

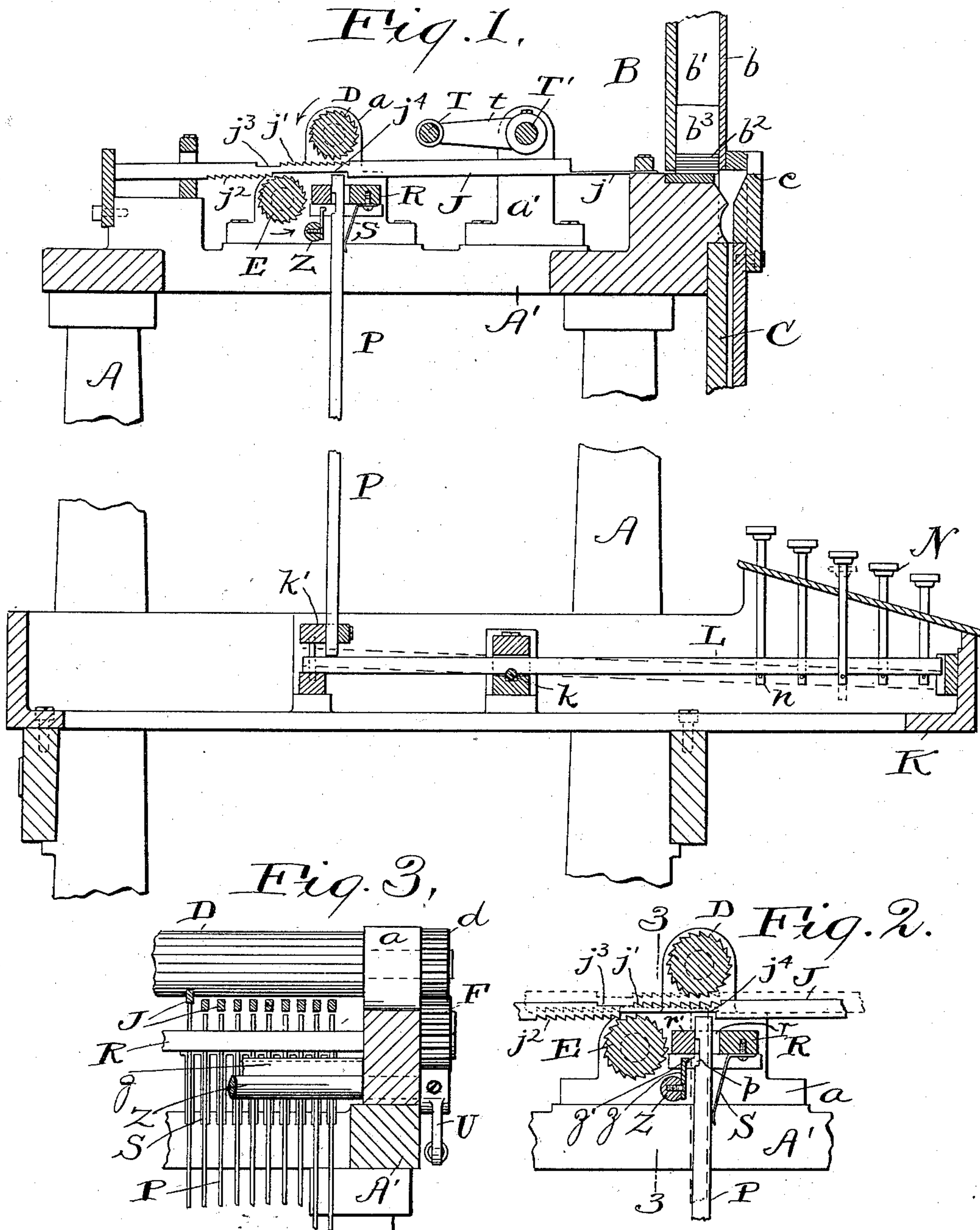
No. 749,773.

PATENTED JAN. 19, 1904.

F. B. CONVERSE, JR.
TYPE SETTING MACHINE.
APPLICATION FILED FEB. 27, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
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By his Attorneys,
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2 SHEETS—SHEET 2.

Fig. 4.

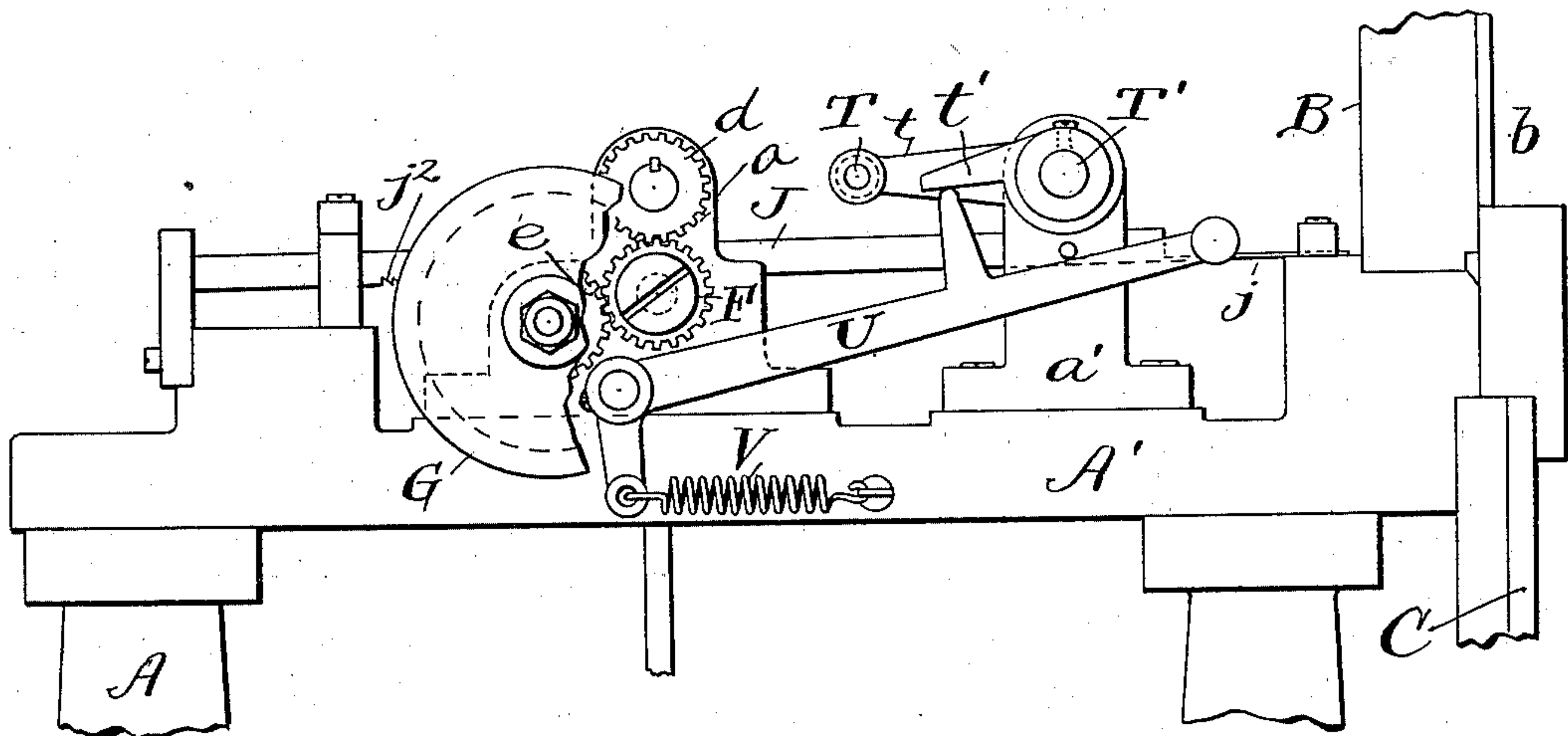
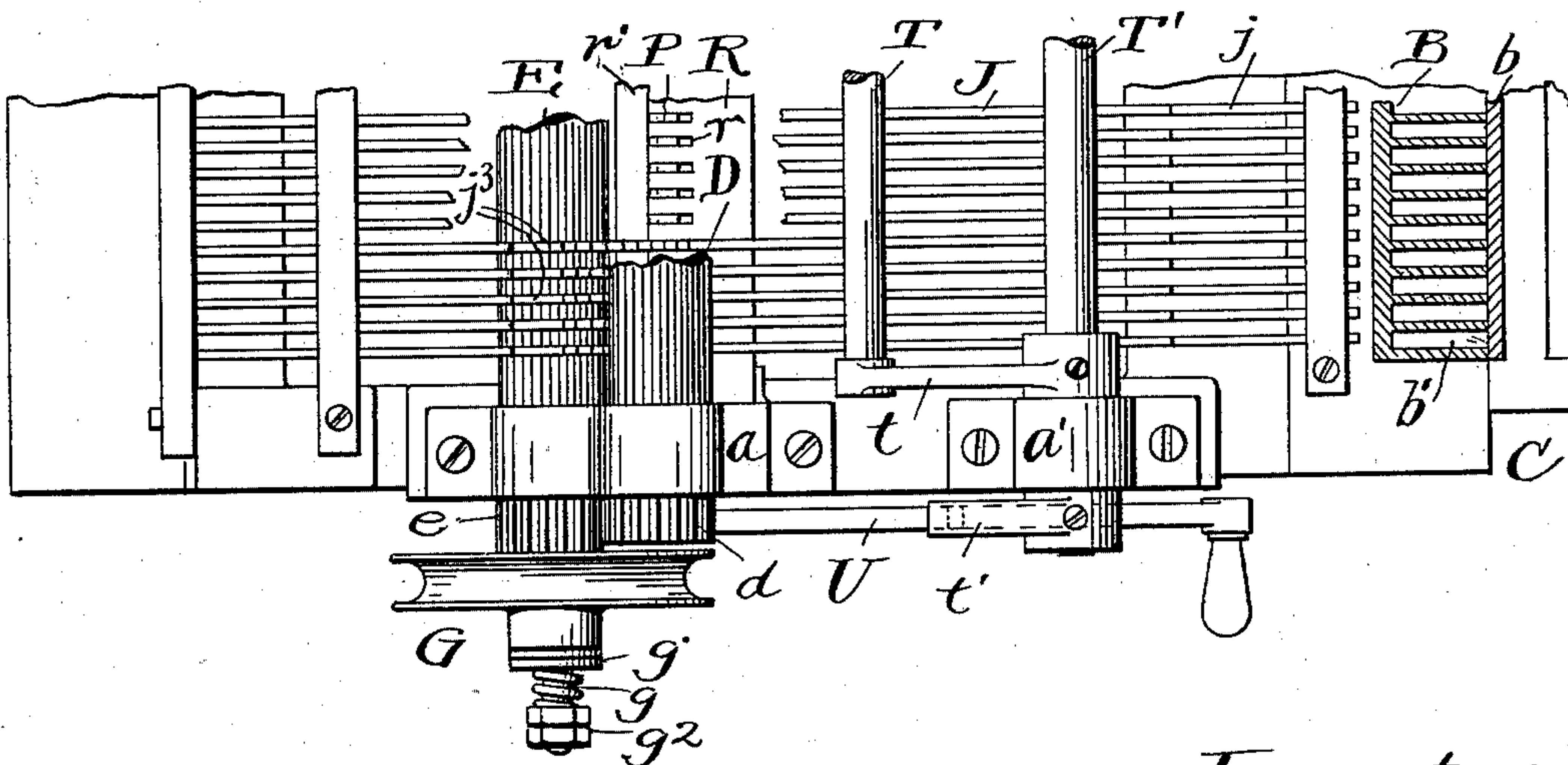


Fig. 5.



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UNITED STATES PATENT OFFICE.

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CORPORATION OF OHIO.

TYPE-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 749,773, dated January 19, 1904.

Application filed February 27, 1903. Serial No. 145,300. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS B. CONVERSE, Jr., a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Type-Setting Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to a type-setting machine of the general character set out in my prior patents, numbered 601,706 and 717,171, granted to me April 5, 1898, and December 30, 1902, respectively, the object being to simplify the construction there shown, rendering it cheaper to make and more efficient in service.

In each of the patents mentioned there is shown a type-setting machine comprising vertical type-cases having a plurality of channels, series of toothed ejectors, one for each channel, a pair of toothed rollers between which the ejectors lie, and mechanism operated by the finger-keys for causing the corresponding ejector to move to cause its teeth to engage the teeth of one of the rollers, whereby the ejector is fed forward, the ejector automatically moving into engagement with the other roller and being returned at the end of its forward movement. Such a structure, broadly, is shown in the embodiment of the invention herein illustrated. The particular improvements which constitute this invention relate to the mechanism for moving the ejector into engagement with the rotating roller and mechanism for unlocking any engaged ejector when the same becomes blocked by absence of type in the channel. These features will be hereinafter described, and definitely set out in the claims.

In the drawings, Figure 1 is a vertical section through the type-setting machine at the ejector mechanism and at the keyboard. Fig. 2 is an enlarged vertical section of the ejector mechanism near the two toothed rollers. Fig. 3 is a vertical cross-section of the ejecting mechanism substantially on the line 3 3 in Fig. 2.

Fig. 4 is a side elevation of the ejector portion of the machine, and Fig. 5 is a plan view of such portion.

Referring to the parts by letters, A A represent suitable frame-standards, on the upper ends of which the horizontal frame A' is mounted. Resting on the forward end of this frame and extending upward therefrom are the type case or cases B, covered by a plate *b* and divided into a plurality of channels *b'*. The type (designated by *b*²) are surmounted by followers *b*³. Extending downward from the front edge of the frame A' is the race-plate C, carrying a ledge *c*, around which the type ejected forward from the type-cases are adapted to swing, whereupon they pass foot downward into the race-plate.

Journaled in a pair of brackets *a*, carried by the frame A', are two toothed rollers D and E. These rollers are geared to rotate in the same direction—i. e., their proximate surfaces in opposite direction—by the gears *d* and *e* on said rollers, respectively. These gears are connected together by the idle gear F. In the machine shown the rollers are rotated by a pulley on the shaft of the roller E and frictionally clamped thereto by a spring *g*, bearing on washers *g'* and clamped by nuts *g*².

Between the rollers D and E are a series of ejector-bars J, one for each type-channel. These ejectors are guided in suitable frame members and have at their forward ends reduced portions *j*, adapted to extend in the type-cases. Adjacent to the rollers D and E these ejectors have on their upper and lower edges teeth *j*¹ and *j*². At the rear end of the teeth *j*¹ is a notch *j*³, and at the front of the teeth *j*² is a notch *j*⁴. Now if an ejector is raised the teeth *j*¹ come into engagement with the teeth of the roller D, and the ejector is advanced, ejecting the lowest type in the type-case until the notch *j*³ relieves the engagement, when the ejector drops, bringing the teeth *j*² into engagement with the roller E, which retracts the ejector until this engagement is released by the notch *j*⁴ coming over the roller E.

The mechanism so far described is itself old,

being shown in my two prior patents referred to. These patents also show a keyboard and mechanism actuated thereby for raising the ejectors to cause their engagement. The particular raising mechanism herein illustrated is a feature of this invention and will now be described.

Mounted in the keyboard-box K carried by the frame-standards A are series of key-levers L, pivoted on the box K and adapted to be individually depressed by finger-keys N. Stems of these keys fork over the key-levers, which are flat bars on edge and are held thereto by pins n through the key-stems. Slidably guided in the frame members k' just above the rear ends of the key-levers L are a series of flat rods P, one for each key-lever and for each ejector. At its upper end each rod P takes through and is guided by a slot r in a frame-bar carried by the brackets a and preferably composed of a notched member R and a bar r' . Secured to the under side of the bar R are a series of springs S, bearing on the front side of the raising-bars P, giving them a slight pressure rearward. Near the upper end of the bars P on their rear side are notches p . These notches in their normal position of the parts, as shown in Fig. 1 and in full lines in Fig. 2, are idle, and the rear edge of the bars P rests against the rear wall of the slot r . Now when a finger-key N is depressed the corresponding rod P is elevated, and the upper edge of the notch p becomes flush with the top of the bar r' , whereupon the spring S forces the bar P slightly rearward sufficiently to cause it to hook over and hang on said frame-bar r . This elevation of the frame-bar raises the ejector J above it into engagement with the toothed wheel D, which at once feeds forward the ejector. This engagement continues notwithstanding the pressure is removed from the finger-key by reason of the raising-bar P having hooked over the frame-bar r' until at the extreme forward position of the ejector J the shoulder constituting the rear wall of the notch J^4 impinges the rear side of the bar P, forcing it forward against the light spring S. At the same time the notch j^3 comes under the roller D and releases the ejector, whereupon both the ejector and the bar P fall by gravity, the pressure of the spring S not being heavy enough to support the bar P. The bar P being comparatively long, its angular movement is so very slight that the guide k' may make substantially a tight fit without binding the bar P. This makes a very simple and effective means for causing the engagement of the ejector and enables the touch on the finger-keys to be very light and very quick. As soon as the key is depressed the operation becomes automatic, and the finger may be removed from the key as quickly as it is possible for the operator to do it, the speed of the operation being limited only by the operator's manual dexterity. Dotted lines in Fig. 2

show the engaged position of the ejector and bar P, and the dotted lines in Fig. 1 show the corresponding position of the key-lever.

Surmounting the type b^2 within the channels of the type-keys are followers b^3 . When the type are exhausted, these followers block the advancement of the corresponding ejectors. This blocking stops the setting action, the pulley G slipping by reason of its frictional engagement with the roller E. To release the ejector raised and locked by these circumstances, I provide the frame consisting of a rod T, extending across the ejector and carried by arms t from a rock-shaft T', journaled in the frame-standards a' . The weight of this frame if released is sufficient to depress and unlock any engaged ejectors. The frame is normally held elevated and out of action, however, by the engagement of a lever U with an arm t' , extending from the shaft T', the lever U being normally elevated by the spring V. This much of the releasing device is shown in my prior patent, No. 717,171, referred to. The lever U is secured to a rock-shaft Z, which extends across the frame and has secured to its front side a plate z , at the upper end of which is a rib z' , which stands opposite the notch p in the depressed position of the bars P. When any ejector is blocked by the exhaustion of a type-channel, the lever U is simply drawn downward by the operator, and this turns the bar Z and swings forward the plate z , and the rib z' engages and forces forward any bar P which is elevated, the rib having no effect on the bars which are not elevated. This will be seen from the two positions of the bars P illustrated in dotted lines and full lines in Fig. 2. As soon as the elevated bars P are released the descent of the frame T on the blocked ejectors releases them from engagement with the roller D.

It will be seen that the improvement herein set out does away entirely with the bell-crank fingers between the rods from the key-levers and the ejectors, as shown in my above-mentioned patents. This simplifies the construction and renders it more efficient.

I claim—

1. In a type-setting machine, the combination of an ejector, mechanism for driving the same forward, a longitudinally-movable bar adapted to engage said ejector and raise it into engagement with said mechanism and hold it in engagement throughout the forward stroke of the ejector, and a member by which said bar may be held in such raised position, substantially as described.

2. In a type-setting machine, in combination, an ejector, driving mechanism therefor, a bar adapted to raise said ejector into engagement with said mechanism, and hold it in engagement throughout the forward stroke of the ejector, a shoulder on said bar, a member over which said shoulder may hook when the bar is raised, and a spring tending to cause

engagement between said bar and said member, substantially as described.

3. In a type-setting machine, an ejector, mechanism above the ejector for driving it forward, a bar adapted to raise said ejector into engagement with said mechanism, there being a shoulder on said bar, means with which said shoulder may engage and hold the bar raised, and a shoulder on the ejector adapted to release said bar from its raised position when the ejector reaches its forward position, substantially as described.

4. In a type-setting machine, a toothed rotatable roller, an ejector beneath the roller and having teeth on its upper side, a bar adapted to raise said ejector into engagement with said roller, and a guide for said bar having a slot through which the bar slides, there being a notch in the rear side of the bar adapted to engage said guide, and means whereby the ejector at the end of its forward movement engages the bar and releases it from the guide, substantially as described.

5. In a type-setting machine, a toothed rotatable roller, an ejector beneath the roller and having teeth on its upper side, a bar adapted to raise said ejector into engagement with said roller and hold it in engagement throughout the forward stroke of the ejector, a guide for said bar having a slot through which the bar slides, there being a notch in the rear side of the bar adapted to hook over said guide, a shoulder on the ejector adapted to engage said bar and move it from its hooked position when the ejector reaches its forward position, the slot in which said bar is guided allowing play backward or forward, and a spring tending to force said bar rearward, substantially as described.

6. In a type-setting machine, the combination of two toothed rollers, an ejector between them having teeth on its upper and under edges, a raising-bar beneath the ejector, a finger-key connected therewith and adapted to elevate the bar and thereby raise the ejector into engagement with the upper roller, a shoulder on the rear side of the raising-bar, a spring tending to move said bar rearward, and a member over which said shoulder may thereby hook, said ejector having on its under side a notch normally standing over the upper end of the raising-bar and over the lower roller, the rear end of said notch making a shoulder adapted to shove the raising-bar from its hooked position, when the ejector reaches its forward position, substantially as described.

7. In a type-setting machine, a series of key-levers, a series of ejectors, and driving means for the ejectors, combined with a series of raising-bars resting at their lower ends on the key-levers and having their upper ends standing below the ejectors and adapted to raise them into engagement with the driving means, said bars having shoulders on their rear sides, and means over which said shoulders hook and

remain hooked throughout the forward movement of the ejector, substantially as described.

8. In a type-setting machine, the combination of a series of key-levers, a series of ejectors, driving means for the ejectors, a series of raising-bars resting at their lower ends on the key-levers and having their upper ends standing below the ejectors and adapted to raise them into engagement with the driving means, means for holding the raising-bars elevated after they have been raised until the ejector reaches the forward end of its stroke, and means for thereupon automatically releasing them, substantially as described.

9. In a type-setting machine, the combination of a series of key-levers, a series of ejectors, driving means for the ejectors, a series of flat raising-bars side by side resting at their lower ends on the key-levers and having their upper ends standing below the ejectors and engage them and raise them into engagement with the driving means and hold them in such engagement throughout the forward stroke of the ejectors, and slotted guides for said raising-bars, substantially as described.

10. In a type-setting machine, the combination of a series of key-levers, a series of long ejector-bars, driving means for the ejectors, a series of raising-bars connecting at their lower ends with the key-levers and having their upper ends standing below the ejectors and adapted to engage them and raise them into engagement with the driving means, and hold them in such engagement throughout the forward stroke of the ejectors, a guide for said raising-bars located adjacent to the rear ends of the key-levers, and a second guide for said raising-bars located adjacent to the ejectors, the last-mentioned guide being slotted with play forward and back, there being engageable shoulders on said raising-bars for holding them elevated, substantially as described.

11. In a type-setting machine, the combination of a series of finger-keys, a series of pivoted key-levers with which the finger-keys connect, said key-levers being flat and set on edge, a series of flat upright raising-bars side by side and resting at their lower ends on the key-levers near their rear ends, said raising-bars being slidable vertically and the upper end thereof being movable also forward and back, driving mechanism, ejectors beneath the same, a type-case containing channels with which said ejectors cooperate, shoulders formed on the rear side of said raising-bars near their upper ends, springs tending to cause engagement of said raising-bars when they are raised, and shoulders on the ejectors adapted to release said raising-bars from such engagement at the completion of the forward stroke of the ejector, substantially as described.

12. In a type-setting machine, the combination of driving mechanism, an ejector, a bar adapted to raise said ejector into engagement

with said mechanism, a member over which said bar hooks and by which it may be held in raised position throughout the forward movement of the ejector, and a releasing device in addition to the ejectors and adapted to release such raising-bar from engagement, substantially as described.

13. In a type-setting machine, the combination of driving mechanism, ejectors, bars adapted to raise said ejectors into engagement with said mechanism, a member over which said bars may hook and be held in raised position, a releasing-bar extending crosswise behind the raising-bars, and means for moving such releasing-bar forward to unhook any raising-bar which may be elevated, substantially as described.

14. In a type-setting machine, the combina-

tion of a rotatable roller, ejectors, notched bars adapted to raise said ejectors into engagement with said roller, a member over which the notches of said bars may hook when the bars are in raised position, a pivoted releasing-bar having rib normally opposite the notches in the raising-bars but below said notches when the raising-bars are elevated, and means for swinging such releasing-bar forward at its upper end to cause the rib to engage any elevated bar below the notch therein, substantially as described.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

FRANCIS B. CONVERSE, JR.

Witnesses:

EDWARD Y. MOORE,

ALBERT. H. BATES.