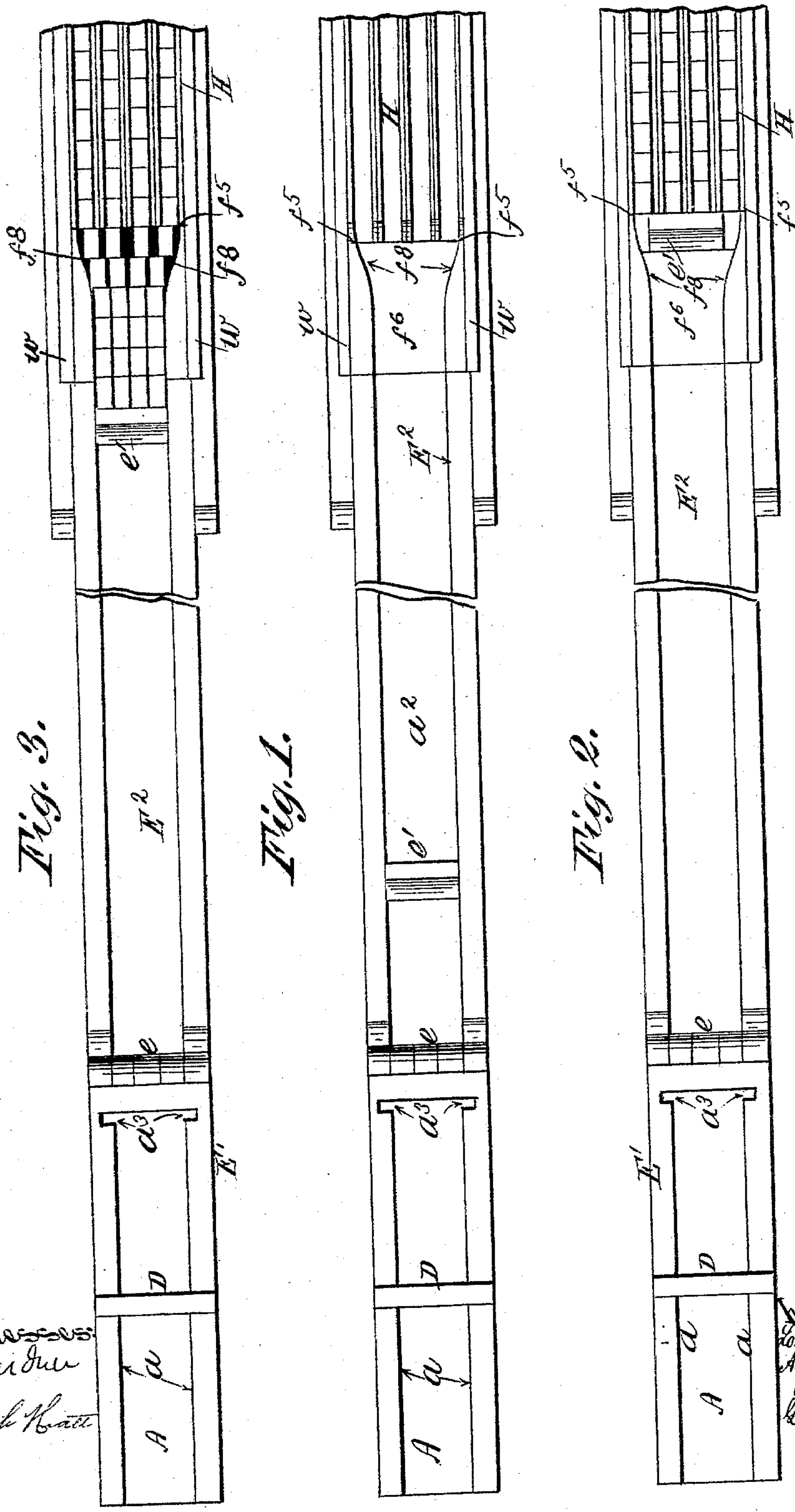
(No Model.)

4 Sheets—Sheet 1.

L. K. JOHNSON & A. A. LOW.

TYPE SETTING APPARATUS.

No. 551,385. Patented Dec. 17, 1895.



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(No Model.) 4 Sheets—Sheet 2.

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Fig. 4.

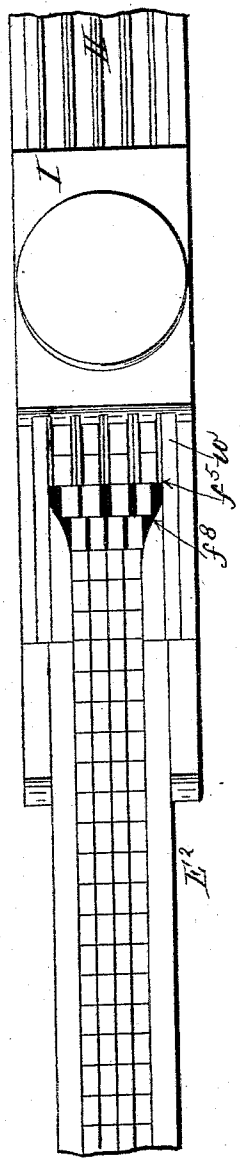
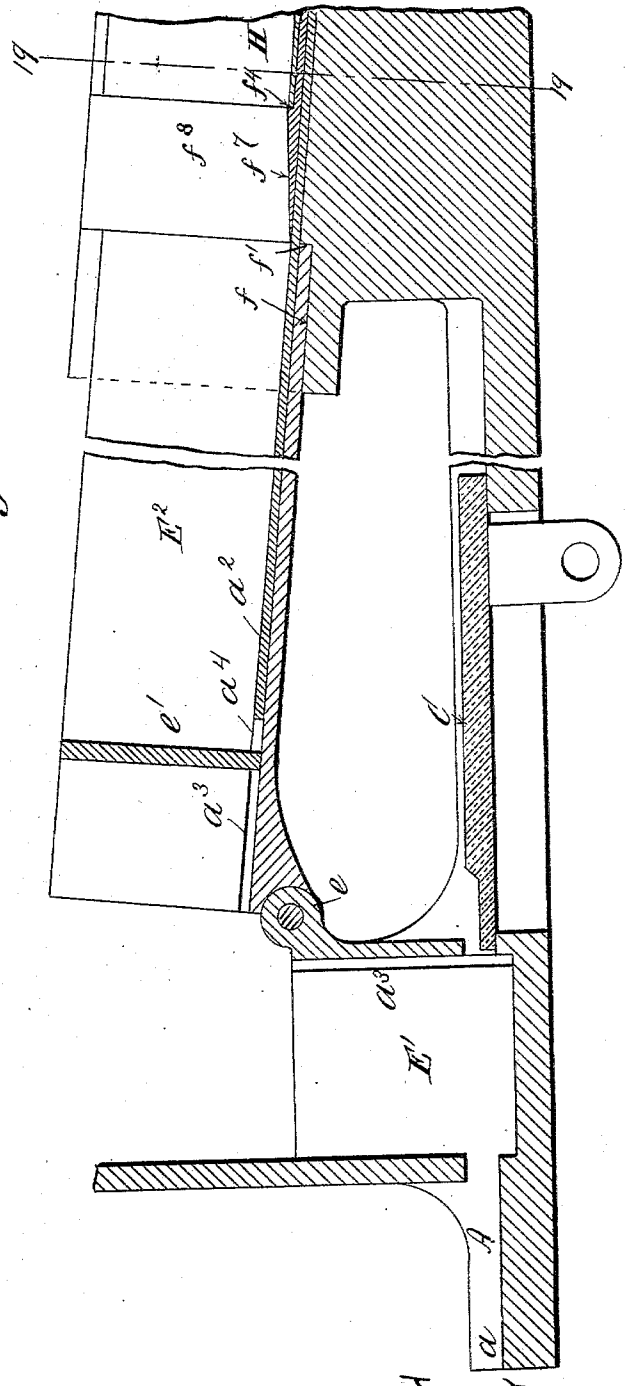


Fig. 5.



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(No Model.) 4 Sheets—Sheet 3.

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TYPE SETTING APPARATUS.

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Fig. 6.

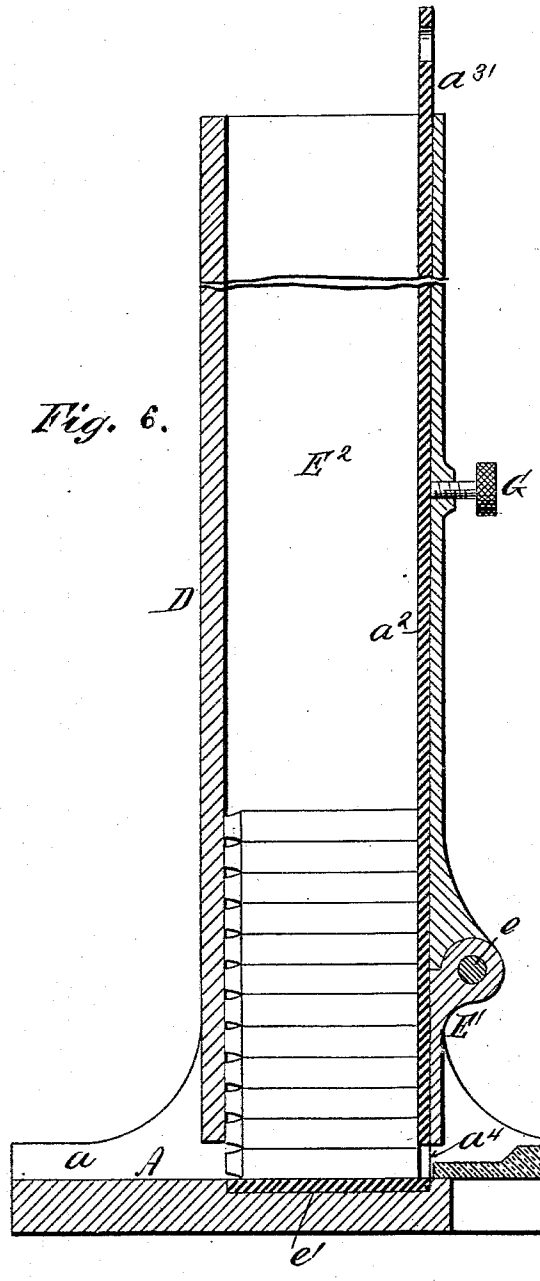
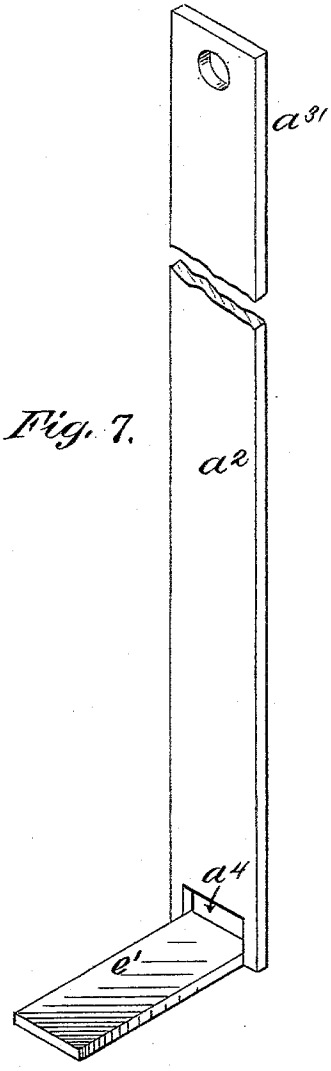


Fig. 7.



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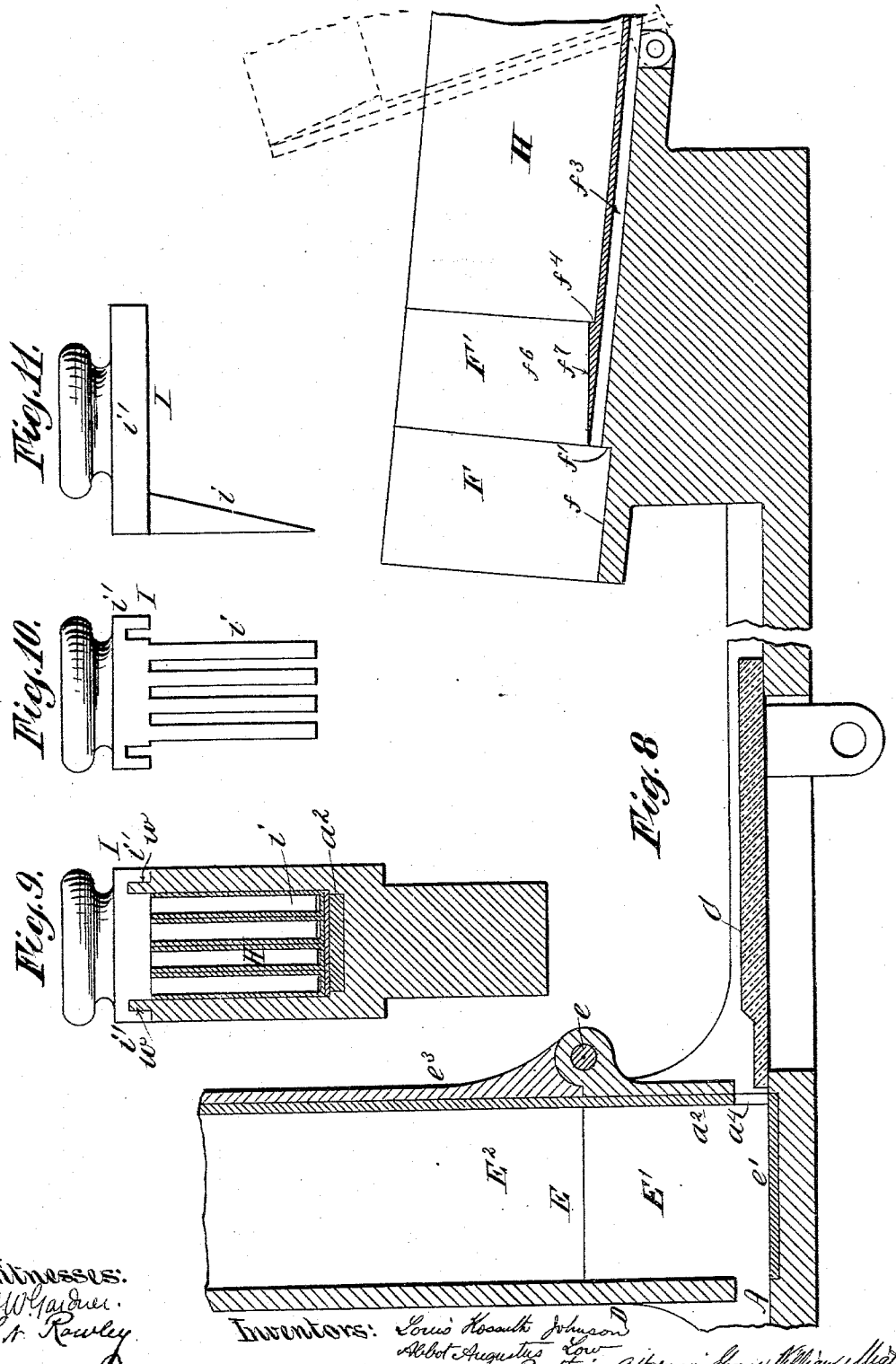

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UNITED STATES PATENT OFFICE.

LOUIS KOSSUTH JOHNSON AND ABBOT AUGUSTUS LOW, OF BROOKLYN, ASSIGNORS TO THE ALDEN TYPE MACHINE COMPANY, OF NEW YORK, N. Y.

TYPE-SETTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 551,385, dated December 17, 1895.

Application filed April 3, 1895. Serial No. 544,230. (No model.)

To all whom it may concern:

Be it known that we, LOUIS KOSSUTH JOHNSON and ABBOT AUGUSTUS LOW, citizens of the United States, residing in the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Type-Setting Apparatus, of which the following is a specification sufficient to enable others skilled in the art to which the invention appertains to make and use the same.

Our improvements relate to type-setting apparatus in which a plurality of types, representing a word or other desired combination of characters, are arranged side by side and presented for simultaneous removal to the "stick." Heretofore we have arranged the type-containing channels side by side in a common holder, the types descending to a common type-floor directly from the type-containing channels. Owing to the thickness of the side walls of the type-containing channels, which represented the play or looseness between the types as deposited on the type-platform, we have heretofore made provision for converging and assembling the types as they were advanced by the type-forwarder.

The main object of our present invention is to obviate the necessity for thus converging and assembling the types by depositing them in close order and contact upon the type-platform, and this we accomplish by transferring the types from the containing or transfer channels into a holder or broad channel which supports them over and upon the type-platform in such manner that the lowest type in the column thus formed may be successively advanced by the type-forwarder into position to be simultaneously grasped and removed by and between the fingers of the compositor. We thus dispense with the converging side walls or guides, and the curved pusher heretofore used, and prevent all possibility of derangement or want of proper alignment in the types, since they are positively held in proper relation to each other from the time they are transferred to the common holder until removed from the front of the type-platform by the compositor.

Obviously the thickness of the type-containing channels must be taken into consideration in providing for the transfer of the types from the several type-containing channels to the broad channel or holder, and we provide for the converging and closing together of the types by means of a contracting passage or throat intermediate between the type-containing channels and the single broad channel or holder. In carrying out our invention in this respect we prefer to make this intermediate throat or tranfer passage stationary upon the apparatus and to make the broad channel or holder so that a part of it may be swung back to connect with and form a continuation of the narrow side of the transfer-passage while provision is made for receiving and presenting the ends of the type-containing channels to the wider side of said transfer-passage. Thus the several columns of types in the type-containing channels may be simultaneously advanced through the transfer-passage into the common broad channel or holder, being made to converge and the thickness of the side walls being compensated for by the contraction or convergence of the side walls of the transfer-passage.

In order to accomplish the uniform steady advance of the several columns of types simultaneously from the type-containing channels through the transfer-passage and into and along the wide channel or holder, we use a forwarding device of special construction consisting of a slide having a series of comb-teeth or type-fingers one for each type-containing channel.

Another important feature of our invention consists in so arranging the parts that the types while being transferred from the type-containing channels to the holder travel up an incline, thereby causing each to rest back against that next succeeding and utilizing gravity to maintain close order and prevent derangement. We also provide the broad channel with a movable type shoulder or support, which forms a portion of the type-platform when lowered into position, but which may be used as an end rest or bearing for the front of the advancing types during transfer, and then as a means for lowering the types

gently into position onto the type-platform after transfer.

In the accompanying drawings, Figure 1 is a plan showing the upper part of the plural type-holder turned back to the transferring-table; Fig. 2, a similar view showing the types in containing-channels prior to their entrance into the intermediate transfer type-passage. Fig. 3 is a similar view illustrating the advance of the types through the intermediate transfer-passage; Fig. 4, a plan of parts adjoining the intermediate transfer-passage, illustrating the action of the type-forwarder in advancing the types through the transfer-passage; Fig. 5, a central vertical section showing the upper portion of the plural channel turned back and resting upon the transfer-bed; Fig. 6, a vertical section showing the type-shelf, &c., in the lowest position; Fig. 7, an isometrical view of the type-shelf and slide; Fig. 8, a central longitudinal section of the parts empty, and showing in dotted lines the channel-holder and intermediate transfer-passage raised. Fig. 9 is a transverse section upon plane of line 19 19, Fig. 7, showing the type-forwarder in position; Fig. 10, a front view thereof; Fig. 11, a side elevation thereof.

A series of the type-platforms A, holders E, and other essential parts may be arranged in a single case, although for convenience and simplicity of illustration we herein show and describe only the parts essential for a single word or combination of characters. The side walls *a a* are parallel, and confine the types laterally as they advance under control of the pusher C, which latter may be of any desired or suitable construction and arrangement, that indicated representing symbolically a reciprocating pusher actuated intermittently by well-known means.

The front plate D is stationary, as is the lower part E′ of the holder E. The upper part E^2 of the holder is pivotally attached to the lower part E′, as by the hinge *e* or otherwise, to enable it to swing back to allow its upper end to be brought into coincidence with the transfer-section F′ of the channel-receiver F.

A type-shelf *e′* projects at right angles from a false back or spine a^2, movable longitudinally in grooves a^3 a^3, formed in the side walls of both the stationary section E′ and the movable section E^2 of the holder. The platform is countersunk below the stationary section E′ of the holder to receive the type-shelf *e′*, so that its upper surface will coincide with and form a continuation of the type-platform A when lowered into position. The back or spine a^2 is formed with the slot a^4 just above the shelf *e′* to allow the pusher C to pass back and forth. One or more set-screws G or equivalent means may be used to clamp the type-shelf *e′* and spine a^2 in any desired position. The spine a^2 is somewhat longer than the holder E E′, so that when in its lowest position therein its upper end a^{31} will project above the holder and afford a convenient handle.

The channel-receiver F is formed with a recess *f* for the reception and support of the upper end of the movable section E^2 of the holder, the shoulder *f′* corresponding in height or thickness to the real back e^3 of the holder. Above and beyond this shoulder *f′* the channel-receiver is formed with a groove corresponding to the thickness of the spine a^2, so that the shelf *e′* can be drawn backward until it rests against the ends of the type-containing channels H when the latter are in position. In order to allow of the insertion or withdrawal of the projecting end e^3 of the spine a^2 within the section E^2 of the holder, we make the transfer-channel or section F′ movable, as by hinging it at f^2 or otherwise, so that it may be raised sufficiently to allow the said upper end e^3 to clear it while the section E^2 of the holder is being raised or lowered.

The transfer channel or section F′ is formed with the recess or compartment f^3, having parallel side walls for the reception of the type-containing channels H, the spines of which abut up against the shoulder f^4, while the side walls of the outer channels abut against the corresponding shoulders f^5 on either side of the recess f^3. These shoulders f^4 f^5 compensate for the thickness of the material of which the type-containing channels are composed, so as to make a flush joint.

The transfer-compartment F′ is formed with a contracting passage f^6, the bottom f^7 of which is inclined to connect the inner surfaces of the spines of the type-containing channels with the inner surface of the back of the broad channel or holder E, and thus present a continuous smooth surface for the heels of the types to travel over. The side walls f^8 f^8 converge so as to connect the side walls of the outer channels with the side walls of the broad channel or holder E, thereby causing the types to move laterally toward each other and into contact while passing through the assembling-passage f^6.

The types are forwarded by means of a transferring device I, provided with a series of type-fingers *i*, which support the rear ends of the columns of types in the type-containing channels. The fingers are preferably made wedge-shaped, substantially as shown, so as to be easily inserted between the types where a portion only of the contents of the type-containing channels is required.

The inclination of the several passages in the channel-receiver and transfer-section F F′ is such as to cause the types to lean backward at an angle sufficient to enable them to support each other, especially while passing through the converging or assembling passage f^6.

In operation, when it is desired to replenish the holder E′ E^2 the spline a^2 is drawn up

until the type-shelf is above the stationary section E', the channel-section F' is raised, the holder E lowered into position, the section F' lowered, and the type-containing channels placed in position. The type-shelf e' is next slid back until it rests against the end of the type-containing channels, when the transferring device I is placed in position with its type-fingers supporting the desired types. The forwarder I is then slid along upon the ways w w, upon which the flanges i' i' of the forwarder rest. When the desired types have been transferred to the holder, the type-channels are removed, the section F' raised, the holder E swung into position and the type-shelf and types lowered into position by means of the end e^3 of the spine.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In type setting apparatus the combination of a channel for holding a plurality of types side by side in columns, a transfer channel having converging side walls which guide the types from separate individual containing channels to said plural channel and means for forwarding the types from the individual containing channels through said transfer channel to said plural channel, substantially in the manner and for the purpose described.

2. The combination of the swinging plural type channel, the converging channel adapted to receive and support the end of the said plural type channel, on one side and the ends of the individual type containing channels on the other, and means for forwarding the types from the individual containing channels through said transfer channel to said plural channel, substantially in the manner and for the purpose described.

3. The combination of a plural type channel formed with a swinging section, a longitudinal slide in said plural channel formed with a type shelf or support, a converging transfer channel for receiving the end of the plural channel on one side and the ends of the individual type channels on the other, and means for forwarding the types from the individual channel through the transfer channel and into the plural channel in which the types are sustained by the said type support on the longitudinal slide, substantially in the manner and for the purpose described.

4. The combination of a plural type channel formed with a swinging section, a converging transfer channel adapted to receive the ends of said plural channel on one side and the ends of individual type containing channels on the other, said transfer channel being pivotally connected to its support for the purpose set forth and means for forwarding the types from the individual channels through the transfer channel and into the plural channel substantially as described.

5. The combination with a type channel for holding a plurality of types side by side as set forth, of a type support or shelf movable longitudinally in said channel and means for clamping said type support against movement for the purpose and substantially in the manner described.

6. The combination of a plural type containing channel formed with a swinging section and converging transfer channel adapted to receive the end of said plural channel on one side and the ends of individual type channels on the other, said transfer channel being formed with an inclined type floor connecting the inner surfaces of the backs of the individual type containing channels with the inner surfaces of the back of said plural channel, substantially in the manner and for the purpose described.

7. The combination of a plural type containing channel formed with a swinging section, a converging transfer channel adapted to receive the end of the plural channel on one side and the ends of individual type containing channels on the other side, and a device for forwarding the types from the individual channels through the transfer channel and into the plural channel, said forwarding device being formed with wedge shaped pusher fingers substantially in the manner and for the purpose described.

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