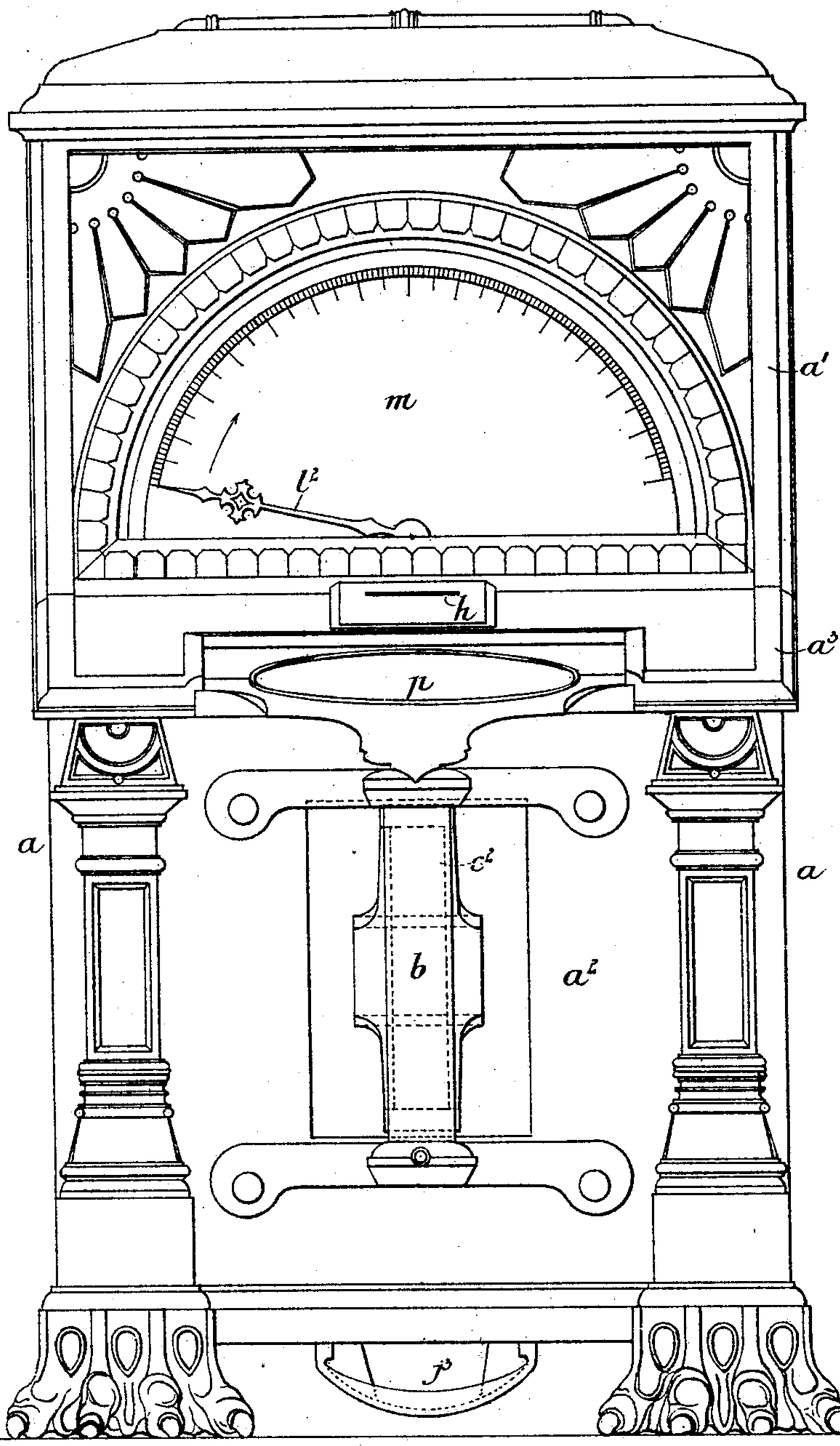
(No Model.) 5 Sheets—Sheet 1.

C. A. & A. BARRETT.

COIN FREED DYNAMOMETER.

No. 452,688. Patented May 19, 1891.

Fig. 1.



Witnesses.
Will Norton
B. H. Naylor

Inventors.
Charles A Barrett
Alfred Barrett
by John J. Halsted. Son
their Atty's.

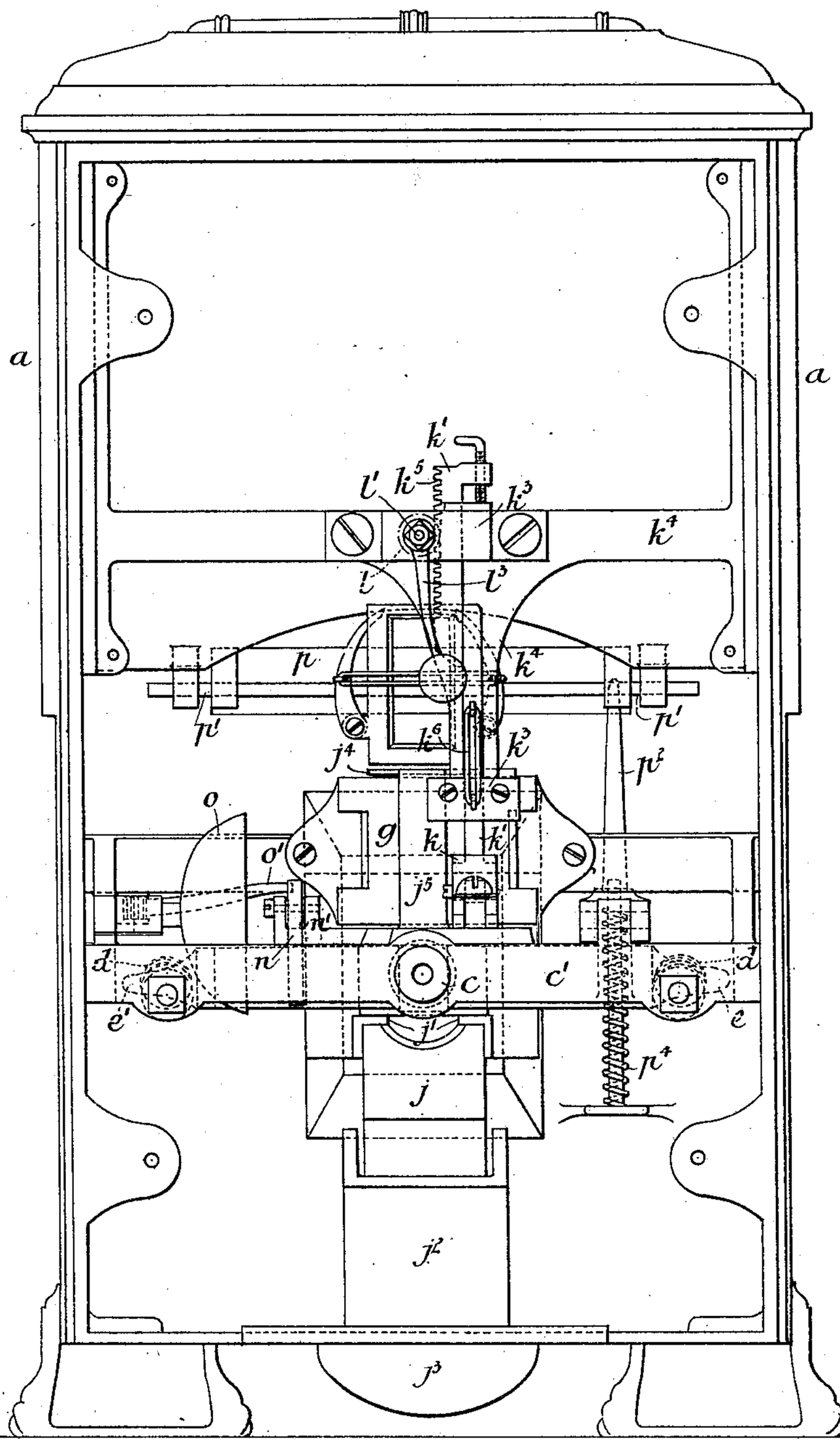
(No Model.) 5 Sheets—Sheet 2.

C. A. & A. BARRETT.

COIN FREED DYNAMOMETER.

No. 452,688. Patented May 19, 1891.

Fig. 2.



Witnesses.
Wm. E. Norton
B. H. Naylor

Inventors.
Charles A Barrett
and Alfred Barrett
by John J. Halsted & Son
their Attys.

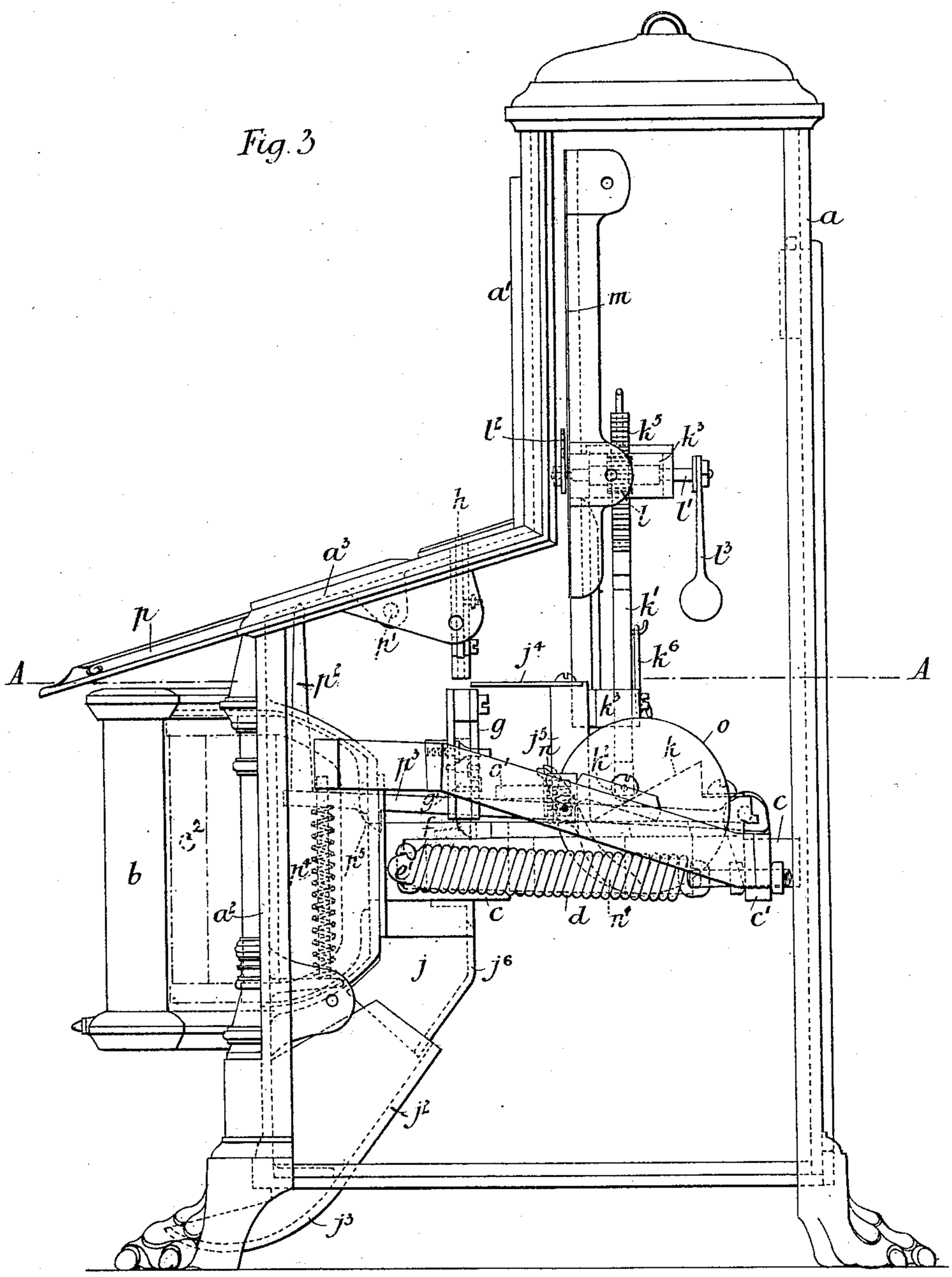
(No Model.) 5 Sheets—Sheet 3.

C. A. & A. BARRETT.

COIN FREED DYNAMOMETER.

No. 452,688. Patented May 19, 1891.

Fig. 3



Witnesses.
Wm. T. Norton
B. A. Naylor

Inventors.
Charles A. Barrett
and Alfred Barrett
by John J. Halsted & Son
Their Attys.

(No Model.) 5 Sheets—Sheet 4.

C. A. & A. BARRETT.

COIN FREED DYNAMOMETER.

No. 452,688. Patented May 19, 1891.

Fig. 4.

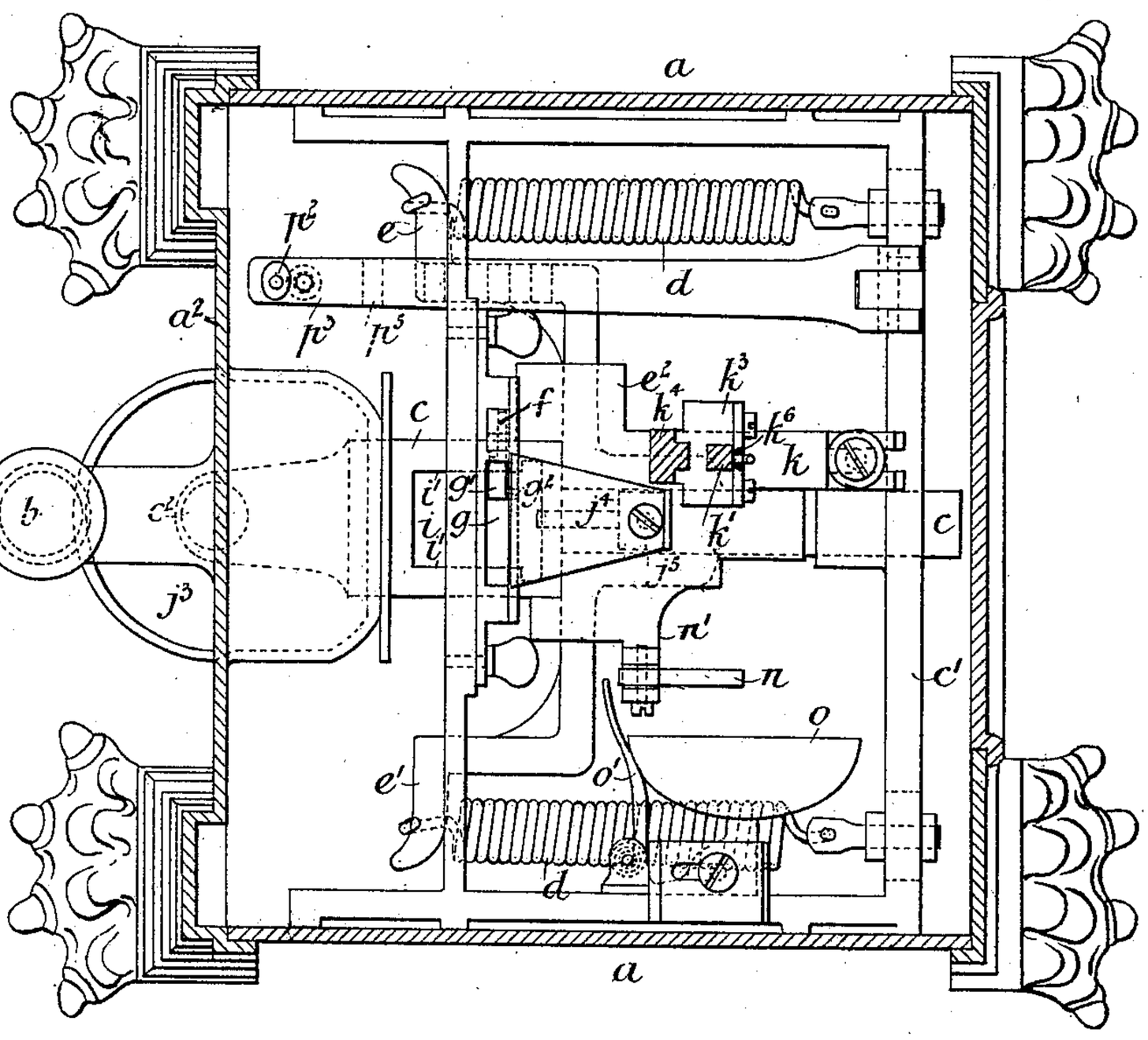


Fig. 9.

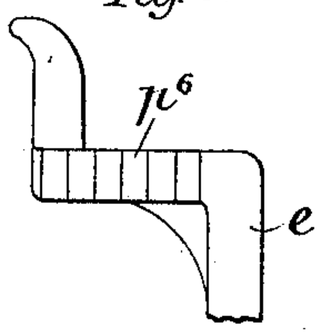
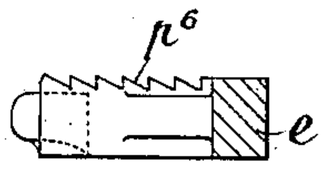


Fig. 10.



Witnesses.
Willet Norton
B. N. Naylor

Inventors.
Charles A. Barrett
and Alfred Barrett
by John J. Halsted & Son
their Attys.

(No Model.) 5 Sheets—Sheet 5.

C. A. & A. BARRETT.

COIN FREED DYNAMOMETER.

No. 452,688. Patented May 19, 1891.

Fig. 5.

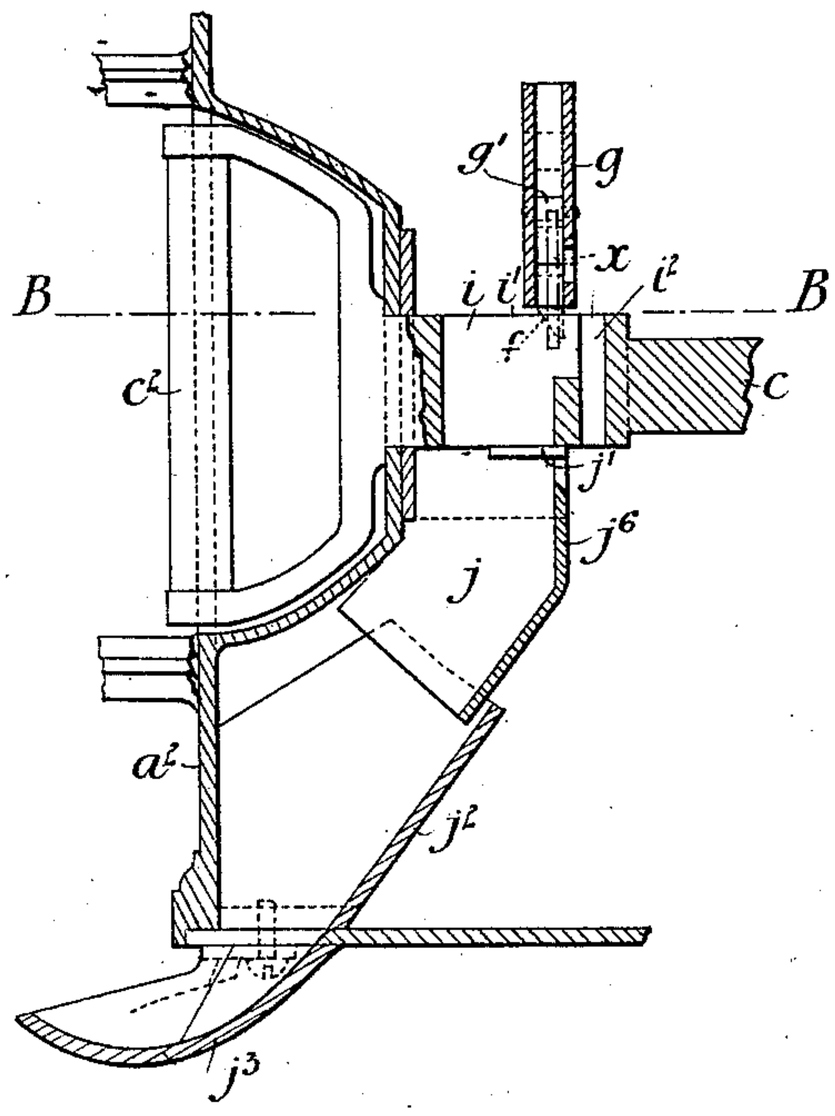


Fig. 6.

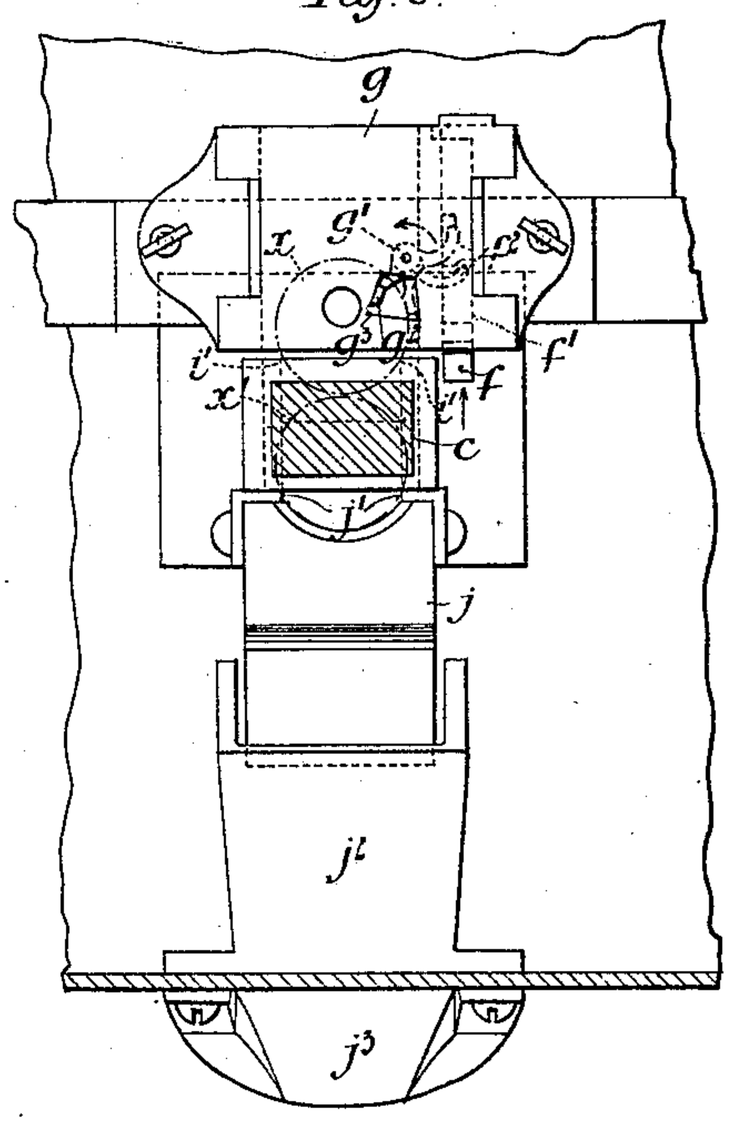


Fig. 7.

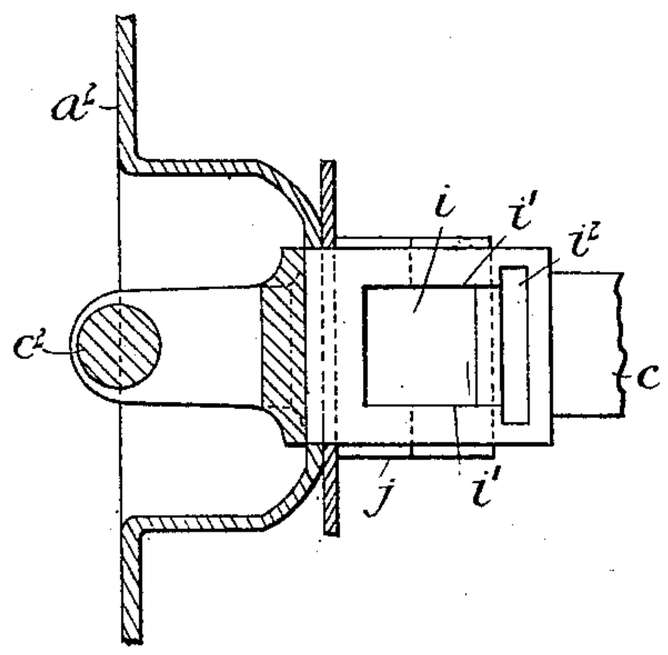
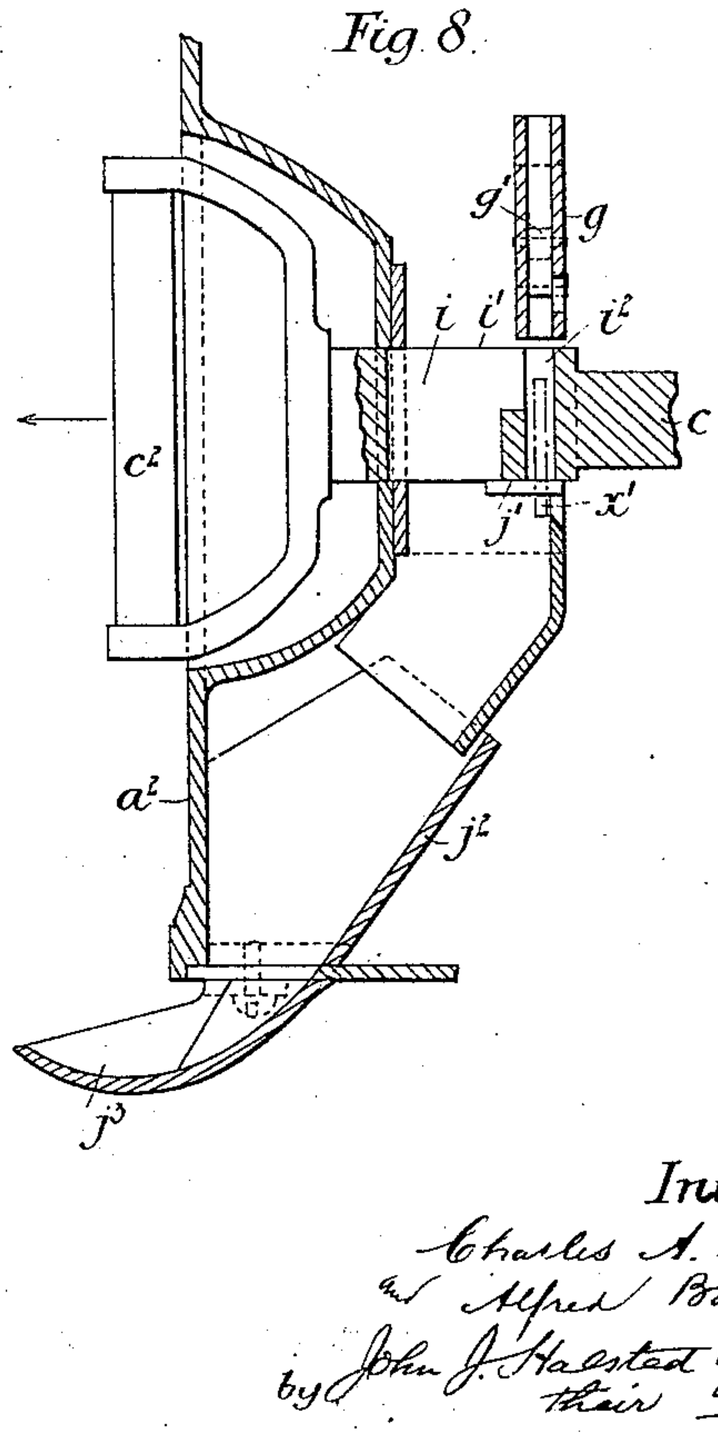


Fig. 8.



Witnesses:
Wm. T. Norton
B. N. Taylor

Inventors.
Charles A. Barrett
and Alfred Barrett
by John J. Halstead & Son
their Attys.

UNITED STATES PATENT OFFICE.

CHARLES ARTHUR BARRETT AND ALFRED BARRETT, OF LONDON, ENGLAND.

COIN-FREED DYNAMOMETER.

SPECIFICATION forming part of Letters Patent No. 452,688, dated May 19, 1891.

Application filed April 15, 1890. Serial No. 347,968. (No model.)

To all whom it may concern:

Be it known that we, CHARLES ARTHUR BARRETT and ALFRED BARRETT, subjects of the Queen of Great Britain, residing at London, England, have invented a new and useful Improved Automatic or Coin-Freed Dynamometer or Muscular-Power-Testing Machine, of which the following is a specification.

This invention relates to the construction of an improved dynamometer, by the use of which, on a proper coin or the like being inserted in the apparatus, the muscular gripping or pulling power of a person using it will be indicated on a dial in the usual manner; but if the power be exerted beyond a certain predetermined point a bell or gong will be sounded; and, in addition, we provide an arrangement whereby at the same or at any other given point the coin or the like will be returned outside the machine to the person using it. If, however, sufficient power be not exerted to reach the aforesaid given point or points, the bell or gong will not sound nor will the coin be returned, but will drop into a box provided to receive it in the ordinary manner.

In order to enable our invention to be fully understood, we will describe how it can be carried into practical effect by reference to the accompanying drawings, in which—

Figure 1 is a front elevation of an automatic or coin-freed machine for testing the muscular gripping power of a person, the said machine being constructed according to our invention. Figs. 2 and 3 are elevations showing the interior of the same as seen from the rear and right-hand side, respectively, the back and side of the case being removed for this purpose. Fig. 4 is a horizontal section on the line A A of Fig. 3. Fig. 5 is a vertical section of a portion of the front of the case of the apparatus, showing the sliding bar, hereinafter described, in its normal position. Fig. 6 is a rear view of the same parts. Fig. 7 is a horizontal section on the line B B of Fig. 5. Fig. 8 is a similar view to Fig. 5, but showing the sliding bar when partly drawn out. Figs. 9 and 10 are views of a detail hereinafter described.

Similar reference-letters indicate similar or corresponding parts throughout the drawings.

In carrying out our invention we employ a suitable case a, the upper front part a' of which is advantageously set back relatively to the lower front part a^2, they being connected with a sloping part a^3, as shown clearly in Fig. 3. On the part a^2 of the front of the said case we attach a fixed bar, handle, or fulcrum b. A sliding bar c passes through and slides in an opening in the said part a^2 of the front of the case a and in the rear part of a frame c'. By means of a handle c^2, attached to the sliding bar c, the said bar can be drawn by the grip of the hand toward the fixed bar, handle, or fulcrum b when a proper coin is inserted in the apparatus; but otherwise the sliding bar is kept in its normal position by a bolt or lock f, Figs. 3, 4, and 6, which is only released when the coin or the like is inserted, the lower end of the bolt or lock f for this purpose projecting in front of an extension e^2 (see Fig. 4) on the sliding bar c, so as to prevent the latter being drawn out until this is done.

d d are springs which form the resistance against the power exerted, they being attached at one end to extensions e e' (see Fig. 4) on the bar c and at the other end to the frame c'. The bolt f slides in a recess f' at one side of the coin-chute g and is raised by the coin dropped into the apparatus through the medium of a small lever g', curved or arched in form and pivoted in the said coin-chute, one end of the said lever g' bearing beneath a shoulder f^2 on the bolt f and the other end projecting in the way of the coins and provided with a small extension g^2, which extends into an opening g^3 in the rear wall of the coin-chute, the sides of the said opening serving to limit the movement of the lever g', and consequently of the bolt f. In the part a^3 of the case a is arranged the slot h for the insertion of the coins in the apparatus, the said slot being situated just above the chute g. (See Fig. 3.)

When the coin has raised the bolt f, it rests upon the upper inner edges i' i' of the two sides of an aperture i in the sliding bar c. If the bar c be now drawn beyond a certain distance, the support is withdrawn from the coin by reason of a wider portion i^2 of the said aperture in the bar coming beneath it, through which it falls onto the upper inner edges j' j' of the two sides of a fixed bracket j, situated below the sliding bar c. The lower

portion of the bracket j forms a guide to a chute j^2, which leads to a receptacle j^3 at the outside of the part a^2 of the case a. By this construction if a coin of the required size be passed through the coin-slot h it will fall and rest upon the edges i' i' of the sides of the aperture i in the sliding bar c, as shown by the dotted lines x in Figs. 5 and 6, and at the same time will move the lever g' into the position also shown by dot and dash lines in Fig. 6, thereby raising the bolt f. If now the handles b and c^2 be gripped and the sliding bar c consequently drawn out, the portion i^2 of the aperture i in the said sliding bar will come beneath the coin-chute g and the coin will fall through it onto the upper edges j' j' of the sides of the bracket j, as shown by the dotted lines x' in Figs. 6 and 8. By continuing the outward movement of the bar c the coin will be moved by the said bar along the top of the bracket j till it arrives beyond the front extremity of the edges j' j', when it will fall through the chute j^2 into the receptacle j^3, from whence it can be taken by the operator. If, however, the strength of the operator is not great enough to produce the foregoing result the coin as the grip is released will be moved back along the top of the bracket j, and when the sliding bar c is again back and again fixed in position by the bolt f the coin will have arrived beyond the back extremity of the edges j' j' and will fall into the money-drawer. (Not shown in the drawings.)

To prevent the lever g' being operated by the insertion through the coin-chute g of a piece of wire or the like, we provide a plate j^4, attached to an extension j^5 on the sliding bar c, so that when the said bar is drawn out the said plate will come against the wire or the like, which will prevent any further movement of the bar c.

If a coin the diameter of which is less than the width of the aperture i be inserted in the apparatus, it will not rest either upon the edges of the said aperture or upon the edges j' j', but will fall through and be conducted to the receptacle j^3, or by arranging the rear wall j^6 of the bracket j a little nearer to the front of the apparatus the said coin would fall into the money-drawer.

Attached to the sliding bar c is an inclined plane k, which, as the bar is drawn out, actuates a vertical rod k', which bears upon it, the rod k' being provided with a friction-roller k^2 for that purpose and working through guides k^3 on a frame k^4. In the rod k' are cut rack-teeth k^5, which gear into and operate a spur-pinion l, through the medium of which the shaft l' and pointer l^2 are actuated to indicate the power exerted, the pointer l^2 working over the dial m, located at the part a' of the case a.

The rod k' is provided with an india-rubber spring k^6 or its equivalent to keep its roller k^2 always in contact with the inclined plane k, and the shaft l' is provided with a weighted lever l^3, which keeps the top surfaces of the teeth k^5 of the rack in constant contact with the teeth of the pinion, thereby insuring an accurate indication by the pointer l^2.

A catch or tongue n is pivoted to an extension n' on the sliding bar c in such a manner that it can only turn in one direction, as shown in Figs. 3 and 4.

o is a gong or bell, the hammer o' of which is pivoted and forms a spring-trip or catch-piece against which the catch n bears when the sliding bar c is drawn out. By this arrangement when the sliding bar is drawn out the top of the catch n will press back the hammer o', and when the sliding bar c has reached a predetermined point the said hammer will be released and strike the gong. In moving back the sliding bar c the catch n will, when it strikes the hammer o', be depressed and pass under the said hammer and will then regain its normal position.

In order to prevent this machine from being used as an ordinary pulling-machine, which might be done by placing one hand on the machine and then pulling the handle c^2 with the other hand, we provide on the part of the machine that the hand could only be suitably placed upon a loose-hinged plate p. This plate is hinged at p' and forms a portion of the part a^3 of the case a, and is supported or held in its normal position by an upward extension p^2 at the end of a lever p^3, pivoted to the frame c' and supported at its free end by a spring p^4. The lever p^3 is provided on its under surface with a tooth or projection p^5, which is normally situated above but to the front of the extension e, Fig. 4, the said extension being provided with a series of ratchet-teeth p^6, as clearly shown in Figs. 9 and 10, which represent a plan and elevation, respectively, of the said extension detached. By this arrangement, if the operator should press upon the plate p with his or her disengaged hand in order to exert more strength, by pulling the handle c^2 toward the handle b the said plate p will be depressed and cause the tooth p^5 on the lever p^3 to move in the path of the extension e or to engage with the ratchet-teeth p^6, thereby preventing any further outward movement of the sliding bar c.

In cases where it is deemed advisable to provide against the surreptitious removal of the machine we find it convenient to suspend it in such a manner that while allowing of its being operated by the grip of the hand it will offer no resistance to pressure when an attempt is made to use it as a pulling-machine.

We sometimes adapt to the apparatus a reed or reeds to form a "voice" or "voices" to be operated by the return of the sliding bar or otherwise; but we make no claim herein for this, and therefore have not illustrated it.

When required a disk can be fixed on the pointer-shaft l' behind the dial m, so as to move with the pointer l^2 and exhibit any advertisement thereon through an opening in the said dial.

It will be obvious that if we wish to employ our dynamometer for testing the muscular power exerted by a person in pulling, we dispense with the fixed handle-bar or fulcrum *b*, the machine in this case being secured to a table, counter, or the like.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is—

1. In a coin-freed dynamometer adapted for testing the power of a hand-grip, the combination, with a coin-receiver, of the handles *b* and c^2, slide-bar *c*, to which c^2 is attached, and reacting springs *d*, connected to bar *c*, the latter being provided with the two openings $i\ i^2$, all substantially as and for the purposes set forth.

2. In combination, the handles *b* and c^2, one of them being fixed and the other adapted to slide and attached to a slide-bar *c*, reacting springs attached to extensions on said slide-bar, said bar having openings $i\ i^2$, as described, slide-bolt *f*, and coin-chute *g*, all substantially as shown and described.

3. In combination, the coin-receiving chute provided with a lever g' and a bolt *f*, a slide-bar having the apertures *i* and i^2, and bracket *j*, having edges $j'\ j'$, and the coin-delivering chute, all substantially as set forth.

4. In combination with the sliding bar *c*, the loose hinged plate *p*, hinged at p' and constituting part of the sloping part a^3 of the case *a* and serving when pressed down to arrest the further outward movement of the slide-bar.

5. In combination with the case, the bar *c*, hinged plate *p*, extension p^2, lever p^3, spring p^4, tooth or projection p^5, and ratchet-teeth p^6, substantially as and for the purpose set forth.

CHARLES ARTHUR BARRETT.
ALFRED BARRETT.

Witnesses:
A. ALBUTT,
B. BRADY.