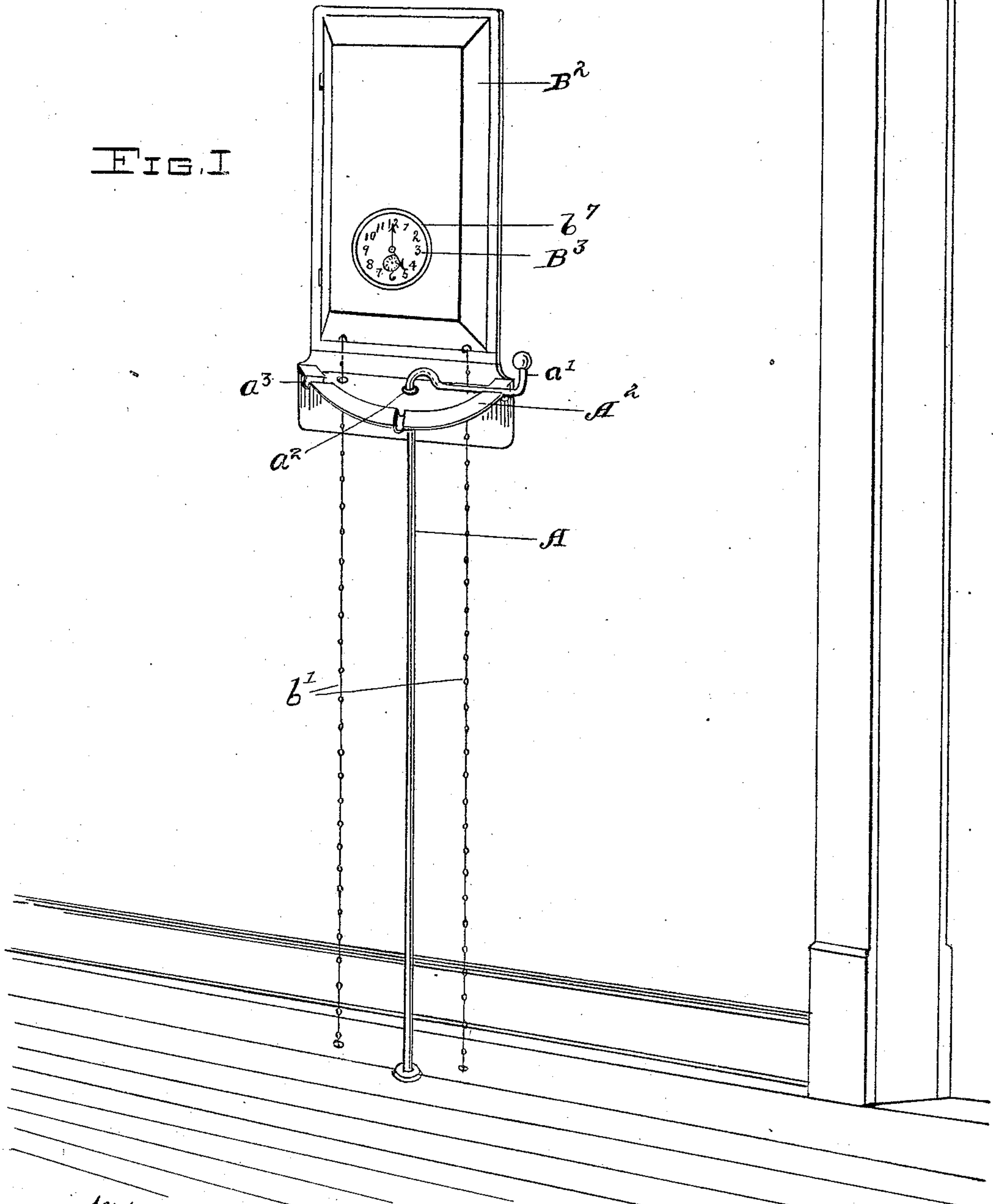


954,032.

Patented Apr. 5, 1910.

2 SHEETS—SHEET 1.

FIG. I



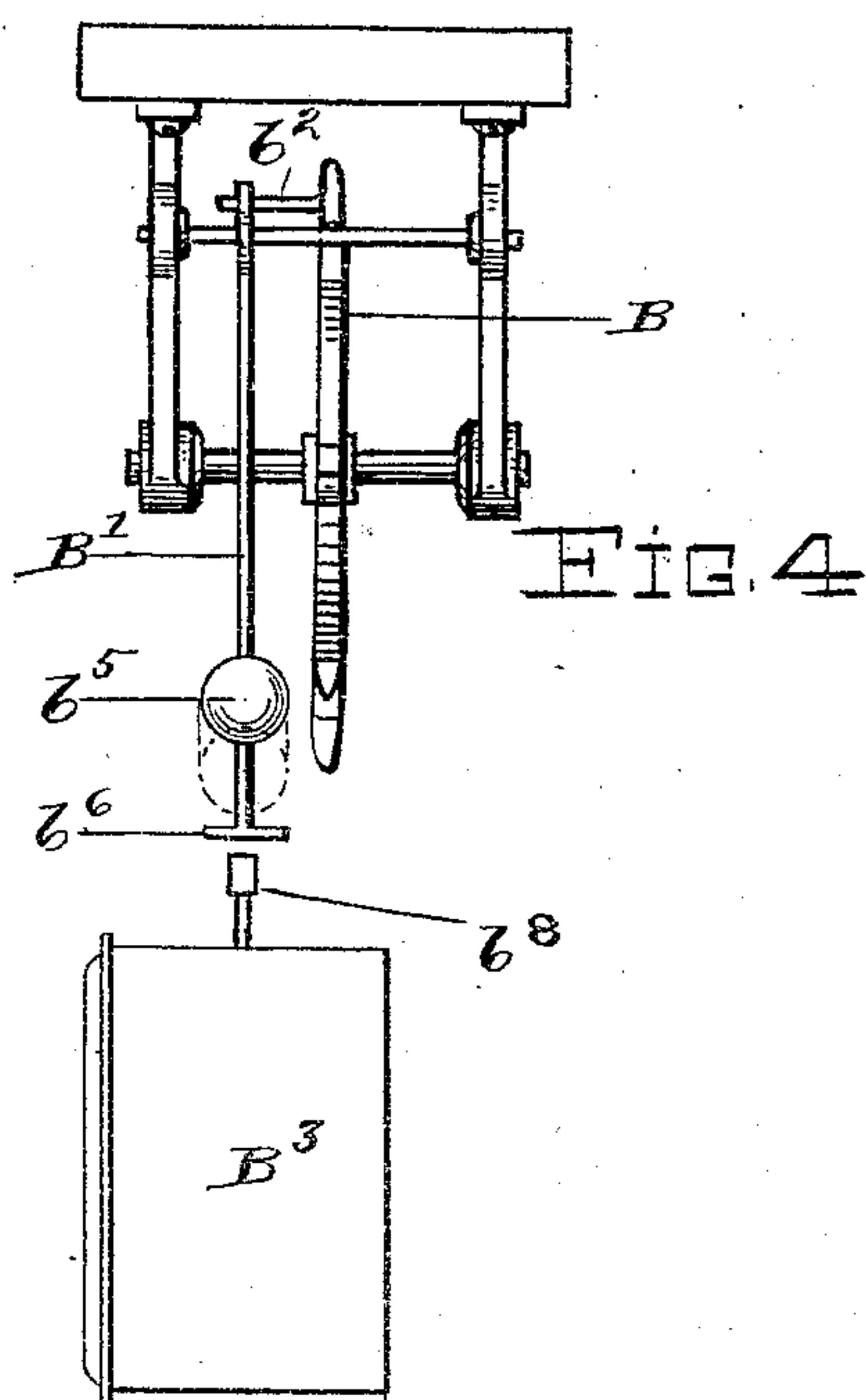
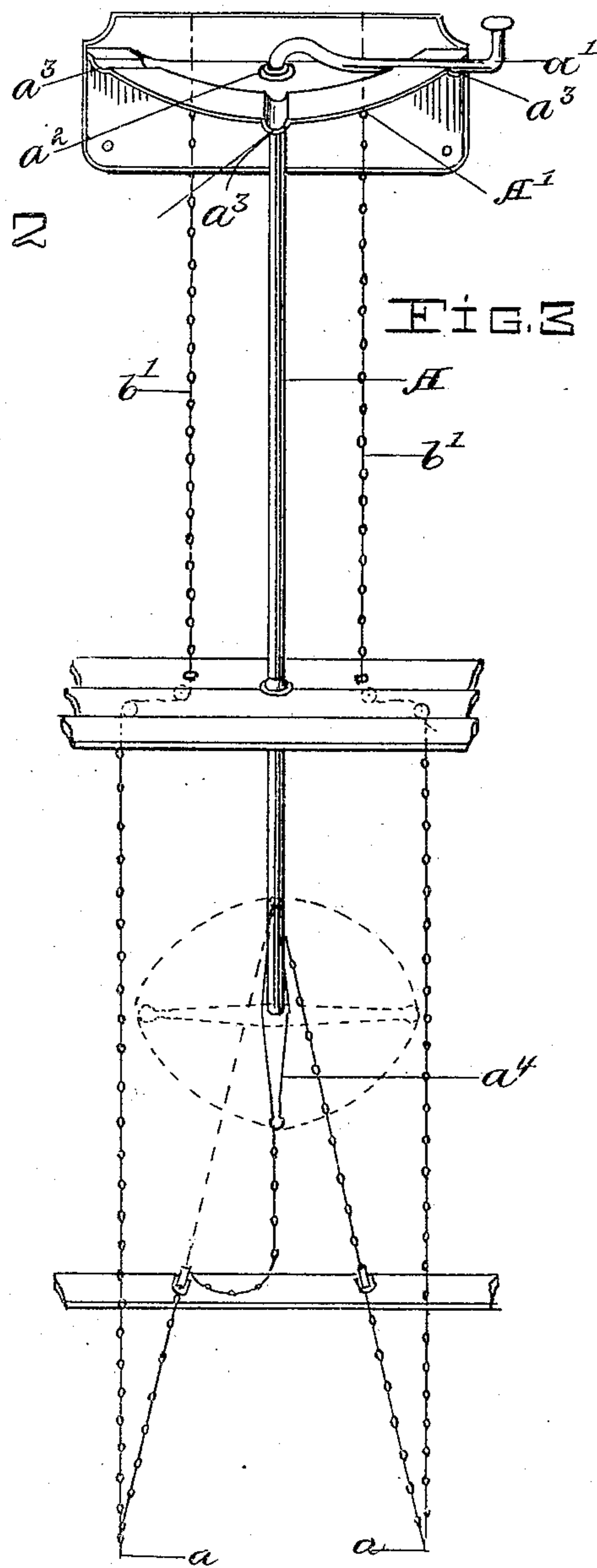
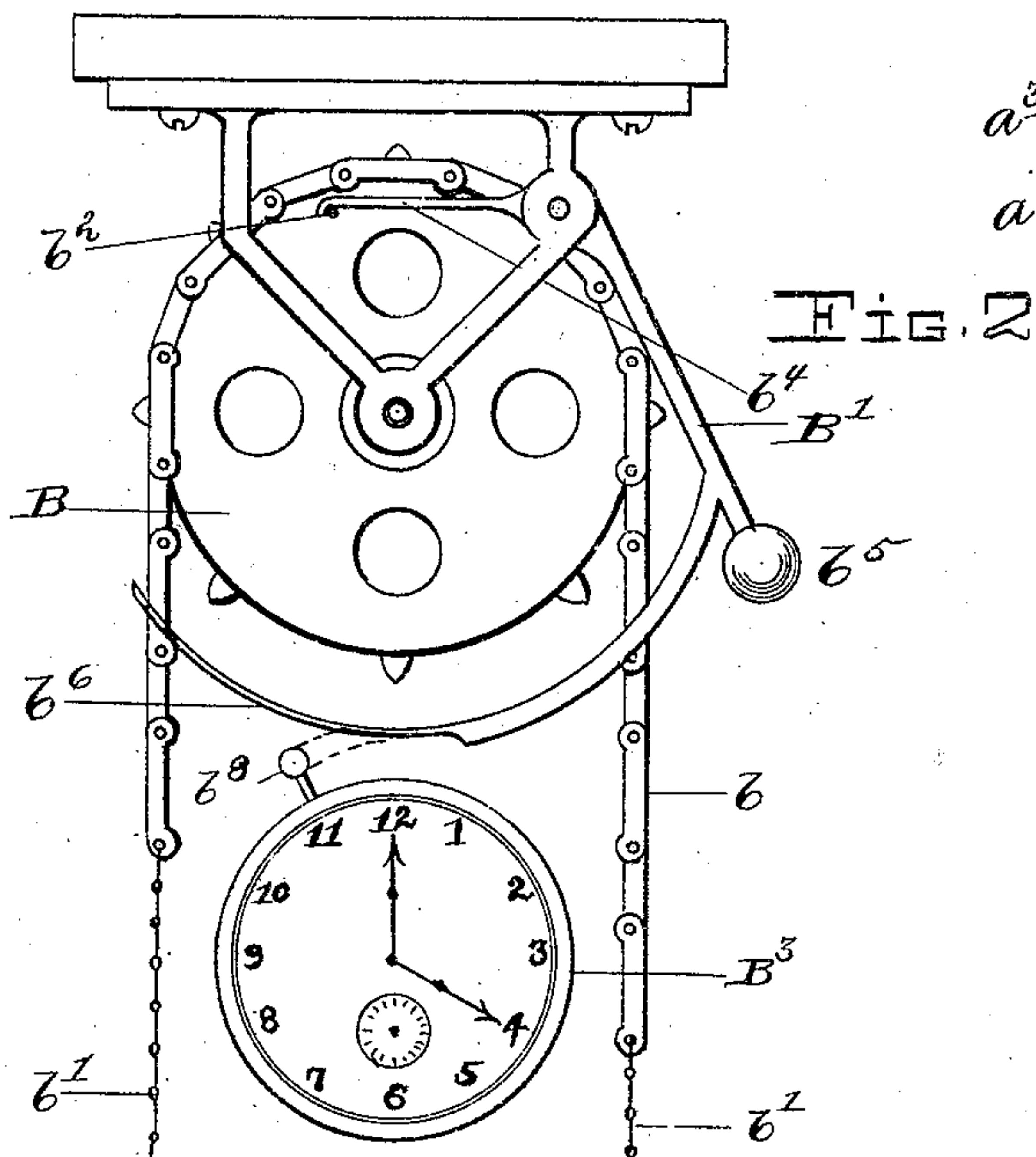
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Attorney.

954,032.

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DRAFT REGULATOR.  
APPLICATION FILED APR. 8, 1909.

Patented Apr. 5, 1910.  
2 SHEETS—SHEET 2.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

DWIGHT M. KIMMEL, OF RAVENNA, OHIO.

DRAFT-REGULATOR.

954,032.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed April 8, 1909. Serial No. 488,691.

*To all whom it may concern:*

Be it known that I, DWIGHT M. KIMMEL, a citizen of the United States, and a resident of Ravenna, county of Portage, and State of Ohio, have invented a new and useful Improvement in Draft-Regulators, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The draft regulator constituting the present invention, is designed for use in connection with any of the various types of heating apparatus commonly employed in residences and other buildings, and has as its object the provision of a device whereby the draft of such heating apparatus may be adjusted manually in the ordinary way, or automatically by time actuated means, as desired, and without interference between the parts of the device.

To the accomplishment of the foregoing and related ends said invention, then, consists of the means hereinafter fully described, and particularly pointed out in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:—Figure 1 illustrates in perspective the portion of the regulating apparatus that will ordinarily be installed on one of the upper floors of the building; Fig. 2 is a front elevational view of the mechanism of the portion of the apparatus illustrated in Fig. 1; Fig. 3 is a similar view of the portion of the apparatus extending below the floor whereon the portion illustrated in Figs. 1 and 2 is located; and Fig. 4 is a partial side elevation and partial section of the apparatus appearing in Fig. 2.

It has not been deemed necessary in view of the general applicability of the device to the controlling of furnaces or heaters of various kinds, to illustrate any of the details of such a furnace or heater. It suffices accordingly to show simply, as in Fig. 3, the two chains or cords *a a* that lead respectively to the feed draft cover, and check draft cover of such furnace. As is well understood, these are designed to be operated in reverse fashion, that is when the check draft cover is closed, the feed draft cover

is open and vice versa. For convenience, I shall hereinafter refer to the "draft" as being "open" in the first case, and "closed" in the second. As has been indicated, my improved regulator comprises means whereby such adjustment of the drafts may be effected either manually, and that from an upper floor or in the furnace room as desired, or automatically by time controlled mechanism. The details of the manual control and automatic control will now be taken up and described in the order named.

Extending upwardly from the furnace chamber through the intervening floor or floors into the room from which it is desired the manual control of the furnace may be exercised, is a light rod or shaft *A*, the upper end of which is bent over to form a lever *a'*, or otherwise provided with a handle, by means of which such rod may be rotated to occupy various angular positions about its axis, as will be obvious. For supporting the upper end of the rod, a bearing *a<sup>2</sup>* is provided in a horizontal plate *A'* supported from a bracket attached to the wall or the like, which plate is provided with a plurality of recesses *a<sup>3</sup>* adapted to receive the handle lever in question, and retain the same in whichever of the foregoing angular positions as it is to be utilized in the adjustment of the furnace draft. To rotate the shaft or rod, it hence becomes necessary to lift the same a short distance in order to first free said handle from the groove in which it chances to be resting. Thereupon rotation is freely had. Inasmuch as the rod may be lifted from its lower end as well as its upper end, it will be obvious that possibility of this adjustment is not confined to the upper end but that the device may be rotated from the furnace room as well as from the room wherein such upper end is located. For communicating the rotative movement of the shaft to the chains *a*, a cross arm *a<sup>4</sup>* is mounted on the lower end of said shaft, to the outer ends of which such chains are respectively attached.

The time controlled portion of the apparatus is conveniently located contiguous to the upper end of the manually operable rod just described, and with this in view, is shown as mounted upon a vertical portion of the same bracket *A'* wherein the upper rod of such is journaled. This apparatus comprises, Figs. 2 and 4, simply a sprocket wheel *B* over which passes a section of a



sprocket chain  $b$  connected at its free ends with ordinary chains or cords  $b'$  that pass downwardly parallel with the shaft  $A$  into the furnace room and are there connected at points below the ends of the cross-arm  $a'$  with the chains  $a$  that lead to the draft covers of the furnace. Sprocket wheel  $B$  bears on its outer face a pin  $b^2$  with which a pivoted detent or latch  $b^4$  is adapted to engage, such latch forming one end of a bell-crank  $B'$ , the other end  $b^5$  of which is weighted and is, in addition, provided with a curved arm  $b^6$  that extends transversely below the sprocket wheel.

The mechanism just described, is designed to be included within an inclosing box  $B^2$ , Fig. 1, that is hinged to the wall bracket, so as to form, in effect, a door. Mounted in such door is a clock  $B^3$  preferably an ordinary alarm clock suitable provision being made whereby such a clock may be secured in place or removed as desired, and an aperture  $b^7$  in the door rendering the face of the clock visible, so as to permit the use of the time-piece in the ordinary fashion, as well as for the actuation of the apparatus. When the door is in its closed position, the clapper  $b^8$  of the clock is brought into such position with respect to the transverse arm  $b^6$  of the latch or detent shown in Fig. 2, as to permit it to strike the latter and thus free the sprocket wheel from its engagement with said detent.

The general operation of the apparatus, thus described in detail may be briefly set forth. As has been indicated, the draft covers of the furnace may be set from the upper floor by simply lifting and then rotating into desired position the handle  $a'$  on upper end of the rod or shaft  $A$ . Should it be desired to effect such adjustment from the furnace chamber, it is not necessary to go to the upper floor and there set the apparatus and then again return to the furnace chamber, but adjustment may be effected directly as previously explained. The automatic operating portion of the apparatus is, of course, designed simply to start the furnace going by opening the feed draft cover and closing the check draft cover, so that operation of said apparatus is required in one direction only. To this end the covers in question are appropriately weighted, or weights are otherwise provided in connection with the apparatus to insure movement of the chain  $b$ , that passes over the sprocket wheel, in the proper direction whenever such sprocket wheel is free and the manually controlled apparatus so set as to permit the desired movement of the chains  $a$ . The latter, it will be observed, are connected with the cross-arm of said rod or shaft, as well as with chains  $b'$ . Accordingly, whenever the clapper of the alarm clock is set off, the detent will be released

and the drafts automatically allowed to assume the positions determined beforehand by the setting of lever  $a'$ , which will usually be that of full open draft. It should further be remarked, in regard to the operation of this detent by the clapper of the clock, that there is no direct connection between the parts in question. In other words, the clapper is not required to lift the dead weight of the detent, light as it is, but is allowed to strike the same with a distinct hammer blow that is equally effective to operate the detent and relieve the clock mechanism of all undue strain.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. The combination with a furnace, of draft controlling means therefor comprising a rigid member extending upwardly from one chamber through the floor to the chamber above, means connected with the lower end of said member for regulating the draft of the furnace, manually operable means for retaining said member in position to regulate said drafts as desired, said member being capable of adjustment from either end, and time-controlled means for retaining said draft-regulating means in closed position independently of the position of said member.

2. The combination with a furnace, of draft controlling means therefor comprising a rigid member extending upwardly from one chamber through the floor to the chamber above, means connected with the lower end of said member for regulating the draft of the furnace, manually operable means for retaining said member in position to regulate said drafts as desired, said member being capable of adjustment from either end, a sprocket wheel, a chain passing over the same and connected with said draft-regulating means, and a time-controlled device for holding said sprocket wheel against movement, whereby said draft-regulating means may be retained in closed position independently of the position of said member.

3. The combination with a furnace, of draft controlling means therefor comprising a rod, both rotatably and longitudinally movable, extending upwardly from the furnace chamber through the floor to a chamber above, a bracket in such upper chamber provided with bearing for the upper end of said rod, said bracket being adapted to retain said rod in desired angular position when said rod is lowered but to permit rotation of said rod in its raised position, means con-



connected with the lower end of said rod for regulating the draft of the furnace and adapted to be operated by rotation of said rod, and a time-controlled device for retaining said draft-regulating means in closed position independently of the position of said rod.

4. The combination with a furnace, of draft controlling means therefor comprising a rod, both rotatably and longitudinally movable, extending upwardly from the furnace chamber through the floor to a chamber above, a bracket in such upper chamber provided with a bearing for the upper end of said rod, such end being bent to form a radially disposed lever, and said bracket having recesses adapted to retain said lever and thereby said rod in desired angular position, means connected with the lower end of said rod for regulating the draft of the furnace and adapted to be operated upon rotation of said rod, and a time-controlled device for retaining said draft-regulating means in closed position independently of the position of said rod.

5. The combination with a furnace, of draft controlling means therefor comprising a rod, both rotatably and longitudinally movable, extending upwardly from the furnace chamber through the floor to a chamber above, a bracket in such upper chamber provided with a bearing for the upper end of said rod, such end being bent to form a radially disposed lever, and said bracket having recesses adapted to retain said lever and thereby said rod in desired angular position, means connected with the lower end of said rod for regulating the draft of the furnace, a sprocket wheel mounted above said bracket, a chain passing over the same and having its ends connected with said draft regulating means, and a time-controlled device for holding said sprocket wheel against movement, whereby said draft-regulating means may be retained in closed position independently of the position of said rod.

6. The combination with a furnace, of draft controlling means therefor comprising a rod, both rotatably and longitudinally movable, extending upwardly from the furnace chamber through the floor to a chamber

above, a bracket in such upper chamber provided with a bearing for the upper end of said rod, such end being bent to form a radially disposed lever, and said bracket having recesses adapted to retain said lever and thereby said rod in desired angular position, means connected with the lower end of said rod for regulating the draft of the furnace, a sprocket wheel mounted above said bracket, a chain passing over the same and having its ends connected with said draft regulating means, a pivoted detent adapted to hold said sprocket wheel against movement, whereby said draft-regulating means may be held in closed position independently of the position of said rod, and an alarm clock supported with its clapper in position to engage said detent and thereby release said wheel.

7. The combination with a furnace, of draft controlling means therefor comprising a rod, both rotatably and longitudinally movable, extending upwardly from the furnace chamber through the floor to a chamber above, a bracket in such upper chamber provided with a bearing for the upper end of said rod, such end being bent to form a radially disposed lever, and said bracket having recesses adapted to retain said lever and thereby said rod in desired angular position, means connected with the lower end of said rod for regulating the draft of the furnace, a sprocket wheel mounted above said bracket, a chain passing over the same and having its ends connected with said draft regulating means, a pivotal detent adapted to hold said sprocket wheel against movement, whereby said draft-regulating means may be held in closed position independently of the position of said rod, a hinged door provided with an aperture and adapted to inclose said wheel and detent, and an alarm clock supported on the rear of said door with its face in such aperture, the clapper of said clock being adapted when the door is closed to strike said detent and thereby release said wheel.

Signed by me this 5th day of April, 1909.

DWIGHT M. KIMMEL.

Attested by—

ANNA L. GILL,

JNO. F. OBERLIN.