No. 686,727 Patented Nov. 19, 1901.

L. GROSSMAN.

CASTING BOX.

(Application filed Feb. 5, 1901.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1

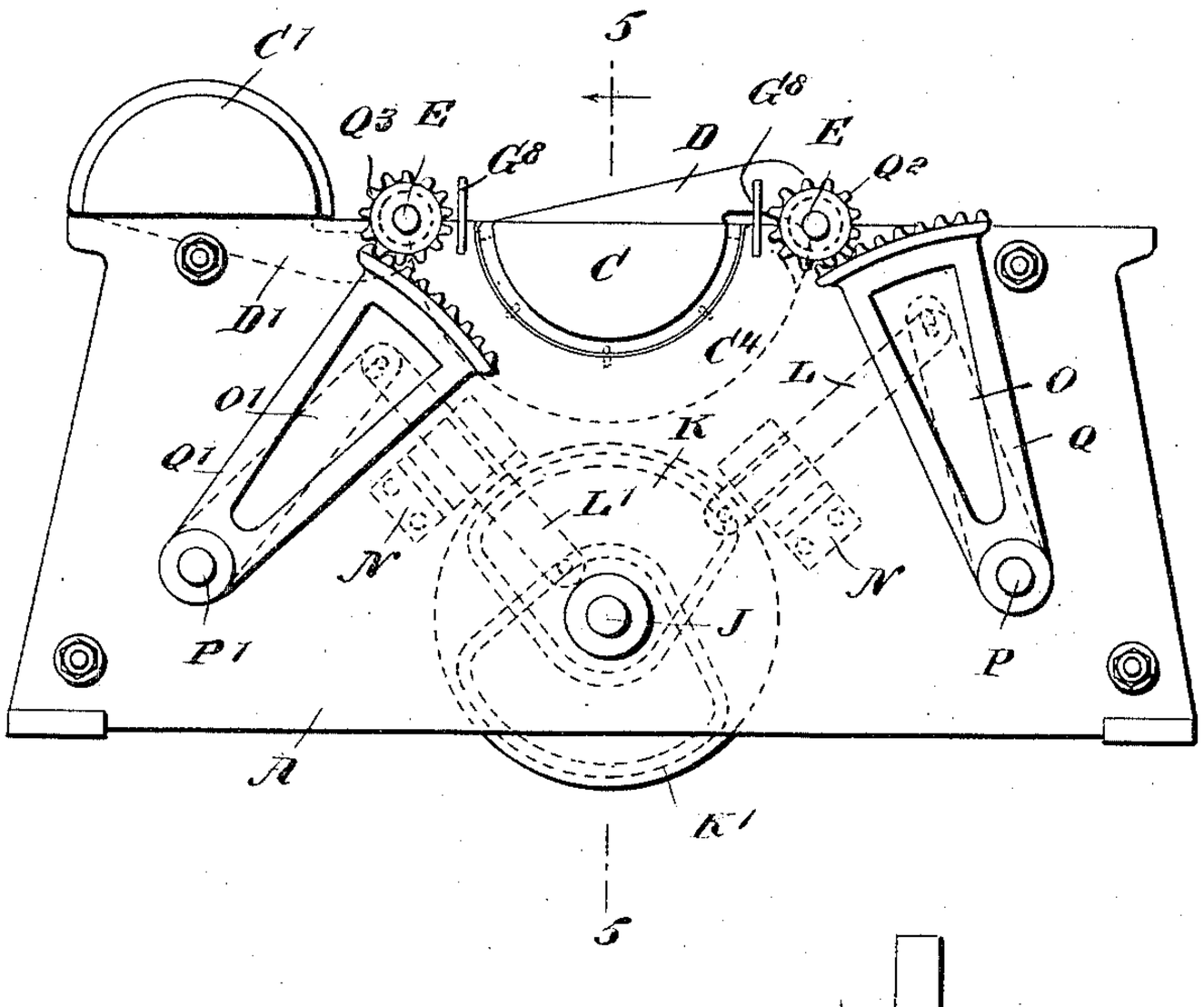

Fig. 2

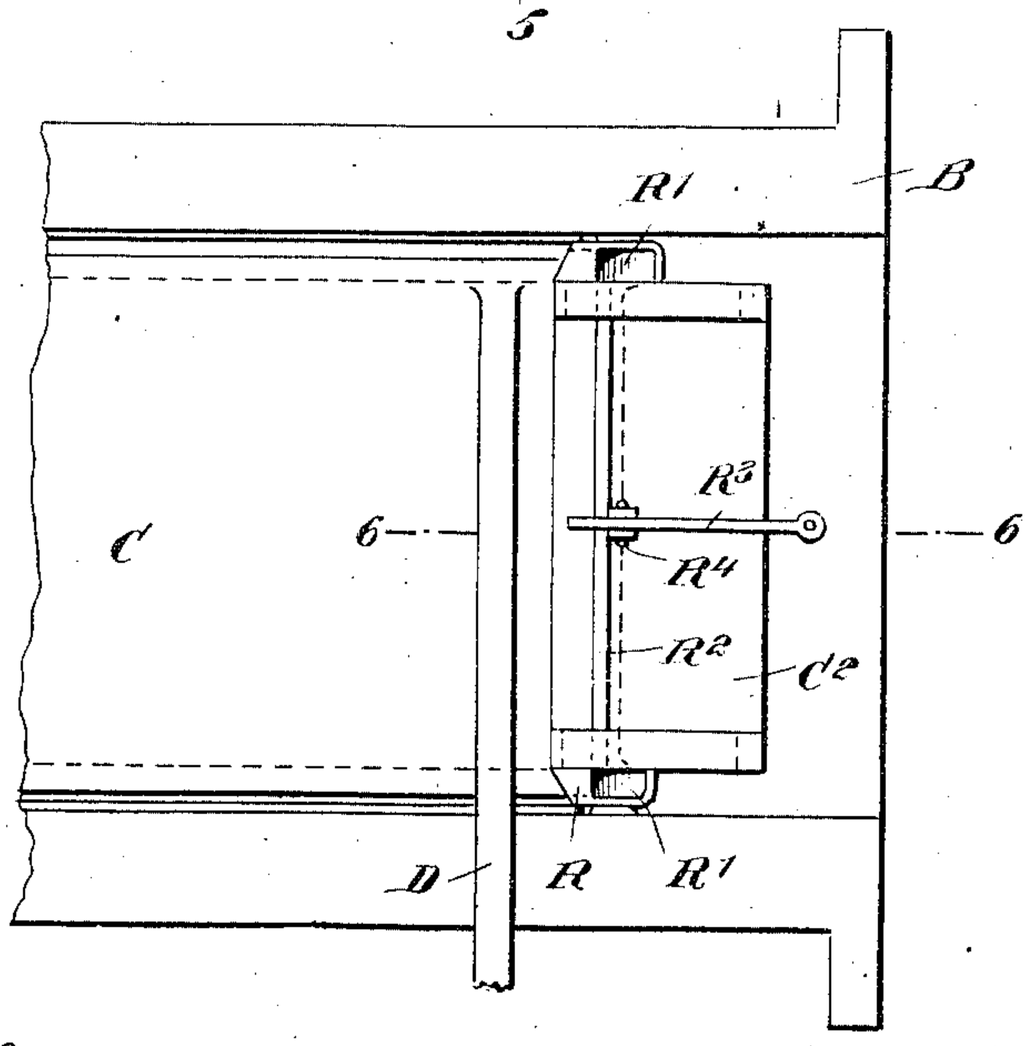

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Fig. 3

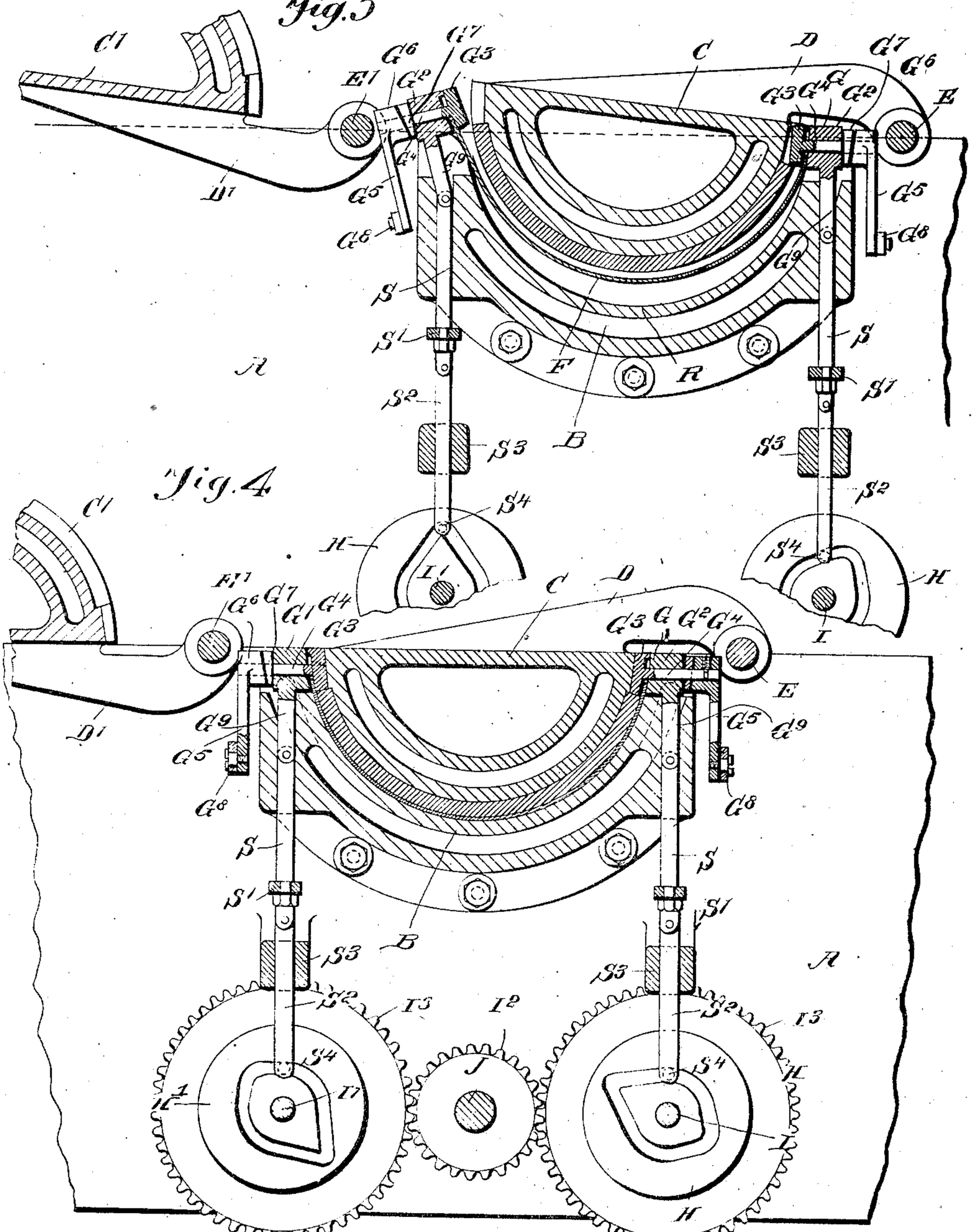
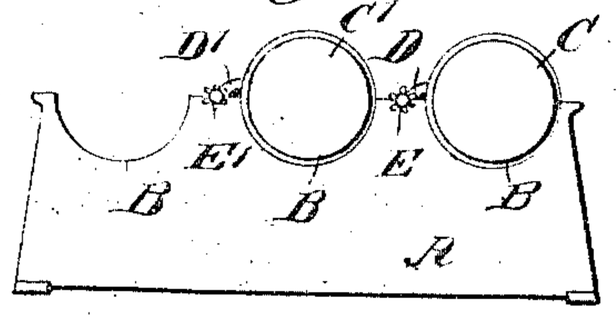


Fig. 8



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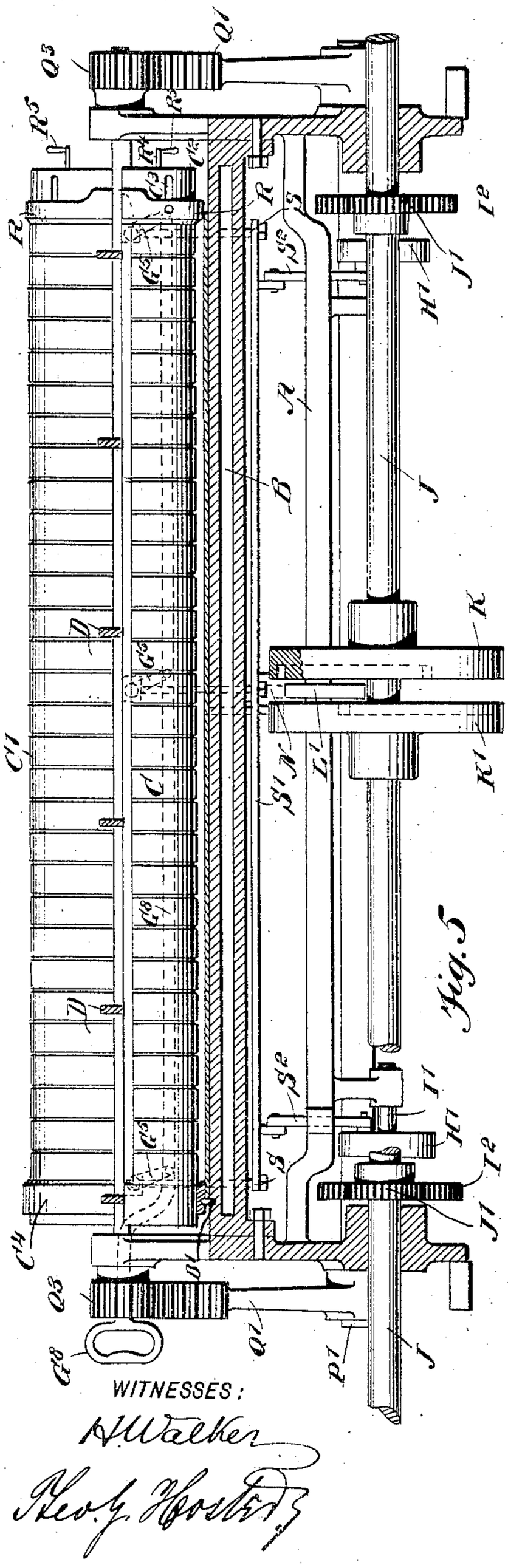

Fig. 5

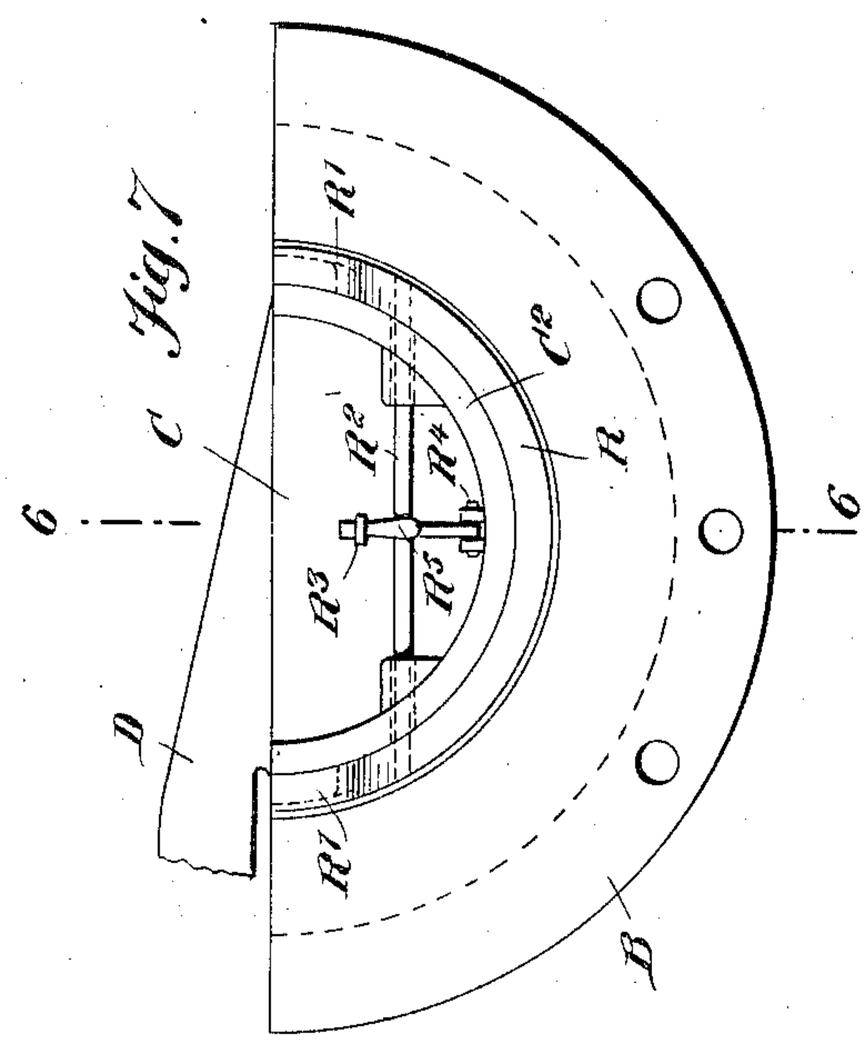

Fig. 7

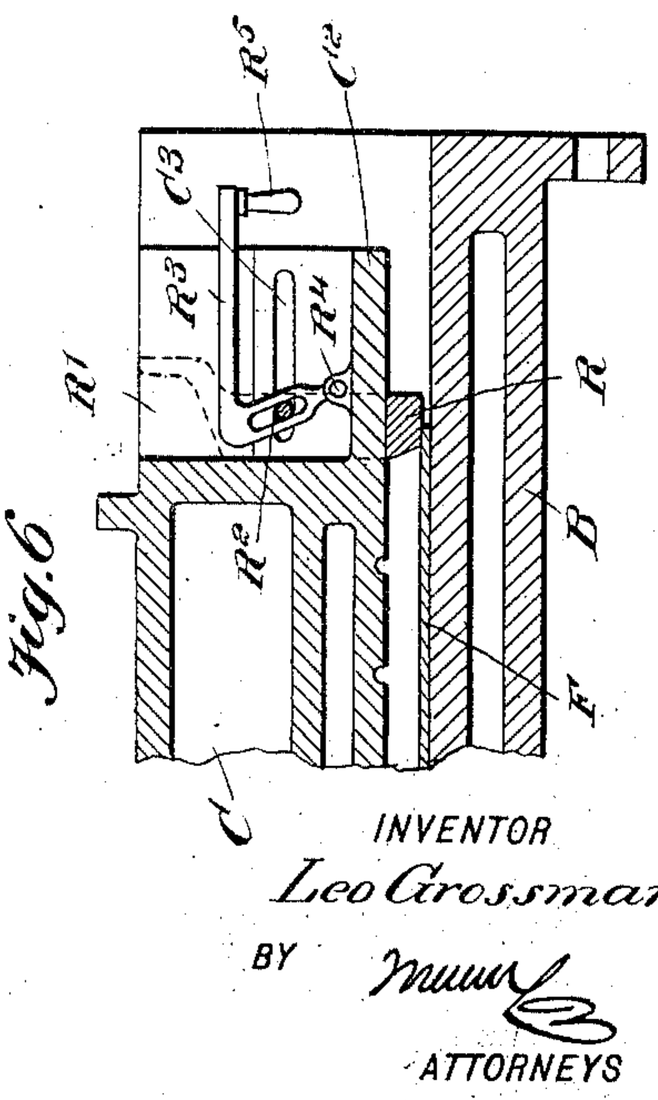

Fig. 6

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UNITED STATES PATENT OFFICE.

LEO GROSSMAN, OF BROOKLYN, NEW YORK.

CASTING-BOX.

SPECIFICATION forming part of Letters Patent No. 686,727, dated November 19, 1901.

Application filed February 5, 1901. Serial No. 46,055. (No model.)

To all whom it may concern:

Be it known that I, LEO GROSSMAN, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Casting-Boxes, of which the following is a full, clear, and exact description.

The object of the invention is to provide certain new and useful improvements in casting-boxes for forming stereotypes and the like and whereby a large number of plates can be successively cast in and removed from the mold or casting-box in a comparatively short time and without requiring the employment of highly-skilled labor.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is an end elevation of the improvement. Fig. 2 is an enlarged plan view of parts of the same. Fig. 3 is an enlarged cross-section of the improvement. Fig. 4 is a similar view of the same with parts in a different position. Fig. 5 is a longitudinal sectional elevation of the same on the line 5 5 in Fig. 1. Fig. 6 is a longitudinal sectional elevation of the improvment on the line 6 6 in Figs. 2 and 7. Fig. 7 is an end view of the same, and Fig. 8 is a diagrammatic end view of a modified form of the improvement.

On a suitably-constructed frame A is bolted or otherwise secured a drag B, preferably of semicircular or other shape, and into and out of which move alternately the cores C C', having arms D D', respectively, secured on longitudinally-extending shafts E E', journaled in suitable bearings in the main frame A and rocked intermittently, as hereinafter more fully described. In the bottom of the drag B is adapted to rest a matrix F, of paper or other suitable flexible material and secured at its sides on matrix-holders G G', adapted to be seated on the sides of the drag B, as is plainly shown in Fig. 4, to hold the matrix in the bottom of the drag at the time one of the cores C or C' is in the drag, and the casting is made in the manner hereinafter explained.

The matrix-holders G G' are moved in an upward and outward direction after the casting is made to permit of swinging the corresponding core C or C' out of the drag, and for this purpose the matrix-holders G G' are actuated by cams H H', secured on short shafts I I', driven from the continuously-rotated main shaft J by gear-wheels I^2 I^3, secured on the shafts J and I I', respectively. This gearing is so arranged that the shafts I I' make one-half of a revolution for each revolution of the shaft J to cause the matrix-holders to operate in harmony with the cores C C', as hereinafter more fully explained, it being understood that the matrix-holders move outward during the beginning of the outward swinging motion of the cores to properly disengage or peel the cast printing-plate from the matrix, as will be readily understood by reference to Fig. 3.

On the shaft J are secured the cams K K', engaged by bars L L', mounted to slide in bearings N N', connected with arms O O', adapted to intermittently rock the shafts P P', journaled in suitable bearings in the main frame A and carrying at their outer ends segmental gear-wheels Q Q', in mesh with pinions Q^2 Q^8, (see Fig. 1,) secured on the outer ends of the shafts E E', respectively, so that when the said shafts P P' are simultaneously rocked then the segmental gear-wheels Q Q' rotate the pinions Q^2 Q^3 and the shafts E E' in such a manner that the core C swings out of the drag B and the other core C' swings into the same, and vice versa.

Now when a core C or C' is in position in the drag B the metal is poured into the drag, at one end thereof, the core being temporarily at a standstill, and as soon as the core is caused to swing out of the drag, with the printing-plate adhering to the core, then the other core swings into position in the drag, and after this second core is in position in the drag metal is again caused to flow into the casting-box or mold for making a second casting. During this operation the casting made on the first core is removed from the latter, the

core now being in an outermost position, as indicated in Fig. 1, and the casting being on the top of the core for convenient removal.

The metal is poured into the drag through spouts R′, formed in the movable end-gate R for closing one end of the core and drag and for engaging the end of the matrix F to securely hold the latter in position on the bottom of the drag. (See Fig. 6.) The gate R is half-ring shaped (see Figs. 6 and 7) and extends under an extension C^2 of the respective core C or C′, the gate R being provided with a transverse shaft R^2, extending through elongated slots C^3 in the sides of the core extension C^2. The shaft R^2 is engaged by a slotted lever R^3, fulcrumed at R^4 on the extension C^2 and provided at its free end with a handle R^5, adapted to be taken hold of by the operator to impart a swinging motion to the lever R^3 and move the gate R inward or outward. The other end of the drag is closed by a flange C^4 on each of the cores C C′ at the time either of the latter moves into the drag, the flange C^4 engaging pins B′ in the bottom of the drag and also the end of the matrix abutting with this end against the pins B′, as plainly shown at the left in Fig. 5. The gate R is moved inward to close the metal-pouring end of the drag soon after the casting has been removed from the core then in an outermost position and previous to the core moving into the drag. The metal is now poured into the spouts R′ and flows from the latter into the space between the matrix and the core to form the casting. The core, with the casting thereon, is then caused to swing outward on further rotation of the shaft J, and when the core reaches its outermost position at the time the other core has moved into the drag then the cores stop for the time being and the operator now moves the handle R^5 outward to open the gate R and release the casting to allow of lifting the latter off the core. During this time another casting is made in the drag, with the other core in position therein. When a core is in an outermost position, then the handle R^5 extends upward, as shown in Fig. 5, and is within convenient reach of the operator.

The matrix-holders G G′ for engaging the upper side edges of the matrix F are alike in construction, and each consists, essentially, of a longitudinally-extending bar G^2, on which is held a clamping-plate G^3 for clamping the corresponding upper side edge of the matrix F in position between the bar and the plate, as is plainly indicated in Figs. 3 and 4. Each clamping-plate G^3 is provided with shafts G^4, mounted to slide in the bar G^2, and on the outer end of each shaft G^4 is formed a beveled hub G^6, abutting against a similarly-shaped bevel G^7 on the bar G^2, so that when the arms G^5 receive a swinging motion the clamping-plate G^3 is moved inward or outward to engage or disengage the edge of the matrix F to lock or unlock the same. The several arms G for each matrix-holder are connected with each other by a handled shifter G^8, adapted to be taken hold of by the operator for simultaneously moving the several arms G^5 to release or clamp the matrix F, as above described. By this arrangement the matrix can be readily placed in position in the holders or removed therefrom whenever desired, it being understood that a large number of castings, however, are usually made before the matrix is removed and replaced by another.

Each of the bars G^2 is formed with downwardly-extending arms G^9, pivotally connected with slides S, mounted to slide in suitable bearings in the sides of the drag B, and the lower ends of the slides are connected with each other by a bar S′, and this bar S′ is pivotally connected with slides S^2, mounted to move vertically in suitable bearings S^3, carried by the main frame A. The lower ends of the slides S^2 carry friction rollers or pins S^4, engaging the cam-grooves in the cams H H′, so that when the latter are rotated an intermittent up-and-down sliding motion is given to the slides S^2 and S to move the matrix-holders G G′, as previously explained, it being understood that the cams H H′ are so arranged and constructed relatively to each other and to the cams K K′ that the matrix-holder at the free end of a core is moved outward quicker than the other matrix-holder at the time the active core begins to swing outward away from the drag B.

By the arrangement described a large number of printing-plates can be successfully cast in and removed from the mold or casting box in a comparatively short time, and the matrix can be readily changed for another one whenever required without disturbing the cores C C′ and the parts connected therewith. Each of the cores is formed with the usual spaced recesses for casting ribs on the back of the printing-plate.

I do not limit myself to the particular arrangement of cores and drag shown and above described, as the same may be varied without departing from my invention. For instance, a number of drags arranged one alongside the other may be employed and engaged by two cylindrical cores mounted to swing and passing alternately into the central drag and into the side drags, as indicated in Fig. 8.

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

1. A casting-box having a drag, a plurality of cores, and means for swinging the cores alternately into and out of the drag, as set forth.

2. A casting-box having a drag, a plurality of cores, and means for swinging the said cores alternately into and out of the drag from opposite sides, as set forth.

3. A casting-box having a drag, holders for engaging the matrix at opposite sides of the drag, cores, and means for swinging the cores alternately into and out of the drag from the opposite sides thereof, as set forth.

4. A casting-box having a drag, movable holders for engaging the matrix at opposite sides, cores, and means to swing the cores alternately into and out of the said drag, as set forth.

5. A casting-box having a drag, movable holders for engaging the matrix at opposite sides, cores, and means to swing the cores alternately into and out of the said drag over said matrix-holders, as set forth.

6. A casting-box having a drag, movable holders for engaging the matrix at opposite sides, cores, means to swing the cores alternately into and out of the said drag, and means for actuating the matrix-holders, to peel the matrix off the drag and allow swinging of the core out of the drag, as set forth.

7. A casting-box having a drag, movable holders for engaging the matrix at opposite sides, cores mounted to swing alternately into and out of said drag, means for imparting a simultaneous swinging motion to said cores to move one out of the drag and the other into the drag, and means for imparting movement to said matrix-holders, as set forth.

8. A casting-box having a drag, a core provided at one end with a retaining-flange, an end-gate movable on the other end of the said core, and means carried by the core and engaging the said end-gate, to move the latter longitudinally on the core, to close the end opening between the core and the drag, as set forth.

9. A casting-box having a core, an end-gate movable longitudinally on the core, pouring-spouts on said end-gate, and means carried by the core and engaging the end-gate, to move the latter longitudinally on the core, as set forth.

10. A casting-box having a matrix-holder comprising a bar, a clamping-plate for clamping the sides of the matrix to the bar, and means for opening and closing said clamping-plate, said means comprising shafts on the clamping-plate and mounted to slide in said bar, cam-arms on the shafts and working on the faces of the bar, and means for operating said cam-arms, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LEO GROSSMAN.

Witnesses:
THEO. G. HOSTER,
EVERARD BOLTON MARSHALL.