

No. 734,599.

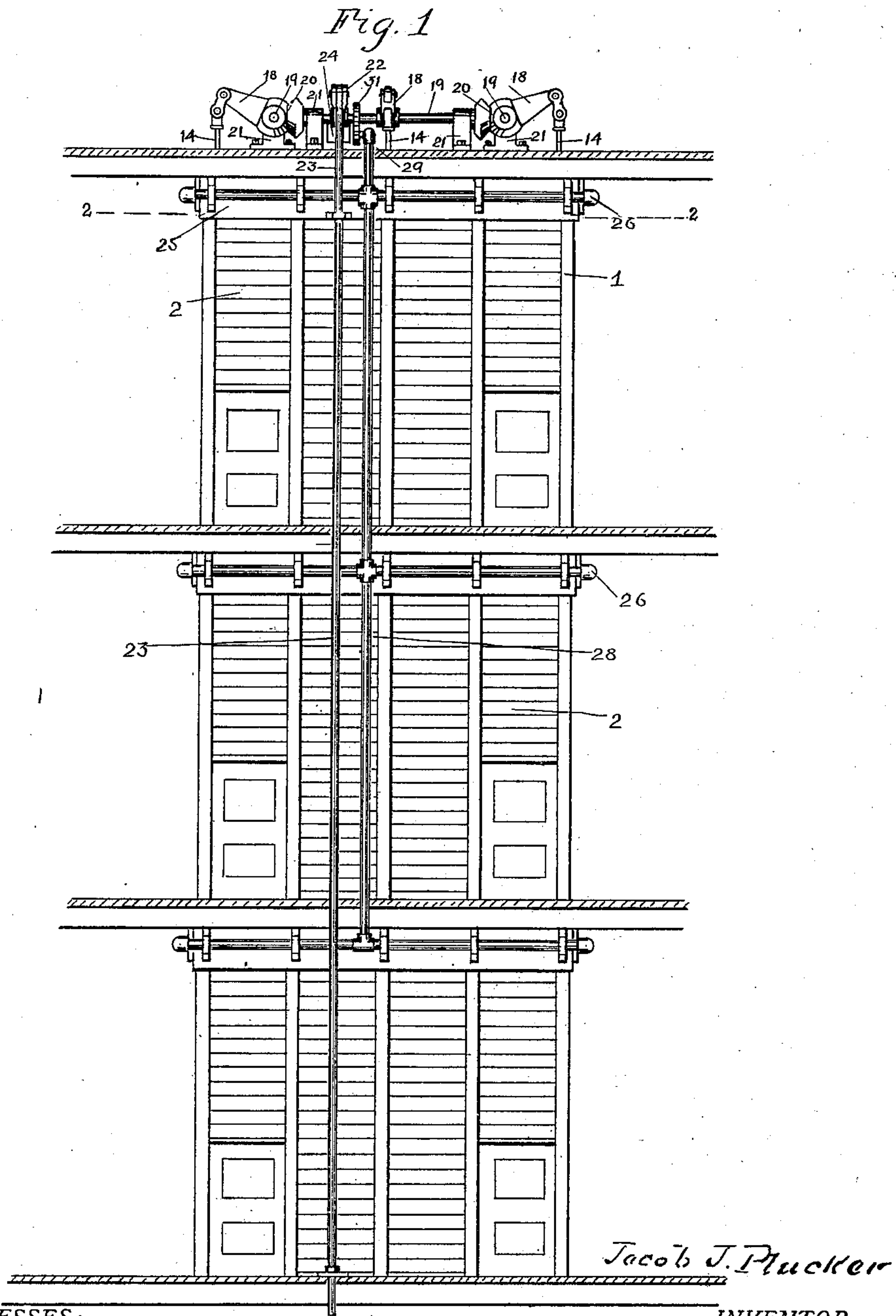
PATENTED JULY 28, 1903.

J. J. PLUCKER.  
FIREPROOF CASING FOR ELEVATOR SHAFTS.

APPLICATION FILED DEC. 5, 1902.

NO MODEL.

4 SHEETS—SHEET 1.



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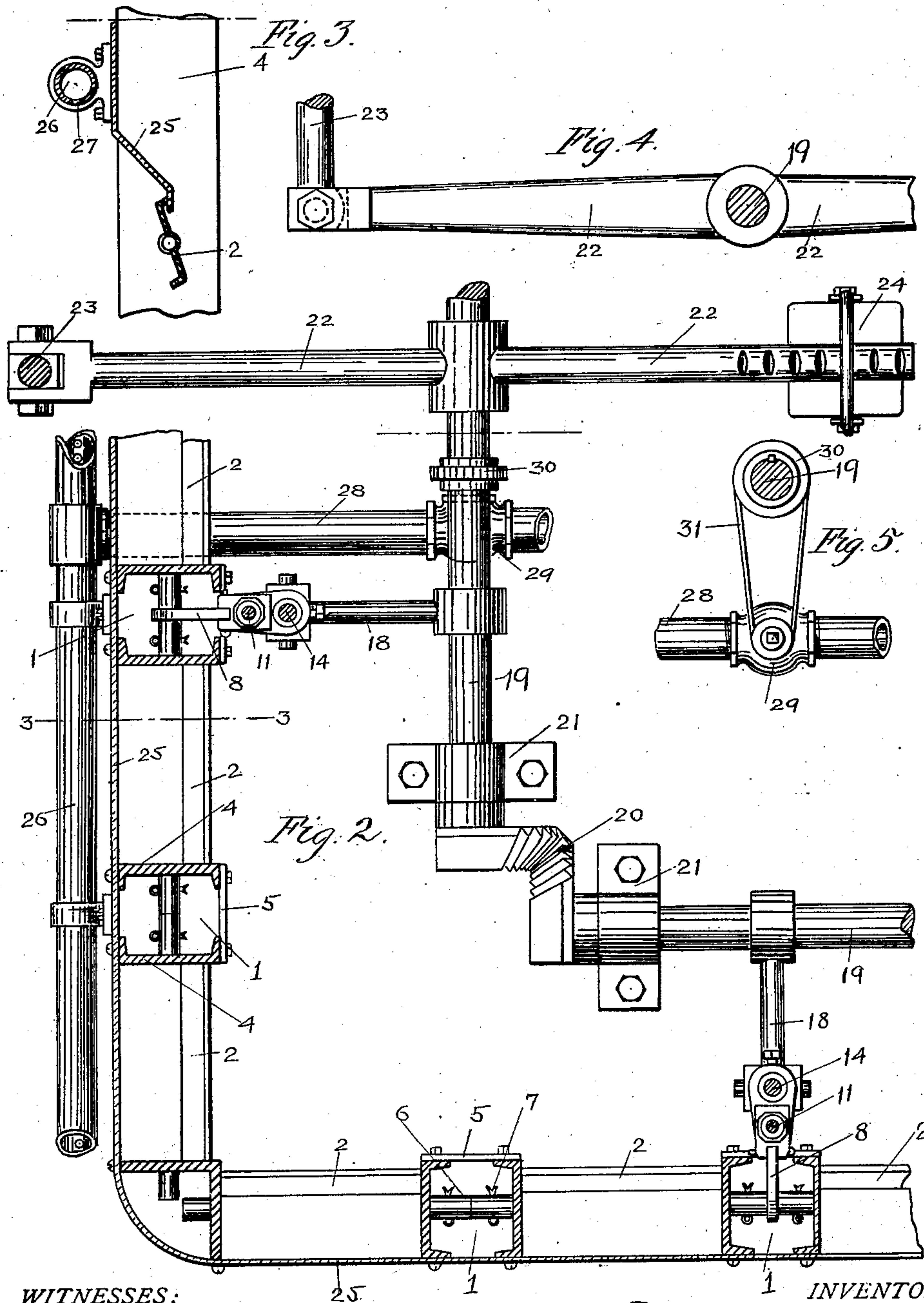
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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

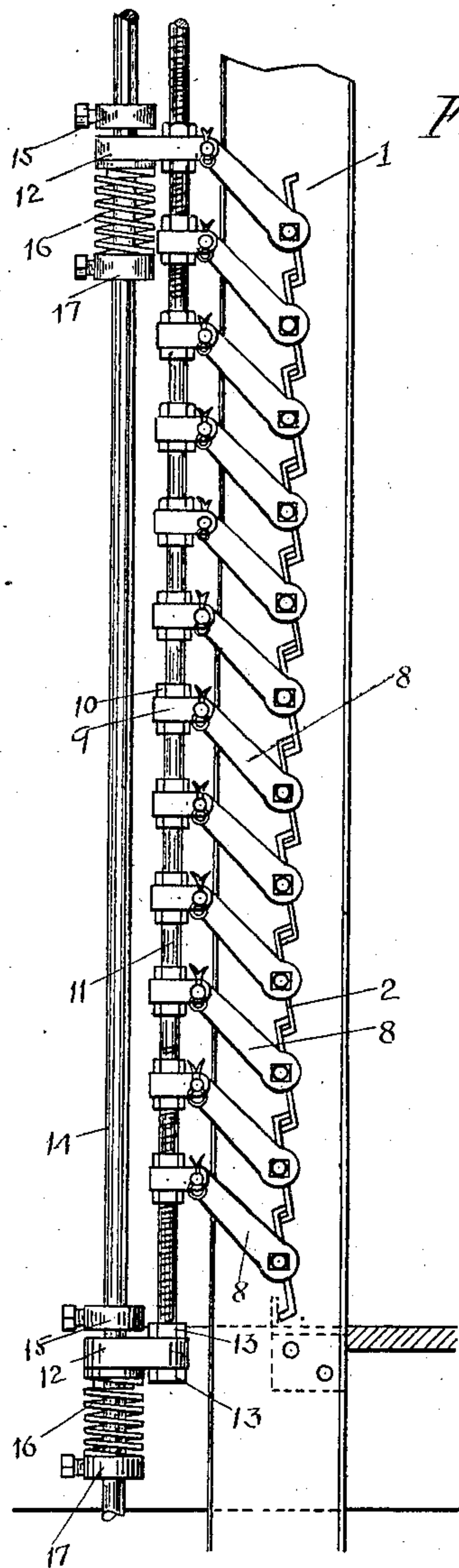


Fig. 6.

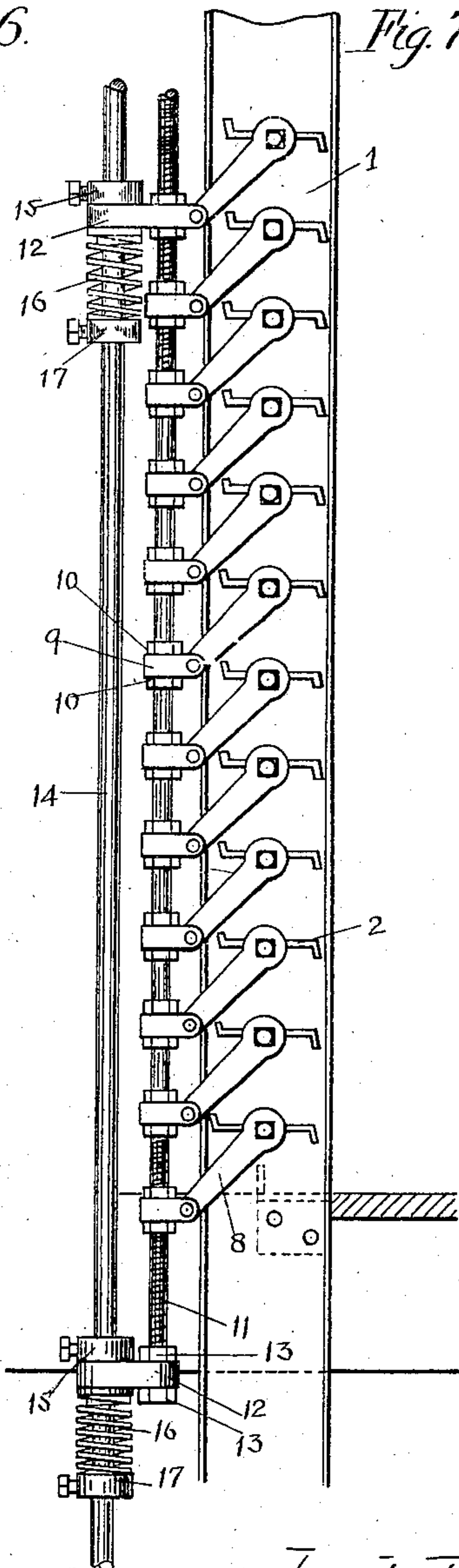


Fig. 7.

Fig. 10.

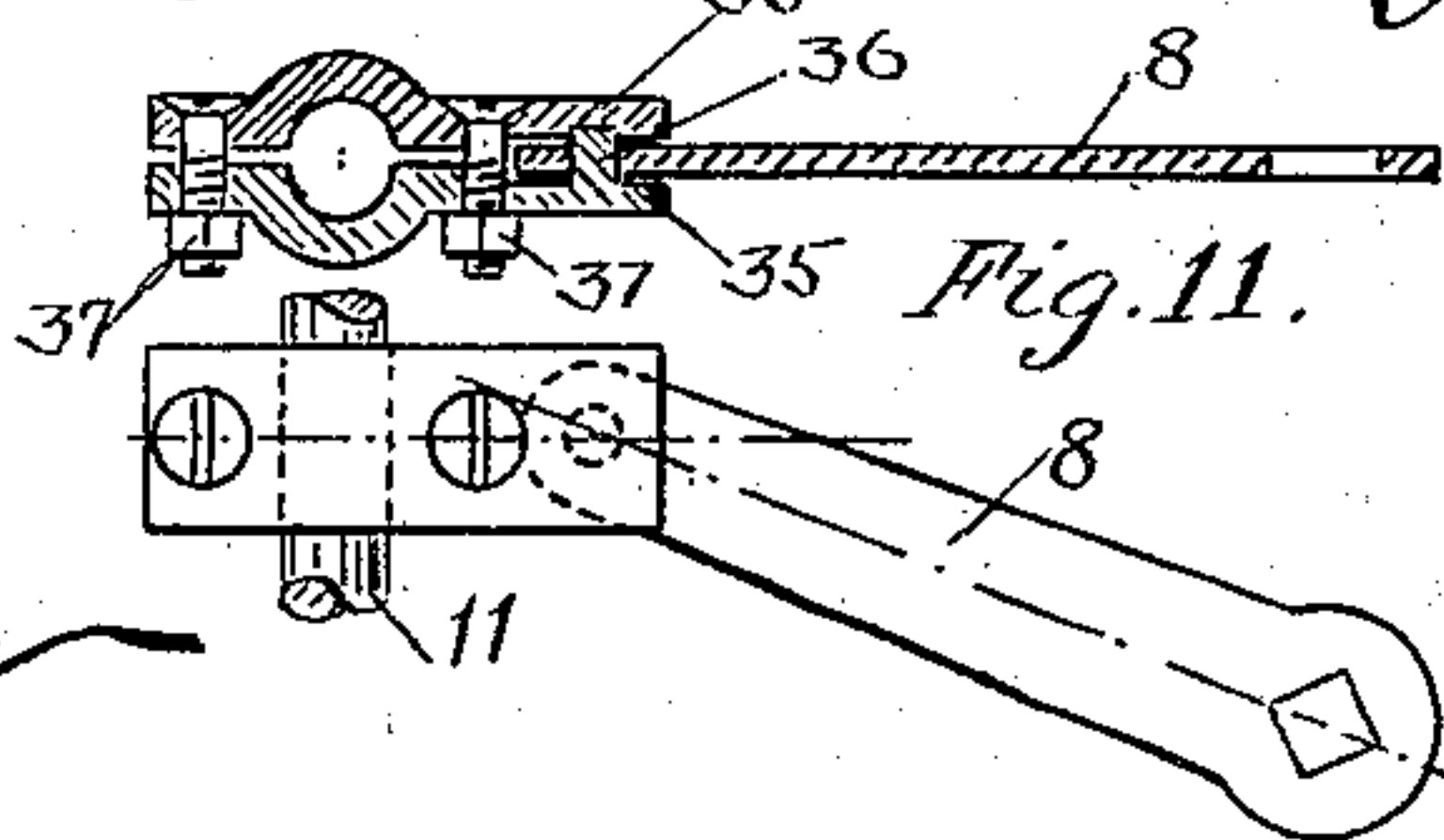


Fig. 11.

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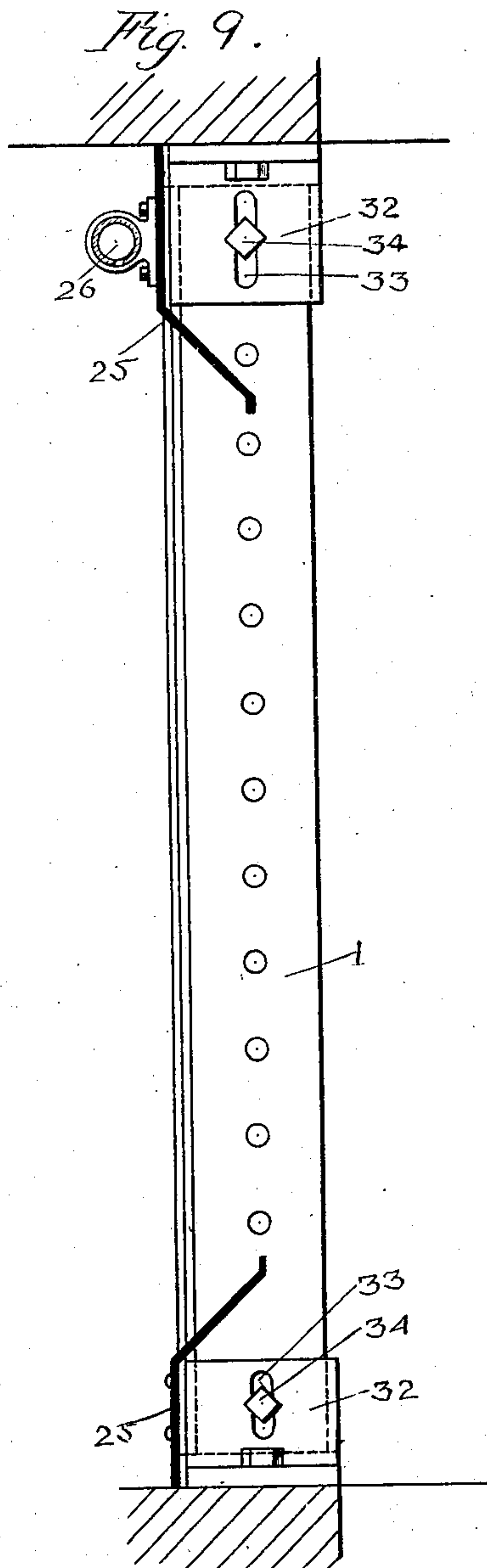
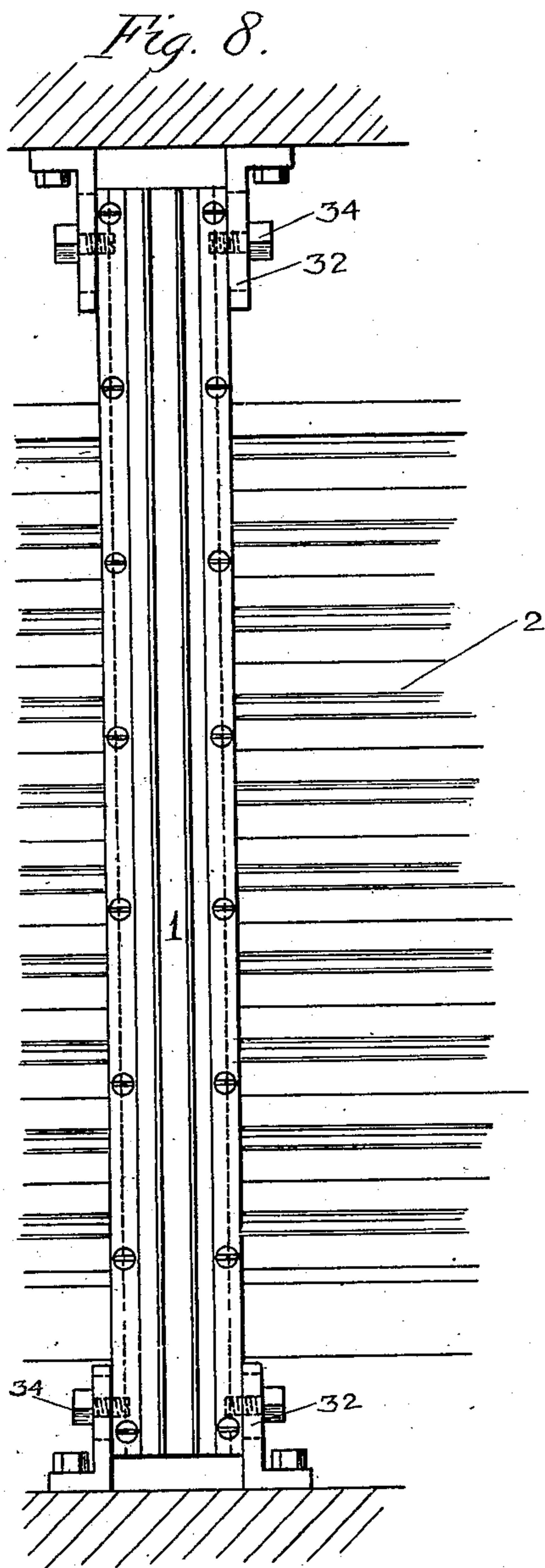
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APPLICATION FILED DEC. 5, 1902.

NO MODEL.

4 SHEETS—SHEET 4.



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# UNITED STATES PATENT OFFICE.

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MESNE ASSIGNMENTS, TO JAMES S. JOHNSON, OF PHILADELPHIA,  
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## FIREPROOF CASING FOR ELEVATOR-SHAFTS.

SPECIFICATION forming part of Letters Patent No. 734,599, dated July 28, 1903.

Application filed December 5, 1902. Serial No. 134,031. (No model.)

*To all whom it may concern:*

Be it known that I, JACOB J. PLUCKER, a citizen of the United States of America, and a resident of 6820 Paschall avenue, Philadelphia, Pennsylvania, have invented certain new and useful Improvements in Fireproof Casings for Elevator-Shafts, of which the following is a specification.

My invention relates to improvements in casings for elevator-shafts, and has for its object to provide a casing of such construction that under normal conditions it may be opened to provide for the admission of light and air to the elevator-shaft and in case of fire may be closed from the top to the bottom of the shaft from any floor of the building to cut off communication between the building and the shaft.

Reference is had to the drawings, wherein the same reference-numeral indicates the same part wherever it occurs.

Figure 1 is a section taken through a building, showing in front elevation a double elevator-shaft provided with my improved casing. Fig. 2 is a sectional view of part of the elevator-casing looking toward the top of the shaft, the section being taken on line 2 2 of Fig. 1. Fig. 3 is a detail sectional view through the top part of the casing on one of the floors of the building, taken on line 3 3 of Fig. 2. Fig. 4 is a detail view of the main operating-lever shown in Fig. 2. Fig. 5 is a detail view of one form of valve connection for automatically turning on water when the casing is closed. Fig. 6 is a side view showing a series of shutters and the mechanism by which they are operated, the shutters being shown in their closed position. Fig. 7 is a view similar to Fig. 6, showing the shutters in their open position. Fig. 8 is a detail elevational view of a modified form of column for supporting the shutters. Fig. 9 is a longitudinal sectional view of the same. Figs. 10 and 11 are detail views of a modified form of connecting-lever for connecting the shutters to the operating-rods.

In the particular embodiment of my invention which I have shown in this application the elevator-shaft is surrounded by vertical

columns 1, which in the form of construction shown in Figs. 1 to 7, inclusive, run the full height of the building, and between these columns are mounted the horizontal shutters 2, these shutters being formed of iron or other suitable fireproof material and when opened form a grille inclosing the elevator-shaft and admitting light and air to the same and when closed cut off the shaft from the rest of the building, so that a fire cannot be transmitted from one part of the building to another by the elevator-shaft acting as a chimney. The shutters 2 extend between the columns 1, the columns being preferably built up of two channel-irons 4, held together by the plates 5 5. The side plates 4 are perforated to receive the pivotal ends of the shutters.

The operating means for operating the shutters is preferably connected to each alternate pair of shutters inside the columns, the adjacent ends of the pairs of shutters which are not connected to the operating mechanism being connected together by means of dowel-pins 6, the dowel-pins being held in position in the ends of the shutters by means of the pins 7.

8 represents a series of levers which are pivoted to collars 9, which are held between lock-nuts 10 10 to a vertical rod 11. The levers 8 are connected to the shutters by means of a square projection on the center of the connecting dowel-pin 6. Secured to each end of the rods 11 are links 12, the links 12 being held on the ends of the rods 11 by means of the lock-nuts 13.

14 is a vertical rod which extends the full height of the building and at the top and at the bottom of each set of shutters passes through the links 12.

15 represents collars provided with set-screws which are mounted on the rod 14 just above the links 12.

16 represents springs held between the link 12 and the collars 17, which are secured to the rod 14 by means of set-screws, the springs holding the links normally against the collar 15 when the shutters are open, as shown in Fig. 7, but being put under tension when the shutters are closed, as in Fig. 6, whereby, as



will be clearly seen, the shutters will be held tightly together by the tension of the springs. The necessity for these springs is because it has been practically impossible to so adjust the different sets of shutters that they will all close together, and it is to allow some of the sets to close before the other sets that I use these springs. The operating-rod being moved such a distance that it will put the springs of all the sets under tension, the tension of some of the springs will, however, be greater than others. The rods 14 extend to the top of the elevator-shaft, where they are connected by suitable links to levers 18, secured to shafts 19, which shafts are set at right angles to each other and geared together by the beveled gears 20, the shafts being supported in suitable bearings 21. Secured fast to one of the shafts 19 is a lever 22, to one end of which is pivoted a vertical rod 23, which extends the full height of the building outside of the casing and which is adapted to be pulled for the purpose of closing the shutters through the oscillation of the shafts 19 and the consequent pulling down on the rods 14. On the other end of this lever 22 is adjustably mounted a weight 24 in order to counterbalance the combined weights of the various parts of the operating mechanism.

25 is a casing which extends around the elevator-shaft just under the ceiling of each floor and in position to form, with the upper edge of the upper shutter for that floor, a continuation of the shutter structure up to the ceiling to make the shaft fireproof clear to the ceiling, as is clearly shown in Fig. 3. In order to keep the casing and the interior of the shaft cool, even though there was a fire immediately surrounding the shaft, I have secured to the casing 25 by suitable brackets a pipe 26, which is perforated on its lower side at 27, through which water may be forced when the shutters are closed, and I have provided an automatic means for opening a valve controlling the supply of water to this pipe structure.

28 is the supply-pipe for the pipes 26, and where the pipe 28 passes under one of the shafts 19 I have provided a valve 29, which is connected to a pulley 30 on the shaft 19 by a belt 31, whereby upon the operation of the mechanism for closing the shutters the valve 29 will be opened and water will be forced through the pipes 26.

In Figs. 8 and 9 I have shown a modification of the vertical columns. In this modification the columns instead of extending the full height of the elevator-shaft are made in sections and secured between the floors. The sections are held in position by means of brackets 32, provided with elongated slots 33, through which pass bolts 34 into the column-sections, so that the columns may be placed in the building without having to be specially made therefor, as will be clearly understood.

In Figs. 10 and 11 I have shown a modified form of connection for connecting the levers

8 to the vertical rod 11. This connection consists of a pair of plates 35, which are provided with a pivot 36 for the levers 8 and are adapted to be clamped onto the rod 11 by means of the bolts 37.

It will be seen that by the construction above described I have produced a structure which when under normal conditions with the slats open is practically a grillework and allows all the light and air necessary to freely enter the elevator-shaft; but upon the breaking out of a fire in the building any one by pulling up on the rod 23 from any floor of the building can instantly close the casing and cut off all communication with the elevator-shaft, so that the fire can have no chance to spread through the building by means of the elevator-shaft, as is often the case.

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

1. In an elevator-shaft the combination of a series of columns surrounding the shaft, sets of movable shutters interposed between the columns, a system of rods extending from the top to the bottom of the shaft and connected to the sets of shutters, mechanism arranged at the top of the shaft connecting the rods whereby they will operate the shutters simultaneously, and a rod connected to said operating mechanism extending from the top to the bottom of said building which may be raised or lowered from any floor of the building opening and closing the shutters.

2. In an elevator-shaft the combination of a series of columns surrounding the shaft, sets of shutters interposed between the columns and pivoted thereto, vertical rods extending from the top to the bottom of the shaft, a set of rods for each set of shutters connected to the vertical rods, pivoted links for connecting the shutters of each set to its rod, mechanism at the top of the shaft connecting the vertical rods to cause them to move simultaneously and an operating-rod extending from the top to the bottom of the building and connected to said connecting mechanism whereby all the shutters may be operated simultaneously from any floor of the building.

3. In an elevator-shaft the combination of a series of columns surrounding the shaft, sets of shutters interposed between the columns and pivoted thereto, vertical rods extending from the top to the bottom of the shaft, a set of rods for each set of shutters yieldingly connected to the vertical rods, pivoted links for connecting the shutters of each set to its rod, mechanism at the top of the shaft connecting the vertical rods to cause them to move simultaneously and an operating-rod extending from the top to the bottom of the building and connected to said connecting mechanism whereby all the shutters may be operated simultaneously from any floor of the building.



4. The combination with a series of shut-  
ters pivoted in suitably-set frames of a rod,  
links connecting the shutters to the rod where-  
by upon the reciprocation of the rod the shut-  
5 ters will be opened and closed, an operating-  
rod for said first-mentioned rod, a collar se-  
cured to the first-mentioned rod through which  
the second rod loosely passes, a second collar  
fast on said last-mentioned rod on one side  
10 of the first-mentioned collar and a spring on  
the other side of said collar, the parts being  
so constructed that when the second rod is  
moved to close the shutters the shutters will  
be held together under tension.  
15 5. In an elevator-shaft the combination  
with a framework of columns, movable shut-

ters interposed between the same, and means  
for opening and closing the shutters, of a sys-  
tem of water-piping arranged around the cas-  
ing and provided with a valve, mechanism 20  
for operating the shutters to open and close  
the same, and connections between said op-  
erating mechanism and said valve whereby  
when the shutter is closed said valve will be  
opened.

Signed by me at Baltimore, Maryland, this 25  
22d day of October, 1902.

JACOB J. PLUCKER.

Witnesses:

HOWARD D. ADAMS,  
FRANCIS M. PHELPS.