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Patented Nov. 6, 1900.

S. S. COLT.

TIME RELEASING MECHANISM.

(Application filed Feb. 21, 1900.)

(No Model.)

2 Sheets—Sheet 1.

FIG. 1

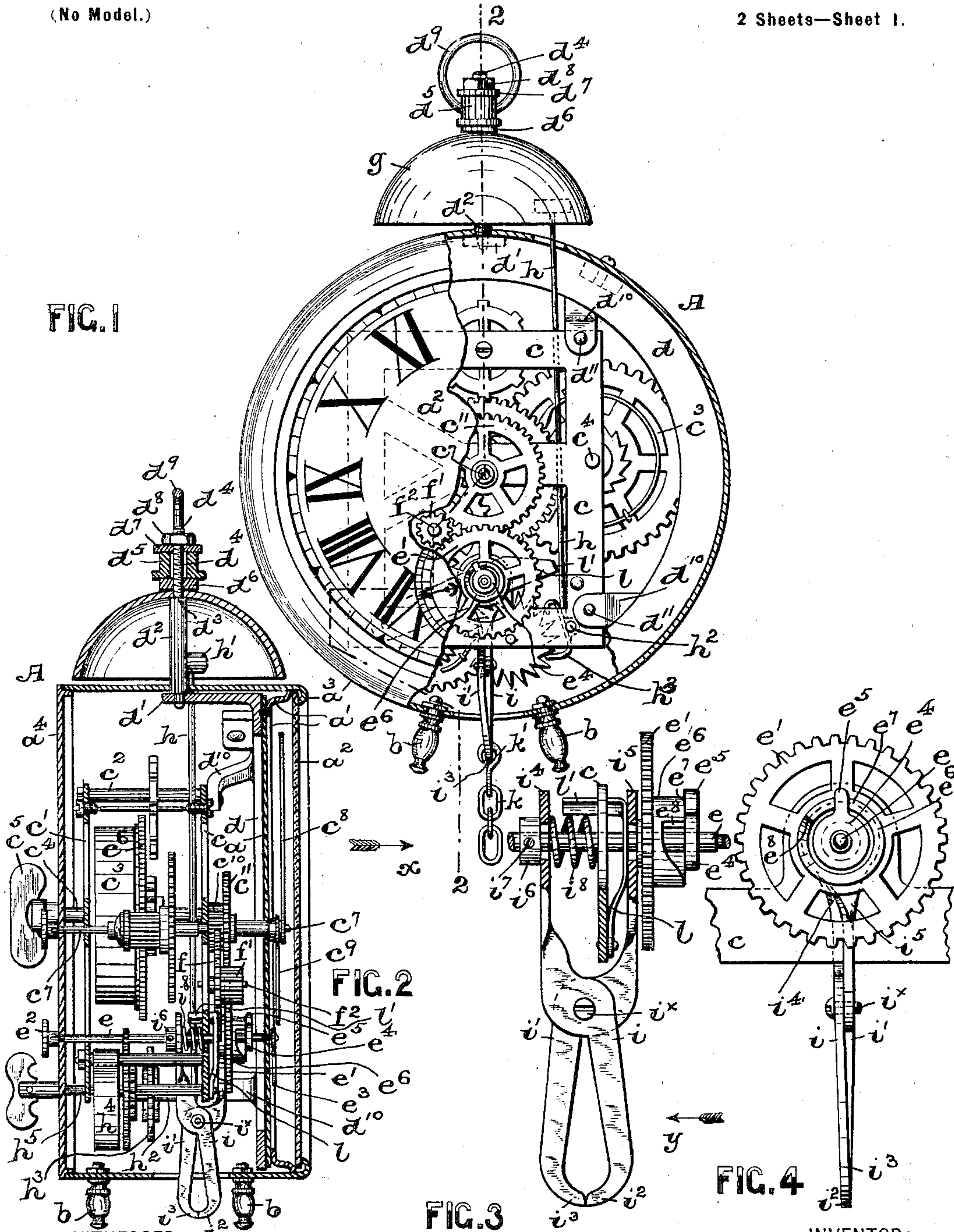


FIG. 2

FIG. 3

FIG. 4

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TIME RELEASING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 661,285, dated November 6, 1900.

Application filed February 21, 1900. Serial No. 5,990. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL S. COLT, a citizen of the United States, residing at Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Releasing Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention has reference to a novel construction of time-controlled weight-releasing mechanism to be used in connection with the alarm mechanism of a clock; and the invention has for its principal object to provide a simply-constructed weight-releasing mechanism which can be released by the alarm mechanism of the ordinary clock without altering the general construction or interfering with the mechanism of the clock, the mechanism being arranged to actuate a pair of pivoted holding-jaws and by separating or opening said jaws releasing a weight and said jaws thereafter being again closed or brought into their initial holding relation by the alarm mechanism.

The invention therefore consists in the novel construction of time-controlled weight-releasing mechanism hereinafter fully set forth and also in the novel features of construction and combinations of the various parts, all of which will be described in detail in the accompanying specification, and finally pointed out in the clauses of the claim which form a part of this specification.

The invention is clearly illustrated in the accompanying drawings, in which—

Figure 1 is a front view of a clock mechanism and one form of weight-releasing mechanism embodying the principles of my invention, a portion of the face of the clock being broken away to clearly illustrate the arrangement of the clock mechanism and the weight-releasing mechanism within the casing of the clock. Fig. 2 is a section, taken on line 2 2 in Fig. 1, looking in the direction of arrow *x*, the main parts of the clock mechanism and the weight-releasing mechanism

being represented in elevation. Fig. 3 is a face view of the weight-releasing mechanism, on an enlarged scale, illustrating its arrangement on the alarm-arbor, some of the parts of the alarm mechanism for actuating said weight-releasing mechanism being represented in side elevation; and Fig. 4 is a view of the said parts represented in Fig. 3 when looking in the direction of arrow *y*. Fig. 5 is a face view of a weight-releasing mechanism of a slightly-modified form of construction with its arrangement on the arbor of the alarm mechanism of a clock. Fig. 6 is a similar view of still another modified form of weight-releasing mechanism embodying the leading features of my invention, and Fig. 7 is a view of the said parts represented in Fig. 6 when looking in the direction of arrow *z* in said figure. Fig. 8 is a perspective view of a guide employed with the construction represented in said Figs. 6 and 7. Figs. 9, 10, and 11 are face views of three other modified constructions of weight-releasing mechanism, but all embodying the principles of my present invention.

Similar letters of reference are employed in all of the said above-described views to indicate corresponding parts.

In said drawings in Figs. 1 and 2, A indicates the usual form of clock-casing provided with the supporting-legs *b* or other suitable devices at the bottom and with an alarm-gong *g*, secured upon the top of the casing, preferably in the manner hereinafter more fully set forth. Within said casing is the usual form of ring-shaped frame *d*, against which is arranged the dial *a* of the clock, and *a'* is the usual ornamental ring, against which is placed the glass face *a²*, held in position by said ring *a'* and the inwardly-extending bead *a³* of the clock-casing. In the back said casing A is provided with the usual cover *a⁴*. The said frame *d* is preferably provided with a rearwardly-extending supporting lug or shoulder *d'*, which is provided with an upwardly-extending post *d²*, which extends through a hole in the top of the casing A and has a shoulder *d³*, on which the gong *g* rests. The upper end of said post is screw-threaded, as at *d⁴*, and is provided with a sleeve *d⁵*, ro-

tatively arranged upon said screw-threaded end between a pair of disks d^6 and d^7 , which are screwed upon said end, substantially as illustrated. A nut d^8 may be arranged above the disk d^7 , and said sleeve d^5 is usually provided with a ring d^9 . Suitably secured against the holding lugs or projections d^{10} on said frame d , by means of screws or rivets d^{11} or in any other desirable manner, is the usual frame c , connected with a similar frame c' by means of the usual posts c^2 , as shown in Fig. 2 of the drawings. Between these two frames c and c' is arranged the usual clock or gear mechanism, actuated by the mainspring c^3 on the spindle c^4 , and which is wound by means of the usual finger-piece c^5 . The said spindle c^4 , by means of a gear c^6 , actuates the main arbor c^7 , which carries the clock-hands c^8 and c^9 . On said arbor c^7 are the usual gears c^{10} and c^{11} , which mesh with the intermediate gears f and f' on a pin f^2 in the frame c . In operative mesh with the gear f' is a toothed wheel e' , which is rotatively and slidably arranged on the usual arbor or stem e , connected with the alarm mechanism of the clock and provided with a finger-piece e^2 for setting the hand or index e^3 , connected with said stem, to the hour at which it is desired that the alarm mechanism and in the present instance the weight-releasing mechanism shall become actuated to release a weight or the like. This arbor e has fixed thereon a collar e^4 , having a projection or finger e^5 , and its arrangement on said spindle or arbor is such that it will turn with the said arbor when the latter is turned by means of its finger-piece e^2 for setting the index-hand e^3 . Operatively suspended from this spindle or arbor e is the weight-releasing mechanism made according to my invention, and said mechanism, as represented in Figs. 1 to 4, inclusive, consists, essentially, of a pair of jaws i and i' , which are pivotally connected by means of a screw i^x or other suitable pintle, substantially as illustrated. The lower holding portions of said jaws i and i' are bent or curved inwardly, as at i^2 and i^3 , and the upper arm portions i^4 and i^5 are each provided at or near their upper ends with suitable holes or perforations through which the arbor or spindle e is passed and whereby the said holding device is operatively suspended from said spindle or arbor. As shown in the several figures of the drawings, a suitable flat spring l , which is secured to a portion of the frame c , is employed to force the arm portion i^5 against the one side of the toothed wheel e' , hereinabove mentioned, thereby forcing the cam-surface e^7 of a hub e^6 , connected with said wheel e' , against the back of the projection or finger e^5 on the collar e^4 . Against the outer surface of the other arm portion i^4 and suitably secured upon said arbor or spindle e by means of an adjusting-screw i^7 or in any other well-known manner is a nut or collar i^6 , against which said arm i^4 is forced by the action of a spring

i^8 , encircling the arbor e between said arm i^4 and the inner surface of the frame c . In this manner, having properly adjusted said nut or collar i^6 upon the arbor e and secured it in its fixed position, the springs will cause the lower holding-jaw ends i^2 and i^3 to come close together, as shown, for holding or retaining a hook k' with a chain k or other weight in the opening thus formed, as clearly shown in Fig. 1 of the drawings. At the determined hour the rotation of the wheel e' will have brought an offset e^8 in the cam-surface e^7 of the hub e^6 directly back of the said projection or finger e^5 of the collar e^4 , and the spring-plate l will cause the immediate sliding forward of the tubular hub e^6 and the wheel e' connected therewith. At the same time the spring l has also moved the arm portion i^5 in the same direction and the jaw i' will swing on its pivot i^x . The lower end portions i^2 and i^3 have now become separated and the chain or weight is released, as will be clearly evident. After such release the arbor or spindle e , being actuated by the clock mechanism, will keep on turning and then cause the return of the jaws to their initial positions for receiving the hook k' , connected with the chain or weight k . All that is therefore necessary after the weight or chain has been released is to keep the mainspring of the clock mechanism wound, and the holding mechanism is automatically set for the reception of the hook with which the weight or chain is attached.

The spring-plate l is usually provided with a projection l' in normal holding engagement with a rod or stem h , which extends upwardly through an opening in the casing A and has a hammer h' . The lower end of said rod or stem h is connected with a shaft h^2 , having an oscillatory motion in bearings in the frames c and c' and which is provided with an escapement h^3 , actuated from a spring h^4 on an arbor h^5 in the usual manner when the projection l' is moved from its holding engagement with the stem h to cause the hammer h' to strike the gong g in the usual and well-known manner.

In Fig. 5 I have illustrated a modified arrangement of the weight-releasing mechanism. In this construction the frame c has arranged in a screw-threaded hole a sleeve m , preferably of the construction shown, in which I arrange the spring i^8 in such a manner that both its ends will act upon the inner surfaces of the arm portions i^4 and i^5 , and when the cam-hub e^6 slides forward in the manner above set forth by the action of the compressed spring i^8 then will the lower jaw portions of the device become separated and release the weight or chain, as will be clearly evident. It will thus be seen that the flat spring-plate l may be entirely dispensed with. To prevent the ringing of the alarm-gong until the weight-releasing mechanism has been actuated, it is only necessary to provide the

arm portion i^5 with a suitably-bent pin i^9 , which projects in a lateral direction from the flat surface of said arm portion and normally is in holding engagement with a portion of the vibrating stem or rod h .

In lieu of the pivotal arrangement of the holding-jaws i and i' (represented in Figs. 1 to 5, inclusive) a pair of jaws i^{10} and i^{11} may be employed, as illustrated in Figs. 6 and 7, the jaw i^{10} being pivotally secured in a bearing n on one side of the frame c , and the jaw i^{11} being pivotally secured in a bearing n' upon the opposite side of said frame c . One of said jaws, as i^{10} , may also be provided with a suitable means of adjustment, such as an adjusting or set screw o , to cause the proper holding contact of the lower chain or weight-retaining portions against the tension of a compressed spring i^{12} . The arm or jaw i^{11} moves between a pair of guide-arms p' of the device p , (represented more particularly in Fig. 8,) said spring i^{12} serving to open or separate the holding portions of the weight-releasing device when the wheel e' and its cam-hub e^6 have moved forward on the arbor e in the manner above stated.

Instead of pivoting the jaw i^{10} in a bearing n , as illustrated in Figs. 6 and 7, the arm or jaw i^{10} may be made as represented in Fig. 9 and rigidly secured to the frame c by means of screws or rivets i^{13} , as shown. In all other respects the arrangement and construction of the remaining parts are the same as that set forth in said Figs. 6 and 7.

In some cases, as in Fig. 10, the jaw i^{10} may have a stud or pin i^{14} projecting from its lower end portion, said stud or pin extending into and through a hole or opening in the lower end portion of the second jaw i^{11} . When the parts are in the position indicated in said Fig. 10, the chain or weight is arranged upon the pin or stud in the manner shown, and when the toothed wheel and its cam-hub move forward on the arbor e then said jaw i^{11} will force the chain or weight from said pin or stud i^{14} , as will be clearly understood.

In Fig. 11 of the drawings I have represented still another modified arrangement and construction of the pair of holding-jaws of the weight-retaining mechanism. In this case the jaws are each of them provided with perforated ears or lugs i^{15} and a connecting pivotal pin i^{16} . A suitable spring, as i^{17} , forces the lower holding portions of the jaws apart when the toothed wheel e' and its cam-hub e^6 move on the arbor e in the direction toward the fixed sleeve or collar e^4 on said arbor. In this case, as shown, the parts may all be arranged on one side of the frame c , and the gear-wheel e' , with its cam-hub, and the collar e^4 may be arranged between the upper arm portions of the jaws, which portions are suspended from said arbor in the manner illustrated in said Fig. 11 and as set forth in the above description in connection

with the various other figures of the drawings.

I am fully aware that many changes may be made in the various arrangements and combinations of the parts as herein described and illustrated without departing from the scope of my present invention. Hence I do not limit my invention to the exact arrangements and combinations of the parts as herein described and illustrated, nor do I confine myself to the exact details of the construction of such parts.

Having thus described my invention, what I claim is—

1. In a releasing mechanism, the combination, with a gear mechanism, of a load-releasing device, consisting of a pair of opening and closing holding-jaws and a direct means of pivotal connection between both jaws, for bringing the lower ends of said jaws in holding contact with the load to be released, and whereby said jaws are arranged and constructed to be opened and closed by the action of said mechanism, substantially as and for the purposes set forth.

2. In a releasing mechanism, the combination, with a gear mechanism, of a load-releasing device, consisting, essentially, of a pair of spring-actuated opening and closing holding-jaws, and a direct means of pivotal connection between both jaws, for bringing the lower ends of said jaws in holding contact with the load to be released, and whereby said jaws are arranged and constructed to be opened and closed by the action of said mechanism, substantially as and for the purposes set forth.

3. In a releasing mechanism, the combination, with a gear mechanism, of a load-releasing device, consisting, essentially, of a pair of pivotally-connected and spring-actuated opening and closing jaws, having their lower ends in holding contact with the load to be released, arranged and constructed to be opened and closed by the action of said mechanism, substantially as and for the purposes set forth.

4. In a releasing mechanism, the combination, with the casing of a clock, and its alarm mechanism, of a weight or load releasing mechanism arranged within said casing and having a portion extending through the casing, and means connected with said alarm mechanism for actuating said weight or load releasing mechanism, said load-releasing mechanism consisting, essentially, of a pair of opening and closing holding-jaws, and a direct means of connection between both jaws, for bringing the lower ends of said jaws in holding contact with the load to be released, and whereby said jaws are arranged and constructed to be opened and closed by the action of the alarm mechanism, substantially as and for the purposes set forth.

5. In a releasing mechanism, the combination, with the casing of a clock, and its

alarm mechanism, of a weight or load releasing mechanism suspended on the alarm-arbor of said alarm mechanism, and means on said alarm-arbor for actuating said weight or load releasing mechanism, said load-releasing mechanism consisting, essentially, of a pair of opening and closing holding-jaws, and a direct means of connection between both jaws, for bringing the lower ends of said jaws in holding contact with the load to be released, and whereby said jaws are arranged and constructed to be opened and closed by the action of the alarm mechanism, substantially as and for the purposes set forth.

6. The combination, with the frame of a clock mechanism, and its alarm mechanism, of a weight or load releasing mechanism connected with the alarm-arbor of said alarm mechanism, said load-releasing mechanism consisting, essentially, of a pair of opening and closing holding-jaws, and a direct means of connection between both jaws, for bringing the lower ends of said jaws in holding contact with the load to be released, and whereby said jaws are arranged and constructed to be opened and closed by the action of the alarm mechanism, substantially as and for the purposes set forth.

7. The combination, with the frame of a clock mechanism, its alarm mechanism, and the alarm-arbor thereof, of a weight or load releasing mechanism connected with said alarm-arbor, a fixed sleeve on said arbor, a finger or projection on said sleeve, and a sliding gear and cam-shaped hub on said gear, said load-releasing mechanism consisting, essentially, of a pair of opening and closing holding-jaws, and a direct means of connection between both jaws, for bringing the lower ends of said jaws in holding contact with the load to be released, and whereby said jaws are arranged and constructed to be opened and closed by the action of the alarm mechanism, substantially as and for the purposes set forth.

8. The combination, with the frame of a clock mechanism, its alarm mechanism, and the alarm-arbor thereof, of a weight or load releasing mechanism connected with said alarm-arbor, consisting, essentially, of a pair of spring-actuated holding-jaws, having their lower ends in holding contact with the load to be released, and means on said arbor for actuating said holding-jaws, substantially as and for the purposes set forth.

9. The combination, with the frame of a clock mechanism, its alarm mechanism, and the alarm-arbor thereof, of a weight or load releasing mechanism connected with said alarm-arbor, consisting, essentially, of a pair of spring-actuated holding-jaws, having their lower ends in holding contact with the load to be released, and means on said arbor for actuating said holding-jaws, consisting, of a fixed sleeve on said arbor, a finger or projec-

tion on said sleeve, a sliding gear and a cam-shaped hub on said gear, substantially as and for the purposes set forth.

10. The combination, with the frame of a clock mechanism, its alarm mechanism, and the alarm-arbor thereof, of a weight or load releasing mechanism connected with said alarm-arbor, consisting, essentially, of a pair of pivoted holding-jaws, and a guiding means for preventing a lateral motion of said jaws, and a direct means of pivotal connection between both jaws, for bringing the lower ends of said jaws in holding contact with the load to be released, and whereby said jaws are arranged and constructed to be opened and closed by the action of said alarm mechanism, substantially as and for the purposes set forth.

11. The combination, with the frame of a clock mechanism, its alarm mechanism, and the alarm-arbor thereof, of a weight or load releasing mechanism connected with said alarm-arbor, consisting, essentially, of a pair of pivoted holding-jaws, and a guiding means for preventing a lateral motion of said jaws, and means on said arbor for actuating said jaws, consisting, of a fixed sleeve on said arbor, a finger or projection on said sleeve, a sliding gear and a cam-shaped hub, substantially as and for the purposes set forth.

12. In an alarm-clock, the combination, with an arbor *e*, and means of rotating the same, of a weight or load releasing mechanism connected with said arbor, and means on said arbor for actuating said weight or load releasing mechanism, said load-releasing mechanism consisting, essentially, of a pair of opening and closing holding-jaws, and a direct means of connection between both jaws, for bringing the lower ends of said jaws in holding contact with the load to be released, and whereby said jaws are arranged and constructed to be opened and closed by the action of the alarm mechanism, substantially as and for the purposes set forth.

13. In an alarm-clock, the combination, with an arbor *e*, a sliding gear on said arbor, and means engaging with said gear for rotating the same and said arbor, of a weight or load releasing mechanism connected with said arbor, and means on said gear and arbor for actuating said weight or load releasing mechanism, consisting, of a cam-hub on said gear and a fixed sleeve on said arbor having a finger or projection with which said cam-hub is in operative engagement, substantially as and for the purposes set forth.

14. In an alarm-clock, the combination, with an arbor *e*, and means for rotating the same, of a pair of pivoted and spring-actuated holding-jaws connected with said arbor, having their lower ends in holding contact with the load to be released, and means on said arbor for actuating said jaws, substantially as and for the purposes set forth.

15. In an alarm-clock, the combination, with
an arbor *e*, a sliding gear on said arbor, and
means engaging with said gear for rotating
the same and said arbor, of a pair of pivoted
5 and spring-actuated holding-jaws connected
with said arbor, and means for actuating said
jaws, consisting, of a cam-hub on said gear
and a fixed sleeve on said arbor having a fin-
ger or projection with which said cam-hub is

in operative engagement, substantially as and 10
for the purposes set forth.

In testimony that I claim the invention set
forth above I have hereunto set my hand this
17th day of February, 1900.

SAMUEL S. COLT.

Witnesses:

FREDK. C. FRAENTZEL,
GEO. D. RICHARDS.