(No Model.) 2 Sheets—Sheet 1.

L. DART.

TYPE WRITING MACHINE.

No. 432,479. Patented July 15, 1890.

Fig. 1.

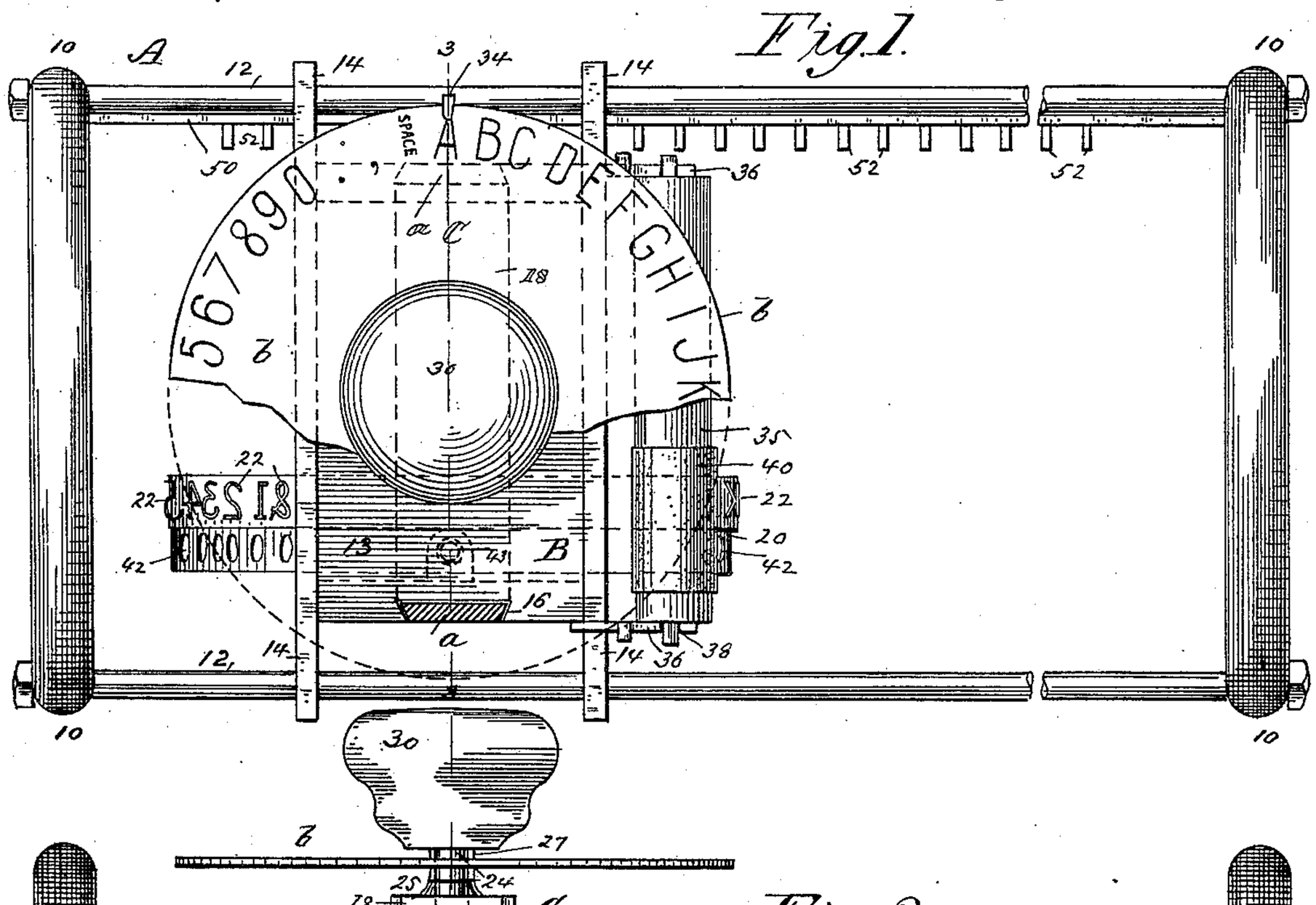


Fig. 2.

Witnesses,
Wm. F. Fellows.
C. M. Chamberlain.

Inventor, Lewis Dart,
By his Attorneys, Chapin & Co

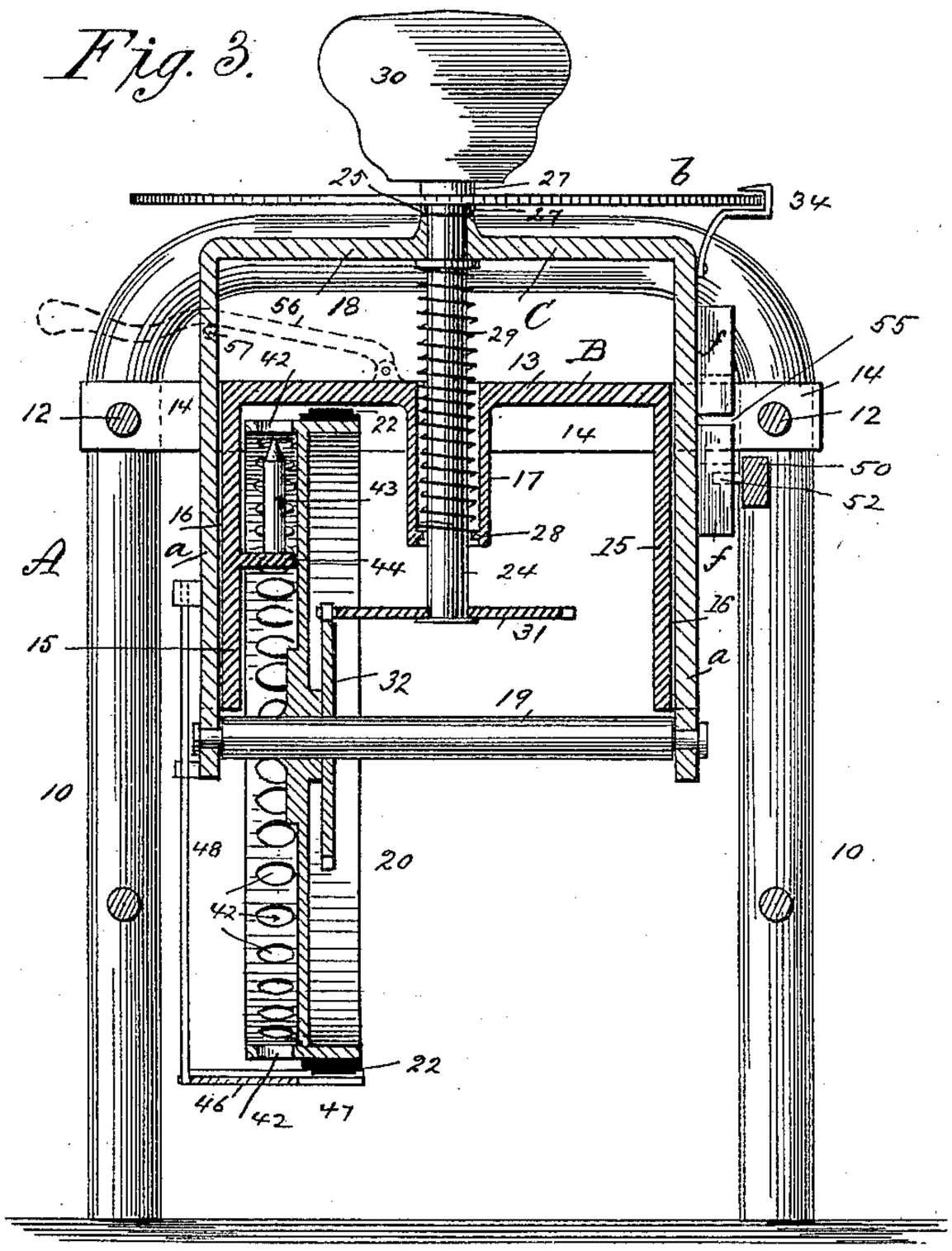
(No Model.) 2 Sheets—Sheet 2.

L. DART.

TYPE WRITING MACHINE.

No. 432,479. Patented July 15, 1890.

Fig. 3.



C

Fig. 4

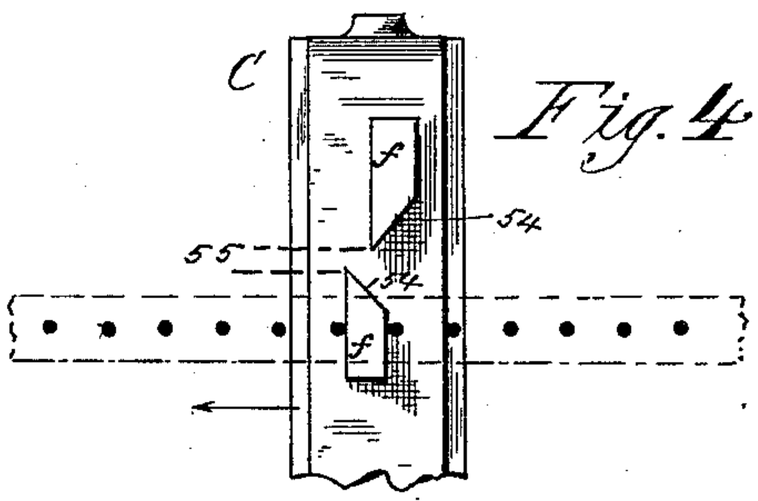
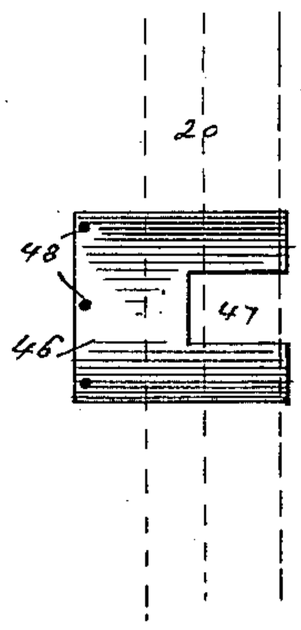


Fig. 5.



Witnesses

Wm. F. Bellamy

G. W. Chamberlain.

Inventor,

Lewis Dart,

By his Attorneys, Chapin & Co

UNITED STATES PATENT OFFICE.

LEWIS DART, OF HARTFORD, CONNECTICUT; WILBUR E. GOODWIN (ADMINISTRATOR OF SAID LEWIS DART, DECEASED) ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE TYPE-WRITING MACHINE COMPANY, OF SAME PLACE.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 432,479, dated July 15, 1890.

Application filed October 3, 1888. Serial No. 287,111. (No model.)

To all whom it may concern:

Be it known that I, LEWIS DART, a citizen of the United States, residing at 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 that class of type-writing machines wherein a series of type or printing faces are arranged on the periphery of a rotatable drum and are successively brought into a proper position for presentation to imprint the character denoted thereby on a then bodily depression of the said drum, the object of the present invention being to improve and render more efficient machines of the before-mentioned class; and to this end 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 sheets of drawings, forming part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the machine with a portion of the indicating dial-plate broken away to permit of better illustration, and a part of a vertically-movable frame in horizontal cross-section. Fig. 2 is a side elevation of the machine, and Fig. 3 is a cross-section thereof on the line 3 3, Figs. 1 and 2. Figs. 4 and 5 are views in detail to be hereinafter referred to.

This machine comprises three frames, viz: a stationary main frame A, a frame or carriage B, horizontally movable on and longitudinally of the said frame A, and a frame C, directly carrying the printing devices, spring-supported from and vertically movable on the said carriage B. The said main frame A is of rectangular form composed of opposing end posts 10 10 and parallel horizontal rails 12 12 between them, said posts and rails being rigidly joined. The longitudinally-moving carriage B consists of a horizontal supporting-platform 13, having rigidly connected thereto horizontal and laterally-extending bars 14, which are perforated to embrace said rails 12 of the main frame A and permit of a lengthwise slide thereon, and of downwardly-extending hangers 15, having vertical guide-ways 16 therein; and said platform 13 also has formed on or attached to the central portion thereof a downwardly-extending socketed or tubular bearing 17. The frame C is of stirrup or yoke form, the vertical legs *a* thereof playing through the said ways 16 of the hangers 15 of the frame B, and are rigidly united at their upper ends by the cross-plate 18. The said legs of the frame C extend below the lower ends of the hangers 15, and have formed therein bearings for a transverse arbor 19, on which is mounted for rotation therewith the drum 20, carrying the type 22. Disposed within and playing vertically through the said tubular bearing-socket of the carriage-frame B is a plunger-shaft 24, which also passes through the cross-plate 18 of the frame C. The said plunger-shaft is capable of a free vertical movement through the said tubular socket 17, and also of a rotary movement therein, and the plunger is also capable of a rotary movement in its bearing 25 in the said plate 18; but any vertical movement thereof in, through, and with relation to said plate is prevented by the shoulders or collars 27 27 on the shaft above and below the plate 18. The said tubular socket 17 is at its lower end of a contracted diameter to fit and form a guiding-bearing for the said plunger-shaft 24, and to also form the rest 28 for the lower end of the spiral spring 29, which embraces the plunger-shaft and bears for an upward pressure against the under side of the cross-plate 18. A circular horizontal dial-plate *b* is fixed on the plunger-shaft above the frame C, above which, on the said shaft, is a handle-knob 30 for convenience in its manipulation, as will be hereinafter described. A horizontal spur-gear 31 is fixed on the lower end of the plunger-shaft, and on the transverse type-drum arbor 19 a spur-gear 32 is fixed in a vertical plane, its teeth engaging the teeth of the first-named gear. The type or impression faces 22 to represent letters of the alphabet, numerals, punctuation-

marks, and other characters, as desired, and a short open space between two of the characters are arranged in alignment around the periphery of the said drum 20, with their tops and bottoms toward the rear and front sides of the machine, as shown, and the circular dial-plate *b* on its upper surface near its edge has a similar indication of the characters and space formed on the type-drum and in corresponding successive arrangement.

34 represents a stationary index-pointer on the carriage C, overlying the revolving rim of the dial-plate *b*.

Through the gearing between the plunger-shaft and type-drum arbor 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 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 the axis of the drum—and then on a forcing down of the said carriage 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 into contact. The type-faces are to be of any suitable practicable form, and are usually formed of rubber, and may be all molded on a single band, which is secured on the periphery of the drum, and for its inking an inking-roller 35 is mounted to bear on the peripherally-arranged type-face and to roll thereon and therewith when the drum in its normal or uppermost position is rotated.

The support for the inking-roller consists of a pair of bracket-plates 36, hung on the end portions of one of the cross-bars 14 of frame B and braced the one from the other by the rod 37, and each bracket-plate is provided with a bearing-socket 38 for the axial end pintles 39 of the ink-roller body. It is preferred to make the roller-body of solid metal and to provide thereon one or more layers 40, of felt or other absorbent material, for holding the ink. By making the body heavy it will bear with suitable pressure upon the type-periphery and give by rising slightly in its open bearings on the upward spring movement of the drum to accommodate itself to any inequality in the adjustment of the parts, so that its ink-supplying bearing will always be insured. 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 42. A rigid post 43 stands on a bracket 44, formed on the inside of one of the hangers of the carriage B, and above and in a vertical plane through 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 in the downward forcing through the knob 30 of the frame C and the printing-drum the drum will then by one of its said rim-perforations 42 pass over and about the said post, the said post and perforation engagement insuring the drum against any undue rotary motion and a proper presentation of the desired type. A guard-plate 46 of thin metal or material, is placed below the lower central portion of the drum-rim, having an opening 47 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 is rigidly suspended from the frame C to move therewith, and, as shown, is hung at the lower ends of the pendent brace-rods 48.

A longitudinal step-by-step motion is imparted to the carriage B and the frame C and printing devices carried thereby on each depression of the latter frame to imprint or space, and the means for producing such motion consists in providing on a longitudinal rail 50, between two of the end posts of the main frame A, a series of horizontal transverse rigid pins 52 52, spaced to correspond with the degree of separation desired between the letters.

On the side of one of the hangers of the frame C are two abutment-blocks *f*, having inclining faces 54, the points of which are toward each other and one slightly above the other, and the said blocks are located one slightly in advance of the other, as shown in Fig. 4, which is a view of the opposite hanger from the one seen in Fig. 2, and illustrating the relative location of the said transverse pins and said inclined blocks. On the downward movement of the frame C the inclined edge of the upper block will exert force on the said frame in a longitudinal direction, and as no movement thereof is permitted in relation to the carriage B both frames B and C will be moved longitudinally a short distance forward, or in the direction of the arrow, Fig. 4, and so that on the upward movement of the said frame the inclined face of the lower block will also exert a similar force on the carriages to feed them forward, the length of the steps occurring on the downward movement and on the upward movements of the said frame being equal to the distance between the center of one imprinted character and the next succeeding one, and it will be seen that the effect of the one inclining-block in one movement of the frame is to place the latter in such a position that the other block thereof will be in a position to take against a pin 52 in the other movement of the frame.

The machine is to be used mainly for marking packages, boxes, &c., and is to be placed thereupon, having the carriage B and frame C at or toward the left-hand end. When a line has been printed under the movements of the parts before described and the frames B and C have moved forward and it is desired to replace the frames again at the left, the said frame C is depressed, so that the space-

opening 55 is level with the said horizontally-arranged pins, when the said frames are free to be moved back. This depression for the said backward slide may be had by the hand simply holding the frame C down at the required point, and, if desired, a lever 56 may be pivoted on the platform 13 to swing against a pin 57 on one leg of frame C, the degree of downward swing of the said lever to accomplish the proper depression of the frame C being limited by any suitable abutment—as, for instance, by its striking against one of the rod-slides 12, all as indicated in the dotted lines in Fig. 3.

When desired to print in another line, the machine is bodily lifted and its position changed, according to the position desired for the new line.

In lieu of inking the type by an inking-roller located, as described, for a bearing on the type-drum, an inking-ribbon may be placed below the drum, substantially in the manner of its use in many type-writing machines, as well known, in which event, however, the type on the drum would necessarily be formed of a hard material.

What I claim as my invention is—

1. In a type-writing machine, in combination, a main supporting-frame A, having a series of transverse pins in longitudinal arrangement, a carriage B, movable horizontally and longitudinally on said main frame, and a frame C, spring-supported and vertically movable on said carriage B, provided with the blocks *f*, having the inclined edges 54, arranged for operation on said pins, substantially as described, and a rotatable type-drum mounted on said frame C, having on its arbor a gear, and 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 the said drum-gear, substantially as described.

2. The main supporting-frame having the parallel longitudinal slide-rails 12 12, and the carriage B, comprising the platform 13, the cross-bars 14, resting for a slide on said rails 12, the hangers 15, having the vertical ways 16 therein, and the vertical tubular socket having the contracted bore to form the rest 28, combined with the frame C, comprising the cross-plate 18, and the legs *a*, playing through the said ways 16, and having mounted at the lower ends of said legs the shaft 19, carrying the drum 20, provided with the series of type in alignment around its periphery, and the spur-gear 32, the index-pointer 34, secured on one of said legs, the vertical plunger-shaft fixed for rotation in said vertically-movable frame and playing through said tubular socket, provided at its one end with a handle-knob, at its other with the spur-gear 31, and having the dial-plate *b*, with indicating-characters thereon corresponding with those of the said drum, and the spring coiled around said plunger-shaft bearing by its lower end on said rest 28 and by its upper end to exert an upward pressure against the cross-plate 18, substantially as described.

3. The combination, with the main frame A, provided with the transverse pins 52, in longitudinal arrangement, and the carriage B, horizontally and longitudinally movable on said main frame, of the frame C, spring-supported and vertically movable on said carriage B, having the blocks *f*, provided with the inclined edges 54, all arranged for operation, substantially as described, for the purpose described.

4. The combination of the carriage B, having the hangers 15 15, and the bracket 44 and post 43, supported from one of said hangers, the spring-supported frame C, provided with the index-pointer 34, having the legs *a a* vertically guided in said hangers, carrying at their lower ends the drum provided with the series of type in alignment around its periphery, and having through its rim perforations 42, corresponding with said type, arranged with their centers in a vertical plane coincident with that of said post 43, and the spur-gear 32, 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, at its other with a spur-gear, and having the dial-plate *b*, with the indicating-characters, as described, and all arranged for operation substantially as and for the purpose described.

LEWIS DART.

Witnesses:
WM. L. BELLOWS,
G. M. CHAMBERLAIN.