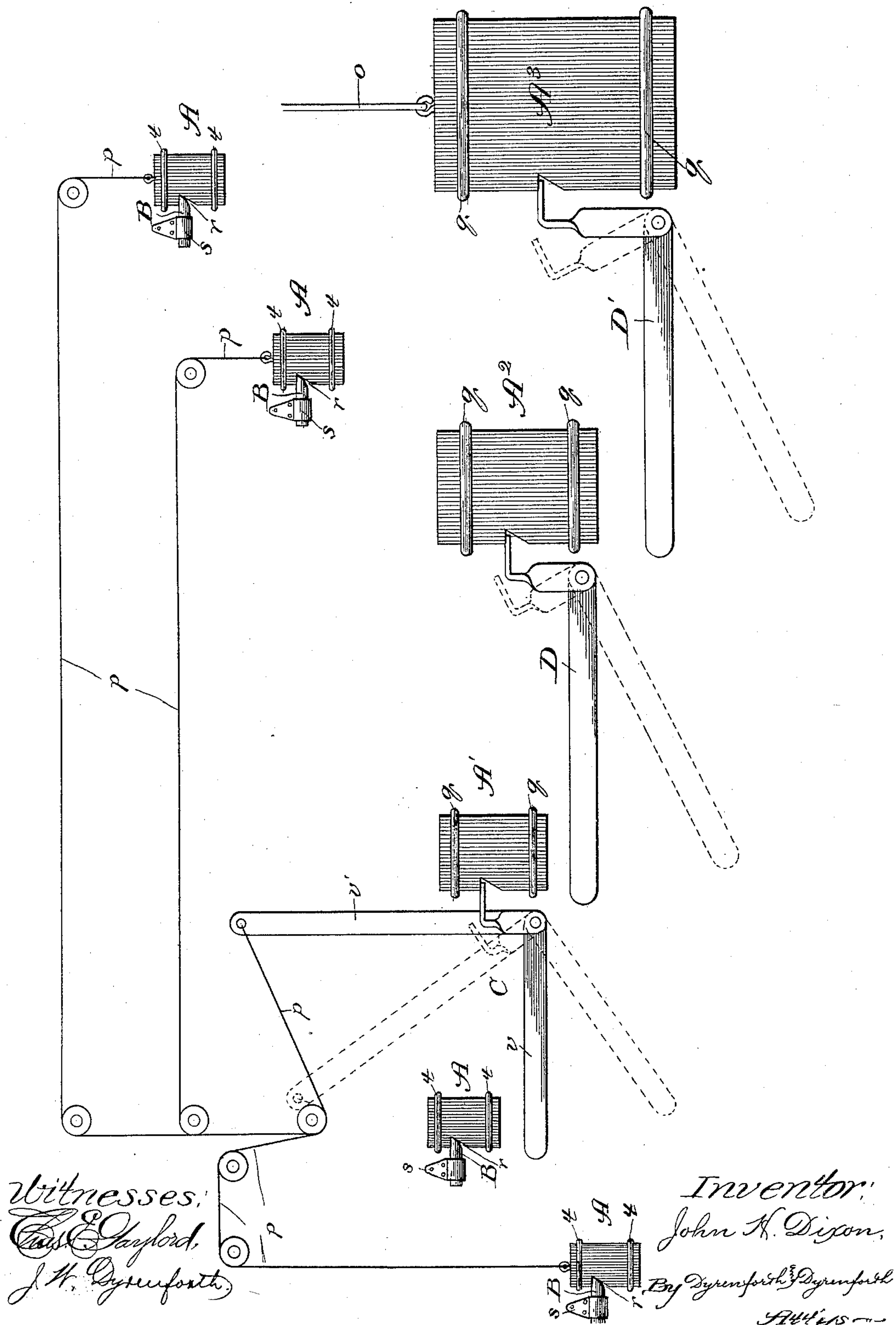


(No Model.)

J. H. DIXON.  
SYSTEM OF ACTUATING MECHANISM.

No. 432,158.

Patented July 15, 1890.





# UNITED STATES PATENT OFFICE.

JOHN H. DIXON, OF CHICAGO, ILLINOIS.

## SYSTEM OF ACTUATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 432,158, dated July 15, 1890.

Application filed March 1, 1890. Serial No. 342,288. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. DIXON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Systems of Actuating Mechanism, of which the following is a specification.

My invention relates, in its broadest sense, to a system of graduated weights and lever or analogous mechanism, involving, generically stated, a primary weight of comparatively little gravity sustained by a readily removable support and a weight of greater gravity, supported by a lever or the like, so arranged with reference to the primary weight as to be displaced by the release of the latter from its support from its holding effect upon the weight of greater gravity, which latter is thus permitted by falling to actuate a desired form of mechanism for a certain purpose, such as a locking-bolt of a door for withdrawing it, an alarm, or the like. While, as thus outlined, I intend to be understood as claiming my improved apparatus as an actuating means for all purposes to which it is applicable, for the sake of brevity and convenience in describing my improvement I confine its detailed description to its one use of automatically actuating a fire-alarm. In this last-named particular connection my invention relates to an improvement in mechanism for automatically producing an alarm in case of fire, or for actuating other mechanism in that event, and which is caused to operate by the effect of heat above a predetermined temperature; and my object is to provide improved mechanism for that purpose of a mechanical nature, as distinguished from the electrical appliances hitherto commonly employed, which shall be of simple and economical construction, and thoroughly reliable and effective in its operation.

The drawing is a diagram illustrative of my improvement, adapted especially to the purpose of fire-alarm-actuating mechanism, and is shown in somewhat extended arrangement for purposes of illustration.

The primary weight A is normally sustained by a medium B of readily-fusible material—such as wax—and is located where its sustaining medium will be most effectively exposed to the influence of the heat in the event of a

fire. The weight A may be supported in any desired place in a building, and if upon a wall it may for safety be held against lateral movement by guides, such as the staples *t*. The fusible retaining medium may comprise a short piece of the substance of which it is composed, held by a bracket *s* or other suitable means, in a manner to extend, as shown, into a recess *r* in the weight or against its lower end.

A' is a weight mounted in a guide or guides *q* and normally sustained by a pivotally-supported lever C.

The mechanism thus far described affords my improvement in its simplest form, since, by releasing the primary weight A and causing it to fall upon the arm *v* of the lever C or to pull against the arm *v'* by being connected therewith through the medium of a wire, cord, or the like *p*, the lever will be withdrawn from sustaining the weight A', permitting the latter to fall and sound an alarm suitably connected with it. My improvement is more especially designed, however, to involve a more extended system of the weights sustained by the levers and of increasing gravity, and may include any desired number thereof. Accordingly I provide a weight A<sup>2</sup> of greater gravity than the weight A', mounted similarly to the latter and sustained in the same way by a lever D, which extends with its long arm beneath the weight A'. The final weight A<sup>3</sup> is of greater gravity than the preceding weight, and is mounted and sustained in the same manner as described, the long arm of the lever D', which supports it, extending beneath such preceding weight, shown as the weight A<sup>2</sup>.

In practice a number of the weights A may be distributed with their sustaining means B in different parts or rooms of a building, and the series of weights A', A<sup>2</sup>, and A<sup>3</sup> may be located in any desired place; also, in or adjacent to the building. Each weight A may be secured to the end of a wire, cord, or the like *p*, connecting it with the arm *v'* of the lever C. The final weight A<sup>3</sup> may be attached to a wire, cord, or the like *o*, through the medium of which a bell or other alarm may be actuated when the weight is permitted to drop; or, as in cities where fire-alarm-telegraph systems are in vogue, the wire or cord *o* may



extend to an alarm-box to turn in an alarm by drawing upon a lever which actuates the alarm on the release of the weight.

In operation, when any one of the weights  
5 A is freed from its fusible retaining medium, it will drop, and the strain thus exerted upon the wire or other flexible medium *p* will operate to swing the lever C and cause it to release the weight A', which drops upon the  
10 lever D, causing the latter to release the weight A<sup>2</sup>, which in turn drops upon the lever D' and releases the weight A<sup>3</sup>, the latter as it descends actuating the alarm. In this manner the release of a weight A, of comparatively  
15 little gravity, and capable of being supported by a fusible sustaining medium susceptible of being fused almost instantaneously when exposed to heat above a certain temperature, may be made to release, indirectly, a weight  
20 of a gravity sufficient to actuate mechanism offering comparatively great resistance, and while the final weight may be poised upon a lever with such nicety as to be released directly by the slight strain or pressure which  
25 one of the primary weights is capable of exerting upon the long arm of the lever I prefer, for the sake of safety and effectiveness, to employ the extended series of weights sustained by levers and of increasing gravity, as  
30 shown, whereby the pressure or impact exerted successively by the releasing-weights when freed from their supports will be ample to overcome the resistance of the levers against which they act.

35 As before suggested, there are numerous connections in which my improved system of actuating mechanism may be advantageously applied, among others to that of drawing the bolt of a door or the like, as in public halls,  
40 whereby, in case of alarm of fire or similar emergency, the doors and other means of exit may be quickly unfastened without difficulty. If desired, when the mechanism is used in the latter or similar connections, handles may be  
45 substituted upon the ends of the wires or cords *p* in place of the initial weights A and their fusible supports, and so located as to be readily accessible in case of necessity.

While I prefer, for the sake of simplicity  
50 and economy, to employ the levers described, any other readily displaceable or removable supporting means of desired construction may be employed in their stead and would be the equivalent thereof.

55 What I claim as new, and desire to secure by Letters Patent, is—

1. In an actuating mechanism, substantially for the purposes set forth, the combination of  
60 a weight sustained against dropping by a readily-displaceable support and a weight of lesser gravity normally sustained by a readily-displaceable support and arranged with reference to the support of the heavier weight to actuate it when the lesser weight is released  
65 to release the heavier weight, and through the latter operate the alarm or other mechanism, substantially as described.

2. In an actuating mechanism, substantially for the purposes set forth, the combination of  
70 a weight, a pivotal lever normally sustaining the said weight, and a weight of lesser gravity normally sustained by a readily-displaceable support and arranged with reference to the lever to actuate it when the lesser weight is released to release the heavier weight, and  
75 through the latter operate the alarm or other mechanism, substantially as described.

3. In an actuating mechanism, substantially for the purposes set forth, the combination of  
80 a weight, a pivotal lever normally sustaining the said weight, a weight of lesser gravity arranged with reference to the said lever to actuate it when the lesser weight, is released to release the heavier weight and through the latter operate the alarm or other mechanism,  
85 a pivotal lever normally sustaining the lesser weight, and means, as the wire or cord *p*, connected with the supporting-lever of the lesser weight and extending to the point of operation, whereby the latter lever may be actuated  
90 to release the lesser weight, substantially as described.

4. In a system of actuating mechanism, substantially for the purposes set forth, the combination of three or more weights of different  
95 gravities in graduated series mounted upon readily-displaceable supports and so arranged with reference to each other that the weight of least gravity will operate when released from its support to displace the support of  
100 the next weight in the series, and so on to the end of the series, the final or heaviest weight being connected with the alarm or other mechanism to operate the latter when released from its support, substantially as described. 105

5. In a system of actuating mechanism, substantially for the purposes set forth, the combination of three or more weights of different  
110 gravities in graduated series mounted upon readily-displaceable supports and so arranged with reference to each other that the initial weight of least gravity will operate when released from its support to displace the support of the next weight in the series, and so  
115 on to the end of the series, the final or heaviest weight being connected with the alarm or other mechanism to operate the latter when released from its support, and a wire or cord  
120 *p*, connected with the displaceable support of the initial weight and extending to the place of operation, substantially as described.

6. A system of mechanism for automatically actuating a fire-alarm or other mechanism in the event of a fire, having a weight normally  
125 sustained by a readily-displaceable support and arranged with relation to the alarm or other mechanism to actuate it in falling, a primary weight of lesser gravity arranged with relation to the support of the heavier weight to displace in falling the said support,  
130 and a readily-fusible support for the primary weight in an exposed position to be melted by the heat of the fire, substantially as and for the purpose set forth.



7. A system of mechanism for automatically actuating a fire-alarm or other mechanism in the event of a fire, having a weight normally sustained by a readily-displaceable support  
5 and arranged with relation to the alarm or other mechanism to actuate it in falling, a second weight of lesser gravity normally sustained by a readily-displaceable support and arranged with reference to the support of the  
10 heavier weight to actuate it when the said second weight is released to release the heavier weight, a primary weight of lesser gravity than the second weight arranged with relation to the support of the second weight to displace the latter in falling, and a readily- 15 fusible support for the primary weight in an exposed position to be melted by the heat of the fire, substantially as and for the purpose set forth.

JOHN H. DIXON.

In presence of—

J. W. DYRENFORTH,

M. J. FROST.