

No. 765,988.

PATENTED JULY 26, 1904.

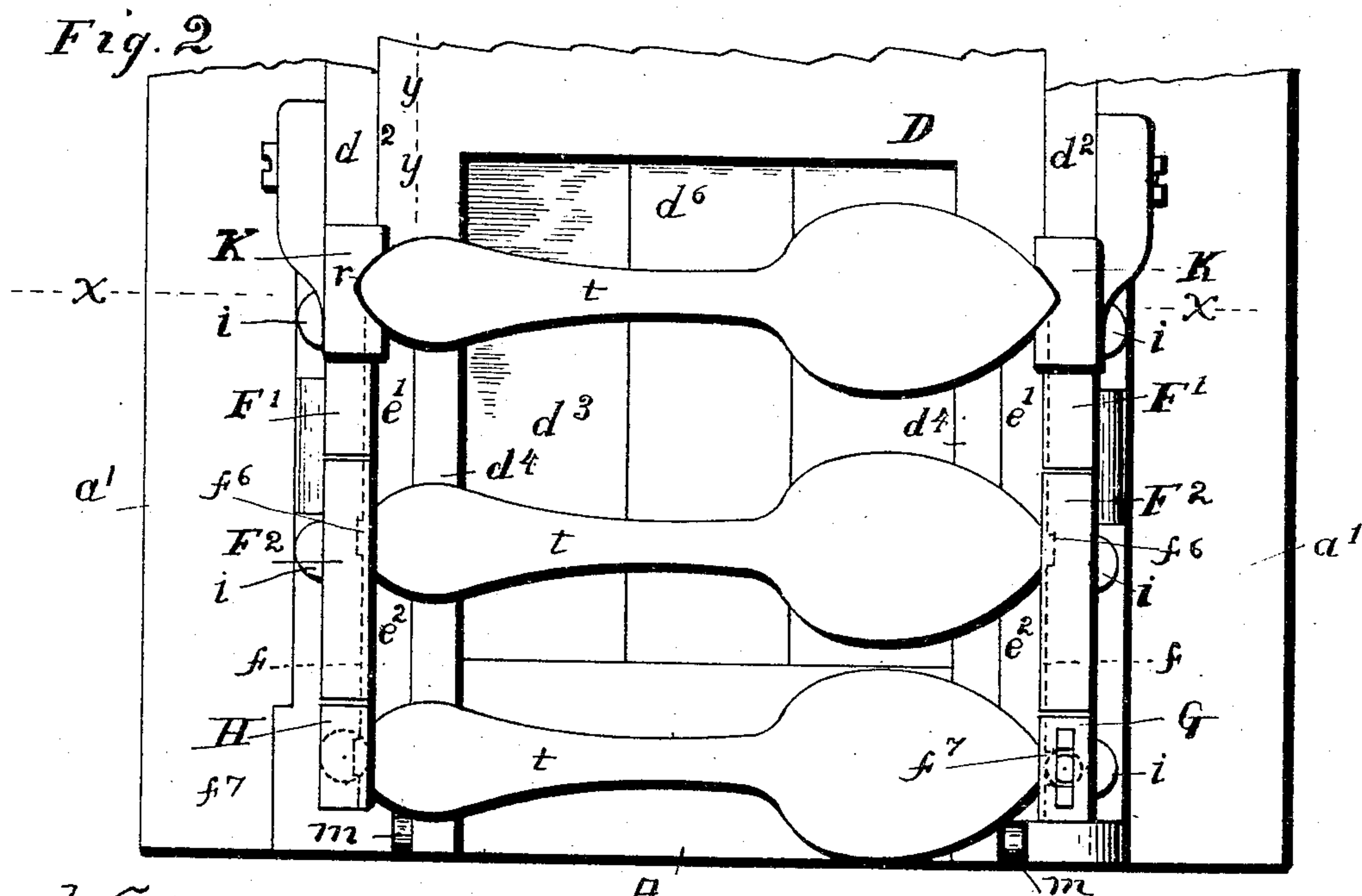
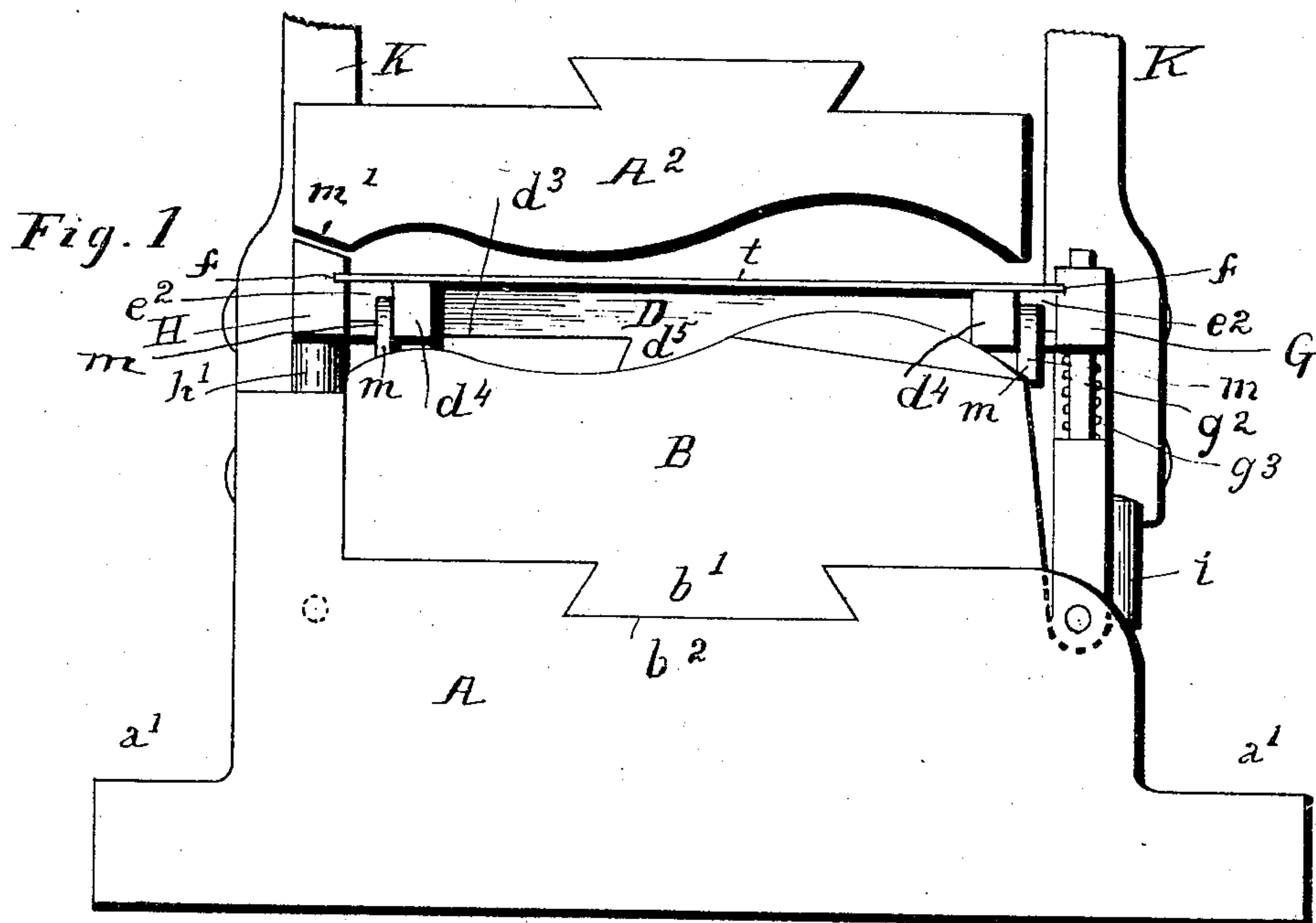
F. W. OTIS.

MECHANISM FOR FORMING SPOONS.

APPLICATION FILED SEPT. 17, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses :

Willie Barnes
Godson & Foote

Inventor:

Frederic W. Otis
By George L. Barnes, Atty.

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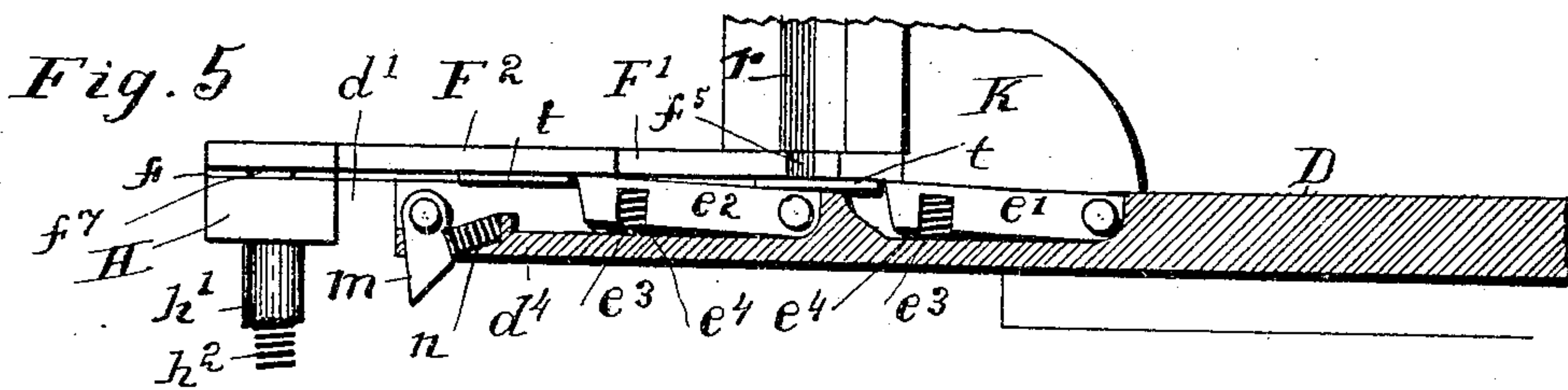
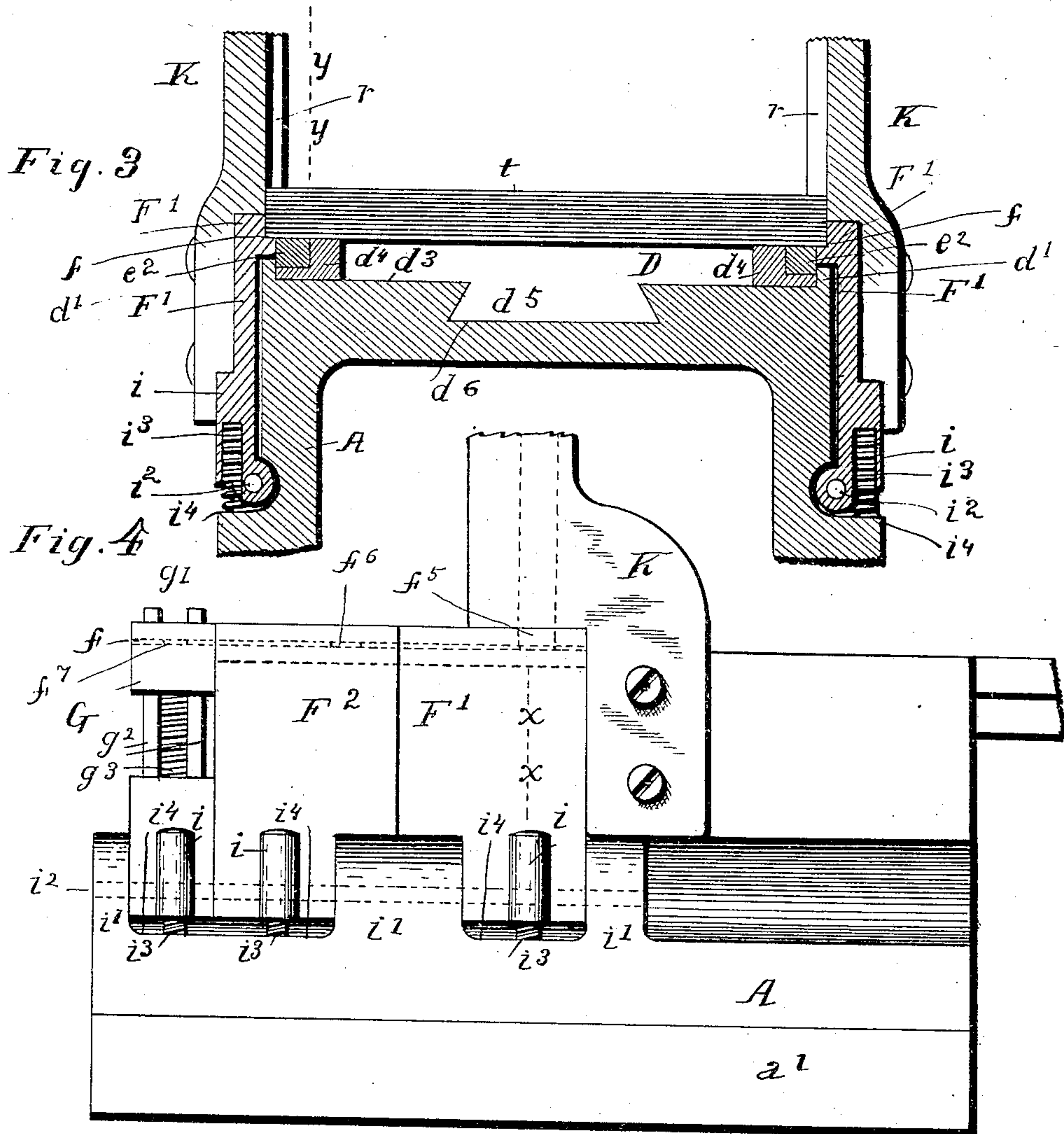
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3 SHEETS—SHEET 2.



Witnesses :

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3 SHEETS—SHEET 3.

Fig. 6

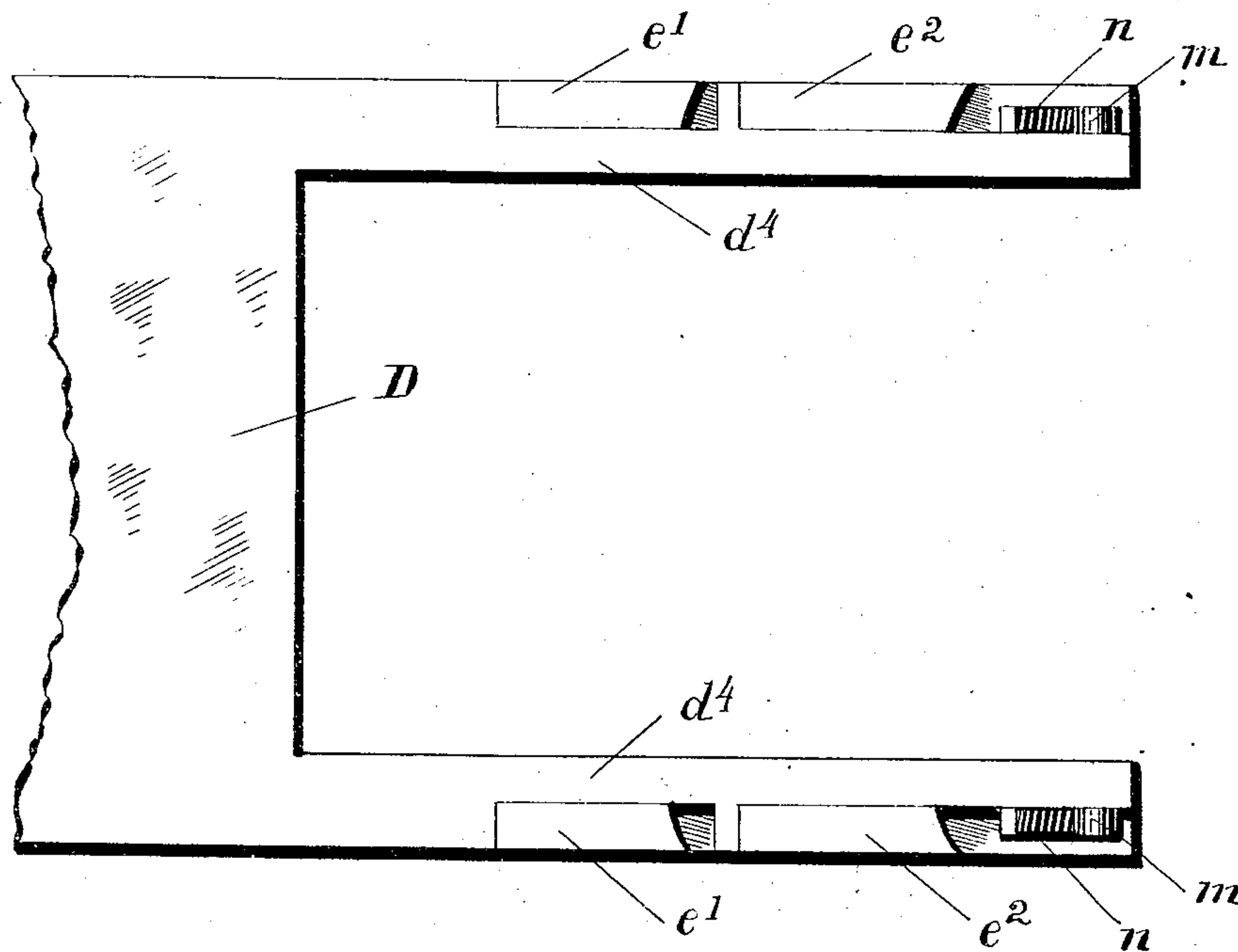
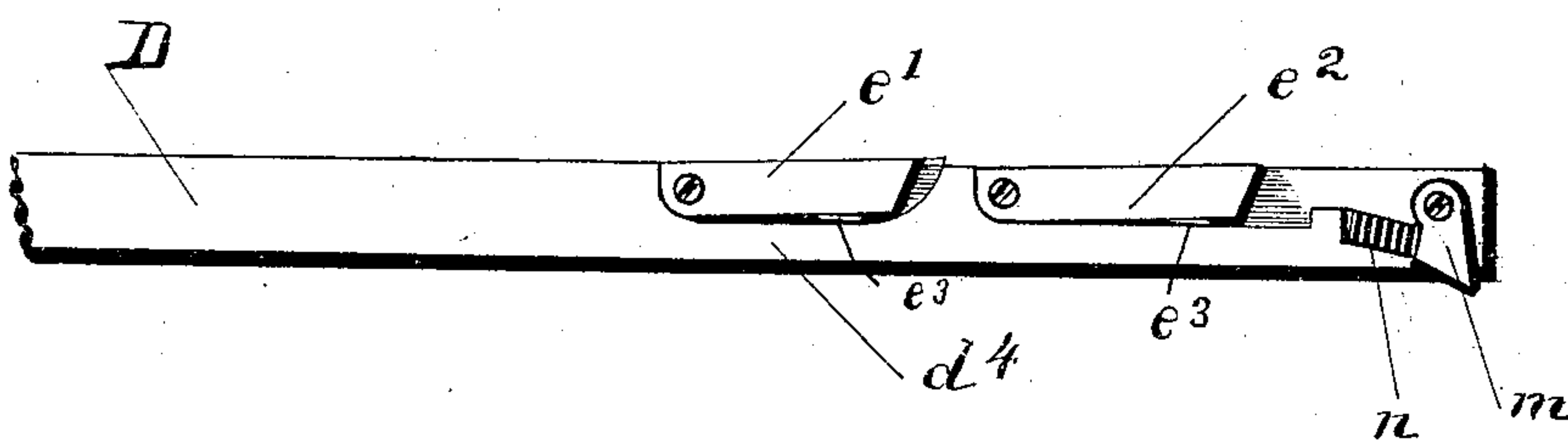


Fig. 7



WITNESSES:

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UNITED STATES PATENT OFFICE.

FREDERIC W. OTIS, OF ORANGE, CONNECTICUT.

MECHANISM FOR FORMING SPOONS.

SPECIFICATION forming part of Letters Patent No. 765,988, dated July 26, 1904.

Application filed September 17, 1903. Serial No. 173,526. (No model.)

To all whom it may concern:

Be it known that I, FREDERIC W. OTIS, a citizen of the United States, and a resident of Orange, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Mechanism for Forming Spoons, of which the following is a full, clear, and exact specification.

My invention relates to improvements in mechanism for forming spoons or other articles that are shaped with press-dies.

It has for its object to provide press attachments for automatically feeding and holding the blanks between the dies.

The invention consists in the novel combination and arrangement of the spring-pressed clamping-guides and reciprocating feeding devices and in the construction of parts, as hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a front view of my improved spoon-forming mechanism with the punching-die shown in outline. Fig. 2 is a plan view of the same with the punching-die omitted. Fig. 3 is a vertical cross-section on line X X of Figs. 2 and 4. Fig. 4 is a side elevation of Figs. 1 and 2. Fig. 5 is a lengthwise section on the line y y of Figs. 2 and 3. Fig. 6 is a plan view of the sliding carriage detached from the machine, and Fig. 7 is a side view of the same.

Referring to the drawings, A designates a rectangular die-block adapted for being secured to the bed of an ordinary punching-press by means of the bolt-flanges a' . At its front edge is mounted the lower die B, held in place by the dovetailed tongue b' and groove b^2 in the parts. The corresponding converse die A^2 (shown in outline in Fig. 1 only) is carried in the operating-head of the press in the usual and well-known manner, here requiring no further description.

Above the horizontal plane of the lower die B is a sliding carriage D, fitted to travel between suitable flanges d' d^2 on the die-block and resting on the flat horizontal surface d^3 thereof. The forward part of the carriage comprises the two parallel bars d^4 , extending from the solid body or rear main portion thereof. Said rear portion is provided with

a dovetailed tongue d^5 , which is movably engaged with a corresponding groove d^6 in the die-block to hold the carriage down. On the outer sides of the bars d^4 are the horizontal pawls e' e^2 , pivoted to the carriage at their rear ends and pressed upward at their forward ends by springs e^3 , received in suitable sockets e^4 in the pawls. The pawls are adapted to engage and convey the spoon-blanks to the forming-dies by a suitable reciprocating movement of the carriage, performed in the required relation to and consonance with the stroke of the die and operating-head of the press. Such reciprocating motion may be imparted to the carriage from the main driving mechanism of the press by any suitable cam devices or other mechanisms, here requiring neither to be shown or described.

At each side of the die-block are three clamping-guides arranged in juxtaposition in a row parallel with the central vertical longitudinal plane of the die-block, the individual guides of each row forming pairs with the corresponding guides of the other row. With one exception these guides are vertical pieces pivoted to the die-block at their lower ends, all projecting above the plane of the carriage or bars d^4 . They are formed with a continuous lateral groove f on their inner sides, having its lower side coincident with the upper surface of the bars d^4 . The guides F' of the first pair, numbering from the rear side of the die-block, have the vertical notches f^5 on their inner sides above the grooves f , and said grooves are not continued rearwardly of said notches. In the second pair of guides F^2 the grooves f are deepened at the points corresponding to the notches f^5 of the first pair, forming pockets or recesses f^6 . Similar pockets f^7 are formed in the third pair of guides G H, which are located in the vertical plane of the dies. The guide G is a suitable block fitted to slide vertically on a post g' , which is pivoted similarly to the first two pairs of guides described. The part of the post fitting the guide comprises a pair of tenons g^2 , between which a coil-spring g^3 is held seated in the lower part of the post and on which the guide g is supported normally in position to bring its groove f coincident

with the same groove in the other guides of the row or series, but capable of being depressed on the guiding-tenons to a position that will bring this groove on a plane with the lower die B. This guide with those of the two first pairs are pivoted to the die-block near its base by the pins i^2 , passed through suitable ears i' thereon. The guides are provided with sockets i , which receive springs i^3 , bearing vertically on the shoulder i^4 of the base outside of the pivotal plane of the guides, thereby holding the upper ends of the guides normally pressed inwardly to a position where they rest in contact with the sides d' of the die-block or any other suitable stop device. The guide H differs from all the others in not being pivoted to the die-block. It is a block similar to the guide G, having a vertical stem h' , guided in a suitable socket in the die-block and adapted to vertical movement corresponding to that of the guide G. It is supported in normal position by a coil-spring h^2 , contained within the stem h' , as shown in Fig. 5.

In the vertical plane of the front pair of guides F' and overhanging them, as shown, are two upright or channel-strips K, bolted to the sides of the die-block and provided with vertical grooves r on their inner sides corresponding to but slightly deeper than the notches f^5 of the guides. Their purpose is to receive a stack of spoon-blanks t , placed in them and the said notches, as shown in Figs. 2 and 3, the tips or ends of the blanks being engaged by the said grooves and notches. The pile of blanks rest upon the carriage D, which slides beneath them and in operation picks them one by one from the bottom of the stack by means of the pawls e' and conveys them to the forming-dies as follows:

The blanks resting upon the carriage as it is moved rearwardly under them to the position shown in Fig. 5, the pawls e' will be lifted by action of their springs e^3 when having passed clear of the blanks and on the return or forward motion of the carriage will carry the lowermost blank forward through the slot f in the guides. The stroke of the carriage is such that the blank will be carried forward to the position of the pockets f^6 in the second pair of guides F², which pockets will receive the ends of the blank, and the clamping-guides by means of their spring-pressure will hold the blank stationary in that position while the carriage travels back to its first position to secure another blank. This movement brings the secondary pawls e^2 back of the first-moved blank, which on the next forward stroke of the carriage will be conveyed forward to a position over the die B, where it will be held by being engaged by the pockets of the dies G and H, and its former place in the guides F² will be filled by

another blank at that time moved forward. While the blank is held in the dies G H, the forming-die A² descends upon it and carries it down to and shapes it over the lower die B. In this movement it is held continuously by the dies, which are correspondingly depressed upon their springs. The inward swing of the guides G enables the guide to retain its hold on the blank through the forming operation and consequent shortening of the blank by being curved over the die until the spoon is completed, when it will have left the slot f in the guides. At this point the guides will be forced upward to normal position, and the finished spoon will remain on the die until in the next forward movement of the carriage it will be pushed clear of the machine by the action of suitable push-out pendants m , pivoted to the ends of the parts d' , and which by being yieldingly hung by impinging against springs n back of them are enabled to swing over the curved or irregular surface of the die in such action. The descent of the guide H is rendered positive by the impact upon it of an overhanging part m' of the die A². The shortening of the blank by curvature takes place at the bowl end. Hence the guide H at the handle end of the spoon is movable only in a vertical plane and gages the position of the blank in the machine and of any letters, figures, or mark which is to be made upon the spoon.

The small portion of the blank held in the guides at the time of forming the spoon is drawn into shape by the deflection or shaping of the adjacent body of metal, and no difficulty is presented as to that feature. The ends of the blank being more or less pointed act to cam aside the guides as the blank is forced out of the pockets f^6 . The conveyance of the blank from the stack to the die in two steps or stages results in a great saving of time, as the throw of the carriage is correspondingly reduced and the time of a stroke proportionately increased.

I claim and desire to secure by Letters Patent—

1. In press and die mechanism the combination of a reciprocating carriage, depressible blank-engaging pawls mounted on the carriage, and a series of laterally-movable clamping-guides grooved to form a blank-conveying way parallel with the stroke of the carriage and provided with the blank-retaining pockets in said grooves, substantially in the manner and for the purpose specified.

2. In press and die mechanism the combination of a reciprocating carriage, upwardly-pressed pawls pivoted thereon and depressible on the backward stroke of the carriage, a blank-conveyer mounted over the carriage, and a series of laterally-movable clamping-guides grooved to form a continuous blank-conveying way parallel with the stroke of the

carriage and provided with blank-retaining pockets, substantially in the manner and for the purpose specified.

3. In press and die mechanism the combination of a reciprocating carriage, upwardly-pressed pawls pivoted thereon and depressible on the backward stroke of the carriage, channel-strips forming a blank-stacking conveyor above the carriage, laterally-movable clamping-guides grooved to form a continuous blank-conveying way parallel with the stroke of the carriage and provided with blank-retaining pockets and laterally-movable and vertically-depressible clamping-guides grooved in continuity with the series of guides, and provided with blank-retaining pockets, substantially in the manner and for the purpose specified.

4. In press and die mechanism the combination of a die-block, a carriage guided thereon movable into the plane of the dies, a primary pair of laterally-movable spring-pressed clamping-guides grooved to form a blank-conveying way above the carriage and provided with vertical blank-delivering channels into said grooves, an intermediate pair of laterally-movable spring-pressed clamping-guides grooved in continuity with the primary pair and provided with blank-retaining pockets in said grooves, a final pair of spring-pressed clamping-guides in the moving plane of the dies grooved in continuity with the others, one laterally movable with respect to the carriage and both vertically movable with respect thereto and provided with blank-retaining pockets in the said plane of the die, and pawls carried on the carriage and adapted to convey the blanks successively from one pair of clamping-guides to the next, substantially in the manner and for the purpose specified.

5. In press and die mechanism the combination of a die-block, a carriage guided therein, a primary pair of laterally-movable spring-

pressed clamping-guides pivoted to the die-block and provided with blank-conveying grooves parallel with the plane of the carriage and blank-delivery channels into said grooves, an intermediate pair of laterally-movable spring-pressed clamping-guides grooved in continuity with the primary pair and provided with blank-retaining pockets in said grooves, a final pair of spring-pressed clamping-guides in the moving plane of the dies grooved in continuity with the others, one laterally movable with respect to the carriage and both vertically movable with respect thereto and spring-pressed oppositely to the punching stroke of the die, and provided with blank-retaining pockets in the said plane of the die, pawls carried on the carriage and adapted to convey the blanks successively from one pair of clamping-guides to the next, and channel-strips for stacking the blanks over the primary pairs of clamping-guides, substantially as and for the purpose specified.

6. In press and die mechanism the combination of a die-block, a carriage guided thereon a primary pair of laterally-movable spring-pressed clamping-guides grooved to form a blank-conveying way above the carriage, a final pair of spring-pressed clamping-guides in the moving plane of the dies grooved in the plane of the primary grooves, one laterally movable with respect to the carriage and both vertically movable with respect thereto and provided with blank-retaining pockets in the said plane of the die, and pawls carried on the carriage and adapted to convey the blanks from one pair of clamping-guides to the other, substantially as and for the purpose specified.

Signed by me at New Haven, Connecticut, this 11th day of September, 1903.

FREDERIC W. OTIS.

Witnesses:

GEORGE L. BARNES,
JOHN S. FOWLER.