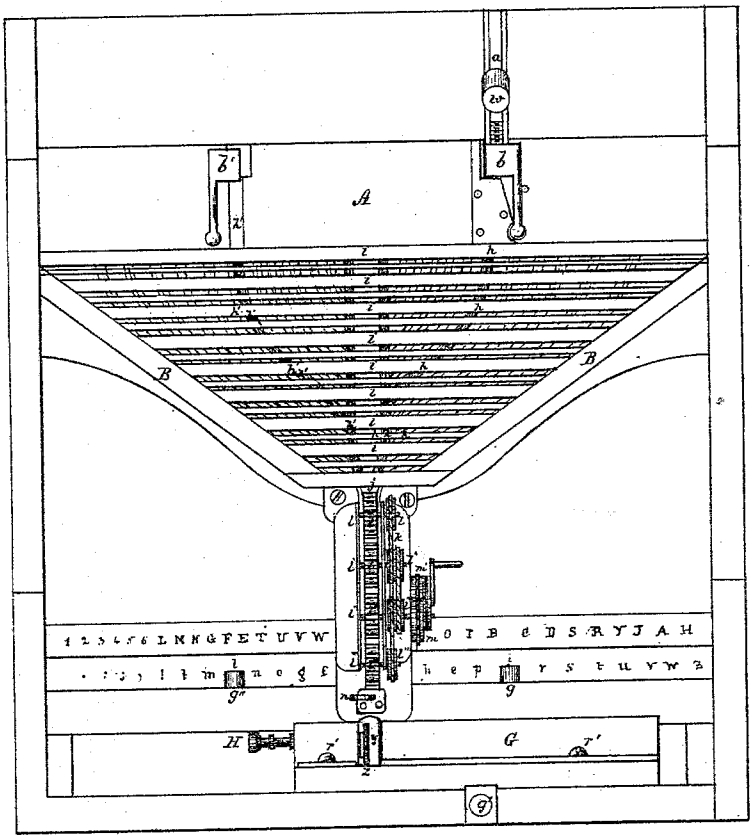
5 Sheets--Sheet 1.

JOHN M. FARNHAM.

Type-Setting Machine.

No. 126,944. Patented May 21, 1872.

Fig. 1. Front View.



Witnesses.

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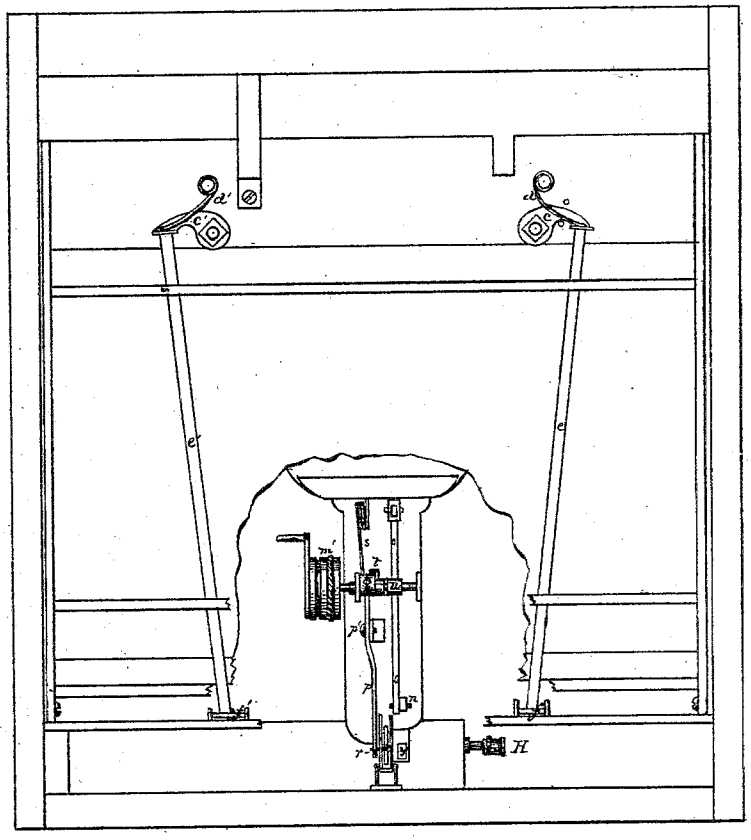
5 Sheets--Sheet 2.

JOHN M. FARNHAM.

Type-Setting Machine.

No. 126,944. Patented May 21, 1872.

Fig. 2. Back View



Witnesses.

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5 Sheets--Sheet 3.

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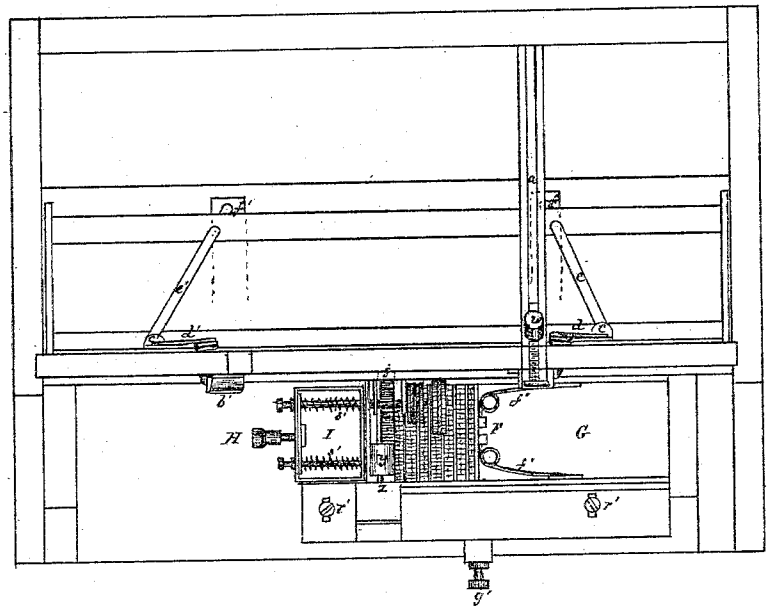
Type-Setting Machine.

No. 126,944. Patented May 21, 1872.

Fig. 3. Top View



Witnesses.

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5 Sheets--Sheet 4.

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Type-Setting Machine.

No. 126,944. Patented May 21, 1872.

Fig. 4 a.

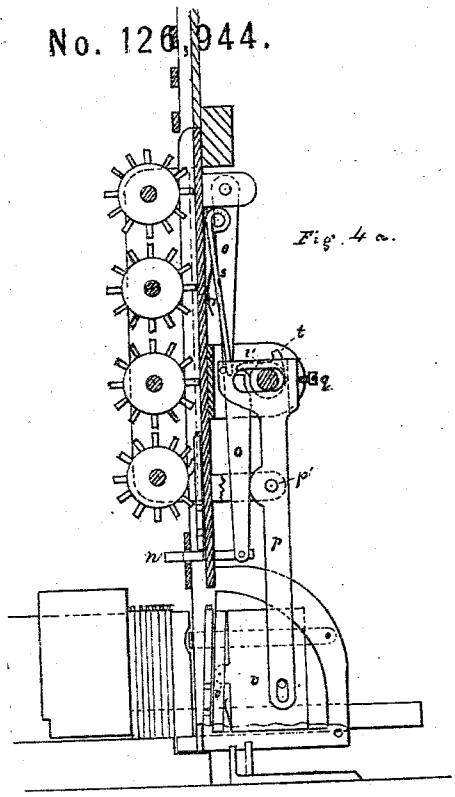


Fig. 4.

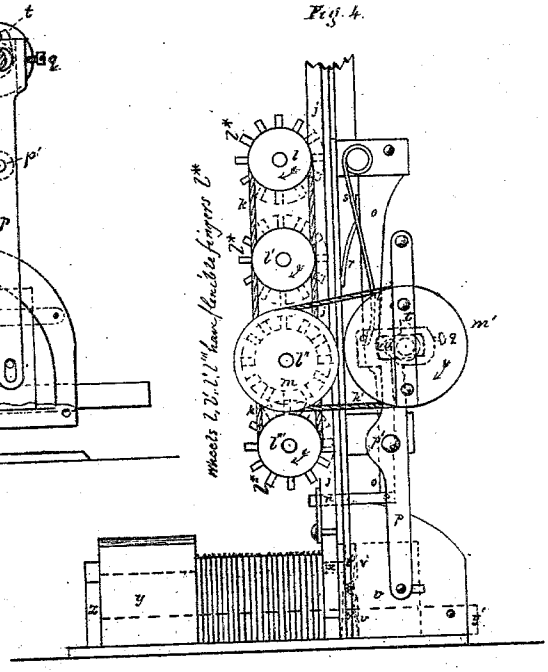
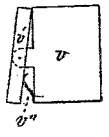


Fig. 4. b.



Side View of Regulating mechanism (Enlarged)

Witnesses.

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Type-Setting Machine.

No. 126,944. Patented May 21, 1872.

Fig. 5.

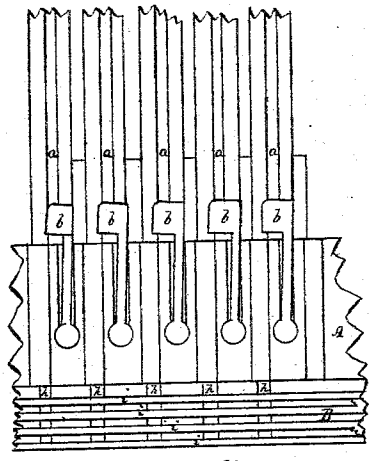


Fig. 6.

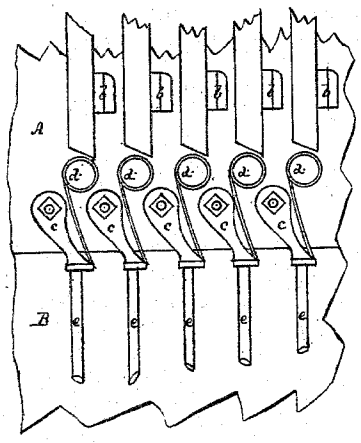


Fig. 7.

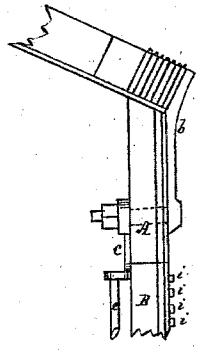
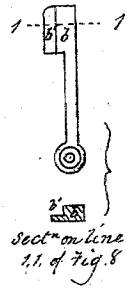
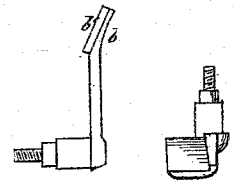


Fig. 8.



Section on line 1, 1, of Fig. 8

Fig. 9.



Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN M. FARNHAM, OF HARTFORD, CONNECTICUT, ASSIGNOR TO GEORGE B. HAWLEY AND STILES D. SPERRY, OF SAME PLACE.

IMPROVEMENT IN TYPE-SETTING MACHINES.

Specification forming part of Letters Patent No. 126,944, dated May 21, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, JOHN M. FARNHAM, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Type-Setting Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, whereby a person skilled in the art can make and use the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

Like letters in the figures indicate the same parts.

Nature and Objects of the Invention.

My invention consists in new devices for releasing the types from the troughs in which they are placed; in improvements, hereinafter described, in the channels or grooves by which they are conducted to the setting mechanism; in improved devices for regulating their passage through the main channel, to which all the types are led by their respective grooves, and for letting them out one by one to the setting mechanism and composing-stick.

The objects of my invention are to insure a rapid and easy motion of the types from the troughs in which they are originally placed to the main channel in which the regulator is situated at the instant the proper key is touched, and to cause them to pass regularly and evenly through the regulator with a positive motion at a determined speed, so that they can be delivered one by one through a valve opening and closing automatically at certain intervals, and thereby preventing all clogging or other irregularity in the delivery of the types to the setting mechanism. It also has for its object a more certain and positive motion in setting the types in the composing-stick.

Description of the Accompanying Drawing.

Figure 1 shows a front view of my improved machine, having all but the *i* and *l* keys, valves, and receptacles for the types omitted. Fig. 2 shows a back view of the same with a part of the frame removed to show some of the working parts of the regulator. Fig. 3 shows a top view of the same with several lines of leaded type in the galley already set. Fig. 4 shows a side view of the regulating mechanism drawn to an enlarged scale. Fig. 4^a shows the same view as Fig. 4, with some of the front parts detached to show those in the rear. Fig. 4^b is a detached view of the packer. Figs. 10 and 11 show detached views of the device for packing the type in the galley. Fig. 5 shows a front view, Fig. 6 shows a back view, and Fig. 7 shows an end view of the mechanism for letting the types out from their troughs or bores into the channels which conduct them to the regulator. The above three figures also show the arrangement side by side of the type-receptacles and bands for releasing the types one by one, as they would be in an operating machine. Fig. 8 shows a front view, and Fig. 9 shows a side view of the band *b* detached.

General Description.

a is one of the receptacles or boxes in which the types are placed. It consists of an inclined trough, in which the types are arranged singly with the face up. They are pressed down toward the band *b*, if necessary, by a sliding weight or follower, *w*. *b* is a band or valve for holding the types in the trough or box *a*, and for pressing the foremost type laterally out of the trough *a* and allowing it to fall into the groove *h* a little to one side of *a*, through which it descends. There is a nick or shoulder, *b'*, on the face of the band *b*, shown in Figs. 8 and 9, which holds one type and moves it with the band. The band *b* is connected by a central pin passing through the frame to the arm *c* on the back, which is operated by the connecting-rod *e*, on which it simply rests, and by the spring *d*. *f* is a lever, having at one end the key *g*. When *g* is pressed down the rod *e* is raised and the band *b* moved so as to release a type from the trough *a*. When the key is released the spring *d* moves the band *b* back again to its place, and allows another type to drop into the notch in the face of *b*, ready for the next movement to press it to one side and allow it to fall into the groove *h*. *h h'*, &c., are grooves or channels in the board B, through which the types descend to the main channel *j*. *i i*, &c., are strips or slats across the grooves *h h'*, &c., by which they are partially covered, keeping the types in the grooves,

and permitting them to move rapidly without resistance. The openings between the slats serve for the purpose of cleaning the passages, but are more especially for the escape of the air in front of the type as it descends. If the channel is entirely covered the air within the tube retards the passage of the type. The channels *h h'* can also be partially covered at the sides, leaving a longitudinal slit through the middle for the escape of the air and retaining the types by the sides. *j* is the main channel, to which all the channels *h h'*, &c., converge, and into which the types are delivered consecutively as the keys are touched by the operator. *l l' l'' l'''* are revolving wheels, having on their peripheries a series of flexible arms made of rubber or other suitable material, which enter into the channel *j* and rest against the types as they pass downward. These wheels revolve in the direction of the arrows, Fig. 4, so that they draw the types downward as they turn. The wheels hold and regulate the types in their descent, so that they cannot descend too rapidly, and if the valve or stop below detains them the flexible arms pass over without advancing them. By this means, also, the types are pressed against the back of the channel *j* and prevented from passing by or crowding each other. *m* is a pulley on the axis of one of the wheels *l*, &c., by which motion is communicated to them all by means of the belts *k*. *m'* is a pulley, which drives *m* by means of the belt *k'*. *n* is a stop or valve in the channel *j*, which arrests the descent of the column of types in the channel above it, except when it is sprung so as to allow one type to pass. This is done quickly, so that the wheels *l*, &c., above will not bring the next one down to it until it is again closed. This valve *n* is operated by means of the lever *o* and a cam, *u*, on the arbor of the wheel *m'*. The cam presses the lever forward and opens the valve, which returns to its place, under the influence of the spring *r*, as soon as the cam drops into the notch in the lever *o*. *p* is a lever turning on the axis *p'*. It has its upper end operated by a cam, *t*, on the arbor of the wheel *m'*, against which it is pressed by the spring *s*, so that the lower end of the lever is pushed forward by the cam at each revolution of *m'*. *q* is a set-screw for regulating the throw of the lever *p* by the cam *t*. *v* is a plunger or packer for pushing forward the type into the composing-stick, and is operated by the lever *p*. On its front, next to the type, is an inclined piece, *v'*, shown by dotted lines in Fig. 4, for receiving the type as it falls from the catch or valve *n*. This inclined piece is held in its position by a small spring, *v''*, which yields as the type is pushed forward, so that it is placed in its proper position against those that have been previously set. As the type falls on the inclined surface of *v'* it is prevented from turning by entering the wedge formed between the inclined face of *v'* and the type already set. *x* is a small spring on the side of the stationary frame for retaining the last type set and preventing it from following *v'* as it is drawn back. The wheel *m'*, which operates the regulating and releasing mechanism, is driven by a belt from some pulley outside of the machine, and not shown in the drawing. *y* is a sliding block, guided by the partition *z*, against which the types are set by the packer *v v'*, and which yields as each successive one is placed in the line. It extends over the partition *z* and has one leaf on each side. On the side opposite that on which the types are set there is a long guide or "tail," *y'*, serving to keep the block steady. Its motion is regulated by a spring working against the guide *y'*. The part to the right is for the purpose of retaining the leads in their proper position while the types are being set. The opening between the two parts of the block serves to introduce the leads next to the partition *z* as the work progresses. The aperture can be made flaring, so as to introduce the leads more easily and rapidly. G is the galley for holding the types as they are set line after line. *g'* is a clamp-screw, by loosening which the galley can be removed from the machine. F is a slide for holding the types in place, which yields as each line is successively pushed forward. *f'' f''* are springs pressing against the sides of the galley to retain the slide F in its proper position. H is a knob for pushing up each successive line in the galley. It operates by means of the bottom plate I upon the partition *z* to push the line of types last set forward in a body in the line of the galley G. *s' s'* are springs for drawing back the partition *z* to its original position in order to set a new line of types. *r' r'* are regulating-screws for adjusting the width of the galley. A regulating-screw in H fixes the distance the partition *z* is moved to suit different-sized type.

The boards A and B are separate pieces, A being removable with its font of type for the purpose of substituting another when desired. There can also be several boards B in each machine, with grooves or channels, all leading into one main channel, *j*. These would be placed one back of the other, and each have its separate set of valves and keys to operate them.

The operation of my invention is as follows: The end type of any row is resting in the step or nick of the band *b*. On pressing the key *g* this type is pushed sidewise and falls into the groove *h*, which conducts it to the main channel *j*. Other keys are successively pressed as rapidly as desired to keep the channel *j* full. The wheels *l*, &c., being all the time revolving rapidly, carry the types downward and keep them pressed against the stop or catch *n*. This latter releases one type at every turn of the wheel *m'*, and the packer *v v'* catches it the moment it falls and pushes it forward against the row in the composing-stick between the side of the partition *z* and the face of the slide F. If it is desired to have the

work leaded, leads are placed against the partition *z* and the slide F, and the types are set between them. Successive leads are introduced through the opening in the block *y*, so that they lie close to the partition *z*. As the types are successively placed in the row the block *y* is pushed forward until the line becomes full. The knob H is then pressed, which moves the whole line to the right a distance determined by the position of H on its screw-spindle. On releasing the knob H the partition *z* moves back to its place and the block *y* is pushed up against the setting mechanism, ready for a new line.

Claims.

What I claim as my invention is—

1. The construction and arrangement of the band *b* with a recess, *b'*, by which it holds the types in the trough or box *a*, and holds one type in the nick ready to be moved to one side by pressing the key, substantially as herein described.

2. The grooved board B, in combination with the slats *i i*, for the purpose herein set forth.

3. Partially-covered grooves *h*, for the descent of the types, which shall retain them, but permit the free egress of the air, substantially as described.

4. The wheels *l l' l'' l'''*, with their flexible arms for regulating the descent of the types, as herein described.

5. The catch or stop *n*, when used in combination with one or more wheels with flexible arms, as herein described.

6. The plunger or packer *v*, with its inclined face *v'*, when constructed substantially as described.

7. The herein-described arrangement of the cams *t* and *u* and the levers *o* and *p*, for operating the stop *n* and the packer *v* at the proper instant of time to release the type and push it forward in the composing-stick, substantially as described.

8. The block *y*, constructed substantially as described, having an aperture for the purpose of introducing leads, as herein specified.

9. The devices shown by H, I, *s'*, and *z*, for pushing the line of type already set along the galley, when constructed and arranged substantially as described.

Witnesses: J. M. FARNHAM.

THEO. G. ELLIS,
S. D. SPERRY.