

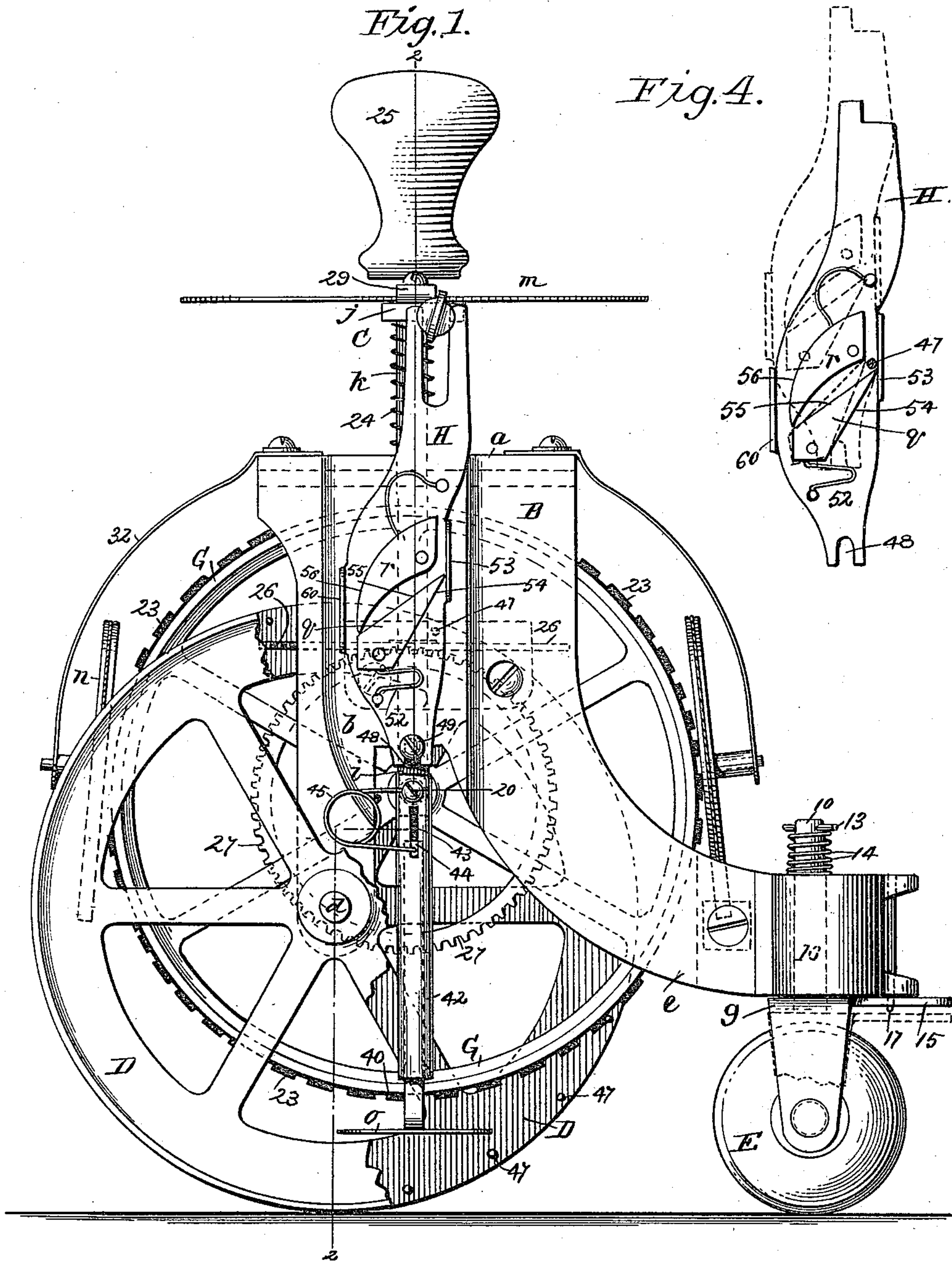
(No Model.)

3 Sheets—Sheet 1.

S. C. HURLBUT.
TYPE WRITING MACHINE.

No. 441,068.

Patented Nov. 18, 1890.



Witnesses:
J. B. Garfield
Wm. F. Bellows

Inventor,
Samuel C. Hurlbut
by *Chapman*
Attorneys.

(No Model.)

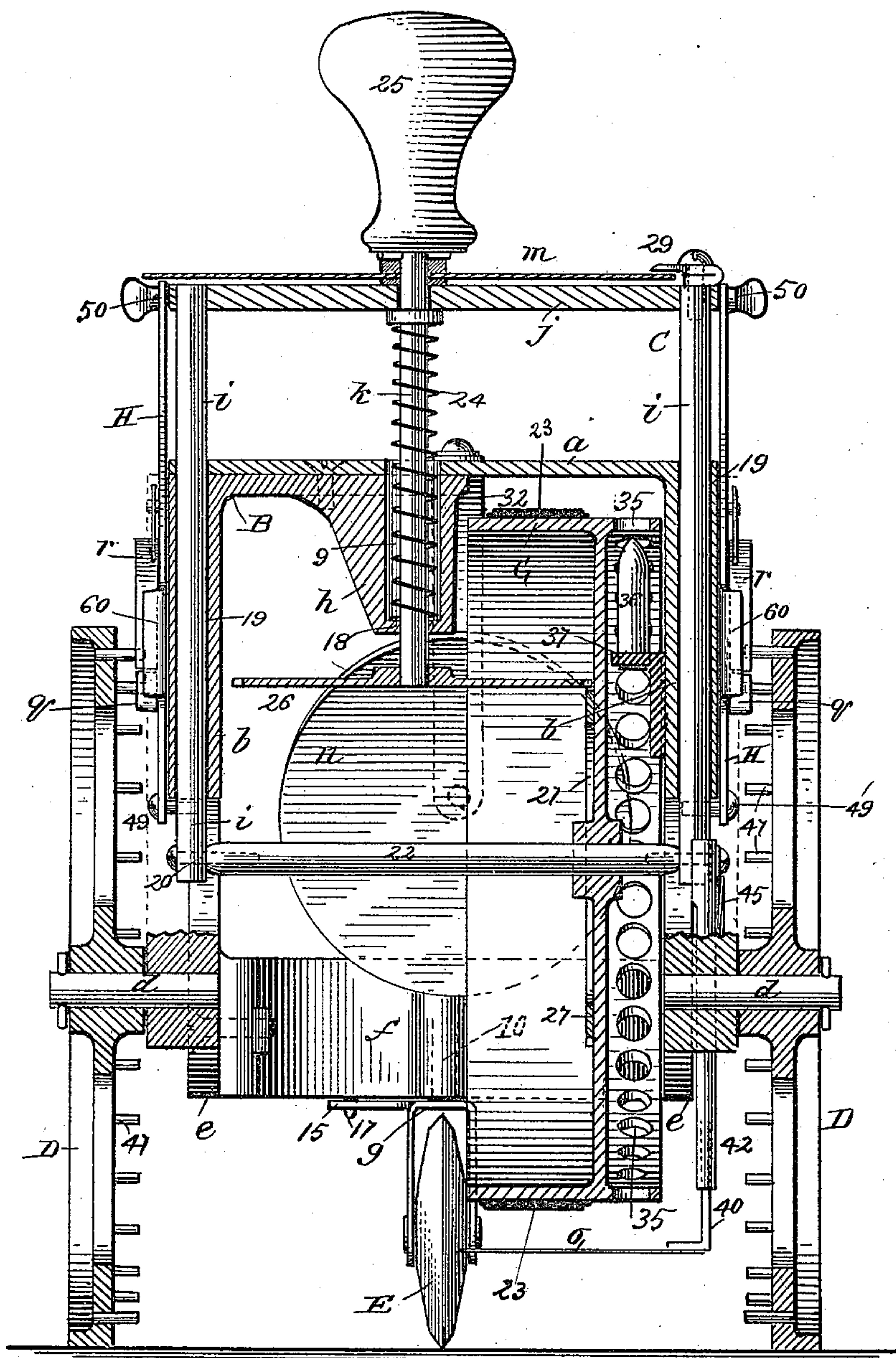
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Fig. 2.



Witnesses:
J. D. Garfield.
H. S. Bellon.

Inventor,
Samuel C. Hurlbut
by Chapman
Attorneys.

(No Model.)

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Fig. 5.

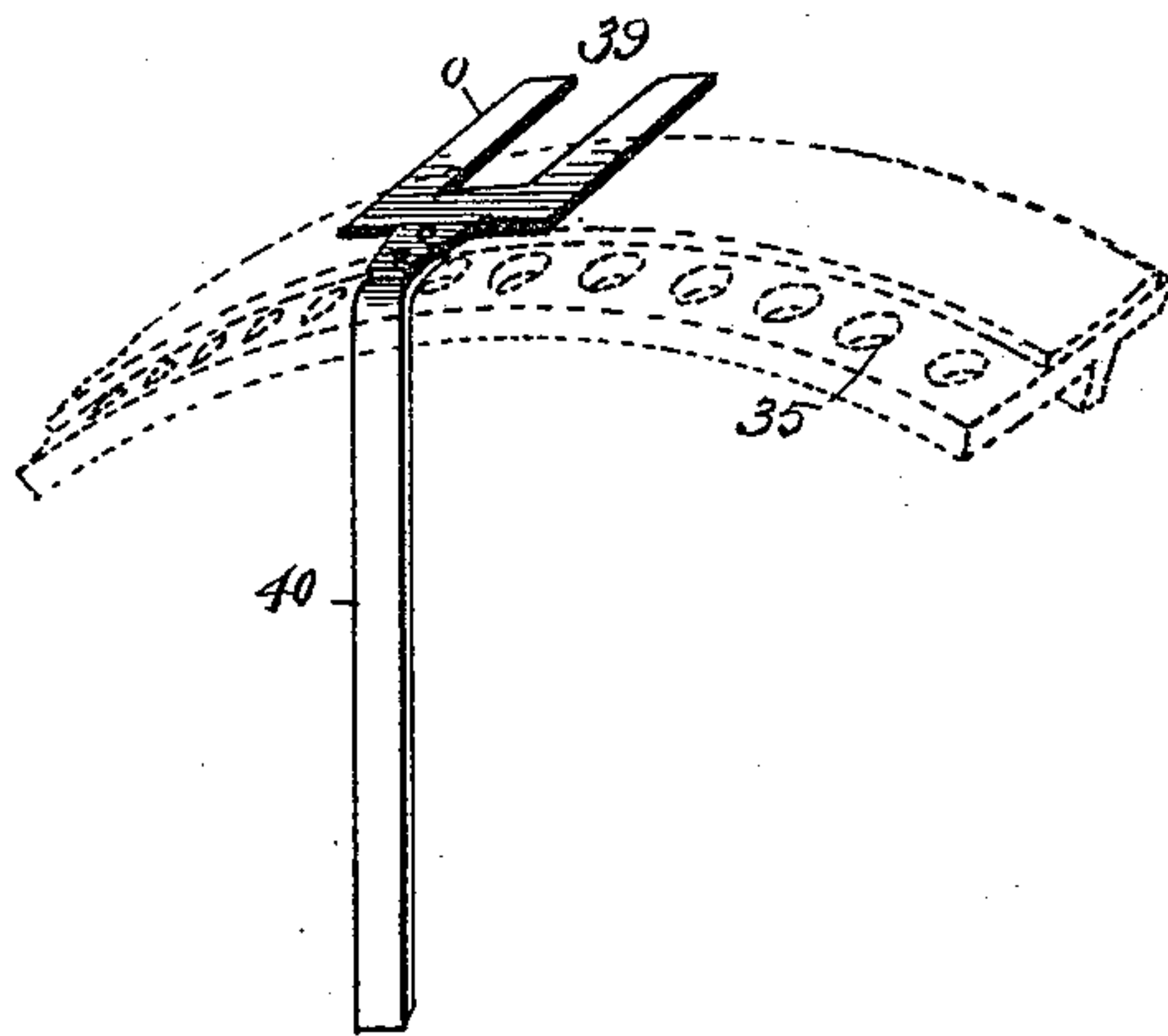
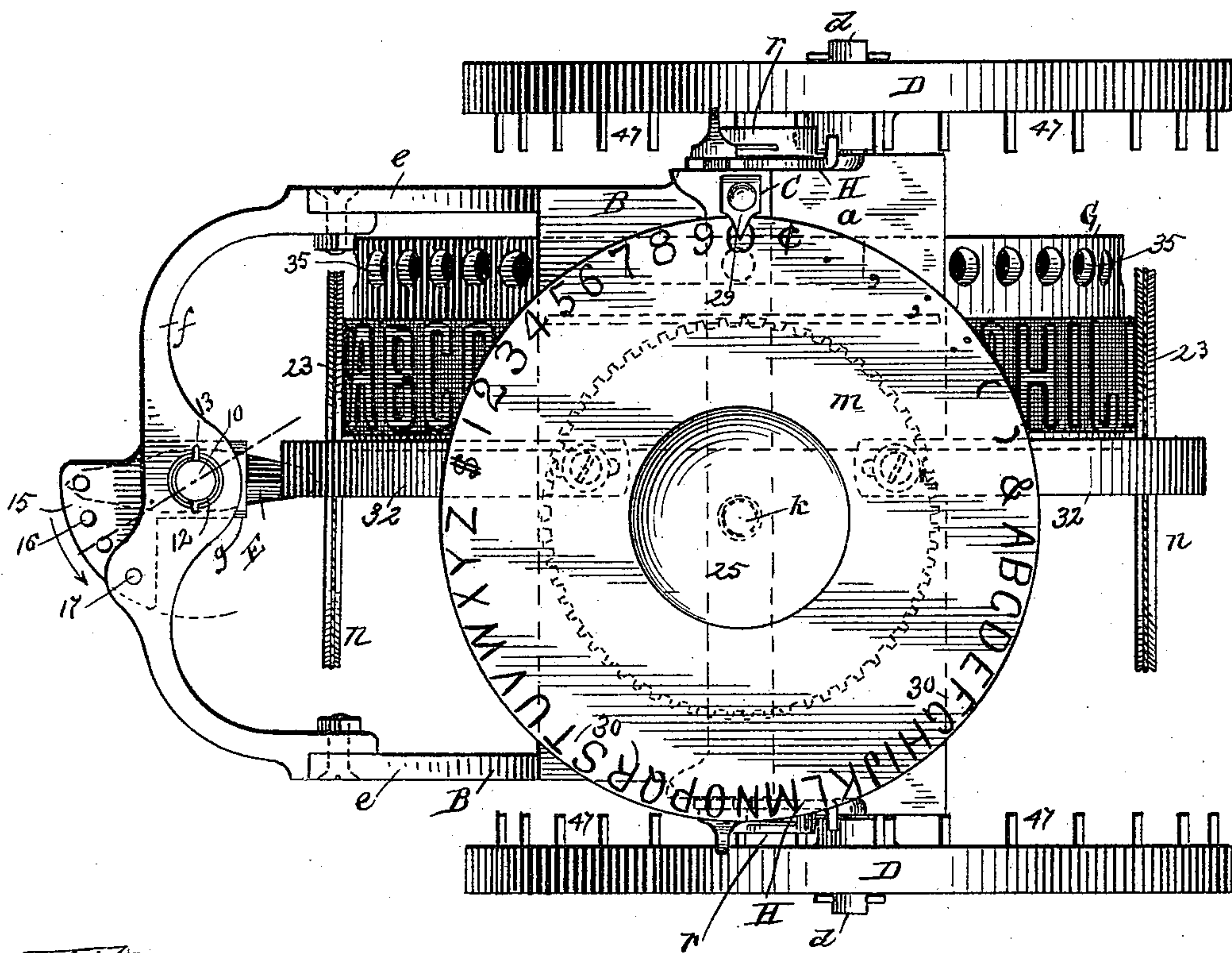


Fig. 3.



Witnesses:
J. G. Garfield
Wm. F. Bell

Inventor:
Samuel C. Hurlbut
by *Chapman*
Attorneys

UNITED STATES PATENT OFFICE.

SAMUEL C. HURLBUT, OF WEST HARTFORD, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE TYPE WRITING MACHINE COMPANY, OF HARTFORD, CONNECTICUT.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 441,068, dated November 18, 1890.

Application filed May 3, 1889. Serial No. 309,523. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL C. HURLBUT, a citizen of the United States, residing at West Hartford, in the county of Hartford and State of Connecticut, have invented new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to improvements in printing-machines particularly applicable for use for addressing packages of merchandise, and is in the nature of an improvement on the invention described in an application for Letters Patent of the United States filed by Lewis Dart October 3, 1888, Serial No. 287,111; and the invention consists in the construction and combination of parts, all substantially as will hereinafter more fully appear, and be set forth in the claims.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the printing-machine with parts thereof broken away for clearer illustration. Fig. 2 is a vertical cross-sectional view of said machine on two planes indicated by the lines 2 2, Fig. 1. Fig. 3 is a plan view of the machine. Fig. 4 is a view in detail of a part of the propelling mechanism for the machine, to be hereinafter referred to. Fig. 5 is a perspective view to illustrate the guard at the bottom of the type-drum, the same being shown inverted.

The present machine, in lieu of having its frame, which carries the printing devices, movable along and upon an immovable supporting-frame, as shown in the application of said Dart, has its frame supporting the printing devices carried on wheels, to one or both of which movement is automatically imparted through suitable mechanism to propel the machine forward at each depression of the type-drum to imprint a character, and while under the said improvement of Dart the length of a line of printing which might be performed by the machine without lifting it bodily and resetting it is limited in accordance with the length of the supporting-frame under the pres-

ent improvement the machine may be used to print a line of words or characters limited only by the length of the surface provided to receive such line of printing.

In the drawings, B represents the frame or carriage, which supports the printing devices and operating mechanism therefor, consisting of an upper horizontal platform *a*, having opposing pending cheek plates or pedestals *b b*, provided with journals *d*, on which the side wheels D D are mounted, and by which wheels the said carriage is supported, and rear and transverse portions *e e* and *f*, uniting said pedestals and strengthening the frame structure, and a roller E supports the rear end of the carriage, being disposed, normally in the median vertical longitudinal plane of the machine and journaled in and between the members of a stirrup-frame *g*, which latter has an upwardly-projecting spindle 10 extended through a vertical bearing 12 in the middle of said transverse portion *f* of the frame. Said spindle above said transverse portion *f* is provided with a cross-pin 13 or other form of shoulder, between which and the upper side of said transverse portion a spiral spring 14 is applied, the tendency of which is to maintain said roller-carrying stirrup-frame in its uppermost position.

On the upper transverse uniting portion of the stirrup is formed a horizontal extension 15, having a series of holes 16 therein, arranged concentrically to the said spindle. A rigid pin 17 projects downwardly from said rear portion of the frame and at a distance from the spindle corresponding to that of any of said holes in the stirrup-extension. When the said pin is in engagement in one of said holes, the roller will be confined in the normal vertical median plane of the machine, but on forcing downwardly on said spindle against its spring and disengaging the perforated stirrup, extension from the fixed pin 17, on turning the spindle, with its extension and roller, so that the plane of the latter is out of coincidence with said median vertical plane of the machine, and then permitting, under the action of the spring, said extension by one of its perforations to engage with the pin; the travel

of the machine in operation may be on a curve, as will more fully appear hereinafter when the propelling mechanism for acting on the side wheels has been described. The said platform *a*, which constitutes the upper intermediate portion of the carriage B, has a boss *h*, extending downwardly, centrally therefrom, axially chambered or socketed, as at 9, and provided in its lower end with a shoulder or seat 18.

C represents a frame vertically movable on the carriage B, consisting of vertical legs *i*, playing through vertical guiding-ways 19 in said pedestals and the rigid uniting cross-plate *j* at and between their upper ends. The said legs *i* of the frame C extend below the lower ends of the pedestals *b* and have bearings 20 formed therein or supported thereon for a transverse axle 22, on which the type-drum G is fixedly mounted for rotation therewith, said drum carrying the type 23 peripherally arranged thereon. Disposed within and playing vertically through the said tubular socket of the carriage-frame B is a plunger-shaft *k*, which also passes through the cross-plate *j* of the frame C, having, however, no axial movement with relation thereto. The said plunger-shaft is capable of a free vertical movement through the said socket 9 and also of a rotary movement therein, and the bearing for said plunger-shaft in and through said cross-plate *j* of frame C is such as to permit of its free rotation. A spiral spring 24 rests on the seat 18 in the bottom of the socketed boss encircling the plunger-shaft and bears for an upward pressure against the under side of the cross-plate *j*. A circular horizontal dial *m* is fixed on the plunger-shaft above the frame C, said shaft thereabove being provided with a handle-knob 25 for conveniently manipulating the machine. A horizontal gear 26 is fixed on the lower end of the plunger-shaft, and to mesh therewith on the transverse type-drum axle 22 is fixed a vertical gear 27. The type or impression faces 23, to represent letters of the alphabet, numerals, punctuation-marks, and a short open space between two of the characters, are arranged in proper rotation and alignment on the periphery of said drum with their tops and bottoms toward the rear and front sides of the machine, as shown, and the circular dial-plate on its upper surface near its edge has a similar indication, as shown at 30, of the characters and space formed on the type-drum and in corresponding successive arrangement.

29 represents a stationary index-pointer on the carriage C, overlying the rim of the dial-plate *m*.

Through the gearing between the plunger-shaft and the type-drum axle described, and the corresponding relative arrangement of the printing-type on the drum and on the dial when any particular character or the space on the dial is so rotated as to be brought

opposite the index-pointer 29, the character or space corresponding thereto on the type-drum is also brought into its lowermost or printing position—that is, in a vertical line projected through and below the axis of the drum, and then on a forcing down through the handle-knob of the said frame C and of all the parts carried thereby. The said lowermost type when properly inked may be made to leave its impression upon the paper, &c., with and against which it is brought to a contact.

The types are to be of any suitable form, and are preferably formed of rubber molded on a single band, which is secured on the periphery of the drum, and for its inking a circular inking-pad is arranged to bear on the peripherally-arranged type-face and to roll thereon and therewith when the drum while in its normal or uppermost position is rotated, and, as shown, from, say, the forward end of the platform of the carriage-frame B is projected a spring-arm 32, extending forwardly and downwardly, and on its extremity is centrally and pivotally mounted a disk *n*, comprising an inking-pad bearing by a portion thereof at one side of its central and pivotal point. Through the spring-bearing of said inking-pad disk by an eccentric portion thereof on the face of the type-carrying drum, when said drum is rotated as before described, different portions of its periphery are brought to the inking contact of and by the disk, and said disk also rotates to present fresh inking-surfaces to the face of the type. The rim of the type-drum is of a width greater than to simply include the height of the type, and opposite and at the bottom of each character is a circular perforation 35. A rigid post 36 stands on a bracket 37, formed on the inside of one of the pedestals *b* of the carriage B, and above and in a vertical line intersecting the axis of the drum, the relation of the said post with the said holes being such that when the dial has been turned to register the proper character on the downward forcing through the knob 25 of the frame C and the printing-drum the drum will then by one of its said rim-perforations pass over and about the said post 36, such post and perforation engagement insuring the drum against any undue rotary motion, and a proper projection and presentation of the desired type is assured.

A guard-plate *o* of thin metal is placed below the lower central portion of the drum-rim, having an aperture 39 to permit of the imprinting therethrough of a single type at one time and to guard the adjacent type from also imprinting. The said guard-plate, a practical form of which is shown in Fig. 5, and which comprises besides the horizontal apertured plate *o* the vertical stem 40, carrying said plate, is supported on the machine for its most efficient operation by having its said stem slightly movable in a suitable ver-

tical tubular guideway 42, formed on and as a downward continuation of one of the side legs *i* of the frame C, (see Figs. 1 and 2,) said tubular guideway being vertically slotted in a portion of its length, as at 43, through which a stud 44 projects and receives the downward recoil of a spring suitably applied therefor, and the lower end of said slot 43 acts as an abutment to limit the downward projection of said guard, the same being normally held in its lowermost presentation and at a slight distance below the face of the lowermost of the peripherally-arranged type, and thereby no impediment is offered by the guard to the free rotation of the drum; but when on its rotation the suitable type is in its lowermost disposition, on being pressed downwardly the said guard *o* moves therewith until it is carried to contact with the imprint-receiving surface, when it remains stationary, the tubular guide for its stem moving downwardly upon and over said stem and the drum to its contact by its selected type through said guard-aperture. The spring (shown at 45) is suitably applied to normally maintain said stem 40 to its lowermost extension with relation to the said guiding-tube, at such time being compressed.

A forward step-by-step motion is imparted to the carriage B at each downward projection of the type-drum by mechanism, as follows: The supporting side wheels D for the carriage B are both correspondingly provided on their inner faces with horizontally-extended pins 47, the distance between each being greater than the width occupied by a character on the drum, so as to afford suitable spaces between the characters in printing. Attached on and to move with the frame C outside of the pedestals and parallel with the legs are plates H, their attachment, as shown, on said frame being by forming a short slot 48 in the lower end of each plate, which fits over the headed stud 49, on and outwardly extended from the lower end of each leg *i* below the pedestal and the shoulder of a set-screw 50, which screws into the end of the cross-plate *j* of the frame C, and by its head overlies and bears on the upper end of said plate H. *q* represents a pallet of sharp triangular form, by its base portion pivoted on said plate H, and adapted by the spring 52 therefor to be normally held in the oblique position shown in Fig. 1, its apex lying against an abutment-lug 53 on the plate H, and said triangular pallet is by its apex when the drum is raised to a position somewhat above the nearest pin 47 thereto of the side wheel D, such relative position of the pallet and pin being shown in Fig. 1. When the frame C is depressed to cause the drum to print, as the pallet passes down it comes by its inclined side 54 in contact with the said nearest pin of the wheel, and is thereby forced forwardly against its spring until the apex passes below the pin, when the pallet is again forced to lie by its apex back against said abutment, and the then

relative position of the pin and pallet is shown in full lines in Fig. 4. The impact of the type to print having now been made and the pressure released from the knob, permitting the frame C to rise under the reaction of its spring 24, as said pallet moves upwardly its other inclined side 55 exerts a cam action upon said pin 47, the pallet being held against rearward movement by the abutment 53, and the pin is forced forward to partially rotate the side wheel. The length of upward movement of the frame C is such that before it is completed the pin 47 has been forced entirely across the forward extremity of the pallet. It will be noticed that in so passing it will raise and pass by the point of a spring-click *r*, the forward wall 56 of which is substantially vertical, so that on the next downward movement of the frame C and the pallet there will be no liability of retrograde movement of the wheel, for it will be seen that on such next downward movement of the pallet the said vertical wall of the click will present a barrier against the reverse movement of the pin, accidental or otherwise. It will also be noticed that when the pallet has moved upwardly to force the pin to the forward extremity thereof any motion of said pin or rolling of the wheel further than that positively caused by the pallet, as described, will be prevented by the abutment-lug 60 on the forward edge of the plate H.

To employ the machine embracing the form of propelling motion above described for printing in straight lines, it is necessary, to secure practical and satisfactory results, to have the pin and pallet mechanism duplicated—that is, one set thereof provided at each side of the machine; but by removing the pallet-carrying plate at one side of the machine, which may be easily done under the set-screw attachment thereof mentioned, and by turning the rear roller so that its median vertical plane is at an angle to the median vertical plane of the machine proper, an arc-shaped line of printing may be obtained, the said roller set at an incline, acting in the manner of a rudder, freely speaking, to deflect the straightforward travel of the machine, for, as will be understood, one wheel will be positively fed and will have an arc movement, the other wheel moving in the arc of a smaller circle and acting more or less as a fulcrum on which the larger wheel swings.

What I claim as my invention is—

1. A printing-machine comprising therein in co-operative arrangement the following instrumentalities, viz: a suitable carriage and wheels for supporting same, a frame-spring supported and vertically movable on said carriage, a type-drum rotatable on said frame and a gear mounted on the arbor of said drum, a vertical plunger-shaft fixed for rotation in said vertically-movable frame and provided at one end with a handle-knob and at its other with a gear meshing with said drum-gear, and a mechanism actuated and controlled by the movement of said frame and acting upon one

of the carriage-supporting wheels to propel same, for the purpose set forth.

2. A printing-machine comprising therein the following instrumentalities: a carriage 5 and wheels for supporting same, a frame spring-supported and vertically movable on said carriage, a type-drum rotatable on said frame and a gear mounted on the arbor of said drum, an index-pointer and a plunger-shaft fixed for rotation on said vertically-movable frame and provided at one end with a handle-knob, at its other with a gear-wheel meshing with said drum-gear, and having fixed thereon a dial-plate with an indication 15 of characters thereon corresponding with and in the same relative arrangement as those of said type-drum, and a mechanism actuated and controlled by the movement of said frame and acting upon one of the carriage-supporting wheels, for the purpose set forth. 20

3. A printing-machine consisting of a carriage comprising a horizontal platform and opposing pedestals, each having journal-bearings and rearward and transverse portions, two side wheels mounted in said journals, and a roller having an adjustable axis 25 centrally mounted on and supporting said rear portion of the carriage, a frame-spring supported and vertically movable on said carriage, a type-drum rotatable on said frame and a gear mounted on the arbor of said drum, and a vertical plunger-shaft fixed for rotation in said vertically-movable frame and provided at one end with a handle-knob and at 35 its other end with a gear meshing with said drum-gear, substantially as described.

4. A printing-machine consisting of a carriage comprising a horizontal platform and opposing pedestals, each having journal-bearings and rearward and transverse portions, two side wheels mounted in said journals, and a roller centrally mounted on and supporting said rear portion of the carriage and adapted to be adjusted in varying vertical planes, a frame-spring supported and vertically movable on said carriage, a type-drum rotatable on said frame and a gear mounted on the arbor of said drum, a vertical plunger-shaft fixed for rotation in said 45 vertically-movable frame and provided at one end with a handle-knob and at its other with a gear meshing with said drum-gear, and a mechanism actuated and controlled by the movement of said frame and acting upon one of the carriage-supporting wheels, substantially as described. 55

5. In a printing-machine, the carriage, supporting side wheels, at least one of which is provided with projecting teeth, a rear wheel 60 hung to said carriage, a frame vertically movable on the carriage and a type-drum carried thereby, and a vertically-reciprocating pallet on said frame having an inclined face in position to engage one of the teeth of said wheels, whereby the tooth is pressed to one side and the wheel partly rotated by said

pallet engagement, all in combination, substantially as described.

6. In a printing-machine, the combination, with the carriage and the supporting side wheels provided with the teeth or pins 47, and a rear wheel or roller, of the frame C, spring-supported and vertically movable on said carriage, a type-drum rotatable on said frame and a gear mounted on the arbor of said drum, a vertical plunger-shaft fixed for rotation in said vertically-movable frame and provided at one end with a handle-knob and at its other with a gear meshing with said drum-gear, and wheel rotary devices on suitable side portions of said frame C, adapted to act on the pins of said wheels, substantially as described. 75 80

7. In a printing-machine, the carriage, the supporting side wheels, at least one of which has projecting teeth or pins, a rear wheel or roller hung in the carriage, a frame C, spring-supported and vertically movable on the carriage, a pallet pivoted on said frame in position to engage the teeth of said side wheel, and a spring-check engaging said pallet, all in combination substantially as described. 85 90

8. In a printing-machine, substantially as described, the combination, with the vertically-movable frame C, provided with a guideway, of an apertured guard-plate *o*, having a stem fitting in said guideway, and a spring for maintaining said guard depressed and an abutment to limit the downward depression of said guard, for the purpose set forth. 95 100

9. In a printing-machine, substantially as described, the combination, with one of the legs *i* of the vertically-movable frame and the tubular guideway 42 thereon, provided with the slot 43, of the guard comprising the apertured plate *o* and the stem 40, which plays through said tubular guideway and is provided with the stud 44, movable in said slot, and the spring 45, as described and shown. 105 110

10. The combination, with the rear extension of the frame B, provided with the vertical bearing-socket 12 and the pin 17, of the stirrup-frame having the perforated extension 15 and the spindle 10, a roller carried by said stirrup-frame, the spring applied on said spindle, and all substantially as and for the purpose described. 115

11. In a printing-machine, in combination, a carriage B, consisting of the upper platform *a*, having the socketed boss provided with the seat 18, the pedestals having the vertical ways 19, the rear extensions *e*, and cross portion *f*, the bracket 37, the post 36, the roller adjustably mounted on said cross portion, the side wheels having the pins 47 mounted on the frame B, the frame C, comprising the cross-plate *j*, having the index-pointer 29, vertical legs *i i* playing through the said pedestal-ways, and the horizontal axle 22, supported between and rotatable on the bottom portion of said legs, the type-drum hav- 120 125 130

ing the perforations 35 and the gear 27 carried on said axle, the plunger passed through said plate *j*, being rotatable therein and through said socketed boss, carrying on its upper portion the handle-knob and the dial *m* and on its lower portion the gear 26, the plates H H, movable with said frame C, each

provided with the spring pallet and click, and a type-guard carried on said frame C, all substantially as and for the purpose described.

SAMUEL C. HURLBUT:

Witnesses:

WILLARD A. RICE,
SIDNEY E. CLARKE.