

(No Model.)

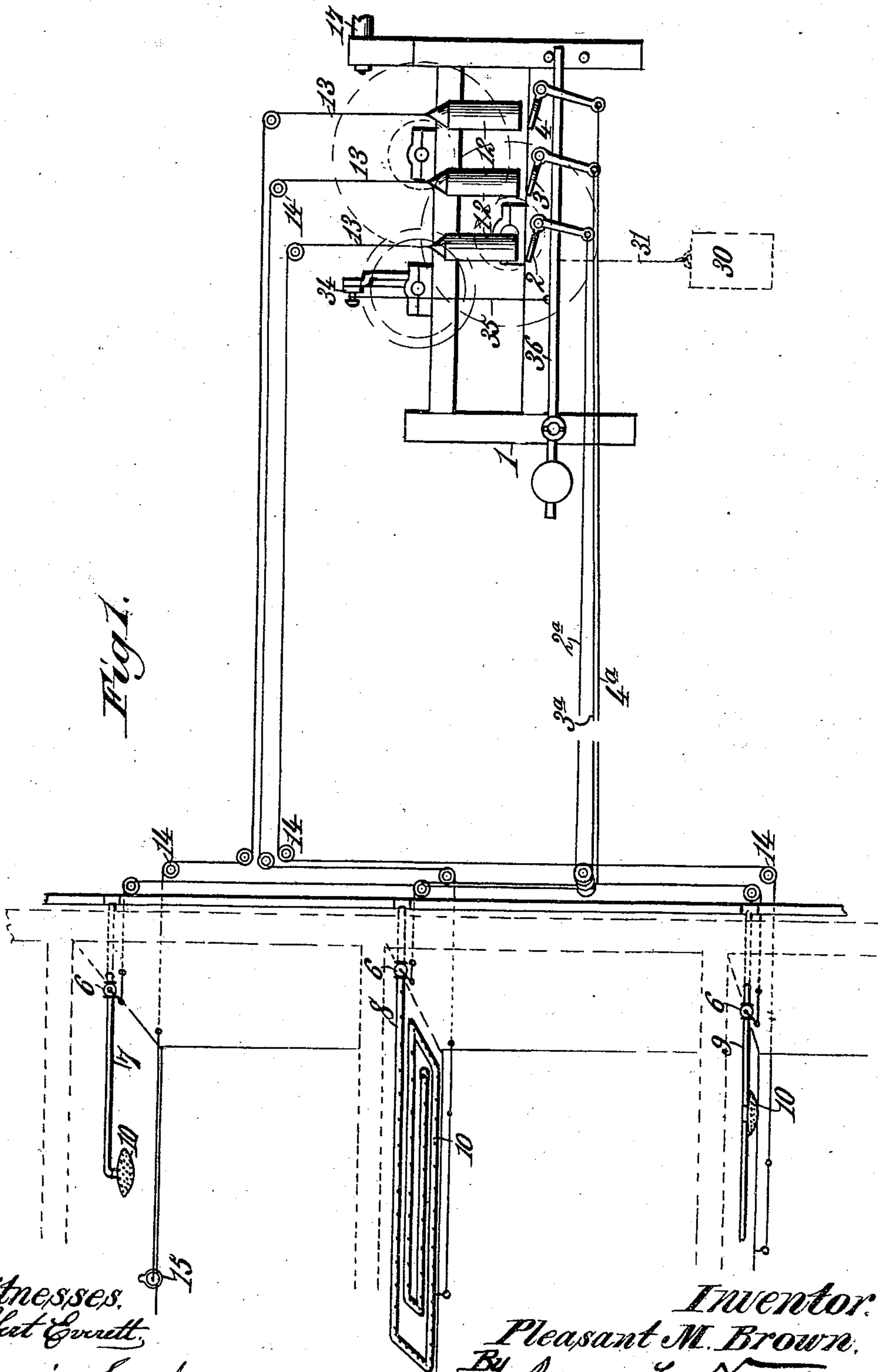
2 Sheets—Sheet 1.

P. M. BROWN.

AUTOMATIC FIRE ALARM AND FIRE EXTINGUISHING APPARATUS.

No. 549,055.

Patented Oct. 29, 1895.



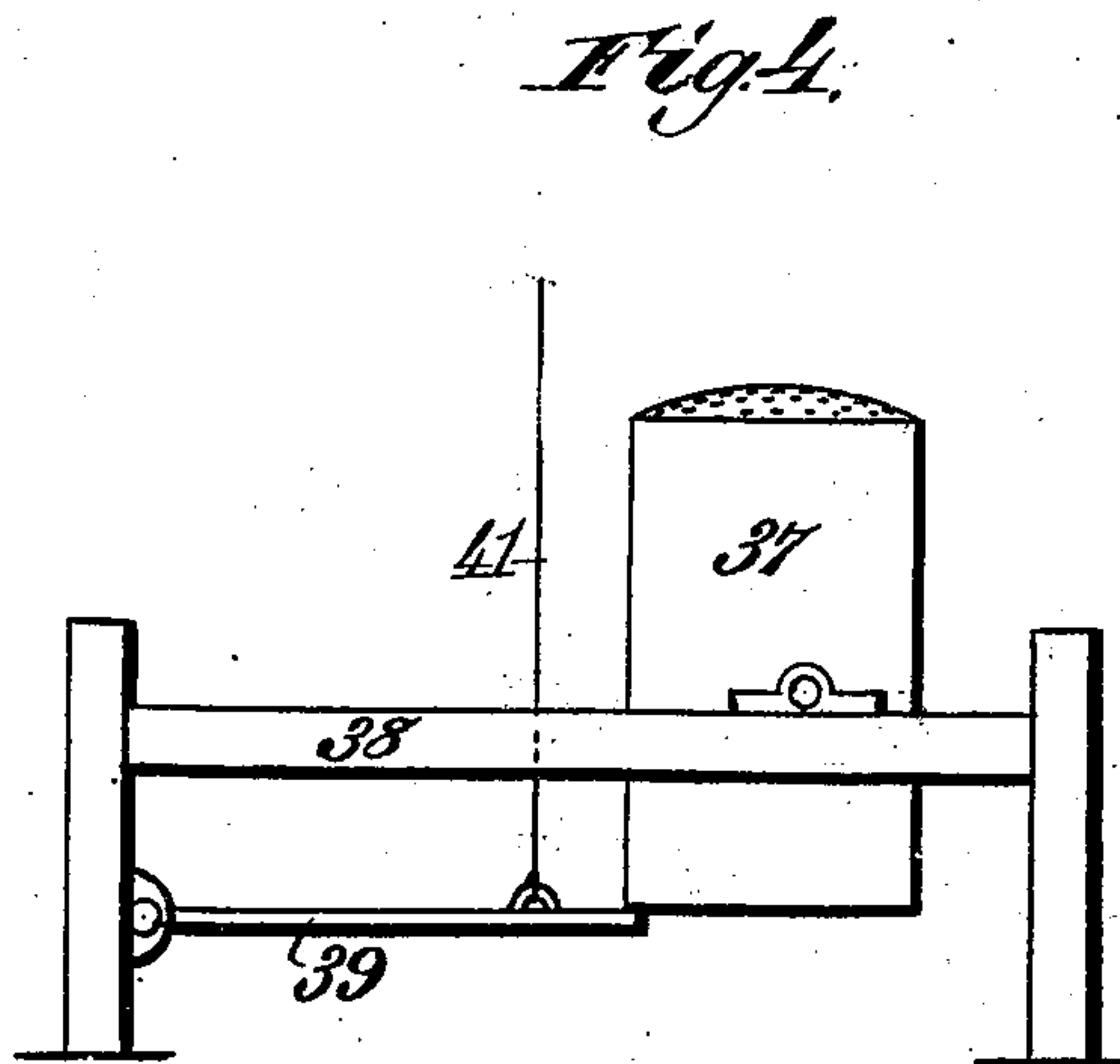
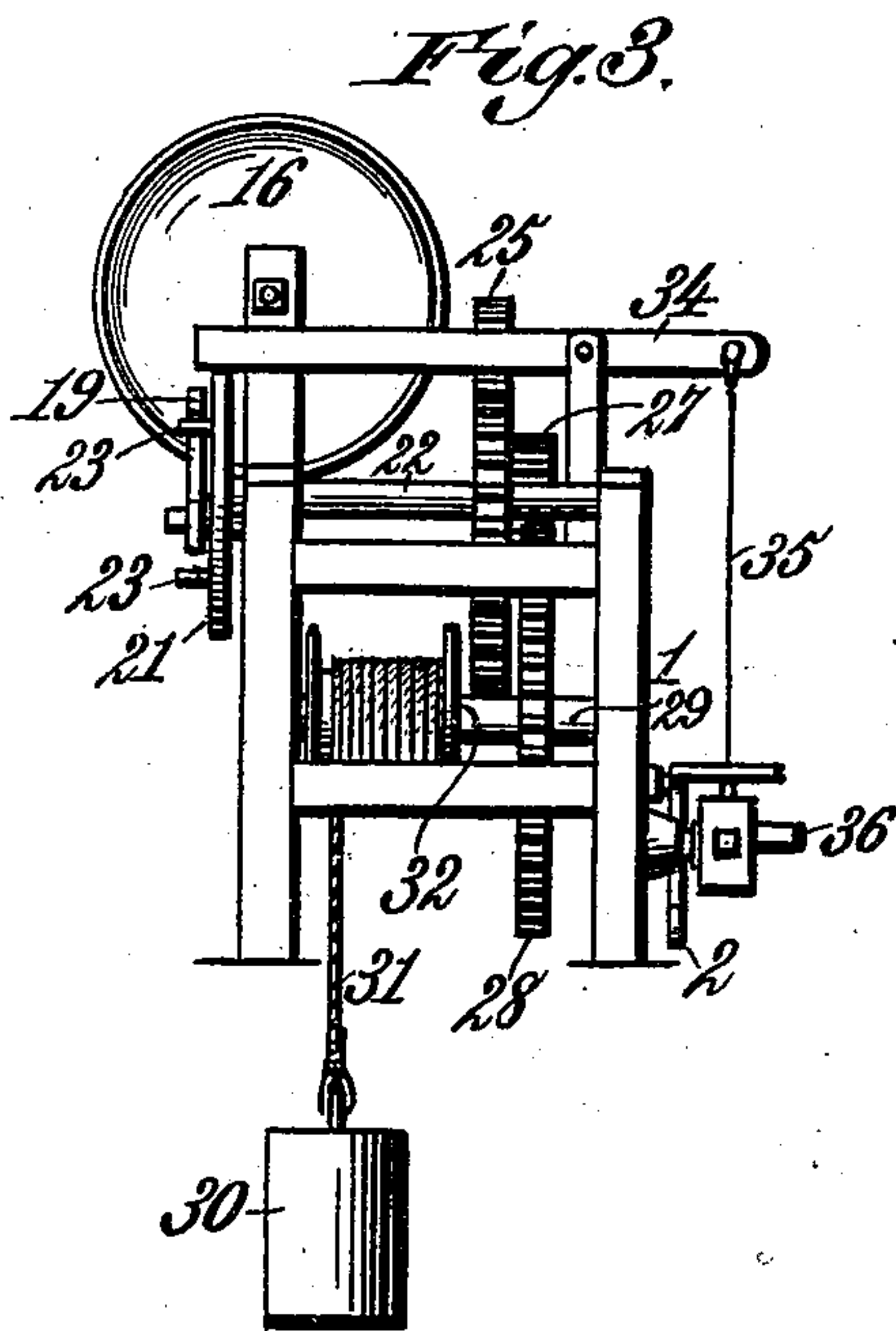
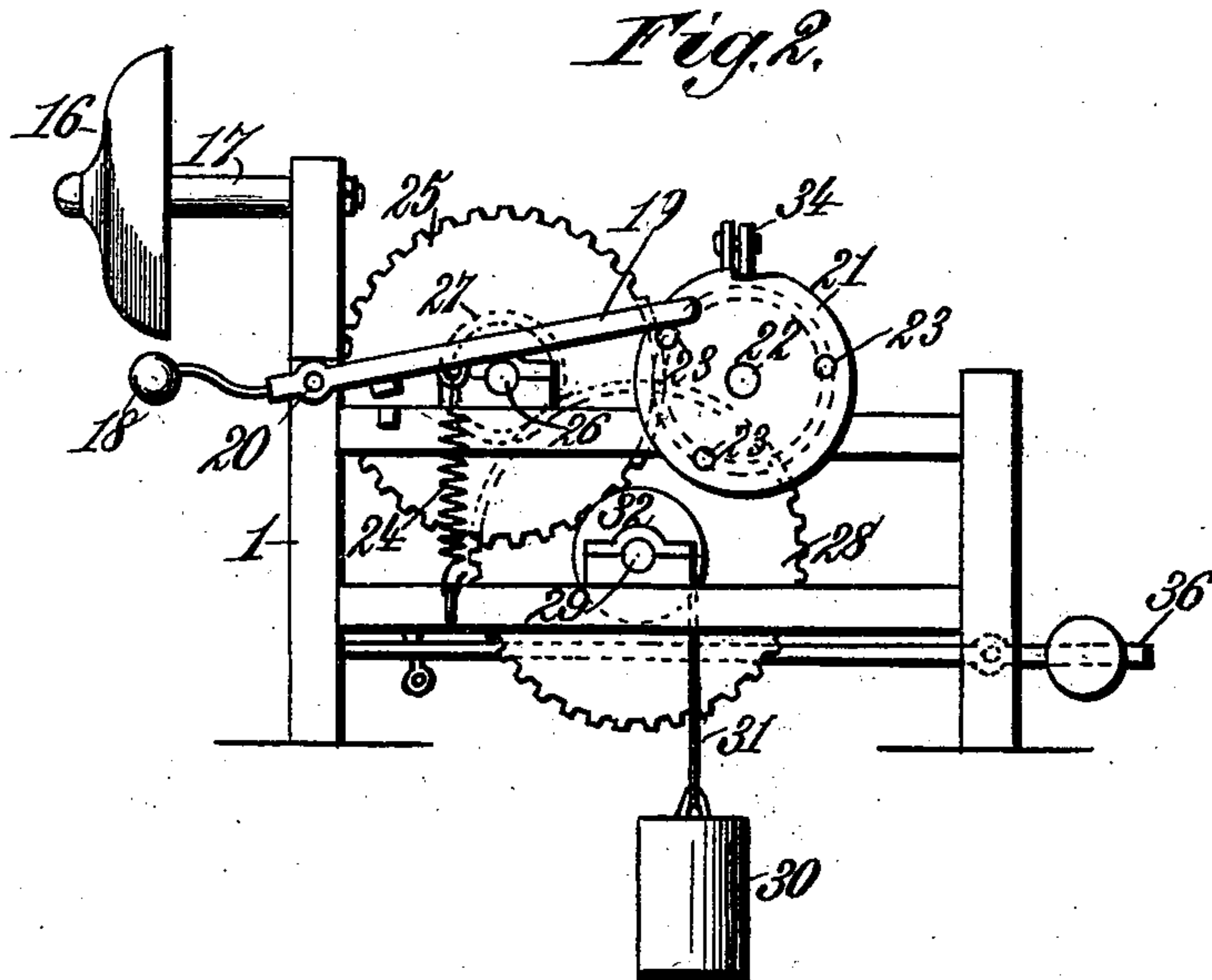
Witnesses.
Robert Everett,
Dennis Sumby.

Inventor.
Pleasant M. Brown.
By James L. Norris.
Atty.

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Denise Sundry,

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UNITED STATES PATENT OFFICE.

PLEASANT M. BROWN, OF BEAR POPLAR, NORTH CAROLINA.

AUTOMATIC FIRE-ALARM AND FIRE-EXTINGUISHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 549,055, dated October 29, 1895.

Application filed August 12, 1895. Serial No. 559,071. (No model.)

To all whom it may concern:

Be it known that I, PLEASANT M. BROWN, a citizen of the United States, residing at Bear Poplar, in the county of Rowan and State of North Carolina, have invented new and useful Improvements in Automatic Fire-Alarms and Fire-Extinguishing Apparatus, of which the following is a specification.

My invention relates to automatic fire-alarms and fire-extinguishing apparatus, my purpose being to provide extremely simple and economical means whereby a fire taking place at any point in a building, or in any one of a number of buildings, may be speedily announced at any suitable point and promptly showered with an ample quantity of water, which is automatically released, the point where the discharge-valve is located being more or less remote from the fire and usually exterior to the building or structure, so that the automatic apparatus shall not be injured and its prompt and effective action prevented by a sudden blaze in its immediate vicinity. This arrangement, moreover, enables me to bring all the water-releasing valves into one or more groups, where they may be examined, tested, repaired, or adjusted, without requiring the operative to remove himself and his tools from place to place.

It is a further purpose of my said invention to provide an alarm-signal which shall be automatically operated whenever a fire begins at any one or more of a series of selected points, its operation being arrested after a suitable period by automatic means.

The invention consists to these ends in the several novel features of construction and new combinations of parts hereinafter fully explained, and then particularly pointed out and defined in the claims which follow the description.

To enable others to understand and practice my said invention I will proceed to describe the same in detail, reference being had for this purpose to the accompanying drawings, in which—

Figure 1 is a side elevation of an apparatus in which my invention is incorporated, save only the alarm mechanism, the cords or wires being broken away in order to show in the same figure their arrangement at the points to be protected. Fig. 2 is a side elevation

showing the automatic alarm mechanism, the latter being omitted from Fig. 1 in order to render the illustration clearer. Fig. 3 is a view of the apparatus in end elevation, the releasing cords or wires being omitted. Fig. 4 is a view showing a modification of the means for automatically releasing a body of water at a point where fire is apprehended.

The reference-numeral 1 in said drawings indicates any suitable frame-work upon which the principal operative parts of my invention are supported. This frame may be located at any point more or less remote from the combustible parts of a structure; but I prefer in many instances to arrange it outside the building or inclosure to be protected, in order to prevent its injury in case the conflagration should be phenomenally destructive, as will sometimes happen even with the most ample protective apparatus. Upon said frame are mounted a series of independent levers 2 3 4, &c., up to any required number, corresponding in this respect with the number of different points to be protected. Said levers are so formed that each is capable of operating a cock or valve 6, which normally closes a water-pipe 7, which communicates with a suitable source from which a sufficient volume of water may be forced through the pipe under the necessary pressure.

In large cities, where there is a system of water-mains, the pipes 7 8 9, &c., corresponding to the independent levers 2 3 4, &c., may be supplied directly from the mains, which will usually supply the required pressure. A water-tower or a suitably elevated reservoir, fed in any known manner, may be used for this purpose, either in conjunction with the water-mains or as a substitute for them. The pipes 7 8 9, &c., are led from the source of supply or from a point communicating with said source to the several rooms or points where fire is apprehended, and at such points each pipe communicates with a discharge-terminal 10 of such form that it will properly distribute the escaping water. Any of the familiar patterns of sprinkling or distributing nozzles used upon fire-hose may be employed, and when the combustible character of material or other circumstances render it advisable groups of pipe may be arranged along the sides of an apartment and over-

head, each length being perforated and all being in communication with the supply-pipe, so that a great number of separate streams thrown from all sides and from above may be set free simultaneously. The means by which this latter result is accomplished are as follows: Each of the levers 2 3 4, &c., is of angular form, and one of its arms lies directly beneath an actuating-weight 12, which is suspended over it by a cord or by a small flexible wire 13. This wire is led over guide-pulleys 14 directly to the room or place where the discharging-terminal of the pipe corresponding to said weight is located. At this point the cord is either rendered suitably combustible by any ordinary means or it is attached to a cord so treated or formed of combustible material. The combustible portion may advantageously be led over guide-pulleys in such manner that it will traverse every part of the room one or more times, especially those parts where fire may occur, or where in case of fire the blaze would most quickly penetrate and burn most fiercely. Being separated at any point the weight 12 is released, and its fall opens the valve, admitting water to the pipe having its terminal at the place where the fire breaks out. Being under suitable pressure the water is showered plentifully upon the flames until they are extinguished. At the same time all parts of the room or locality are flooded, so that the fire will not spread. The second arms of the levers 2 3 4, &c., are conducted by wires or cords 2^a 3^a 4^a, &c., to the valves which open the pipes 7 8 9, &c.

By increasing the number of water-pipes, valve-opening levers, and their cord-suspended weights, any number of separate rooms or localities can be securely protected from destruction by fire.

In places where by reason of the contracted space or other cause the cord 13 cannot traverse different parts of the inclosure, and where by reason of absence of ventilation a fire might smolder, but would not be likely to burst into a bright flame until it had eaten its way into other parts of the structure, I may fasten the cord by a plug or seal 15, formed of fusible metal, such as commonly used upon the valves of automatic extinguishers. As this alloy or composition can be so compounded that it will fuse at any temperature that may involve danger, it will be preferable to use the same under circumstances similar to those mentioned instead of waiting until the fire reaches the cord. If desired, a fastening of this character may be used at any point for the cord, the fact that the latter is released by the action of the fire rendering it a mechanical equivalent of any fastening for the cord, so far as the purposes of my invention are concerned.

It is desirable and frequently essential that the occurrence of a fire should be announced by an audible alarm, and I provide an automatic mechanism for this purpose consisting

of the following parts: Upon the frame 1 is mounted a gong or bell 16, supported by an arm 17. Beneath said gong is arranged a striker 18 on the end of an arm 19, which is fulcrumed upon the frame 1. From its fulcrum 20 at or near one end of the frame the arm extends toward the other end, with an upward inclination until its end overhangs a disk 21, mounted upon a shaft 22, arranged transversely to the frame and to the arm 19. Projecting from the periphery of the disk 21 are a series of pins 23, which lift the arm 19 a corresponding number of times at each revolution against the tension of a spring 24 and thereby cause the striker to sound the gong. The disk 21 and its shaft are driven by a spur-gear 25 on a shaft 26, which also has a pinion 27, meshed with a large gear 28 on a power-shaft 29, which is driven by a weight 30, suspended by a cord 31, wound upon a drum 32. The mechanism is restrained from action by a lever 34, fulcrumed on one side of the frame and lying over the disk 21. This lever is connected by a rod 35 to a general lever 36, mounted upon one side of the frame below the end of the lever 34. The general lever projects beyond its fulcrum to a point where its end lies beneath the weights 12, so that whenever one of the latter falls it will first operate the valve-lever beneath it and then drop upon the general lever. This lifts the lever 34 from a notch 25 in the disk 21 and releases the train of gearing and allows the alarm to be sounded. The strokes on the gong will continue while the pins 23 act upon the striking-lever, during which time the disk 21 will revolve not more than once. When notch 25 on the disk 21 arrives at its former position, it again engages the lever 34 and arrests the alarm mechanism.

In situations where a large body of water should be sprayed over a single point I may use the devices shown in Fig. 4, in which the numeral 37 denotes a spraying tank or vessel supported by trunnion-pins on a frame 38, the pins being arranged on one side the center, so that the vessel is not in equilibrium. It is sustained on its heavier side by a pivoted arm 39, which is supported by a cord 41, the arrangement being the same as that already described in connection with the cords sustaining the weights 12. When the cord 41 is burned, the arm 39 will fall and the vessel 37 will at once be inverted and spray its contents upon the objects beneath it.

What I claim is—

1. In automatic fire-extinguishing and alarm mechanism, the combination with a plurality of water-pipes arranged to convey water from a common source to different points, of a plurality of valve operating levers, to open said pipes, weights suspended over said levers by cords which are led to the same points as the corresponding pipes and there fastened by inflammable portions, a gong and striker, a train of gearing to operate the striker, a stop-lever normally lying in the path

of a notch on one of the gears, and a general lever connected to the stop lever and lying in the path of the weights that operate the valve-levers, substantially as described.

5 2. In an automatic fire-extinguishing and alarm mechanism, the combination with a plurality of pipes to convey water from a common source to different points, of valve-levers to open said pipes, weights suspended above
10 said levers by cords led to the discharge ends of the corresponding pipes and fastened at said points, a train of gearing held by a stop-lever, a disk driven by said train and having a pin projecting from it, a gong, a striker
15 lifted by said pin, and a general lever connected to the stop-lever and lying beneath the valve-levers in the path of the weights operating them, substantially as described.

20 3. In an automatic fire-extinguishing and alarm mechanism, the combination with a plurality of pipes to convey water from a com-

mon source to different rooms, or points, of a series of valve-operating levers to open said pipes, weights suspended over said levers by inflammable cords led to the corresponding
25 rooms and suitably arranged therein, a gong, a striker-lever, a disk having a pin lying beneath said lever, means for revolving said disk, a stop-lever to hold the revolving mechanism stationary, and a general lever con-
30 nected to the stop lever and arranged beneath the valve-levers and in the path of the several weights which operate the same, substantially as described.

In testimony whereof I have hereunto set
35 my hand in presence of two subscribing witnesses.

PLEASANT M. BROWN.

Witnesses:

JOHN L. KISTTER,
BACHMAN B. MILLER.