

W. G. BRUHN.
TAXIMETER.

APPLICATION FILED MAR. 4, 1910.

993,645.

Patented May 30, 1911.

2 SHEETS—SHEET 1.

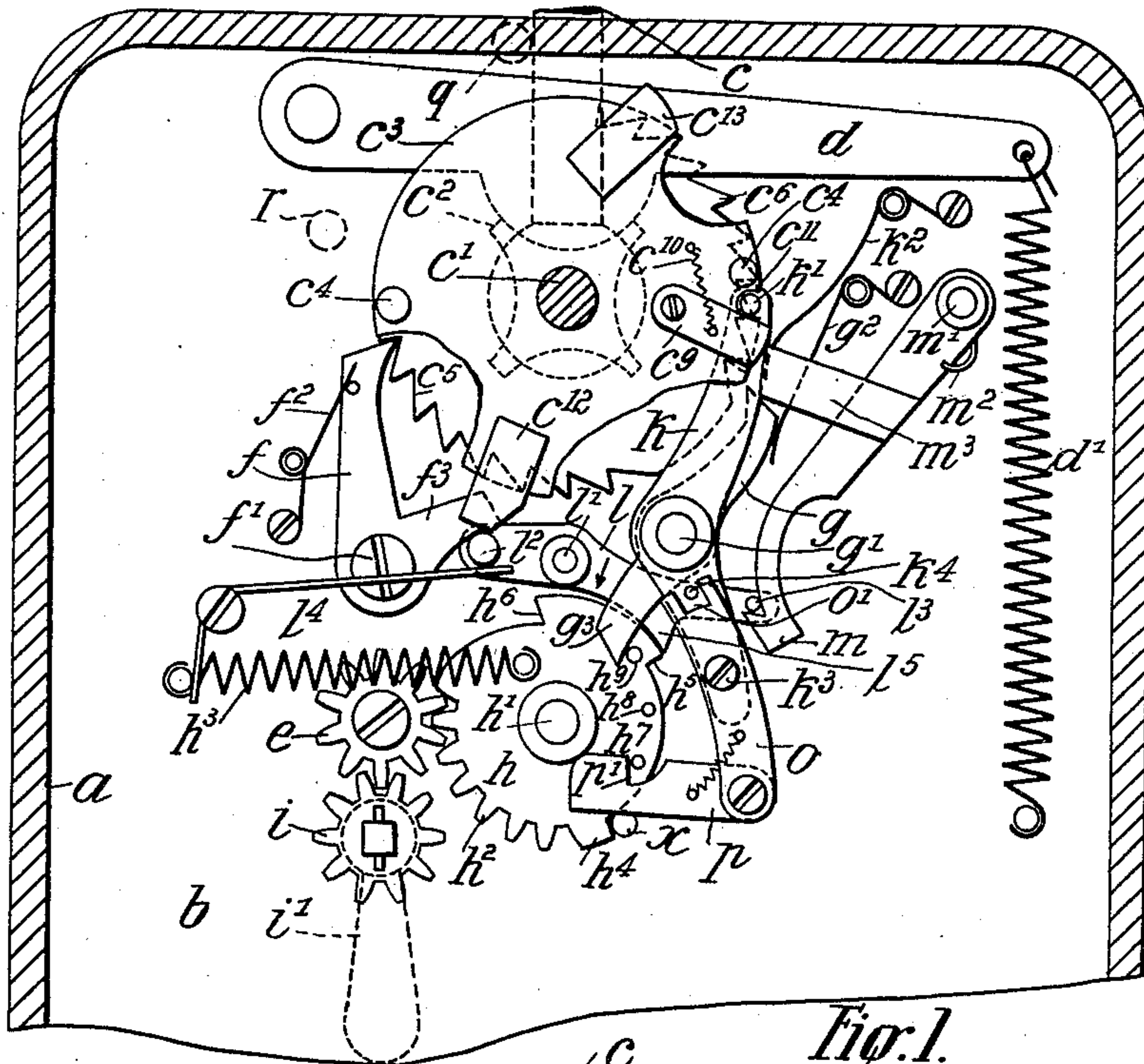


Fig. 1.

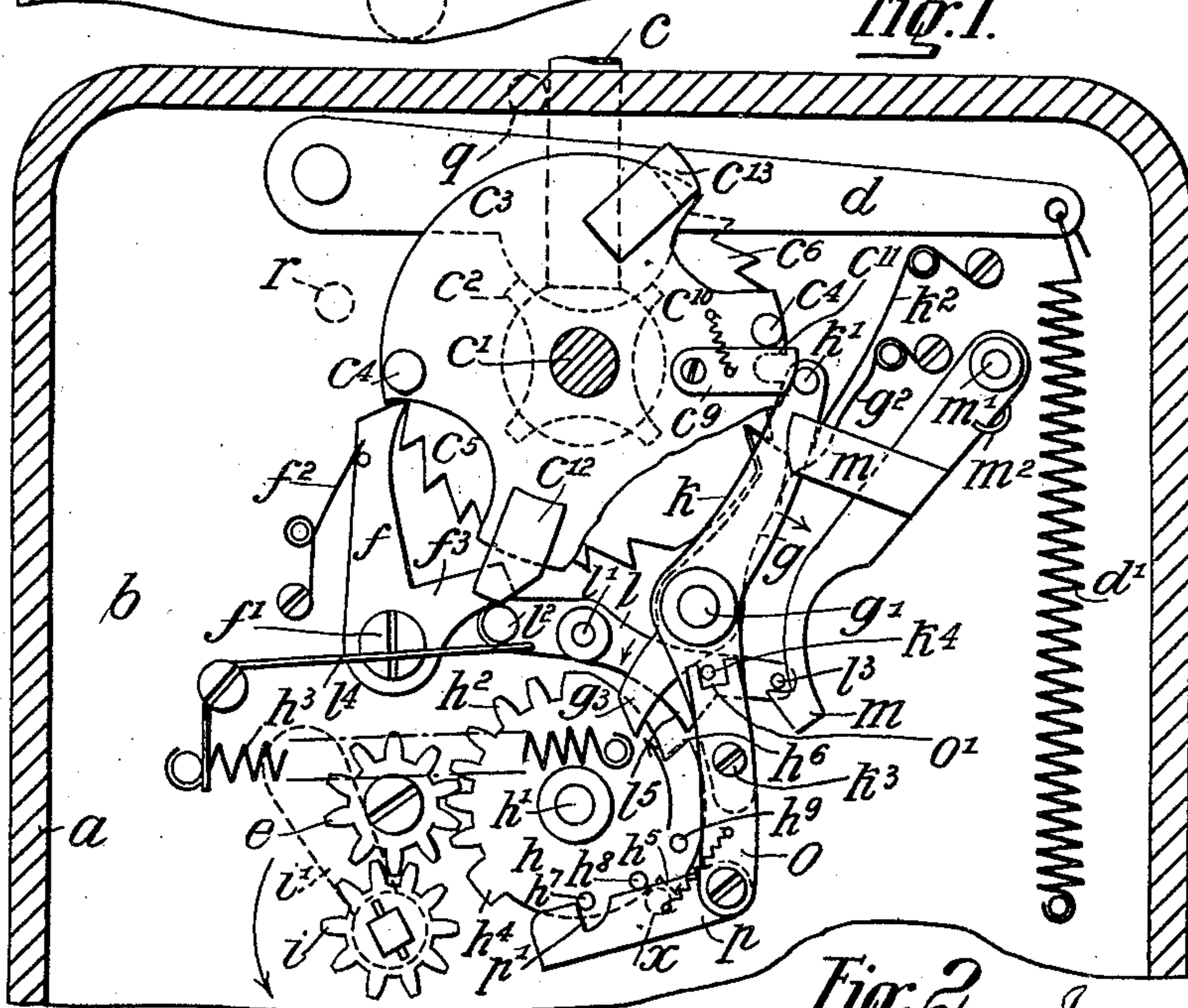


Fig. 2.

Witnesses
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2 SHEETS—SHEET 2.

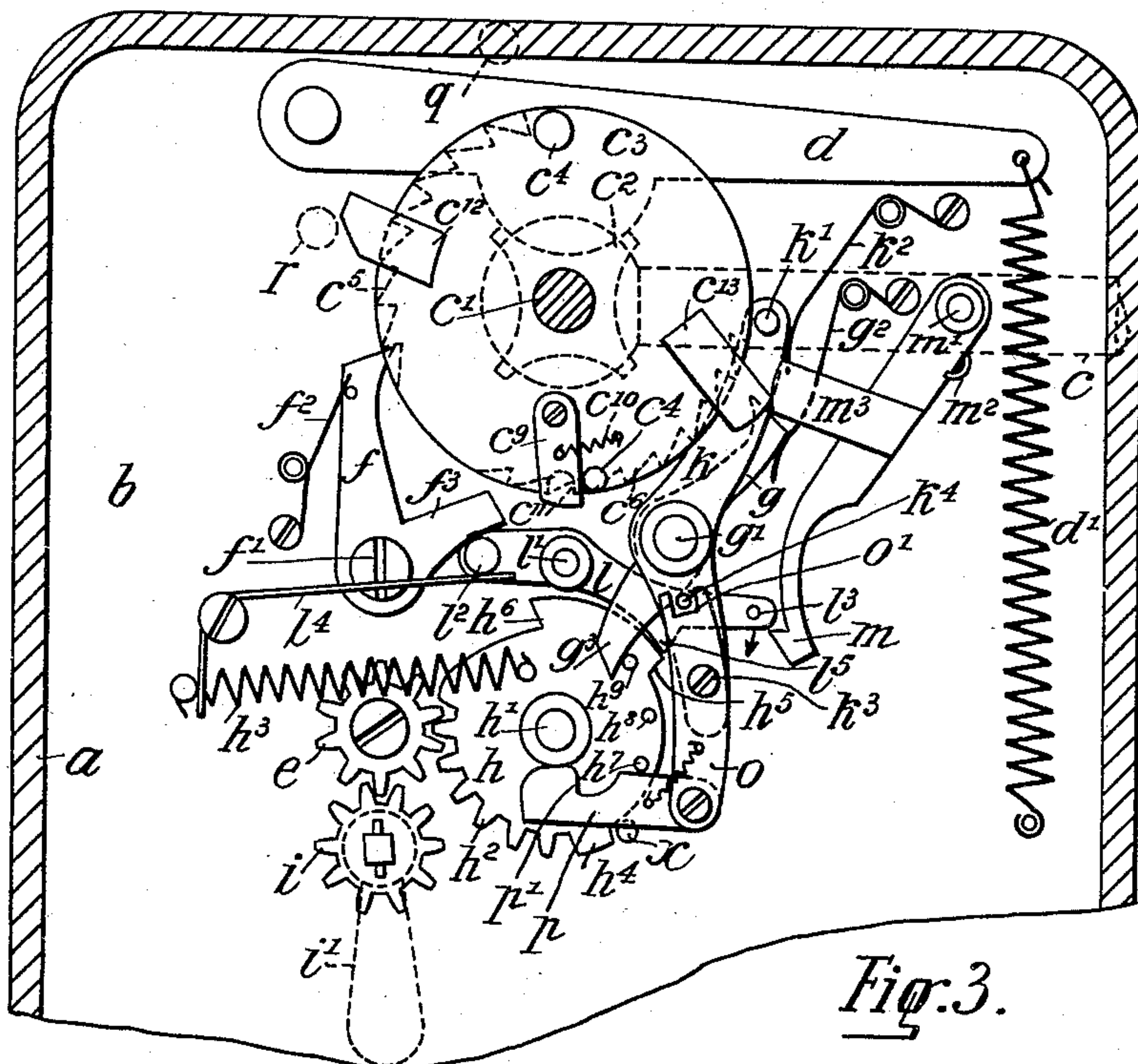


Fig. 3.

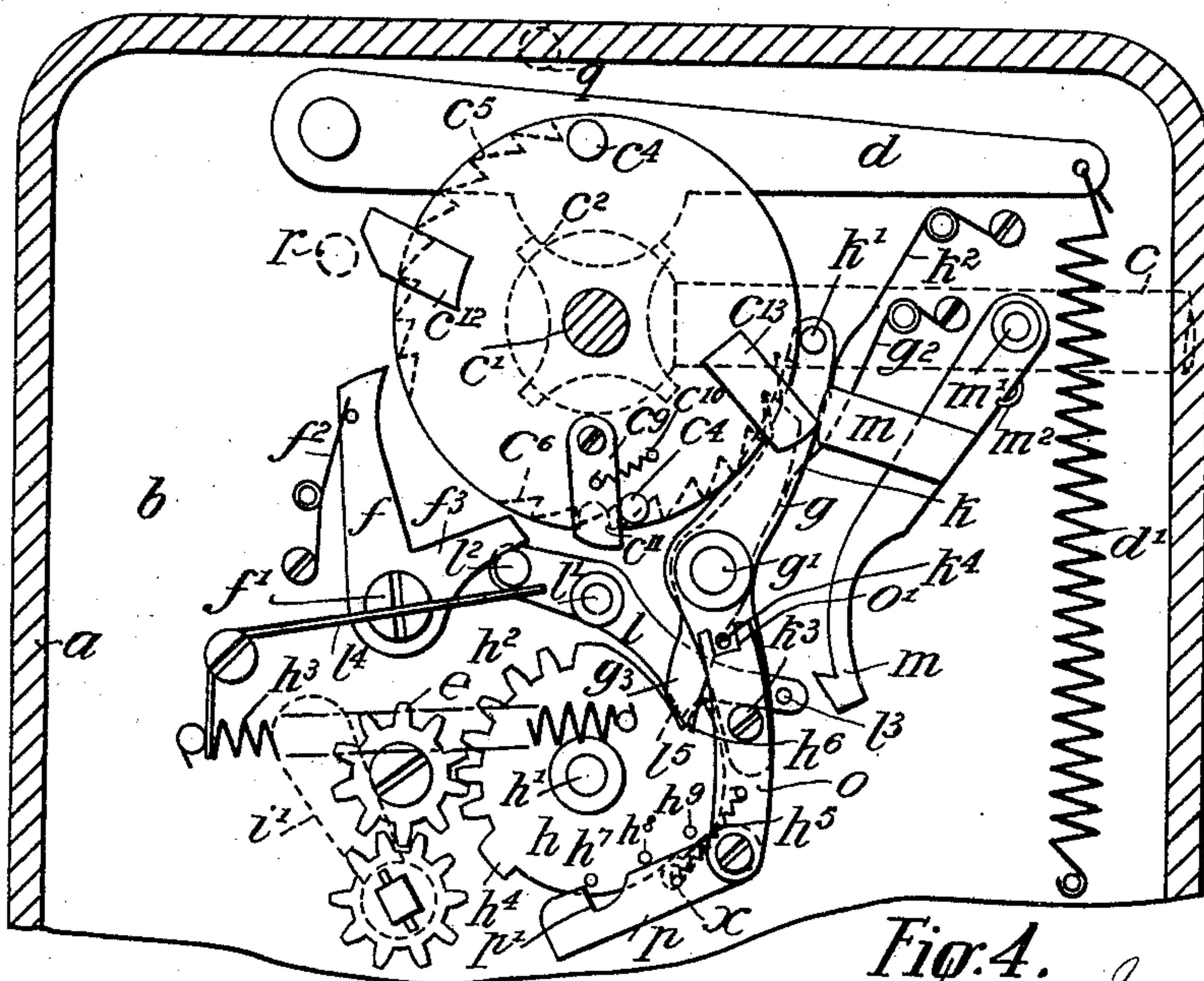


Fig. 4.

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UNITED STATES PATENT OFFICE.

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TAXIMETER.

993,645.

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To all whom it may concern:

Be it known that I, WILHELM G. BRUHN, a citizen of the German Empire, residing at Berlin, in the Kingdom of Prussia, German Empire, have invented new and useful Improvements in Taximeters, of which the following is a specification.

The present invention relates to certain means in taximeters of the kind wherein the setting of the apparatus to the different positions is effected by one device or part, for example the flag or signal, and the invention has for object to prevent the apparatus when in the operative or "Engaged" position, from being set in rapid succession to the inoperative position and back again to the operative or engaged position. As the disks, drums or the like which indicate the fare have to be returned to their initial position in the setting of the taximeter to the inoperative or "Disengaged" state, it is possible, if the taximeter is quickly set to disengaged and then at once quickly set to engaged, that the fare indicating disks, drums or the like have not time to return fully to their zero or initial position, but are caught or arrested before they reach the same. It is possible for the driver to take advantage of this fact for the purpose of dishonestly indicating and charging to a new fare (a foreigner for example) a considerably higher minimum fare than that of the tariff.

The drawings illustrate an example of apparatus constructed in accordance with the invention.

The taximeter to which the invention is assumed to be applied is one of the kind in which the setting to the different positions is effected by means of the flag, and wherein when the apparatus is in the "Engaged" position it cannot be set again to the "Disengaged" position before turning a special lever, which causes a plate bearing a suitable indication ("End of journey" or the like) to be exhibited in the known way at the front of the apparatus.

The taximeter shown is also assumed to be a three-tariff apparatus. In the upright position of the flag, the taximeter is at "Disengaged". When the flag is turned over to the right the taximeter is set to "Tariff 1" while the turning of the flag through a

further 90° sets the apparatus to "Tariff 2", and turning through still another 90° sets it to "Tariff 3".

The invention is not concerned with the manner in which the taximeter is set to the different positions by the said four positions of the flag, nor with the construction and arrangement of the mechanism of the actual apparatus for automatically calculating and indicating the fare. I have therefore only shown the rear wall of the taximeter and those parts which serve for preventing the flag from being turned in rapid succession from "Engaged" to "Disengaged", and back again to "Engaged".

Figures 1 to 4 are views of the rear wall seen from the inside of the apparatus. Fig. 1 shows the parts in the "Disengaged" position; Fig. 2 shows the position after the commencement of the preparatory manipulations necessary for setting the taximeter to "Engaged". Fig. 3 shows the position immediately after the taximeter has been set to "Engaged". Fig. 4 shows the position after the preparatory manipulations necessary for setting the taximeter to "Disengaged".

a is the casing of the apparatus and *b* the rear wall.

c is the flag for setting the taximeter to "Engaged" (Tariff 1, Tariff 2, Tariff 3) and to "Disengaged".

*c*¹ is the spindle of the flag.

*c*² is a multiple cam which, together with a lever *d*, held in engagement therewith by a spring *d*¹, forms a retaining catch or detent.

*c*³ is a disk fixed on the flag spindle *c*¹ and carrying pins *c*⁴ serving in the known way for moving or operating the parts whereby the operations necessary for setting the taximeter to "Engaged", "Disengaged", and for different tariffs are effected.

To the disk *c*³ is attached another disk of the same diameter. This latter disk is formed at one part of its circumference with ratchet teeth *c*⁵ and at another part of its circumference with oppositely directed ratchet teeth *c*⁶. A pawl *f* pivoted at *f*¹ and having a lateral arm *f*³ and subject to the action of a spring *f*² engages with the teeth *c*⁵.

g is a pawl pivoted at *g*¹, having an ex-

tension g^3 and pressed into engagement with the teeth c^6 by a spring g^2 .

The taximeter is set to operative condition by turning the flag c from the vertical position shown in Figs. 1 and 2 into that shown in Figs. 3 and 4. During this movement the pawl f is in engagement with the teeth c^5 and thus prevents the flag from being raised again when once it has been partly turned down.

The taximeter is set to the inoperative condition by turning back the flag c from the horizontal position shown in Figs. 3 and 4 into the vertical position shown in Fig. 1. During this movement of the flag the pawl g is in engagement with the teeth c^5 and prevents the partly raised flag from being turned down again.

Means hereinafter described are provided such that during the setting from "Disengaged" to "Engaged", *i. e.* from the position shown in Fig. 2 to that shown in Fig. 3, only the pawl f is in engagement with the teeth c^5 , and that during the setting from "Engaged" to "Disengaged", *i. e.* from the position Fig. 4 to the position Fig. 1, only the pawl g is in engagement with the teeth c^6 . Means hereinafter described are further provided such that it is necessary to turn a lever through a considerable angle before the taximeter can be set from "Disengaged" to "Engaged"; also that the lever shall be automatically released and turned back into its original position as soon as the flag has been fully raised, *i. e.* when the taximeter is set to "Disengaged"; and also that the said lever must be completely returned to its original position, then again turned through a considerable angle and again returned to the initial position before the taximeter can be again set from "Disengaged" to "Engaged". The control or actuation of the parts serving for these locking and releasing operations is effected by means of a disk h rotatably mounted at h^1 .

c is a toothed wheel which meshes with the teeth h^2 of disk h and with a toothed wheel i adapted to be turned from the position shown in Fig. 1 to that shown in Fig. 2, by means of a handle or lever i^1 fitted outside the rear wall of the casing.

By turning the lever i^1 the disk h is caused to turn in the same direction through the medium of the toothed wheels, and the spring h^3 which tends to turn the disk h back into the position shown in Fig. 1, is stretched. The rotation of the disk h under the action of the spring h^3 (see Fig. 1) is limited by a fixed stop-pin x which engages a projection h^4 of the disk h . The disk h can be turned against the action of the spring h^3 by raising the handle or lever i^1 and this turning movement is limited by a

projection h^5 of the disk coming against the same stop-pin x . (In Fig. 2 this position is not quite reached.) The disk h is likewise formed with a gap or nose h^6 and carries three pins, h^7 , h^8 , and h^9 . On the stud g^1 about which the pawl g turns is likewise pivoted a two-armed lever k . The upper arm of this lever carries a pin k^1 and is pressed with its pin k^1 against the periphery of the disk c^3 by a spring k^2 . On the disk c^3 is likewise pivotally mounted a pawl c^9 the outer edge of which projects beyond the periphery of the disk c^3 . A small spring c^{10} tends to draw the pawl c^9 up against one of the pins c^4 (see Figs. 2, 3 and 4). In this position the pawl c^9 covers a notch c^{11} formed in the periphery of the disk c^3 . When the flag c is turned up from the position shown in Fig. 4 into that shown in Fig. 1, the pin k^1 slides upon the periphery of the disk c^3 . Before the flag is fully raised, the pin k^1 comes against the projecting pawl c^9 and pushes it aside. When the flag is fully raised, the pin k^1 snaps into the notch c^{11} of the disk c^3 . This is the position shown in Fig. 1. In Fig. 1 the parts concerned are in the following position: The pawl g has been lifted out of engagement with the teeth c^6 owing to the pin h^9 of the disk h^3 having moved the tail g^3 of the pawl g aside against the action of the spring g^2 . The flag c cannot, however, be turned down, because, as already explained, the pin k^1 is seated in the notch c^{11} of the disk c^3 and thus locks the disk c^3 against movement. The pawl f is held in engagement with the ratchet teeth c^5 by its spring f^2 . Below the disk c^3 and above the disk h is a two-armed lever l pivotally mounted at l^1 . The left arm of this lever carries a pin l^2 and the right arm a pin l^3 . A strong spring l^4 tends to turn the lever l in the direction of the arrow. When the lever l is turned in this direction, the pin l^2 rises, comes against the arm f^3 of the pawl f and lifts the pawl f out of engagement with the teeth c^5 , the spring f^2 being considerably weaker than the spring l^4 . In the position shown in Fig. 1, however, the pin l^2 is pressed down by a nose c^{12} , fixed on the disk c^3 , to such an extent that the pin l^2 releases the pawl f so that this is free to obey the action of the spring f^2 and engage with the teeth c^5 . Moreover the pin l^3 has risen to a position in which it is engaged by a hooked locking catch m subject to the action of a spring m^2 and pivoted at m^1 .

On the lower arm of the lever k is pivoted at k^3 a two-armed lever o . The upper arm of this lever o is formed at the end with a gap o^1 in which is located a pin k^4 fixed on the lever k . To the lower arm of the lever o is pivoted a pawl p formed with a notch p^1 .

In the position shown in Fig. 1 the flag c is locked. It cannot be turned to the left, as its rod is against a fixed stop q . Moreover the pawl f is in engagement with the last tooth of the series c^5 . The pawl g is raised out of engagement with the teeth c^6 by the pin h^9 and would therefore not prevent the turning of the flag to the right, but the turning of the flag in this direction is prevented by the fact that the pin k^1 is engaged in the notch c^{11} of the disk c^3 . If the lever i^1 is now turned up toward the left, the disk h will be turned in the same direction against the action of the spring h^3 , through the medium of the toothed wheels, i , e and h^2 . In this movement the pin h^9 moves away from the tail g^3 of the pawl g , so that the pawl g again engages with the teeth c^6 . The pin h^7 engages in the notch p^1 of the pawl p and draws the pawl toward the left. The result of this is first to turn the lever o about h^3 until the pin k^4 strikes the other side of the notch o^1 . In the continued movement of the pawl p toward the left, therefore, the lower arm of the lever k is also moved toward the left. Consequently the pin k^1 is raised out of engagement with the notch c^{11} to such an extent as to allow the pawl c^9 to be pulled in front of the pin k^1 by its spring c^{10} . In this position the pawl c^9 covers the notch c^{11} , so that the pin k^1 cannot return into engagement therewith. It is still not possible, however, to turn down the flag to the right, as the pawl g is again in engagement with the teeth c^6 . The parts are shown, in this position, in Fig. 2. If now the lever i^1 is turned a little farther, the pawl p is turned downward by the pin h^8 , the pin h^7 moves up out of the notch p^1 of lever p and consequently the lever k is free to obey the action of the spring h^2 . But, as before mentioned, the pin k^1 is prevented by the pawl c^9 from engaging in the notch c^{11} . If the lever i^1 is now released, the disk h and the lever i^1 are turned back in the direction of the arrows into their initial position by means of the spring h^3 . In this position the pawl g is raised out of locking position by the pin h^9 . The flag c can now be turned down from the position shown in Fig. 2 into that shown in Fig. 3, so as to set the apparatus to operative position. Until the lever i^1 was turned right back to its initial position, the pawl g remained in engagement with the teeth c^6 and thus rendered it impossible to turn down the flag.

As the lever l is kept locked in the position shown in Figs. 1 and 2 by the catch m , the pawl f remains in engagement with the teeth c^5 while the flag is being turned down, and therefore prevents the partly depressed flag from being raised again.

It is only when the flag has been fully de-

pressed (see Fig. 3) that a nose c^{13} fixed to the disk c^3 comes against a projection m^3 of the catch m and moves the latter aside, so as to release the pawl. The lever l , however, can at first only be turned slightly in the direction of the arrow by its spring l^4 , namely until a nose l^5 of this lever comes upon the periphery of the disk h . The pawl f therefore remains in engagement with the teeth c^5 (see Fig. 3) and prevents the flag from being again raised to "Disengaged". On the other hand the flag can be turned down through another 90° (Tariff 2) and can be then turned through a further 90° in the same direction (Tariff 3). Any further turning of the flag in the same direction is prevented by the stop pin r . Between Tariffs 1, 2 and 3 the flag can be set backward and forward without obstruction. Before however the flag can be set back from Tariff 1 (Fig. 3) to "Disengaged" (Fig. 1), the lever i^1 must be turned up from the position shown in Fig. 3 to that shown in Fig. 4. The disk h is thereby turned against the action of the spring h^3 to such an extent that the nose l^5 of lever l can engage the notch or tooth h^6 of the disk h (see Fig. 4). By this means the pawl f is raised out of engagement with the teeth c^5 and the disk h is held locked by the nose l^5 so that neither this disk nor the lever i^1 can be drawn back into their initial positions by the spring h^3 . It will now also be understood why it was necessary to keep the lever l locked by the catch m until the flag c was turned right down from the position shown in Fig. 2 to that shown in Fig. 3. For if the lever l were not locked by the catch m during this time, it would be possible, after partly depressing the flag, to raise the lever i^1 sufficiently to allow the nose l^5 to engage in the notch or tooth h^6 and thereby release the pawl f . The partly depressed flag could then be raised again. Moreover as the disk h is held locked in the position shown in Fig. 4, the pawl g cannot be disengaged from the teeth c^6 by the pin h^9 . The pawl g therefore remains in engagement with the teeth c^6 during the whole time the flag is being raised and prevents any possibility of the flag being depressed again after it has been partly raised. If now the flag c is raised from the position shown in Fig. 4 (Tariff 1) to the position shown in Fig. 1 ("Disengaged"), the nose c^{13} first released the catch m . Just before the flag has been quite raised the pin k^1 moves the pawl c^9 aside so that this pin can engage in the notch c^{11} when the flag is fully raised. Further the nose c^{12} depresses the pin l^2 so that the nose l^5 is raised from engagement with the notch or tooth h^6 . Consequently the disk h and lever i^1 spring back into the

position shown in Fig. 1. When the pin l^2 moves down, the pin l^3 rises so that the catch m can engage under it.

The same series of operations as above described is repeated when the apparatus is again set to the operative and inoperative conditions.

From the foregoing description it will be seen that the flag or other part which serves for setting the taximeter to the different positions of service cannot be set directly from "Disengaged" to "Engaged," but is locked in the "Disengaged" position until a lever has been moved to and fro between two positions.

Another feature of the invention is that the locking of the flag is effected in the raising thereof, by a pin adapted to move a pawl aside and engage in a notch of a disk connected with the flag, and that in order to release the flag it is necessary first to turn the lever last mentioned, so as to move the said pin out of engagement with the notch and so that the said pawl moves in front of this pin and prevents it from reengaging with the notch, the releasing of the lever then serving to release a second intermediately effected locking of the flag.

I claim:

1. In a taximeter or fare indicating apparatus, means for setting the apparatus to the different positions to indicate different conditions of service, comprising a movable element, a lever adapted to be moved to and fro between two positions, and means whereby said element is locked in the "Disengaged" position until the said lever has been moved to and fro between said positions.

2. In a taximeter or fare indicating apparatus, means for setting the apparatus to the different positions to indicate different conditions of service, comprising an indicator, a lever adapted to be moved to and fro between two positions, and means whereby said indicator is locked in the "Disengaged" position until the said lever has been moved to and fro between said positions.

3. In a taximeter or fare indicating apparatus, means for setting the apparatus to the different positions to indicate different conditions of service, comprising a pivoted indicator, a lever adapted to be moved to and fro between two positions, and means whereby said indicator is locked in the "Disengaged" position until the said lever has been moved to and fro between said positions.

4. In a fare indicating apparatus, the combination of a movable element, for setting the apparatus to the different positions to indicate different conditions of service, a locking pin, a disk connected with the setting element provided with a notch adapted

to be engaged by the pin to lock said element during the setting, a lever adapted to be moved to and fro between two positions, and means operated by said lever when moved in one direction, for disengaging the locking pin from the notch.

5. In a fare indicating apparatus, the combination of a movable element, for setting the apparatus, to the different positions to indicate different conditions of service, locking means, a disk locked by said means when the setting element is moved during the setting, a lever adapted to be turned to and fro between two positions, and means, operated by said lever in its movement in one direction, for disengaging the locking means from the disk.

6. In a fare indicating apparatus, the combination of a pivot, an element adapted to be rotated on said pivot for setting the apparatus from the "Disengaged" to the "Engaged" position, a lever adapted to be turned to and fro between two positions, means for normally and yieldingly holding the lever in one of said positions, means for locking the setting element in the "Disengaged" position, and means operated by said lever in its movement to and from its normal position for disengaging the locking means and permitting the setting element to be moved to the "Engaged" position.

7. In a fare indicating apparatus, the combination of a pivot, a disk thereon provided with a notch in its periphery, a setting element projecting from said disk adapted to be moved with the disk about the pivot to set the apparatus to different positions to indicate different conditions of service, a locking pin held yieldingly upon the periphery of the disk and engaging the notch to lock the disk when the latter is rotated in one direction, and a pawl pivoted on the disk in position to shunt the pin over the notch when the disk is moved in the opposite direction.

8. In a fare indicating apparatus, the combination of a pivot, a disk thereon provided with a notch in its periphery, a setting element projecting from said disk adapted to be moved with the disk about the pivot to set the apparatus to different positions to indicate different conditions of service, a locking pin held yieldingly upon the periphery of the disk and engaging the notch to lock the disk when the latter is rotated in one direction, a pawl pivoted on the disk in position to shunt the pin over the notch when the disk is moved in the opposite direction, a lever adapted to be turned to and fro between two positions, and means, operated by said lever when moved in one direction, for disengaging the locking pin from the notch.

9. In a taximeter or fare indicating apparatus, the combination of a movable element, for setting the apparatus to the different positions to indicate different conditions
5 of service, a locking pin, a disk connected with said setting element and having a notch adapted to be engaged by said pin during the setting of said element to lock
10 said element, a lever adapted to be turned to and fro between two positions, means operated by the movement of said lever in one direction for disengaging the locking pin from said notch, a pawl adapted to mask
the said notch when the locking pin is dis- engaged from the notch and to be moved
15 aside by the locking pin in its locking motion, and means for intermediately locking said setting element, said means being released by the release or movement of the
20 said lever in the other direction, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

WILHELM G. BRUHN.

Witnesses:

WALDEMAR HAUPT,
HENRY HASPER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
