(No Model.) 3 Sheets—Sheet 1.

H. D. HINCKLEY.

COIN CONTROLLED TORSIONAL GRIP TESTING MACHINE.

No. 421,712. Patented Feb. 18, 1890.

Fig. 1

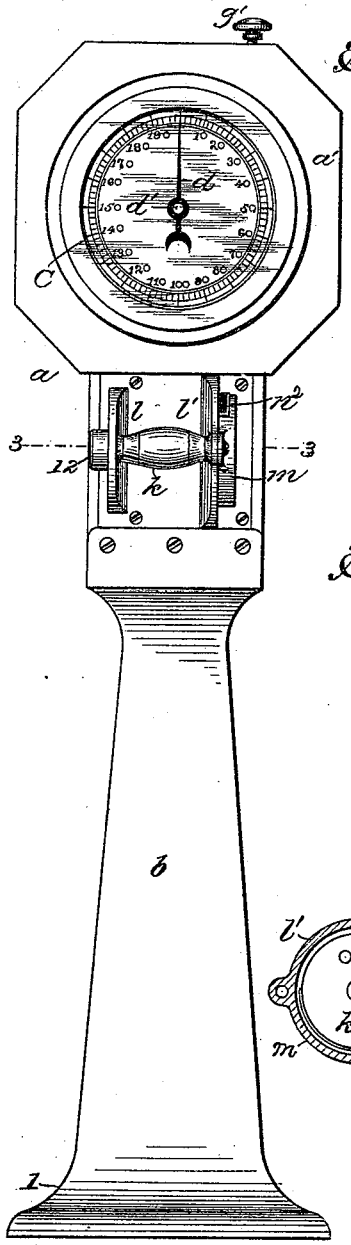


Fig. 2

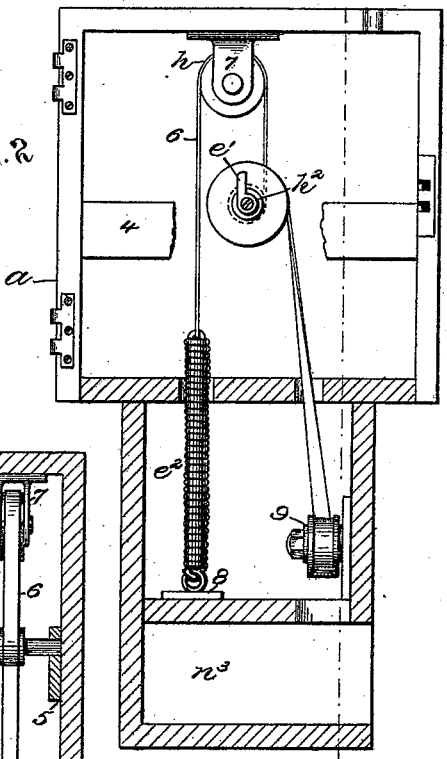


Fig. 4

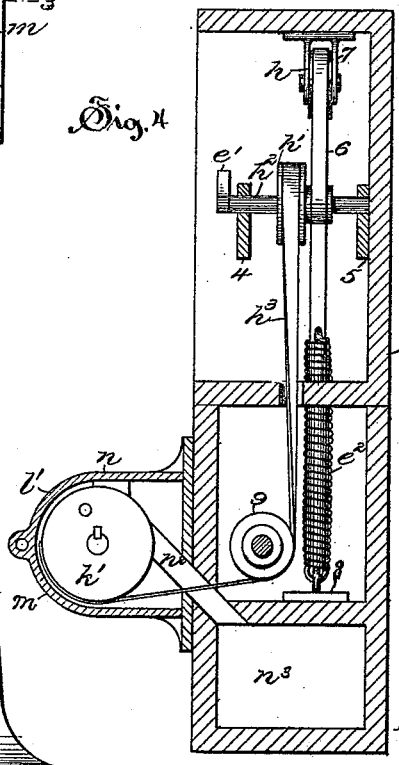
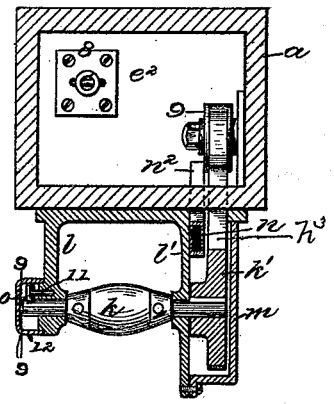


Fig. 3



Witnesses:

Harry P. Williams

Arthur P. Jenkins,

Inventor,

Henry D. Hinckley

by Simonds & Burdett,

atty.

(No Model.) 3 Sheets—Sheet 2.

H. D. HINCKLEY.

COIN CONTROLLED TORSIONAL GRIP TESTING MACHINE.

No. 421,712. Patented Feb. 18, 1890.

Fig. 5

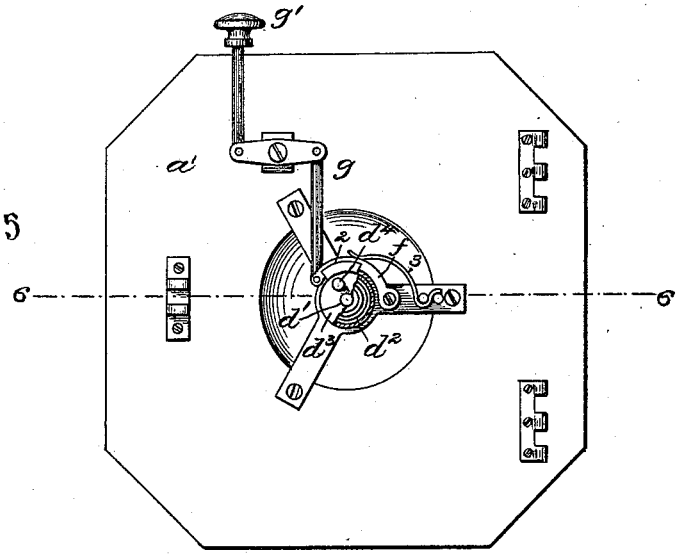
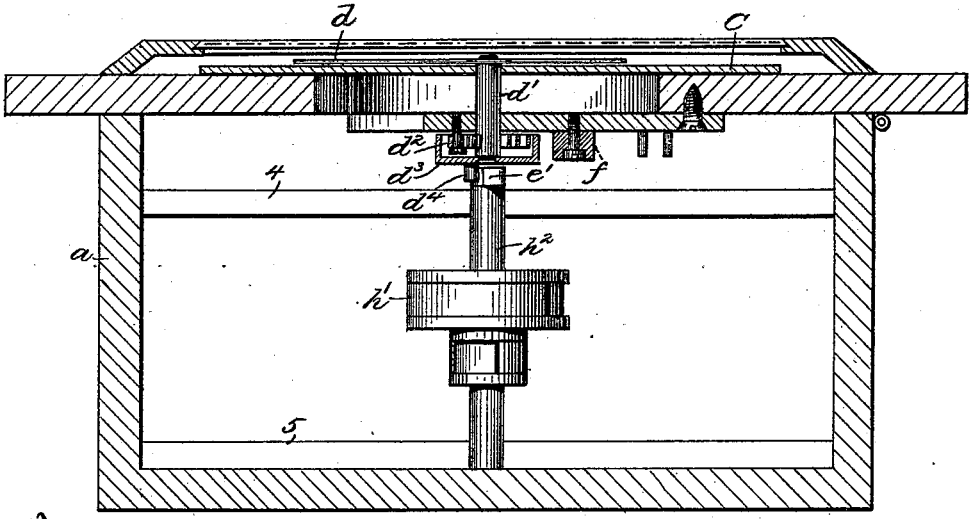


Fig. 6.



Witnesses:
Harry R. Williams.
Arthur P. Jenkins.

Inventor,
Henry D. Hinckley.
by Simonds & Burdett,
attys.

(No Model.) 3 Sheets—Sheet 3.

H. D. HINCKLEY.

COIN CONTROLLED TORSIONAL GRIP TESTING MACHINE.

No. 421,712. Patented Feb. 18, 1890.

Fig. 7.

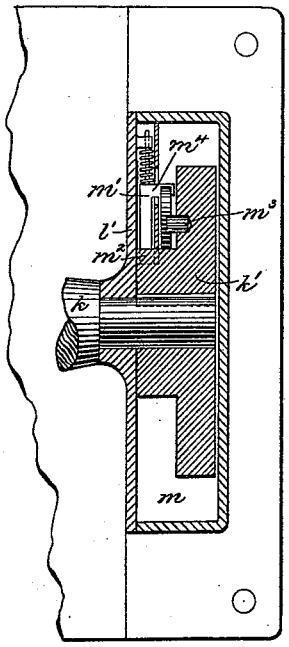


Fig. 8.

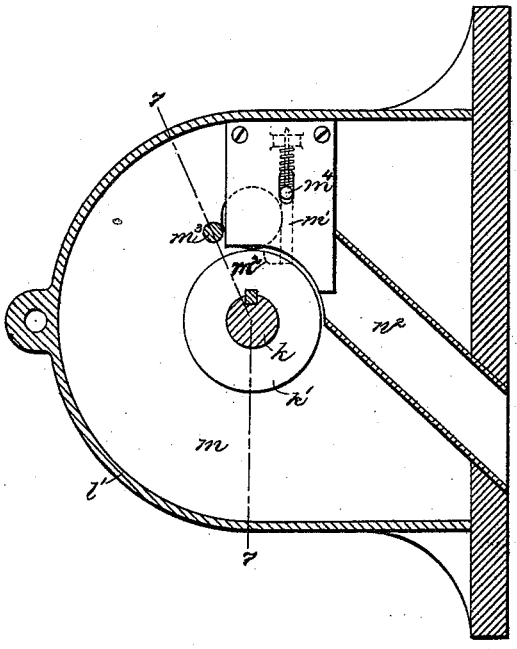


Fig. 9.

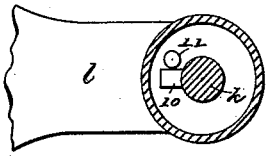
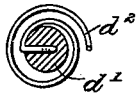


Fig. 10.



WITNESSES

Wm. Musser.

B. W. Sommers.

INVENTOR

Henry D. Hinckley.

by Simonds & Burdett, H.

Attorney

UNITED STATES PATENT OFFICE.

HENRY D. HINCKLEY, OF HARTFORD, CONNECTICUT, ASSIGNOR TO WILLIAM L. TOMLINSON AND JOHN G. RICH, BOTH OF SAME PLACE.

COIN-CONTROLLED TORSIONAL GRIP-TESTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 421,712, dated February 18, 1890.

Application filed January 7, 1889. Serial No. 295,628. (No model.)

To all whom it may concern:

Be it known that I, HENRY D. HINCKLEY, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Coin-Controlled Torsional Grip-Testing Machines, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

My invention relates to improvements in devices for testing and measuring the power of the human grip, of that class wherein the mechanism is normally held in locked condition to prevent action or operation, and which may be unlocked by the action of a coin coming in contact with the locking mechanism; and the object is to simplify and improve existing machines of the class.

To this end my invention consists in the novel construction of parts and their combinations, as will be hereinafter fully specified, and particularly as the same is pointed out in the claims.

I attain the object of my invention by the means illustrated in the accompanying drawings, wherein—

Figure 1 is a front view in elevation of the device, showing the dial with the indicating-hand and the hand-grasp. Fig. 2 is a view of the casing with the door removed and a sectional view of the lower portion with the mechanism displayed on the interior. Fig. 3 is a transverse sectional view taken on the line 3 3 of Fig. 1. Fig. 4 is a vertical sectional view taken on the line 4 4 of Fig. 2. Fig. 5 is a view of the inside of the door, showing the attached mechanism, the spring-barrel being partly broken away to display the spring. Fig. 6 is a transverse sectional view of the casing and parts cut by a plane on the line 6 6 of Fig. 5. Fig. 7 is a sectional view through the band-wheel of the hand-grasp, showing the locking mechanism, the figure being taken on the lines 7 7 of Fig. 8. Fig. 8 is a sectional view of the bracket-casing, the band-wheel for the hand-grasp, the locking mechanism, and the coin-slot. Fig. 9 is a sectional view of the holding and stopping means for the hand-grasp, taken on line 9 9, Fig. 3. Fig. 10 is a detail view of the spring for returning the indicator to its normal position.

a designates the casing or frame within which the mechanism is contained and supported. The casing is supported on a substantial standard *b*, formed with a flaring or extended base 1, to give it stability. To the upper portion of the casing is hinged a door *a'*, having arranged on its face a graduated plate *c*, the graduations of which indicate weight. In the door, and arranged in the center of the graduated plate, is journaled a short arbor *d'*, having secured to its outer end a hand or pointer *d*, which sweeps over the face of the graduated plate and indicates by its position the force applied in weight to the hand-grasp. On the inner projecting part of the arbor *d'* is secured one end of a coil-spring d^2, having its other end secured to the rim of a spring-barrel d^3 on the inner face of the door. From the face of the spring-barrel d^3 is inwardly projected a lug or pin d^4, arranged to engage with a lug or arm *e'* on the shaft of the adjacent mechanism.

f designates a brake pivotally mounted on a support and provided with a brake-shoe 2, adapted to bear on the rim of the spring-barrel, as shown in Fig. 5 of the drawings. Attached to the free end of the friction-brake is a tripping device *g*, having its upper end *g'* extending above the case. By means of this trip the brake-shoe may be raised from contact with the barrel, and the hand or indicator be freed to return to its normal position after being moved therefrom. A spring 3 is arranged to bear with its free end on the brake, and serves to hold the brake-shoe down on the barrel and thus hold the indicator to the point to which it may have been moved by the arm or lug *e'*.

Arranged in the case *a* are supports 4 5, carrying in bearings therein a shaft h^2, having attached thereto one end of a band 6, carried over a pulley *h*, journaled in bracket 7 at the top of the case, and thence extending down has its end connected to a resistance-spring e^2, the lower end of which is anchored to a support 8 in the casing. On the shaft h^2 is a pulley *h'*, having one end of a belt h^3 fixed to the face thereof, which belt is carried down-

ward under an idler 9 in the case, and thence to a pulley k' in a casing in the bracket carrying the hand-grasp. On the inner end of the shaft h^2 is the pin or lug e', arranged to engage the pin d^4 on the barrel d^3. On the front of the casing are secured brackets $l\ l'$, having bearings formed therein, in which is journaled the hand-grasp k, on one end of which is fixed the pulley k', to which one end of the belt h^3 is fastened, as heretofore stated, and the other journal of the hand-grasp is provided with a lug 10, which engages a stop-pin 11, which stops and holds the hand-grasp in its movement. This end of the journal of the hand-grasp is covered by a boxing or housing 12, substantially as shown in Fig. 3 of the drawings.

It will now be perceived, when the mechanism is free to be moved, that by turning the hand-grasp the shaft h^2, by the intermediate connection of the belt h^3, will be turned, the normal position of which shaft is at a point with the lug e' thereon, in contact with the lug d^4 on the spring-barrel, so that as the shaft h^2 is turned the arbor d' of the hand or pointer d is also turned, and the limit of the movement indicated on the graduated plate. To make such indication express or denote the force exerted on the hand-grasp resistance mechanism e^2, 6, and h is provided, the spring of which is graded or adapted to measure the force by weight. When the force at the hand-grasp is removed, the mechanism returns to its normal position through the instrumentality of the spring e^2, but the hand d on the front is left in the position reached by the action of the other mechanism until the brake f is lifted, when, by the action of the spring d^2 in the barrel on the arbor of the hand, it is returned to the zero-point in the graduated plate.

To provide the machine with a coin-controlled locking device the bracket l' is made with a covered chamber m, within which the pulley k' on the hand-grasp shaft is concealed, and in this chamber is mounted a spring-actuated bolt m', (see Fig. 7,) the lower end of which engages a recess or socket m^2, formed in the hub of the pulley k', as shown in Figs. 7 and 8 of the drawings. The socket m^2 is large enough to permit a slight movement of the hand-grasp before the wall of the socket encounters the spring-bolt, so that the force on the hand-grasp may not be unnecessarily impeded by the sudden resistance at the start and the coin rolled under the lug of the spring-bolt to disengage the bolt. In the top of the chamber m is a coin-slot n, from which leads the coin-channel n^2 into the receptacle n^3 in the casing. The spring-bolt m' is formed with a projecting lug m^4, which extends across the coin-channel at such a height as to be engaged by the edge of a coin dropped into the slot, as indicated in Figs. 7 and 8 of the drawings.

On the inner face of the pulley k' is a pin m^3, arranged to rest behind the coin and bear it under the lug m^4 of the spring-bolt. It will now be perceived that when a coin is dropped into the slot it descends until it lodges between the lug m^4 and the pin m^3, as indicated in Figs. 7 and 8. The hand-grasp being now turned slightly, the coin is rolled or turned under the lug m^4, which lifts the spring-bolt m' from its engagement with the socket m^2 in the hub of the wheel k', which disengagement unlocks the mechanism and permits the coin to pass on downward into the repository. After the grip has been released from the hand-grasp the mechanism automatically returns to its normal position, as already specified.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the journaled hand-grasp k, the pulley k', mounted on the journal of the hand-grasp, the shaft h^2, provided with a lug e', the belt h^3, connecting the shaft h^2 and pulley k', the resistance mechanism, substantially as described, connected to the shaft h^2, and an arbor d', provided with a spring-barrel having lug d^4 to engage the lug e' on the shaft h^2, and a pointer on the arbor, substantially as described, and for the purpose specified.

2. The combination of the journaled hand-grasp k, the pulley k' on the journal of said hand-grasp, the shaft h^2, provided with a lug e', the belt h^3, connecting the shaft h^2 and pulley k', the pulley h, the spring e^2, and belt 6, and an arbor having a spring-barrel provided with a lug to engage the lug on the shaft h^2, and an indicator on the arbor, substantially as described, and for the purpose specified.

3. The combination, with the journaled hand-grasp k, and the pulley k', mounted on the journal of the hand-grasp and formed with a recess in its hub and a projecting pin in its side, of the coin-controlled locking means consisting of the spring-actuated bolt m', normally engaging the recess in the hub of the pulley k', having a projecting lug m^4 to set across the coin-channel, substantially as and for the purpose specified.

HENRY D. HINCKLEY.

Witnesses:
CHAS. L. BURDETT,
WM. L. WOOD.