

(No Model.)

2 Sheets—Sheet 1.

C. T. UMSTED.
AUTOMATIC FIRE LIGHTING DEVICE.

No. 547,233.

Patented Oct. 1, 1895.

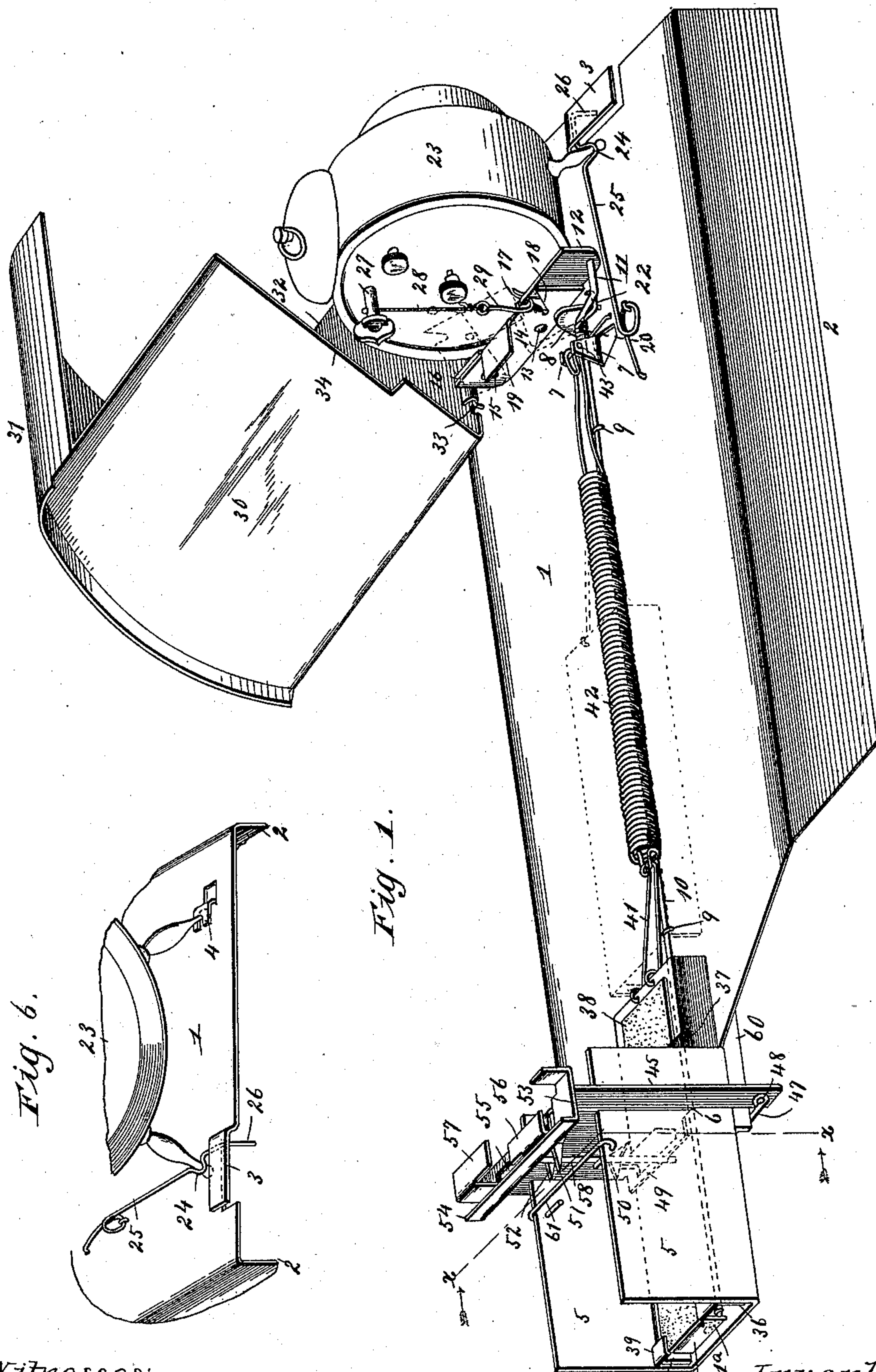


Fig. 6.

Fig. 1.

Witnesses:

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By

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(No Model.)

2 Sheets—Sheet 2.

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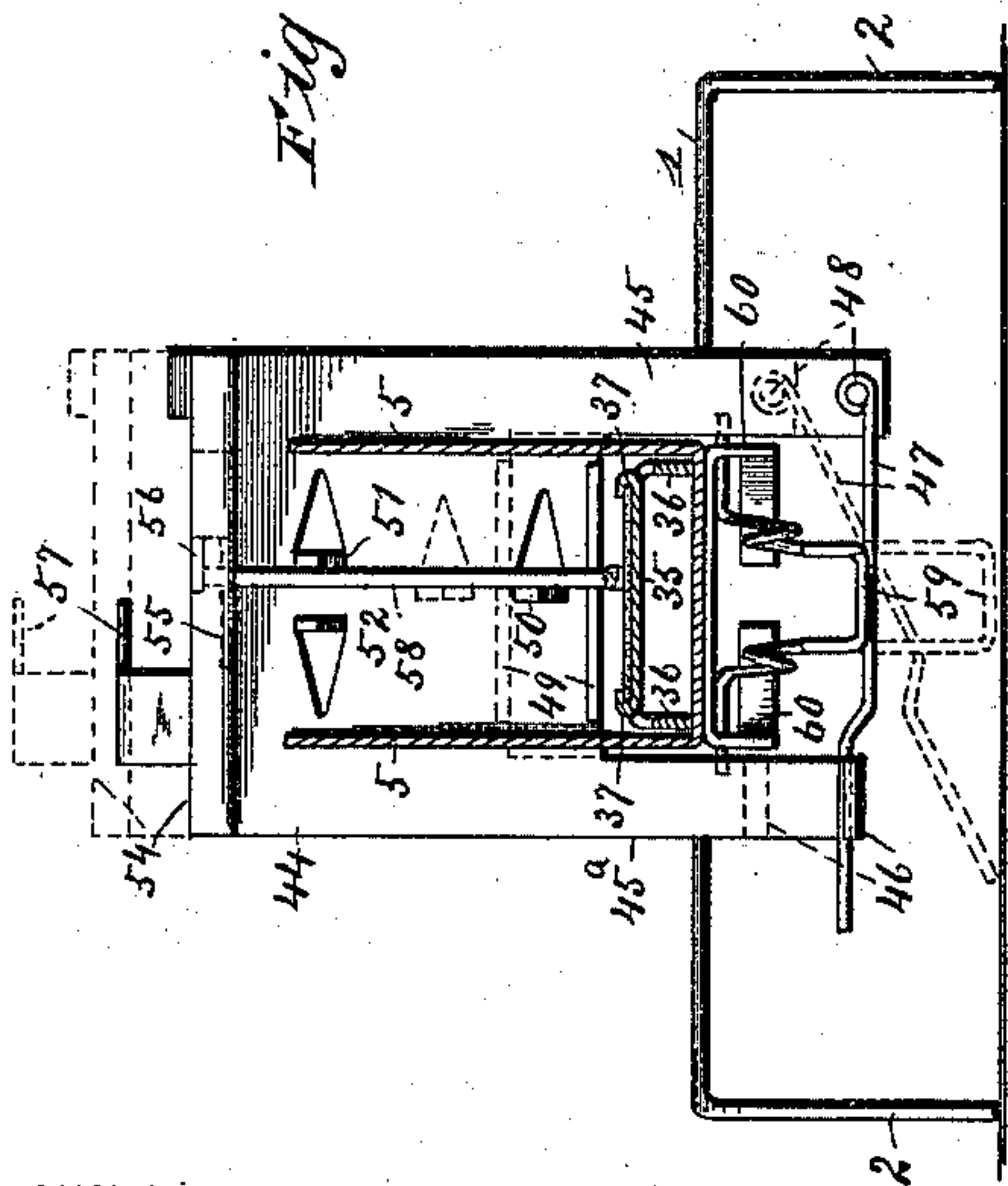


Fig. 2.

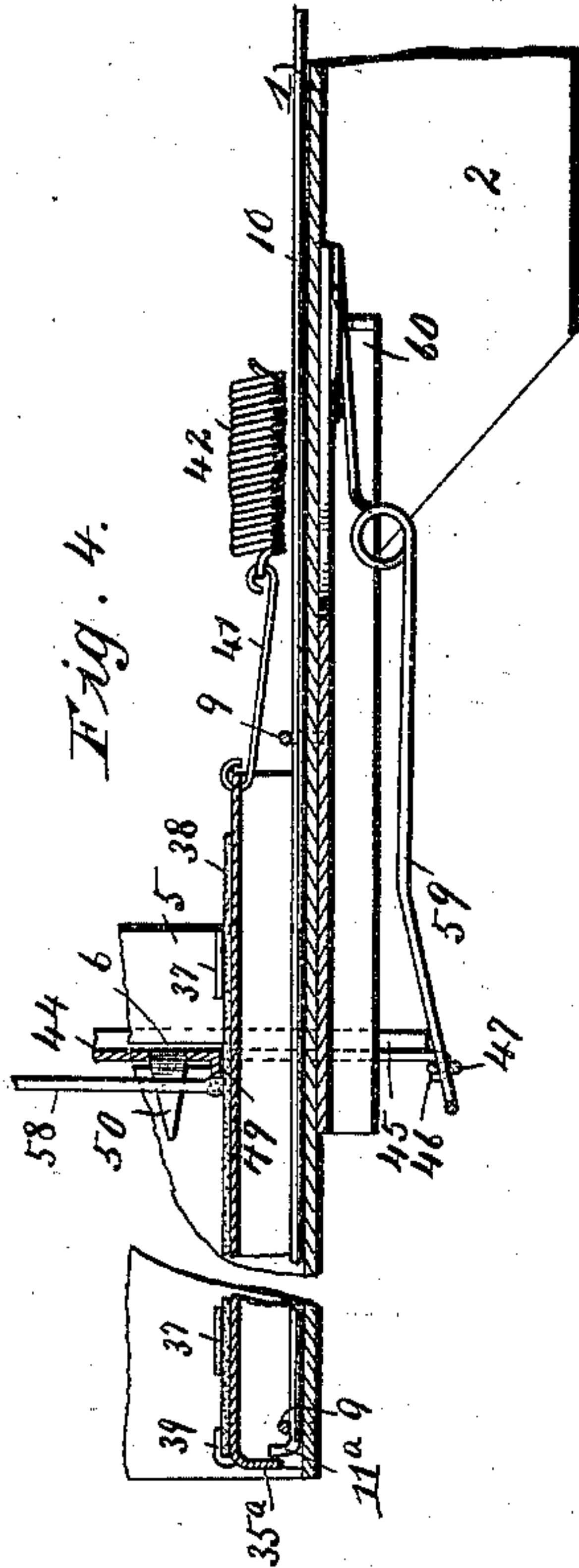


Fig. 4.

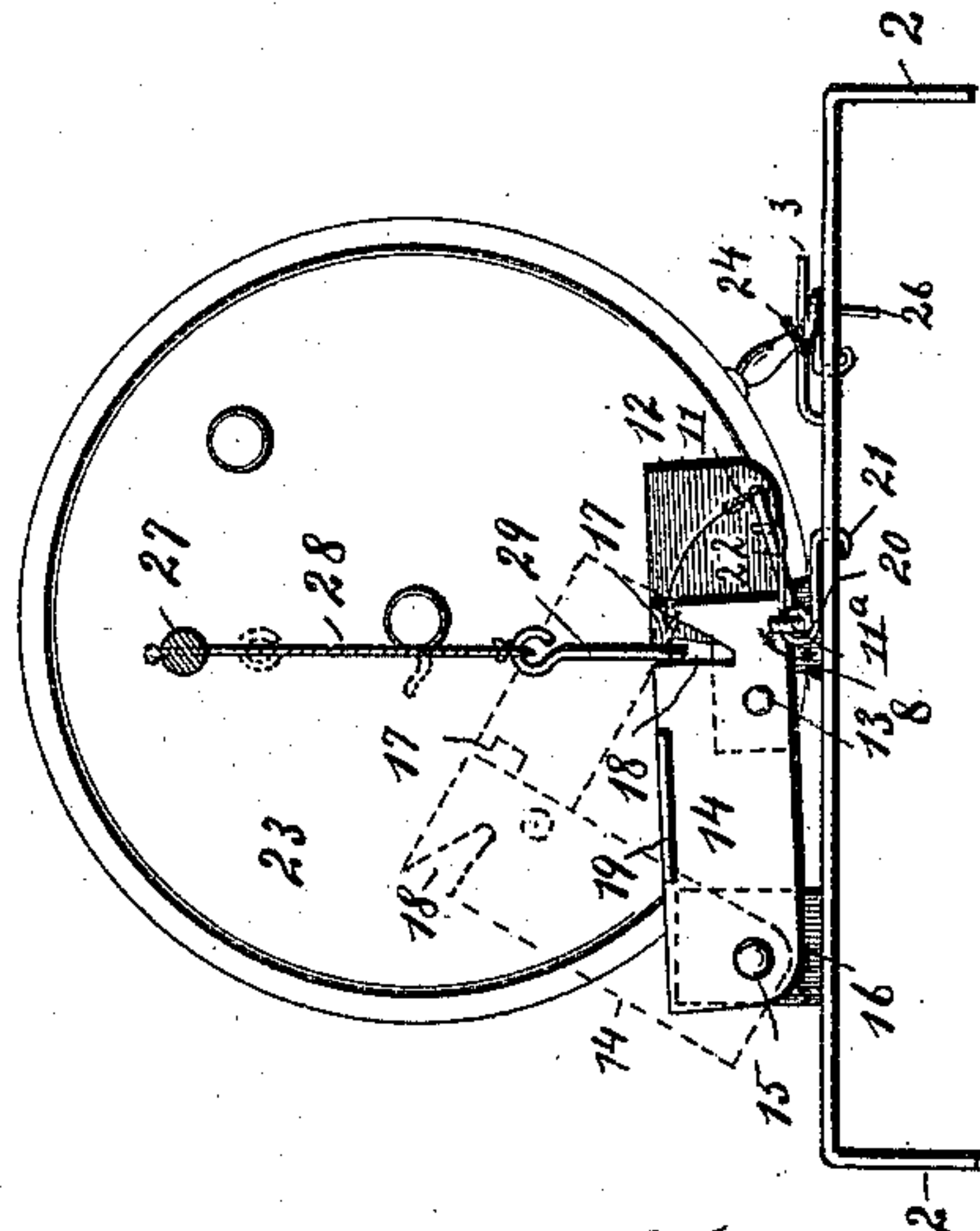


Fig. 3.

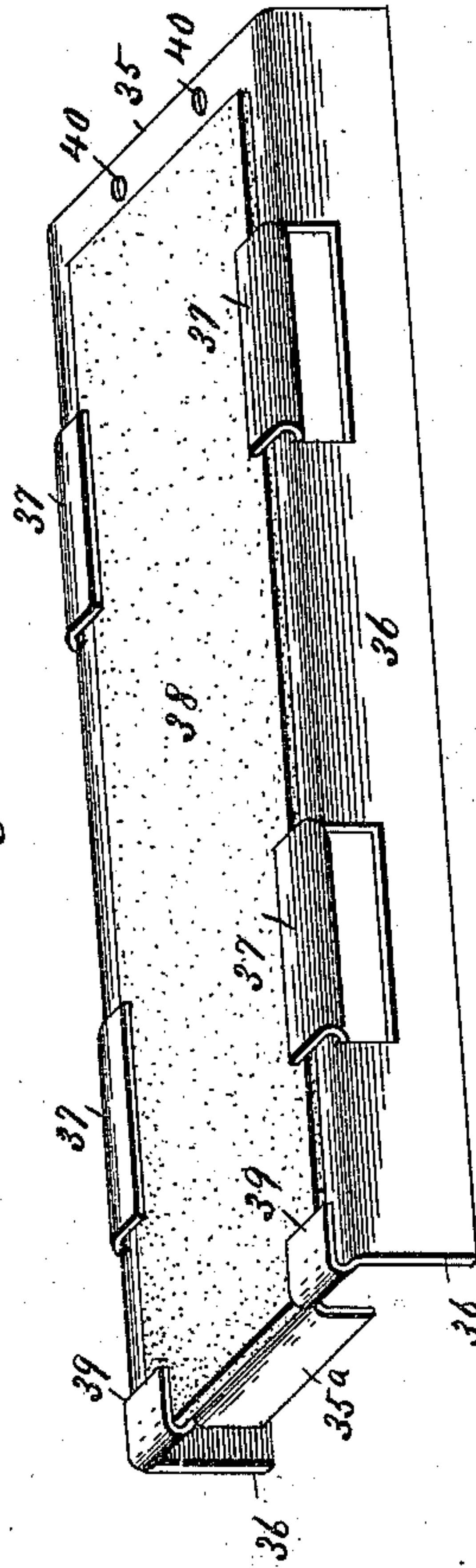


Fig. 5.

Witnesses:

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UNITED STATES PATENT OFFICE.

CLIFTON T. UMSTED, OF FORT SCOTT, KANSAS.

AUTOMATIC FIRE-LIGHTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 547,233, dated October 1, 1895.

Application filed April 5, 1895. Serial No. 544,582. (No model.)

To all whom it may concern:

Be it known that I, CLIFTON T. UMSTED, of Fort Scott, Bourbon county, Kansas, have invented certain new and useful Improvements in Automatic Fire-Lighting Devices, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to automatic fire-lighting devices.

The primary object of the invention is to produce a comparatively simple and inexpensive device which can be set and relied upon for automatic operation at any hour required, and also for notifying the house-occupants of such hour, if desired, by an audible signal.

The invention consists, essentially, in the combination, with a clock or device which will operate a shaft at any predetermined hour for which it is set and a locking-shaft connected with said clock or device, of a slidable friction-surface connected with a spring or equivalent, and a match-carrier for holding a match into frictional contact with said friction-surface, so that when the locking-shaft is thrown out of the path of said slidable friction-surface by means of the clock or other device for the purpose said friction-surface will slide and thereby ignite said match.

The invention further consists in certain novel and peculiar features of construction and combinations of parts, as will be hereinafter described and claimed.

In order that the invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 represents a perspective view of an automatic fire-lighter embodying my invention. Fig. 2 represents a vertical cross-section taken on the line $x x$ of Fig. 1. Fig. 3 represents the device as viewed from the front end, certain parts being omitted to more clearly disclose the construction and operation of the remaining parts. Fig. 4 represents a vertical longitudinal section of a part of the front end of the device. Fig. 5 is a perspective view, enlarged, of the sliding frame provided with a friction-surface. Fig. 6 is a perspective view of a portion of the rear end of the device.

In the said drawings, 1 designates the base

of the device, which is supported in a horizontal plane a suitable distance above any platform upon which it may rest by depending flanges 2, said flanges being formed preferably by bending the base, which is of sheet-metal, on lines parallel to its side margins. At its rear end said base is stamped upwardly to form the laterally-disposed hook 3, and near its opposite margin is stamped to form the bifurcated hook 4, which is disposed in the same direction as the hook 3. At its front end the base 1 is diminished in width, and at the opposite side margins of said diminished portion are formed the upwardly-projecting parallel side walls 5, which near their rear ends are provided with the oppositely-disposed vertical slots 6. About in line with the longitudinal center of the base and nearer its rear end are formed the upwardly-projecting parallel ears 7, and rearward of said parallel ears the transversely-extending ear 8.

Arranged longitudinally of the base and journaled thereon in staples or eyes 9 is the shaft 10, which extends between the ears 7, and is provided at its rear end with a crank-arm 11, contiguous to the ear 8, so that said shaft cannot have longitudinal motion upon the base, and at its opposite or front end with a short crank-arm 11^a, which is disposed at an angle of about ninety degrees to the arm 11, and projects vertically upward when said arm 11 occupies a horizontal position, as shown clearly in Fig. 1. Said arm 11 is pivotally connected to one end of a plate 12, pivotally connected in turn at 13 to a plate 14. Said plates 12 and 14 extend transversely of the face or at right angles to the rock-shaft 10, and said plate 14 is pivotally mounted at 15 upon the ear or lug 16, stamped vertically upward from the base. The plate 12 at the opposite end from its point of connection with the arm 11 is notched to form a downwardly-disposed shoulder 17, and the notched portion of said plate below said shoulder registers with the approximately V-shaped notch 18 in the contiguous end of the plate 14, and said plate 14 is also provided with a laterally-extending thumb-piece or handle 19. Coiled around the rock-shaft 10, contiguous to the crank-arm 11, is a spring 20. One end of said spring extends laterally and is hooked through an opening in the base, as shown at

21, while the other end 22 is bent to engage and exert a constant and continuous upward pressure against the said crank-arm 11, the object of which will be hereinafter explained.

5 Contiguous to the pivoted plates 12 and 14 an alarm-clock 23 or equivalent mechanism, which can be set for automatic operation at any predetermined time, is mounted upon the base, one of the front diverging legs of

10 said clock being engaged by the loop 24, which is adjacent but is oppositely disposed to the hook 3 of the spring 25, which is secured, as shown, or in any other suitable manner, upon the base, and exerts a pressure corresponding

15 in direction to the disposition of said loop 24. To prevent any upward movement of said spring or any accidental disconnection with the leg of the clock and the hook 3, it is formed with a downwardly-disposed hook 26

20 at its free end, which is engaged by said hook 3. The opposite front leg of the clock is held by the action of the spring 25 firmly in the bifurcation of the hook 4. By this arrangement it will be apparent, with proper ma-

25 nipulation, that the clock, while held from accidental displacement, may be easily and quickly disconnected from the base and used where required. This alarm-clock is of the ordinary or any preferred construction, be-

30 ing provided with the usual arbor 27 for winding the spring which controls the alarm mechanism and with the customary devices or mechanism for setting the clock for automatic action at any hour required. As the majority

35 of people wish to obtain as much sleep as possible, the bell upon said clock may be dispensed with or the clapper-arm bent, so that the alarm shall not be sounded when the arbor 27 begins to rotate. Said arbor is con-

40 nected by a cord 28, and the hook 29 with the downwardly-disposed shoulder 17 of the plate 12. It will be noted here that as the shaft 10 and the pivot 13 of the plate 12 are out of alignment it will be impossible for

45 the spring actuating the crank-arm of the said shaft to move said plates from the relative position shown in full lines in the drawings, so that it is necessary in order to permit said spring-actuated shaft to operate to

50 cause the relative positions of said shaft 10 and said pivot 13 to change, and this is accomplished by means of the connection between said plates and said arbor 27, as will be hereinafter more particularly explained.

55 Except when the clock and the contiguous mechanism is being set for operation it may be covered, and preferably is, by a hood, which is open at its front side to expose the face of the clock, and at one side so as to fit

60 snugly around the clock and at the same time to permit of pivotal operation, as will be readily understood. Said hood comprises the back 30, the arched top 31, and one side 32, which is hinged at 33 to a staple projecting

65 from the base or in any suitable manner. The back 30 occupies a vertical plane between the ears 7 and 8, and therefore is notched, as

at 34, in its lower margin to fit snugly over the spring 20 and the spring 25, and yet not interfere with the operation of the shaft 10 70 and of the contiguous mechanism.

35 designates an elongated rectangular frame, which is preferably in the form of a top, depending sides or runners 36, and the depending arm or shoulder 35^a at the front 75 end of the top. At suitable points metal is stamped out from the depending sides or runners, and is bent back to overlap the body portion and the interposed friction-surface 38, of sandpaper or equivalent material, as 80 shown at 37. At its front ends said body portion is also provided with overlapping-ears 39 to prevent the frictional contact of a match with the friction-surface 38 sliding or forcing the same off the frame 35. At its 85 rear end said frame is provided with apertures 40, which are engaged by the ends of a hook 41. A retraction-spring 42 or an equivalent is detachably or otherwise connected at its opposite ends to a cross-pin 43, connect-

90 ing the upper ends of the ears 7 of the base and said hook 41. When the spring is set for operation, the upwardly-projecting arm 11^a of the rock-shaft 10 is in the path of the depending arm 35^a of the frame 35, and there- 95 fore prevents the same being moved by the action of said spring.

44 designates a match-holder of sheet metal, which engages the oppositely-disposed slots 6 of the sides 5 at the front end of the base, and 100 said match-holder is bifurcated at its lower end to form the vertical arms 45 and 45^a depending below the said base. The arm 45^a is bent at its lower end to form the hook 46, engaged by the transverse rod 47, pivoted at 105 48 to the lower end of the arm 45. At the lower end of said holder 44, between the said depending arms, is formed the forwardly-projecting flange 49, and centrally of said holder and just above said flange metal is 110 stamped out to form the forwardly-projecting and vertical guide-lug 50. Near the upper end of the holder are formed in a similar manner the forwardly-projecting guide-lugs 51 and 52, 51 occupying a vertical plane at one 115 side of lug 50, and 52 occupying a vertical plane at the opposite side of said lug 50. At its upper end said holder is bent to form the forwardly-projecting horizontal flange 53, which terminates in the upwardly-projecting flange 120 or shoulder 54. Said flange 53 is provided with a slot 55 extending transversely of the base, and overhanging one end of said slot in the plane of the upper end of the shoulder 54 is a flange 56, while overhanging the other 125 end of said slot and in a higher plane than the flange 56 is a flange 57. These flanges also are preferably formed by stamping them from the material of the holder.

When a short or "parlor" match is to be 130 employed in connection with the device, the holder is detached from its position in the slot 6 and the match is inverted and slipped to the position shown at 58 between the lugs

50 and 51 and bearing at its upper end against the overhanging flange 56 and near its head against the forwardly-projecting flange 49. Said holder is then inserted to the position shown, where the head of the match will be held in frictional contact with the friction-surface of the sliding frame 35 by the approximately U-shaped spring 59, which bears at its free end down upon the cross-rod 47, and has its opposite ends securely attached in any suitable manner to the approximately U-shaped plate 60, secured to the under side of the base, as shown most clearly in Fig. 4. The pressure exerted by this spring will yield to any irregularity that may exist in the friction-surface, so that the head of the match will not be broken off. It will be observed from the peculiar construction of the holder that it will be next to impossible to break the match, owing to its being braced from upward movement and from lateral or pivotal movement in any direction, from pivotal movement longitudinally by reason of the flange 49 at its lower end and the sides of the slot 55 at its upper end, and from pivotal movement sidewise or lateral movement bodily by the lugs engaging its opposite sides. When a long or "sulphur" match is to be employed in connection with the device, it is inserted, as before described with reference to the match shown at 58, between the lugs 50 and 52 and has its upper end bearing against the under side of the overhanging flange 57. It also bears at a point contiguous to its head against the flange 49, as before described.

After the parts have been properly assembled, as illustrated, and the clock set for operation at, say, five a. m., the device is placed upon the stove in any suitable or convenient manner, with its front end near the grate of the stove, so that a strip of paper or other inflammable material may project from said grate and be supported upon the cross-rod 61, which bridges the space between the upper ends of and is attached to the sides 5 in any suitable manner contiguous to the match. The said paper or other inflammable material preferably is nearly in contact with the head of the match. When the clock automatically operates at the time set in the morning and the arbor 27 begins to rotate, it winds up the cord 28 and breaks the alignment existing between the plates 12 and 14 by pulling upward on the shoulder 17, and thus pivotally operating them upon the pivot 13 and changing the relation of said pivot to said rock-shaft. Immediately this takes place the pressure of the spring 20 causes the rotation of said rock-shaft in the direction indicated by the arrow, Fig. 3, and forces said plates pivotally to the position shown in dotted lines, same figure. Shortly after the alignment between said plates has been broken, the hook 29 becomes disengaged from the shoulder 17, the plate 14, by reason of the notch 18, not interfering with this disconnection. It is obvious, however, that if the shoul-

der 17 of the plate 12 were formed a suitable distance above the plane of the upper edge of the plate 14, said plate would not have to be notched, though I prefer the construction shown. Simultaneously with the throwing of the plates to the position shown in dotted lines by the rock-shaft 10, the arm 11^a of said rock-shaft moves down to a horizontal position and therefore out of the path of the depending arm 35^a of the sliding friction-surface frame, and thus permits the spring 42 to retract and to draw or slide said friction-surface frame quickly to the position shown in dotted lines, Fig. 1. This action, as will be readily understood, causes the match to ignite and the paper or other combustible material leading from the stove to take fire from the match. Therefore, it will be seen that the fire will be properly and reliably started, and the house warmed to a certain extent, and water boiled or heated for use, without requiring the personal attention of the inmates of the house. It will be apparent, also, that it obviates the necessity of a person rising until the room has been warmed to a degree and material prepared for preparing breakfast in a short time.

It is manifest that a device of this character, which is positive and reliable, will be found of great utility in houses heated by stoves necessary to be lighted each morning and not provided with hot-water boilers, and may also be employed in other connections not necessary to mention herein. It is to be understood, of course, that slight changes in the form, proportion, or arrangement of the parts and in the substitution of equivalents will not be a departure from the spirit and scope or sacrifice any of the advantages of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An automatic fire-lighting device, comprising a match-holder, a sliding friction surface, a rock-shaft having arms, one of them in the path of the friction-surface, and a pivoted plate engaging the other, means for automatically moving the plate, a spring engaging said shaft, and a second spring which is anchored at one end and attached at the other to the friction surface, substantially as set forth.

2. An automatic fire-lighting device, comprising a spring-actuated friction-surface, a match-holder, a rock-shaft having an arm in the path of the friction-surface, a plate engaging another arm of the shaft, means for automatically moving said plate, and means to operate said shaft when said plate is moved, substantially as and for the purpose set forth.

3. An automatic fire-lighting device, comprising a spring-actuated friction-surface, a match-holder and a rock-shaft, all arranged relatively as described, a plate having a fixed pivot, a second plate provided with a shoulder and pivoted to the first-named plate out

of line with the rock-shaft, and pivoted also to an arm of said shaft, a hook engaging said shoulder, means to elevate said hook and thereby pivotally operate said plates, and a
5 spring to operate the rock-shaft, substantially as set forth.

4. An automatic fire-lighting device, comprising a base, having at its front end upwardly projecting slotted sides, a sliding friction-surface upon said base between said
10 sides, a spring-actuated holder engaging the slots of said sides, and a match held rigidly thereby with its head in engagement with said friction-surface, and means to slide said
15 friction-surface and ignite said match, substantially as set forth.

5. An automatic fire-lighting device, comprising a base provided at its front end with upwardly-projecting slotted sides, a vertical
20 match-holder fitting in said slots and carrying rigidly a match in an inverted position, a slidable friction-surface upon said base between said sides and in contact with the head of said match, a rock-shaft upon said base pro-
25 vided with an arm lying in the path of said friction-surface, a spring attached to said friction-surface and exerting its pressure against the arm of said rock-shaft, and a mechanism also mounted upon said base which operates
30 automatically at a predetermined time and permits said shaft to rock, and thereby permits said spring to move or slide said friction-surface, substantially as set forth.

6. An automatic fire-lighting device, comprising a suitable base, a friction-surface
35 mounted thereon, a match-holder provided with a match in engagement with said friction-surface, a rock-shaft upon said base having an arm at one end lying normally in the
40 path of said friction-surface, and having a crank-arm at its opposite end, a spring to actuate said rock-shaft, a pair of plates pivoted together and one of them provided with a
45 downwardly-disposed shoulder contiguous to said pivot and at its opposite end pivotally connected to the said crank-arm of the rock-shaft, and the other plate pivoted at its opposite end to a fixed point upon the base, and means at a predetermined time to break the
50 joint between said plates by an upward pressure or pull upon the said shoulder of one of the plates to permit the rock-shaft to operate, and a spring connected to said friction-surface to move or slide the same after the rock-
55 shaft has been operated and its first-mentioned arm moved out of the path of said friction-surface, substantially as set forth.

7. An automatic fire-lighting device, comprising a suitable base, a friction-surface
60 mounted thereon, a match-holder provided with a match in engagement with said friction-surface, a rock-shaft upon said base having an arm at one end lying normally in the path of said friction-surface, and having a
65 crank-arm at its opposite end, a spring to actuate said rock-shaft, a pair of plates pivoted

together and one of them provided with a downwardly-disposed shoulder contiguous to
said pivot and at its opposite end pivotally connected to the said crank-arm of the rock- 70 shaft, and the other plate pivoted at its opposite end to a fixed point upon the base, a time-operated mechanism, such as an alarm-clock, having a rotatable shaft, a hook engaging the said shoulder of one of said plates, a
75 flexible connection, such as a cord, between said hook and said rotatable shaft, and a spring for moving or sliding said friction-surface at the proper time, substantially as set forth. 80

8. An automatic fire-lighting device, comprising a suitable base, having upwardly-projecting slotted sides at its front end, a cross-rod connecting said sides to support inflammable material from the contiguous grate of a
85 stove, a slidable spring-actuated friction-surface upon said base between said sides, a match-holder engaging said slots provided with forwardly-projecting lugs to stay a match from lateral movement, with a flange at its
90 lower end engaging the match contiguous to its head to prevent said match being broken, and with an overhanging flange to engage the upper end of the match to prevent any upward movement of the same, a spring holding
95 said match-holder down with a yielding pressure, and a rock-shaft having an arm lying normally in the path of said slidable friction-surface, and means to operate said rock-shaft and throw said arm out of the path of said
100 friction-surface, substantially as and for the purpose set forth.

9. An automatic fire-lighting device, comprising a suitable base, having upwardly-projecting slotted sides at its front end, a cross-rod connecting said sides to support inflammable material from the contiguous grate of
105 a stove, a slidable spring-actuated friction-surface upon said base between said sides, a match-holder engaging said slots provided with forwardly-projecting lugs to stay a match from lateral movement, with a flange at its
110 lower end engaging the match contiguous to its head to prevent said match being broken, and with an overhanging flange to engage the upper end of the match to prevent any upward movement of the same, arms depending from said holder below the supporting
115 base, a rod connecting said arms, a spring carried by said base at its under side and exerting a downward pressure upon said rod to hold the match yieldingly into engagement with said friction-surface, and means at times
120 to automatically move or slide said friction-surface and thereby ignite the match, substantially as and for the purpose set forth. 125

10. In an automatic fire-lighting device, a match-holder, comprising a plate bifurcated at its lower end, a transverse shoulder 49, forwardly projecting lugs 50, 51 and 52, a horizontal slotted flange 53, flanges 56 and 57, overhanging the said slot, and a vertical
130

flange 54, at the front margin of the slotted flange, substantially as shown and described.

11. In an automatic fire-lighting device, a match-holder, comprising a plate formed with forwardly-projecting lugs 50, 51 and 52, a shoulder 49, a slotted flange 53, flanges 56 and 57, overhanging the slot of said flange, and bifurcated to form depending arms 45 and 45^a, one of which is bent to hook-form, and a rod 47, pivoted to the other arm and engaging the hook-arm, substantially as shown and described.

12. In an automatic fire-lighting device, a sliding friction-surface, comprising a plate 35, provided with runners 36, at its sides, and with inwardly-projecting ears at 37, its sides and one end, with a depending flange 35^a, at the end provided with the ears, with apertures 40, at the opposite end, and with a piece

of roughened material 38, upon said plate and overlapped by said ears.

13. In an automatic fire-lighting device, the combination of a base provided with laterally disposed hooks, one of them bifurcated, with a time-operated mechanism, provided with depending legs, one of which engages the bifurcated hook, and a spring having a hook-end engaging the other hook of the base and provided with a loop engaging the other leg of said time-operated mechanism, substantially as shown and described.

In testimony whereof I affix my signature in the presence of two witnesses.

CLIFTON T. UMSTED.

Witnesses:

M. R. REMLEY,
S. B. FALOR.