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PATENTED FEB. 6, 1906.

C. F. HESS.  
COIN SEPARATING, COUNTING, AND STACKING DEVICE.

APPLICATION FILED FEB. 10, 1905.

4 SHEETS—SHEET 1.

Fig. 2.

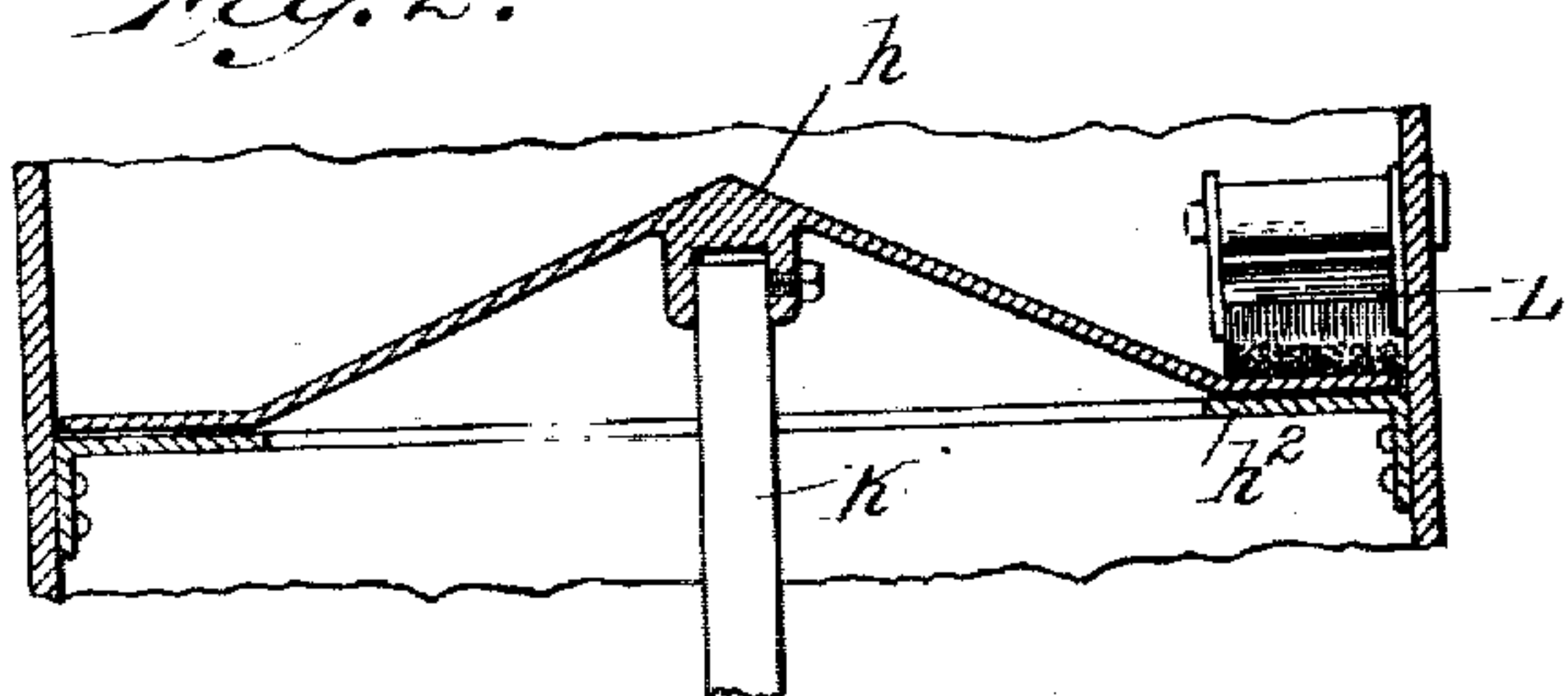
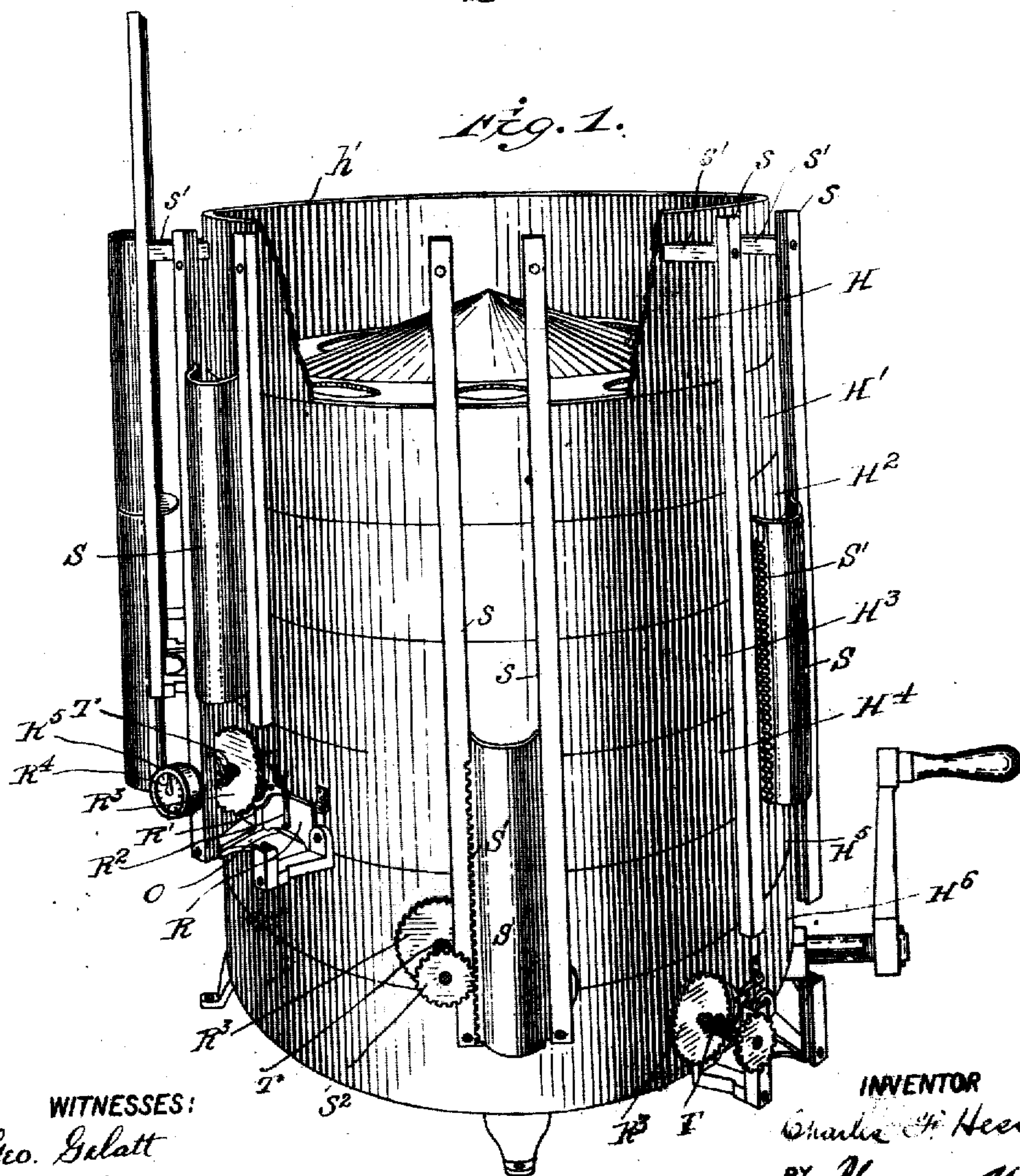


Fig. 1.



WITNESSES:

Geo. Selatt  
Edwin L. Jewell

INVENTOR

Charles F. Hess,

BY *March*  
his ATTORNEYS.

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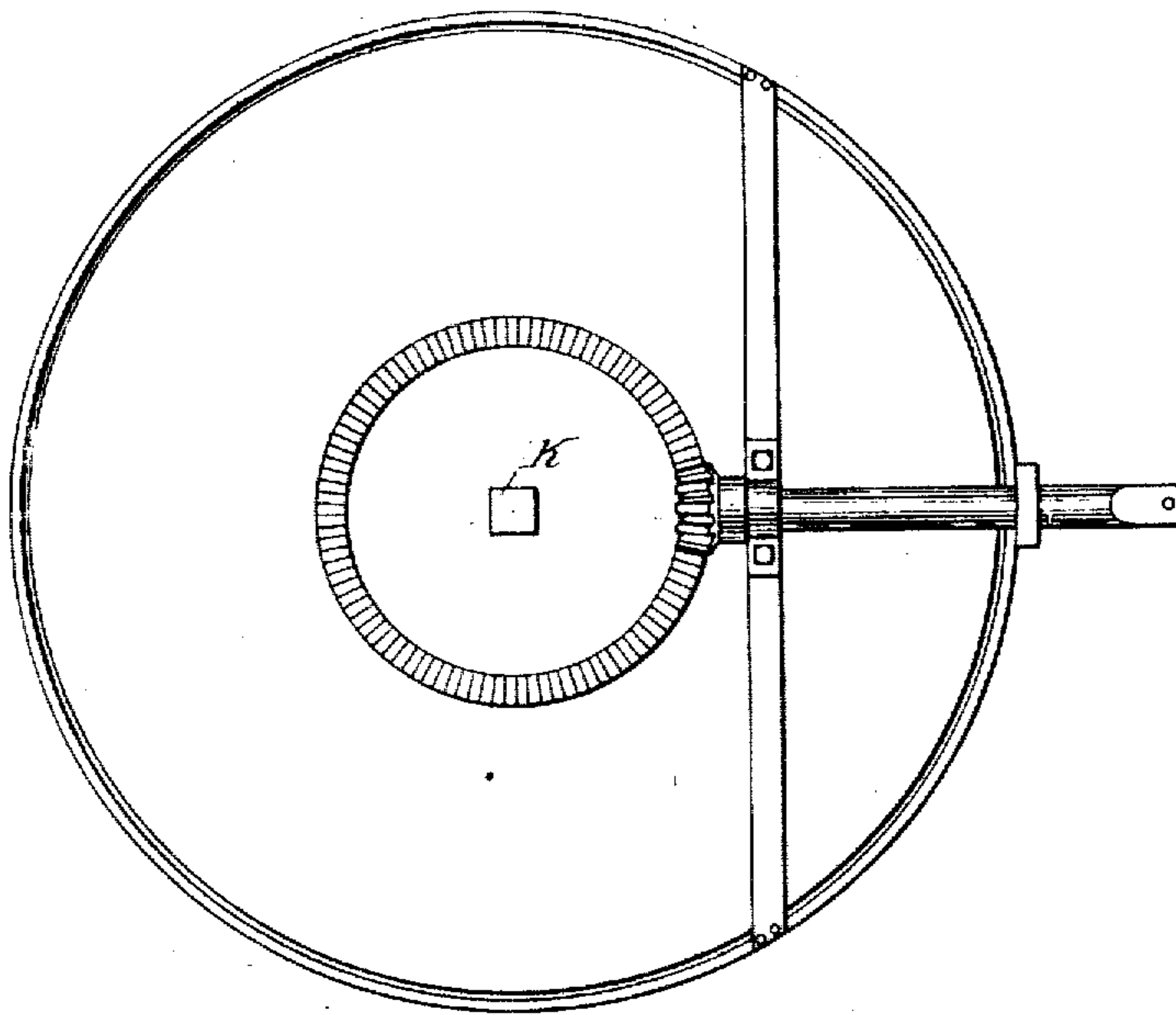
C. F. HESS.

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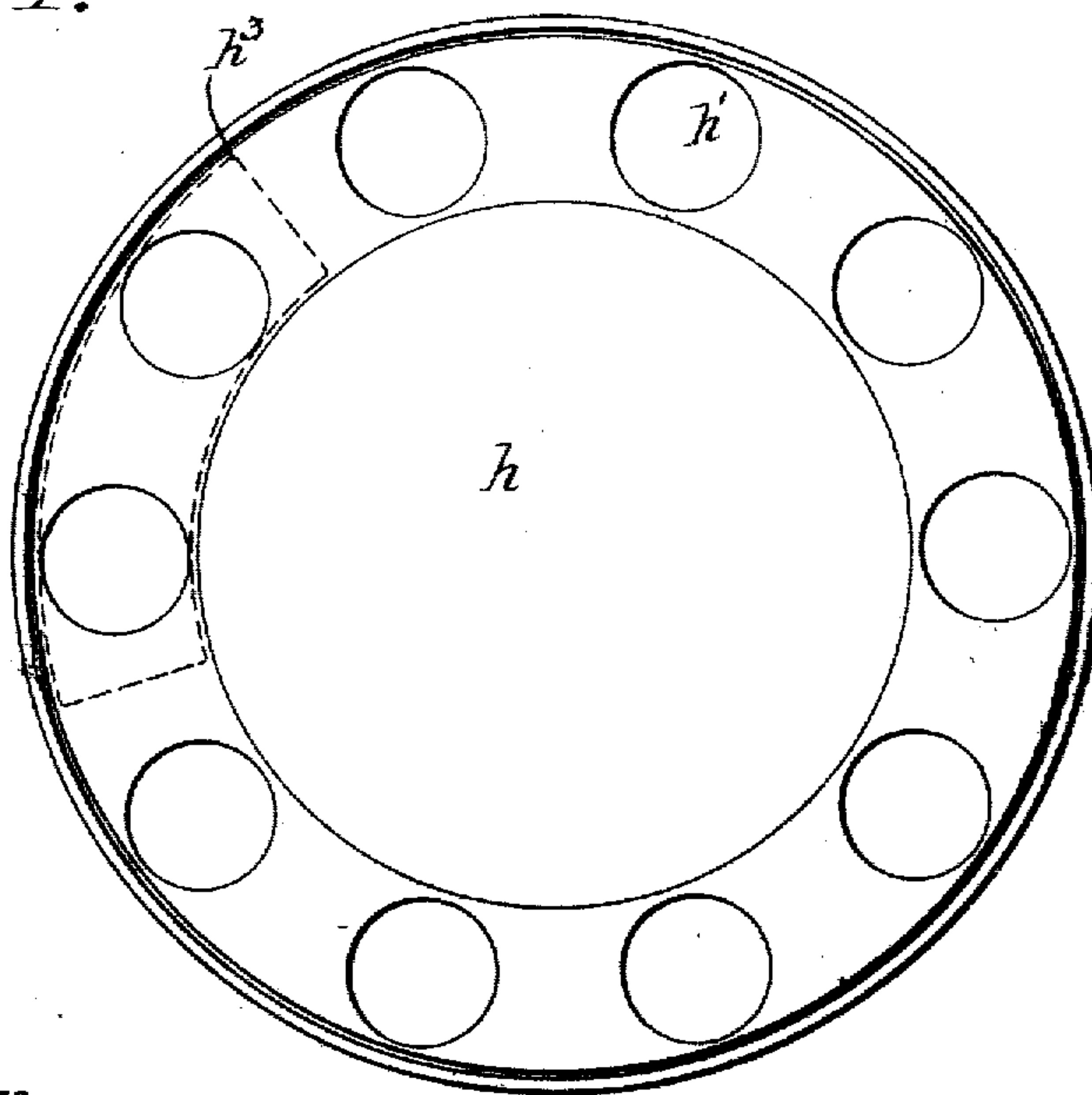
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4 SHEETS—SHEET 2.

*Fig. 3.*



*Fig. 4.*



WITNESSES:

*Geo. Gillett.*  
*Edwin L. Jewell*

INVENTOR

*Charles F. Hess*

BY

*Charles F. Hess*  
his ATTORNEYS.



No. 811,559.

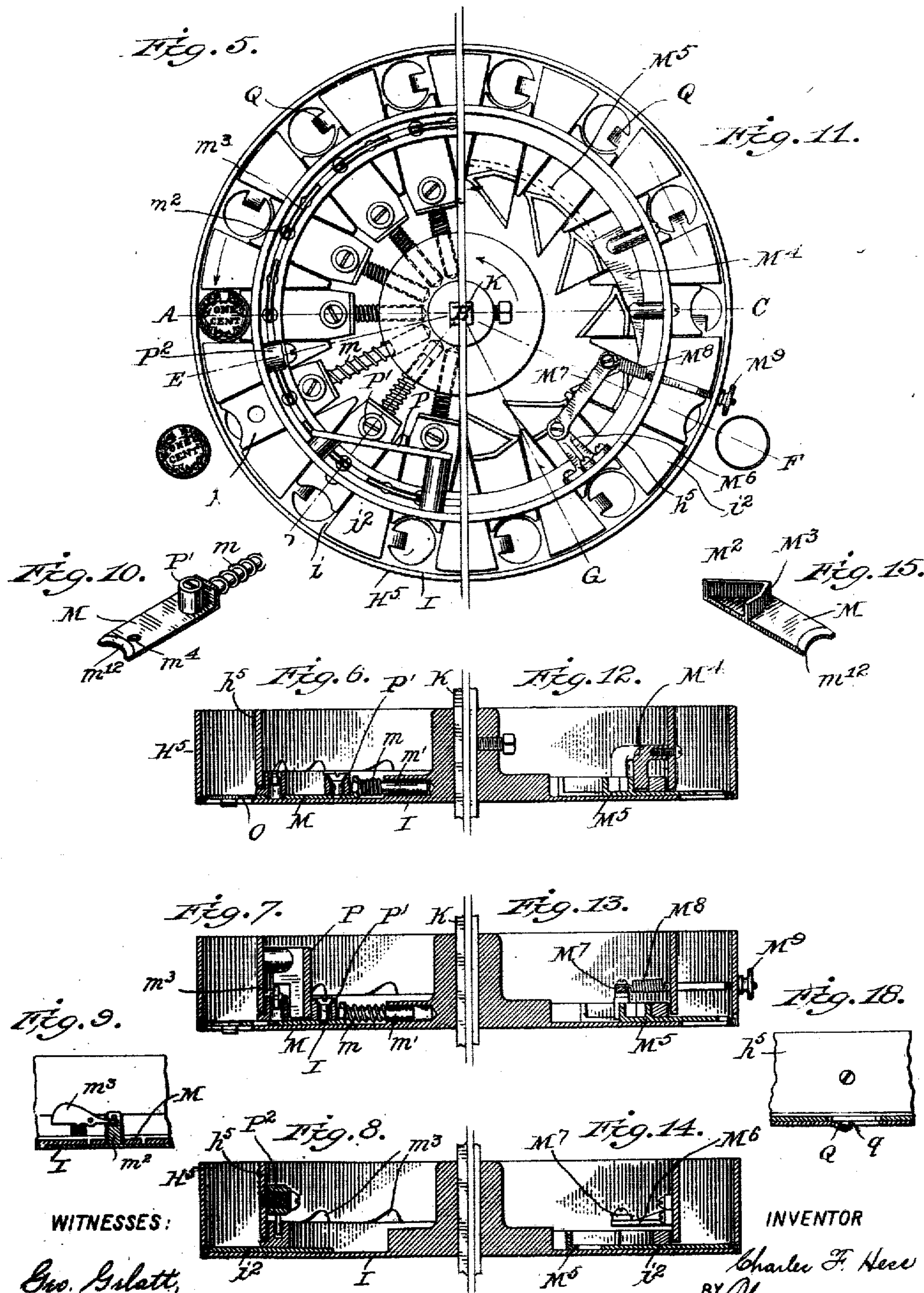
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C. F. HESS.

COIN SEPARATING, COUNTING, AND STACKING DEVICE.

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4 SHEETS—SHEET 3.



WITNESSES:  
Geo. Islett,  
Edwin L. Jewell

INVENTOR  
Charles F. Hess  
BY  
Church & Thumley  
his ATTORNEYS.





# UNITED STATES PATENT OFFICE.

CHARLES F. HESS, OF SCRANTON, PENNSYLVANIA.

## COIN SEPARATING, COUNTING, AND STACKING DEVICE.

No. 811,559.

Specification of Letters Patent.

Patented Feb. 6, 1906.

Application filed February 10, 1905. Serial No. 245,091.

*To all whom it may concern:*

Be it known that I, CHARLES F. HESS, a citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Coin Separating, Counting, and Stacking Devices; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

The objects of the present invention are to provide a convenient, positive, and simple mechanism which will operate with certainty to separate coins of various denominations into stacks or piles of each denomination and at the same time to count and, if desired, indicate the aggregate of each stack or pile of coins.

Another object of the invention is to provide a mechanism of the character specified adapted to receive in bulk coins of all denominations capable of being separated by the machine and to quickly and effectually separate the same by the mechanical manipulation of the coins as distinguished from simple gravity or automatic separation, as has been heretofore proposed.

In accordance with the present invention the separation of the coins is effected by means which depends for its effectiveness upon the difference in the diameters of coins of various denominations, and in carrying the invention into practice a series of mechanically-driven carriers are provided each with an aperture or series of apertures through which coins of lesser diameter than those adapted to be handled by that carrier may drop, each carrier being also provided with a discharging mechanism for discharging therefrom coins of proper diameter to be retained by the carrier without passing through the before-mentioned aperture or apertures, the counting mechanism preferably being operated by the coin itself in the act of being discharged from the carrier. In the preferred construction the carriers take the form of a series of disks or wheels located one above the other and all save the lowermost carrier provided with a series of concentrically-arranged apertures for the passage of coins of lesser diameter than the coin adapted to be discharged and counted by the discharging and counting mechanism. Said disks or wheels are preferably all mounted on a single central vertical

shaft adapted to receive rotary motion from any suitable driving mechanism, the whole being contained in a case or framing of any suitable construction. In this preferred embodiment the case and carriers are preferably constructed in units adapted to be assembled by being placed one upon the other, each unit embodying one carrier and an annular section of the casing whereby each section or unit is, save for the driving mechanism, independent of the other sections or units and may be removed for repair or adjustment by the simple expedient of separating the several units without disassembling the parts of each unit.

Referring to the accompanying drawings, Figure 1 is a perspective view, with portions broken away to show underlying parts, of an apparatus embodying the present invention. Fig. 2 is a sectional detail, in a vertical plane, showing the top or hopper section. Fig. 3 is a bottom plan view of the bottom section, showing one form of driving mechanism for the coin-carrier shaft. Fig. 4 is a top plan view of the section shown in Fig. 2. Fig. 5 is a top plan view of one-half of a carrier, illustrating one form of coin-discharging mechanism; and Figs. 6, 7, and 8 are vertical sectional views of the same on the lines BA, BD, BE, respectively. Figs. 9 and 10 are detail views of one of the locks for the coin-discharger and one of the coin-dischargers itself, respectively. Fig. 11 is a top plan view of one-half of a carrier, showing a different form of coin-discharging mechanism. Figs. 12, 13, and 14 are vertical sections of the same on the lines BC, BF, and BG, respectively. Fig. 15 is a perspective view of the coin-discharger used in this form of the device. Fig. 16 is a top plan view of a carrier, illustrating still another form of coin-discharging mechanism. Fig. 17 is a detail perspective view of one of the coin-dischargers used in the form of carrier illustrated in Fig. 16. Fig. 18 is a detail vertical section through one of the apertures in the coin-carrier and illustrating the retainer for preventing the coins from jamming in the aperture. Fig. 19 is a perspective view, partially broken away to show one of the brushes for positioning the coins on the carriers and for insuring the proper distribution of the coins. Fig. 20 is a detail section through the brush-shaft and associated parts in the form illustrated in Fig. 19. Fig. 21 is a detail of the brush-shaft itself. Fig. 22 is a detail perspective showing a slightly-modified arrangement of brush-adjusting mechanism.



ism. Fig. 23 is a detail perspective illustrating a spring-pressed brush-carrier.

Similar letters of reference in the several figures indicate like parts.

5 The apparatus illustrated is in general cylindrical in form and composed of a series of superposed sections  $H H' H^2 H^3 H^4 H^5 H^6$ , the section  $H$  being a hopper-section and the sections  $H'$ , &c., being, respectively, the dollar-  
10 section, fifty-cent section, twenty-five-cent section, five-cent section, one-cent section, and ten-cent section. The sections, except the hopper and ten-cent sections, are practically duplicates of each other, save that the  
15 apertures are of different size for permitting the passage of coins of smaller diameter than coins adapted to be handled by the carrier in its section. The bottom or ten-cent section obviously need not be provided with aper-  
20 tures, inasmuch as this is the smallest coin to be handled and the necessity of passing smaller coins therethrough does not exist. Each of the sections  $H$  to  $H^6$  is adapted to hold within it a rotary coin-carrier. Thus the  
25 section  $H$  is provided with a central conical projection  $h$  for directing the coins toward the periphery, and at or near the periphery is a series of apertures  $h'$ , Figs. 1 and 4, through which coins of all denominations may pass;  
30 but said coins are prevented from passing through the apertures, save at one side of the hopper, by a guard  $h^2$ , having a section  $h^3$ . (Shown in dotted lines in Fig. 4 removed.) With this construction coins dropped into the  
35 hopper-section  $H$  will be shaken about and carried around to the opening  $h^3$  and will then drop through or out of the hopper and into the next section  $H'$ , which is the section containing the mechanism for discharging coin  
40 of the larger diameter, (dollars,) all coins of smaller diameter being adapted to pass through the dollar-section and into the succeeding sections.

Inasmuch as all of the coin-carriers and  
45 sections are practically duplicates, as before stated, it is not deemed necessary to illustrate in detail or describe but one of said sections. Thus in Figs. 5, 6, 7, 8, 9, and 10 the one-cent section is illustrated, and by refer-  
50 ence to these figures it will be seen that the rotary carrier  $I$  is mounted on the central shaft  $K$  and is provided near its periphery with a series of circumferential coin-receptacles  $i$ , in the bottom of each of which is a coin-  
55 aperture  $i'$ , through which coins of lesser diameter than those to be handled by the carrier are adapted to pass. The coin-receptacles  $i$  are preferably formed by segmental projections  $i^2$  on the carrier and are of such  
60 depth as to permit a coin of the proper denomination to lie substantially flush therein and of insufficient depth to permit more than a single coin to lodge in any receptacle. The casing-section  $H^6$  in this instance is provided  
65 with an inner annular wall  $h^5$ , and the coins are

adapted to pass down between the two walls of the casing and be distributed in this annular space to the several receptacles in the carrier, the distribution being preferably effected by brushes  $L$ , Fig. 19, usually pivotally  
70 mounted between the walls  $h^5$  and  $H^6$  and capable of being adjusted so as to exert a greater or less pressure on the carrier, so as to insure the proper entry and distribution of  
75 the coins to the receptacle in the carrier and also so as to prevent smaller coins from traveling around with the carrier in case all of the receptacles are filled by coins of proper de-  
80 nomination, in which event the smaller coins will be retained by the brush until an opening presents itself through which the smaller coin may drop to the next section of the device.

The arrangement is preferably such that the coins will travel down through the series of sections at one side of the device, and more  
85 than one brush is provided beneath which the coins must travel before reaching the discharging-point and before being operated on by the discharging mechanism, which will be now described.

90 Arranged to move radially in each of the coin-receptacles of the carrier is a pusher or discharger  $M$ , preferably of proper thickness to cooperate with the edge of a coin held in the receptacle and to discharge the same  
95 through an aperture—such, for instance, as indicated at  $O$  in Fig. 1. A mechanism is provided for advancing the discharger or pusher  $M$  quickly or with an impulsive action at the instant when the coin-receptacle has  
100 reached a point in registry with the aperture in the casing. Obviously mechanism of widely-different character may be employed for effecting the impulsive discharge move-  
105 ment of the discharger or pusher, and in the accompanying drawings three different forms of such mechanism are illustrated. In Figs. 5 to 10, inclusive, each discharger is pro-  
110 vided with an impelling-spring  $m$ , preferably mounted on a pin or extension  $m'$  of the discharger and adapted to be compressed when the discharger is retracted or held back out of  
the coin-receptacle. To hold the springs under tension, a bolt or retainer  $m^2$  is provided  
115 in the carrier with a spring-pressed latch or trigger  $m^3$  for normally holding the bolt  $m^2$  advanced in position to enter a notch or hole  $m^4$  in the discharger. The dischargers are re-  
120 tracted to put the springs under compression by a cam or incline  $P$ , Fig. 5, which cooperates with projections or rollers  $P'$  on each discharger, as shown in Fig. 7, whereby as the  
carrier is rotated each roller or projection riding up the incline  $P$  will force the dis-  
125 charger back until the spring-pressed pin  $m^2$  may enter the aperture  $m^4$  and retain the discharger retracted. The latches or triggers  $m^3$  are vertically arranged in this embodiment of the device, and at the proper instant, or  
when the coin-receptacles are opposite the 130



discharge-aperture, said latches or triggers are adapted to be depressed, so as to release the dischargers by means of a relatively fixed projection or roller  $P^2$ , Figs. 5 and 8, thus permitting of the impulsive advance of the discharger and the consequent discharge of any coin held in the receptacle.

In Figs. 11 to 15, inclusive, a somewhat different arrangement of pusher or discharging mechanism is illustrated, said mechanism in this instance dispensing with the necessity of employing separate impulse-springs for each pusher or discharger and providing a single spring-pressed operating member adapted to cooperate with the pushers or dischargers in succession as they reach the discharging-point. In this form of the device the carrier itself is as described in connection with Figs. 5 to 8, inclusive; but no lock and trigger mechanism is employed for retaining the pushers retracted. On the contrary, each of said pushers  $M$  is provided with an incline  $M^2$  and a projecting shoulder  $M^3$ , the latter being adapted to cooperate with a fixed incline  $M^4$ , Figs. 11 and 12, whereby the pushers or dischargers will be moved inwardly and may be held inwardly by an annular continuation of the incline, as indicated in dotted lines at  $M^5$ . Pivoted on a projection or bearing  $M^6$ , carried by the inner ring  $H^5$  of the casing, is an operating-arm  $M^7$ , adapted to cooperate with the inclines  $M^2$  on the pusher or discharger and to be advanced, so as to move said pushers or dischargers radially outward by a spring  $M^8$ , the tension of which may be adjusted by a thumb-screw and nut  $M^9$ . With this construction the projections  $M^3$  limit the outward movement of the pushers or dischargers, and the operating-arm will travel up the inclines  $M^2$  as the carrier rotates and passing around the inner end of the segments  $I^1$  will drop upon the incline of the next succeeding pusher or discharger at the instant when the latter registers with the coin-discharge aperture, thus advancing the said pusher or discharger with an impulsive action to cause the discharge of any coin held in the receptacle of the carrier.

In Figs. 16 and 17 still a third form of operating mechanism is illustrated. The construction of the carrier *per se* is substantially as before described, save that the segmental projections  $i^2$  are in this instance provided with inclines  $m^6$ , up which inclines the spring-pressed operating-arm or device  $m^7$  is adapted to travel, and the pushers or dischargers are provided with projections  $m^8$ , against the rear faces of which the driver  $m^7$  is adapted to act as it rides off of the previous incline  $m^6$ , so as to advance the pushers or dischargers smartly. The outward movement of said pushers or dischargers is limited by the projection  $m^8$  striking the inner face of the casing-ring  $h^5$ . The pushers or dischargers are adapted to be retracted by an

incline  $m^9$ , which corresponds in construction to the incline  $M^1$  of Figs. 11 and 12, and therefore need not be further described. In this instance the driver or operating mechanism for the pushers or dischargers may consist simply of a resilient arm or spring  $m^{10}$ , attached at one end to the inner ring  $h^5$  of the casing, as shown at  $m^{11}$ . In each instance it is preferred that the end of the pusher or discharger shall be beveled slightly, as indicated at  $m^{12}$ , Figs. 10, 15, and 17, in order that the pusher will only operate to discharge one coin should it so happen that too extra thin or worn coins are held in the receptacle of the carrier, although, as before pointed out, said receptacles are of such depth as to receive and retain only one coin, and in practice it is found that the chances of more than one coin lodging in each receptacle as it passes beneath the brush or brushes is exceedingly remote.

By reference to Figs. 5, 11, 16, and 18 it will be seen that the apertures in the carriers through which coins of smaller diameter than those intended to be handled and discharged by that carrier and its discharging mechanism are not complete circles, but on the rear sides are provided with projections  $Q$ , such projection being preferably formed with inclined upper surfaces  $q$ , Fig. 18, the base of the incline being flush with the bottom of the receptacle or upper edge of the aperture. The formation of the coin-passing apertures of less than a full circle is an important feature of construction in connection with coin-carriers or devices of this character wherein the coins are adapted to be positioned in the receptacles or caused to pass through the apertures by being swept over the surface of the carrier by brushes or equivalent positioning devices, inasmuch as it is found that without the provision of means such, for instance, as the projection  $Q$  there is a liability of the coins sticking in the apertures and clogging the operation of the mechanism. The projections  $Q$  described constitute, in effect, inclines on the rear side of the coin-passing apertures, and a coin passing over the surface of the carrier and its front edge tipping into the aperture will ride up the incline until it is positioned squarely on the carrier, when if the coin be of sufficiently small diameter its rear edge, or edge toward the direction in which the carrier is traveling with relation to the coin, will drop down through the aperture, and the whole coin will follow as a matter of course. On the other hand, if the coin is of such size as to simply seat in the receptacle without passing through the aperture it will seat squarely without danger of binding in the aperture or being upset by the passage of the brush over it, as might otherwise be the case. Obviously the width of the projection may be widely varied and it may, for instance, entirely bridge the aperture or be a comparatively narrow projection.



While any desired or preferred form of distributing device or brush may be employed for spreading the coins over the carriers and insuring their distribution to the receptacles and apertures, I prefer to employ a brush the face of which is more or less inclined to the face of the carrier, as shown particularly in Fig. 19 of the accompanying drawings. In this preferred construction the brush L is mounted on a square shaft  $l$ , journaled in the casing-rings  $H^2$   $h$ , and on the other end of the shaft there is provided an adjusting-arm  $l'$ , having a projection adapted to cooperate with one of a series of depressions  $l^2$  in a guard-piece  $l^3$  on the casing, whereby the pressure of the brush may be radially adjusted as found desirable or necessary. The squared shaft where it passes through the casing-ring  $H^2$  may be provided with a circular washer  $l^4$ , which in this instance will constitute a journal on which the shaft may rotate. As an obvious modification of the adjusting means the guard-piece  $l^3$  may be provided with a series of teeth  $l^5$ , Fig. 22, between which a projection  $l^6$  on the operating-arm  $l'$  may be held.

The brush may be spring-pressed, as illustrated, for instance, in Fig. 23, where a spring  $l'$  is mounted on the shaft with one end bearing on the brush-carrier L and the other end on a pin  $l^7$ , which latter may be inserted in any one of the series of holes  $l^8$ , so as to adjust the pressure or tension of the spring tending to hold the brush down to its position. In any of the constructions it will be noted that under extreme pressure the brush may yield so as to relieve the brush and carrier of breaking strains should through any accident a coin catch and tend to upset or turn over beneath the brush, although with inclines at the rear side of the apertures, as before explained, this contingency is exceedingly remote.

It will be understood that each section or unit is provided with one of the before-mentioned discharge-apertures O, through which coins of the denomination handled by the carrier for that unit is adapted to be discharged, and these apertures O of the several units are so arranged with relation to each other that the coins may be shot out of the device at different points around the circumference and, if desired, into different receivers. In the preferred arrangement receivers are provided which will properly stack the coins in convenient form for subsequent handling or wrapping, as the case may be, and, in addition, a counting or registering mechanism is provided for indicating the number of coins or the value of the coins passing through the discharge-openings. A convenient form of counting or registering mechanism may be, as shown in Fig. 1, composed of a pivoted gate or operating device R, adapted to be swung outwardly as each coin passes beneath it and to operate an escapement  $R'$  through the me-

dium of a link  $R^2$ . The escapement or pawl  $R'$  is adapted to cooperate with a ratchet-wheel  $R^3$ , forming part of the registering mechanism, which may consist simply of a pointer  $R^4$  on the end of the shaft carrying the ratchet-wheel and adapted to register with graduations on a dial  $R^5$ , suitably supported in fixed position. In the particular device illustrated the escapement or pawl  $R'$  is a restraining device for preventing the forward rotation of the ratchet-wheel and allowing said wheel to advance step by step, and the power for rotating the wheel and registering mechanism is obtained through the weight of the coin-receiver S, which latter is mounted to slide vertically in guideways  $s$  and is provided along one edge with a rack  $S'$ , adapted to mesh with a gear-wheel  $S^2$  on the shaft of the ratchet-wheel  $R^3$ . The receiver S thus constitutes a weight tending to advance the registering mechanism, and by the operation of the said registering mechanism the receiver is allowed to move downwardly step by step, the distance of its movements being gaged in accordance with the thickness of the coins it is adapted to receive. By this construction not only will the coins be shot into the receiver and dropped squarely into position, but by properly regulating the length of the rack  $S'$  when a predetermined number of coins have been deposited in the receiver the rack may be caused to pass out of engagement with the registering mechanism and dropped into position for removal, whereby each receiver will contain only the predetermined number of coins, and manual counting or separation of the coins into stacks of predetermined value is thus done away with. Obviously the receivers may be stacked between the guides  $s$ , one above the other, as shown at the left-hand side of Fig. 1, so that when one moves out of engagement with the registering mechanism the next one will move into engagement therewith.

Inasmuch as the function of the registering mechanism is chiefly to indicate the number of coins in a receiver when said number of coins is less than the capacity of or full quota of coins to be held by the receiver, the said registering mechanism should start from zero as each receiver comes into engagement therewith. It is therefore preferred to have a spring (indicated at T) for returning the registering mechanism to zero the instant that each receiver moves out of engagement therewith. This spring T may be a simple convolute spring mounted on the shaft of the ratchet-wheel, with one end attached to said shaft and the opposite end attached to a fixed support, such as one of the guides  $s$ . In the preferred construction the registering and coin-receiver holding and controlling devices or parts are preferably each rigidly connected with the section or unit of the machine to which it belongs in order that said sections or



units may be separated from each other without first removing said coin-receivers and associated parts, although, as shown in the drawing Fig. 1, the upper ends of the guide-ways 8 are also steadied by posts 8' from the top or hopper section II of the apparatus.

Obviously other forms of registering or indicating mechanism for counting the coins may be employed; but it is preferred that said mechanism should depend entirely upon the passage of a coin from the receptacles in the carriers out through the wall of the casing, inasmuch as at this time the coin is guided and ample power may be brought to bear upon it to both discharge it and cause it to operate the recording devices. So, also, it is obvious that registering devices may be employed without the necessity of receivers, which will travel down as they are filled, or, in other words, fixed receivers of ordinary construction may be employed, into which the coins are discharged, and the coins may be subsequently gathered into stacks of the desired value, or the coins may be discharged into or conducted from the separating mechanism to any of the well-known forms of apparatus for stacking and wrapping the same in bundles of desired value, and consequently I do not wish to be limited to the specific use of the coin-separating mechanism illustrated and described herein.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a device of the character set forth, the combination with a series of superposed carriers having apertures therein for the passage of coins of less diameters than the coins adapted to be handled by the carriers and coin-receptacles in the carriers, of means for distributing the coins to the receptacles and means for discharging the coins from the receptacles in succession.

2. In an apparatus such as described, the combination with a series of superposed carriers having coin-receptacles therein and apertures for the passage of coins of smaller diameters than those to be held in the receptacles and means for imparting movement to said carriers, of dischargers working in said receptacles for discharging the coins therefrom and means for operating said dischargers successively to discharge the coins.

3. In an apparatus such as described, the combination with a series of superposed carriers having coin-receptacles therein and apertures in said receptacles for the passage of coins of less diameters than the coins adapted to be held in said receptacles, of means for moving said carriers and means for discharging the coins from the receptacles successively; substantially as described.

4. In a device of the character described, the combination with a rotary carrier having coin-receptacles therein and apertures for the

passage of coins of smaller diameters than the coins adapted to be held by the receptacles, of spring-actuated discharging mechanism for discharging coins from the receptacles and means for retracting the discharging mechanism by the movement of the carrier.

5. In a device such as described, the combination with a rotary carrier, of a series of circumferentially-arranged coin-receptacles and apertures for the passage of coins of smaller diameters than those adapted to seat in the receptacle, of radially-movable spring-actuated discharging mechanism and means for retracting said discharging mechanism against the tension of its spring and embodying an incline; substantially as described.

6. In a device such as described, the combination with a rotary carrier having circumferentially receptacles therein, means for distributing coins to said receptacles and a casing having a coin-discharge aperture with which said receptacles register in succession, of a discharging mechanism operating to discharge the coins through said aperture in the casing embodying an impelling-spring and means for retracting the discharging mechanism.

7. In a device such as described, the combination with a rotary carrier having circumferentially-arranged coin-receptacles therein and apertures in said receptacles for the passage therethrough of coins of less diameter than the coins adapted to be held in said receptacles, of radially-movable discharging mechanism and means for moving said discharging mechanism radially outward to discharge the coins successively from the receptacles.

8. In a device such as described, the combination with a series of superposed carriers mounted on a common shaft adapted to be rotated thereby and each having a series of circumferentially-arranged coin-receptacles therein and apertures in the superposed carriers for the passage of coins of less diameters than those adapted to be held in the receptacles, of radially-movable discharging mechanism for each carrier, means for moving said discharging mechanism impulsively outward and means for retracting the discharging mechanism.

9. In a device such as described the combination with a rotary carrier having circumferentially-arranged coin-receptacles therein and means for discharging the coins from said receptacles in succession, of a distributor having a yielding face overlying said carrier for spreading and distributing the coins to the receptacles; substantially as described.

10. In a device such as described, the combination of a rotary carrier having circumferentially-disposed coin-receptacles therein and means for discharging the coins from said receptacles in succession, of a brush overlying the carrier for distributing the



coins to the receptacles; substantially as described.

11. In a device of the character described, the combination of a rotary carrier having circumferentially-disposed coin-receptacles therein and discharging mechanism for discharging the coins from said receptacles in succession, of a yielding distributor overlying said carrier for distributing the coins to the receptacles; substantially as described.

12. In a device such as described, the combination with a rotary carrier having circumferentially-disposed coin-receptacles therein with apertures for the passage of coins of smaller diameters than those adapted to be held by the receptacles, and a yielding distributor for distributing the coins to the receptacles; substantially as described.

13. In an apparatus such as described, the combination with the rotary carrier having circumferentially-disposed coin-receptacles therein and apertures for the passage of coins of smaller diameters than those adapted to be held by the receptacles and a discharging mechanism for discharging the coins from the receptacles in succession, of a succession of brushes for distributing the coins to the receptacles and apertures, and means for yieldingly supporting said brushes in position in proximity to the carrier; substantially as described.

14. In an apparatus such as described, the combination with a rotary carrier having circumferentially-disposed coin-receptacles therein and means for discharging the coins from said receptacles in succession, of annular walls between which the coins are confined in position to enter the receptacles; substantially as described.

15. In a device such as described the combination with the rotary carrier having circumferentially-disposed coin-receptacles therein and means for discharging the coins from said receptacles in succession, of a casing embodying annular walls between which the coins are confined in position to enter the receptacles, and distributors between said walls in proximity to the carrier; substantially as described.

16. In a device such as described, the combination with the rotary carrier having circumferentially-disposed coin-receptacles therein and means for discharging the coins from said receptacles in succession, of a casing embodying annular walls overlying the carrier and between which the coins are confined in position to enter the receptacles and a pivoted distributor mounted between said annular walls in position to rest in proximity to the upper surface of the carrier; substantially as described.

17. In a device such as described, the combination with a rotary carrier having a series of circumferentially-disposed coin-receptacles therein, means for distributing the coins

to the receptacles and annular walls between which the coins are confined in position to enter the receptacles, of a discharging mechanism embodying radially-movable dischargers, means for impelling said dischargers outwardly and a fixed incline for moving said dischargers inwardly.

18. In a device such as described the combination with a rotary carrier having a series of circumferentially-arranged coin-receptacles, of spring-actuated sliding dischargers working in said receptacles and a fixed incline for retracting said dischargers; substantially as described.

19. In a device for separating coins of differing diameters, the combination of a support on which the coins rest having apertures therethrough for the passage of coins of smaller diameter, said apertures having inclines at one side thereof and means for effecting a relative movement of the coins and support toward the sides of the apertures having the inclines.

20. In a separator for coins, the combination of a carrier having apertures therein for the passage of coins of smaller diameters, said apertures in part only conforming to the peripheral shape of the coins and having inclines on one side thereof, of means for distributing the coins to said apertures; substantially as described.

21. In a device such as described, the combination with a rotary carrier having apertures therein for the passage of coins of smaller diameters, and inclines on the rear sides of said apertures for preventing the entry of the forward edge of the coin into the apertures and means for distributing the coins to the apertures as the carrier is rotated; substantially as described.

22. In an apparatus such as described the combination with the rotary carrier having radially-arranged coin-receptacles therein, apertures in said receptacles of less diameters than the receptacles and inclines projecting into said apertures on the rear sides thereof, of means for rotating the carrier and means for discharging coins from the receptacles; substantially as described.

23. In a device for separating coins of different diameters, an apertured support over which the coins are distributed to the apertures in the support, said apertures having a transverse diameter equal to or greater than the coins adapted to pass therethrough and a projection extending below the level of the face of the support from one side of the aperture, said projection having an inclined upper face against which the forward edge of coins tending to enter the aperture are deflected upwardly and out of the aperture; substantially as described.

24. In an apparatus such as described, the combination of a series of separable units arranged in succession one above the other and



each embodying a coin-carrier and discharging mechanism, said coin-carrier of each unit having apertures therethrough for the passage of coins of smaller diameters than those adapted to be discharged by the discharging mechanism of that unit.

25. In an apparatus such as described the combination with a cylindrical casing formed in separable sections arranged one above the other, of coin-separating and radially-operating discharging mechanisms mounted in each section, operating simultaneously to separate and discharge coins, the separating and discharging mechanisms for the larger coins being arranged above the separating and discharging mechanisms for the smaller coins; substantially as described.

26. In an apparatus such as described the combination with a cylindrical casing, a central shaft and means for rotating said shaft, of a series of coin separating and discharging mechanisms rotated by the shaft and located one above the other within the casing.

27. In an apparatus such as described, the combination with a series of rotary coin separating and distributing mechanisms arranged one above the other and adapted to each permit of the passage therethrough of coins of smaller denominations, of a series of coin-receivers disposed in succession around said coin separating and distributing mechanisms and each adapted to receive coins from one of said mechanisms; substantially as described.

28. In an apparatus such as described, the combination with a series of coin-carriers arranged one above the other on a vertical axis and adapted to rotate horizontally and coin separating and discharging means substantially as described, of a series of coin-receivers disposed in succession around said coin-carriers and each adapted to receive the coins discharged from one of said carriers, as set forth.

29. In an apparatus such as described, the combination with a horizontally-rotatable coin-carrier and means for discharging coins radially therefrom, of a counting and indicating mechanism controlled by the coin as

discharged from the carrier and a movable coin-receiver whose position with relation to the carrier is controlled by said counting and indicating mechanism.

30. In an apparatus such as described, the combination with a horizontally-rotatable coin-carrier and means for discharging coins radially therefrom of a vertically-movable coin-receiver, mechanism controlling the position of said coin-receiver with relation to the carrier and itself controlled by the coin discharged from the carrier; substantially as described.

31. In an apparatus such as described, the combination with a horizontally-rotatable coin-carrier and means for discharging coins radially therefrom, of a vertically-movable coin-receiver into which the coins are distributed and feeding mechanism for the coin-receiver actuated by the discharged coin; substantially as described.

32. In an apparatus such as described, the combination with a horizontally-rotatable coin-carrier and mechanism for discharging coins radially therefrom, of vertically-arranged guides in proximity to said carrier, a coin-receiver mounted in said guides and feeding mechanism controlling the position of said receiver in the guides and having an operating part projecting into the path of the coin being discharged; substantially as described.

33. In an apparatus such as described, the combination with the coin separating and discharging mechanism, of a counting and indicating mechanism actuated by the coins being discharged, means for automatically returning said indicating mechanism to zero, and a coin-receiver advancing in unison with said mechanism whereby the counting mechanism will indicate the number or value of coins in the receiver when less than equal to the capacity of the receiver; substantially as described.

CHARLES F. HESS.

Witnesses:

JOHN J. BECKER,

MARY B. GALLAGHER.