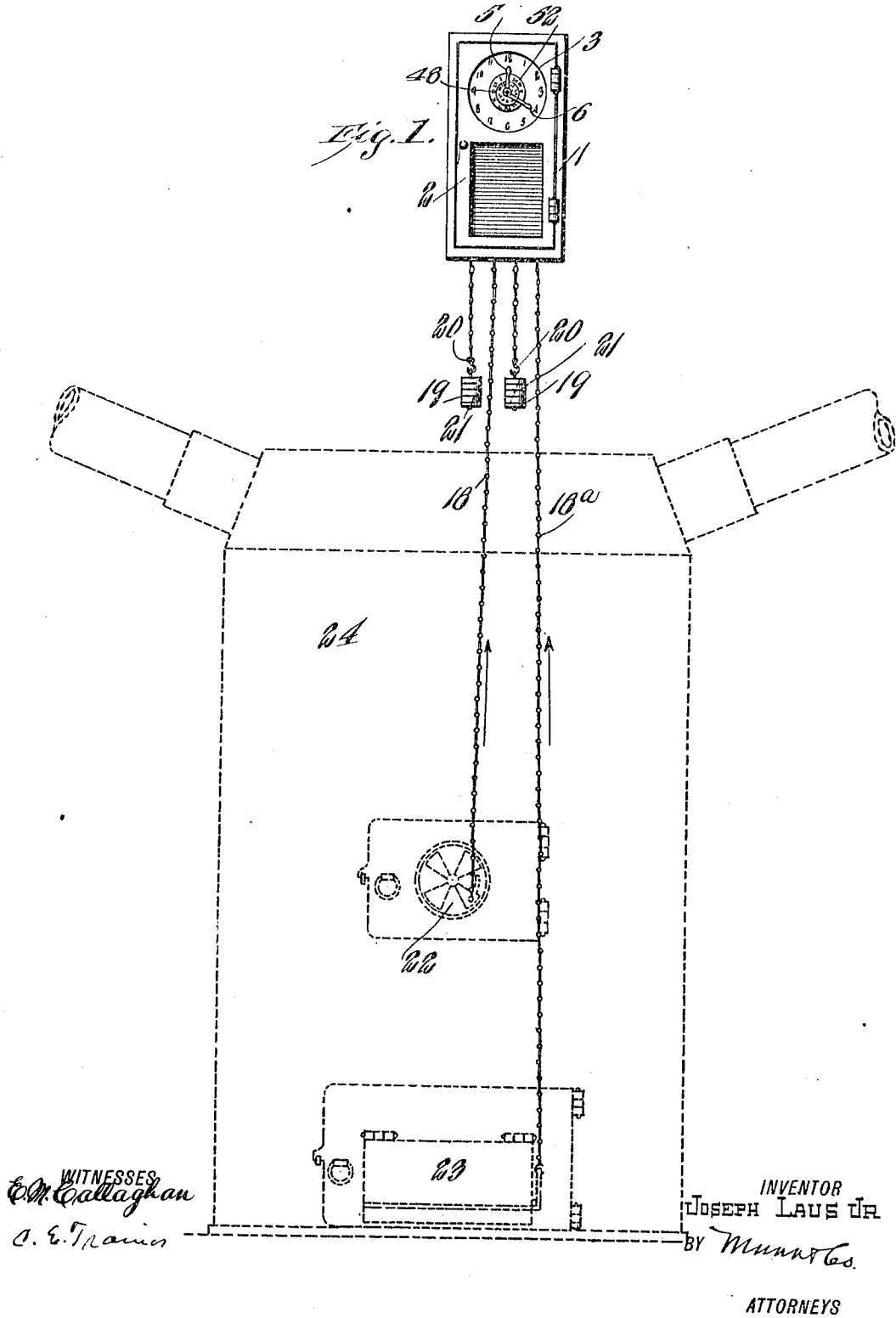


J. LAUS, JR.
DOOR AND DAMPER OPERATOR.
APPLICATION FILED MAR. 17, 1909.

954,309.

Patented Apr. 5, 1910.

3 SHEETS—SHEET 1.



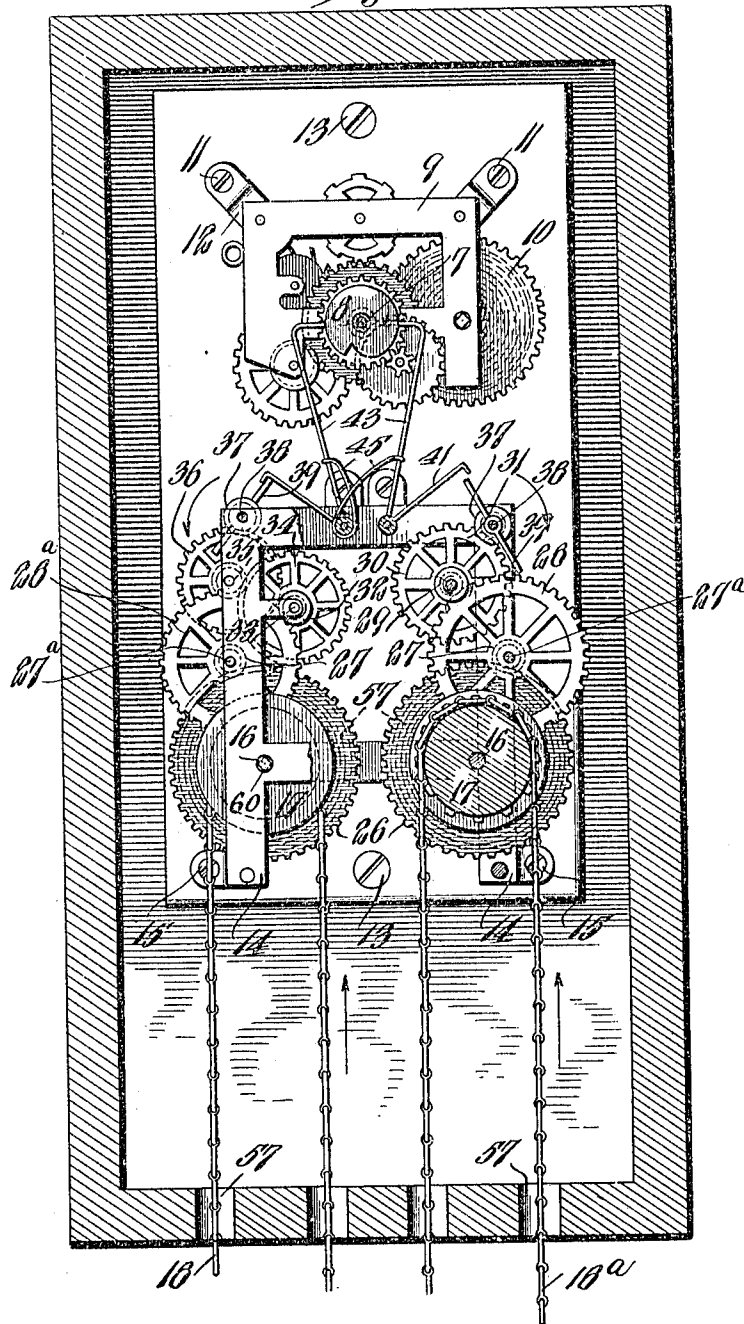
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Fig. 10.



WITNESSES
E. M. Gallagher
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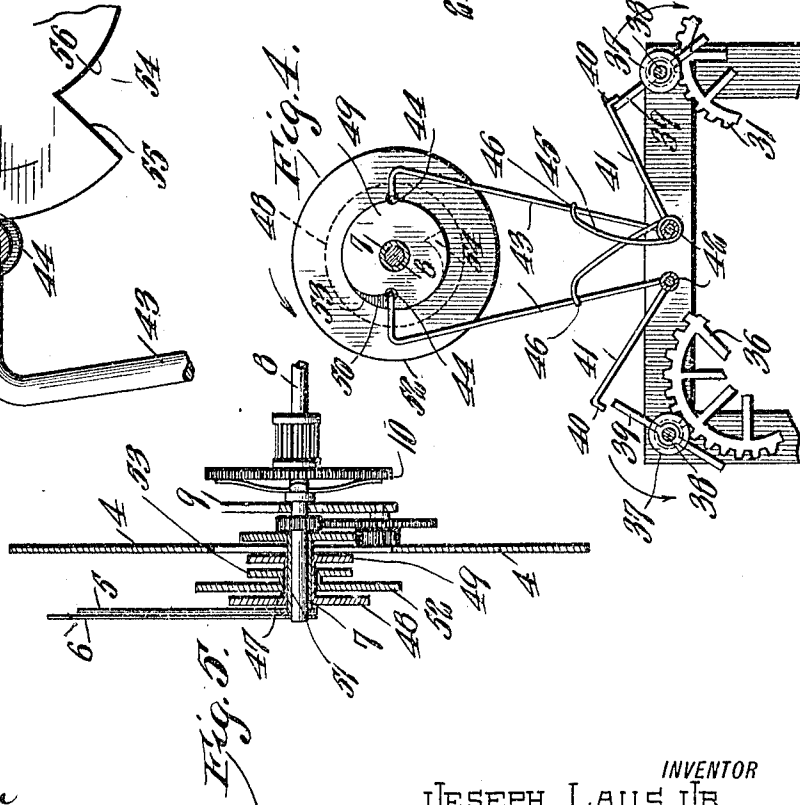
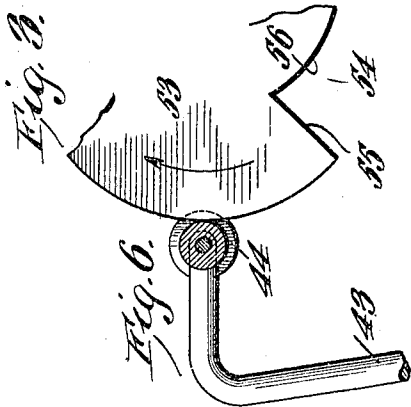
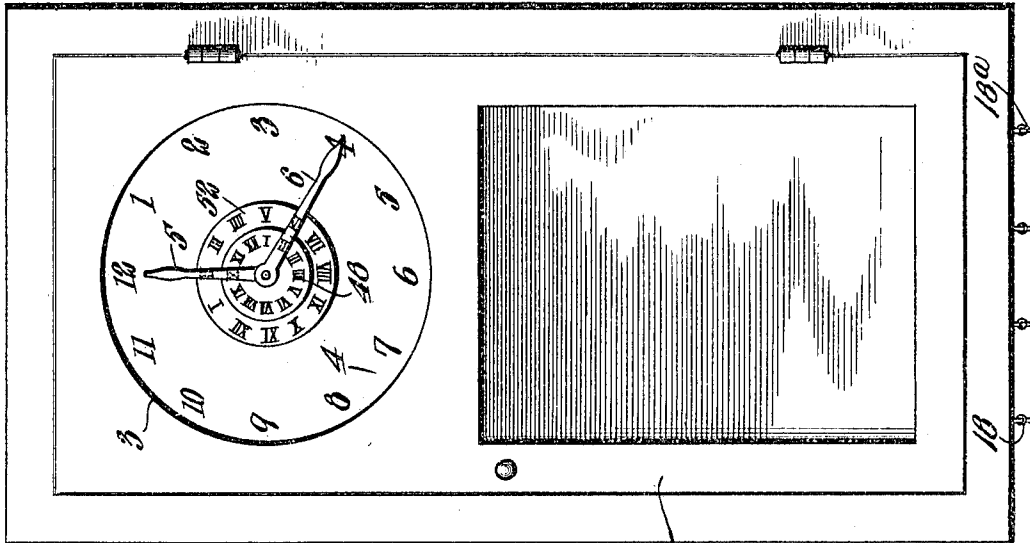
INVENTOR
JOSEPH LAUS JR
BY *Wm. & Co.*
ATTORNEYS

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WITNESSES
E. M. Gallagher
C. E. Tamer

INVENTOR
JOSEPH LAUS JR
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UNITED STATES PATENT OFFICE.

JOSEPH LAUS, JR., OF OSHKOSH, WISCONSIN.

DOOR AND DAMPER OPERATOR.

954,309.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed March 17, 1909. Serial No. 484,075.

To all whom it may concern:

Be it known that I, JOSEPH LAUS, JR., a citizen of the United States, and a resident of Oshkosh, in the county of Winnebago and State of Wisconsin, have invented certain new and useful Improvements in Door and Damper Operators, of which the following is a specification.

My invention is an improvement in door and damper operators, and consists in certain novel constructions and combinations of parts hereinafter described and claimed.

The object of the invention is to provide a spring operated mechanism normally restrained from action for opening and closing the dampers and doors of a furnace or the like at a predetermined time, which mechanism is released by a clock movement.

Referring to the drawings forming a part hereof, Figure 1 is a diagrammatic front view of the apparatus; Fig. 2 is an enlarged view of the movement and the operating mechanism looking from the rear; Fig. 3 is a front view of the movement and case; Fig. 4 is a detail of the connection between the movement and the operating mechanism; Fig. 5 is a vertical section through shaft and arbor for supporting the hands; and Fig. 6 is an enlarged detail view of a portion of Fig. 4.

In the present embodiment of the invention, the clock movement is inclosed in a case 1, provided with a door and having a dial opening 3, behind which is the dial plate 4 of the movement. The said movement may be of any desired construction, and is provided with the usual hour and minute hands 5 and 6. The hour hand 5 is secured to an arbor 7, journaled on a shaft 8 which is arranged in suitable bearings in the frame 9 of the movement, and both of the hands are driven by the usual gearing 10, which however forms no part of the invention, for which reason it is not more particularly described. The movement is secured to the back of the case by screws 11, or to a plate 12, in turn secured to the back by screws 13, and secured to the same plate below the movement is the operating mechanism for causing the opening of the doors and dampers. The said mechanism comprises a frame 14, secured to the plate by screws 15,

and near the lower end of the frame and at opposite sides, are journaled shafts 16. Secured to each shaft is a sprocket wheel 17, each of which is peripherally grooved as shown in Fig. 2, the sprocket teeth being inside of the flanges formed by the groove. Sprocket chains 18, 18^a, pass over each sprocket wheel, and to one end of each chain is connected a pea 19, by means of a hook 20 on the chain, and upon each pea is one or more weights 21. The other end of each chain is connected with the parts of the furnace 24 to be operated, in the present instance the damper 22 for the chain 18, and the ash box door 23 for the chain 18^a. It will be evident that when the sprocket wheels are turned in the direction of the arrows by the spring 57 on the shafts 16, the damper and door will be opened, while when the wheels are turned in the opposite direction they will be closed. A gear wheel 26, is also secured to each shaft 16, which gear wheel meshes with pinions 27, on other shafts 27^a, journaled in the frame. The shafts 27^a are provided with gear wheels 28 and 28^a, the gear wheel 28 meshing with a pinion 29 on a shaft 30 journaled in the frame and provided with a gear wheel 31, while the gear wheel 28^a meshes with a pinion 32 on a shaft 33 journaled in the frame, and provided with a gear wheel 34 meshing with a pinion 35 on another shaft journaled in the frame and provided with a gear wheel 36. The gear wheels 31 and 36 mesh with pinions 37 on shafts 38 journaled one at each corner of the frame at its upper end, and each shaft has secured thereto a fly governor or check 39.

The above described mechanism forms two trains of gears, as will be evident from the description, one train connecting the sprocket wheel of the chain 18 with its governor, while the other train connects the chain 18^a with its governor. An idler, the gear wheel 34, is however interposed in the latter train so that the flies are turned in opposite directions as shown by the arrows in Fig. 2. The flies are normally engaged and retained in inoperative position by hooks or catches 40, on arms 41 which project from shafts 42 journaled at the upper end of the frame near its center. The shafts

42 are each provided with a second arm 43, having its upper end bent inwardly and provided with a friction roller 44 for a purpose to be presently described. A spring 45 is coiled around one of the shafts 42, and at each end the spring is provided with a loop, 46, one loop engaging one of the arms 43 and the other loop engaging the other arm, the spring acting normally to move the arms toward each other.

A sleeve 47 is secured on the arbor 7 of the clock movement, and the sleeve is provided at its outer end with a dial 48, and at its inner end with a cam wheel 49, the said wheel having a notch 50 in its periphery, and the roller on one arm 43 engages the periphery of the cam. A second sleeve 51 is journaled on the sleeve 47, the sleeve being provided at its outer end with a dial 52 and at its inner end with a cam wheel 53, having a peripheral notch 54, and the roller on the other arm 43 engages the periphery of the cam. The dial 52 is of greater diameter than the dial 48, so that the figures on the former are outside of the figures on the latter, and all three dials are arranged concentrically, as shown in Fig. 3.

It will be evident from the description that each chain is provided with an independent mechanism operated by the springs and that both mechanisms are restrained from movement by the engagement of the catches with the flies, until said catches are released by the moving of the friction rollers into the notches of the cams, and the said notches are provided with a square face 55, over which the roller passes to enter the notch and an inclined face 56, against which the roller engages when fully entered into the notch. Each chain is provided with a suitable number of weights for keeping the same taut, which weights tend to move the chain in the direction indicated by the arrows in Fig. 1, that is in a direction to open the door or damper.

In operation the dials 48 and 52 are adjusted on the arbor to the hour at which it is desired to open the dampers and doors, by turning the respective sleeves on the arbor, it being understood that the sleeves are loose enough for this purpose, but tight enough to normally move with the arbor, and that the dials are in front of the clock dial so that they may be taken hold of and turned. The figures are so arranged on the dials that when a numeral on the dial 48 or 52 is brought opposite the hour hand on the clock dial, as for instance 6, the notch on the corresponding cam will arrive in position for engagement by the friction roller on the corresponding arm at 6 o'clock. When the rollers pass into the notches the flies are released and the action of the

springs rotates the trains of gears connecting the fly shafts with the sprocket wheels and the chains are moved to open the doors and dampers. The inclined side, or rather the length of the notch is sufficient to permit the chain to be moved far enough to open the doors and dampers before the rollers pass out of the notches, and again move the catches into engagement with the flies. The chains pass through openings 57 in the bottom of the casing, and are of a length sufficient to permit the clock movement to be arranged where desired.

It will be evident that the dials 48 and 52 may be set at different positions, to open the doors and dampers at different times, and that the chains may be connected with other parts of the furnace if desired.

Each of the shafts 16 has its outer end squared as at 60, for engagement by a key to wind up the corresponding spring.

I claim:—

1. The combination with the furnace having a damper, of a frame, a sprocket wheel at each side of the frame, a spring for driving each of said wheels, a fly governor above each of said wheels and journaled in the frame, a train of gears connecting each of said governors with the adjacent sprocket wheel, a clock movement, a shaft journaled in the frame adjacent to each governor, an arm rigid with each shaft and having a hooked end for engaging the fly to prevent movement of the governor, cams driven by the clock movement each having a depression in the periphery thereof, an arm on each of said shafts for engaging one of the cams, and a chain passing over each of said sprocket wheels, one end of the chain being connected with a damper, and adjustable weights on the other end of each of said chains.

2. The combination with the furnace having a damper, of a frame, a sprocket wheel at each side of the frames, a spring for driving each of said wheels, a fly governor above each of said wheels and journaled in the frame, a train of gears connecting each of said governors with the adjacent sprocket wheel, a clock movement, a shaft journaled in the frame adjacent to each governor, an arm rigid with each shaft and having a hooked end for engaging the fly to prevent movement of the governor, cams driven by the clock movement each having a depression in the periphery thereof, an arm on each of said shafts for engaging one of the cams, and a chain passing over each of said sprocket wheels, one end of the chain being connected with a damper, a pea connected to the other end of the weight and weights on the pea.

3. The combination with the furnace hav-

ing a damper, of a sprocket wheel, a spring
for driving said sprocket wheel, a chain con-
nected with the damper and passing over the
sprocket wheel, a weight on the other end of
5 the chain, a governor, a train of gears con-
necting the sprocket wheel with the gov-
ernor, a shaft having an arm for engaging
the governor to prevent movement thereof, | a clock movement, a cam driven thereby and
having a depression, and another arm on the 10
shaft for engaging the cam.

JOSEPH LAUS, Jr.

Witnesses:

F. C. STEWART,
GEORGIA C. FREEBORN.