

(No Model.)

3 Sheets—Sheet 1.

F. H. SMITH.
GAME APPARATUS AND SAMPLE EXHIBITOR.

No. 472,408.

Patented Apr. 5, 1892.

Fig. 1.

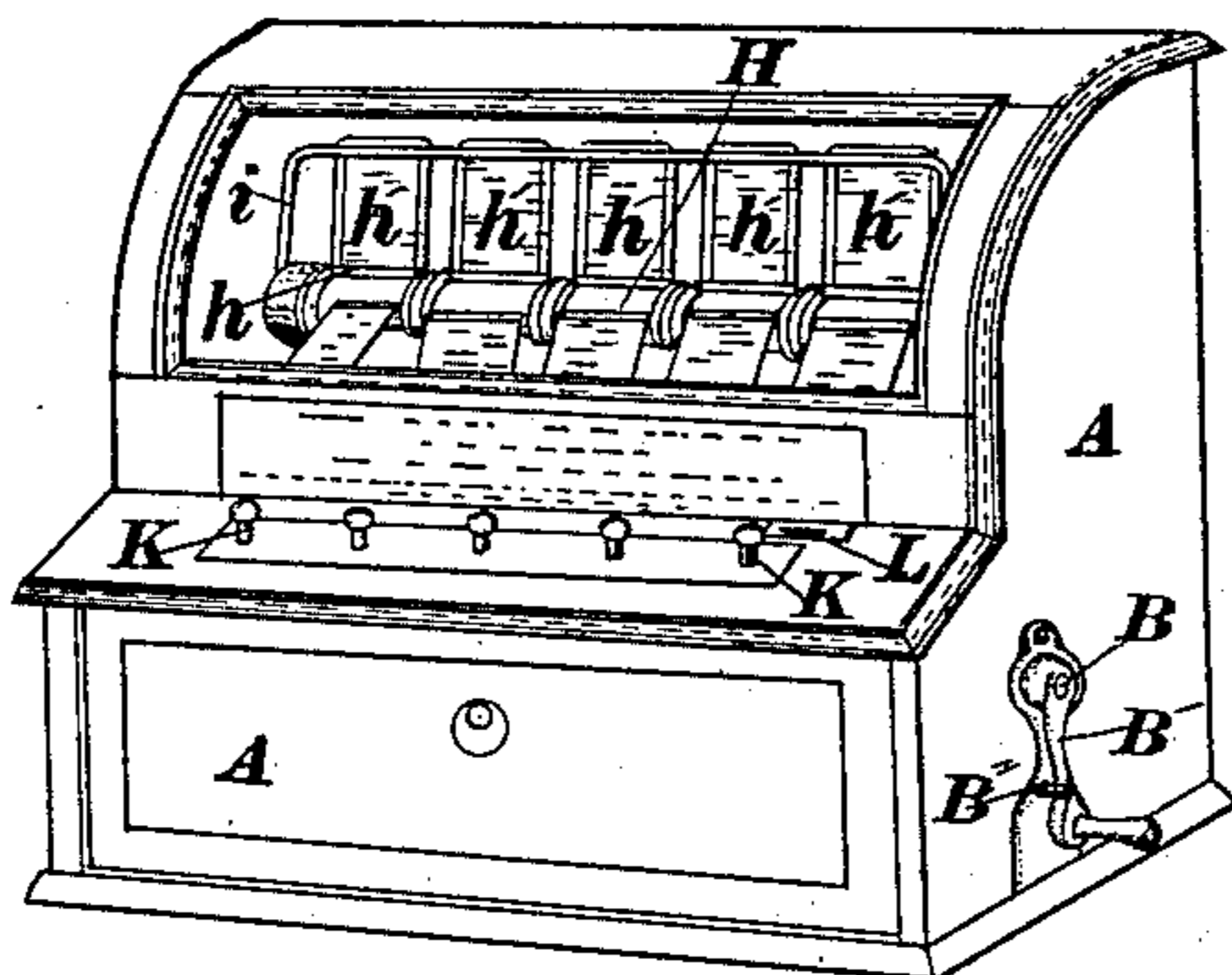
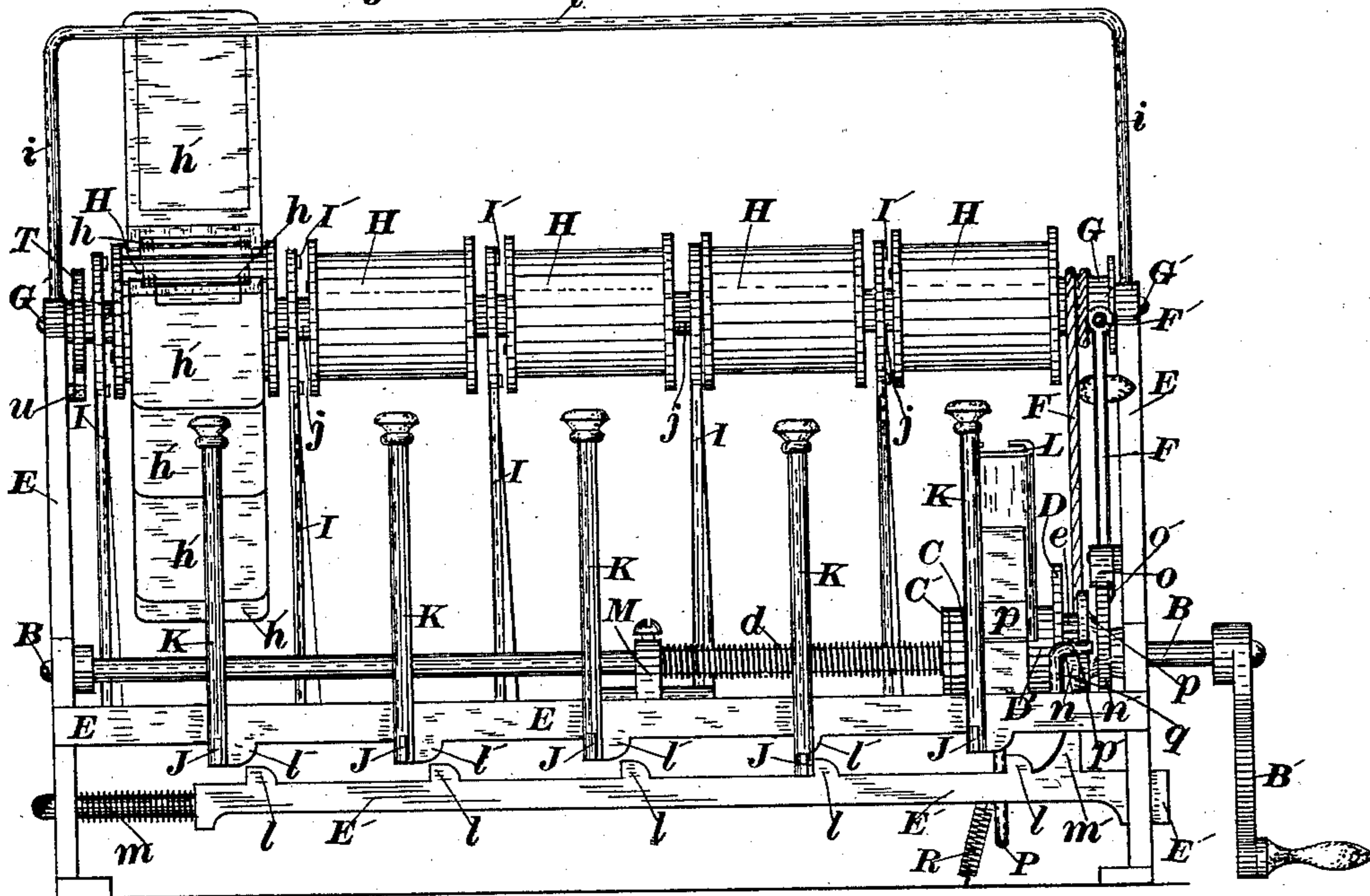


Fig. 2.



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(No Model.)

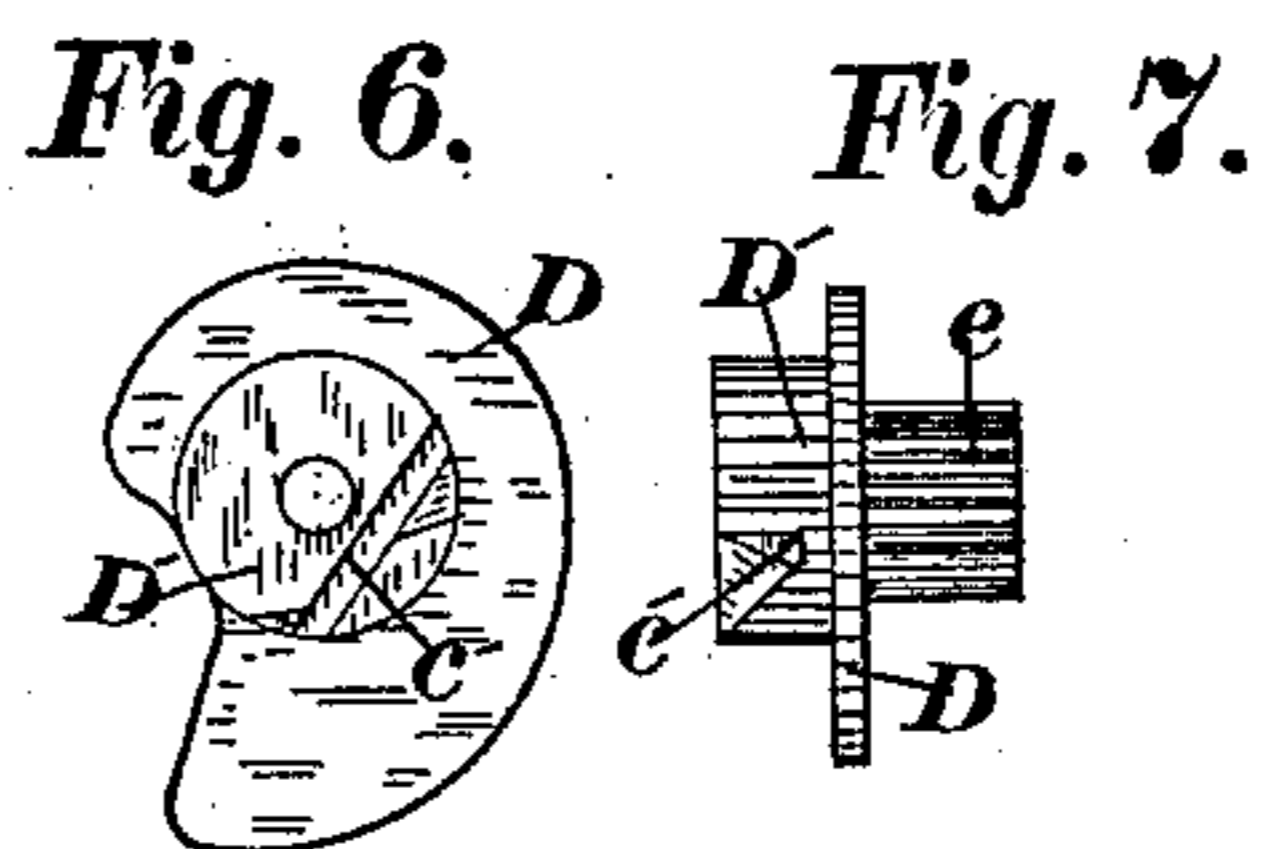
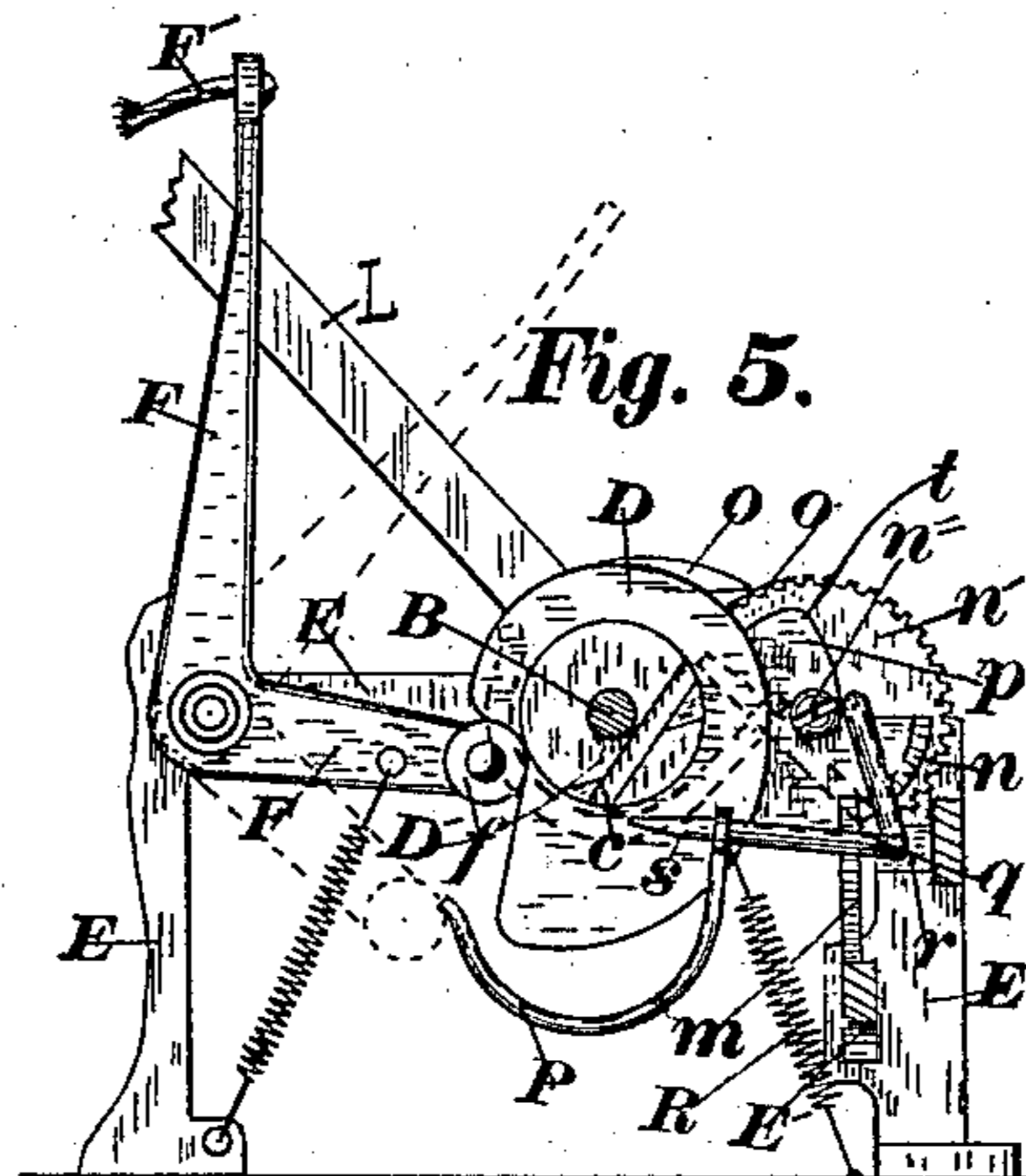
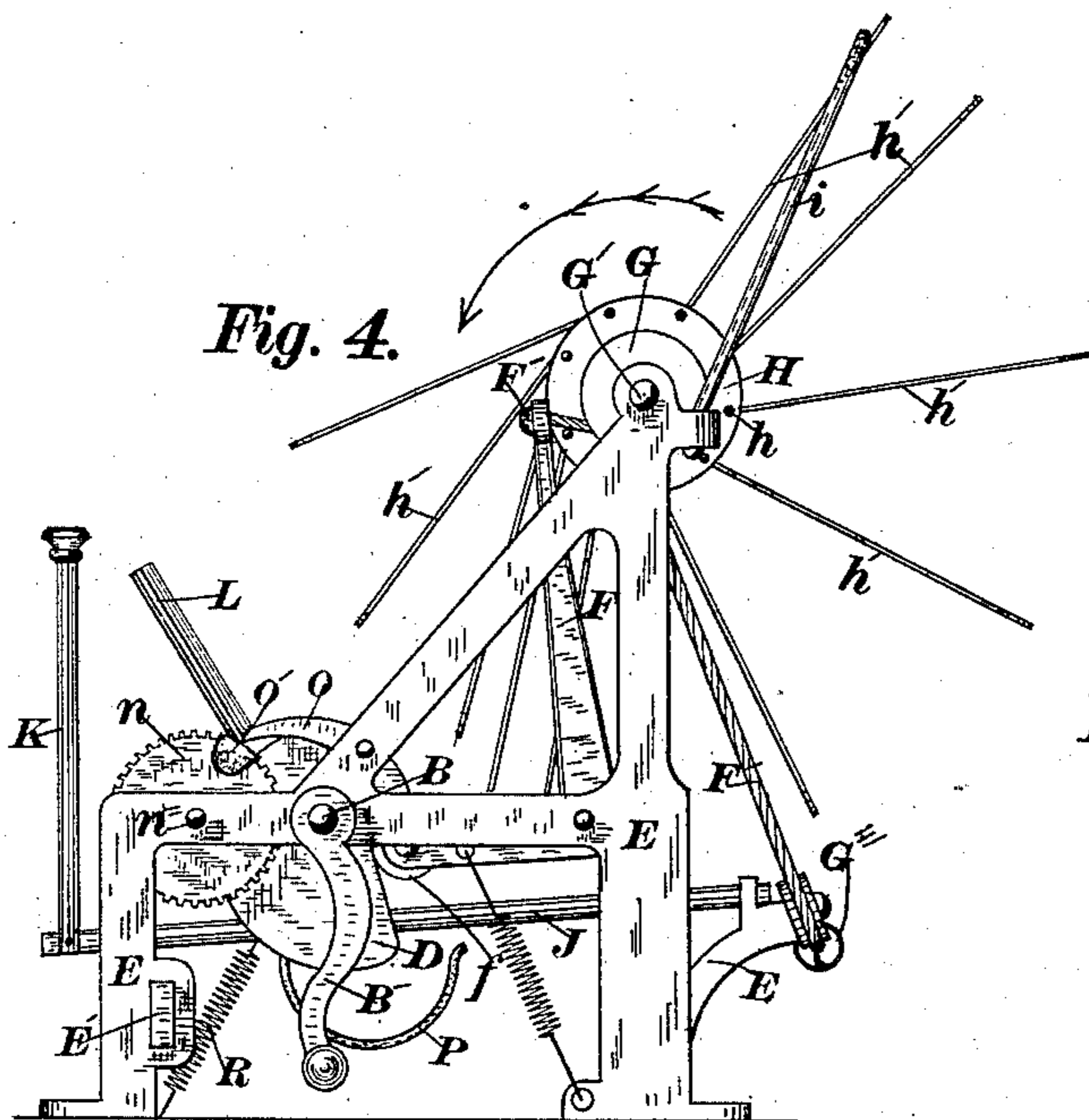
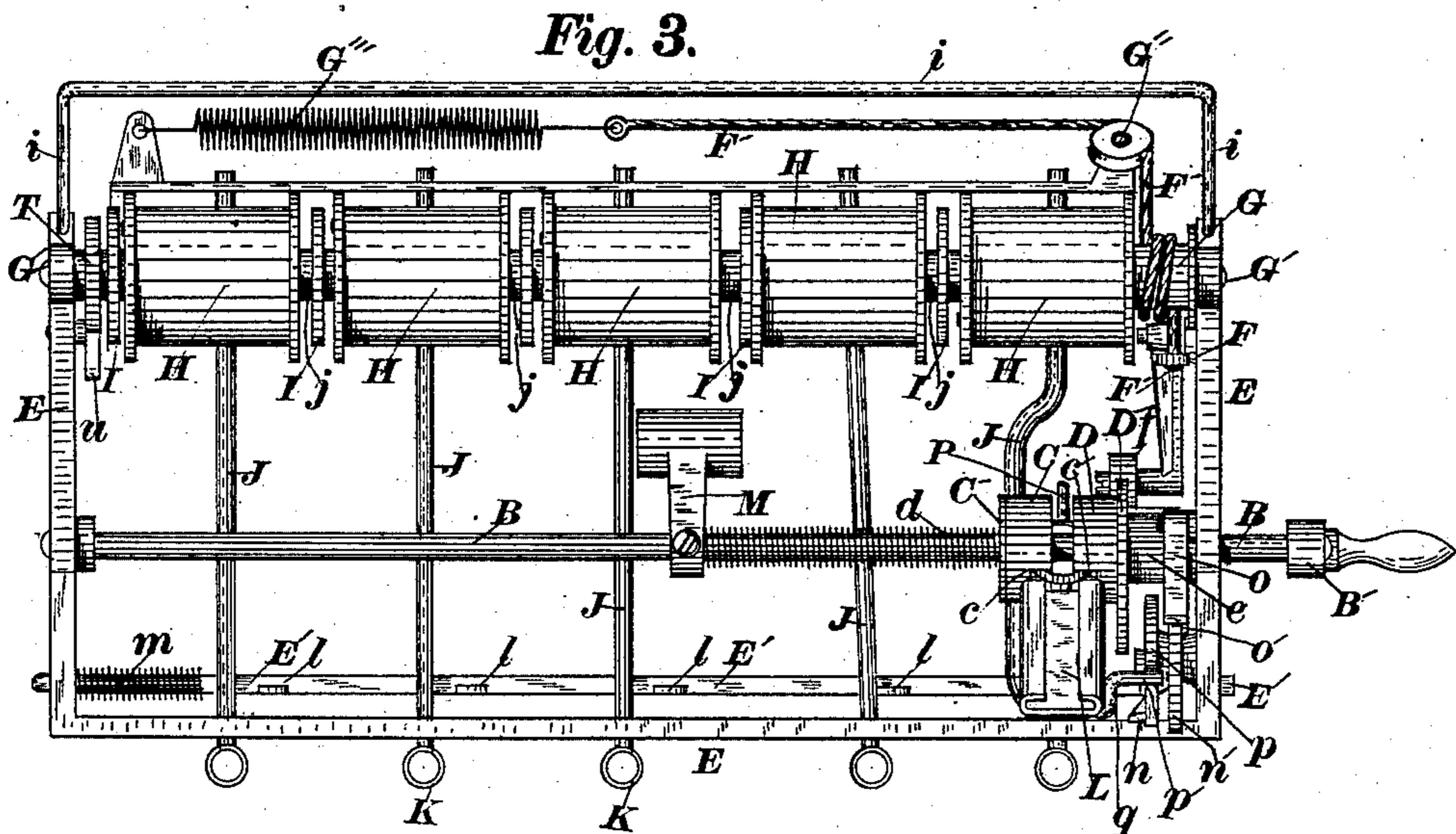
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Fig. 8. Fig. 9. Fig. 10.

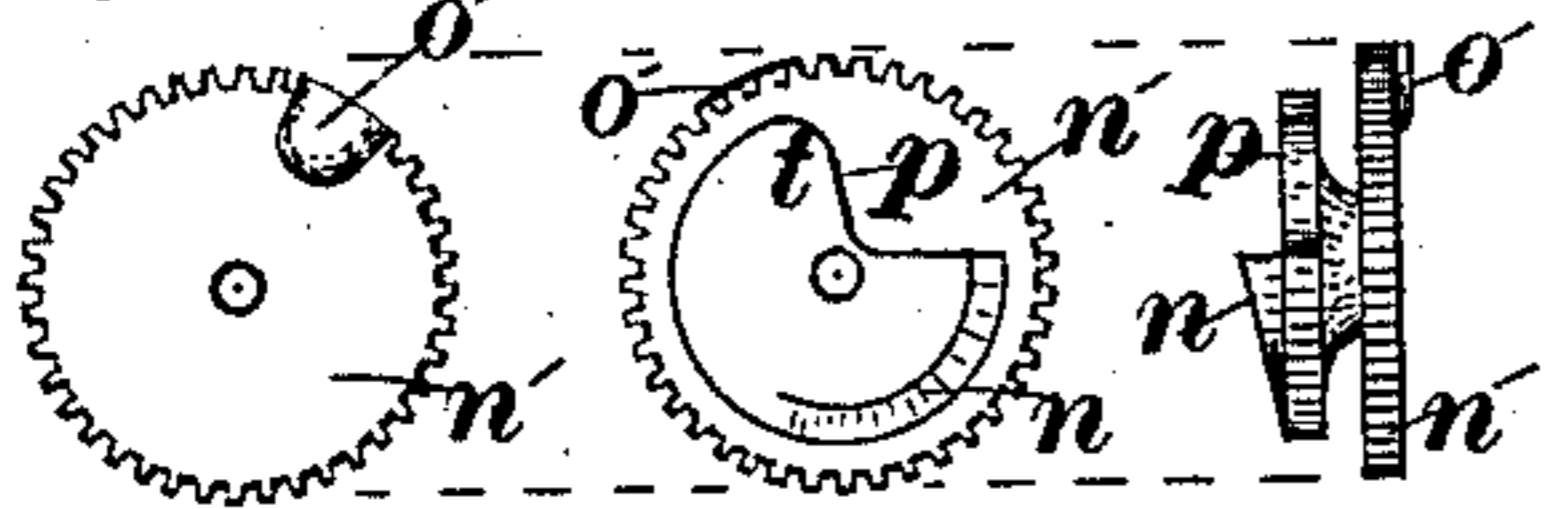


Fig. 11.

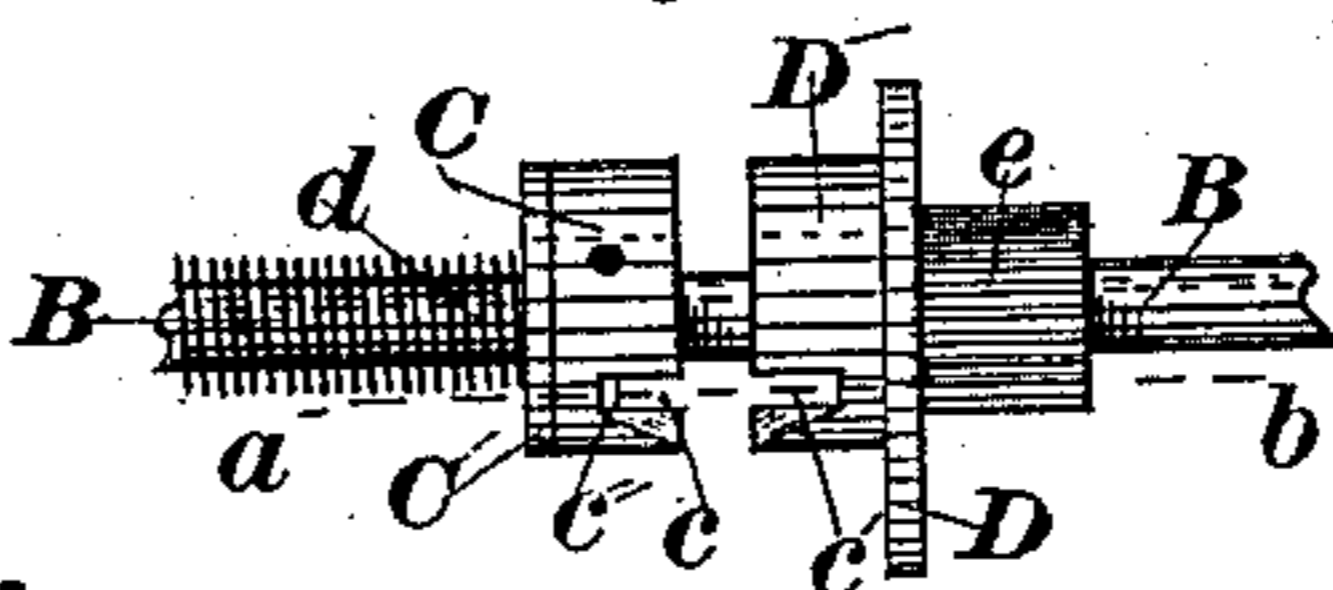


Fig. 14.

Fig. 13.

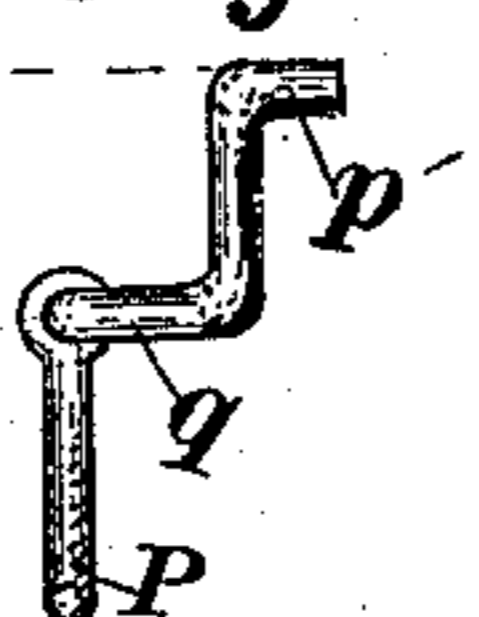
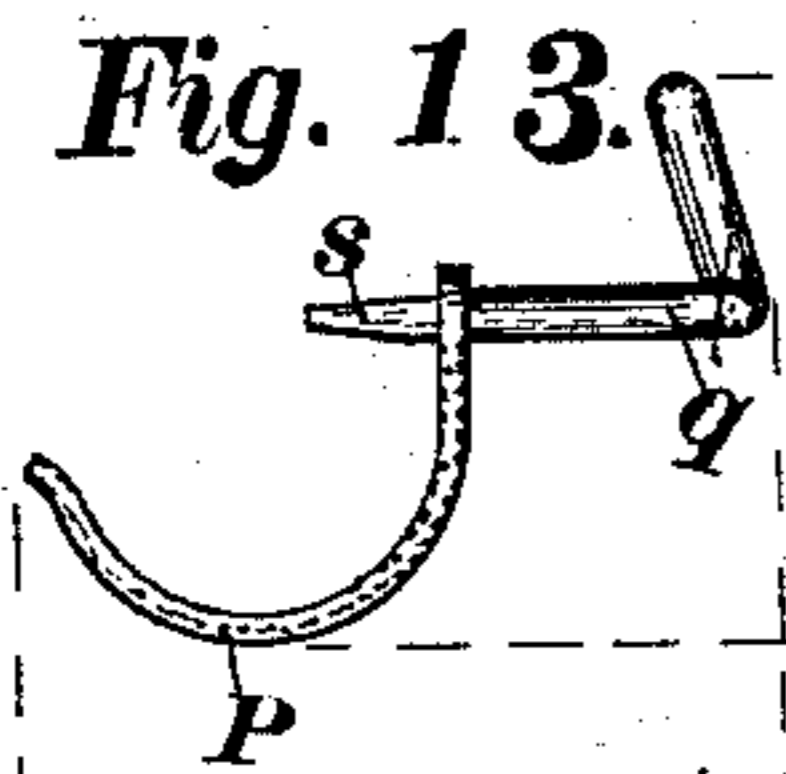


Fig. 12.

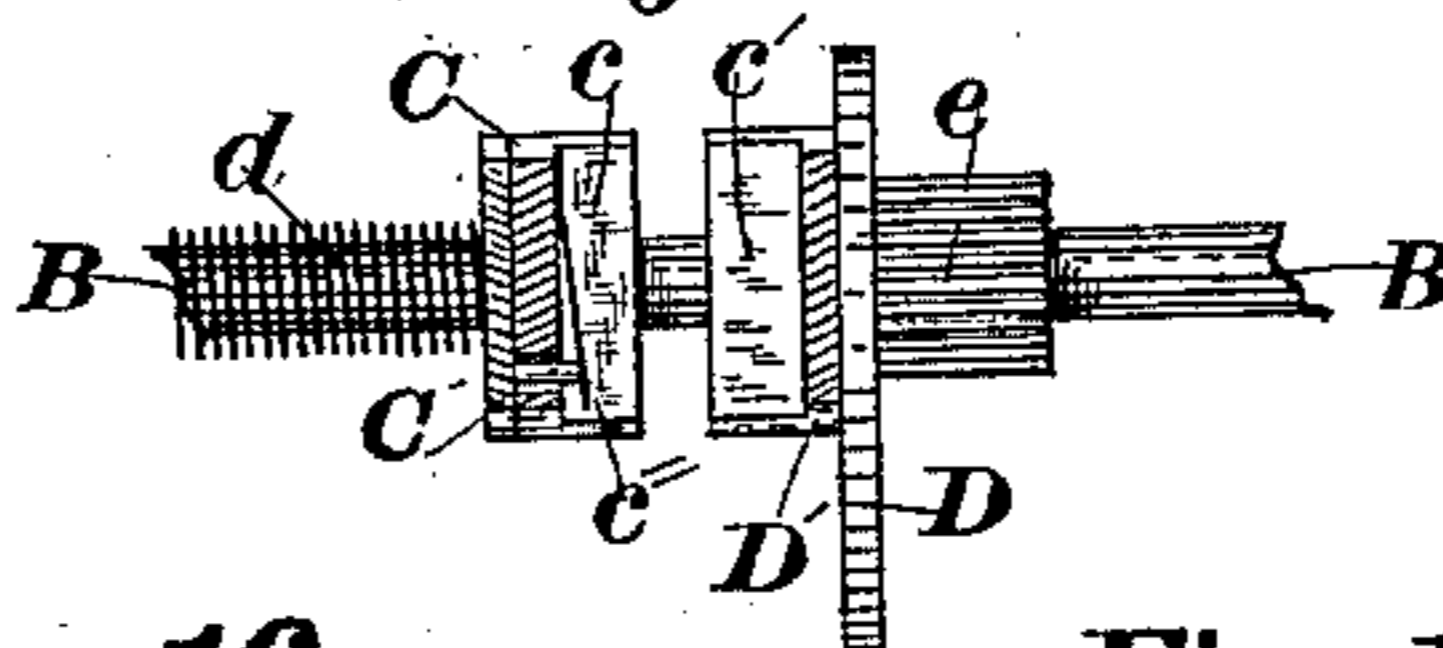


Fig. 15.

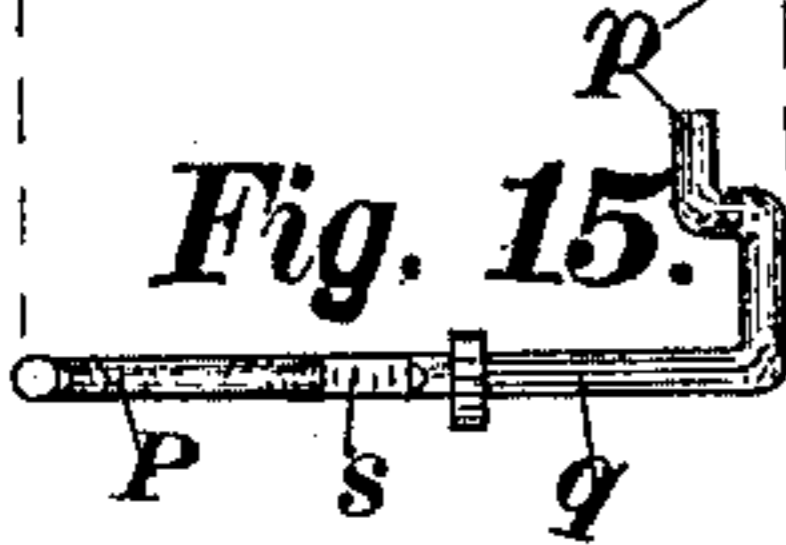


Fig. 16.

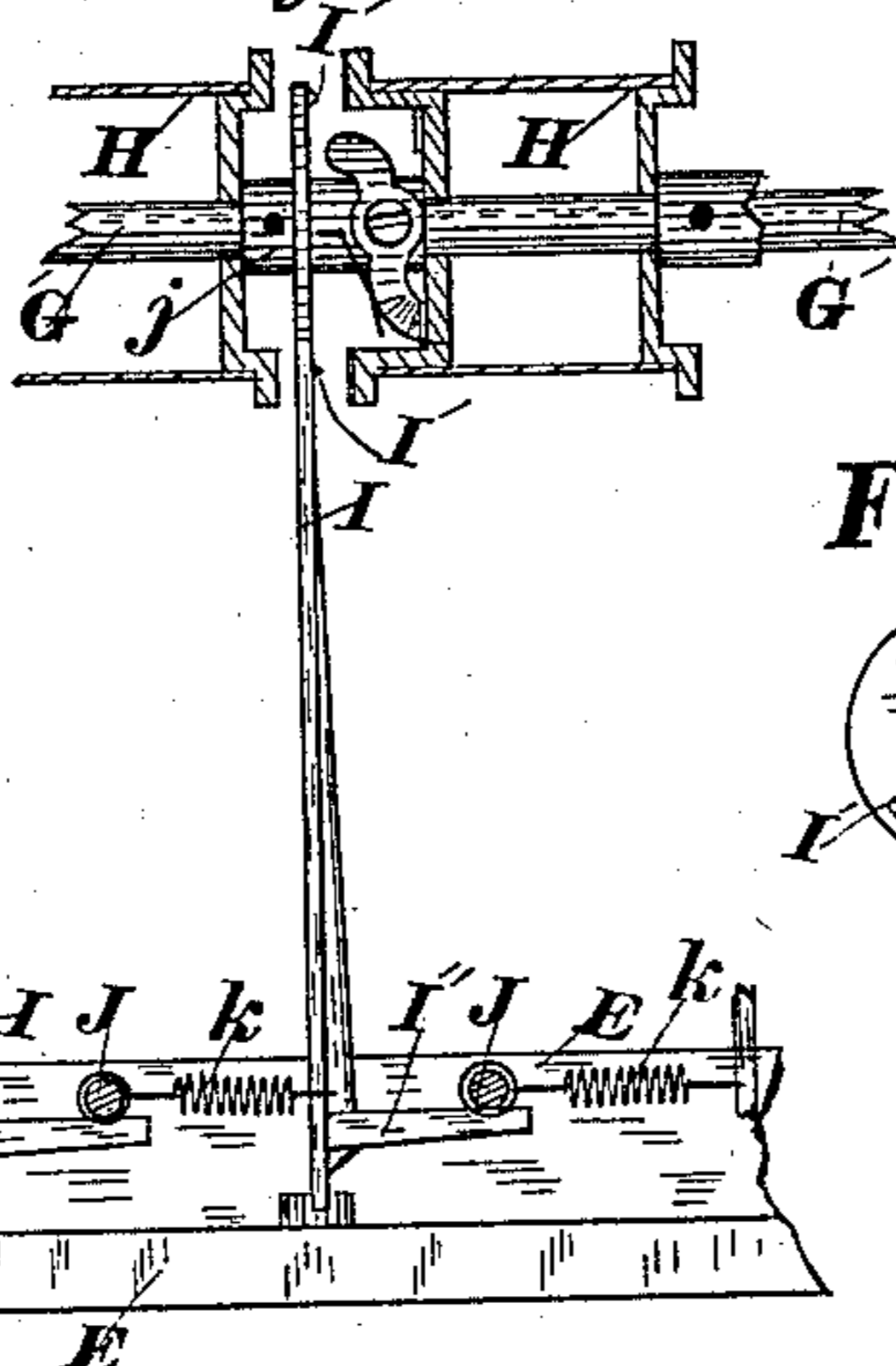


Fig. 18.

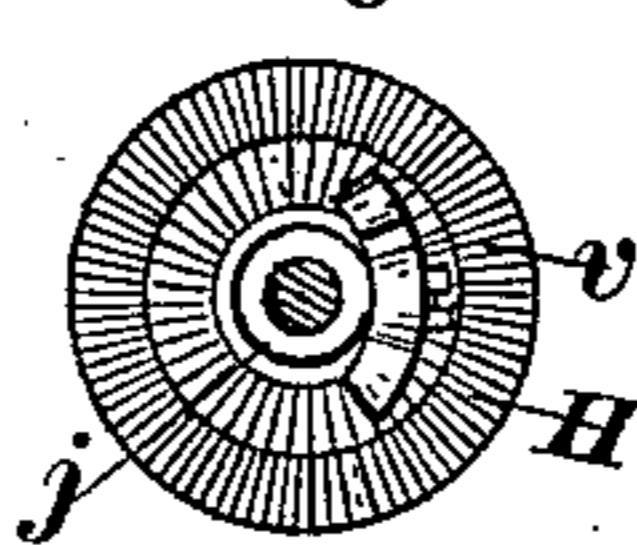


Fig. 19.

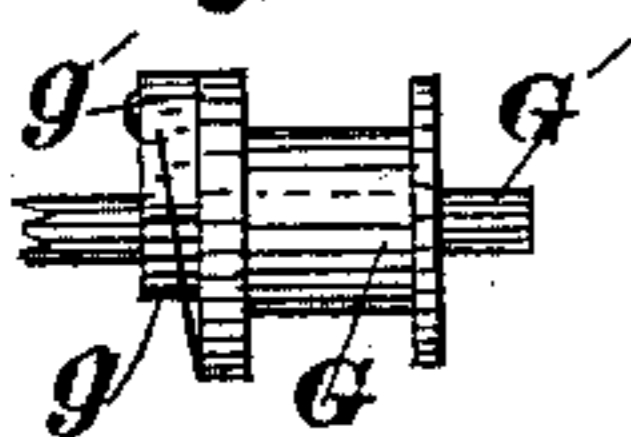


Fig. 17.

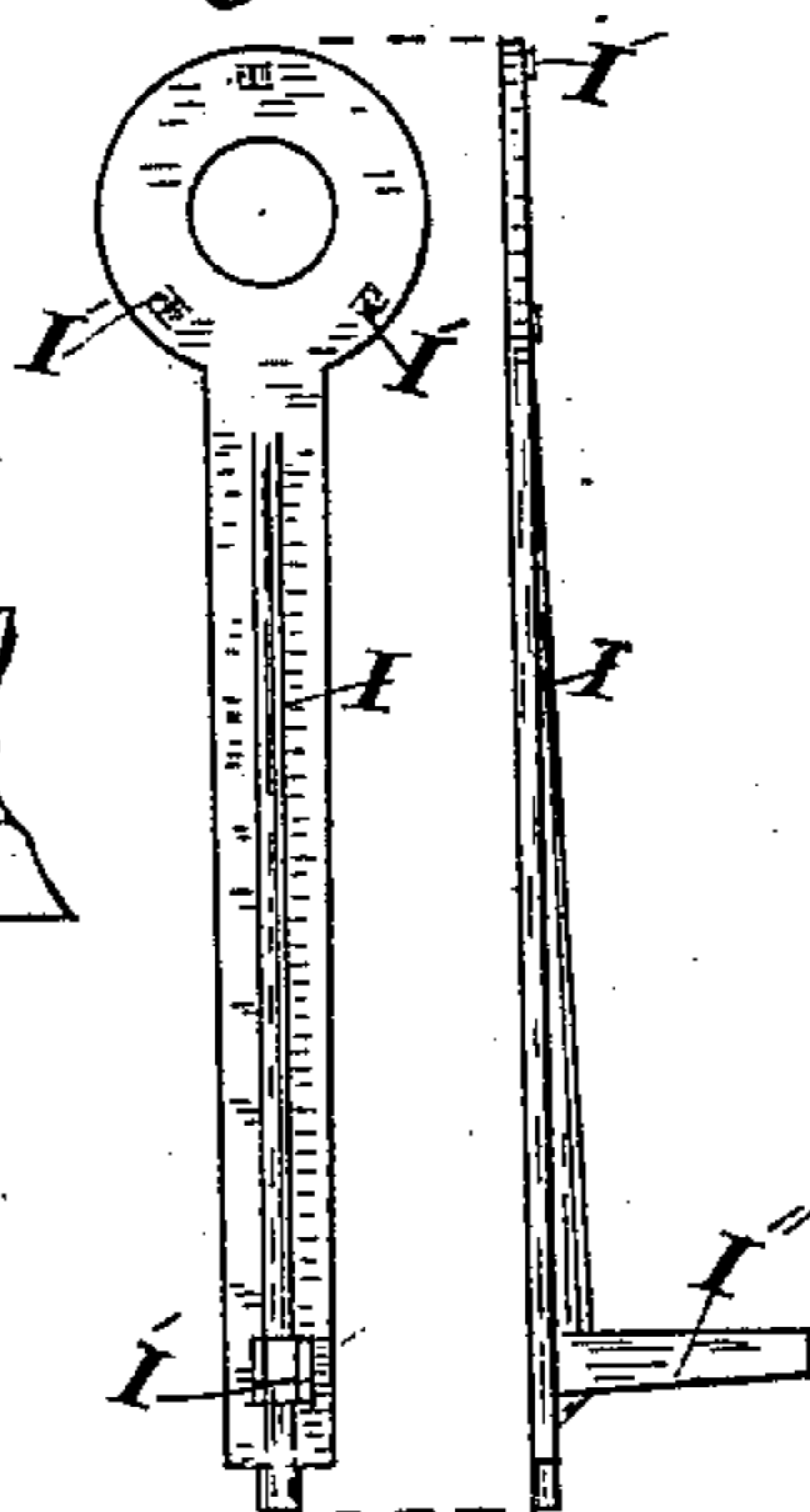


Fig. 20.

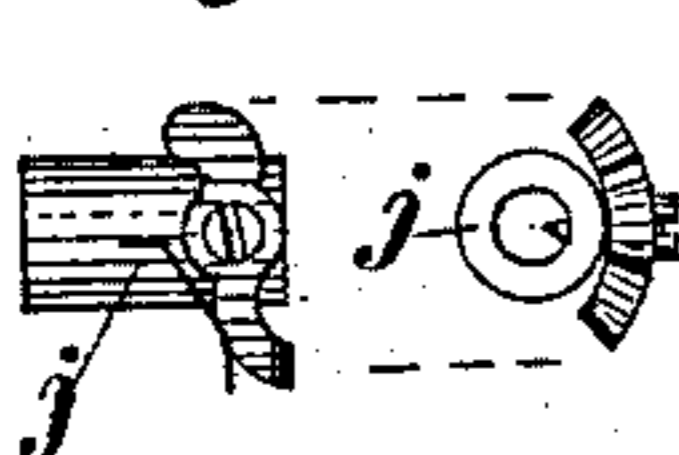


Fig. 21.

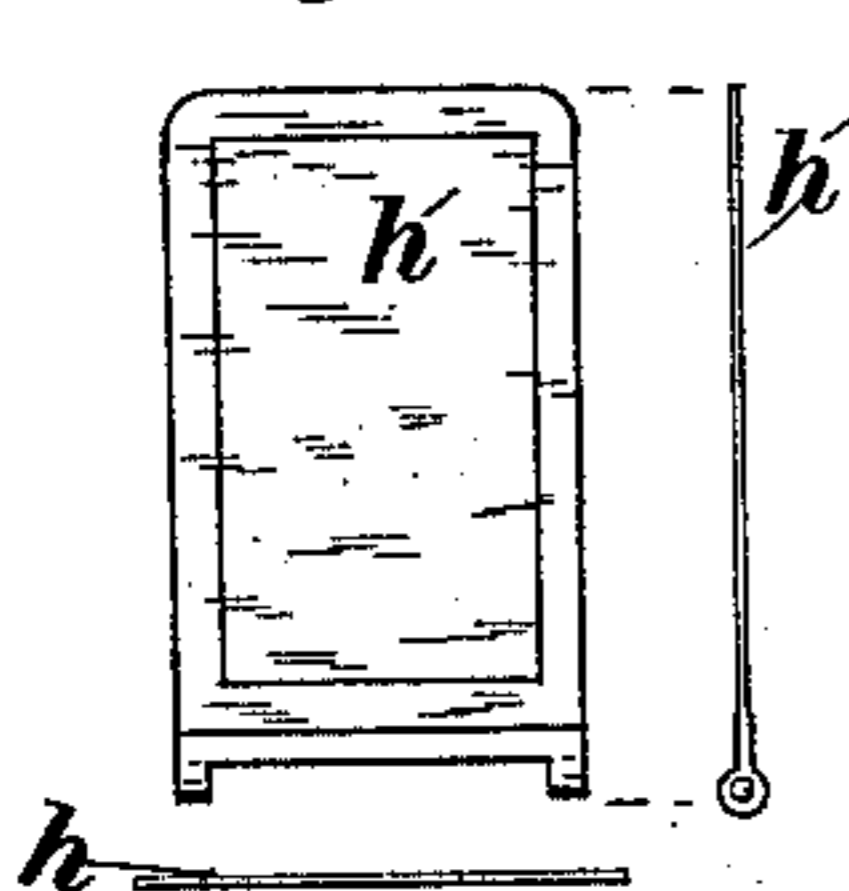


Fig. 22.

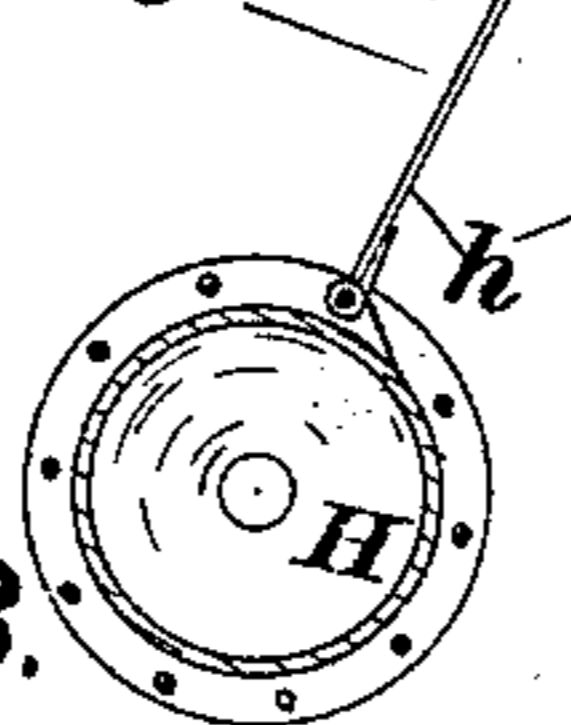


Fig. 23.

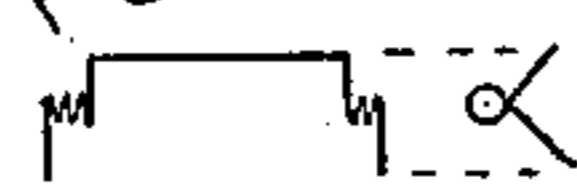


Fig. 24.

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GAME APPARATUS AND SAMPLE-EXHIBITOR.

SPECIFICATION forming part of Letters Patent No. 472,408, dated April 5, 1892.

Application filed October 15, 1891. Serial No. 408,769. (No model.)

To all whom it may concern:

Be it known that I, FRANK H. SMITH, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Game Apparatus and Sample-Exhibitors, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates more particularly to improvements in a game apparatus and sample-exhibitor for which a patent of the United States was granted to me July 15, 1890, No. 432,447; and my object is to provide a construction which obviates the objectionable features of the above-named invention and thereby extends the usefulness of the machine more especially for exhibiting picture-cards or samples of goods when arranged in series for contrast effects.

Another object is to so arrange the coin-receiving apparatus that a greater number than one turn of the operating-crank can be made with the insertion of each coin, so that in exhibiting pictures a large number can be shown, and when all or a part of them are exhibited, as designed, the machine will automatically become inoperative and remain so until another coin is inserted.

Another object is to provide a noiseless mechanical movement for operating the card-carrying wheels, all of which mechanism will be fully described hereinafter.

In the drawings, Figure 1 is a perspective view of the machine as it appears with its case. Fig. 2 is a front elevation of the operative mechanism removed from the case, with but one set of cards being shown attached to one of the display-drums. Fig. 3 is a top view of Fig. 2 with the cards removed so as to not obscure the operative mechanism. Fig. 4 is the right-hand end elevation of Fig. 2. Fig. 5 is an elevation of part of Fig. 4, but viewed from the opposite direction to that shown in Fig. 4. Fig. 6 is a detached view from Fig. 5 of a cam for operating the card-display drums. Fig. 7 is a top view of Fig. 6. Figs. 8, 9, and 10 are respectively outside, inside, and front views of a combined double cam and cog wheel shown in Figs. 2, 3, 4, and 5, and will be fully explained. Fig. 11 is a top

view of a portion of the operating-shaft, together with the cam, Fig. 7, and its slotted hub, in conjunction with a slotted collar, being the parts which are locked together by a coin when the machine is operated as a coin-slot machine. Fig. 12 is a side view of Fig. 11, showing vertical section on line *a b*, Fig. 11. Figs. 13, 14, and 15 are respectively side, end, and top views of a bent lever and guard attached thereto, which is also shown in Figs. 2, 3, 4, and 5, and which is used for the double purpose of holding the coin between the slotted collars shown in Figs. 11 and 12 and also at the proper time to eject the coin from the collars, as will be more fully explained. Fig. 16 shows a section of one of the card-display drums and a portion of another, together with the operating-shaft and pawl; also, the stop-lever and its attachment to the frame below and the means by which it is operated; Fig. 17, respectively side and edge views of the stop-lever; Fig. 18, an end view of one of the card-display drums, together with driving-shaft and operating-pawl; Fig. 19, pulley, ratchet-wheel, and pawl, to the pulley of which the cord is attached for operating the card-display drums; Fig. 20, respectively side and end views of collar and attached pawl from Fig. 16; Fig. 21, respectively face and edge view of one of the cards, upon which can be painted or secured anything to be displayed; Fig. 22, a central transverse sectional view of one of the display-drums with card attached, showing the card-operating spring; Fig. 23, respectively side and end views of the wire spring for operating and holding the cards in proper position on the drums. Fig. 24 is the hinge-pin for securing the display-cards to the flanges of the display-drums.

Similar letters indicate like parts throughout the several views.

A is the case, into which the greater part of the mechanism is placed, and this case is provided with a window filled with glass, through which can be seen the exhibit which is displayed in the manner as will be described. The principal shaft is B, to which a crank B' is attached outside of the case, and projecting out of the case A, Fig. 1, is a stop B'', which is held out in the position shown by

any form of spring which will permit the stop to be pushed into the case A to permit crank B' to be revolved past the end thereof, the stop when released from pressure being
 5 forced out again by the action of the attached spring, so as to stop crank B' at the position shown in Fig. 1, where the crank will remain in contact with the stop, being held
 10 in this position by the action of a weight attached to one side of shaft B, and which will be explained hereinafter.

Secured to shaft B is a collar C, which has one of its ends slotted at *c*, and in this slot is secured a flat spring *c''*, Fig. 12. At the end
 15 of collar C is a flat disk C', and between this disk and spring *c''* is a small pin. Disk C' is held in contact with the pin and the end of collar C by spring *d*.

Figs. 6 and 7 show a cam D with a hub D' and a cog-wheel *e* firmly secured together. The hub D' is slotted at *c'* in the same manner as collar C. This aggregation is loosely
 20 mounted upon shaft B and is operated in the manner as will be hereinafter described.

E is the frame of the machine, and shaft B is journaled at each end in the end portions of this frame.

At F is a lever which has an elbow shape and is pivoted to frame E, as shown. This
 30 lever has a roller *f*, which contacts with cam D, the rotation of the cam causing the elbow-lever to vibrate. To the long arm of lever F is attached the end of a cord F', which cord passes several times around pulley G, which
 35 pulley is loosely mounted on shaft G' near the end thereof. The cord passes from pulley G to and around a grooved pulley G'' and thence to a spring G''', to which it is secured,
 40 a projecting lug at the rear of the frame, as shown. At the inside end of pulley G (not shown in Figs. 2 and 3, but plainly shown in Fig. 19) is a pawl *g'*, which operates in the teeth of small ratchet-wheel *g*, which is firmly
 45 secured to shaft G. Drums H are loosely mounted on shaft G', and into their flanges are secured rods *h*, forming hinges for cards *h'*, springs being coiled around the rods to hold the cards in proper position against a
 50 fence or rod *i* when the cards are ready for exhibition. A collar *j*, Fig. 16, is firmly attached to shaft G' between the drums H. Each collar has a spring-pawl which engages notches in the end of the drums. Stop-levers
 55 I, Fig. 17, have a vertical long arm which extends up and between drums H. One end of each drum H is serrated, and into these serrations engage one or more teeth I' of the stops I.

Figs. 2, 3, and 4 show a number of rods J extending rearwardly, whose rear ends operate in holes in the rear bottom part of frame E, the front ends of the rods passing just above the longitudinal slide-rod E'. Rods J contact
 60 with the short arm I'' of stops I, and springs *k*, attached to rods J at one end and to stop-levers I at the other end, serve to hold the

short arms I'' of stop-levers I in contact with the under side of rods J and also hold the top of stop-levers I out of contact with the
 70 serrated end of the drums H. The stop-levers I are pivoted at the bottom end to permit of a vibratory movement in a direction longitudinal with shaft G'. It will be noticed in Fig. 16 that the pawl secured to collar *j* has
 75 a projecting upper part which projects beyond the face of the end of the drum and would be contacted by the top end of stop-lever I should the lever be moved up to the face of the drum. At the front ends rods J
 80 have pivotally attached to them a vertical rod K, which is surmounted by a button. Fig. 1 shows these push-buttons at the front of case A standing above the surface of the ledge in front of the window. The slide-rod E', re-
 85 ferred to hereinbefore, is provided with a lug *l* at one side of each of the rods J. The front of the frame of the machine is also provided with pendent lugs *l'* at the same side of rods J as lugs *l*. Slide-rod E' has bearings at each
 90 end in the end frames, and at *m* is provided with a spring for moving it from left to right, and at *m'* is an upwardly-projecting lug, which is contacted by a side cam *n* of cog-wheel *n'*, Figs. 2, 3, 9, and 10, which cam by
 95 the revolution of cog-wheel *n'* causes the slide E' to have a movement from right to left for the purpose as will be explained. Cog-wheel *n'* is mounted loosely upon a stud-pin *n''*, which is secured to the inside of the end
 100 frame. This cog-wheel engages with a cog-wheel *e*, which is part of the cam D, as has been explained, and in this case cog-wheel *e* is exactly one-half as large as cog-wheel *n'*. Cog-wheel *n'* acts the double purpose of a
 105 cog-wheel and ratchet, the pawl *o* engaging with its teeth to prevent any backward movement when once it has been partially revolved.

At *o'* is a piece secured to the side of cog-wheel *n'*, which piece is higher than the ends of the cogs, and when the cog-wheel is in the position shown this piece serves to lift and withhold pawl *o* from contact with the cog-teeth, for the purpose as will be explained. 115

At L is a flattened tube for the insertion of a coin. The top end of this tube projects through the case, and is shown in Figs. 1, 2, 3, and 4. The coin-tube is attached to the front frame of the machine, and its lower end
 120 is suspended directly above and opposite to the slots *c* and *c'*, respectively, in collar C and hub D', Fig. 3.

There is a counter-weight M firmly secured to shaft B in the position relative to crank B'.
 125 (Shown in Fig. 3.) The position of this weight causes the crank B' to always contact with stop-pin B'', Fig. 1, after the machine has been operated, which position causes the opposite slots in collar C and hub D' to ex-
 130 actly register with each other and with the opening at the bottom of coin-tube L, so that a coin dropped into the tube will slide down directly into the slots *c* and *c'* and act as a

key to lock the loosely-mounted cam D, with its cog-wheel *e* and hub D', to the collar C, which is firmly secured to shaft B, so that the whole will revolve together as long as the coin remains between the slots.

It is intended that in the operation of this machine there shall be two displays of cards at the window and two turns of crank B' before the coin is ejected and the machine becomes inoperative, and in order to accomplish this result the following-described mechanism has been provided.

At the side of cog-wheel *n'* is a double cam. One cam *n* is for operating sidewise against the slide E', while the other cam *p* operates outward from its center of revolution against an arm *p'* of a bent-wire lever *q*. (Shown detached in Figs. 13, 14, and 15.) This lever is in the form of a double elbow-lever and is journaled in a short lug *r* at the inside of the front frame, Fig. 5, so that a vibratory motion of the top of the lever will cause an upward and downward motion of the inside end *s*, Fig. 5. Near the end *s* is attached a U-shaped guard P, which is held directly under the space between collar C and hub D'. The end *s* of lever *q* is of a length sufficient to vibrate between collar C and hub D' for the purpose of knocking out the coin at the proper time, as will be explained. The cam *p* operates to lift the end *s* of lever *q*, while the downward stroke of end *s* is made by the pressure of spring R when the end of arm *p'* of lever *q* slips off of the high portion *t* of cam *p*. There is a ratchet-wheel T secured to the left-hand end of shaft G', Fig. 2, into which operates a pawl *u* for the purpose of preventing shaft G' from turning in any other but the forward direction, as indicated by the arrow in Fig. 4.

When the machine is ready for operation, the several parts stand in relation to each other the same as is shown in Figs. 1, 2, 3, 4, and 5, in which condition if a coin of the denomination for which the machine is designed is slipped into the end of tube L, Fig. 1, it will fall down the tube and into the slots *c* and *c'* of collar C and hub D. The small flat spring *c''* will prevent the coin from falling through by contracting the passage to a width smaller than the diameter of the coin; but the spring is not strong enough to prevent the coin being knocked out at the time and by the means already described. The coin being in this position forms a key between collar C and hub D'. If now the spring stop-pin B'', Fig. 1, be pushed inward, the hand-crank B' will be released, and if it is revolved the collar C will have its motion transmitted to hub D', cam D, and cog-wheel *e*, all revolving with shaft B. The motion of cam D will cause the top of elbow-lever F to vibrate, drawing out the cord F and revolving pulleys G and G'' and extending spring G''', elbow-lever F being finally thrown forward to the position shown in the dotted lines in Fig. 5, when cam D will have forced roller *f* out as far as the length of the extreme long point of

the cam, when a small amount more of movement causes the roller to suddenly slip off of the high portion and by the pull of spring G''' assume the position shown in the solid lines, Fig. 5. When the elbow-lever F is first drawn forward, the cord F' causes pulley G to revolve around upon shaft G' without turning the shaft; but when under the pull of spring G''' roller *f* suddenly falls from the high portion of the cam the contact of cord F with the pulley reverses its motion, when pawl *g'* of pulley G will catch the teeth of ratchet *g* and suddenly start shaft G revolving in the direction of the arrow, Fig. 4. Collars *j* are firmly attached to shaft G' and having pawls which engage the ratchet-teeth in the ends of drums H. These drums are also suddenly started in revolution in the same direction as shaft G', carrying cards *h'* around with them, the cards in their revolution with the drums striking and passing under the rod-guard *i* until by friction all the drums are stopped, when a row of cards will appear, as shown in Fig. 1, the top of each card on exhibition being in contact with the back of the guard-rod *i*. While this series of motions is taking place, the cam *p* of cog-wheel *n'*, revolving toward arm *p'* of lever *q*, causes this portion of the lever to vibrate outward, which lifts the inside end *s* of the lever, together with the U-shaped guard P, to the position shown in the dotted lines in Fig. 5, and this action takes place very suddenly on account of the steepness of cam *p*, so that after the coin has been deposited between the slots, as described, the first one-eighth of a revolution of wheel *n'* will cause the guard P and end *s* to pass upward, the guard P to prevent the coin from leaving its place in the slots when they are turned upside down from the position they had when the coin was inserted, and next to have the end *s* above the coin and slots to be in proper position to force out the coin when two revolutions of the hand-crank B' is made, as will be explained. It has already been stated that cog-wheel *e* on shaft B is in this case one-half as large as cog-wheel *n'*. Therefore cog-wheel *n'* will make but one-half of a revolution to one revolution of hand-crank B', and on account of the shape of cam *p* the guard P will hold the coin in the slots for two revolutions of crank B'. The herein-before-described action of cam D, elbow-lever F, and its connections around to drums H will take place on the second revolution of crank B; but near the termination of its second revolution wheel *n'* will have almost completed one revolution when arm *p'* of lever *q* will have reached the depressed portion of cam *p*, and suddenly by the action of spring R will be made to assume the position shown in the solid lines in Fig. 5, the downward motion of the end *s* contacting with the coin in slots *c* and *c'* and forcing it downward into the bottom portion of case A. At the end of the second revolution of crank B' the operative parts of the machine assume the relative po-

sitions shown by the solid lines in the drawings.

One or all the drums H can be prevented from revolving when crank B' is turned by simply pushing downwardly upon the buttons on top of rods K, which action causes rods J to press downwardly upon short arms I'', Fig. 16, of stops I, causing the top of the stops to press against the end of the drums H, when the projections I' will engage the serrations *v*, Fig. 18, and at the same time pressing the arm of the pawl of collar *j* and throwing it out of contact with the drums effectually holds them stationary whenever desired. In Figs. 2 and 3 the second drum from the right-hand side is shown in contact with the top of a stop I.

In order to automatically release all the drums H from the stops when the coin is being or has been ejected, the long slide E, with its lugs *l*, has been provided. At one side of cam *p* is a side cam *n*, which has been described. When crank B' has almost completed two revolutions and cog-wheel *n* completed one revolution, side cam *n* contacts with the upward projection *m'* of slide E' and forces it to the left against the pressure of spring *m*. If there should be any of the rods J pressed down to the position shown by the second one from the right in Fig. 2, the lug *l* of slide E' will force it to the left off of its position on the end of lug *l'*, when by the action of spring *k*, Fig. 16, it will be lifted up against the lower side of front frame E at the side of lug *l'*. It will be noticed that the action of spring *k*, Fig. 16, forces the top of stop I out of contact with the end of drum H, and that this same motion causes an upward movement of the short arm I'', which, being under rod J, also lifts the rod and thus serves a double purpose. The springs *k*, being attached at one end to the rods J, have an action to pull the rods to the right and cause the front ends to contact with the lugs *l'* of frame E, and should the vertical rods K be pushed downward until rods J are below lugs *l'* the action of the springs causes a still further movement to the right of rods J, causing them to contact with the side of lugs *l* of slide E', Fig. 2.

When the parts of the machine are in position to receive a coin, the pawl *o* rests upon the piece *o'*, which is fixed at one side of cog-wheel *n'* and extends over the space of several teeth. This lifting of the pawl at this position of cog-wheel *n'* is to permit a slight

movement to be made of the parts by the action of crank B' should the slots in collar C and hub D' fail to register with the opening in the lower end of tube L, the coin contacting with collar C acting as a connection to bring hub D' into register with collar C when but partially entered into the slots.

I claim as my invention—

1. In a machine for the purpose hereinbefore stated, the shaft B, collar C, fixed to said shaft, said collar slotted at *c*, hub D', a single-acting cam D and cog-wheel *e*, secured together and loosely mounted upon said shaft, said hub having a slot *c'*, said slot registering with a slot *c* of collar C, said slots together capable of receiving a coin by which said collar and said hub are connected, said connection causing said cam D to revolve in unison with shaft B, said cam operating elbow-lever F in one direction, said elbow-lever having one end of cord F' secured thereto, a pulley G, which said cord passes around and contacts with, a spring G'', to which the other end of said cord is attached, shaft G', upon which pulley G is mounted, and drums H upon said shaft, and cards *h'*, attached to said drums, and operated in the manner and for the purpose substantially as described.

2. In a machine for the purpose hereinbefore described, in combination with the cog-wheel *e*, mounted loosely upon shaft B, a cog-wheel *n'*, geared to cog-wheel *e*, said cog-wheel *n'* a multiple of cog-wheel *e*, and single-acting cams *n* and *p*, secured to cog-wheel *n'*, cam *n* serving to impart a longitudinal motion to slide E once for every engagement with cam *n* of cog-wheel *n'*, said cam *p* imparting a vibratory motion to levers *q* once for every engagement with said cam, for the purpose substantially as set forth.

3. In a machine for the purpose described, a shaft B, having loosely mounted thereon a cog-wheel *e*, said cog-wheel geared to cog-wheel *n'*, said cog-wheel *n'* a multiple of cog-wheel *e*, cog-wheel *n'* having single-acting cams *p* and *n* attached thereto, cam *p* of cog-wheel *n'* operating arm *p* of bent lever *q*, the end of lever *q* operating between collar C and hub D', cam *n* of cog-wheel *n'* operating slide E, said slide operating rods J, and said rods operating levers I from contact with drums H, substantially in the manner set forth.

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