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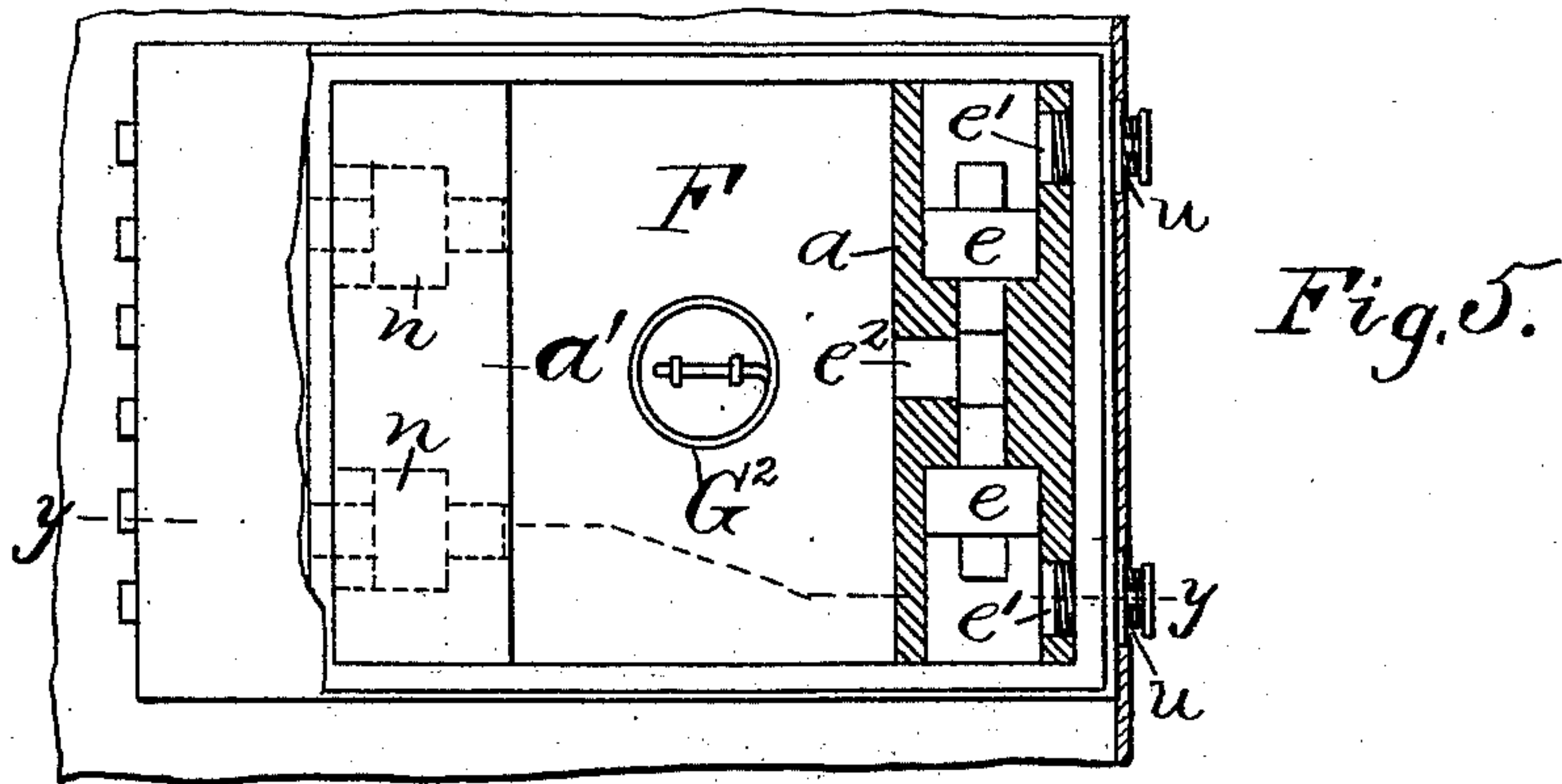
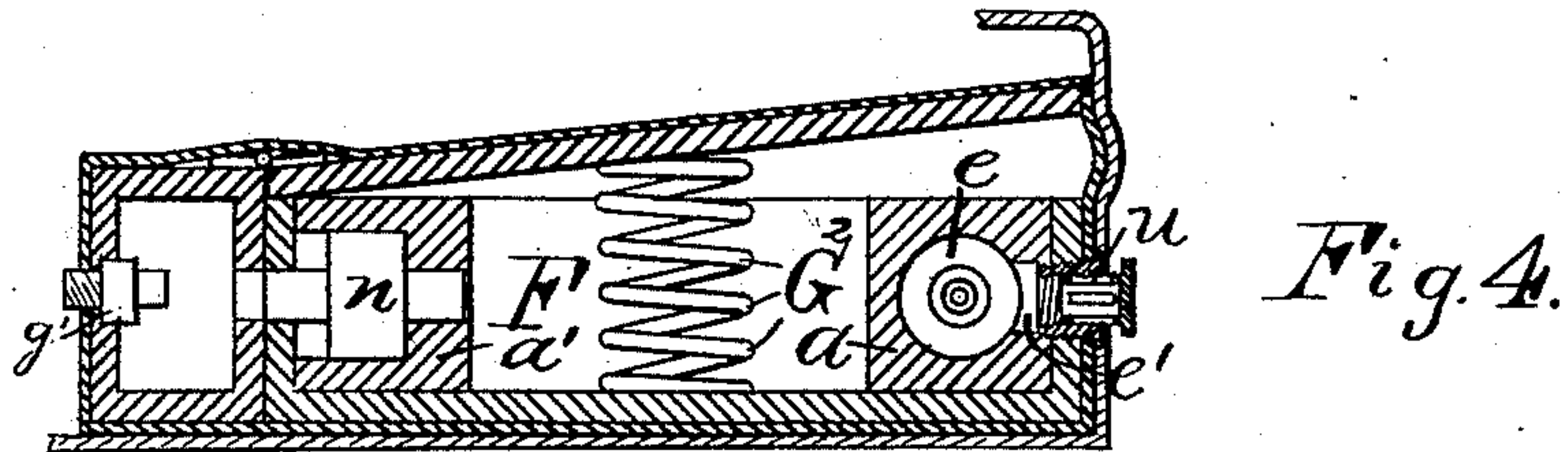
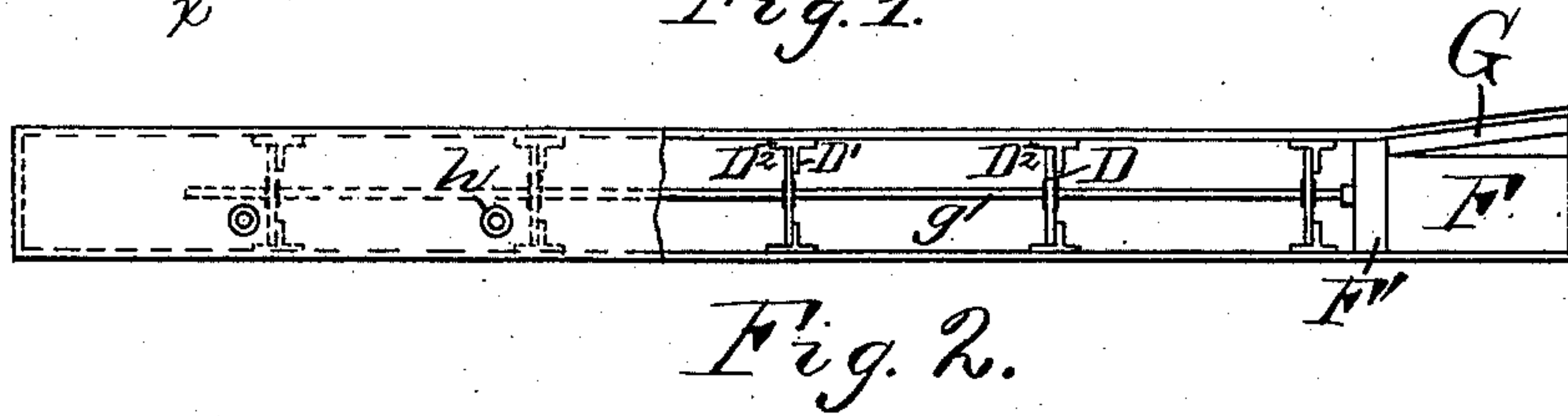
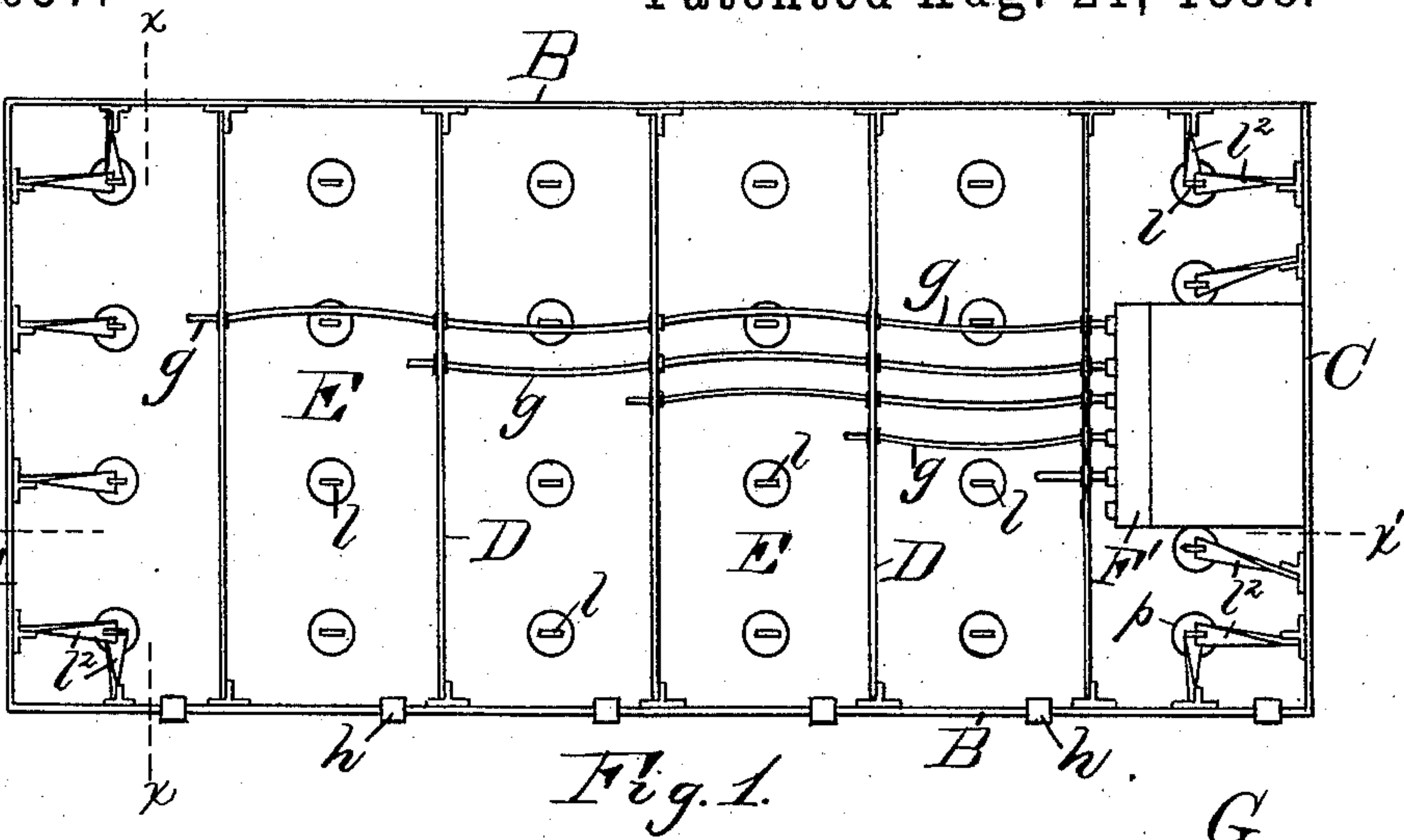
3 Sheets—Sheet 1.

J. R. HARGIN.

AIR MATTRESS.

No. 388,037.

Patented Aug. 21, 1888.



Attest:
L. Lee.
F. C. Fischer.

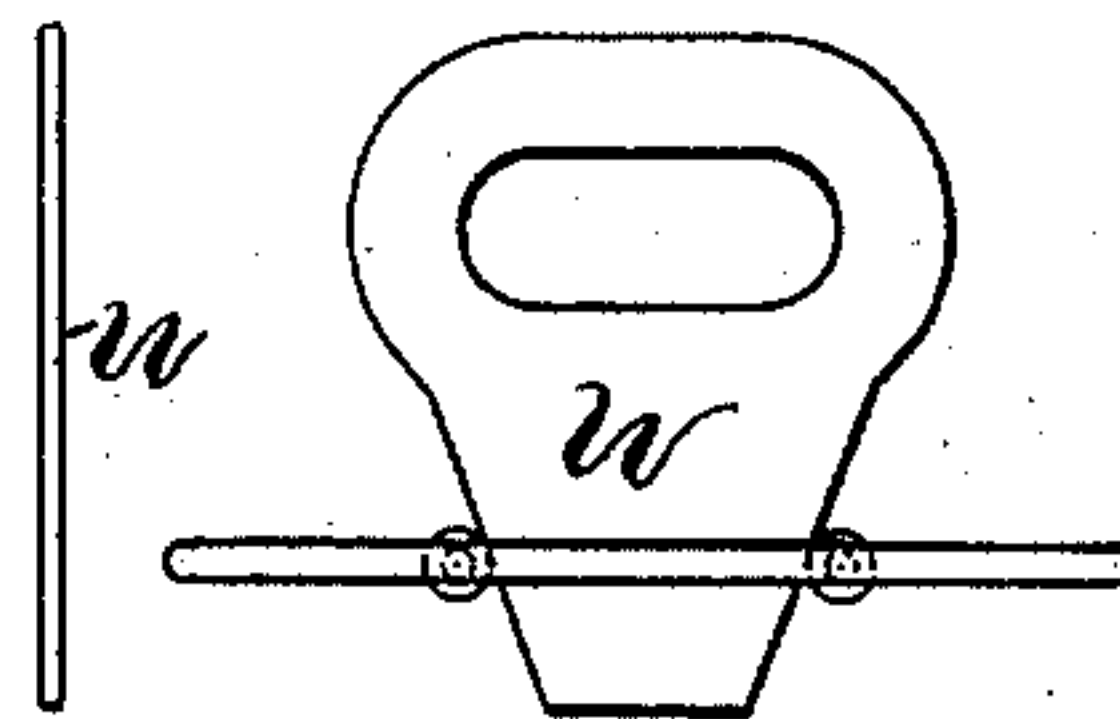
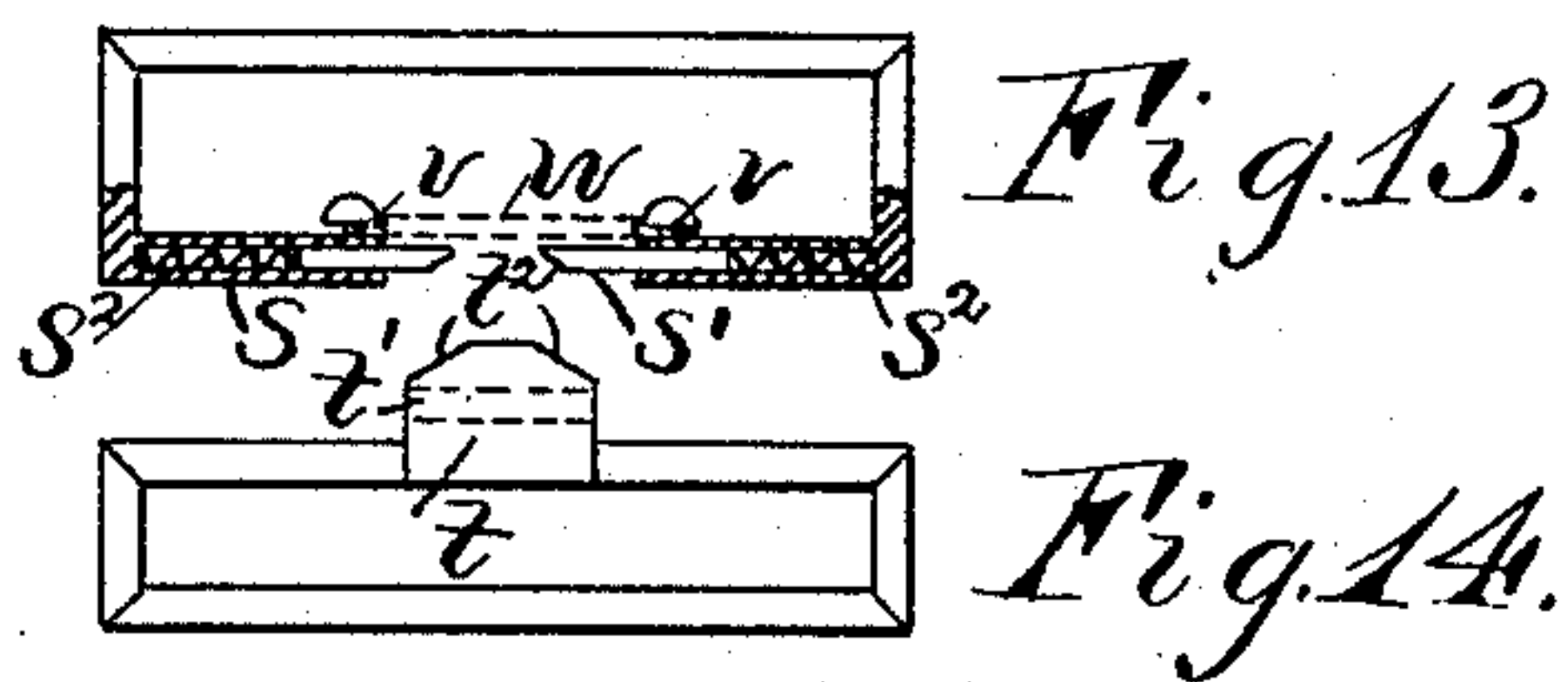
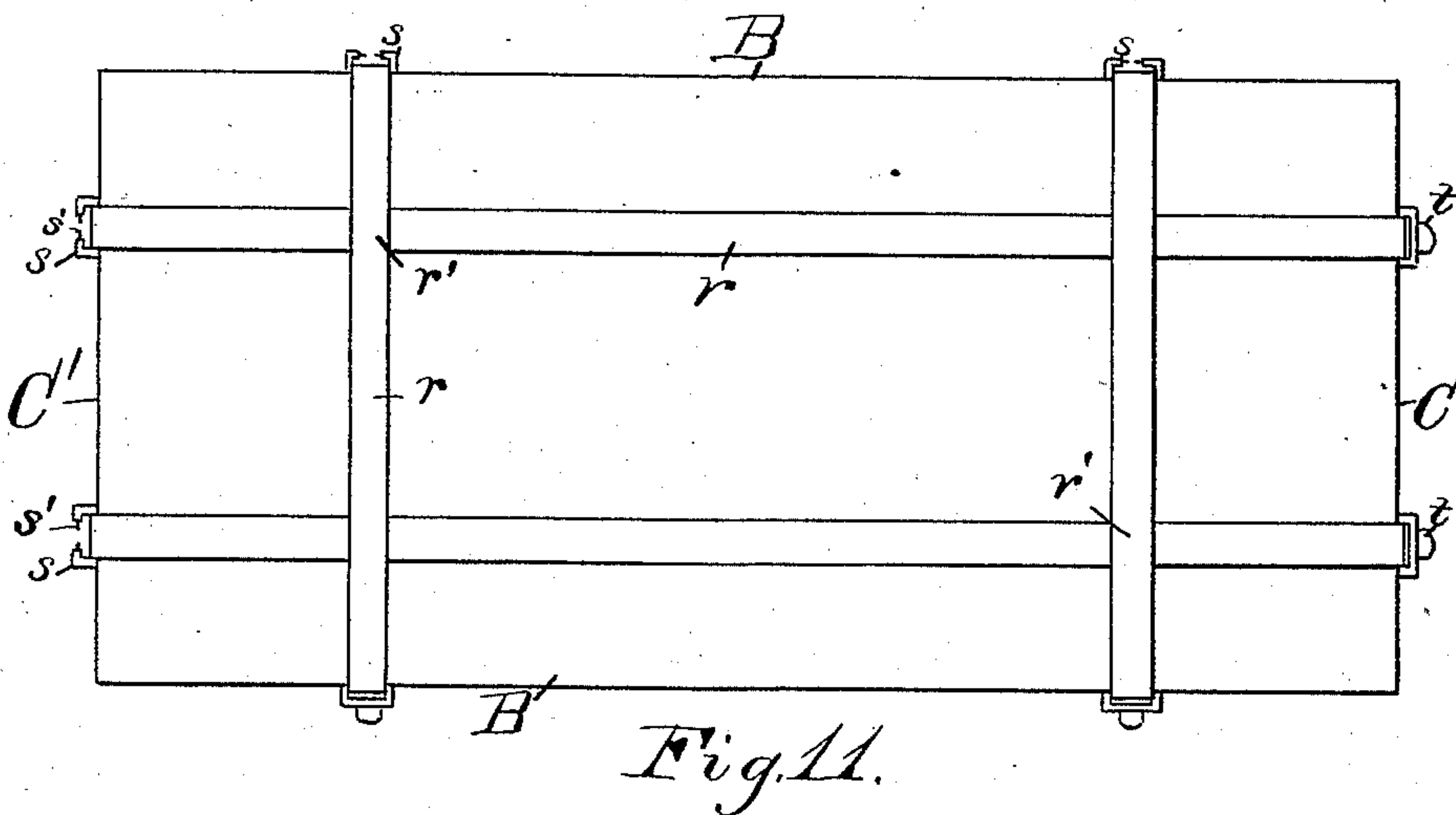
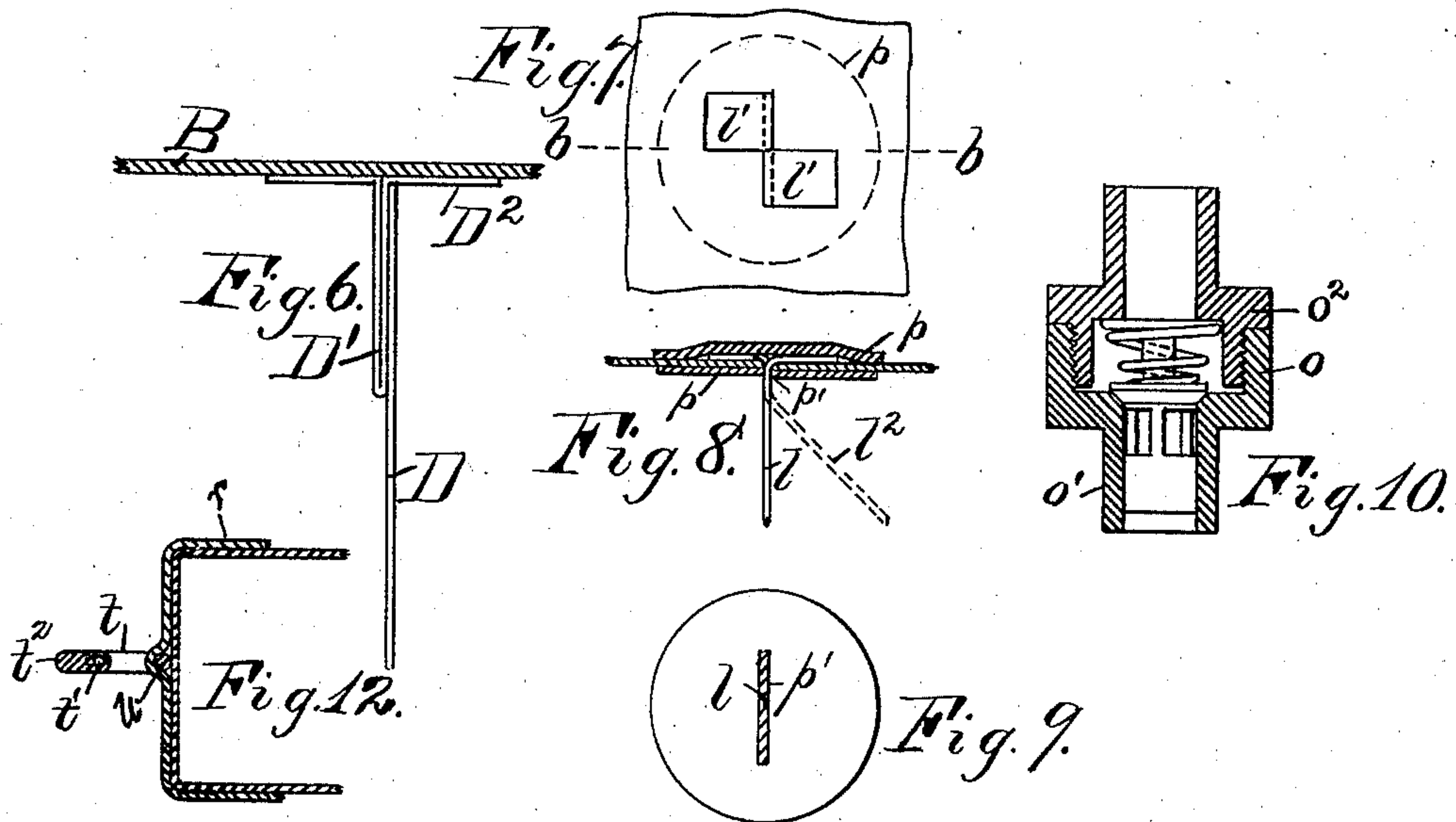
Inventor.
John R. Hargis, per
Ernest Miller, Attys.

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L. Lee.
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Fig. 16. Fig. 15.
Inventor.
John R. Hargin, per
Boam & Miller, Atty.

(No Model.)

3 Sheets—Sheet 3.

J. R. HARGIN.

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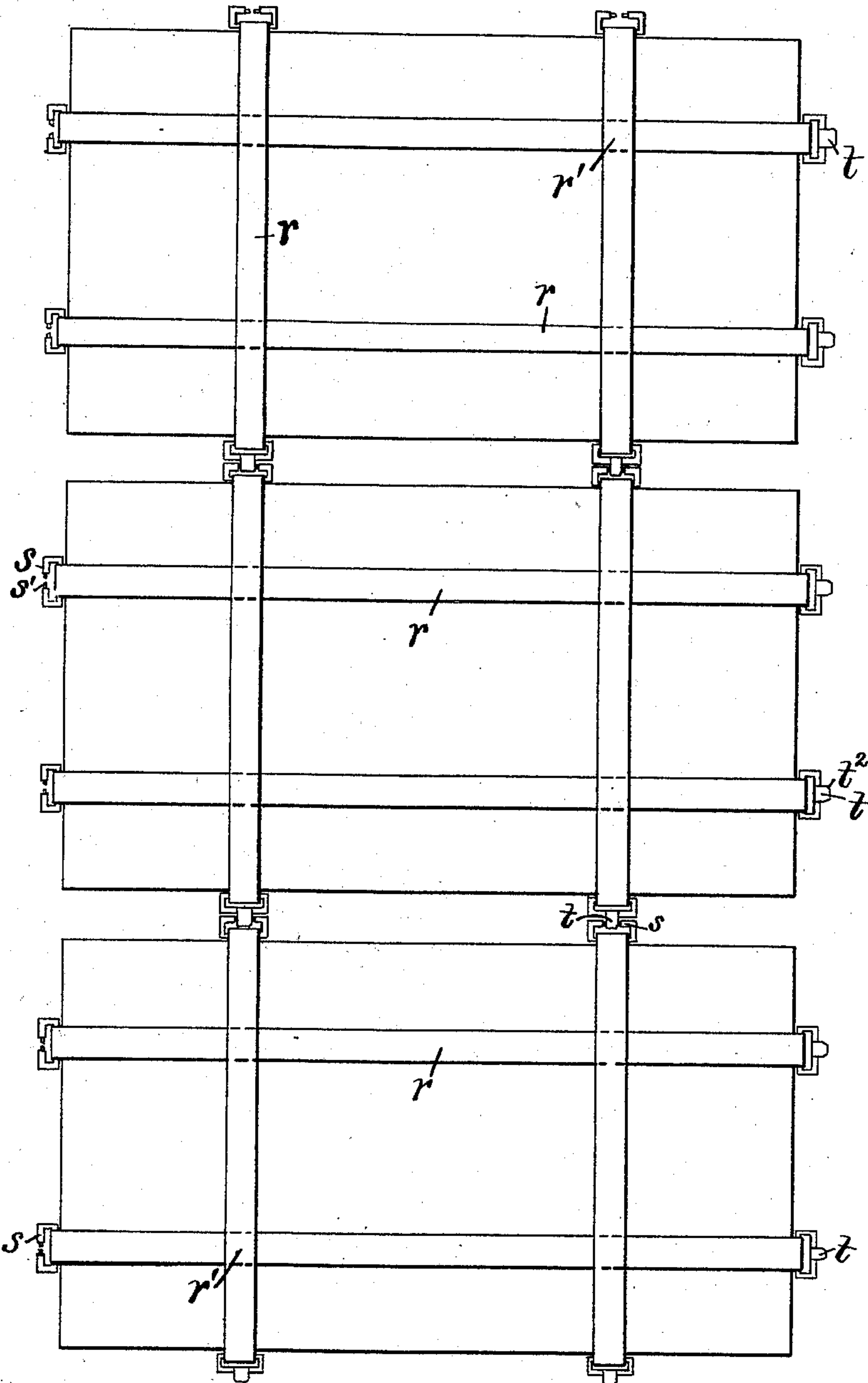


Fig. 17.

Attest:

William H. Conner.

J. C. Fischer.

Inventor.

John R. Hargin, per
Emmett Miller, Atty.

UNITED STATES PATENT OFFICE.

JOHN R. HARGIN, OF ELIZABETH, NEW JERSEY, ASSIGNOR OF ONE-HALF
TO OTIS A. GLAZEBROOK, OF SAME PLACE.

AIR-MATTRESS.

SPECIFICATION forming part of Letters Patent No. 388,037, dated August 21, 1888.

Application filed July 23, 1887. Serial No. 245,053. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. HARGIN, a citizen of the United States, residing at Elizabeth, Union county, New Jersey, have invented
5 certain new and useful Improvements in Air-Mattresses, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention consists in an improved construction for an air-mattress constructed of
10 india-rubber cloth, by which it is provided with means for readily inflating it when desired, and is made with a special reference to strength and durability, and is provided
15 with bands for use as a life-saving raft, if desired, and with means for coupling two or more of such mattresses together to form a buoyant raft of large area.

In the drawings, Figure 1 is a plan of the
20 mattress with the upper covering cut away to show the internal construction. Fig. 2 is an edge view of the same, partly in section, on line *x x* in Fig. 1, where hatched. Fig. 3 is an end view of the same on line *x x* in Fig. 1.
25 Fig. 4 is a longitudinal section of the pump-chamber, taken on line *y y* in Fig. 5. Fig. 5 is a plan of the same with the lid removed and the inlet-valve box shown in longitudinal section. Fig. 6 shows, in full size, the joint
30 between one of the partitions and the mattress-covering. Fig. 7 shows, on the same scale, a plan of the foot of one of the stays; and Fig. 8 shows a transverse section of the same on line *b b* in Fig. 7. Fig. 9 is a detached view
35 of the washer *p*. Fig. 10 is a longitudinal section of one of the pump-valve seats with the valve therein. Fig. 11 is a plan of the mattress with transverse bands and spring-locks. Fig. 12 is an edge view of one end of
40 the mattress, showing the attachment of the lock to the mattress. Fig. 13 is a section of the lock-bolts. Fig. 14 is a plan of the lock-socket. Fig. 15 is a front view of the lock-bolts with a wedge for separating the same.
45 Fig. 16 is an edge view of the wedge; and Fig. 17 is a view showing three mattresses, similar to that shown in Fig. 11, attached together.

The mattress is shown of longitudinal form,
50 with top A, bottom A', sides B, ends C C', and

internal transverse partitions, D, forming a series of compartments, E.

In the compartment at one end is inserted, within the covering of the mattress, a wooden pump-chamber, F, and air-box F', the pump-
55 chamber having a lid, G, hinged at one end and wholly inclosed within the covering of the mattress, which is rigidly secured to the air-box and pump-chamber, and provided with fullness, as shown in Fig. 4, at the free end of
60 the lid, to permit the latter to move up and down like the lid of a bellows. Such movement is assisted by a spring, G². The pump-chamber has valve-boxes *a* and *a'*, the former having inlet-valves *e*, connecting by passages
65 *e'* with the exterior of the end C, to take in air, and delivering the latter through opening *e''* to the interior of the pump-chamber. The valve-box *a'* has similar valves, *n*, discharging the air from the chamber into the air-box F',
70 from whence pipes *g*, provided with valves *g'* at the inner ends, extend through the different partitions D, separately, to the different compartments E. The valves *g'* are shown in Fig.
75 4 similar in construction to the valves *e*, but provided with external screw-threads on their outlet ends to adapt them to be screwed into the side of the air-box F' to hold them in place. The pipes *g* may be provided with nozzles on their inner ends, adapted to be screwed into
80 the outlet ends of the valves *g'* to connect them with the air-box.

The mattress is inflated by working the lid G up and down, thus alternately enlarging and diminishing the capacity of the pump-
85 chamber and forcing the air, which is drawn through the valves *e*, into the several compartments E.

The valves *e* and *n* are shown of full size in Fig. 10, the valve-seat being formed inside a
90 hollow socket, *o*, with tubular shank *o'*, and having a cap, *o''*, with similar shank screwed thereon.

The valve socket and its shank are fitted tightly into a hole bored in the wood of the
95 valve-box *a* or *a'*, and the construction is thus made very cheap and effective, while the wood forms a better medium than metal for the attachment of the mattress-covering to the pump-
100 chamber.

To empty the compartments, so as to roll up the mattress, outlet-valves *h*, of any convenient construction, are applied to each compartment separately.

5 The partitions *D* are secured to the covering of the mattress by stays *D'*, formed, as shown in Fig. 6, of a strip of woven fabric coated with india-rubber and folded into T shape longitudinally, with its central portion, *D'*,
10 where doubled, cemented to the partition, and its edges *D''* bent outwardly to form a broad base for attachment, by cement, to the covering of the mattress.

I am aware that it has been proposed to provide an air-mattress with a series of transverse partitions extending partly across it and to bend the upper and lower edges of each partition laterally and to cement them to the upper and lower covers of the mattress, respectively. The stay *D' D''*, which I employ for connecting each edge of each partition to the mattress-cover, is, however, a new and important element in structures of this class. It has a broad base for attachment to the mattress-
25 cover, a central free edge adapted to be cemented to the side face of the edge of the partition, and its structure and connection with the partition and cover adapt it to resist lateral pressure against either side of the partition to which it is attached.

The air-pipes *g* are formed of suitable rubber tubing cemented to the partitions where they penetrate the same, and as the compartments *E* have no communication with one another it is obvious that in case of leakage into any of the compartments the water which penetrates the same would be confined therein and the buoyancy of the other compartments be unimpaired.

40 To stay the coverings *A* and *A'* of the mattress, stays *l* may be connected to both and the ends secured with especial strength by the means shown in Figs. 7, 8, and 9.

The stay *l*, formed of a strip of strong rubber fabric, is inserted through a slit in the covering, so as to project outside of the mattress, and the projecting end is split to form two feet, *l'*, which are bent in opposite directions and cemented outside to the covering.
50 To increase the adhesion of such tongues, and to strengthen the covering where they are applied, washers *p*, of india-rubber fabric, are applied to the covering at such point, the inside washer being formed with a slot, *p'*, to embrace the stay, as shown in Fig. 9, which represents the stay in section inserted through such slot.

In Fig. 8 dotted lines *l''* are shown inclined from the slit in the covering to illustrate the attachment of diagonal stays, which are shown in Figs. 1 and 2 at different points and lettered *l''*.
60

To fit the mattress for a life-saving raft, I extend transverse and longitudinal bands *r r'* around the mattress, cementing them together at their intersections *r'* and to the edges of the mattress at *B*, *C*, and *C'*.

The bands extend across such edges, and may be used to secure metallic locks to the edges of the mattress for connecting a series of such mattresses together to form a larger raft. 70

The lock consists of two metallic sections, *s* and *t*, the latter being provided with a socket, *t'*, and the former with bolts *s'*, adapted to fit the same. In front of the socket is a tapering projection, *t''*, adapted to enter between the ends of the bolts, and the latter are pressed toward one another by springs *s''*. 75

The sections are provided each with a base-plate, *u*, over which the bands *r* are passed, as shown in Fig. 12, and the bands being cemented firmly to the covering of the mattress adjacent to such plate the sections are held rigidly thereto. 80

The opposite sides and ends of the mattress are shown in Fig. 11 provided with the opposite lock-sections *s* and *t*, and a series of such mattresses would be locked together by pressing the opposite halves of the lock-sections into one another, when the bolts *s'* would be first separated by the projections *t''*, and afterward engaged with the sockets *t'* by the pressure of the springs *s''*. 85 90

The bolts are provided with studs *v*, and are disengaged from the sockets *t'* by pressing a thin wedge, *w*, downward between the studs, as shown in Fig. 15, thus withdrawing the bolts from the sockets *t'*. The bands *r* are left free from the upper and lower faces of the mattress in order that when the mattress is used as a life-raft the bands may be readily clasped with the hands or may serve as convenient means for securing the person to the mattress, it being only necessary for such purpose to thrust the arms or legs under the bands and between them and the contiguous faces of the mattress. By fastening the longitudinal and transverse bands together at their intersections lateral displacement of each of the bands is prevented as effectually as if the band were fastened directly to the mattress at each of such points of intersection, and at the same time the band is left wholly free from the upper and lower faces of the mattress. 95 100 105 110

In Figs. 4 and 5 I have shown valves *u* at the entrance of the passage *e'*. These valves are inserted in order to keep the water from entering the valve-box through the self-acting valves *e* when the mattress is used as a raft; but they may be dispensed with under ordinary circumstances. Such valves may be constructed of any suitable form. 115 120

I am aware that an air-mattress has been connected by an external pipe with a bellows or pump, as in United States Patent No. 10,139, and I therefore disclaim such construction, as it is not adapted for a life-raft, in which the pump must be wholly inclosed within the airtight covering of the mattress to protect it from accident, injury, or separation when plunged into water. 125 130

My invention differs from previous constructions in having the pump-chamber and its movable or bellows lid wholly inclosed within

the air-tight covering of the mattress, so that the air has access to the pump-chamber only by passing through the covering of the mattress, where it is provided with an inlet-valve.

5 I am also aware that tubular stays have been used, as in United States Patent No. 274,495, to permit the tufting of an upholstered covering upon an air-mattress. I am also aware that it is not new to form partitions in a mattress. I therefore disclaim such constructions, and limit myself to the combination, with an air-mattress, of a pump-chamber inclosed within the air-tight covering of the same, with the pump-outlet leading therein, and provided with a movable lid, inclosed also within such air-tight covering and adapted to operate like a bellows to force air into the mattress by internal connections. I thus avoid the exposure of the pump and its connecting-pipes to accidental injury or separation from the mattress when thrown into water as a life-raft.

I am aware that it is not new to construct an air-mattress with cross-lines attached at their ends to the edges of the mattress and stretching across its flat surfaces, as shown in United States Patent No. 274,495, dated March 27, 1883. Mine, however, differs from the said construction in having the bands attached to the mattress both lengthwise and crosswise and secured together at their intersections. Such fastening at the intersections offers a much more rigid and convenient means by which a person may hold himself upon the flat side of the mattress when thrown into the water. I therefore disclaim the said patent and limit myself to the particular construction and arrangement for the bands shown herein.

Having thus set forth my invention, what I claim herein is—

1. The combination, with the air-tight covering of an air-mattress, of air-tight partitions dividing the interior of the mattress into separate air-tight compartments, an air-pump provided with an inlet-opening and an internal air-chamber, and independent tubes connecting the air-chamber of said pump with the separate air-tight compartments of the mattress, respectively, substantially as and for the purpose set forth.

2. The combination, with an air-tight mattress, of a pump-chamber inclosed wholly within the air-tight covering of the same, having an outlet and outlet-valve opening therein, and a movable lid, also inclosed wholly within such air-tight covering, the chamber being

provided with an inlet valve and opening extending through the covering of the mattress, and the lid being adapted to operate like a bellows to draw the air into the pump-chamber through such inlet-valve, and to discharge it within the mattress through such outlet-valve, as and for the purpose set forth.

3. The combination, with the air-tight covering of an air-mattress, of air-tight partitions dividing the interior of the mattress into separate air-tight compartments, a pump-chamber and movable lid inclosed wholly within such air-tight covering, the chamber having an inlet-valve admitting air thereto, and a series of outlet-valves connected within the mattress to the separate compartments, as and for the purpose set forth.

4. The combination, with the covering of an air-tight mattress and partitions forming air-tight compartments therein, of the stay *D'*, consisting in a strip of woven fabric folded and cemented into T shape longitudinally, the central double portion being secured to the edges of the partitions, and the extended edges being secured to the covering of the mattress upon the opposite sides of the partition, substantially as herein set forth.

5. The combination, with the covering of the mattress, of stays *l*, passed through slits in the same and having feet *l'* folded upon the outside of the covering and cemented thereto, and the washers *p*, secured to the covering over the feet and around the stay, inside of the covering, substantially as herein shown and described.

6. The combination, with an air-mattress, of the lock attached to its edge, consisting in the sections *s* and *t*, provided, respectively, with the spring-bolts *s'* and the sockets *t'*, the whole arranged and operated substantially as herein set forth.

7. The combination, with an air-mattress, of the lock-sections *s* and *t*, provided, respectively, with the spring-bolts *s'*, having studs *b*, and with the sockets *t'*, and the wedge *w*, adapted to separate the bolts by pressure between their studs *b*, as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN R. HARGIN.

Witnesses:

THOS. S. CRANE,
HENRY J. MILLER.