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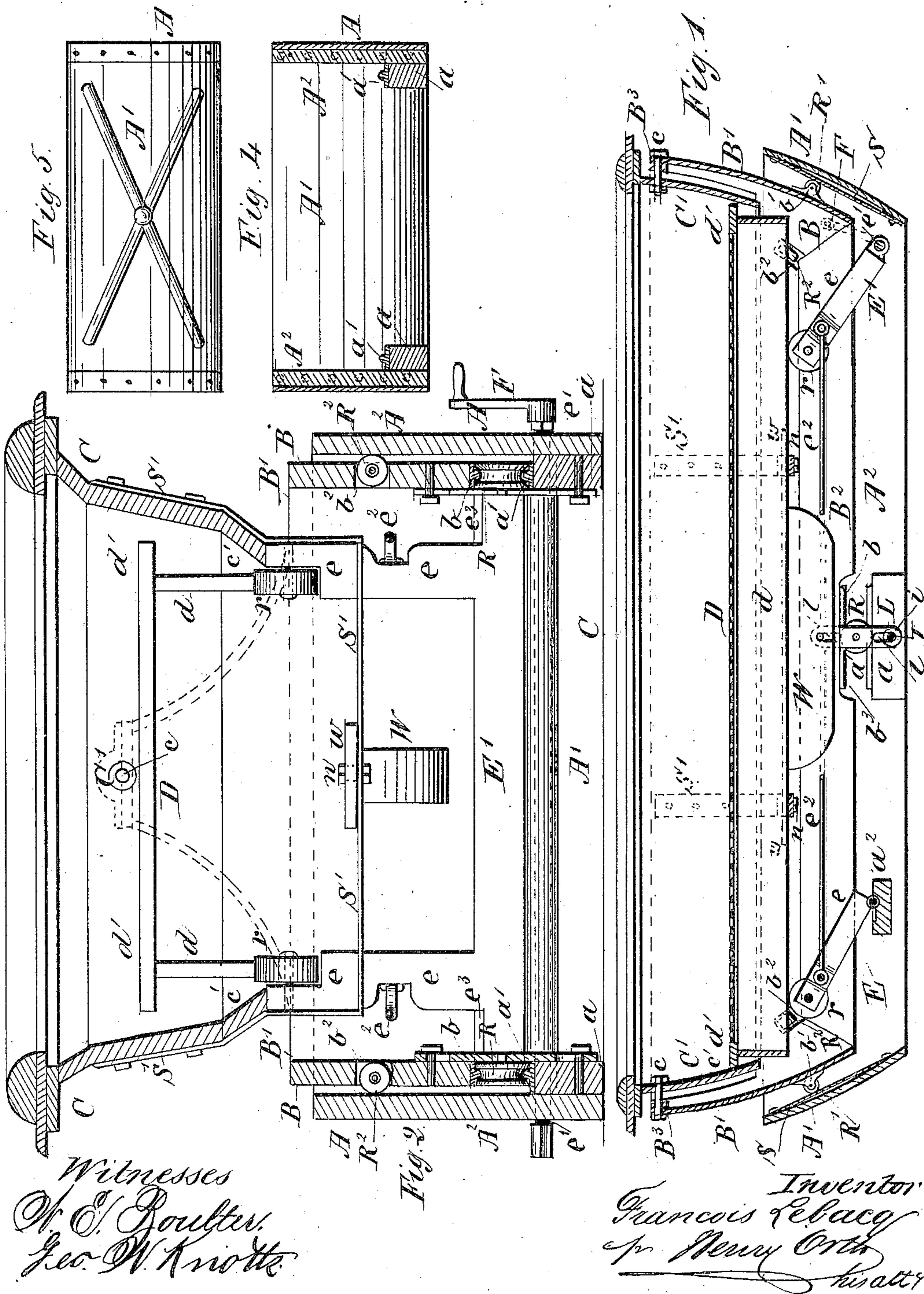
3 Sheets—Sheet 1.

F. LEBACQ.

SELF LEVELING BERTH.

No. 302,571.

Patented July 29, 1884.



Witnesses
W. E. Boulter.
Geo. W. Knott.

Inventor
Francois Lebacqz
per Henry Orth
Attorney

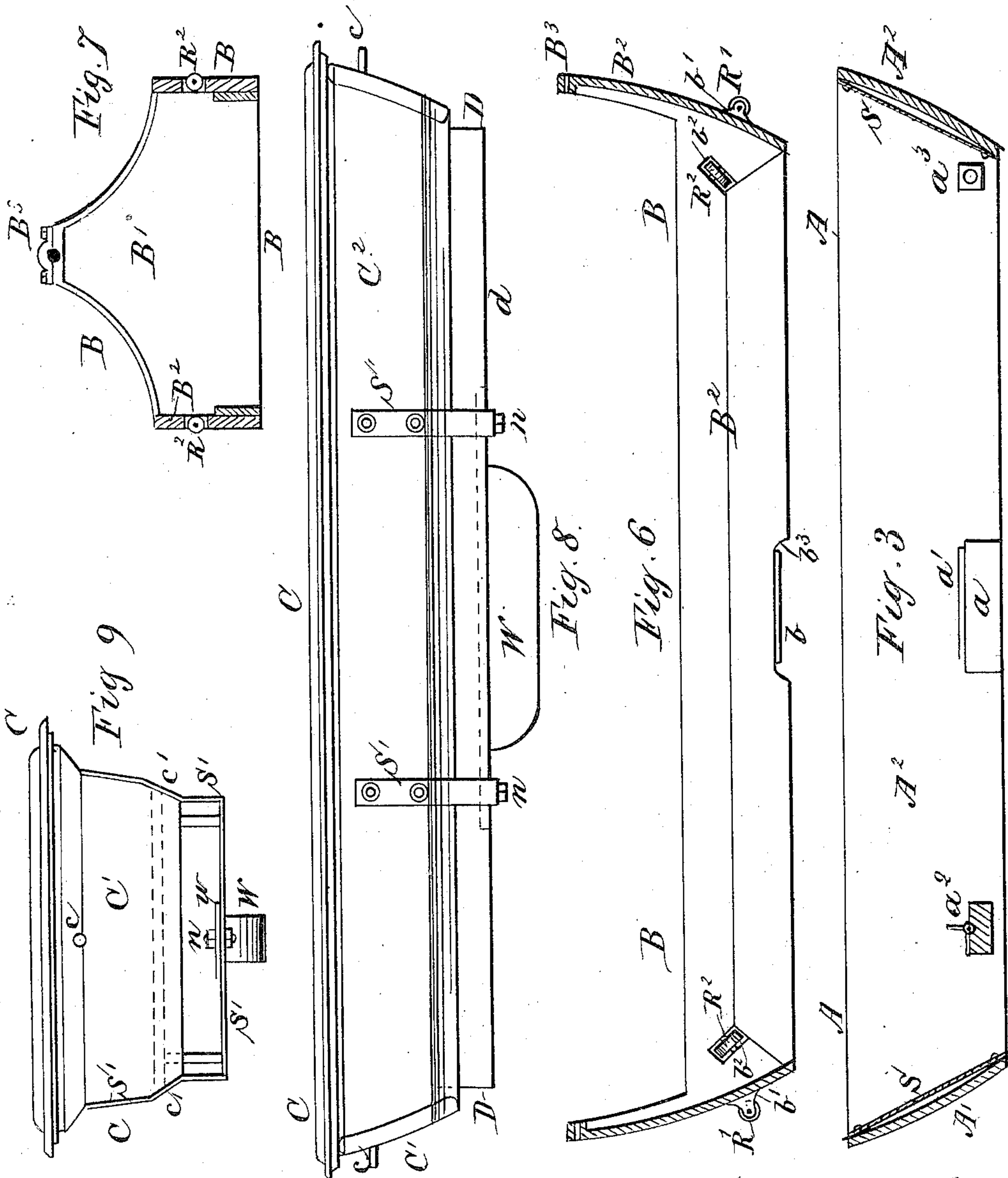
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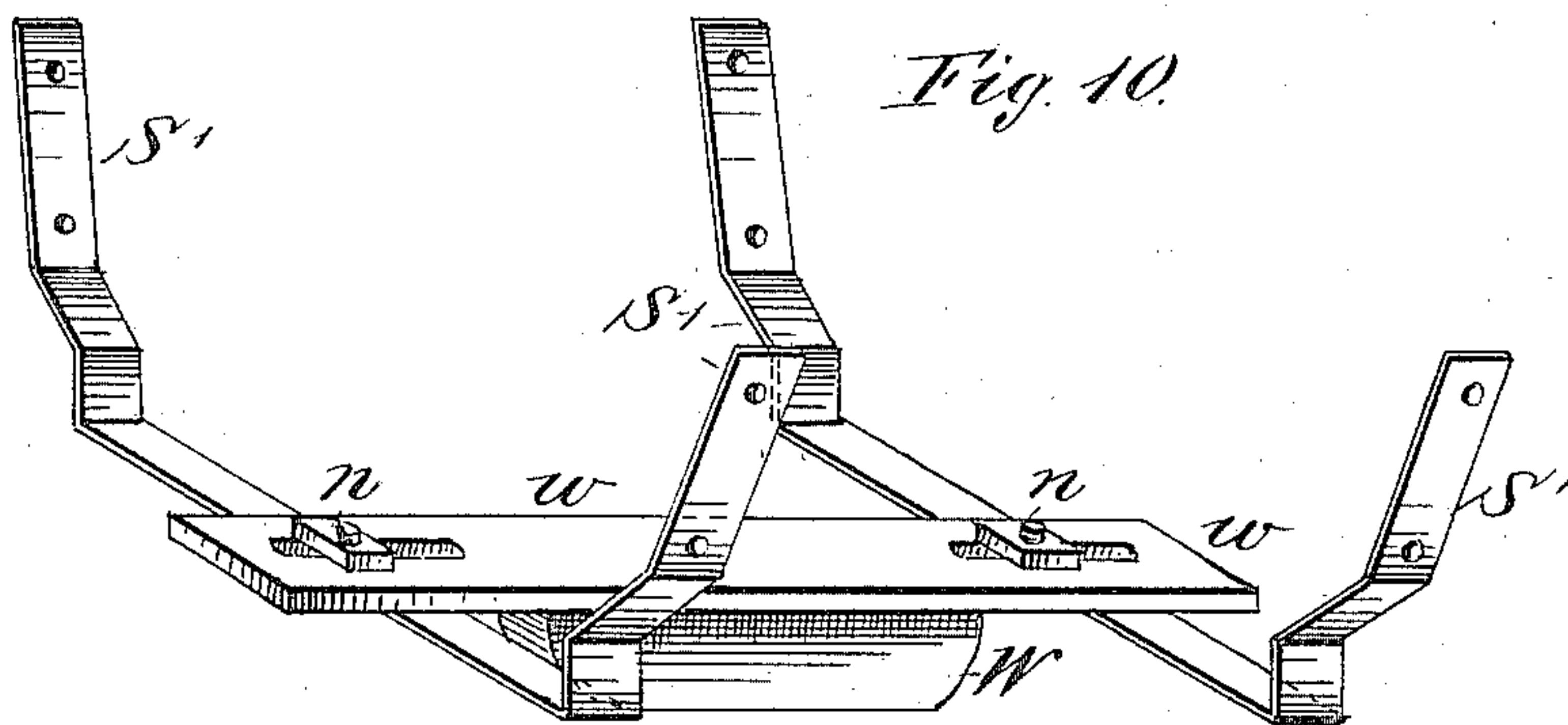
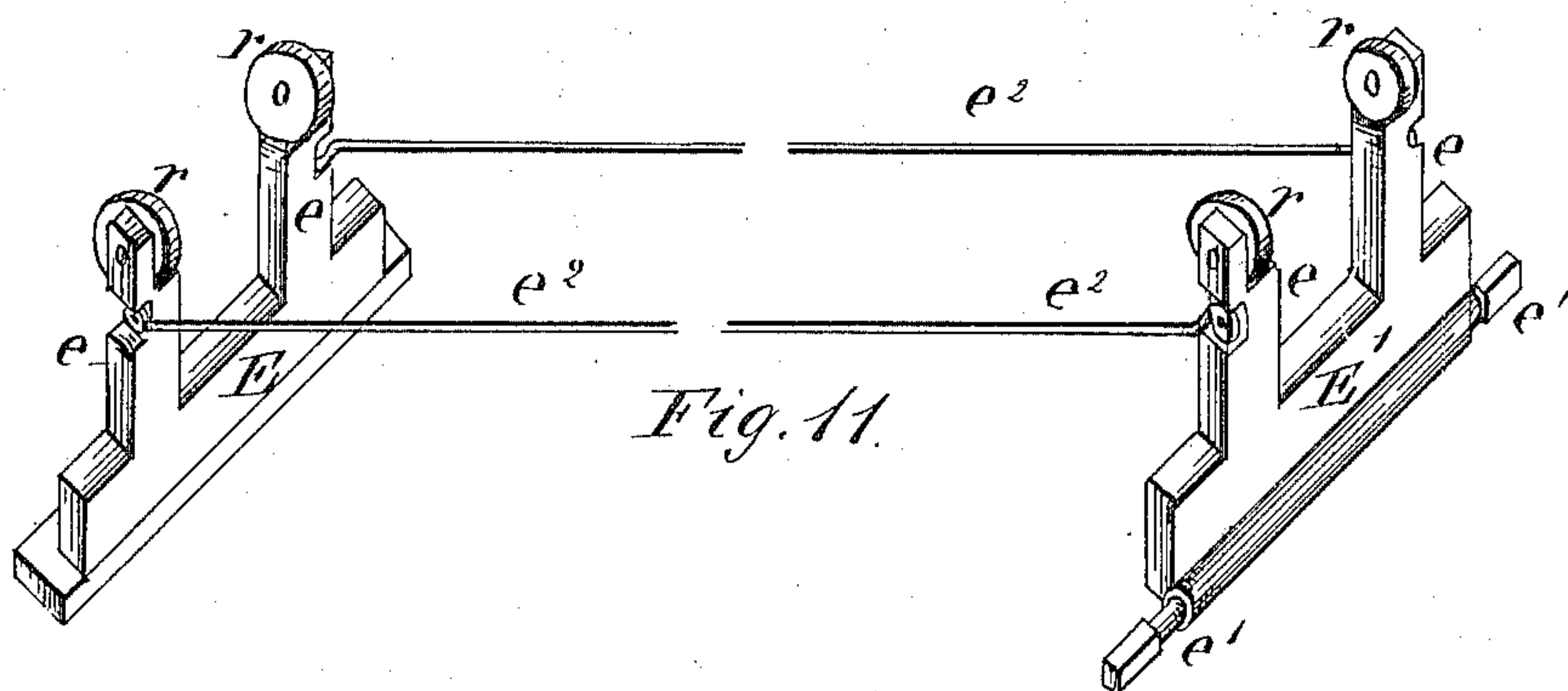
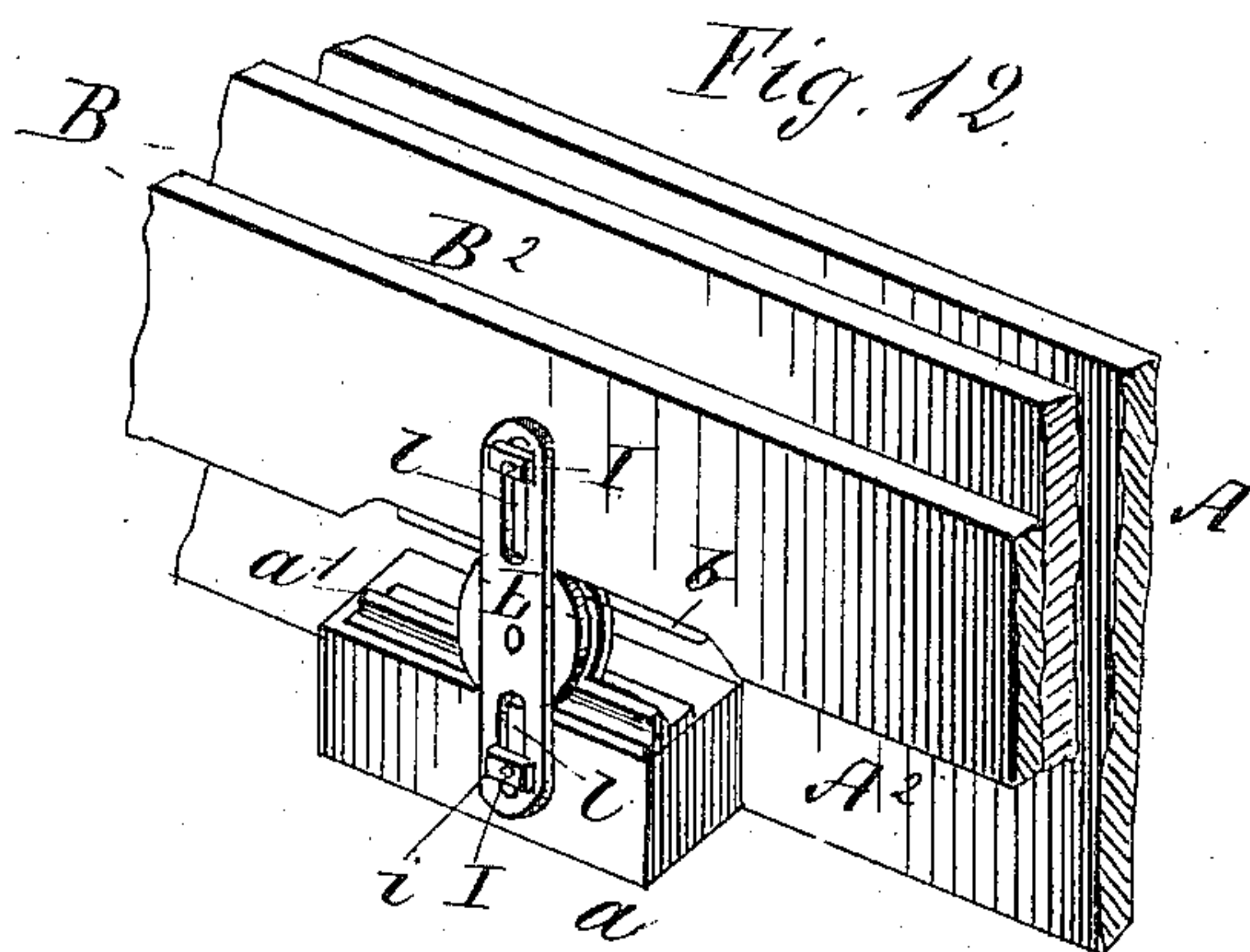
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Inventor
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UNITED STATES PATENT OFFICE.

FRANCOIS LEBACQ, OF BRUSSELS, BELGIUM.

SELF-LEVELING BERTH.

SPECIFICATION forming part of Letters Patent No. 302,571, dated July 29, 1884.

Application filed May 10, 1883. (No model.) Patented in Belgium October 21, 1882, No. 59,350; in Germany October 23, 1882, No. 43,776; in France October 24, 1882, No. 149,262, and in England December 11, 1882, No. 5,909.

To all whom it may concern:

Be it known that I, FRANCOIS LEBACQ, a subject of the King of Belgium, residing at Brussels, in the Kingdom of Belgium, have invented a new and useful Equilibrium-Berth, (for which I have obtained patents in Belgium, No. 59,350, dated October 21, 1882; in France No. 149,262, dated October 24, 1882; in Germany No. 43,776, dated October 23, 1882, and in England No. 5,909, dated December 11, 1882,) of which the following is a specification.

My invention has for its object a novel construction of a ship's berth, whereby the said berth will be maintained in a horizontal position whatever may be the position assumed by the ship itself under the influence of the wind or waves, or both.

The further object of my invention is to so construct the berth as to readily convert the same into a settee or sofa.

In the accompanying drawings, Figures 1 and 2 represent my improved ship's berth by a vertical longitudinal and a like transverse section, respectively, the latter on an enlarged scale. Figs. 3 and 4 represent the stationary or supporting frame of the berth by a vertical, longitudinal, and a like transverse section, respectively; and Fig. 5, an end elevation thereof. Figs. 6 and 7 represent the pivoted frame B by a vertical, longitudinal, and a like transverse section, respectively. Figs. 8 and 9 represent the pivoted frame C by a side and end elevation, respectively. Fig. 10 is a perspective view of the adjustable counterweight. Fig. 11 is a detail perspective view of devices for elevating and lowering the support for the bedding, and Fig. 12 is a detail perspective view of the arrangement of supporting-rolls for the berth-frames.

Like letters indicate like parts wherever such may occur in the above figures of drawings.

The berth is composed of three frames, A B C, that are open at top and bottom, and constructed of any suitable material. I preferably construct the sides of the frames of wood, and their ends, A' B' C', respectively, of metal, said ends being curved, the curves being formed by segments of coincident cir-

cles, to allow said frames to oscillate longitudinally and horizontally, one within the other.

D is a support for the bedding of the usual construction, and having depending side rails, *d*, for purposes hereinafter described.

The frame A is rigidly secured in the position the berth is to occupy, and is provided with bearing-blocks *a*, secured to the inner face of the sides A², about midway thereof, as shown in Figs. 1, 3, and 12, said bearing-blocks being provided with rails *a'* of metal, and preferably semicircular in cross-section.

*a*² is a transverse girt secured to the sides A² of frame A, and *a*³, Fig. 3, is a bearing formed in said sides. To the girt *a*² is hinged a frame, E, Figs. 1, 2, and 11, having two standards, *e*, each of which latter carries at its upper end a roller, *r*. A like frame, E', having trunnions or a shaft, *e'*, rigidly secured thereto, is mounted in the bearings *a*³. One or both of the trunnions project through the sides A² of the frame A, and said projecting end or ends is or are squared for the reception of an operating-crank. The two frames E and E' are connected together by rods *e*², so that both frames may be raised into a vertical position from the horizontal or inclined position they occupy in Fig. 1, or vice versa, by rotating the crank F, shown in dotted lines, Fig. 1, and full lines, Fig. 2, in the proper direction. The position of the standards *e* and their rollers *r* is such that when the frames are raised the pulleys will impinge upon the rails *d* of the support D for the bedding, and carry the same upwardly into the position shown in Fig. 2, so as to bring said support with its mattress flush with the top of the frame C, to convert the berth into a settee or sofa.

B is an oscillating frame the sides B² of which are recessed, as shown at *b*³, and within said recess is fitted a rail, *b*, that, in conjunction with the rail *a'* of frame A, serves to guide the grooved or flanged rollers R. Links L carry the grooved rollers R and connect the frame B flexibly with the supporting or bearing blocks *a* of frame A. The links L are slotted on opposite sides of the bearing for the rollers R, as shown at *ll*, Figs. 1 and 12, and through

said slots pass headed pins or bolts I, adapted to receive a retaining-nut, *i*, to hold the links and rollers in proper position. The links being slotted, the frame B is free to oscillate
 5 freely within the frame A, upon the grooved rolls R, that serve as a fulcrum for said frame B. The ends B' of frame B carry friction-rollers R', mounted on and rotating in suitable bearings *b'*, and said rollers impinge upon
 10 spring-plates S, secured to the inner faces of the curved metallic ends A' of the frame A. By means of these resilient or spring plates S, the friction due to the contact of the rollers R' with a rigid surface is practically annulled, and
 15 said rollers serve, in conjunction with the grooved rolls R, to maintain the frame B in a horizontal position during the longitudinal oscillation of the frame A, due to the pitch of the vessel. The frame B has in its opposite
 20 sides, B², slots *b*², in which are mounted anti-friction rollers R², that impinge upon the sides A² of the frame A, the slots being formed at such an angle to the axis of the frame B as to permit of their rotation in the direction of lat-
 25 eral oscillation of the frame A, due to the rolling of the vessel, and prevent too great a frictional contact between the two frames. The lateral movement of frame B independently of frame A is a comparatively limited one, and,
 30 practically speaking, the two frames move together laterally when the ship is rolling; but said frames move independently when the ship is pitching, the frame A moving with the ship, while the frame B remains stationary. The
 35 ends B' of the frame B extend some distance above the sides B² thereof and terminate in a bearing, B³; or said ends may be slotted at that point to receive the pivot-pins *c*, secured to the ends C' of frame C, by means of
 40 which the latter is hung from frame B. The frame C is cushioned or stuffed, and has suspended from it, by means of straps S', a weight, W, the plate *w* of which has longitudinal slots
 45 *s'* at the point where the suspension-straps pass under the said plate, said straps being secured to the plate by means of bolts and nuts *n*. By means of this arrangement of slots and bolts the weight W is made adjustable longi-
 50 tudinally of the frame C. As above set forth, the frames A B move together laterally—that is to say, they follow the lateral or rolling motion of the ship. The frame C, on the contrary, will move inde-
 55 pendently of said frames A B, for the reason that its pivotal points lie in the plane of the longitudinal axis of frames A B; hence, when the ship rolls, and with it the frames A B, the frame C will remain stationary. The latter, however, by reason of having its pivotal points
 60 in the plane of the longitudinal axis of the frame B, will follow the longitudinal oscillations of frame B when the ship is pitching; but, as above described, the frame B is capable of independent longitudinal oscillation up-
 65 on a fulcrum formed by the rollers R; hence when the ship pitches the frame C will again

remain stationary. The frame D, that supports the bedding, is held within the lower portion of frame C by its top rails, *d'*, as shown in Fig. 1, said frame C being contracted at that
 70 point, as shown at *c'*, Figs. 2 and 9; and it is further supported by the straps S' of the weight W, upon which the side rails, *d*, rest, as shown in Fig. 1. When the frame D is in this posi-
 75 tion, the frame C constitutes the bedstead-frame inclosing said frame D and the bedding on all sides.

If it is desired to convert the berth into a couch or sofa, it will only be necessary to raise the frames E E', whereby the frame D is lifted
 80 up and its mattress or upholstered or cushioned upper face is brought flush with the upholstered edges or hand-rail of the frame C. When the frame D has been raised, the sides C² of frame C will rest upon the upper face of
 85 the standards *e* of frames E E', the sides B² of frame B will rest on the offsets *e*³ of frames E E', and the sides *d* of frame D will rest upon the rollers *r* of the standards *e* of said frames E E', thus locking the parts rigidly and se-
 90 curely together. Any disturbance, from whatever cause, of the center of gravity of the frames B C is at once counteracted and corrected by the action of the counter-weight W. The latter, being adjustable longitudinally of
 95 the frame C, (hence of the system of frames,) permits of an adjustment of the center of gravity, and it assists in maintaining the frame C or the frames B C in a horizontal position when the ship is rolling or pitching. Of
 100 course, it will be understood that the frames E E' may be dispensed with where the berth is not intended for use as a sofa or lounge.

Having thus described my invention, what I claim, and desire to secure by Letters Patent
 105 of the United States, is—

1. In a ship's berth, an oscillating frame for containing the bedding, and a support for the latter adjustable vertically in said frame, and
 110 appliances to raise and lower the support for the bedding and hold the same in either position, and lock the frame against oscillation when the support for the bedding is elevated, whereby said oscillating berth may be con-
 115 verted into a stationary couch or settee, as described.

2. In a self-leveling berth, the combination of three frames arranged one within the other, the first frame being rigidly secured to a mov-
 120 ing body, the second oscillating within the first on its transverse axis, and the third frame oscillating on its longitudinal axis within the second, with a counter-weight connected with
 125 said third frame, and adapted for adjustment longitudinally thereof, substantially as described, for the purposes specified.

3. In a self-leveling berth, the combination of three frames arranged one within the other, the first frame being rigidly secured to a mov-
 130 ing body, the second oscillating within the first in the direction of its longitudinal axis on a shifting fulcrum, and the third frame oscil-

lating on its longitudinal axis within the second, with a counter-weight connected with said third frame, and adapted for adjustment longitudinally thereof, substantially as described, for the purposes specified.

4. In a self-leveling berth, the combination of three frames arranged one within the other, the first being rigidly secured to a moving body, the second oscillating on its transverse axis within the first, and the third frame oscillating on its longitudinal axis within the second, with a bed-support suspended within said third frame, substantially as described, for the purposes specified.

5. In a self-leveling berth, the combination of three frames arranged one within the other, the first being rigidly secured to a moving body, the second oscillating on its transverse axis within the first, and the third frame oscillating on its longitudinal axis within the second, with a bed-support adapted to be raised and lowered within said frame and supported in either position, as described, for the purposes specified.

6. In a self-leveling berth, the combination of three frames arranged one within the other, the first being rigidly secured to a moving body, the second oscillating on its transverse axis within the first, and the third frame oscillating on its longitudinal axis within the second, with a bed-support adapted to be raised and lowered within said frame, and appliances to hold said support in its raised position and lock the first and second frames against oscillation within each other and within the first frame, as described, for the purposes specified.

7. In a self-leveling berth, the combination, with three frames arranged one within the other, the first being rigidly secured to a moving body, the second oscillating within the first on a shifting fulcrum in the direction of the longitudinal axis of the latter, and supporting the third frame, of elastic buffers to take up the end-thrusts of the second frame, substantially as described, for the purposes specified.

8. In a self-leveling berth, the combination, with three frames arranged one within the other, the first being rigidly secured to a moving body, the second oscillating within the first on a shifting fulcrum in the direction of the longitudinal axis of the latter and supporting the third frame, of elastic buffers to take up the end-thrusts of the second frame, and friction-rollers connected to the sides of said second frame, substantially as described, for the purposes specified.

9. In a self-leveling berth, the combination, with three frames arranged one within the other, the first being rigidly secured to a moving body, the second oscillating in the direction of its longitudinal axis on a shifting fulcrum within the first, the third oscillating on its longitudinal axis within the second, and a counter-weight connected with said third frame, of elastic buffers on the first frame to take up

the end-thrusts of the second frame, from which the third frame and the counter-weight are suspended, as described, for the purposes specified.

10. In a self-leveling berth, the combination, with three frames arranged one within the other, the first being rigidly secured to a moving body, the second oscillating within the first in the direction of its longitudinal axis on a shifting fulcrum, the third oscillating on its longitudinal axis within the second, a counter-weight depending from and a bed-support suspended within said third frame, of appliances to raise the bed-support, hold the same in that position, and lock the third frame against oscillation within the second, and the latter against a like movement within the first, as and for the purposes specified.

11. The combination, with the stationary frame A, the short tracks $a a'$, secured to its side walls at the longitudinal center thereof, the frame B, having corresponding tracks, and the frame C, suspended within said frame B, the latter being provided on its opposite sides with friction-rollers R^2 , of the rollers R and links L, slotted on opposite sides of the bearings for the roller-shafts to receive the pivots i of frames A B, as described, for the purposes specified.

12. The combination, with the stationary frame A, the short tracks $a a'$, secured to its side walls at the longitudinal center thereof, the frame B, having corresponding tracks, and the frame C, suspended within said frame B, the latter being provided at its opposite ends with friction-rollers R' , of the yielding or spring buffers S, secured to the opposite ends of the frame A, upon which said rollers impinge, to take up the end-thrusts of frame B when its fulcrum is shifted, as described, for the purposes specified.

13. The combination, with the frames A, B, and C, arranged relatively to one another for operation as described, and the bed-support D, suspended loosely within frame C, of the connected frames E E', the former being hinged to a fixed support, and the latter to a movable support, whereby said frames E E' may be raised and lowered, to raise and lower the bed-support within its frame C, as described, for the purposes specified.

14. The combination, with the frames A, B, and C, arranged relatively to one another for operation as described, and the bed-support D, suspended loosely within frame C, of the connected frames E E', having laterally-projecting bearing-surfaces, e^3 , the frame E being hinged to a fixed support, and the frame E' to a movable support, whereby said frames E E' may be raised from a horizontal to a vertical position, to raise the bed-support D within frame C and support the frame B, as described, for the purposes specified.

15. The combination, with the frames A, B, and C, arranged relatively to one another for operation as described, and the bed-support D,

suspended loosely within frame C, of the connected frames E E', having laterally-projecting bearing-surfaces e^3 , and like supports at their upper extremities, whereby said frames
5 E E' may be raised from a horizontal to a vertical position, to raise and support the frame D, and at the same time form rigid supports for the frames B and C, substantially as described, for the purposes specified.

10 16. The combination, with the frames A, B, and C, arranged relatively to one another for operation as described, and the bed-support D, suspended loosely within frame C, of the frames E E', connected by pivoted rods e^2 , and pro-

vided with friction-rollers r , and bearing- 15 surfaces at their upper ends, and with bearing-surfaces e^3 , the frame E being hinged to a fixed support, and the frame E' to a movable support, whereby said frames may be raised from a horizontal into a vertical posi- 20 tion, to raise the frame D and support it, as well as the frames C B, substantially as described, for the purposes specified.

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Witnesses:

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