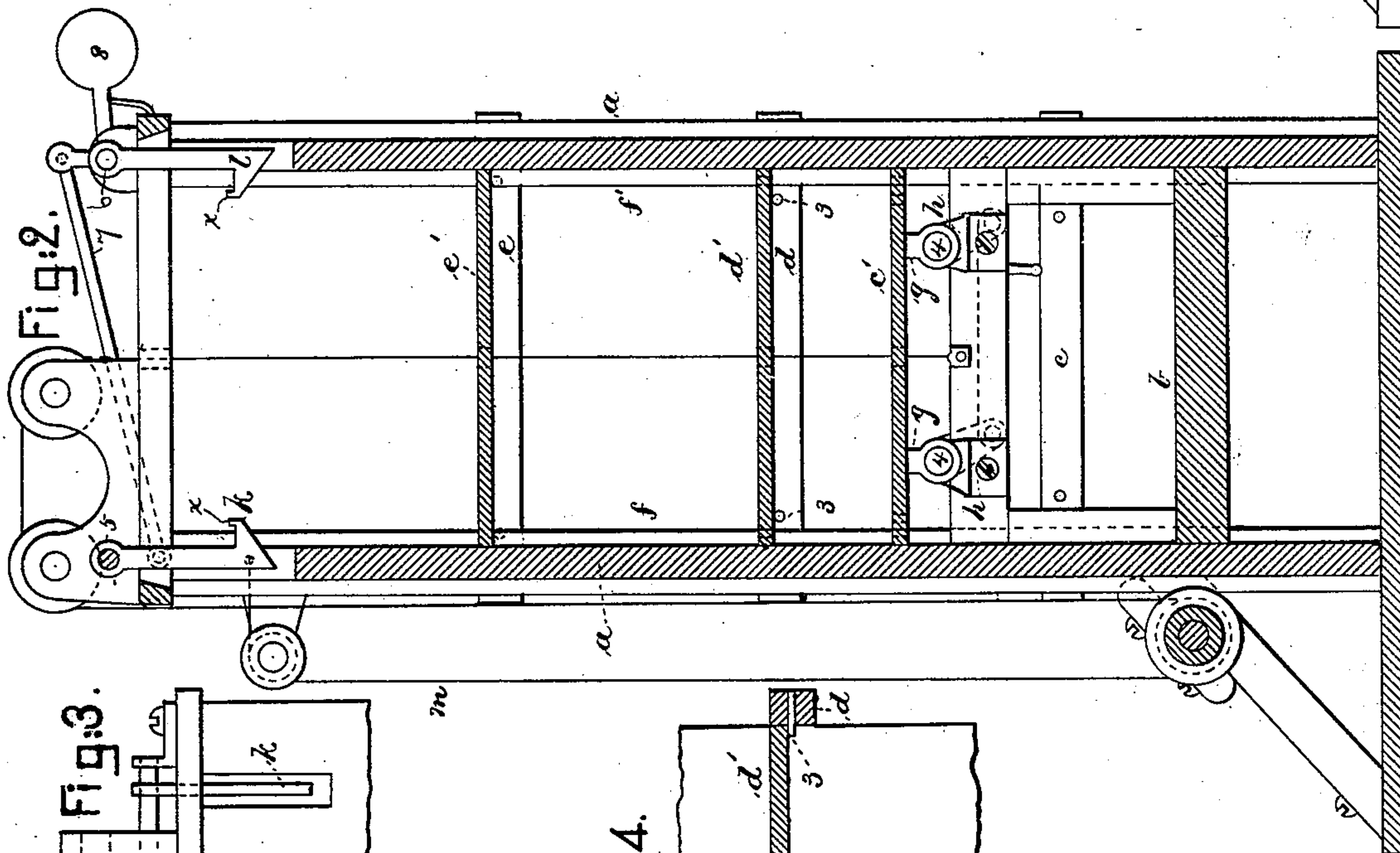
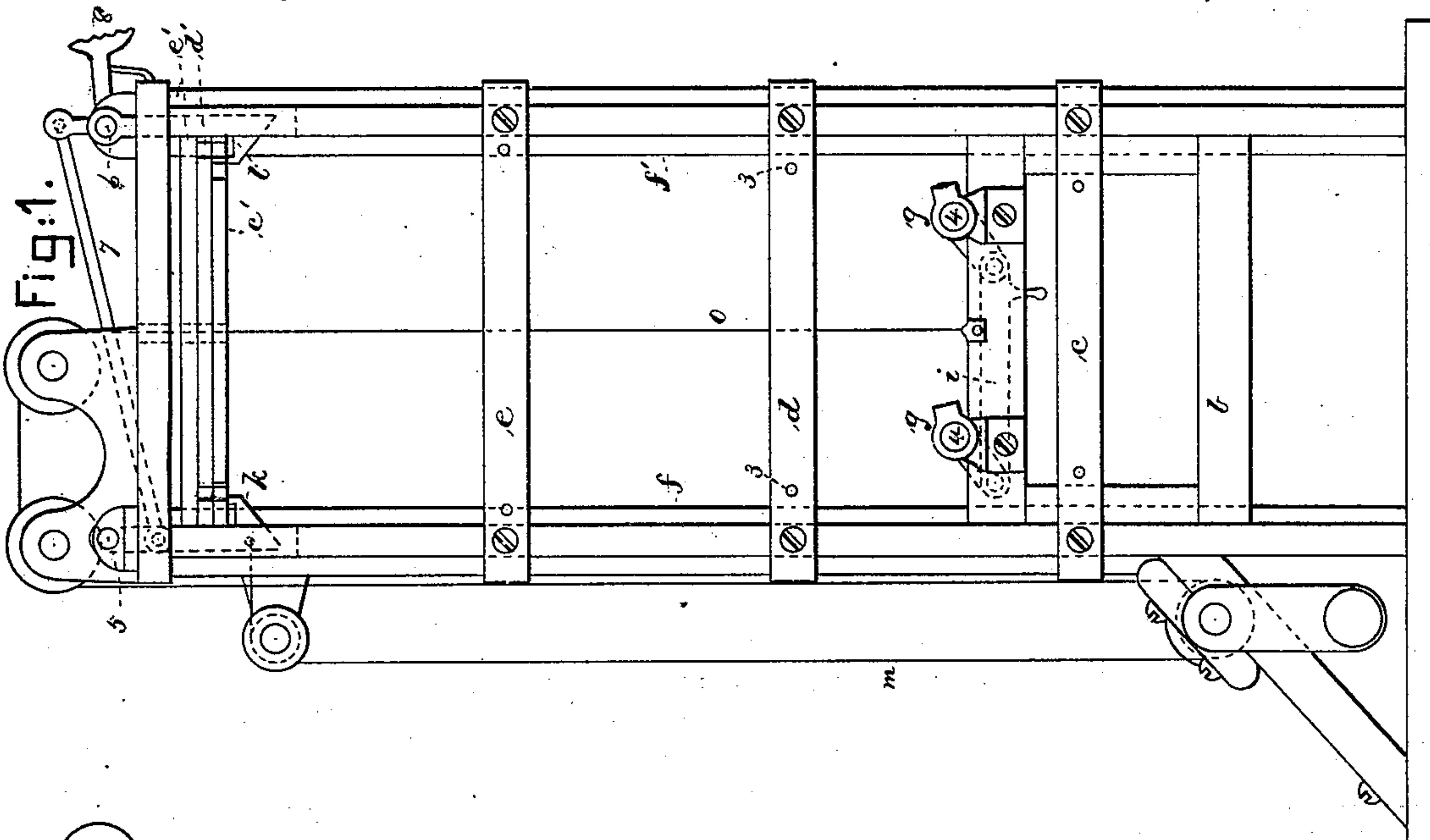


0. TUFTS.  
Elevator.

**No. 235,047.**

**Patented Nov. 30, 1880.**



WITNESSES.

L. F. Connor.  
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Inventor.

Otis Tufts  
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Atty



# UNITED STATES PATENT OFFICE.

OTIS TUFTS, OF SOUTH BOSTON, MASSACHUSETTS.

## ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 235,047, dated November 30, 1880.

Application filed May 6, 1878.

*To all whom it may concern:*

Be it known that I, OTIS TUFTS, of South Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Elevators, of which the following is a specification.

This invention relates to improvements in elevators, and has for its object to provide means for closing the hatchways.

10 In this my invention, instead of hinging the hatchway-covers, as heretofore common, and opening and closing them by means of the car, I fit the covers to the hatchways loosely, and the car as it rises lifts and carries the  
15 covers with it from floor to floor.

At the upper end of the space in which the car moves I have arranged cover-holding devices, which, as the car reaches its uppermost position, receive and hold the covers while  
20 the car again descends; or, if desired, the covers may be lifted successively by the car in its ascent, each cover being carried positively by the car for the entire distance traveled over by the car above the hatchway from  
25 which the cover was lifted, and such covers may be deposited successively in their proper places as the car descends.

Figure 1 represents, in side elevation, a sufficient portion of an elevator to illustrate this  
30 my invention; Fig. 2, a vertical section of the same; Fig. 3, a side view, taken at the upper end of the elevator; and Fig. 4 is a detail, showing one of the covers in section, it being supported at its proper hatchway by its supporting-stop.

35 The frame *a* of the elevator and the car *b* may be of any usual or suitable construction. The different hatchways or openings to be covered are located opposite the floor-levels  
40 *c d e*, cover *c'* covering the hatchway for the floor *c*, *d'* for *d*, and *e'* for *e*. Each cover is made of one flat piece, and is supported at its own floor upon supporting-stops 3, any suitable number, and is notched to fit the guide-  
45 ways *f f'*. These stops, which support the covers at their own floors or hatchways, are in different vertical planes on each floor, and each cover is provided with notches at its edges to pass the stops for the covers of the  
50 floor above it.

In the drawings, cover *c'* has two series of

notches to pass the stops which support the covers *d' e'*, and cover *d'* has but one series of notches, for it has to pass but one series of stops. The notches in each cover are so made  
55 and the stops for each cover are so placed that each cover will pass all the stops of the covers above it, and will be checked in its descent by its own stops.

When starting the elevator for its day's  
60 work the cover-lifters *g g* on axles or rods 4, supported in ears *h*, moving with the car, (such axles being provided with cranks connected by a bar, *i*, as shown in dotted lines, Fig. 1,) are placed in the position shown at  
65 Fig. 2, and as the car is elevated the cover *c'* is lifted from its hatchway and carried upward with the car. These lifters are employed to facilitate the placing of the hatchway-covers in their holders, and also to raise the covers  
70 before the top of the car could come in contact therewith, thereby preventing the noise of concussion between two solid flat bodies.

When cover *c'* meets cover *d'* it is also lifted from its pins, and in a like manner is lifted cover  
75 *c'*. Arriving at the upper end of its travel the car passes the covers beyond the beveled ends of the cover-holders *k l*, they being secured to axles 5 6, connected together by a link, 7, and provided with a weight, 8, or equivalent device, as a spring, to keep the cover-  
80 holders held pressed toward the center of the space in which the car travels.

If it is desired to run the elevator and not cover the hatchways at each descent of the car,  
85 then the covers are left upon the holders, as shown in Fig. 1, and the cover-lifters are turned, as shown in such figure, so that they will not touch or lift the covers from the holders as the car reaches its upward limit.

90 When it is desired to cover the hatchways the cover-lifters are placed in lifting position, so as to lift the covers from the holders, then the holders are withdrawn by means of the cord or hand-rope *m*.

95 It is obvious that the shape of the cover-holders, their moving devices, and the cover-lifters may be variously modified without departing from my invention.

If it is desired that the covers be success-  
100 sively lifted as the car rises, and be put in place as the car descends each trip, then the



holders may be omitted, and instead of the movable cover-lifters I may employ projections at the top of the car.

The car-suspensory *o* passes through the center of each cover.

The cover-holders are provided with projections *x*, to enter recesses formed in the lowermost cover of the series of covers held by them, so that should the rope *m* be pulled when the car is not elevated in proper position to raise the covers, then the holders cannot be moved from under and permit the covers to drop.

I claim—

1. The combination, with the car, of movable cover-lifters adapted to act upon and carry the covers with the car from one to the other landing or floor-level, or to be thrown down out of engagement with said covers when the latter are retained by holders therefor, substantially as described.

2. The combination, with the car and with the covers, of cover-holders to hold the loose and movable covers lifted by the car and placed within such holders, substantially as described.

3. The cover-holders, combined with the devices to hold them pressed toward the center of the space in which the car moves, and with mechanism to move them in the opposite direction, to permit the covers to be discharged upon the car.

4. The combination, with the car, of cover-holders and movable cover-lifters, to lift the covers and place them in said cover-holders, and then by change of position of such lifters fail to lift the covers held by the holders, substantially as described.

5. The cover-holders provided with projections to enter recesses in the lowermost cover of the series of covers and hold them securely in place, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

OTIS TUFTS.

Witnesses:

G. W. GREGORY,  
L. F. CONNOR.