

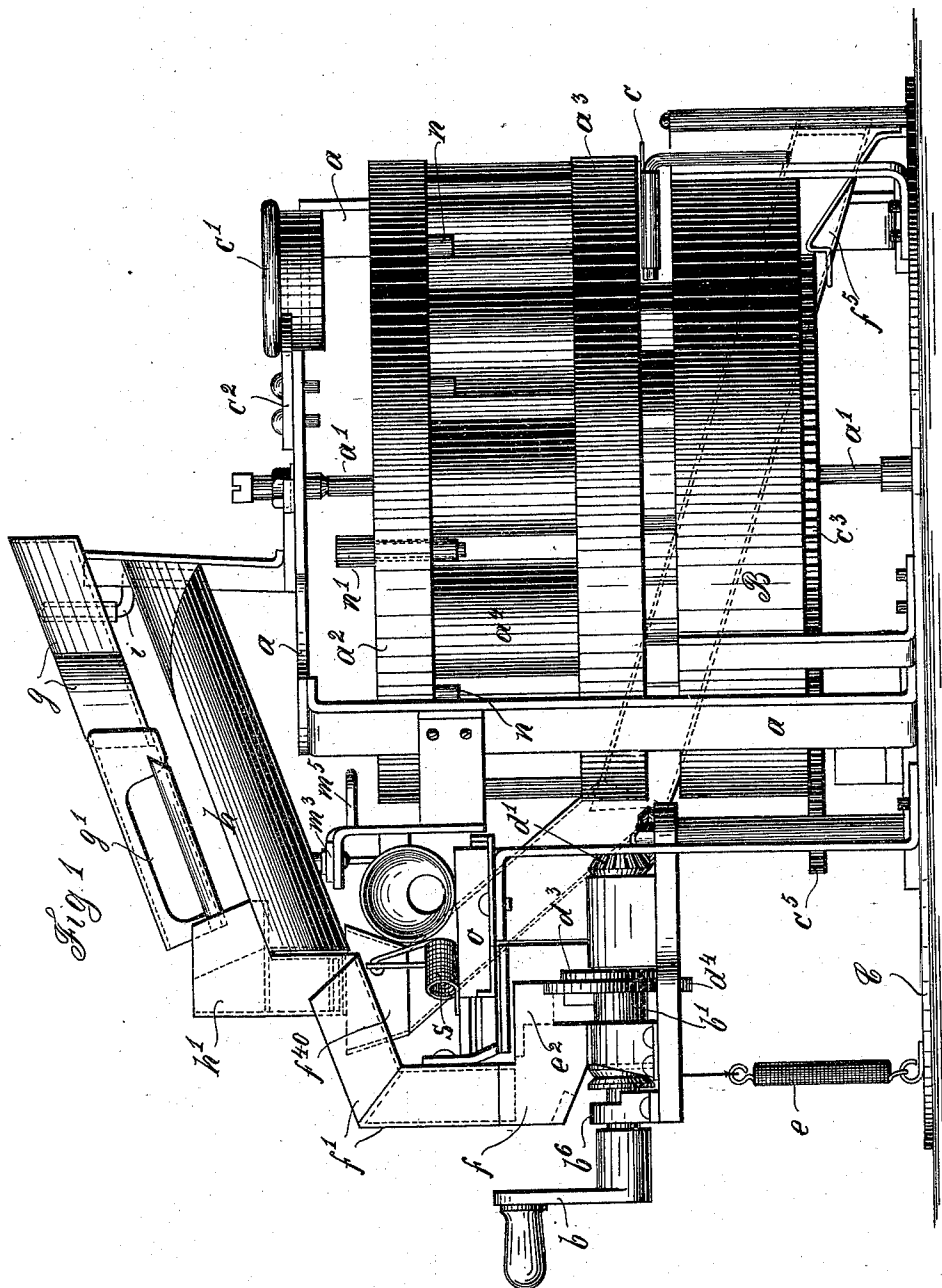
(No Model.)

6 Sheets—Sheet 1.

G. HIRSCHFELD.
COIN FREED APPARATUS.

No. 552,529.

Patented Jan. 7, 1896.



Witnesses:
Arthur Wallther
Carl Reysbach

Inventor:
Georg Hirschfeld
by Robert Dwyer
Attorney.

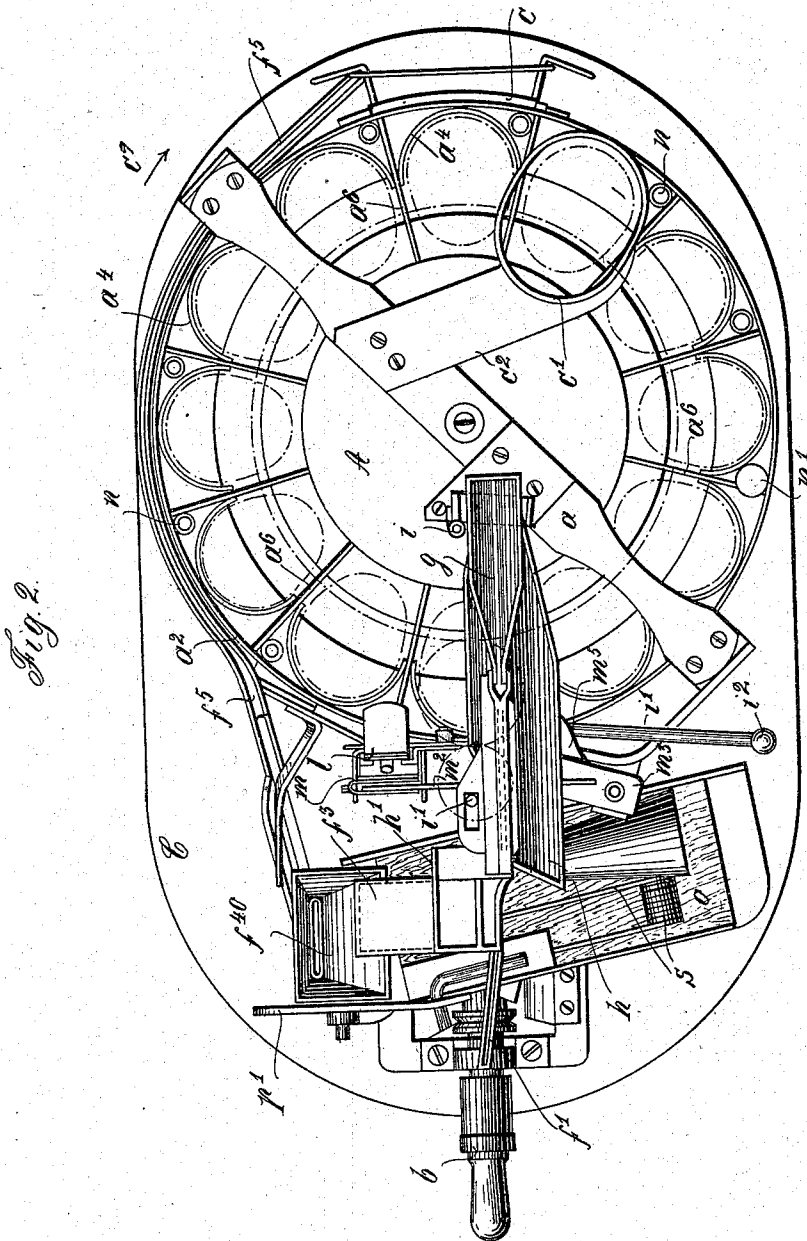
(No Model.)

6 Sheets—Sheet 2.

G. HIRSCHFELD.
COIN FREED APPARATUS.

No. 552,529.

Patented Jan. 7, 1896.



Witnesses:
Arthur Walther
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Inventor:
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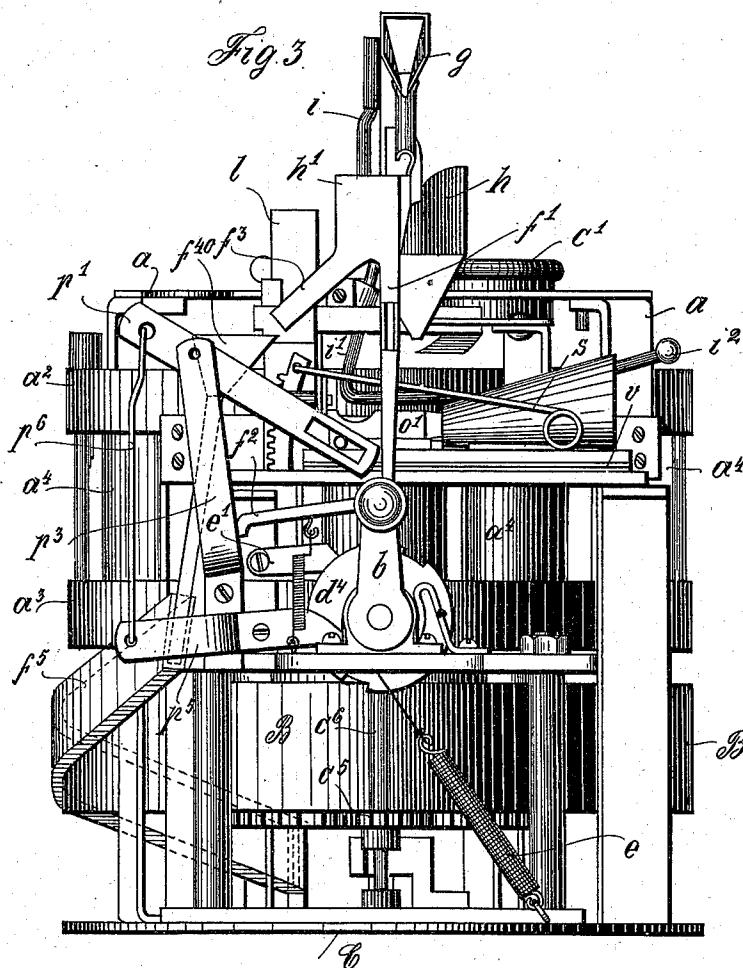
(No Model.)

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G. HIRSCHFELD.
COIN FREED APPARATUS.

No. 552,529.

Patented Jan. 7, 1896.



Witnesses:
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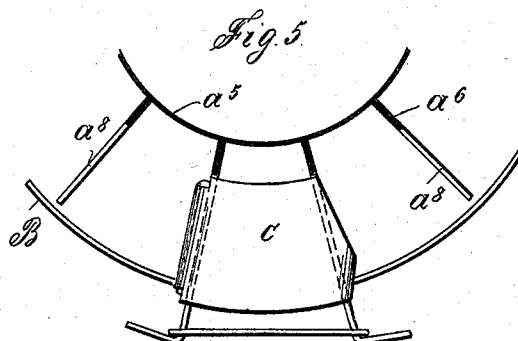
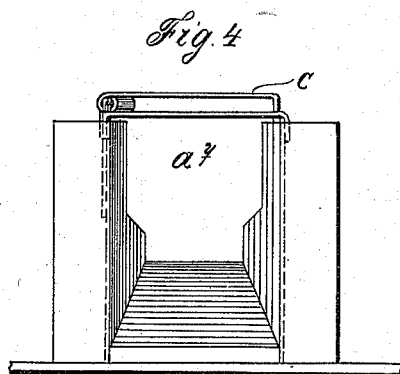
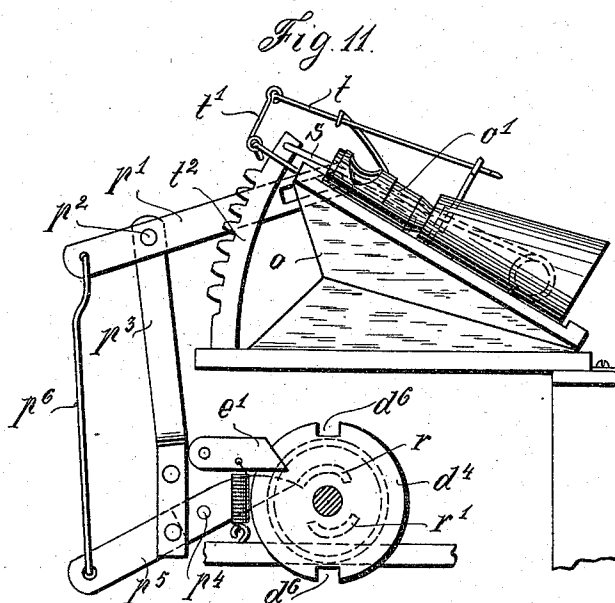
(No Model.)

6 Sheets—Sheet 4.

G. HIRSCHFELD.
COIN FREED APPARATUS.

No. 552,529.

Patented Jan. 7, 1896.



Witnesses:
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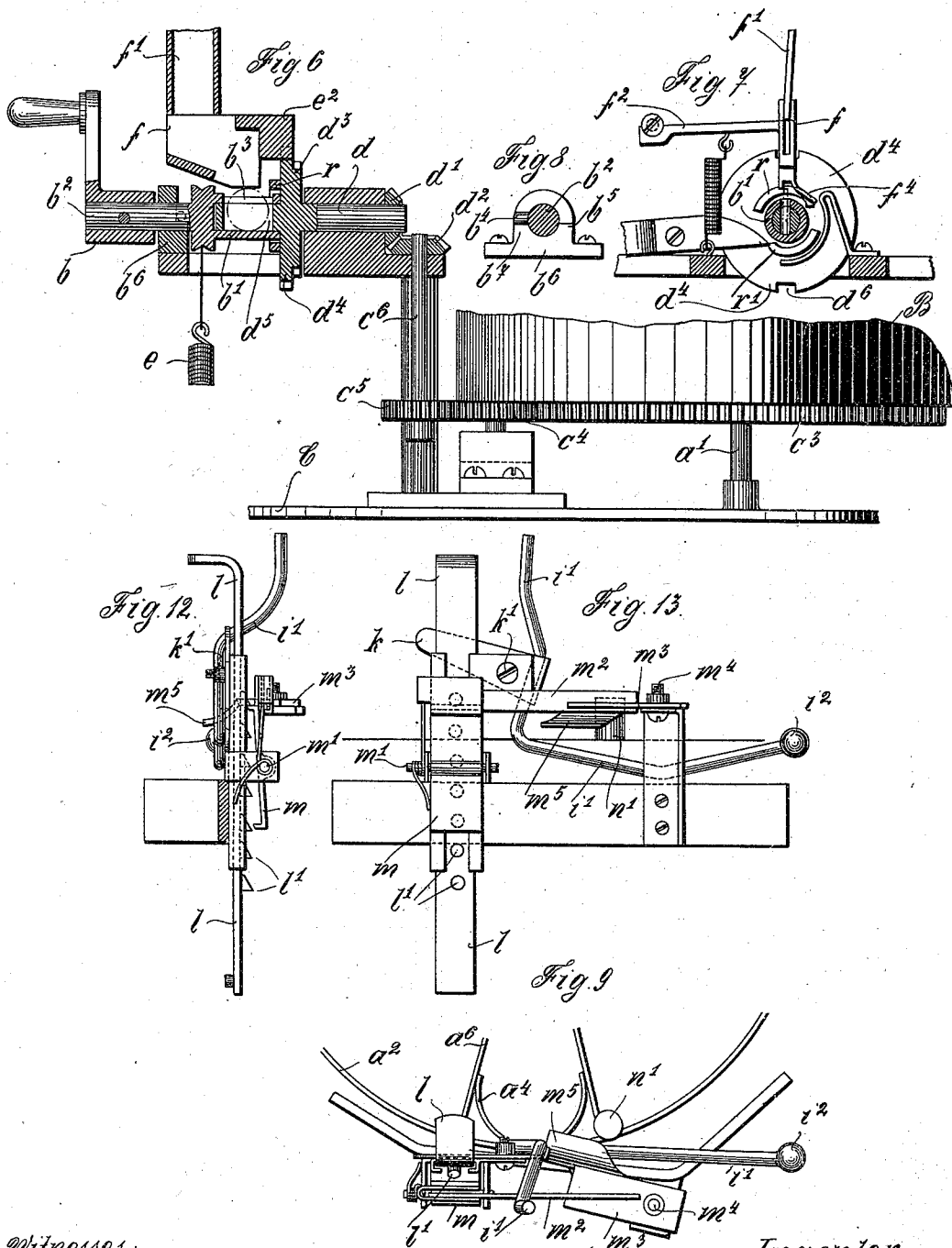
(No Model.)

6 Sheets—Sheet 5.

G. HIRSCHFELD.
COIN FREED APPARATUS.

No. 552,529.

Patented Jan. 7, 1896.



Witnesses:
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Inventor:
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(No Model.)

6 Sheets—Sheet 6.

G. HIRSCHFELD.
COIN FREED APPARATUS.

No. 552,529.

Patented Jan. 7, 1896.

Fig 10

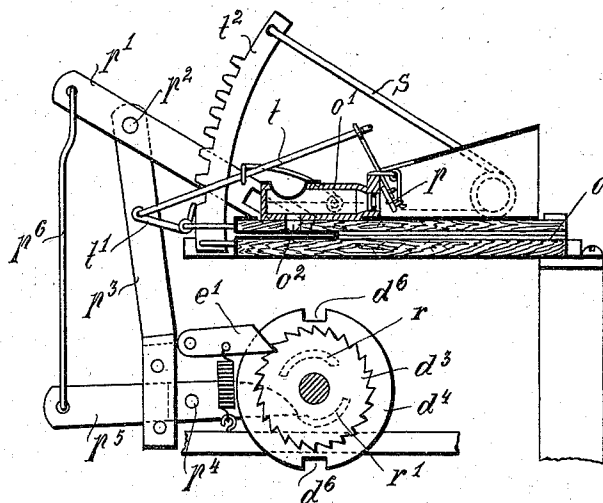
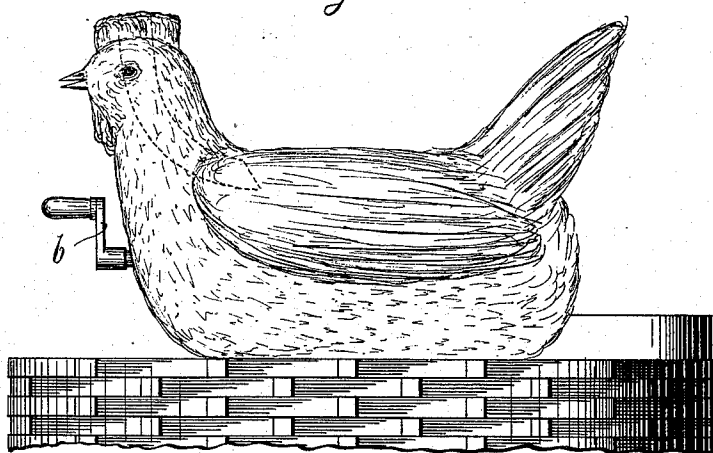


Fig 14



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UNITED STATES PATENT OFFICE.

GEORG HIRSCHFELD, OF BERLIN, GERMANY.

COIN-FREED APPARATUS.

SPECIFICATION forming part of Letters Patent No. 552,529, dated January 7, 1896.

Application filed May 24, 1895. Serial No. 550,565. (No model.) Patented in Germany December 7, 1893, No. 80,423; in France June 30, 1894, No. 239,709; in England July 3, 1894, No. 12,910; in Belgium July 9, 1894, No. 110,911; in Hungary July 22, 1894, No. 804, and in Austria November 29, 1894, No. 6,124/44.

To all whom it may concern:

Be it known that I, GEORG HIRSCHFELD, a subject of the King of Prussia, German Emperor, and a resident of Berlin, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Coin-Freed Apparatus, (for which patents have been obtained in Germany, No. 80,423, dated December 7, 1893; in France, No. 239,709, dated June 30, 1894; in Great Britain, No. 12,910, dated July 3, 1894; in Belgium, No. 110,911, dated July 9, 1894; in Hungary, No. 804, dated July 22, 1894, and in Austria, No. 6,124/44, dated November 29, 1894,) of which the following is an exact specification.

This invention refers to apparatus for automatically vending small articles by the mediation of a coin dropped into the apparatus. My improvements in such apparatus relate, first, to the construction of the container holding the articles to be vended; second, to the mechanism for actuating said container, and, further, to the device for returning the coin to the intending customer if the container has become empty.

In order to make my invention more clear, I refer to the accompanying drawings, in which similar letters denote similar parts throughout the different views, and in which—

Figure 1 is a side view of the apparatus, the hen and the other parts covering the mechanism being removed. Fig. 2 is an upper view of the same. Fig. 3 is a front view of the same. Fig. 4 shows the delivery-opening of the apparatus and a horizontal flap *c* arranged above said opening. Fig. 5 shows a horizontal section through portions of the two drums forming the container for the articles to be vended, the section being taken so as to show the flap *c* aforementioned. Fig. 6 is a vertical longitudinal section through a coupling, the two parts of which must be connected by a coin before the apparatus can be actuated by the crank *b*. Fig. 7 is a vertical section through said coupling, seen from the left side with regard to Fig. 6, the section being taken through the parts *b'* *b*³ of said latter figure. Fig. 8 is a rear view of the bearing supporting the shaft *b*² connecting the

crank aforementioned with a half of the said coupling. Fig. 9 is an upper view of the mechanisms effecting the returning of the coin if the container should be empty. Fig. 10 is a front view of the mechanisms for imitating the cackling of a hen, the bellows *o* being contracted. Fig. 11 is a similar front view, the bellows being expanded. Fig. 12 is a side view of the mechanisms shown in Fig. 9 and seen from the left side of said latter figure. Fig. 13 is a front view of the same mechanisms; and Fig. 14 is an outer view of the whole vending apparatus arranged within the body of a hen and a basket carrying the latter, this figure being drawn on a smaller scale.

Referring to Figs. 1, 2, and 3, *a* designates a frame holding a vertical shaft *a'*. The latter carries a drum A, Fig. 2, composed of two outer rings *a*² *a*³, which are connected by a number of separate curved walls *a*⁴ and of an inner wall *a*⁵, Fig. 5, provided with a number of radial plates *a*⁶. The number of said latter plates corresponds to that of the said curved walls *a*⁴. Below said movable drum A is arranged a fixed drum B, Figs. 1 and 3. The inner circular wall *a*⁵, as well as the radial plates *a*⁶ of the movable drum, reach down into said fixed drum B and rotate with in the same together with the articles to be vended—*i. e.*, together with the eggs. The latter are piled up within the compartments formed by the parts *a*⁴ *a*⁵ *a*⁶, as indicated in Fig. 2 by dotted lines. There are in the mode of construction shown twelve of such compartments, each of which is adapted to hold a pile of four eggs. There is, however, an exception with regard to that compartment which is situated diametrically opposite to the crank *b*, Figs. 1 to 3. Into said compartment reaches a horizontal plate *c*, Figs. 1, 4, and 5, arranged between the lowest series of eggs and the next higher one. Said plate *c* supports, therefore, three eggs of the respective pile, while the lowest egg of said pile is allowed to escape through an opening *a'*, Fig. 4, of the fixed drum B. If, therefore, the drum A is turned for the twelfth part of a rotation, another pile of eggs will be divided in two parts by the said plate *c*, in that the

lowest egg will be freed by arriving in front of the opening a^7 , Fig. 4, while the other three eggs will be supported by plate c , and will thus be hindered from following the egg just freed. If thereafter the drum A is turned for another twelfth of a rotation the said three eggs will fall down for a height according to the size of an egg. It will now be clear that in consequence of the empty space below the plate c , Figs. 1 and 4, the drum A cannot hold forty-eight eggs, but only forty-seven. This number is, with regard to the computation, a bad one, and I prefer therefore to arrange a special container for an egg, in order to make up for the loss of the space below the said plate c . Figs. 1, 2, and 3 designate the said single container, which is arranged directly above a compartment of the drums, and is held by an arm c^2 fixed to the frame a . If therefore the drums are perfectly filled with eggs, and if drum A is then rotated (in the direction of the arrow c^3 , Fig. 2,) for a twelfth of a rotation, the three eggs contained within the compartment above the plate c will fall down, and there will thus be freed the space for the reception of the egg contained within the single frame c' . There may, as a matter of course, be provided more than one of such separate containers c' , and in general the number of the compartments as well as the height of the same may be chosen as desired.

With regard to the radial partition-walls a^6 , Figs. 2 and 5, there is still to be remarked that each of them is provided with a cut-out a^8 , Fig. 5, in order to allow the passage of the plate c .

The shaft a' of the drum A is provided with a large cog-wheel c^3 , Fig. 6, which is in gear with the small cog-wheel c^4 , and is operated by the mediation of said wheel c^4 from a similar wheel c^5 , Fig. 6, fixed to a vertical shaft c^6 . The latter may be driven from a horizontal shaft d by the mediation of bevel-wheels d' d^2 . Shaft d is made in one piece with a ratchet-wheel d^3 , Figs. 6 and 10, and with a check-disk d^4 , Figs. 6, 7 and 11, and is at its front end furnished with a longitudinal slot d^5 , Fig. 6. A sleeve b' forming the rear end of the crank-shaft b^2 , Fig. 6, takes over the slotted front end of said shaft d , and corresponds with the slot d^5 by means of a similar slot b^3 . The normal position of the shafts b^2 and d is such a one that the slots b^3 and d^5 coincide, and the said two shafts are coupled with each other as soon as a coin is introduced into the said two slots, as indicated by dotted lines in Figs. 6 and 7. The drum A may then be rotated and will thus deliver an egg in the manner hereinbefore described. The ratio in diameter of the several wheels of the gear is such a one that in order to turn the drum A for the twelfth part of a rotation the crank b needs make but half a rotation. For this purpose the crank-shaft b^2 is provided with a pin b^4 , Fig. 8, which, when in normal position, rests upon a projection b^5 of the bearing b^6 ,

but which, after half a rotation of shaft b^2 , is stopped by a projection b^7 of said bearing. A spiral spring e , Figs. 1, 3 and 6, secured at one end to the ground-plate C of the apparatus, is strained during the said movement and effects in its turn the backward movement of the crank. Shaft d , however, does not partake of said backward movement, in that the coin leaves the slots b^3 d^5 as soon as the crank is left to itself or to the action of the said spring respectively.

The shaft d can be turned but in the direction of the hands of a clock, as a rotation in the reverse direction is hindered by a pawl e' , Figs. 10 and 11, which co-operates with the ratchet-wheel d^3 aforementioned. The latter is combined with a check-disk d^4 , as also already mentioned. The purpose of this disk is to prevent the drum A from being rotated by grasping through the cut-out a^7 , Fig. 4, and pressing against one or the other of the radial partition-walls a^6 , Fig. 5. The check-disk d^4 is provided with two cut-outs d^6 , Figs. 10 and 11, into one or the other of which takes a projection e^2 , Fig. 6, forming part of the coin-guide f . The latter is at the right-hand part of its lower end provided with an angular projection f^1 , Fig. 7, which is arranged in such a way that it is raised by the coin as soon as the latter commences its rotary movement. The length of the cut-outs d^6 of the disk d^4 is so chosen that said disk may perform a slight movement before it is stopped by the projection e^2 , Fig. 6, and the coin is thus able to act upon the projection f^1 and to raise the projection e^2 out of the respective cut-outs d^6 .

The whole apparatus is arranged within the body of a figure representing a hen, (compare Fig. 14,) and the coin is introduced either through the beak of the hen or through the crest of the same. The coin gets first into an inclined channel g , the right-hand side of which is provided with a cut-out g' , Fig. 1. That part of the bottom which is situated at the side of said cut-out has a small slot. (Indicated by dotted lines in Fig. 2.) Below said channel g is arranged a box h , Figs. 1, 2, and 3, that receives those coins which are either too small or too thin—i. e., which do not have the value corresponding to that of an egg. Those coins which are of too small a diameter fall out of the channel g through the cut-out g' , while those coins that are too thin fall through the small slot aforementioned. The right coins, however, roll down into a hopper h' fixed to the upper end of the flat angular coin-tube f' . The latter is fixed to the coin-guide f , Figs. 1 and 6. These parts f f' are secured to a one-armed lever f^2 , Fig. 7. If now the projection f^1 is acted on by the coin lying within the slots b^3 d^5 , the whole system f f' h' will swing upon the pivot of the lever f^2 . The hopper h' terminates not into the guide-tube f' only, but into an inclined channel f^3 , Figs. 2 and 3, too. The normal position of the channel g with regard to the hopper h' is such a one that the coin

having the proper value glides down into the coin-tube f' . If, however, the drum has become empty, the position of the channel g is altered in such a way that the coin dropped into said channel g gets into the oblique channel f^3 , from whence it falls through a hopper f^{40} into a long coin-tube f^5 , terminating at the rear of the drum or at that part of the apparatus where normally the eggs are delivered. In order to effect said alteration of the position of channel g the following arrangement has been devised.

The upper inclined channel g is fulcrumed to an angular wire i , Figs. 1 to 3, and is at its other end coupled with the upper end of a wire i' , Figs. 1 to 3 and 9, 12, and 13, which at its lower end is furnished with a weight i^2 . This wire i' is fixed to a double-armed lever k , Fig. 13, fulcrumed at k' and operated by the horizontal upper end of a drop-bar l as soon as said bar arrives in its lowermost position. Lever k is then turned in such a way that the upper end of the wire i' moves to the left, and the inclined channel g is consequently moved in such a way that its lower end arrives over the inclined channel f^3 of the hopper h' .

The drop-bar l is provided with a number of ratchet-teeth l' , Figs. 12 and 13, which co-operate with an anchor or ratchet-lever m . The latter is fulcrumed upon the pin m' , and is in certain intervals acted on by a spring m^2 , Figs. 9 and 13, fixed to a lever m^3 . The latter is fulcrumed at m^4 to a suitable part of the frame, and is provided with a projection m^5 reaching over the upper edge of the drum-ring a^2 . Said ring carries a number of short tubes n , Fig. 2, either of which may receive a pin n' . There is but one pin necessary, and that one pin is arranged in such a manner that it acts upon the said projection m^5 of the lever m^3 during that time in which the drum makes the last part of a rotation. In consequence of said action, the anchor or ratchet-lever m will be operated in such a manner that bar l drops for a distance equal to that of three teeth l' . If thus the drum has performed three rotations and eleven-twelfths of the fourth, the pin m' will on making the last part of its whole way cause the bar l to become perfectly free of the anchor m , and to drop upon the free end of the lever k . The latter will now by the mediation of the wire i' act upon the coin-channel g in the manner aforedescribed.

I prefer to combine the apparatus with a crowing device adapted to imitate the cry of a cock. This device may be constructed in any desired way, and I wish it to be understood that the form of construction shown in the drawings is to be regarded but as an example.

As to the construction shown in Figs. 10 and 11, o designates a bellows, which carries upon its upper surface a casing o' communicating with the interior of the bellows by an opening o^2 , Fig. 10. A flap or valve p co-op-

erating with said casing o' hinders the air from escaping in a continuous stream, but causes the same to escape in intervals similar to those occurring in the crow of a cock. The bellows is expanded by a lever p' fulcrumed at p^2 to a fixed arm p^3 of the frame. Lever p' is connected by a rod or wire p^6 with another lever p^5 fulcrumed at p^4 to a suitable part of the frame. Said lever p^5 is acted on by two segments $r r'$, Figs. 7, 10 and 11, fixed to the check-disk d^4 . If, therefore, this disk makes half a rotation, the lever p^5 will be acted on by one of said segments, and will cause the bellows to expand by the mediation of the rod p^6 and the lever p' . (Compare Fig. 11.) As soon as lever p^5 is left by the respective segment, the bellows will be again compressed by the spring s , Figs. 1 to 3, which had been strained during the expansion of the bellows.

The flap or valve p of the casing o' is connected by means of a rod t with an angular lever t' , the shorter arm of which co-operates with the teeth of a rack t^2 arranged in front of the bellows. Owing to the action of this rack upon the lever t' the flap p is caused to oscillate in a corresponding way. These movements occur during the expansion of the bellows as well as during the contraction, and the air escaping during the contraction of the bellows will thus act upon the tongue or reed arranged within the casing o' .

Having thus fully described the nature of this invention, what I desire to secure by Letters Patent of the United States is—

1. In an automatic vending-apparatus, the combination with a rotatable drum adapted to receive the articles to be vended, of a fixed drum arranged below the former, and adapted to receive part of said articles, and to support all of them; said rotatable drum having partition-walls reaching down into said fixed drum, and adapted to shove the articles contained within the latter; said fixed drum having a delivery opening adapted to let pass the respective article reaching that place, and above said opening a flap adapted to support the articles arriving above the former, for the purpose as described.

2. In an automatic vending-apparatus, the combination with a rotatable drum adapted to receive the articles to be vended, of a checking mechanism adapted to close the coin-tube after said drum has completed a certain number of rotations; said mechanism having a drop-bar provided with ratchet-teeth, and a ratchet-lever adapted to co-operate with said bar; said drum having a projection adapted to operate said lever, for the purpose as described.

3. In an automatic vending-apparatus, the combination with a rotatable drum adapted to receive the articles to be vended, of a checking-mechanism adapted to close the coin-tube after said drum has completed a certain number of rotations; said mechanism consisting of a drop-bar having ratchet-teeth, and adapted to act at the end of its way on the check-

ing-lever for the coin-tube; said drop-bar co-
operating with a ratchet-lever having teeth
at both ends; said drum having sockets cor-
responding in number to the number of the
5 compartments of the drum; said sockets be-
ing adapted to receive a removable pin adapt-
ed to act directly or indirectly on said ratchet
lever, for the purpose as described.

4. In an automatic vending-apparatus, the
10 combination with a bipartite shaft, the parts
of which are adapted to be coupled by a coin,
of a notched disk secured to one of said parts,

and adapted to be checked by a pawl, the lat-
ter having a projection adapted to be raised
by the revolving coin, for the purpose as de- 15
scribed.

In testimony whereof I have signed this
specification in the presence of two subscrib-
ing witnesses.

GEORG HIRSCHFELD.

Witnesses:

WM. HAUPT,
CHAS. KREIGER.