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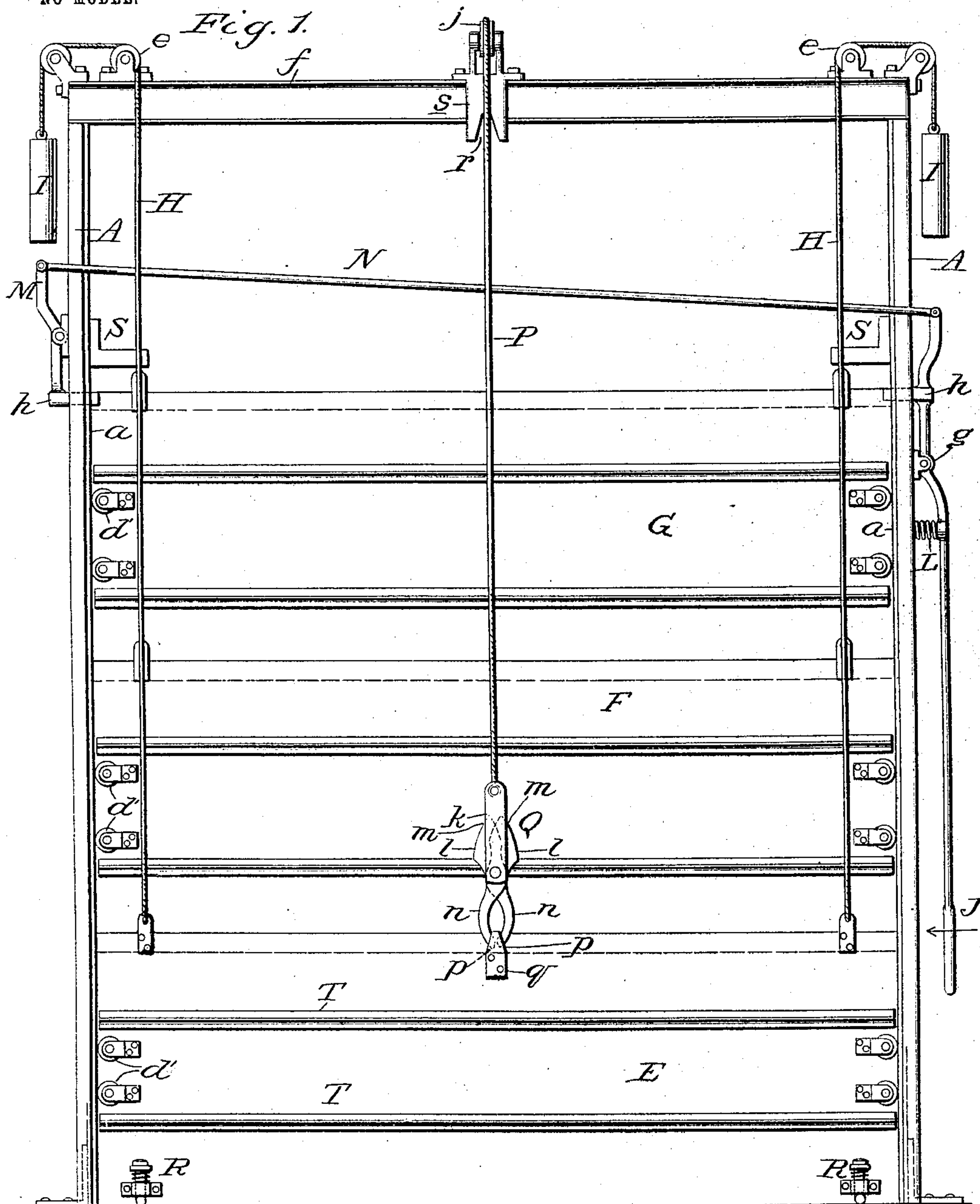
PATENTED JULY 12, 1904.

H. D. HAID & H. L. BISSETT.
FIRE CURTAIN.

APPLICATION FILED FEB. 10, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

N. C. Haly
T. E. Turpin

Inventors

H. D. Haid &
H. L. Bissett
By *James Phelan* Attorney

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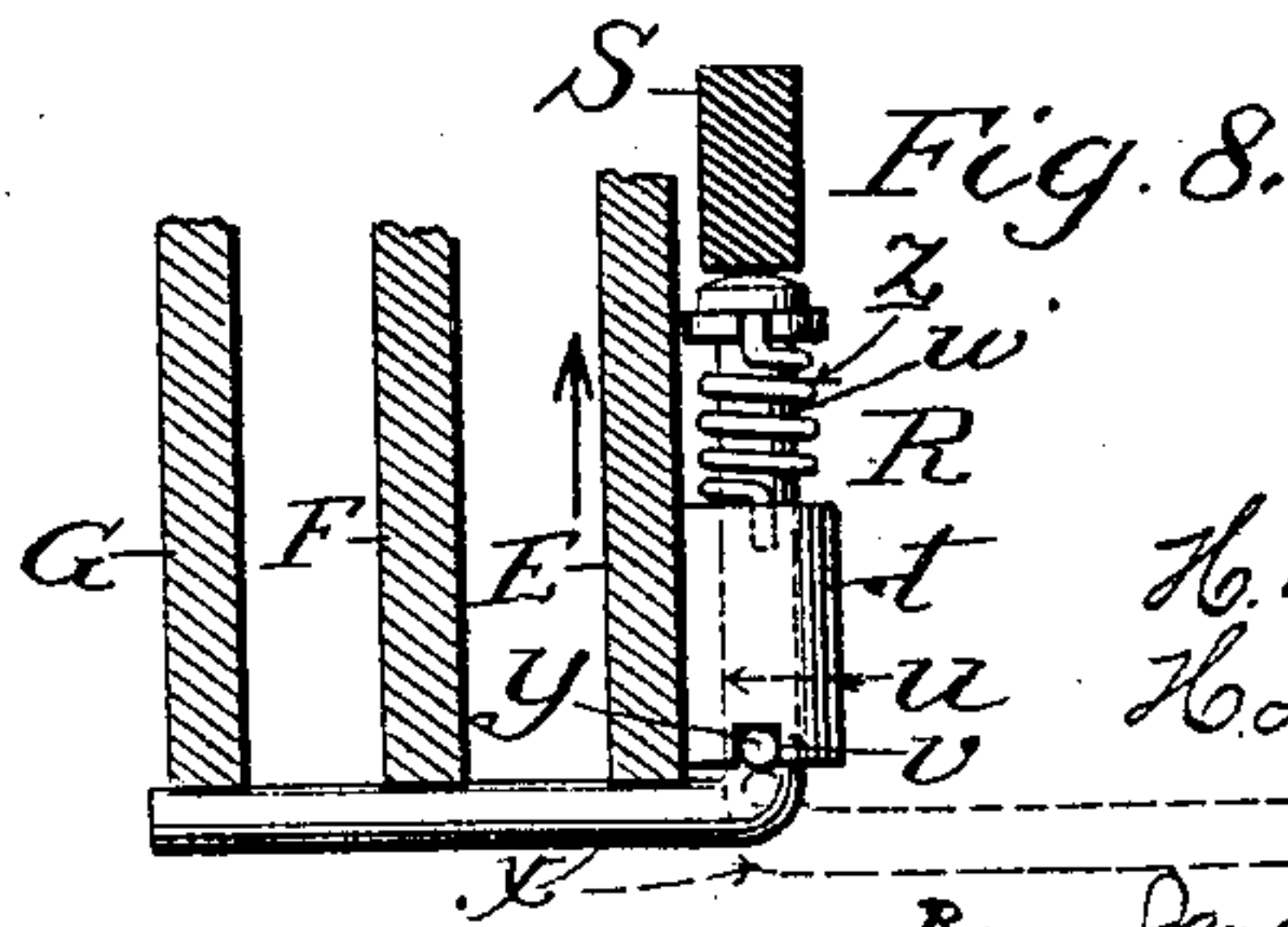
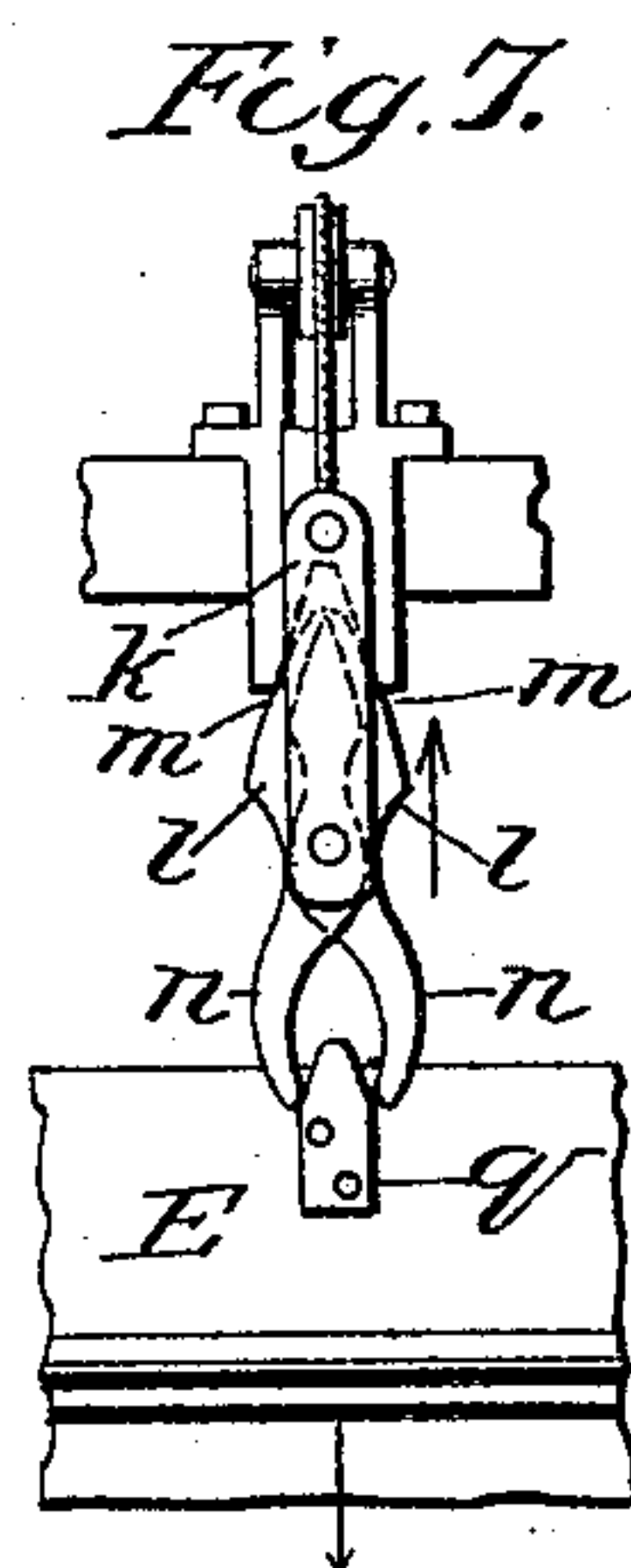
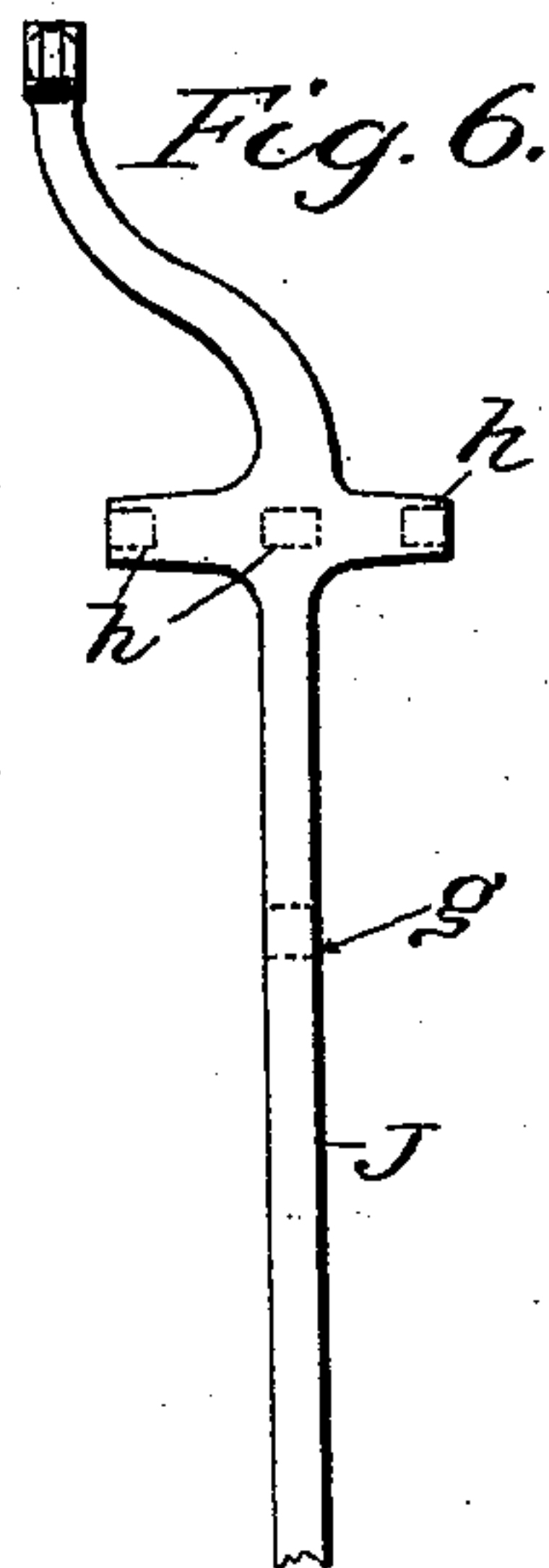
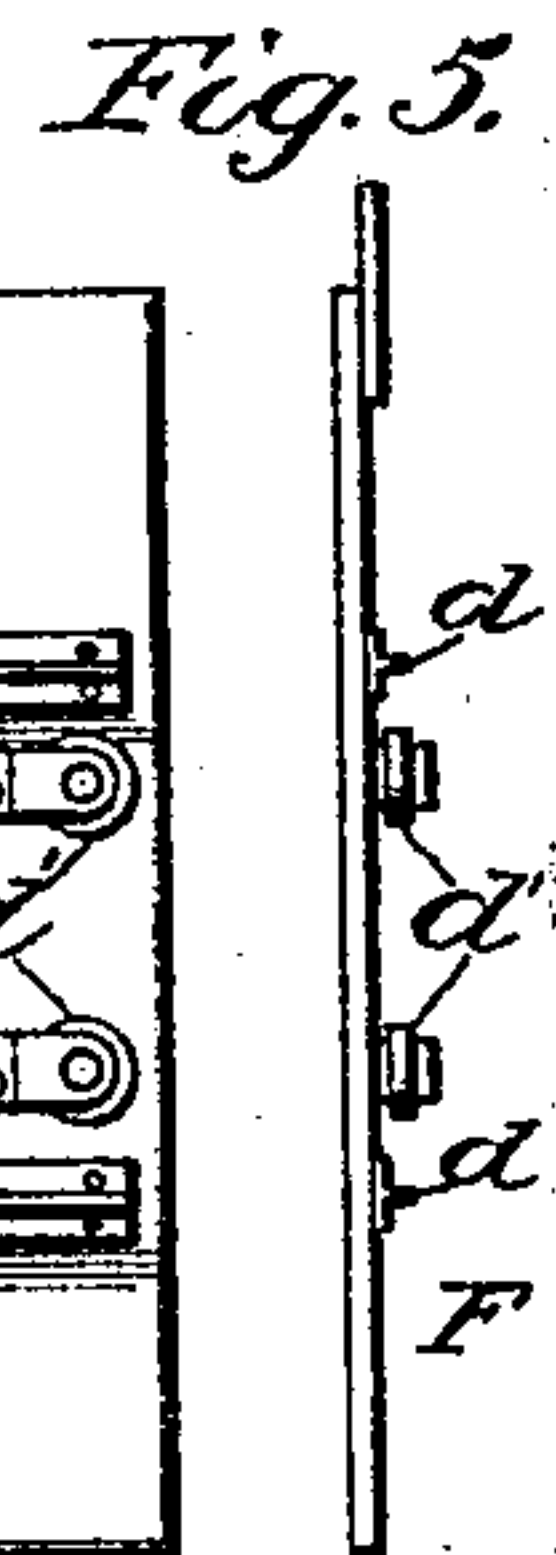
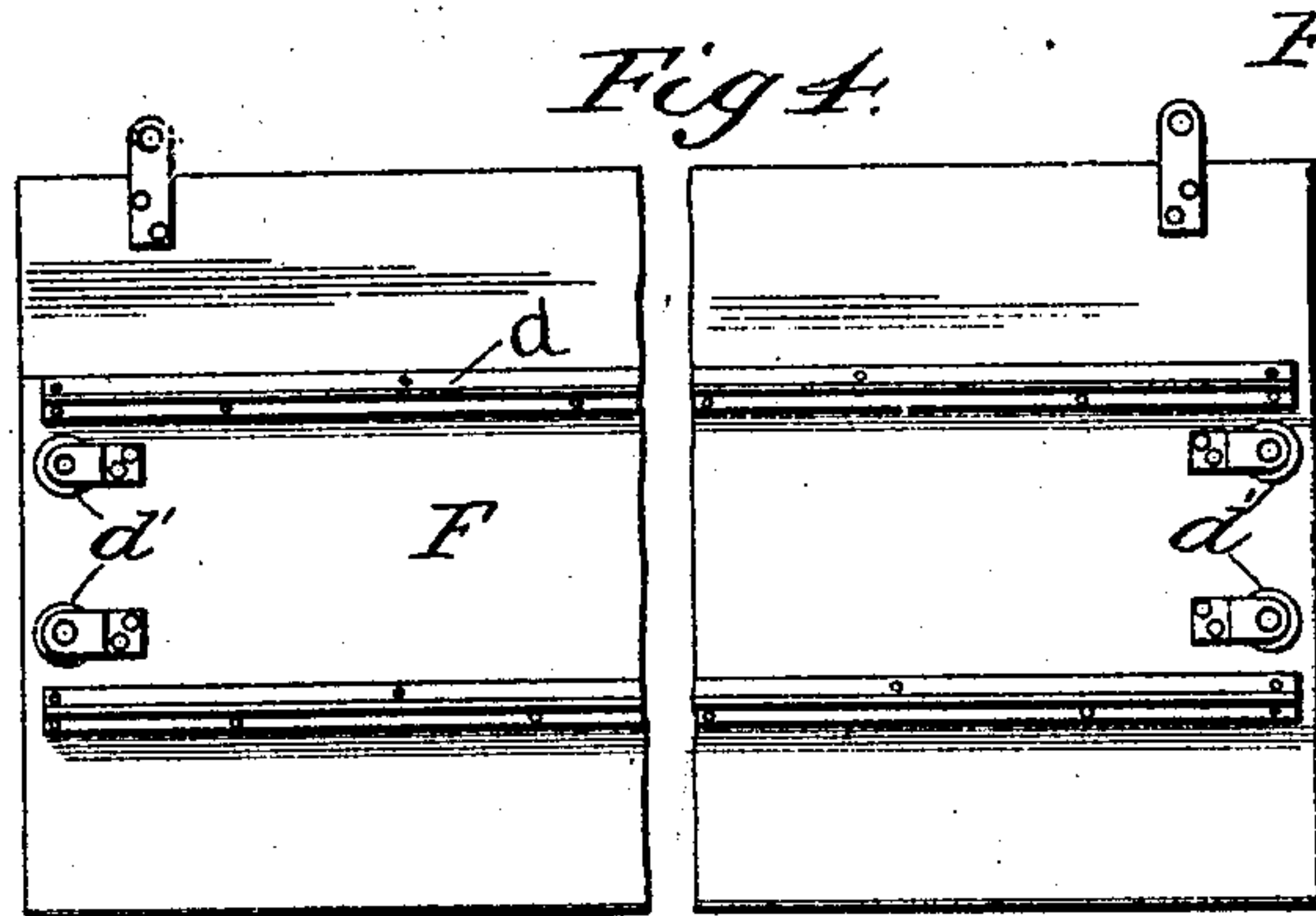
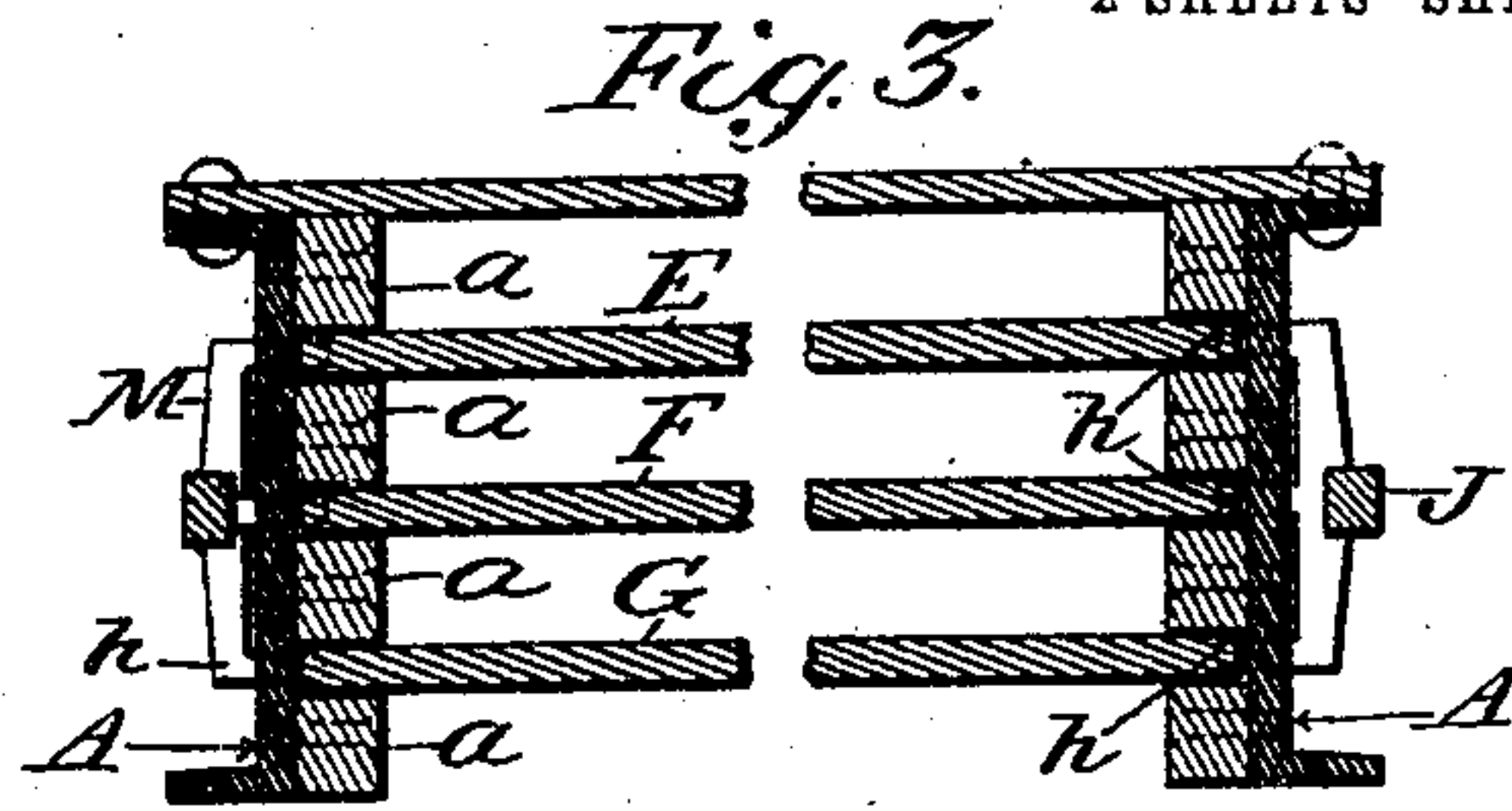
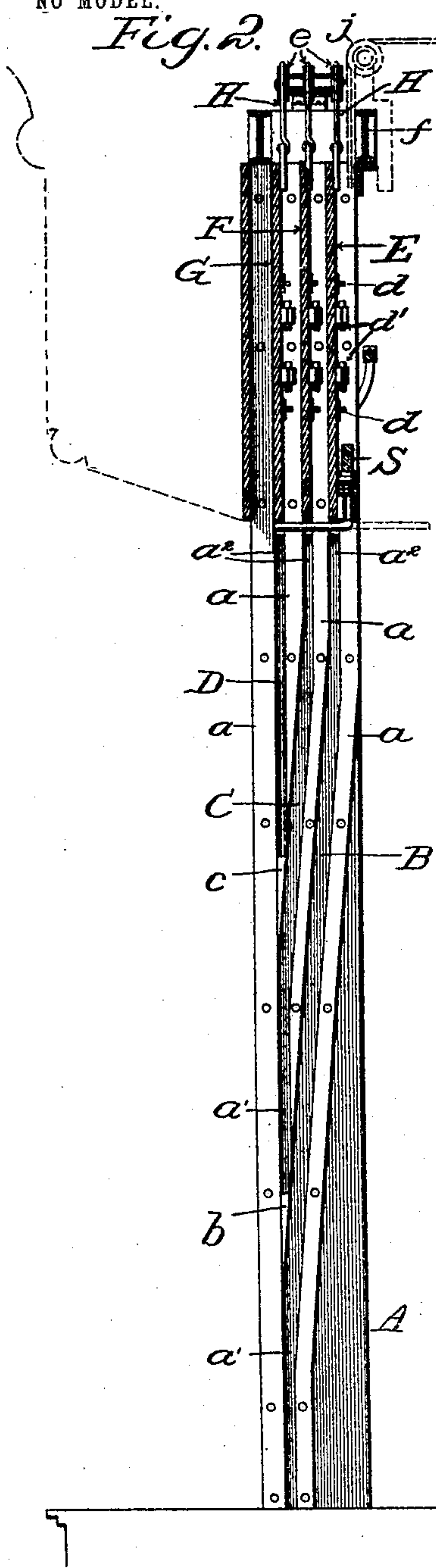
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2 SHEETS—SHEET 2



Witnesses
W. C. Healy
T. E. Turpin

Inventors
H. D. Haid +
H. L. Bissett.

By James Shuh Attorney

UNITED STATES PATENT OFFICE.

HENRY D. HAID AND HARRY L. BISSETT, OF SPRINGFIELD, MISSOURI.

FIRE-CURTAIN.

SPECIFICATION forming part of Letters Patent No. 764,582, dated July 12, 1904.

Application filed February 10, 1904. Serial No. 193,004. (No model.)

To all whom it may concern:

Be it known that we, HENRY D. HAID and HARRY L. BISSETT, citizens of the United States, residing at Springfield, in the county of Greene and State of Missouri, have invented new and useful Improvements in Fire-Curtains, of which the following is a specification.

Our invention pertains to fire-curtains—*i. e.*, curtains for preventing the passage of flames, gases, and heat; and it has for its object to provide a curtain designed more particularly for precluding the passage of flames, &c., from a stage to an auditorium, and vice versa, and one embodying such a construction that it is certain in operation and is adapted to be very quickly dropped with but a minimum amount of effort.

With the foregoing in mind the invention will be fully understood from the following description and drawings, when taken in connection with the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation of the curtain constituting the preferred embodiment of our invention as the same appears when dropped to close the opening at the front of a stage. Fig. 2 is a vertical section illustrating the curtain in its raised position. Fig. 3 is an enlarged broken horizontal section taken through the several curtain-sections. Fig. 4 is a front elevation of one of the curtain-sections, the same being shown as broken. Fig. 5 is an end elevation of said section. Fig. 6 is a rear elevation of one of the levers for holding the curtain-sections raised. Fig. 7 is a detail view, on an enlarged scale, illustrative of the mechanism for automatically effecting the disconnection of a hoisting-cable from one of the curtain-sections subsequent to the raising of the several sections; and Fig. 8 is an enlarged view of one of the devices on the curtain-section to which the hoisting-cable is connected for raising the other sections, the said device being shown in proper juxtaposition to the stop by which it is automatically actuated to release the said other sections after they are raised to the full extent.

Similar letters designate corresponding

parts in all of the views of the drawings, referring to which—

A A are uprights, preferably channel-irons, adapted to be fixed at opposite sides of the opening between a stage and an auditorium, and B, C, and D are runways formed at the inner sides of the uprights, preferably by attaching strips *a* thereto, as best shown in Fig. 3.

The runways B extend throughout the length of the uprights, and their lower portions *a'* are disposed in vertical planes in front of the vertical planes of their upper portions *a''*, Fig. 2. The runways C are disposed in front of the runways B, and their lower ends are arranged in the same vertical planes as the portions *a'* of said runways B and are provided at such ends with stops or rests *b*. The runways D are arranged throughout their length in the same vertical plane as the lower portions of the runways B and C and are provided at their lower ends with stops or rests *c*.

E is a curtain-section, preferably of sheet-steel, stayed with T-irons *d*, arranged and adapted to move up and down in the runways B, F a similar curtain-section movable in the runways C, and G another similar curtain-section movable in the runways D. The said sections E, F, and G are provided by preference with antifriction-rollers *d'*, which are designed to bear against the faces of the strips *a*, and thereby reduce to a minimum the friction incident to the down and up movements of the said sections.

H H are wire cables passed over sheaves *e*, mounted on a crown-frame *f* and connected at one end to the curtain-sections E, F, and G and at their opposite ends to counterbalance-weights I. The said counterbalance-weights, which are lighter than their respective curtain-sections, are designed to ease the fall of the sections when the latter are dropped and are also designed to render easy the raising of the sections, as presently described.

In virtue of the construction thus far described it will be observed that when the curtain-sections are in the position shown in Fig. 2 and are released the section E will drop down the runways B to the lower ends thereof, the section F will drop to the lower ends

of the runways C and bring up against the stops or rests *b*, and the section G will drop to the lower ends of the runways D and bring up against the stops or rests *c*. It will also be observed that the upper portion of the section E will be lapped by the lower portion of the section F and the upper portion of said section F in turn lapped by the lower portion of the section G. From this it follows that the said sections constitute an effective barrier and are calculated to preclude the passage of flames, gases, and heat through a stage or other opening, and thereby prevent the spread of a conflagration.

J, Fig. 1, is a hand-lever fulcrumed at *g* on one of the uprights A and having inwardly-extending lugs *h* designed to rest in apertures in the upright and support the curtain-sections E, F, and G in their raised position.

L is a suitable spring interposed between the lower arm of the lever J and the upright A and having for its purpose to normally hold the lever in the position illustrated in Fig. 1.

M is a lever fulcrumed on the other upright A and having lugs *h* on its lower arm extending through apertures in the said upright and resting under the said curtain-sections, and N a gas-pipe connecting the upper arms of the levers J and M. This construction is advantageous, since the curtain-sections E, F, and G are securely supported and held against casual downward movement, and yet when the lower arm of the lever J is pressed in the direction indicated by arrow, Fig. 1, said sections will be released and left free to gravitate in their respective runways. The described movement of the lever J may be quickly effected by a person standing upon the stage-floor, and it will obviously be followed by the curtain-sections assuming the positions shown in Fig. 1, so as to effectually close the stage-opening, and thereby separate the stage from the auditorium.

P, Figs. 1 and 2, is a wire cable passed over a sheave *j* on the crown-frame *f* and designed to be connected at one end with a drum or the like. (Not shown.) Connected to the opposite end of the cable P is a grapple Q. This grapple comprises a body *k* and members *l*, which are pivoted about midway their length in the body *k* and are provided with upper beveled portions *m*. The lower portions or arms *n* of the grapple members are arranged to take into recesses *p* in a lug *q* on the curtain-section E, and hence it will be observed that when the cable P is drawn upwardly the said curtain-section E will be carried up with it. It will also be observed that when the beveled arms *m* of the grapple members *l* enter a notch *r* in a block *s* on the crown-frame *f* the lower arms *n* of the grapple members will be disengaged from the lug *q* on the curtain-section E, so as to leave the said section free to fall, so far as the grappling and the hoisting means

are concerned. This provision is materially advantageous, inasmuch as the curtain-section E is automatically released subsequent to the raising thereof, and hence there is no liability of a careless employee raising the said section and then failing to disconnect the hoisting means, so as to render the curtain inoperative when the lever J is actuated, as before described.

In order to effect the raising of the curtain-sections F and G with the curtain-section E, we provide the said section E with devices R, located adjacent to the side edges of the section, as shown in Fig. 1. These devices R are similar in construction, and therefore a detailed description of the one shown enlarged in Fig. 8 will suffice to impart a definite understanding of both. Said device R comprises a body *t*, fixed to the inner side of the curtain-section E and having a vertical bore *u* and an offset *v* extending from the lower end thereof, a rock-shaft *w*, arranged in the bore *u* and having an angular arm *x* at its lower end and also having a lug *y* adapted to rest in the offset *v* when the parts are in the relative positions shown in Fig. 8, and a coiled spring *z*, surrounding the upper portion of the shaft *w* and connected at one end thereto and at its opposite end to the body *t*. The shaft *w* is adapted to move vertically as well as rock or turn in its axis, and the spring *z* serves the twofold function of normally holding the shaft against downward movement and turning said shaft on its axis when the lug *y* is removed from the offset *v*, this latter to throw the arm *x* from the position shown by full lines into that shown by dotted lines, and thereby release the sections E, F, and G and place the same under the control of the levers J and M.

In connection with the devices R we employ stops S. These stops S are positioned as shown in Fig. 1, and hence serve when the sections E, F, and G are raised above the projections *h* of the levers J and M to engage and press the shafts *w* downwardly against the action of the springs *z*. The said downward movement of the shafts *w* will obviously carry the lugs *y* out of the offsets *v*, when the springs *z* will operate to turn the shafts on their axes, and thereby swing the arms *x* from beneath the sections E, F, and G.

When our novel curtain is lowered and it is desired to raise the same, the operation is as follows, viz: The section E is slightly raised, and the shafts *w* of the devices R are moved downwardly by hand, and the arms on the said shafts are disposed forwardly beneath the lower edge of the said section E. The grapple Q on cable P is then placed in engagement with the lug *q* on section E, and the cable is wound on a drum or any other means provided for the purpose. When this is done, the arms *x* will obviously engage and raise

the sections F and G, with the section E, and in the order named. Then when the sections E, F, and G reach a position above the projections *h* of the levers J and M, which levers are rocked to enable the sections to pass upwardly beyond said projections *h*, the grapple members *l* engage the notch in the block *s*, and in consequence the grapple is automatically disconnected from the section E. At about the same time the devices R engage with the stops S, with the result that the arms *w* are swung from beneath the sections E, F, and G. The said sections E, F, and G are now supported by the projections *h* of the levers alone, and hence it follows that by simply pressing in the lower arm of the lever J a person is enabled to effect the dropping of the sections E, F, and G and the thorough closing of the opening between a stage and an auditorium, and this very quickly, as is necessary in case of fire, and with but a minimum amount of effort.

In practice all of the parts comprised in our novel curtain are made of metal or some other non-combustible material or materials suitable to the purpose.

Notwithstanding the advantages of our novel curtain, chief among which is certainty in operation, it will be observed that the curtain is simple and sturdy in construction and embodies no delicate parts such as are likely to get out of order after a short period of use.

We have entered into a detailed description of the construction and relative arrangement of parts comprised in the present and preferred embodiment of our invention in order to impart a full, clear, and exact understanding of the same. We do not desire, however, to be understood as confining ourselves to such specific construction and relative arrangement of parts, as such changes or modifications may be made in practice as fairly fall within the scope of our invention as claimed.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination in a fire-curtain, of uprights provided with guides having upper portions disposed in different vertical planes and lower portions disposed in the same vertical plane, and also provided at the lower ends of one or more guides with stops or rests, curtain-sections disposed and movable in said guides; one of the said sections being adapted to bring up against the stops in its pair of guides and lap the curtain-section in the adjacent pair of guides, and one or more levers having portions disposed in different vertical planes and resting under and supporting the sections in their raised position.

2. The combination in a fire-curtain, of uprights provided with guides having upper portions disposed in different vertical planes, and lower portions disposed in the same vertical

plane, and also provided at the lower ends of one or more guides with stops or rests, and curtain-sections disposed and movable in said guides; one of the said sections being adapted to bring up against the stops in its pair of guides, and lap the curtain-section in the adjacent pair of guides.

3. The combination in a fire-curtain, of uprights provided with guides or runways, having upper portions disposed in different vertical planes and lower portions disposed in the same vertical plane, and also provided at the lower ends of the forward guides or runways with stops or rests; the stops or rests of the forward guides or runways being disposed above those of the adjacent guides or runways, and curtain-sections disposed and movable in the guides or runways, and arranged to lap each other when they are dropped.

4. A fire-curtain comprising vertically-movable sections, means for supporting the said sections in a raised position, means for raising the sections, connected to one of the same, means for automatically disconnecting the raising means from the section subsequent to the raising of the latter to the full extent, means on the said section for raising the other section or sections, and means for disengaging said means from the other section or sections subsequent to the raising thereof to the full extent.

5. A fire-curtain comprising vertically-movable curtain-sections, means for supporting the said sections in a raised position; said means being movable to release the sections, means for raising the sections connected therewith, and means for automatically disconnecting the raising means subsequent to the raising of the sections.

6. The combination in a fire-curtain, of vertically-movable curtain-sections, means for supporting the said sections in a raised position; said means being movable to release the sections, a grapple engaging one of the sections and connected to a hoisting-cable, means for disengaging the grapple from the section subsequent to the raising of the latter to the full extent, means on the said section for raising the other section or sections, and means for disengaging the said means from the other section or sections subsequent to the raising thereof to the full extent.

7. A fire-curtain comprising a vertically-movable section, means for raising said section, means for automatically disconnecting the raising means from the section subsequent to the raising of the latter to the full extent, and means for supporting the said section in a raised position; the latter means being movable to release the section.

8. A fire-curtain comprising vertically-movable sections, means on one of the sections for raising the other section or sections when the first-mentioned section is raised, means

for disengaging the said means from the other
section or sections, subsequent to the raising
thereof to the full extent, and means for sup-
porting the sections in a raised position; the
5 latter means being movable to release the sec-
tions, when necessary.

In testimony whereof we have hereunto set

our hands in presence of two subscribing wit-
nesses.

HENRY D. HAID.
HARRY L. BISSETT.

Witnesses:

L. A. BIGGS,
W. H. WAUGH.