

No. 702,435.

Patented June 17, 1902.

G. JANSEN & H. MESSMANN.

STRENGTH TESTER.

(Application filed Dec. 24, 1900.)

(No Model.)

3 Sheets—Sheet 1.

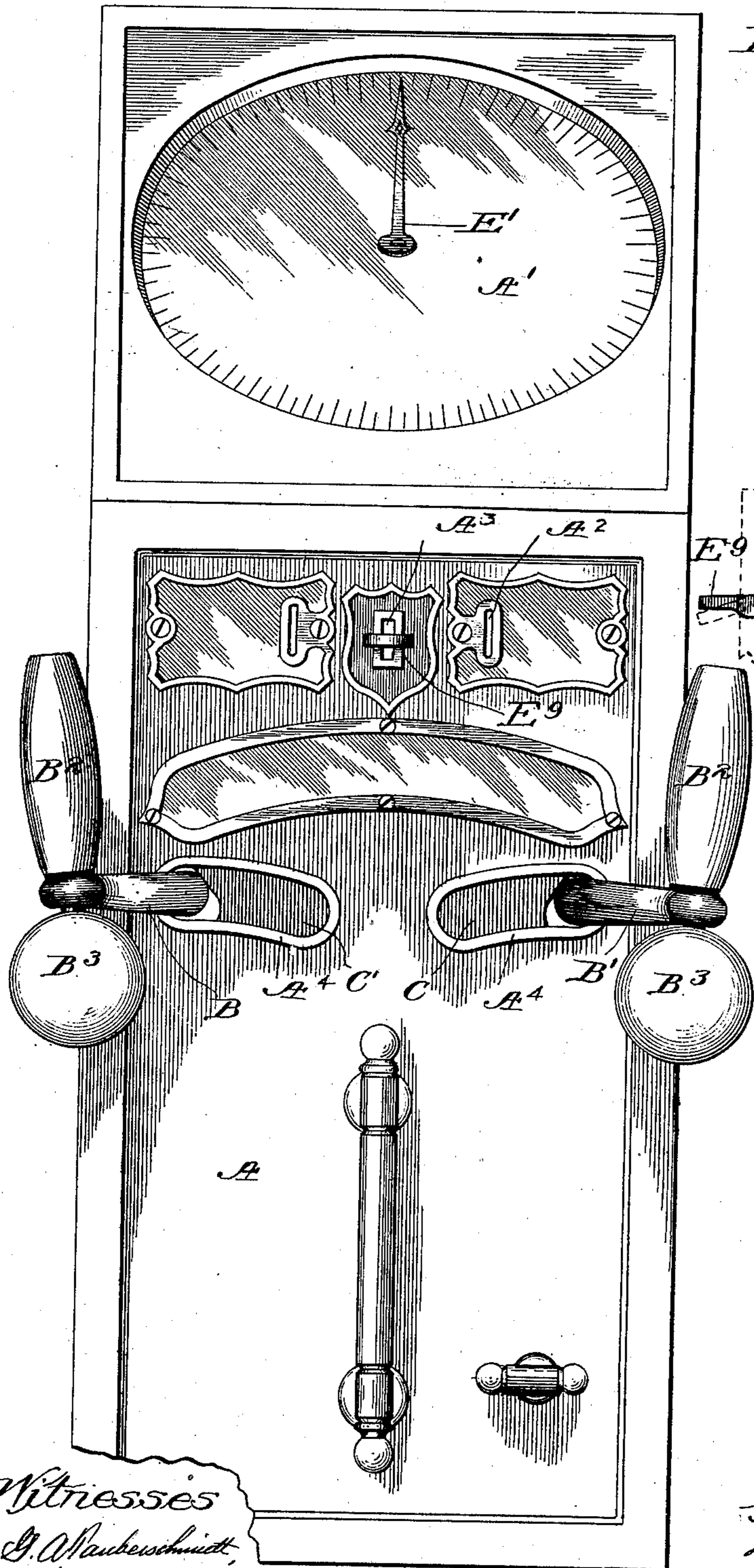


Fig. 1.

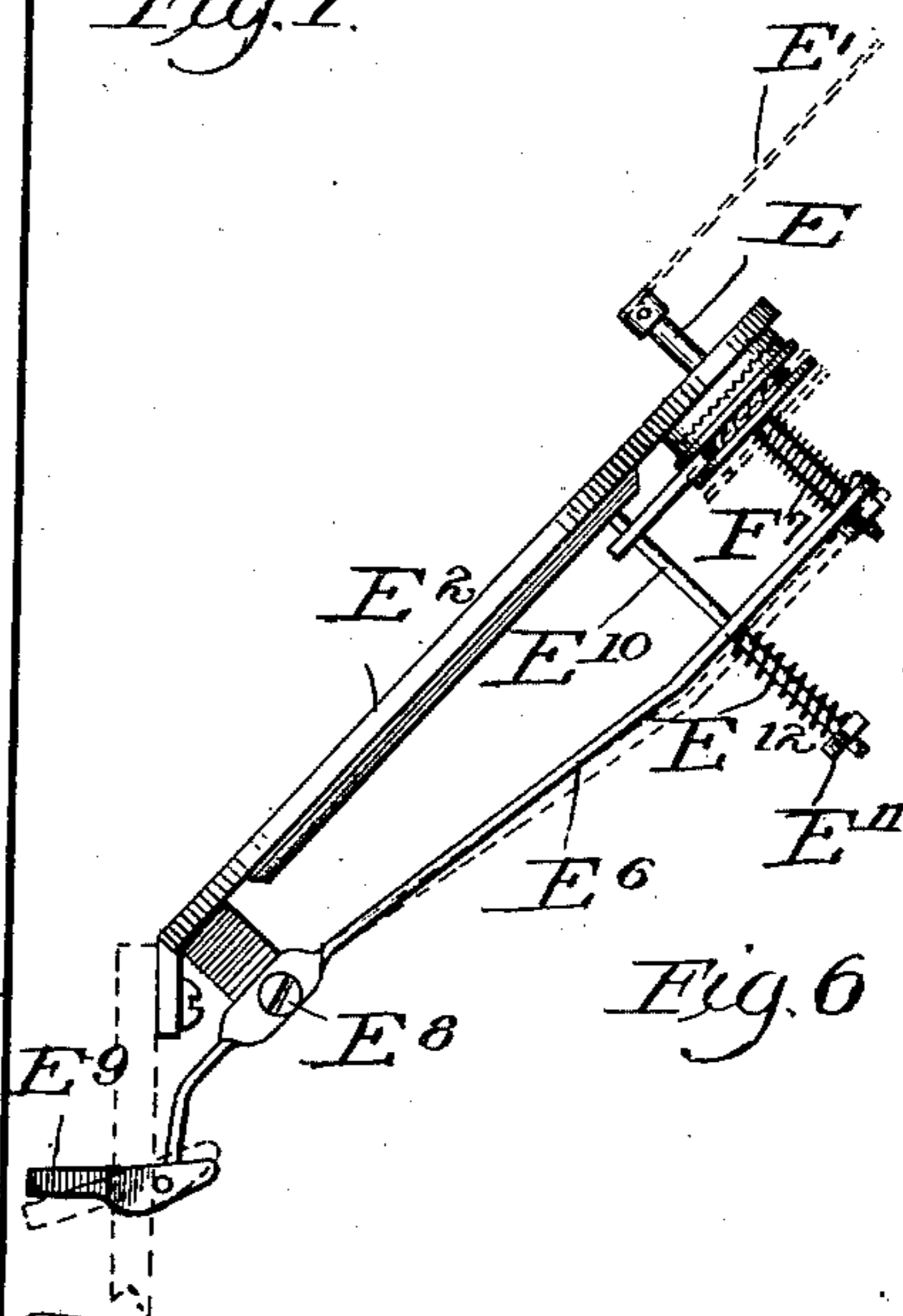
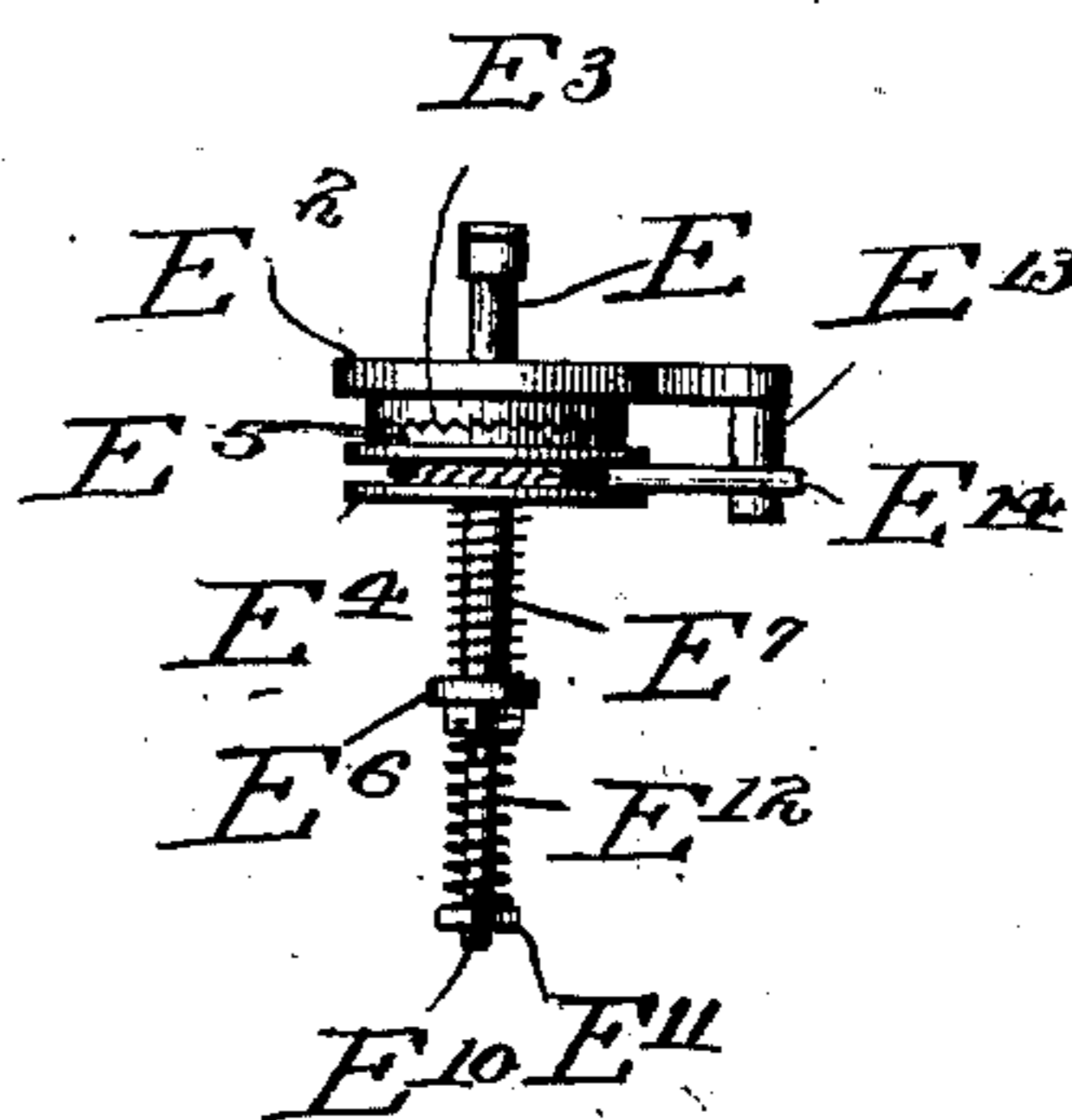


Fig. 6.

Fig. 7.



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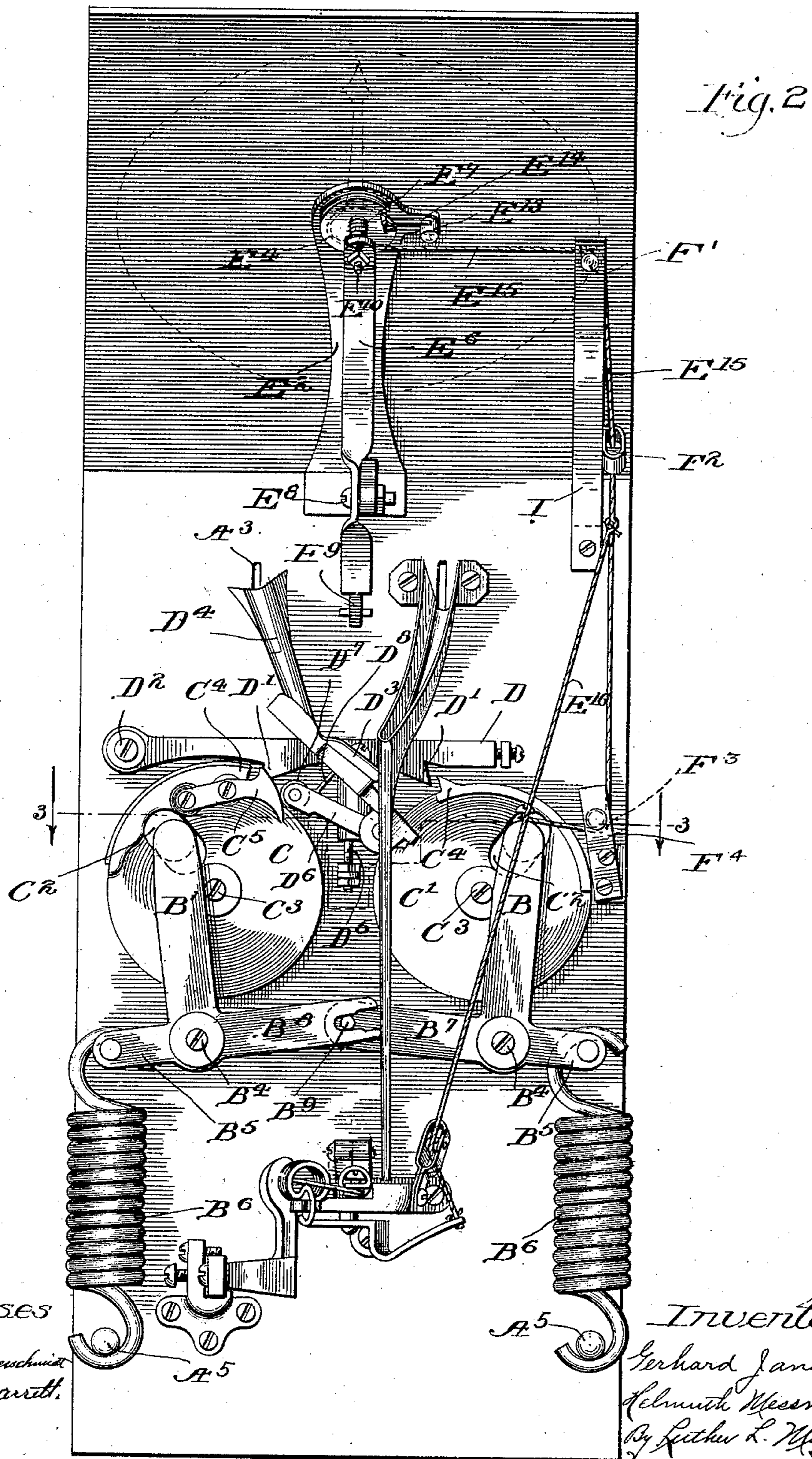
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3 Sheets—Sheet 2.



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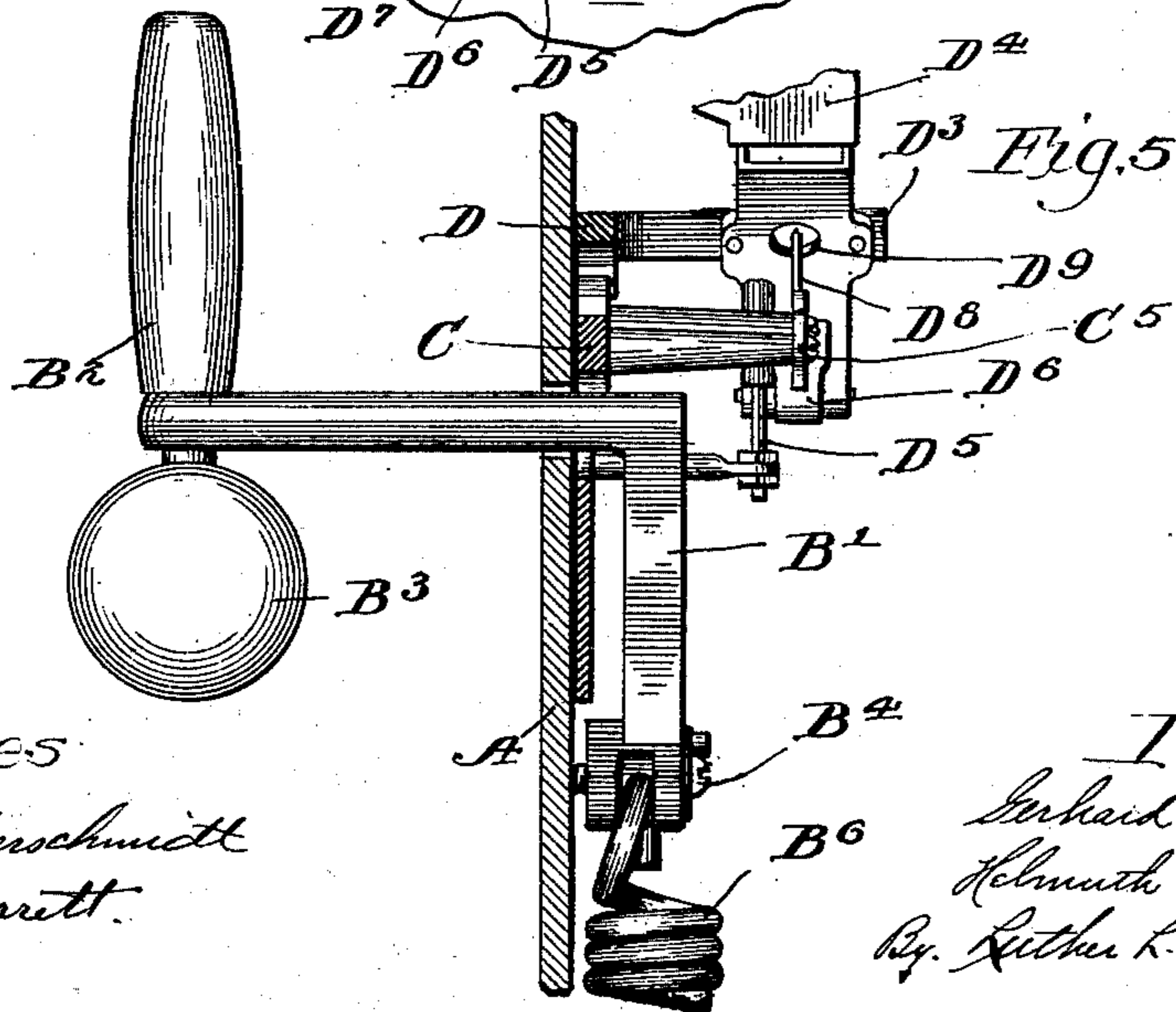
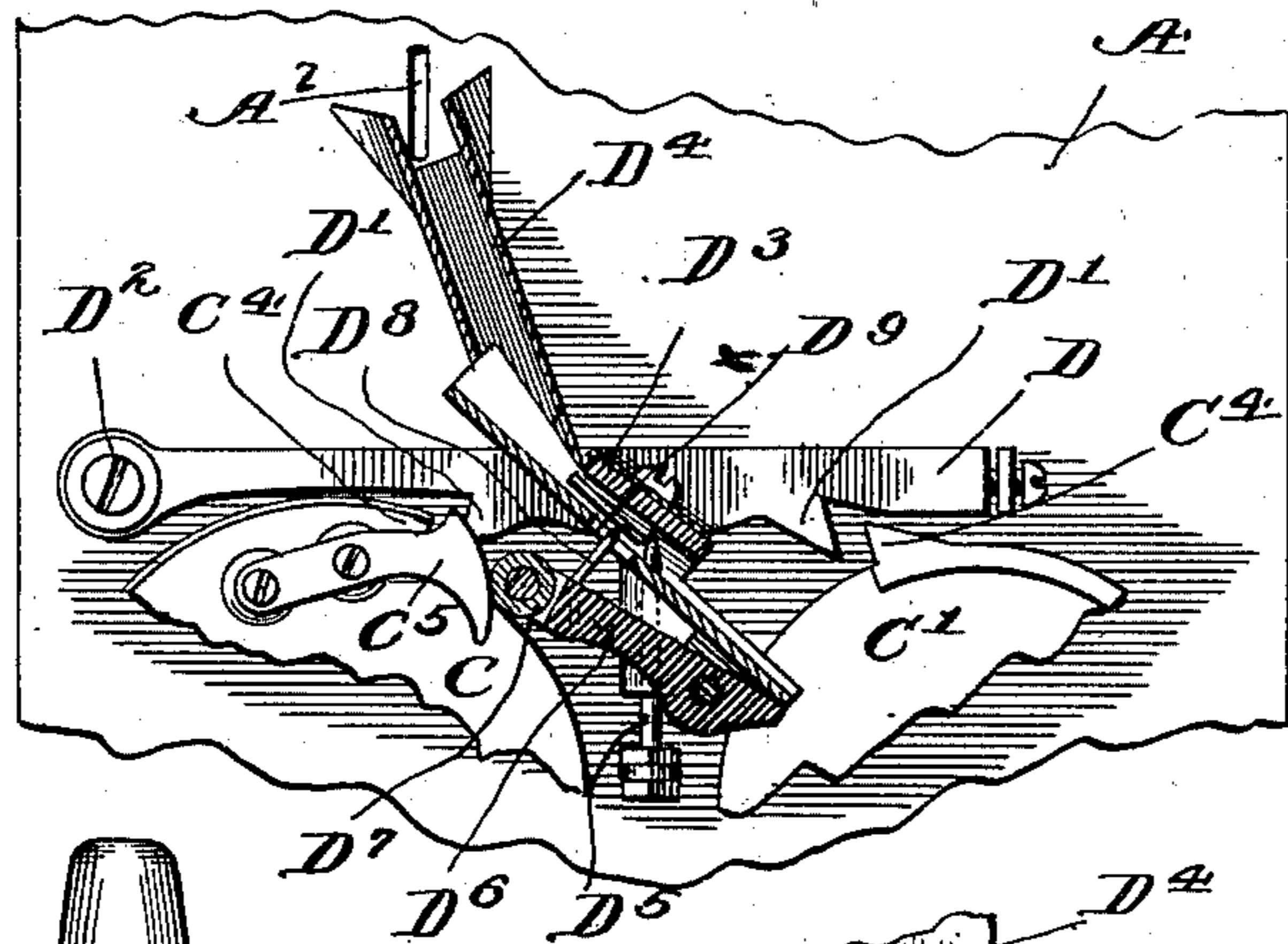
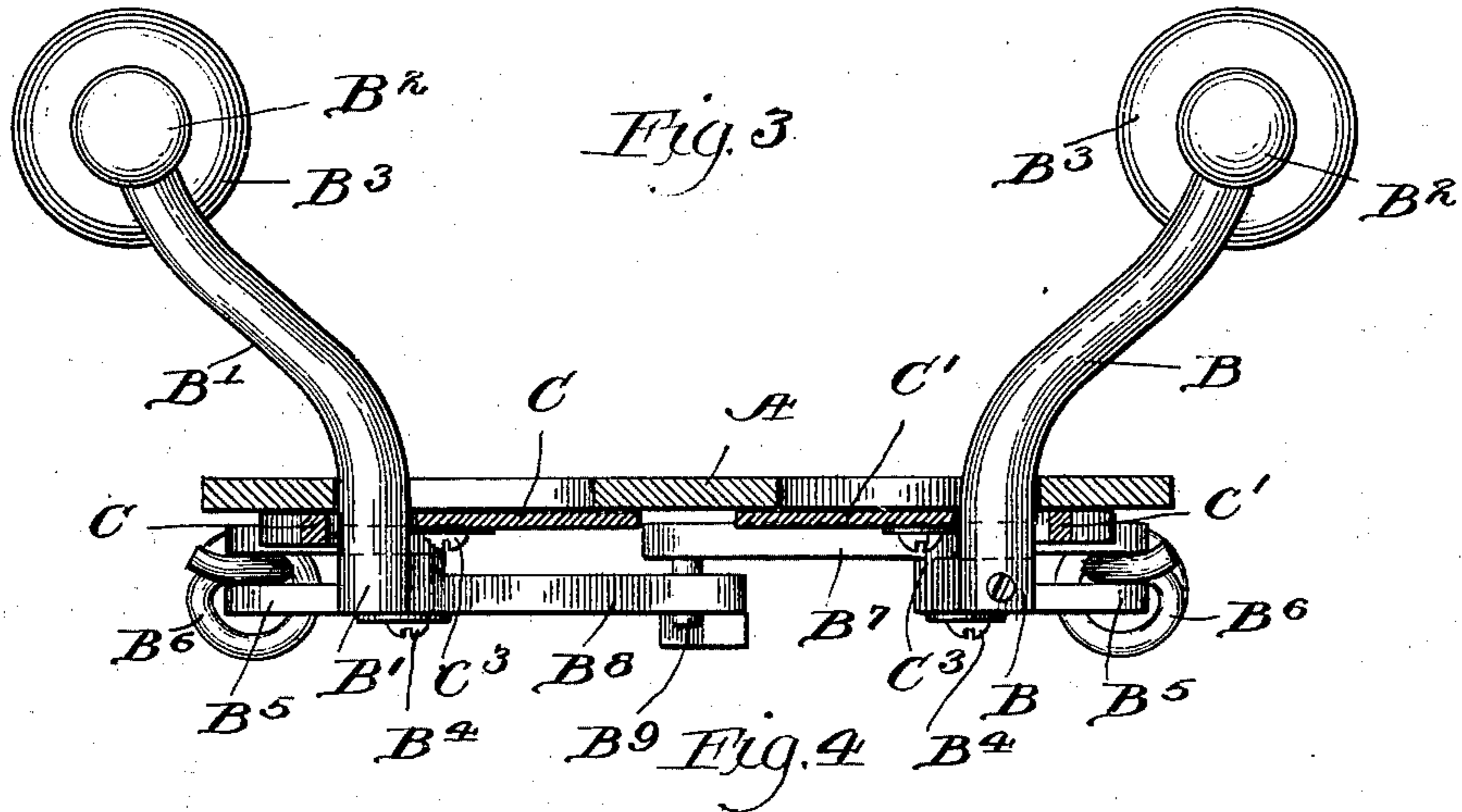
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STRENGTH TESTER.

(Application filed Dec. 24, 1900.)

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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

GERHARD JANSEN AND HELMUTH MESSMANN, OF CHICAGO, ILLINOIS.

STRENGTH-TESTER.

SPECIFICATION forming part of Letters Patent No. 702,435, dated June 17, 1902.

Application filed December 24, 1900. Serial No. 40,885. (No model.)

To all whom it may concern:

Be it known that we, GERHARD JANSEN, a subject of the Emperor of Germany, and HELMUTH MESSMANN, a citizen of the United States, both residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Strength-Testers, of which the following is a specification.

10 The object of this invention is the production of a coin-controlled mechanism for testing the strength of the operator.

15 In the accompanying drawings, Figure 1 is a face view of this strength-testing mechanism. Fig. 2 is a rear elevation thereof. Fig. 3 is a sectional view on dotted line 3-3 of Fig. 2, showing the operating-handles. Fig. 4 is an enlarged view of the coin-actuated releasing mechanism. Fig. 5 is a side view of said 20 coin-controlled mechanism and one of the operating-handles. Fig. 6 is a side elevation of the dial mechanism. Fig. 7 is a top plan view of said mechanism.

25 Like letters of reference indicate corresponding parts throughout the several views.

30 In the embodiment herein shown of this invention we provide a mechanism having a pair of handles adapted to be grasped by the operator and pressed inward toward one another. The handles at their upper ends are substantially of cylindrical form; at their lower ends spherical. The operation of the device when grasping the cylindrical portion of the handles requires the exercise of much 35 less strength than when the operator grasps the spherical handles, owing to the advantage of leverage possessed by the former over the latter. The relative amount of strength exerted upon the mechanism is indicated by the 40 rotatory movement of a pointer-hand upon a dial. By a friction device this hand retains the position last assumed by it upon the dial until it has been released to the action of its restoring-spring, which carries it back to the 45 normal position.

50 In the construction of this mechanism we provide a face-plate A. At its upper end the face-plate supports a suitably-graduated dial A', which in this instance we have inclined to make it more readily visible to the operator. A coin-receiving slot A² is formed near the upper part of the face-plate A, also a slot A³

for the thumb-latch for restoring the dial-hand to its normal position. Two elongated openings A⁴ for permitting movement of the 55 arms of the strength-testing device are also provided, and two integral posts A⁵, projecting rearward from the face-plate A, furnish means for securing the springs of the testing device to the face-plate. 60

The handle-bearing arms B and B' project forwardly through the elongated openings A⁴ in the face-plate A. At their outer ends they are provided with the cylindrical handles B² and the spherical knobs B³, while at the rear 65 side of the face-plate A they turn squarely downward and are pivoted to the rear side of said face-plate by the screws B⁴. A bell-crank B⁵, integral with each of the arms B and B', provides a means for attaching the resistance- 70 springs B⁶, each of which springs is secured at its opposite end to one of the fixed posts A⁵. The arms B and B' also have inwardly-extending arms B⁷ and B⁸, respectively, the former having a fixed pin B⁹ and the latter a 75 forked end for embracing said pin, whereby the said arms B and B' are connected and are caused to oscillate together. Inward pressure exerted upon the handles B² will thus tend to rock the arms B and B' upon their piv- 80 otal screws B⁴ and will be resisted by the coil-springs B⁶.

Two shutters C and C', having the elongated openings C² therein, are pivotally 85 mounted upon the screws C³. Each of the shutters C and C' is provided with the peripheral stop projections C⁴, and the shutter C also has a releasing-cam C⁵, fixed with relation to said shutter.

A locking-lever D, provided with the two 90 teeth D', each for engaging one of the two stop projections C⁴ of the shutters C and C', is pivoted on the screw D² just above the shutter C. When no coin is presented to the mechanism, the locking-lever D occupies the 95 position indicated in Fig. 2 and prevents the operation of the arms B and B'. A coin-pocket D³ is secured to the locking-lever D near its middle portion and is in communication with the coin-receiving slot A² in the 100 face-plate A by means of the coin-chute D⁴. A stop-pin D⁵, fixed to the rear side of the face-plate A, projects upward through a suitable opening in said coin-pocket and prevents

the immediate passage of the coin through the coin-pocket. A lifting-latch D^6 is pivoted to the lower end of the coin-pocket D^3 and at its free end has a roller D^7 , adapted to engage the releasing-cam C^5 of the shutter C . A pin D^8 projects upward from said lifting-latch D^6 and passes through an opening D^9 into the coin-pocket D^3 . When a coin has been presented to the mechanism, it falls through the coin-chute D^4 and into the coin-pocket D^3 , where it will be stopped by the stop-pin D^5 . The mechanism of the tester may now be operated. The inward movement of the arms B and B' will oscillate the shutters C and C' , and the releasing-cam C^5 will strike the roller D^7 , raise the lifting-latch D^6 , and the pin D^8 of the latter striking the coin in the pocket D^3 will raise the locking-lever D , so that the teeth D' of said lever will not engage the stop projections C^4 of the shutters C and C' . When no coin is in the pocket D^3 , the pin D^8 passes freely through the opening in said pocket and the locking-lever D is not raised.

To register the power exerted by the operator, the dial mechanism is provided. This mechanism consists of a shaft E for supporting a dial-hand E' , which shaft is rotatably supported in a bearing at the upper end of the rigid arm E^2 , secured to the face-plate A . The rear side E^3 of the arm E^2 is radially corrugated at a point surrounding the bearing for said shaft E . The shaft E carries the sheave E^4 , fixed thereon, and the side of said sheave adjacent to the arm E^2 is provided with a leather facing E^5 , corresponding in size to the corrugated surface E^3 . A pivoted arm E^6 supports the rear end of the shaft E , and the coil-spring E^7 , surrounding said shaft, is secured to said shaft at one end and to the arm E^6 at the other. The arm E^6 is pivoted upon the bolt E^8 and extending downward therefrom is engaged at its lower end by the thumb-latch E^9 , the forward end of which latch projects from the front of the face-plate A . A pin E^{10} extends from the arm E^6 rearward through an opening in said arm, and this pin is threaded at its rear end and has an adjusting-nut E^{11} thereon. Between the nut E^{11} and the arm E^6 is an expansion coil-spring E^{12} , surrounding the pin E^{10} , the tendency of which spring is to hold the upper end of the arm E^6 toward the arm E^2 , and thus make a frictional engagement between the leather facing E^5 of the sheave E^4 and the corrugated surface E^3 of said arm E^2 . By pressing downward upon the thumb-latch E^9 the arm E^6 is rocked upon its pivot E^8 and the frictional engagement between the leather facing of the sheave and the corrugated surface of the arm relieved. The spring E^7 , coiled about the shaft E , acting like the spring of a roller-shade, will then restore said shaft to its normal position, a stop E^{13} , rigid with the arm E^2 , engaged by a pin E^{14} , extending radially from the sheave E^4 , stopping the rotation of the shaft E , and thus limiting the movement

of the dial-hand E' . A cord E^{15} , passing over and secured to said sheave E^4 , is supported by sheaves F' and F^2 on the arm F and passing about the sheave F^3 in the bracket F^4 is connected with the upwardly-extending arm B at a point where a movement of said arm will pull said cord and rotate said dial-hand E' . A movement of the arms B and B' will thus pull said cord E^{15} and cause the shaft E^4 to be rotated, winding up the coil-spring E^7 upon the shaft E and rotating the hand E' upon the dial A' .

In the operation of this strength-tester a coin of the proper denomination is inserted into the coin-receiving slot A^2 . When a person desires to use this strength-tester, he approaches the machine, drops the required coin into the slot A^2 , grasps the handles B^2 or the balls B^3 , and presses inward as though to bring both hands together. The inserted coin falls through the coin-chute D^4 into the pocket D^3 and is retained therein by the stop-pin D^5 . Pressure upon the arms B and B' oscillates said arms upon their pivots B^4 , stretching the tension-springs B^6 . The shutters C and C' are at the same time turned upon their pivotal bearings and the latch D^6 raised by the engagement of the fixed cam C^5 with the roller D^7 at the free end of said latch. The pin D^8 of said latch D^6 strikes against the under face of the coin in the pocket D^3 , raises said pocket, and with it the locking-lever D . The raising of the locking-lever D withdraws the stop-teeth D' thereof from the path of the stop projections C^4 of the shutters C and C' and permits a full movement of the arms B and B' . The movement of the arm B' causes the cord E^{15} to be drawn downward, unwinding a portion of said cord from the sheave E^4 and turning the hand E' upon the dial A' , at the same time winding up the coil-spring E^7 upon the shaft E . The frictional contact of the leather facing E^5 with the corrugated face of the arm E^2 , produced by the pressure exerted upon the arm E^6 by the coil-spring E^{12} , prevents the return of the hand to its normal position after the arms B and B' have been released and assume their normal positions. When it is desirable to restore the dial-hand to its initial position, the thumb-latch E^9 , projecting from the face-plate A , is depressed. This withdraws the pressure of the coil-spring E^{12} from the arm E^2 and permits the spring E^7 to restore the shaft E .

We claim as our invention—

1. In a coin-controlled strength-testing mechanism, in combination, two pivoted hand-levers; a connection between said levers; a tension-spring for each of said levers; a pivoted shutter for one of said levers; a stop projection on said shutter; a detent for engaging said stop projection; and a coin-controlled mechanism for withdrawing the detent.

2. In a coin-controlled strength-testing mechanism, in combination, two pivoted hand-levers; a connection between said levers; a tension-spring and a shutter for each of said

levers; a stop projection on each of said shutters; a detent-lever having a tooth for engaging each of said stop projections; and a coin-controlled mechanism for withdrawing the detent.

3. In a coin-controlled strength-testing mechanism, in combination, two pivoted hand-levers; a tension-spring for each of said levers; means for connecting the movement of said levers; means for locking said levers; and a coin-controlled mechanism for releasing the levers to action.

4. In a coin-controlled strength-testing mechanism, in combination, two pivoted hand-levers; a connection between said levers; a tension-spring and a shutter for each of said levers; a stop projection for each of said shutters; a detent-lever having a tooth for engaging each of said stop projections; a coin-pocket fixed with relation to said detent-lever; a stop-pin in said pocket; and means adapted to engage the coin and move said coin-pocket and said detent-lever.

5. In a coin-controlled strength-testing mechanism, in combination, two pivoted hand-levers; a connection between said levers; a tension-spring and a shutter for each of said levers; a stop projection for each of said shutters; a fixed cam for one of said shutters; a detent-lever having a tooth for engaging each of said stop projections; a coin-pocket fixed with relation to said detent-lever; a stop-pin in said pocket; a lever pivoted with relation to said coin-pocket; and a coin-engaging pin on said lever.

6. In a coin-controlled strength-testing mechanism, in combination, a face-plate having two elongated openings therein; two hand-levers extending through said openings, pivotally mounted with relation to said face-plate; a connection between said levers; a

bell-crank on each of said levers; two tension-springs fixed with relation to said face-plate, and having connection with said bell-crank levers; a shutter for each of said levers; a stop projection for each of said shutters; a fixed cam for one of said shutters; a pivoted detent-lever having a tooth for engaging each of said stop projections; a coin-pocket fixed with relation to said detent-lever; a stop-pin fixed with relation to the face-plate, extending into said coin-pocket; a lever pivoted with relation to said coin-pocket, which lever is adapted to be engaged by the fixed cam on one of said shutters; and a coin-engaging pin on said lever.

7. In a coin-controlled strength-testing mechanism, in combination, a pivoted hand-lever; a tension-spring; means for preventing the operation of the hand-lever; a coin-controlled mechanism for releasing the hand-lever to action; an indicator-dial; a longitudinally-slidable shaft; a dial-hand fixed to said shaft; a sheave rigidly mounted on said shaft; a cord extending over said sheave and connected with said hand-lever; a coil torsion-spring surrounding said shaft, adapted to restore said sheave to its normal position after said sheave has been rotated by the movement of the hand-lever; a friction-surface adjacent to said sheave; a spring for sliding said shaft to move said sheave into frictional engagement with said friction-surface; and a lever and a thumb-latch for releasing said sheave from its engagement with said surface.

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