No. 652,420. Patented June 26, 1900.

H. BURG.

TYPE SETTING MACHINE.

(Application filed Dec. 31, 1897.)

(No Model.)

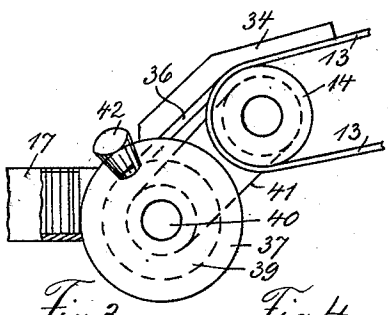


Fig. 3

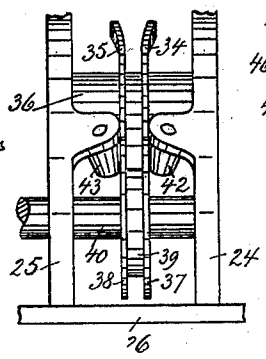
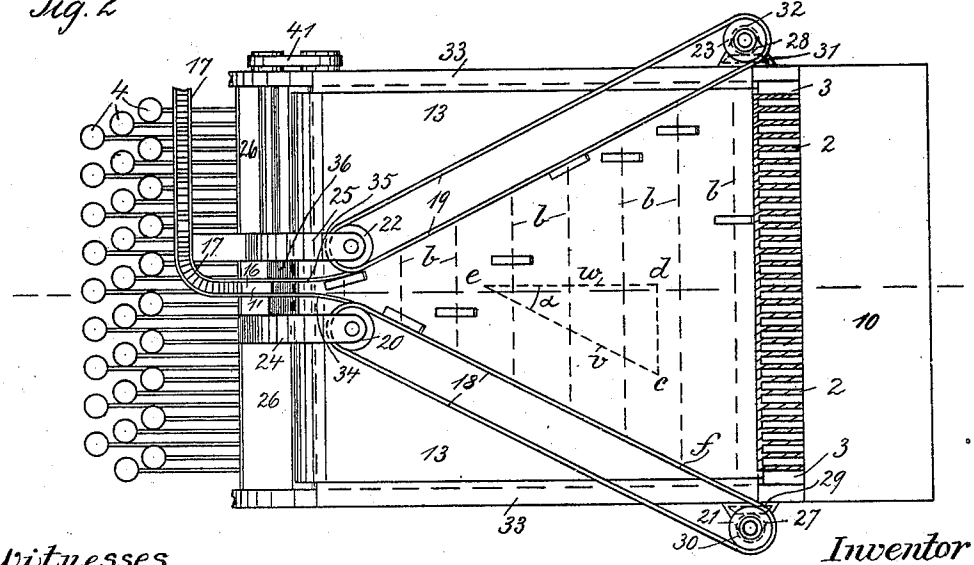


Fig. 4

Fig. 1

Fig. 2



Witnesses

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UNITED STATES PATENT OFFICE.

HUBERT BURG, OF MOLLKIRCH, GERMANY.

TYPE-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 652,420, dated June 26, 1900.

Application filed December 31, 1897. Serial No. 665,019. (No model.)

To all whom it may concern:

Be it known that I, HUBERT BURG, a subject of the German Emperor, residing at Mollkirch, near Rosheim, in the Province of Alsace-Lorraine, Germany, have invented new and useful Improvements in Type or Matrix Setting Machines, of which the following is a specification, and for which Letters Patent have been granted as follows: in Great Britain, No. 18,718, dated August 24, 1896; in France, No. 249,146, dated July 24, 1895; in Germany, No. 101,084, dated July 12, 1895, and in Belgium, No. 116,831, dated August 5, 1895.

My invention relates to setting-machines in which the types are carried from the containing-channels to the assembling-point by endless traveling bands; and the objects of my improvements are, first, to provide means for preventing the types from reaching the assembling-point in a wrong or inverted order; second, to avoid trouble in piling up the types when assembled, and, third, to insure the delivery of the types from the containing-channels to the carrying-band.

The common object of my invention is therefore to afford a reliable and practical setting apparatus of a large capacity. I attain these objects by the means illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of the entire machine; Fig. 2, a top view of the same, the type or matrix containing channels being cut away; and Figs. 3 and 4, a side and a front view, respectively, of a part of the machine on an enlarged scale.

Similar letters and figures refer to similar parts throughout the several views.

The types or matrices 1 are stored in channels 2 of a magazine supported by a cross-bar 3 of the frame. Keys 4 of a keyboard are connected by lever 5, rods 6, levers 7, and springs 8 to pushers 9, guided in grooves of the frame-plate 10. The springs 8 are attached to the levers 7 and pushers 9, serving at the same time as connections and to keep the pushers in the grooves. By depressing a key the corresponding pusher is forwarded, ejecting the lowermost type through a slot 11 of the channel-wall. When releasing the key, pusher 9 is returned to its normal position by a spring 12.

An endless traveling band 13 is guided on rollers 14 15, extending throughout the length of the type-magazine, and takes along with it the types in the succession as they have been ejected by the pushers, Fig. 2. In order to reach the common assembling-point 16 of the assembling-channel 17, the traveling types are simultaneously shifted to the middle portion of band 13 by means of two endless traveling bands 18 19, guided on pulleys 20 21 and 22 23, respectively, the lowermost edges of bands 18 19 being in close contact with band 13. The types travel with band 13 in straight lines until they reach bands 18 19 and are then deflected and successively shifted to the middle of band 13 in their further traveling, and in order to maintain their respective succession there must be provided means to prevent any type from leaving in its lateral shifting movement the transversal section b of band 13 it occupied before having been deflected. I have found by numerous experiences that this cannot be attained with perfect accuracy but by giving the bands 18 19 a well-determined speed, depending as well on the angles of inclination of these bands to the traveling-line of band 13 as on the speed of the latter and by more or less inclining band 13, according to the frictional power of the material of which band 13 is made. The speed to be given to band 18, for instance, is calculated to equal

$$\frac{w}{\cos.\ \alpha},$$

w designating the speed of band 13 and α being the angle of inclination of band 18 to the traveling-line of band 13 and is represented in the diagram, Fig. 2, by the hypotenuse v of the rectangular triangle $c\ d\ e$, α being the said angle of inclination and the cathetus $d\ e = w =$ the speed of band 13. The mechanical effect of so calculating the speed of band 18 is that in the common traveling of bands 18 and 13 any section f of band 18 continuously remains on one and the same section b of band 13. Pulleys 20 22 are journaled in brackets 24 25 of a cross-bar 26 and pulleys 21 23 in supports 27 28 of the side frames. The required speed is imparted to bands 18 19 from roller 15 by means of beveled gears 29 30 31 32. Band 13 is supported by a plate 33.

The types are assembled by entering the

guide-strips 34 35 and descending on a plate 36 by gravity and by their traveling speed. Strips 34 35 are fixed to plate 36, and the latter is supported by the brackets 24 25. Plate 36 projects between the flanges 37 38 of a revolving disk 39, mounted on a shaft 40 and rotated by means of a belt 41, connecting shaft 40 to the shaft of roller 14. The flanges 37 38 are made of rubbing or yielding material and preferably slightly compressed by conical pulleys 42 43, Figs. 3 and 4, so as to positively grasp the entering type and deliver the same in a controlled manner to the assembling-channel 17, the walls of which form continuations of the flanges 37 38, Fig. 3. As a type has been ejected by a pusher 9 the type-column descends by gravity a corresponding distance; but as there occurs trouble, the descending being sometimes obstructed by canting of types or by dust, I have provided heavy followers 44, Fig. 1, bearing on the type-columns, and in order to prevent the followers from becoming inoperative by similar reasons I impart a reciprocating movement to the said followers in such manner that in performing their reciprocating movement they yet descend in the measure as the level of the type-column is lowered by the action of withdrawing types. The said followers are controlled in their rising movement, but descend freely by gravity, thus striking against and being arrested by the top of the type-column, which is positively driven downward by the impact.

The followers are preferably of such length, Fig. 1, that they project from the channels in any position, passing each between a roller 45 and a common revolving shaft 46, provided with a strip 47 of rubbing material. Shaft 46 is driven from roller 15 by a belt, and the followers are therefore raised by friction by passing of the strip 47 and will then descend by gravity, thus being enabled to sink with the level of the type-column.

By sloping the lower part 48 of the follower, providing it further with lateral strips 49, projecting beyond its outer edge, and inserting a deflecting-piece 50 between the strips the follower may at the same time serve the purpose to continuously fill up the channels during the setting. The types supplied by a distributing apparatus or by a casting device are to be delivered to the channel formed by the edge of the follower and the strips 49 and then descend by gravity. The descending type reaches the level of the column in the position indicated $1^{\times}$, and then tilting by gravity it comes to lie on the type-column. It is then shifted toward the left and in close contact with the front wall of the channel at the next rising movement of the follower by means of a roller 50′, provided between the lower ends of strips 49. When the follower then descends again, its stroke will be arrested by the adjusted type, and another type can be supplied, as described. The followers therefore performing their reciprocating movement will follow at the same time the oscillations of the level of the type-column arising from the combined setting and filling action.

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

1. In a type or matrix setting machine, the combination of an endless main traveling band, an endless supplementary traveling band in close contact with the main band and inclined to its traveling-line, and means for keeping in coincidence with each other the several sections of both bands during their common travel, for the purposes described.

2. In a type or matrix setting machine the combination of an inclined endless main traveling band, an endless supplementary traveling band in close contact with the main band and inclined to its traveling-line, and means for keeping in coincidence with each other the several sections of both bands during their common travel, for the purposes described.

3. In a type or matrix setting machine, the combination of an endless main traveling band, an endless supplementary traveling band in close contact with the main band and inclined to its traveling-line, means for keeping in coincidence with each other the several sections of both bands during their common travel, and a revolving assembling-disk provided with yielding flanges, for the purposes described.

4. In a type or matrix setting machine, the combination of an endless main traveling band, an endless supplementary traveling band in close contact with the main band and inclined to its traveling-line, means for keeping in coincidence with each other the several sections of both bands during their common travel, a revolving assembling-disk provided with yielding flanges, and means for slightly compressing the said flanges, for the purposes described.

5. In a type or matrix setting machine, the combination of an endless main traveling band, an endless supplementary traveling band in close contact with the main band and inclined to its traveling-line, means for keeping in coincidence with each other the several sections of both bands during their common travel, a revolving assembling-disk provided with yielding flanges, and a reciprocating follower to act upon the type-column, for the purposes described.

6. In a type or matrix setting machine the combination of an endless main traveling band, an endless supplementary traveling band in close contact with the main band and inclined to its traveling-line, means for keeping in coincidence with each other the several sections of both bands during their common travel, a revolving assembling-disk provided with yielding flanges, means for slightly compressing the said flanges, and a reciprocating follower to act upon the type-column, for the purposes described.

7. In a type or matrix setting machine a revolving assembling-disk provided with yielding flanges, for the purposes described.

8. In a type or matrix setting machine, a revolving assembling-disk provided with yielding flanges, and means for slightly compressing the said flanges, for the purposes described.

9. In a type or matrix setting machine, a follower movable in a type-channel and normally resting on the type-column therein, in combination with a rotating shaft arranged to engage and raise the follower periodically, for the purposes described.

10. In a type or matrix setting machine, a follower movable in a type-channel and normally resting on the type-column therein, means for reciprocating said follower, and an inclined opening in the follower through which type may be introduced into the channel, for the purposes described.

11. In a type or matrix setting machine, the combination of a type-channel, a follower arranged in said channel beyond the type therein and provided with a longitudinally-extending way, a deflecting-plate arranged in said way to guide type therefrom into the type-channel, and means for reciprocating said follower.

12. In a type or matrix setting machine, the combination of a type-channel, a follower arranged in said channel and having two projecting flanges, 49, forming a longitudinally-extending way along which type enter the type-channel, and means for reciprocating said follower.

13. In a type or matrix setting machine, the combination of a type-channel, a follower extending into said channel and having an inclined or deflected end adapted to contact with the type last inserted therein, flanges, 49, attached to and forming a way extending longitudinally of said follower, a deflecting-plate arranged between said flanges and adapted to guide type from said way into the type-channel beneath the inclined portion of the follower, and means for moving said follower longitudinally.

14. In a type or matrix setting machine, the combination of a type-channel, a follower extending into said channel and having a way adapted to guide type into said channel, means for reciprocating the follower, and means movable with the follower for adjusting the type last inserted into alinement with the other type in the channel.

15. In a type or matrix setting machine, the combination of a type-channel, a follower arranged in said channel beyond the type therein and forming a way through which type can enter the channel, means for moving the follower longitudinally, and a roller carried by said follower and adapted as said follower moves longitudinally to adjust the type last inserted in the type-channel into alinement with the other type therein.

16. In a type or matrix setting machine, the combination of a type-channel, a follower arranged in and having a laterally deflected or inclined end 48 which contacts with the type in said channel, flanges, 49, extending longitudinally of the follower and forming a way for guiding type to the type-channel, a deflecting-piece, 50, arranged between said flanges to deflect type from said way into a position below the inclined end of the follower, means for moving the follower longitudinally, and a roller arranged between the flanges on said follower below the deflecting-piece 50.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

HUBERT BURG.

Witnesses:
CHARLES VOLTZ,
PAUL SELDEN.