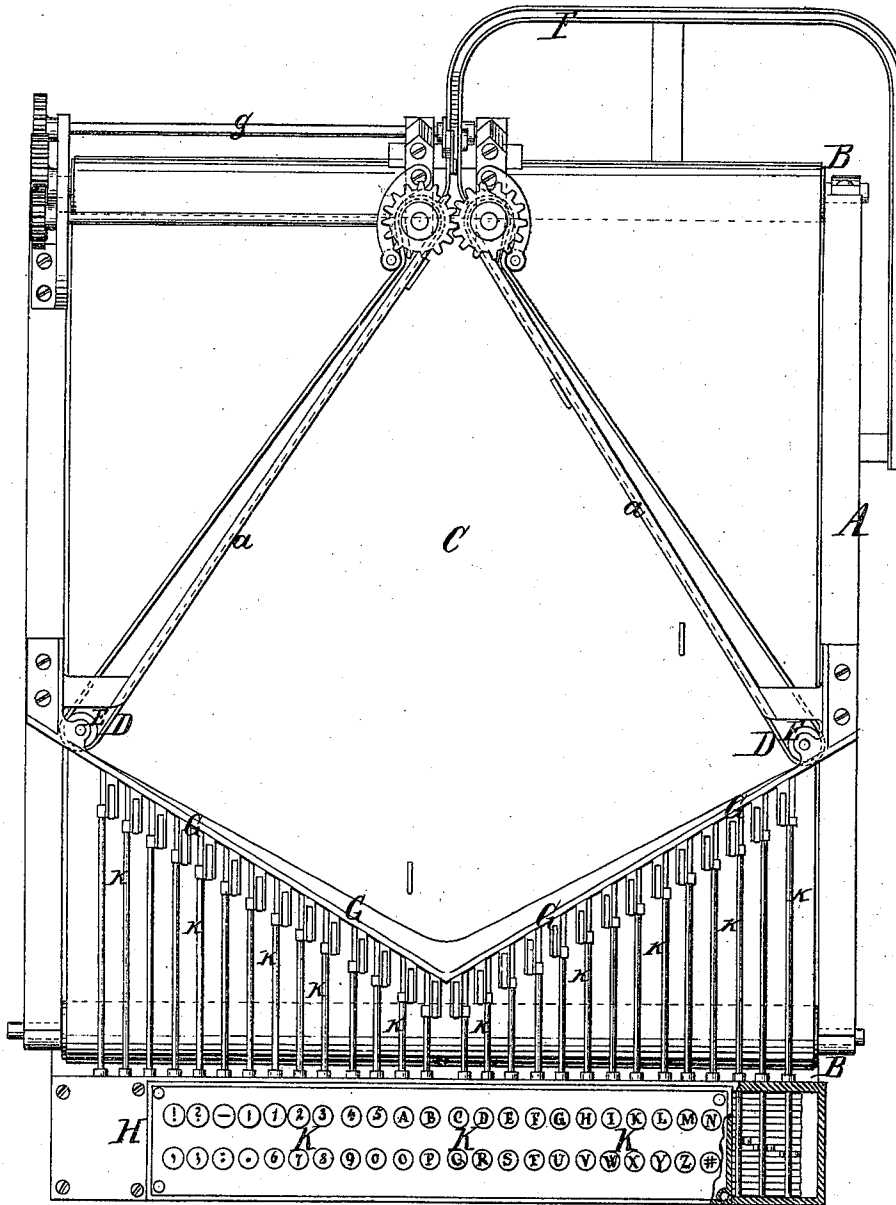


A. C. RICHARDS.
TYPE-SETTING MACHINE.

No. 170,593.

Patented Nov. 30, 1875.

Fig:1.



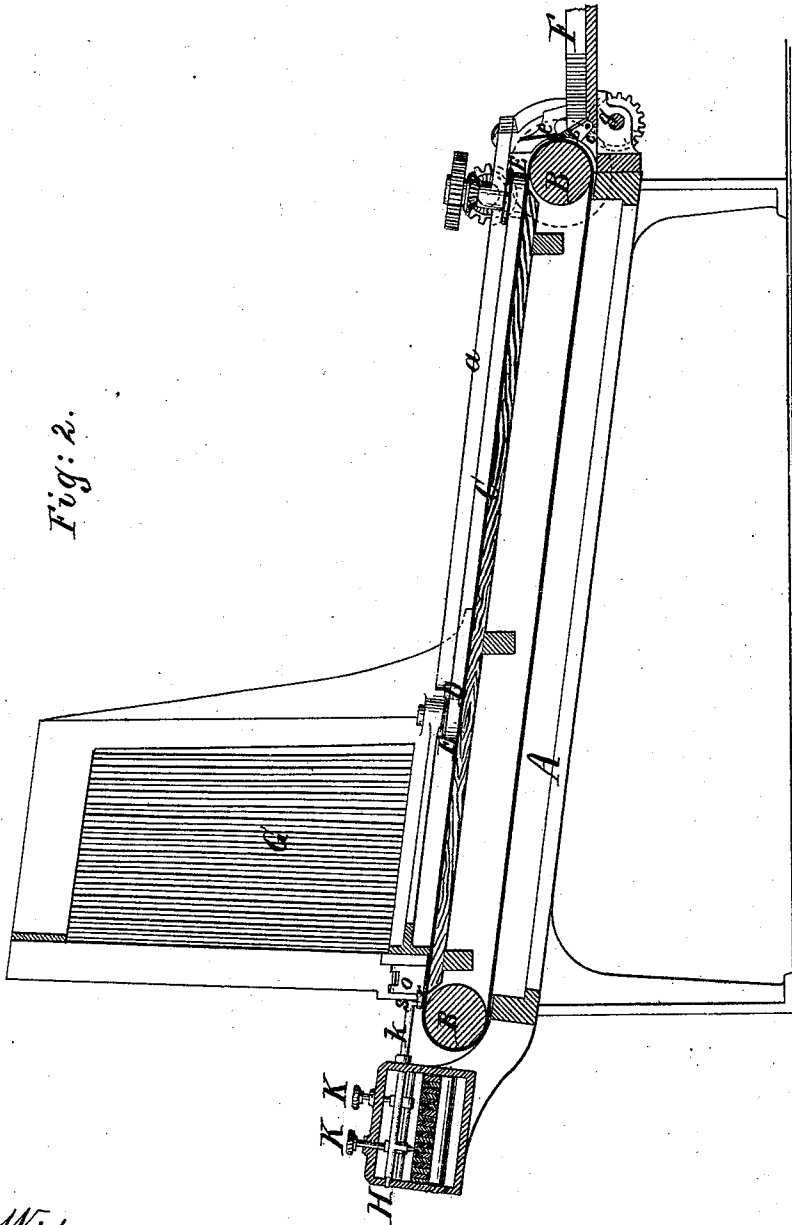
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Fig: 3.

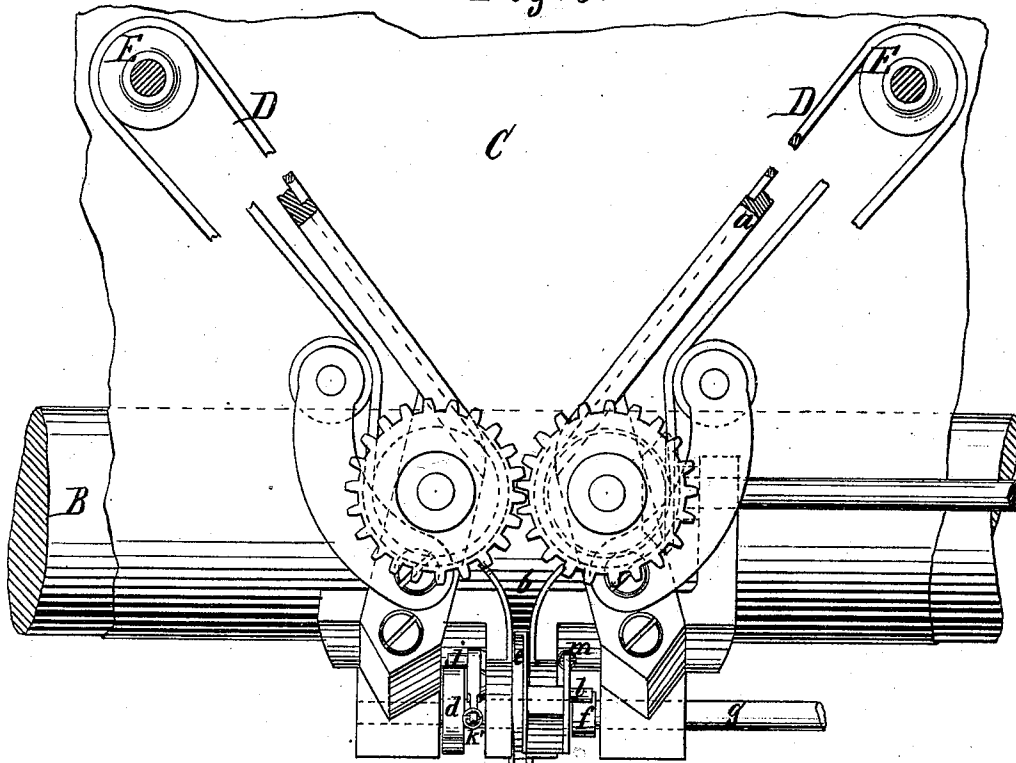


Fig: 6.

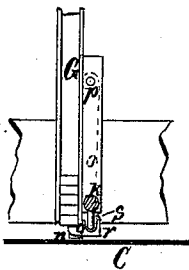


Fig: 7. Fig: 8. Fig: 9.

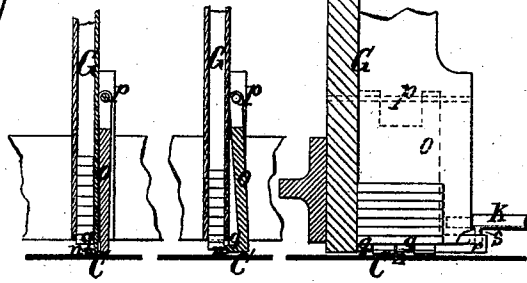
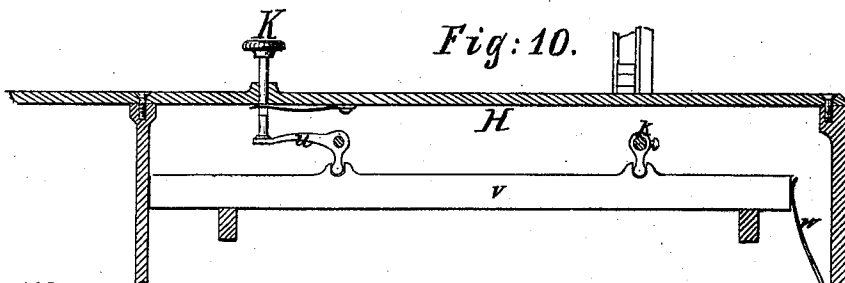


Fig: 10.



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Fig: 4.

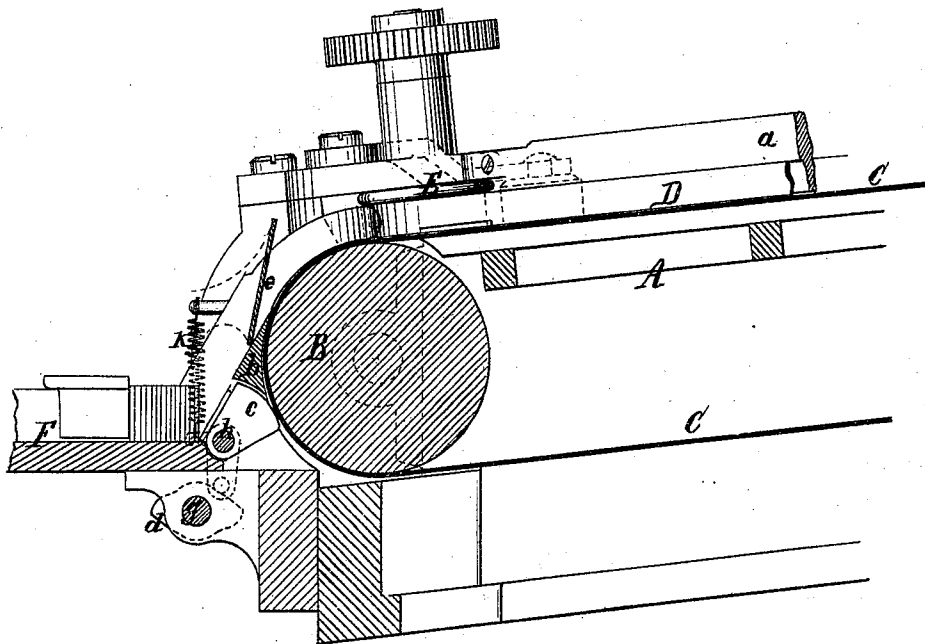
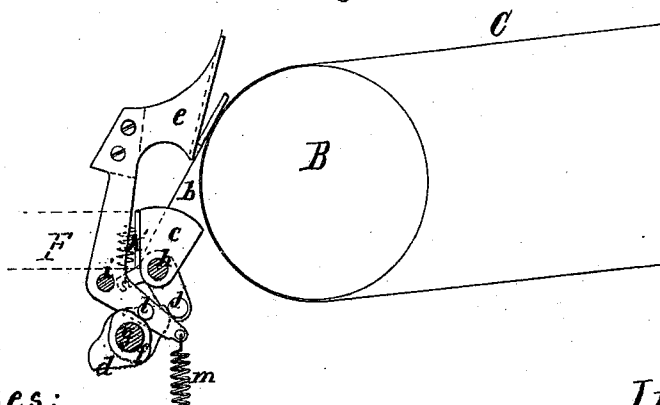


Fig: 5.



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UNITED STATES PATENT OFFICE.

AUGUSTUS C. RICHARDS, OF NEW YORK, N. Y.

IMPROVEMENT IN TYPE-SETTING MACHINES.

Specification forming part of Letters Patent No. **170,593**, dated November 30, 1875; application filed February 2, 1875.

CASE A.

To all whom it may concern:

Be it known that I, AUGUSTUS C. RICHARDS, of the city, county, and State of New York, have invented a certain new and useful Improvement in Type-Setting Machines, of which the following is a specification:

This invention is illustrated in the accompanying drawing, in which—

Figure 1 represents a plan or top view. Fig. 2 is a longitudinal vertical section. Fig. 3 is a plan or top view of the receiving mouth and channel in a larger scale than the previous figures. Fig. 4 is a vertical section of the parts represented by Fig. 3. Fig. 5 is a side view of the same in a different position. Figs. 6, 7, 8, and 9 are different views of the type-cases. Fig. 10 is a longitudinal section of the key-board.

Similar letters indicate corresponding parts.

This invention relates to that class of type-setting machines in which two converging belts are employed, which move at a different speed from the carrying-apron, and serve to discharge the types, in connection with the carrying-apron, into the proper position within a channel provided for their reception.

My invention consists in the combination, with the type-receiving channel, of an oscillating finger, an inclined plane, and a vibrating stop, whereby each type is raised to an upright position as it reaches the receiving channel. The type are compelled to pass successively into the receiving-channel, all of which will be hereinafter described, and specifically pointed out in the claim.

In the drawing, the letter A designates a frame, which forms the bearings for two rollers, B B, round which extends an endless apron, C. The frame and apron are, by preference, placed in an inclined position, as shown in Fig. 2. With said apron are combined two belts, D D, which run over pulleys E E, situated above the apron and close to its surface, so that the edges of the belts move in close proximity to the surface of the apron. In order to prevent the inner strands of the belts from rising and from canting over, flanged rails *a* are applied, which catch over the upper edges of said belts. The pulleys E E are so arranged that the belts D D converge

toward the receiving type-channel F, situated at the lower part of the apron C. The converging belts D D are geared together with the carrying-apron C, so that they move with a different velocity. If a type is dropped upon the upper part of the carrying-apron, it is carried down until it comes in contact with one of the converging belts, and by the action of this belt the type is turned, so that it lies close against the inner surface of said belt, and that it moves down toward the receiving type-channel in the required position. On reaching the lower end of the carrying-apron, said type slides down over an inclined plane, *b*, (best seen in Figs. 4 and 5,) which is fastened in front of and close to the lower roller B. Beneath this inclined plane is situated a finger, *c*, which receives an oscillating motion by a cam, *d*, and which is arranged at the mouth of the receiving type-channel F. When this finger is turned back to the position shown in Fig. 4, a type, sliding down over the inclined plane *b*, is received by the outer edge of said finger, and, as the finger rises to the position shown in Fig. 5, the type is brought in an upright position, and at the same time it is forced into the receiving type-channel. With the inclined plane *b* is combined a stop, *e*, which receives a vibrating motion by a cam, *f*, (see Fig. 5,) the motion of which is so timed that no type is permitted to slide down over the inclined plane while the finger *c* is in its forward position, and when the finger has turned back to the position shown in Fig. 4 and a type has dropped down, the stop *e* immediately closes, and thereby the types are compelled to slide down over the inclined plane in succession, and an undue accumulation of types at the mouth of the receiving type-channel is avoided. The cams *d* and *f* are mounted on a shaft, *g*, which is geared together with the lower roller of the carrying-apron, (see Fig. 1,) and the finger *c* oscillates on a rod, *h*, while the stop *e* has its bearing on a rod, *i*. The cam *d* acts on a pin, *j*, secured in the tail-end of the finger, and this pin is held in contact with the cam by a spring, *k*'. The cam *f* acts on a pin, *l*, secured in the tail-end of the stop *e*, and a spring, *m*, serves to keep said pin in contact

with the surface of the cam. (See Figs. 3 and 5.) The types to be set are taken from a series of cases, G, which are placed at the head of the carrying-apron on an angular or circular line, so that the distances from the several cases to the mouth of the receiving type-channel are as near as possible alike, and that the time required for each type from the moment when it has been discharged from its case until it reaches the receiving type-channel will be uniform, or nearly so.

The type-cases consist of narrow channels just wide enough to receive the types. One side of each case is somewhat shorter than the other, and at the bottom end of the long side is formed a sectional lip, *n*, projecting toward the short side, the distance from the upper surface of said lip to the bottom edge of the short side of the case being a little larger than the thickness of the types contained in the case, so that, if the types in a case are permitted to sink down upon said lip, the lowest type can be pushed out beneath the edge of the short side of the case.

To the outside of the long side of each case is attached a gate, *o*, which swings on a pivot, *p*, Figs. 7 and 8, and the bottom edge of this gate is bent inward to form a sectional lip, *q*, the sections of which, when the gate is closed, project between the sections of the lip *n*, so that when the gate is being closed the lowest type in the case (which at that time rests upon the lip *n*) will be pushed out, and then the remaining types are supported by the lip *q*. (See Fig. 7.) If the gate is then thrown open, the types in the case sink down upon the lip *n*. (See Fig. 8.) On the edge of each gate is formed a fork, *r*, Fig. 6, and with this fork engages a finger, *s*, which projects from a rock-shaft, *k*, that extends from the inner side of the key-board H, (see Figs. 1 and 10,) and is acted upon by one of the keys K. This action may be direct, or the keys may be made to act by means of bell crank-levers *u* upon slides *v*, which engage with cranks or fingers formed on or secured to the rock-shafts *k*, as shown in Fig. 10. The gates are closed

by means of springs *w*, which may be made to act on the slides *v* or on the rock-shaft *k*. Whenever one of the keys is depressed, the gate of the corresponding type-case is thrown open, and when the key is released the gate closes, and the lowest type in the case is thrown out and deposited on the carrying-apron C. As this apron moves downward toward the mouth of the receiving type-channel, the type deposited thereon moves in the same direction, and whenever it comes in contact with one of the converging belts it is turned in the proper position to enter the receiving type-channel.

In operating the machine care must be taken to depress the keys in succession, and at suitable intervals, so that no accumulation of types will take place over the stop *e*, or over the mouth of the receiving type-channel. If this precaution is taken, each type will be deposited in the receiving type-channel in the proper position without fail, and the operation of setting types can be carried on with great rapidity.

I do not, in this application, claim the converging belts, nor any feature other than the oscillating finger, inclined plane, and vibrating stop, as such other features may constitute the subject-matter of a separate application for Letters Patent.

What I claim as new, and desire to secure by Letters Patent, is—

The combination, with the type-receiving channel F, of the oscillating finger *c*, inclined plane *b*, and vibrating stop *e*, for preventing the type sliding down the inclined plane while the oscillating finger is delivering the type received into the type-channel, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand this 22d day of January, 1875.

A. C. RICHARDS.

Witnesses:

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E. F. KASTENHUBER.