

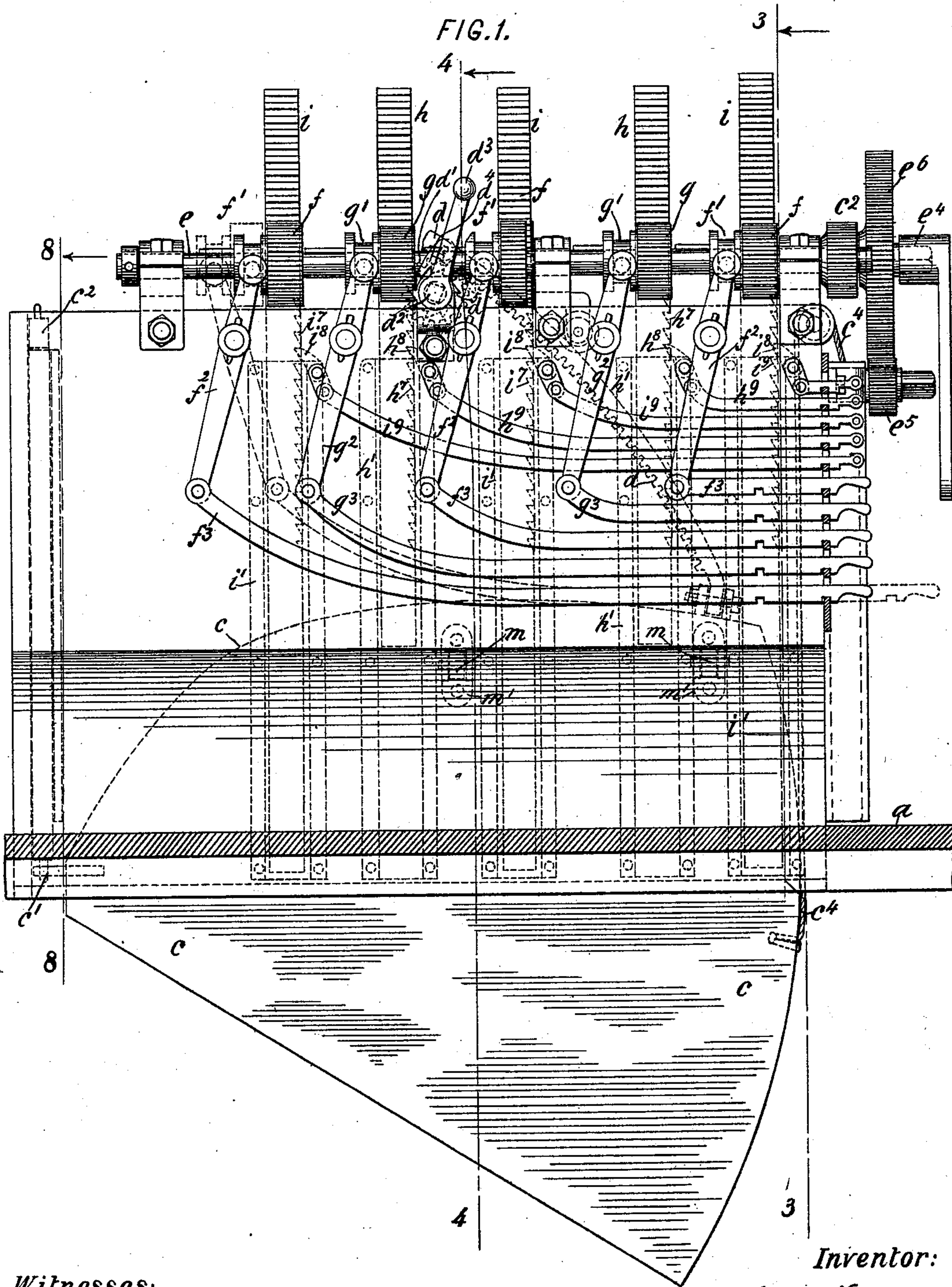
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3 Sheets—Sheet 1.

H. VOSS.
CENTER BOARD.

No. 528,749.

Patented Nov. 6, 1894.



Witnesses:
John Becker
Theodore Becker.

Inventor:
Harry Voss
by his attorneys
R. oeder & Briesen

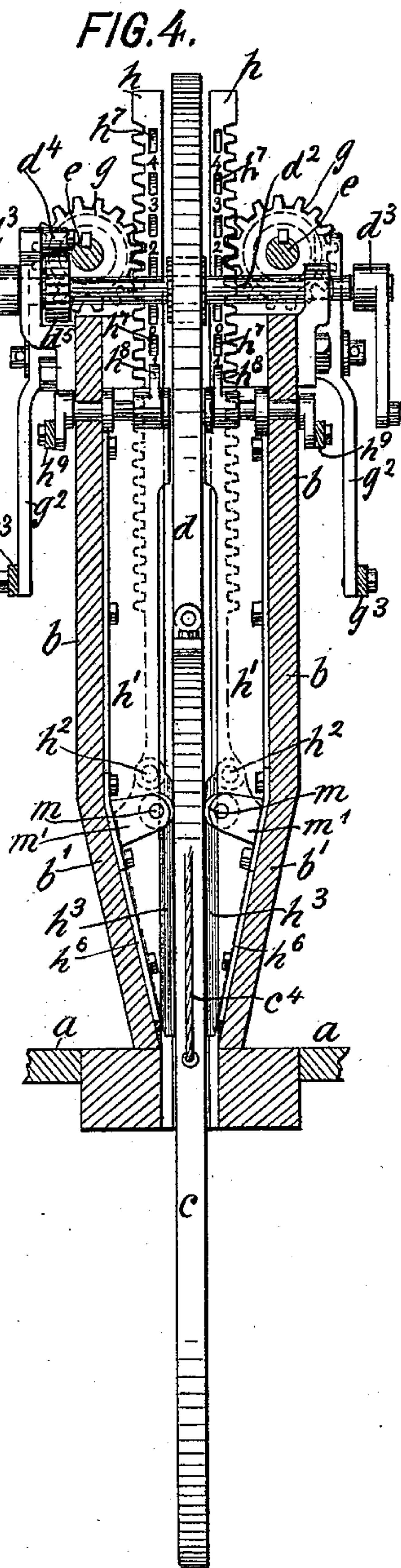
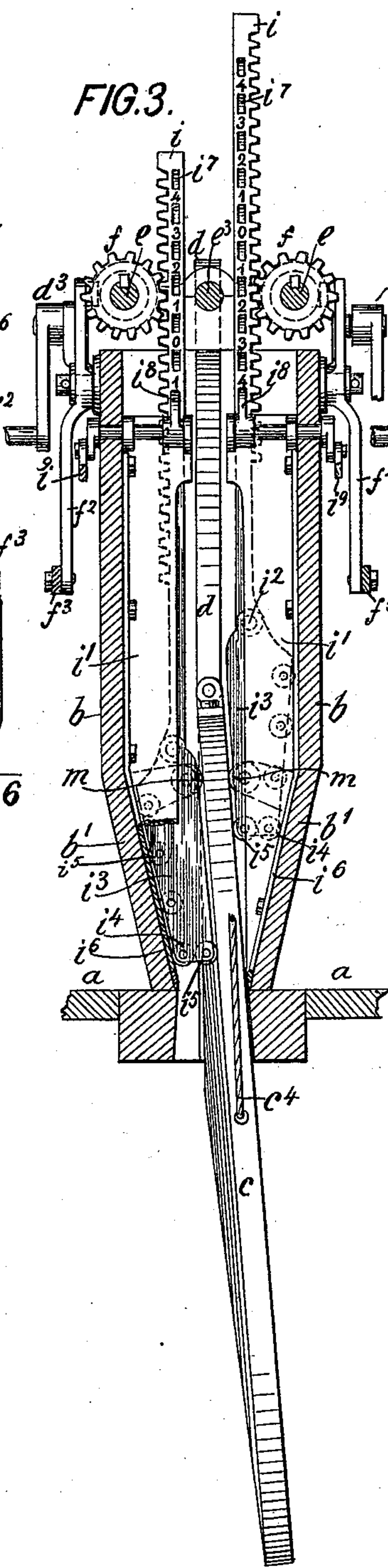
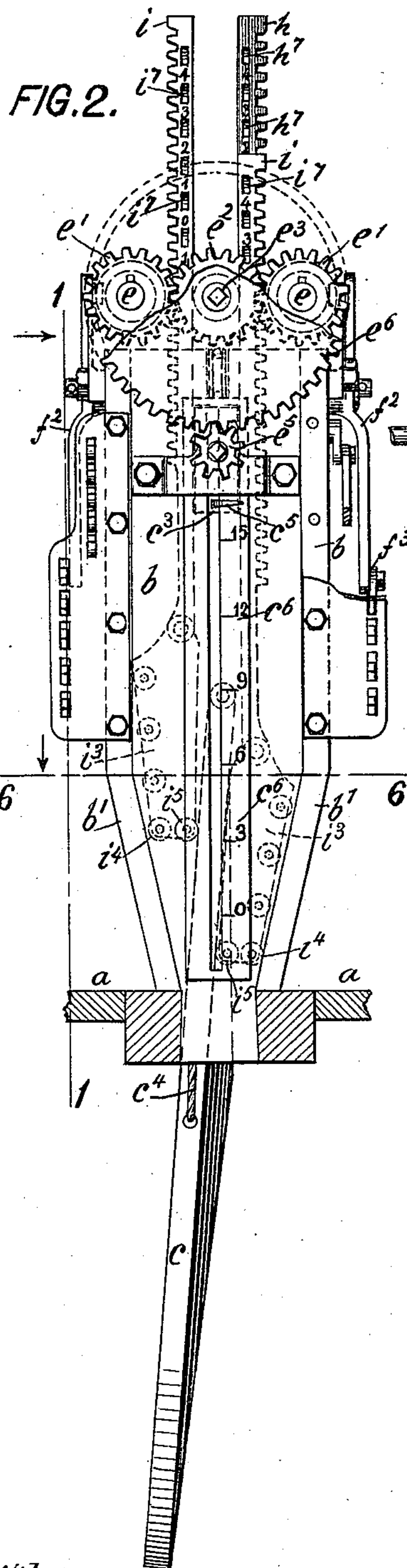
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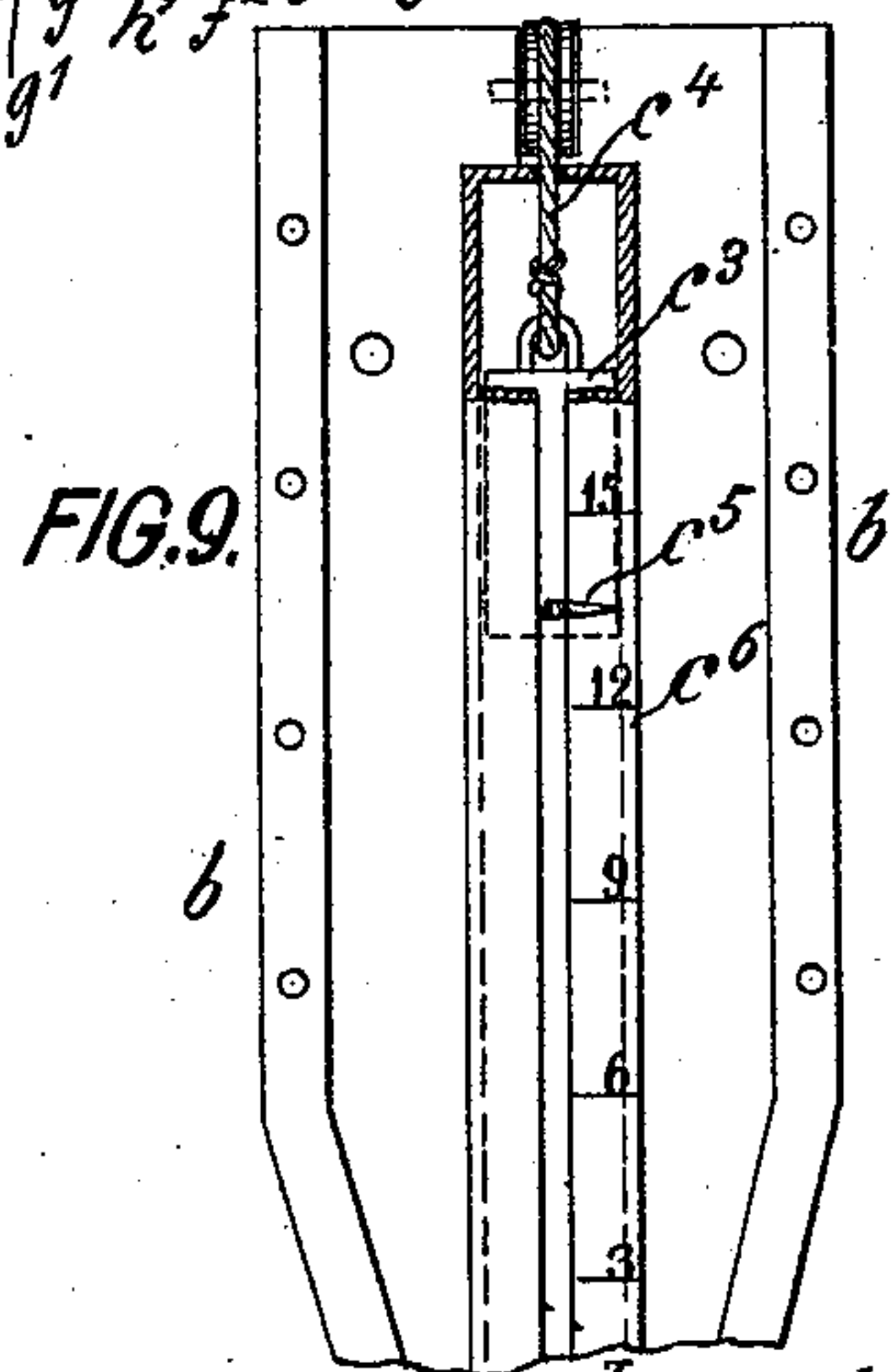
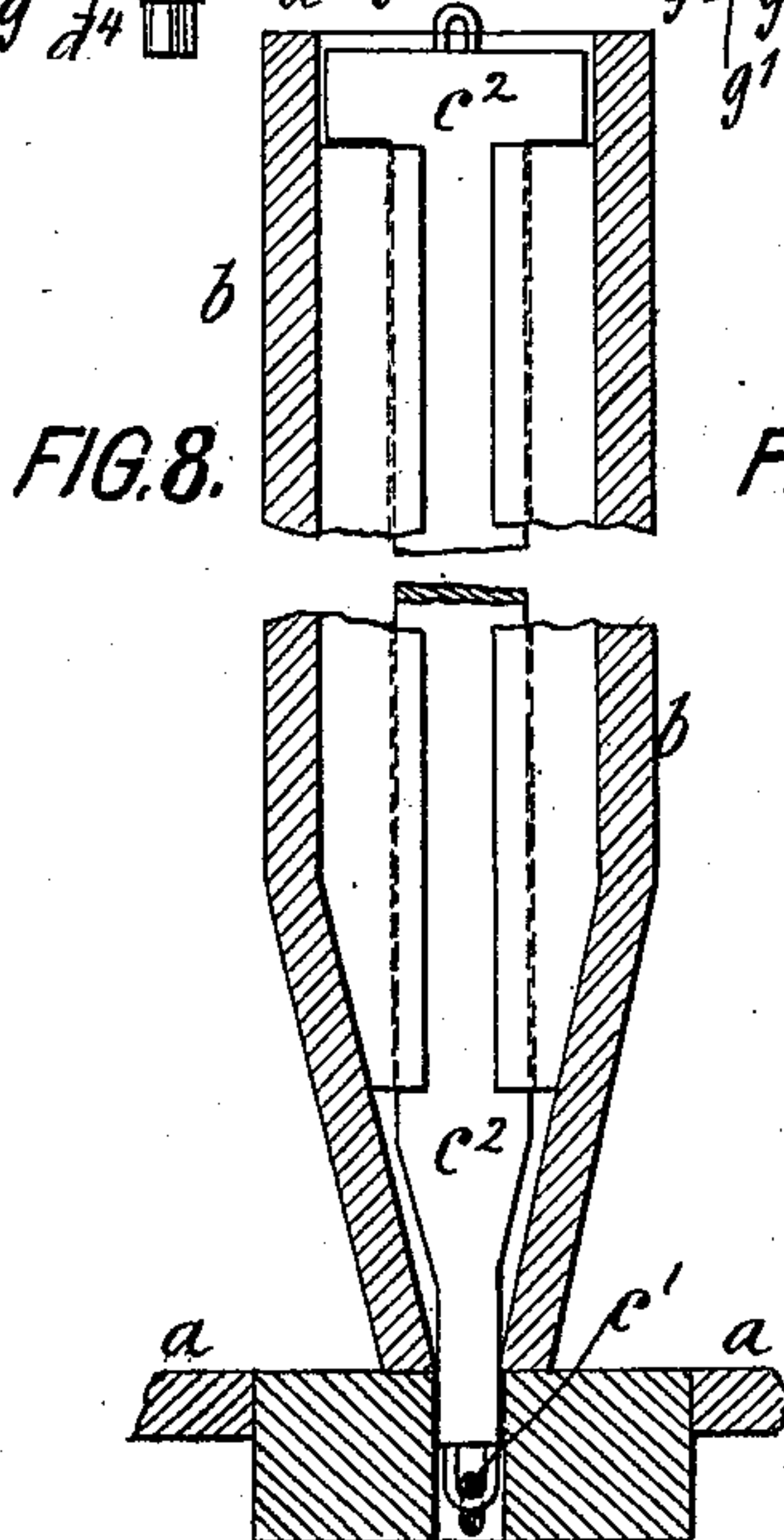
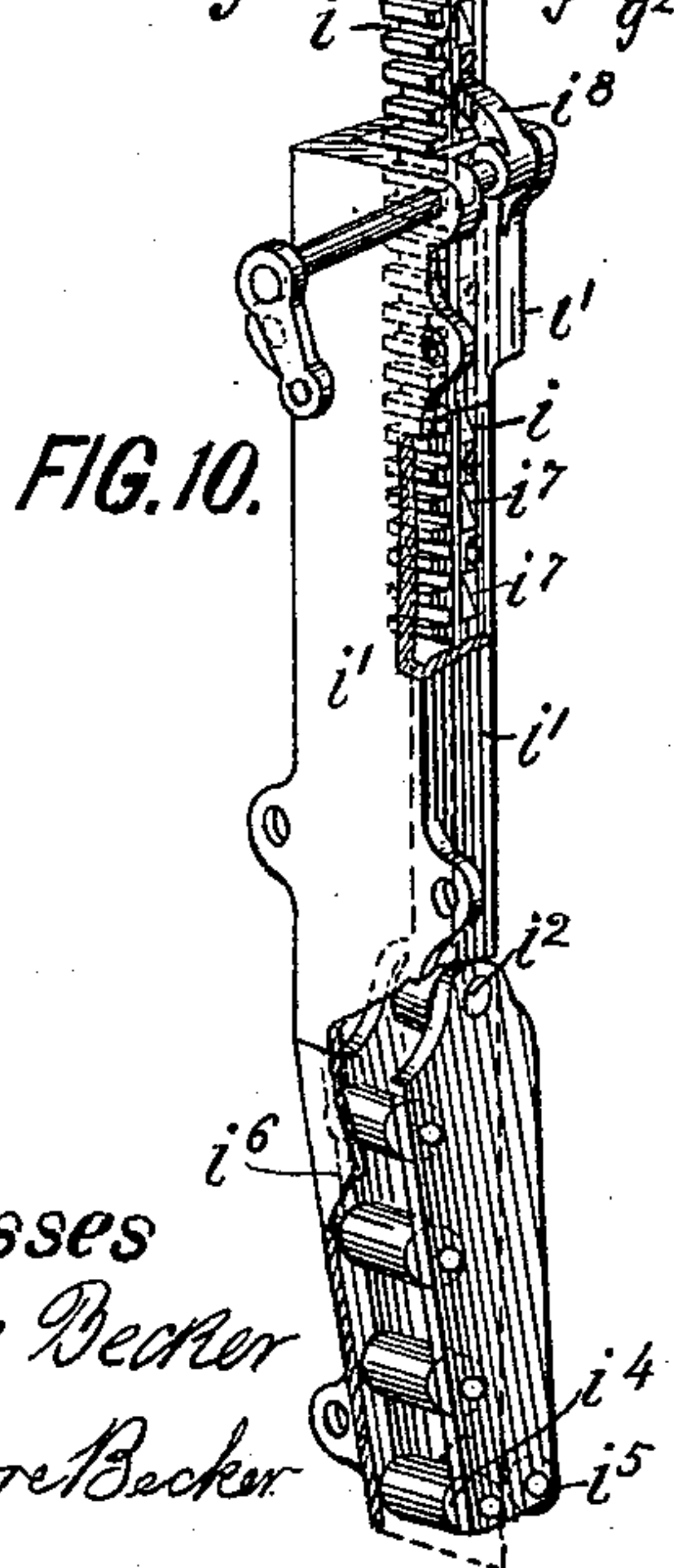
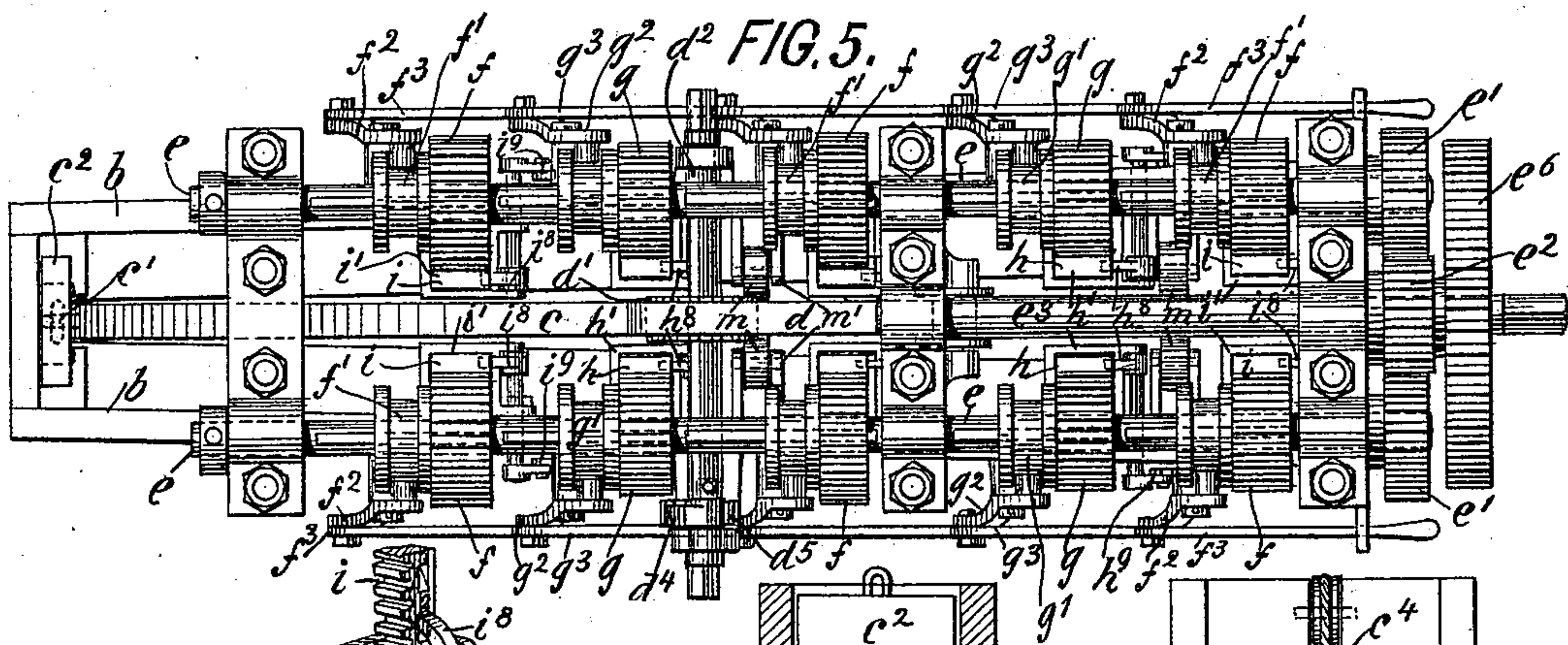
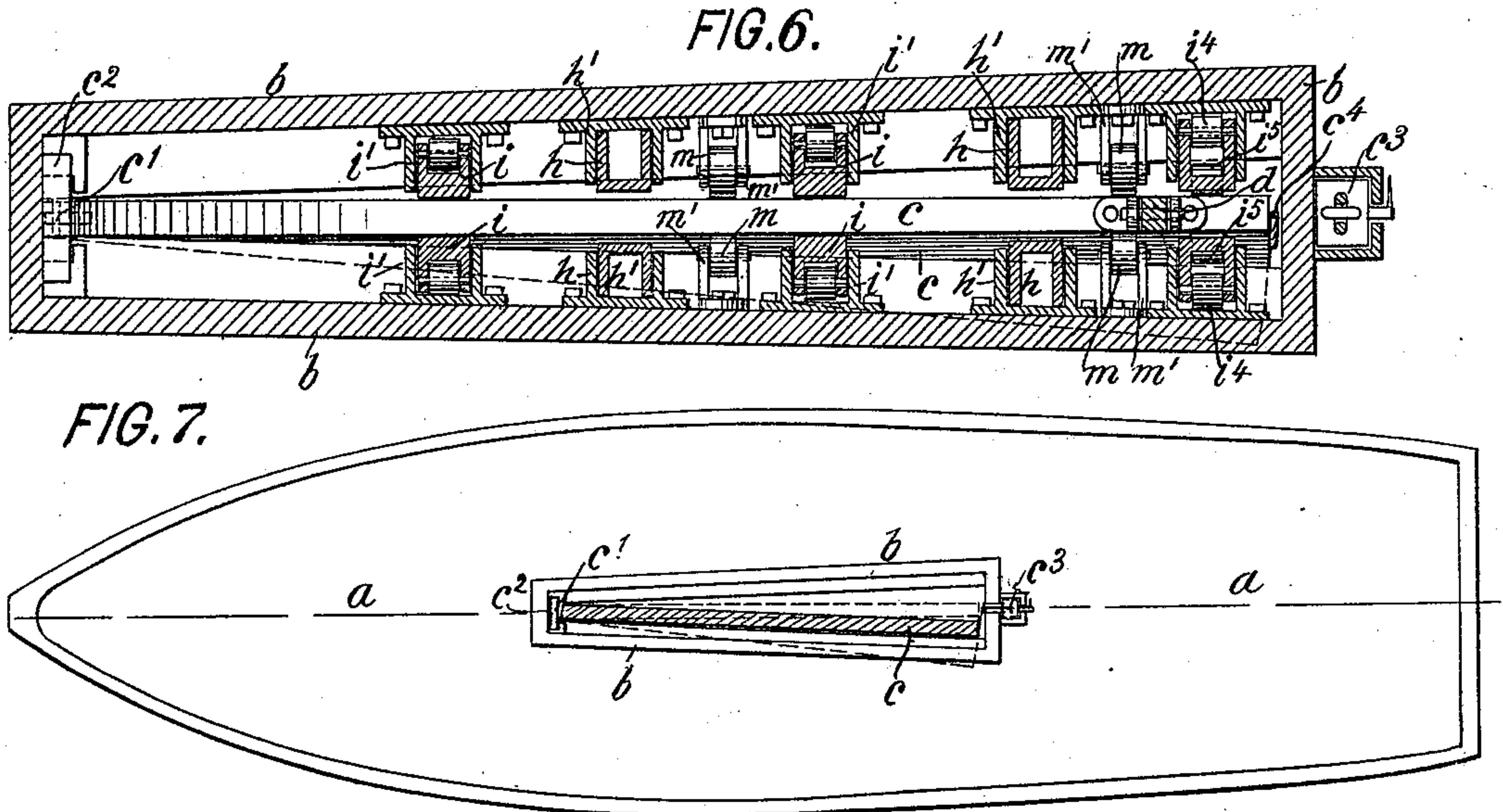
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UNITED STATES PATENT OFFICE.

HENRY VOSS, OF JERSEY CITY, NEW JERSEY.

CENTERBOARD.

SPECIFICATION forming part of Letters Patent No. 528,749, dated November 6, 1894.

Application filed July 18, 1894. Serial No. 517,848, (No model.)

To all whom it may concern:

Be it known that I, HENRY VOSS, a citizen of the United States, and resident of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Centerboards, of which the following is a specification.

This invention relates to a centerboard for sailing vessels which can be simultaneously oscillated and tilted to an inclination with the keel of the vessel. In this way the vessel can be held more bodily to the windward and will sail more closely upon her course. In sailing on a port tack, I oscillate the centerboard to the starboard and tilt it from port to starboard. In sailing on the starboard tack, the centerboard is oscillated and tilted in the opposite direction, and thus the boat is at all times held bodily up to wind and will be prevented from drifting sidewise because its hold on the water is increased.

In the accompanying drawings: Figure 1 is a vertical longitudinal section of the centerboard, on line 1, 1, Fig. 2. Fig. 2 is a rear end view thereof; Fig. 3, a vertical cross section on line 3, 3, Fig. 1, showing the centerboard in full; Fig. 4, a similar section on line 4, 4, Fig. 1; Fig. 5, a plan; Fig. 6, a horizontal section on line 6, 6, Fig. 2; Fig. 7, a diagram of the boat, showing the centerboard and well; Fig. 8, a section on line 8, 8, Fig. 1; Fig. 9, a detail end view, partly in section, of the index and counterweight, and Fig. 10, a perspective view of one of the racks.

The letter *a*, represents a boat, provided with a well *b*, within which the centerboard *c*, is secured. This centerboard is at its forward end pivoted at *c'*, to a sliding support *c''*, while at its rear end, it is connected to a counterweight *c'''*, by rope *c''''*. The weight *c'''*, carries a pointer *c''''*, moving along a scale *c'''''*, so that the elevation of the centerboard may be readily adjusted.

In order to raise and lower the centerboard, I secure to the same, a curved rack *d*, engaged by pinion *d'*, fast on shaft *d''*, that is adapted to be revolved by crank handles *d'''*. A click *d''''*, and pinion *d'''''*, maintain the shaft in position.

In order to oscillate and simultaneously tilt the centerboard, I have devised the follow-

mechanism: To the right and left of the centerboard *c*, there is hung in the well *b*, a shaft *e*, provided at its end with a pinion *e'*, intergeared with pinion *e''*, of a central shaft *e'''*, that may be revolved either by a crank *e''''*, or by pinion *e'''''*, and gear wheel *e''''''*. Upon each of the shafts *e*, are loosely mounted two sets of sliding pinions *f*, *g*, that are made to revolve with the shaft, by a groove and feather connection. The pinions *g*, are designed to set and hold the centerboard in a central position, *i. e.*, in line with, and vertically above the keel, while the pinions *f*, are designed to oscillate and simultaneously tilt the centerboard. The pinions *g*, are shifted by means of grooved collars *g'*, secured to them and engaged by levers *g''*, operated by hand rods *g'''*. The pinions *f*, are shifted in like manner by the collars *f'*, levers *f''*, and hand rods *f'''*. The pinions *g*, are adapted to engage the vertically movable racks *h*, and the pinions *f*, are adapted to engage the vertically movable racks *i*. The racks *h*, *i*, move in their boxes *h'*, *i'*, respectively, and to their lower ends are pivoted at *h''*, and *i''*, the slides or wedges *h'''*, *i'''*, that engage the sides of the centerboard *c*. The wedges *i'''*, are provided at their outer ends, with the anti-friction rollers *i''''*, engaging a metal lining *i'''''*, on the inclined sides *b'*, of well *b*. At their inner end, the wedges *i'''*, carry the anti-friction roller *i''''*, engaging the centerboard *c*. The wedges *h'''*, are preferably made without the rollers, and are in direct contact with the inclined sides *b'*, and with the centerboard. Each of the racks *h*, *i*, is provided with the teeth *h''*, *i''*, engaged respectively by the pawls *h'''*, *i'''*, connected to the hand rods *h''''*, *i''''*. By operating these rods, any of the racks may be locked at any desired elevation. In order to hold the upper part of the centerboard always in the line of the keel, it is engaged by rollers *m*, hung in bearings *m'*, that project inwardly from the well *b*.

The operation of the device is as follows: To set the centerboard to its normal position, *i. e.*, vertical and in line with the keel, I first bring all the racks *i*, on both sides of the centerboard to the same elevation, which is indicated by a zero mark upon a scale with which they are provided. I then secure these

racks in position by their pawls i^3 , and disengage their pinions f , by shifting them along shafts e . I also disengage the pinions g , from their racks h , on one side of the centerboard 5 and hold these racks up by their pawls h^3 , while the pinions g , at the other side of the centerboard are brought into engagement with their racks h . By revolving the shaft e^3 , these racks are now lowered and their 10 wedges h^3 , are brought to engage one side of the centerboard. Next the wedges h^3 , on the other side of the centerboard are lowered in a similar manner, and the centerboard is thus locked in its normal position. If it is desired 15 to oscillate and tilt the centerboard, all the wedges h^3 , are first raised and the pinions f , are shifted into engagement with their racks i . If now the shaft e^3 , is turned, the wedges i^3 , on one side of the centerboard will be 20 raised, and those on the other side will be lowered. The lowering of the wedges on say the starboard side (Fig. 2), will throw the rear end of the centerboard over to the port side, which is done when the vessel is on its star-

25 board tack. At the same time the centerboard is tilted, *i. e.*, inclined from a vertical plane in a direction from starboard to port. If the vessel is on its port tack (Fig. 3), the centerboard is thrown over and tilted in an 30 opposite direction, by lowering the port and raising the starboard wedges. In this way the oscillation and inclination of the centerboard can be quickly and simultaneously effected, and thus the vessel can, by the cen-

35 terboard, be more closely held to the windward as previously described.

What I claim is—

1. The combination of a centerboard with a series of vertically movable slides, that en- 40 gage the sides of the centerboard and are adapted to oscillate and tilt the same, substantially as specified.

2. The combination of a well having a tapering lower end, with a centerboard, a series of vertically movable slides that engage the 45 sides of the well and centerboard, and with racks and pinions for operating the slides, substantially as specified.

3. The combination of a well with a centerboard, a series of vertically movable slides, a 50 pair of shafts extending along the well, movable pinions mounted upon the shafts, and with racks secured to the slides and operated by the pinions, substantially as specified.

4. The combination of a well with a center- 55 board, slides engaging the same, a pair of shafts, movable pinions mounted thereon, racks secured to the slides and operated by the pinions, and with pawls engaging the racks and adapted to lock the same in their 60 elevated position, substantially as specified.

5. The combination of a centerboard with vertically movable slides at both sides of the same, and with mechanism for simultaneously 65 raising the slides on one side and lowering those on the other side, substantially as specified.

6. The combination of a well with a centerboard, shafts extending along both sides of the same, two sets of movable pinions g , f , 70 mounted thereon, racks engaged by the pinions, wedges h , i , secured to the racks, and of which the wedges h are adapted to hold the centerboard in its vertical, and the wedges i are adapted to hold it in its inclined position, 75 substantially as specified.

Signed at New York, in the county of New York and State of New York, this 13th day of July, A. D. 1894.

HENRY VOSS.

Witnesses:

F. V. BRIESEN,
WILLIAM SCHULZ.