(No Model.)

2 Sheets—Sheet 1.

J. F. KINGWILL.

COIN CONTROLLED BLOW TESTING MACHINE.

No. 411,769. Patented Sept. 24, 1889.

Fig. 1.

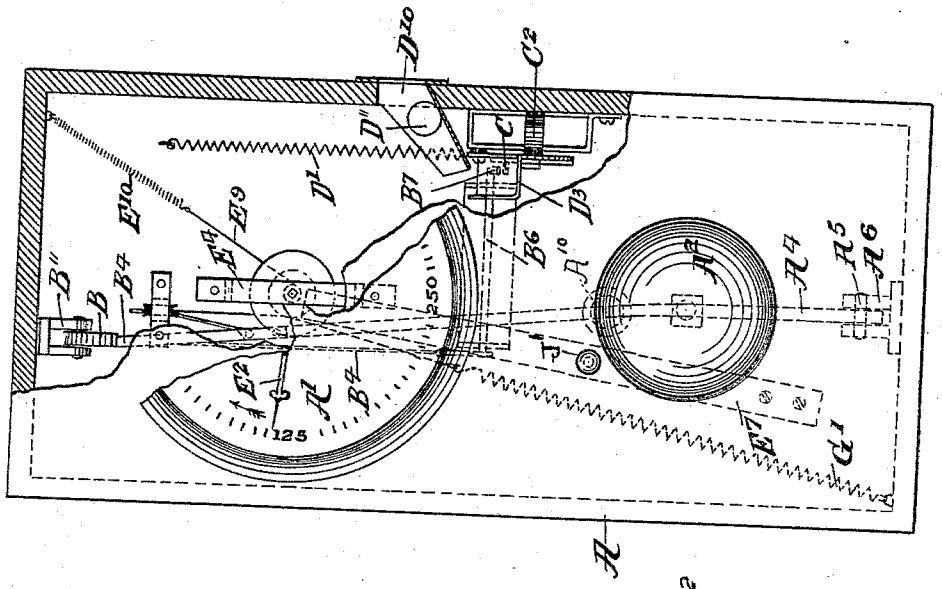
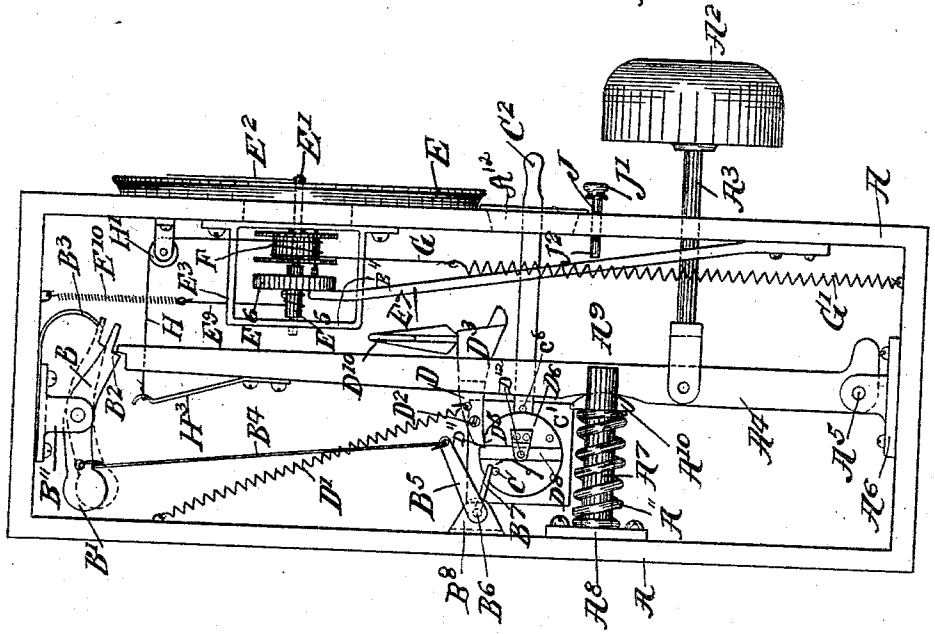


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

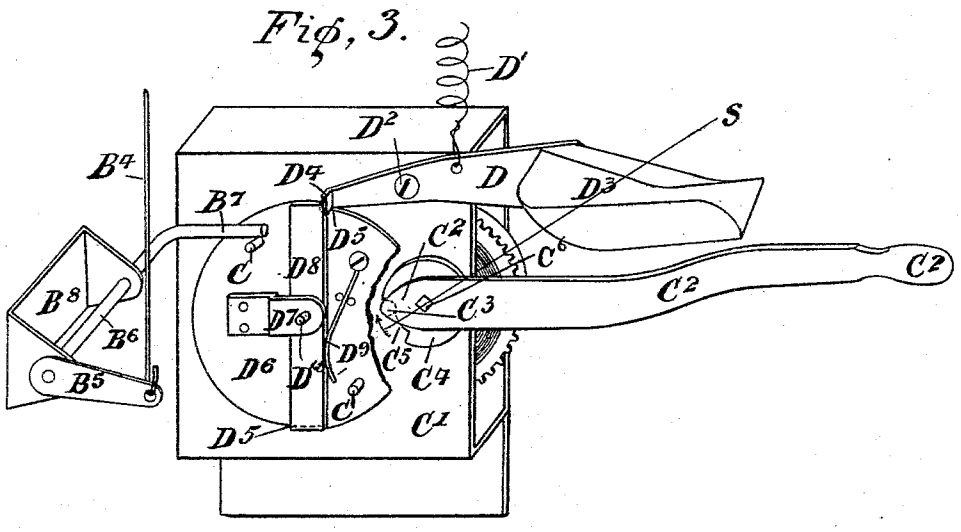


Fig. 4.

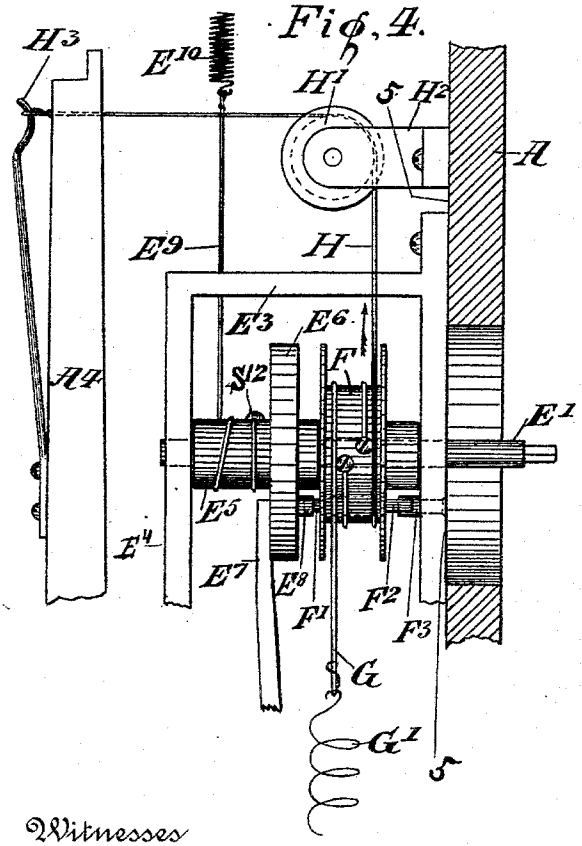
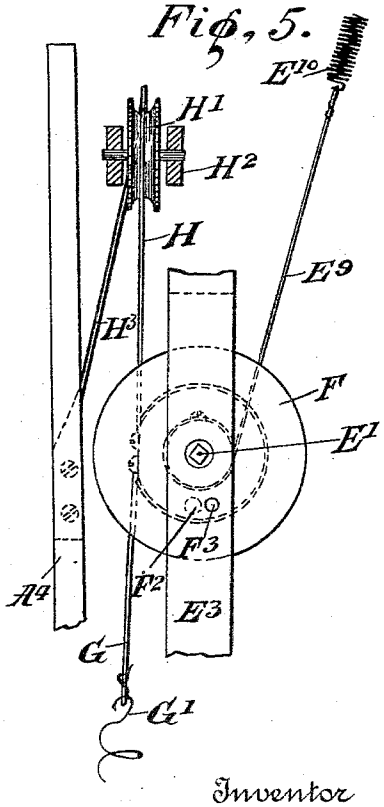


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN F. KINGWILL, OF CHICAGO, ILLINOIS, ASSIGNOR TO T. J. HOLMES, C. W. BECK, AND CHARLES L. WAKEFIELD, ALL OF SAME PLACE.

COIN-CONTROLLED BLOW-TESTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 411,769, dated September 24, 1889.

Application filed February 11, 1889. Serial No. 299,476. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. KINGWILL, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Coin-Controlled Blow Testing or Striking Machines, of which the following is a specification.

My invention relates to coin-controlled testing devices, and particularly such as are used to test the striking power of a person or persons, and has for its object to provide convenient means whereby a series of tests may be made during a considerable period of time. This object I accomplish by means of the mechanism illustrated in the accompanying drawings, wherein—

Figure 1 is a front view of the device with some parts removed. Fig. 2 is a side view of the interior. Fig. 3 is a detail of the clock mechanism. Fig. 4 is a detail of the mechanism which operates the indicating-hand; and Fig. 5 is another detail of the same, taken on the line 5 5 of Fig. 4, with certain parts omitted.

The same or like parts are indicated by the same letters in all the figures.

A is a box or case having on the front thereof the dial A′, and the striking-cushion A^2 on the rod A^3, which is pivoted to the vertical rod A^4, which is in turn pivoted at A^5 to the stand A^6 on the bottom of and inside the case.

A^7 is a bar projecting from the back of the case A, and secured to the stand A^8, and received into a pocket A^9 in the rod A^4. Upon the rod A^7 is the block A^{10}, which bears against the rod A^4, and about the bar A^7, between the block A^{10} and the stand A^8, is the helical spring A^{11}. From an examination of this structure it will be seen that when pressure is applied or a blow struck on the cushion A^2 the rod A^4, if free, will be oscillated on its pivot A^5 against the action of the spring A^{11}; but this bar A^4 is locked by means of the pivoted dog B, pivoted on the hanger B^{11}, which is secured to the top of the case A. The dog B has the weighted end B′ and the notch B^2, and above its inner or notched end is the spring B^3, which keeps it from rising too far, acting against the power of the weight B′. Secured to the dog B is the rod B^4, its lower end secured to the arm B^5, projecting from the rock-shaft B^6, from which projects also the arm B^7, as shown in Fig. 2. This structure will remain in the position shown in Fig. 2 when the arm B^7 is raised and supported—as, for instance, by the pin C on the plate D^6, Fig. 3. The rock-shaft B^6 is supported on the stand B^8, secured to the side of the case.

C′ is a case containing an ordinary clock mechanism, to the winding-shaft C^6 of which is secured the hand lever or arm C^2, having the pin C^3, as shown in Figs. 2 and 3. On the case C′ is secured the plate C^4, having the long notch C^5, in which moves the pin C^3. By operating the arm C^2 the main or winding shaft of the clock mechanism is rotated and the clock wound up, and when released the clock will unwind or run until the arm is arrested against the top of slot A^{12} in the frame A, through which arm C^2 projects, or until the pin C^3 engages the opposite end of the notch C^5.

D is a pivoted dog upwardly held by the spring D′, which dog is pivoted to the clock-case C′ at D^2, said pivoted dog D having at one extremity a scoop D^3 and at the other a lug D^4 to engage the notch D^5 on the plate D^6. This plate is secured upon the ordinary hand-shaft D^{12} of the clock mechanism in lieu of the hands and carries the pins C C. It also carries the block D^7, between which and the plate D^6 is pivoted the bar D^8, against which bears the spring D^9.

D^{10} is a coin-chute through which the coin D^{11} passes into the scoop D^3, which is formed on the dog D.

E is a ring on the face of the case which contains the dial A′, and through the dial passes the shaft E′, carrying the hand E^2 and passing inward into the frame E^3, which is secured to the inner side of the front of the case. The shaft E′ is journaled in this frame and in the cross-bar E^4 behind the dial. Rigid on this shaft E′ is the windlass E^5 and the friction-plate E^6, provided with the lateral pin E^8.

E^7 is a spring friction-bar, which bears against and acts as a brake for said friction-

plate E^6. About the windlass E^5 is coiled the cord E^9, secured to the helical spring E^{10}, which is itself secured to the top of the case, and this cord E^9 is secured at S^{12} to the windlass.

F is a drum loose on the shaft E′ and having on one side (that next the plate E^6) the pin F′ to engage the pin E^8, and on the other side the pin F^2 to engage the pin F^3, projecting from the frame E^3. About this drum are coiled in opposite directions the cord G, secured to the spring G′, which is in turn fastened to the bottom of the case, and the cord H, which passes over the pulley H′, pivoted on the hanger H^2, which projects from the inside of the front of the case, and said cord thence passing to the spring-arm H^3 on the rod A^4.

J is a reciprocating push having the thumb-piece J′ and the inner end J^2 to engage the spring friction-bar E^7. By forcing this push in the friction-bar E^7 will be released from its friction-plate E^6.

The use and operation of my invention are as follows: If a coin D^{11} be dropped, as indicated in Fig. 1, inside the slot D^{10}, said coin being of the right size and weight, it will pass down the chute D^{10} into the scoop D^3. Reference being had now to Fig. 3, it will be seen that the weight of this coin in the scoop D^3, if the coin be of the right denomination, will be sufficient to counteract the influence of the spring D′, rock the dog D on its pivot D^2, and raise the lug D^4 out of contact with the notch D^5 and the end of the bar D^8, as hereinafter stated. If the hand-lever C^2 has been pushed down into the position indicated in Fig. 3 and Fig. 2, the clock mechanism will be wound up to a certain degree, and as soon as the dog D is lifted out of engagement with the notch D^5 and the bar D^8 the clock mechanism will begin to move the plate D^6. In order that the dog D may not re-engage the notch D^5 before the mechanism has had time to move the plate D^6, I have provided the bar D^8, which as soon as released springs forward a certain distance beneath the lug D^4 of the dog. This bar D^8 is concentric with the plate D^6, and its ends are arcs of a circle. The notches D^5 D^5 are on opposite sides of the plate D^6, and the plate will continue to rotate and the clock mechanism to be in operation until the plate D^6 is moved through one-half of its circumference, when the other notch D^5 and the other end of the bar D^8 will be engaged by the lug D^4 on the dog D. The relation of the pins C C to the notches D^5 D^5 is such that when one of these notches is engaged by the lug D^4 the pin is arrested at a point where it supports the arm B^7, extending from the rock-shaft B^6, as indicated in Figs. 3 and 2, and this turns the rock-shaft B^6 in its bearings and raises the arm B^5 and rod B^4, and hence turns the dog B on its pivot, so as to cause the shoulder B^3 to engage the upper end of the rod A^4, whereby said latter-mentioned rod is locked in position. If a blow be struck on the cushion A^2 while the parts are in this position, it is clear that no register will be made and that the cushion will not move. Now, as soon as the plate D^6 is moved any considerable distance, the pin C releases the end of the arm B^7 and permits the weight B′ to cause the parts, including the dog B, to assume the position shown in dotted lines, (see Fig. 2,) thus freeing the upper end of the bar A^4. In this manner the mechanism is unlocked by means of the introduction of a coin through the chute D^{10}. The scoop D^3 is so made as not to respond to any but a coin of the right size and weight. The parts will thus remain unlocked until the arm B^7 is again engaged and supported by one of the pins C, and this will not take place until the plate D^6 is again locked, as shown in full lines in Figs. 2 and 3. If, now, a blow be struck at any time (when the parts are so released or unlocked) upon the cushion A^2, it, with its rod A^3, will be forced inward, rocking the rod A^4, compressing the spring A^{11}, and, by means of the cord H passing over the pulley H′, will rotate the drum F. These parts are shown in Figs. 4 and 2. The rotation of the drum F, however, since it must rotate in the direction indicated by the arrow in Fig. 4, will carry with it the friction-plate E^6 and windlass E^5, secured thereto and to the shaft E′. This is accomplished by the engagement of the pin F′, projecting from the side of the drum, with the pin E^8, projecting from the side of the friction-plate. Now, since the friction-plate E^6 and windlass E^5 are rigid on the shaft E′, and the hand E^2 is also rigid on such shaft, this hand will move in the direction indicated by the arrow in Fig. 1, and hence will indicate the strength of a blow directed against the cushion A^2. Now, of course, as soon as the pressure is removed from the cushion A^2, or as soon as the force of the blow is lost, the spring A^{11} (shown in Fig. 2) reacts, restores the rod A^4 to its normal position, slackens the cord H, and permits the spring G′ to unwind the drum in the opposite direction from that indicated by the arrow in Fig. 4, or until its motion is stopped at substantially the initial point by the engagement of the pin F^2 on the side of the drum with the pin F^3 on the frame. Now, it is desired that the indicating-hand should remain at the point which it has reached, so as to give opportunity to read the indication; hence it is that the drum F is not rigid with the shaft E′ or with the friction-wheel thereon, and hence it is that I have provided the spring friction-bar E^7, which bears against the side of the friction-plate E^6, and which retains the said plate and hence the shaft and indicating-hand in the position they reach. Now, this indication having been read, it is only necessary to force inwardly the push J (shown in Fig. 2) until the friction-bar E^7 is freed from the friction-plate E^6, when the drum E^5 and shaft E′ and hand E^2 will be restored to their

normal positions by the reaction of the spring E^{10} drawing upon the cord E^9. In like manner tests can continue to be taken until the clock mechanism has run down sufficient to cause the dog D to again engage one notch D^5 and one end of the bar D^8, when the parts are again locked and can be opened only by the introduction of a coin. By lowering the hand-lever C^2 the clock mechanism will again be wound up, and when released will continue to run for a period of, say, one or two minutes, during which a number of tests can be made. The dog B, which locks the bar A^4, together with the clock mechanism which controls such lock, I call the "time-lock." The object of the spring-connection between the cord H on the drum and the bar A^4 is to compensate for the inertia of the moving indicating parts, and it prevents breaking of such cord when the blow is given.

I claim as new and desire to secure by Letters Patent—

1. In a coin-controlled testing-machine, the combination of a testing apparatus, a lock therefor, a clock mechanism which controls such lock, and a coin-controlled release for such clock mechanism.

2. In a coin-controlled testing-machine, the combination of an apparatus with a lock therefor, a clock mechanism which when at rest holds such lock in engagement and when in operation leaves the same free, and a coin-controlled catch for such clock mechanism.

3. In a coin-controlled testing-machine, the combination of a testing apparatus, a lock therefor, with a clock mechanism having a movable part which when at rest holds the lock, and a coin-controlled catch for such movable part which normally holds the same locked.

4. In a coin-controlled testing-machine, the combination of a pivoted bar with a spring on one side and a striking-cushion on the other connected therewith, a lock which normally prevents the bar from rocking, a clock mechanism which controls such lock, and a coin-controlled catch for such clock mechanism which normally prevents said clock mechanism from moving and thus from releasing the lock.

5. In a coin-controlled testing-machine, the combination of a testing apparatus with a time-lock therefor independent of said testing apparatus when the same is released, and a coin-controlled catch for such lock which, when operated by a coin, releases said lock, and thereby releases the testing apparatus and after a predetermined period of time automatically again locks the same independent of any operation of said apparatus.

6. In a coin-controlled testing-machine, the combination of a testing apparatus with a lock therefor, a time mechanism which, when in operation, releases said lock for a considerable period, and a coin-controlled catch for such time mechanism which normally holds it out of operation and adapted to release the time mechanism when the coin is introduced.

7. In a coin-controlled testing-machine, the combination of a testing apparatus with a lock therefor, a clock mechanism controlling said lock, a notched disk rotated by the said clock mechanism, connections therefrom to the lock so as to hold the apparatus locked when the clock mechanism is not in motion, and a dog which engages a notch on such disk at one end and locks the disk and carries a scoop at the other to receive the coin and release the dog from said disk and allow the same to rotate and release said apparatus.

8. In a coin-controlled testing-machine, the combination of a testing apparatus with a lock therefor, a clock mechanism, a disk rotated by the said clock mechanism, and connections therefrom to the lock, so as to hold the apparatus locked when the clock mechanism is not in motion, a dog which engages a notch on such disk at one end and carries a scoop at the other to receive the coin, and a spring-bar pivoted on such disk adapted as soon as the dog is raised to slip under the end thereof and prevent the clock mechanism from again being locked until it has made a portion of its revolution.

9. In a coin-controlled testing-machine, the combination, with mechanism the movement of which is to be registered, of a dial with a hand which moves over the same, a shaft to which the hand is secured, a drum loosely mounted on such shaft, flexible connections between said drum and said mechanism, whereby the drum is rotated in one direction when such mechanism is operated, a spring to return the drum to its normal position, and two pins—one on such shaft and one on such drum—so that when the drum is rotated in one direction it carries the shaft and hand with it, but does not so carry them when rotated in the opposite direction.

10. In a strength-testing machine, the combination of mechanism the movement of which is to be registered, a dial, a shaft carrying a hand to move over the dial, a drum loosely mounted on such shaft, a flexible connection between said drum and said mechanism to rotate the drum in one direction, a spring connected with the drum to return the same to its normal position, pins on the shaft and drum to cause the shaft to rotate in one direction with the drum, a spring connected with and adapted to return the shaft and its hand to zero, and stops or pins to prevent the shaft rotating in the opposite direction past zero, substantially as described.

11. In a coin-controlled testing-machine, the combination, with mechanism the movement of which is to be registered, of a dial with a hand which moves over the same, a frame, a shaft to which the hand is secured, a drum loosely mounted on such shaft, flexible connections between such drum and mechanism to rotate the drum in one direc-

tion, and four pins—two on the drum, one rigid with the shaft, and one rigid with the frame—those on the drum adapted to engage the other two in opposite directions, so that the drum cannot move beyond a certain point in one direction and when traveling in the other direction may carry the shaft with it.

12. In a coin-controlled strength-testing machine, the combination of a spring rocking-bar and a striking-cushion attached thereto, a rotary shaft having an indicating-hand attached thereto, a rotary drum loosely mounted on said shaft, means to lock the shaft to the drum when rotating in one direction, springs to return the shaft and drum to their normal positions, and a cord connecting the free end of said rocking-bar with said drum to rotate the same and the hand, substantially as described.

13. The combination, with a registering mechanism, of a spring rocking-bar connected with and adapted to operate said mechanism, a lock for the bar to hold the same rigid, and a coin-controlled lever or catch adapted, when operated by a coin, to release said lock and hence the bar, as and for the purpose set forth.

14. The combination of a rocking-bar, a pivoted lock or catch for the bar, a rock-shaft connected with said lock to release said bar, a clock mechanism to operate said shaft, and a coin-controlled catch for said clock-work which, when operated by a coin, releases the clock and thereby unlocks the bar for a predetermined period of time, as and for the purpose set forth.

15. The combination, with mechanism the movement of which is to be registered, of a time-lock for said mechanism which, when operated, releases the mechanism and after a predetermined time automatically relocks the same independent of any movement of the mechanism, said time-lock comprising a lock and clock-work controlling the same, and a coin-controlled release for the clock-work, substantially as described.

16. The combination, with a case and mechanism the movement of which is to be registered, of a time-lock for said mechanism comprising a lock and clock-work controlling the same, means connected with the winding-shaft of said clock-work and extending to the exterior of the case, whereby the clock-work can be wound up, and a coin-controlled release and lock for the clock-work, substantially as described.

In witness whereof I have hereunto set my hand this 9th day of February, 1889.

JOHN F. KINGWILL.

Witnesses:

FRANCIS W. PARKER,

CELESTE P. CHAPMAN.