Dec. 18, 1934. S. E. SPERRY 1,985,195

LINE STOP FOR TYPOGRAPHICAL MACHINES

Filed Feb. 15, 1934 2 Sheets-Sheet 1

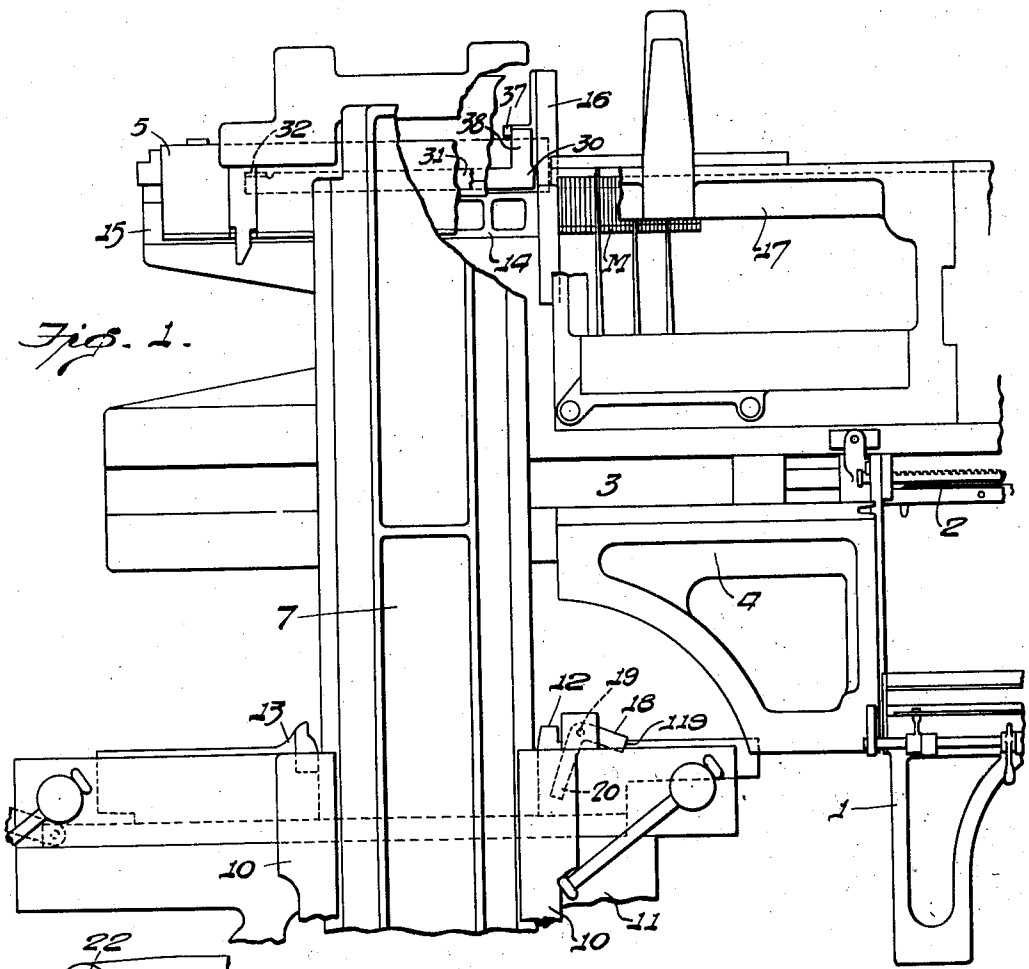


Fig. 1.

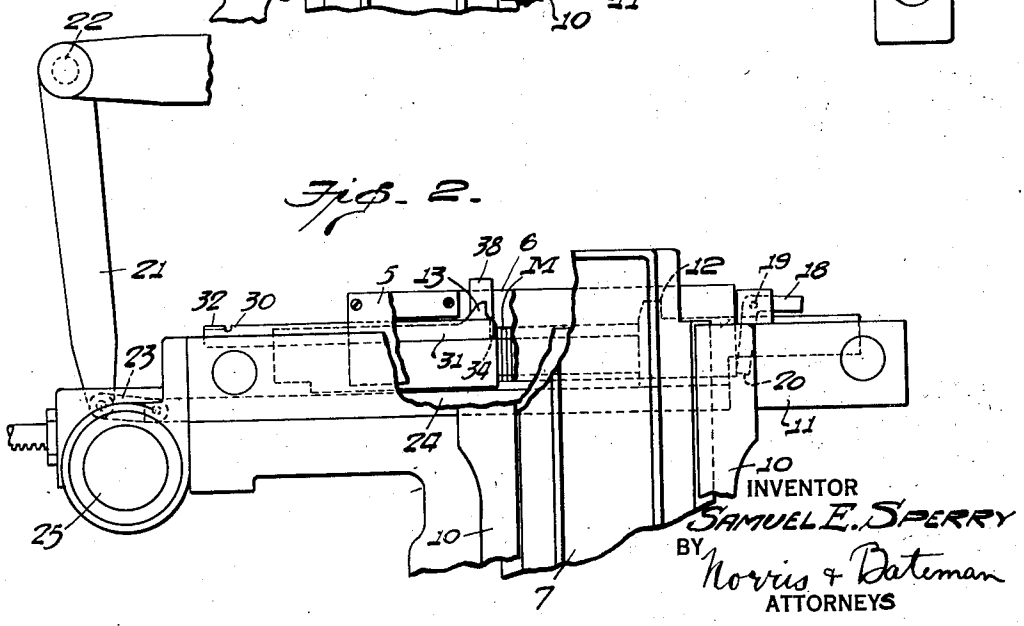


Fig. 2.

INVENTOR
SAMUEL E. SPERRY
BY Norris & Bateman
ATTORNEYS

Dec. 18, 1934. S. E. SPERRY 1,985,195

LINE STOP FOR TYPOGRAPHICAL MACHINES

Filed Feb. 15, 1934 2 Sheets-Sheet 2

Fig. 3.

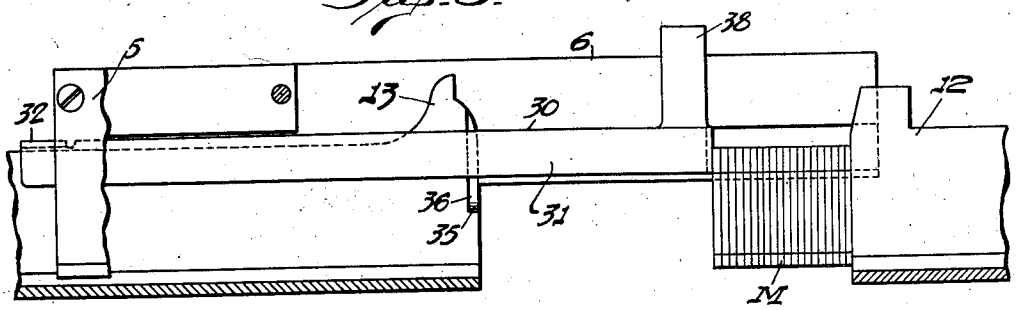


Fig. 4.

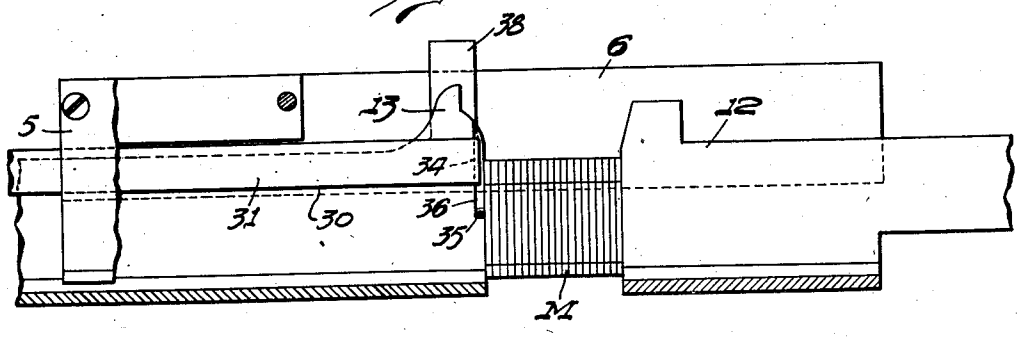


Fig. 5.

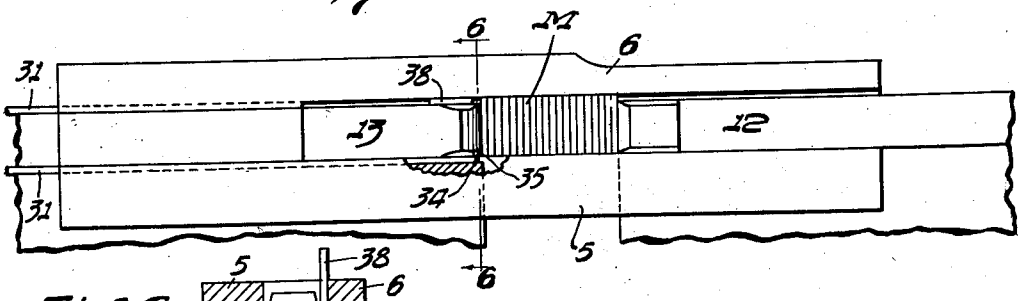
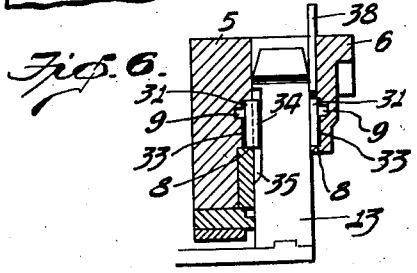


Fig. 6.



INVENTOR
SAMUEL E. SPERRY
BY
Norris & Bateman
ATTORNEYS

Patented Dec. 18, 1934

1,985,195

UNITED STATES PATENT OFFICE

1,985,195

LINE STOP FOR TYPOGRAPHICAL MACHINES

Samuel E. Sperry, Hollis, N. Y., assignor to Intertype Corporation, Brooklyn, N. Y., a corporation of New York

Application February 15, 1934, Serial No. 711,409
In Germany May 31, 1933

10 Claims. (Cl. 199—32)

The present invention relates to improvements in typographical machines and more especially to those of the well-known class disclosed generally in U. S. Letters Patent No. 436,532 granted September 16, 1890 employing a matrix line transporter or so-called "first elevator" having jaws which suspend therein an assembled line of matrices and spacebands received from a line delivery carriage, lower the line so received into a vise the jaws of which clamp and hold the line in front of a mold for the casting of a type bar or slug from the line, and subsequently elevate the line to a higher level for transfer to distributing mechanism which returns the matrices used in the line to the places of storage from which they were drawn, and the present invention relates more particularly to the so-called line stop used in machines of this class for retaining the end or first matrix or several matrices adjacent thereto in a line against squabbling when the line is left hanging in the jaws of the transporter which carries it from between the fingers of the delivery carriage to bring it to the casting position.

In machines of this class, where the vise jaws stand apart from one another a selected distance determined by setting the left hand jaw at the desired line measure, it is sufficient that the line stop engage against the first or end matrix in the line in the ordinary way, the operator in such case usually pushing the line stop manually into contact with the first line of the measure being set and the stop ordinarily remaining in such position, due to its frictional engagement in the jaws of the transporter. However, in machines of this class which are provided with means for moving one of the vise jaws, as for example the right hand jaw, from its normal or line receiving position toward the other vise jaw to make a cast from a matrix line short of the measure for which the vise jaws are set, which operation is ordinarily known as quadding, the usual line stop which normally occupies its extreme right hand position, will be pushed to the left by the matrix line when the latter is moved in the transporter under the influence of the moving jaw. If the line stop is of the usual kind retained in position in the transporter by friction, such line stop may not have sufficient frictional resistance to movement to retain it against overthrow, as the line, pushed by the moving vise jaw, exerts a somewhat sharp propelling influence. It is desirable, on the other hand, to minimize, as far as possible, resistance to the closing movement of the movable vise jaw and the line in the transporter.

In order to hold the line stop against the end or first matrix in a line when quadding in machines of this class, it has been proposed to employ a spring to urge the line stop to the right in opposition to the incoming line, or to provide sufficient friction to the sliding of the line stop in the transporter to prevent overthrow of the stop under the action of the incoming line, but both of such proposals are objectionable because the incoming matrix line must overcome the power of the spring held stop or the excessive friction of a stop depending on friction to prevent overthrow.

The primary object of the present invention is to provide a novel and improved line stop for the line transporter or so-called first elevator of typographical machines of the class referred to whereby overthrow of the line stop when the movable jaw closes against a short matrix line, as in quadding, is prevented, without however resisting appreciably the closing movement of the movable vise jaw, the improved line stop, according to the present invention, having the further advantage that its position with respect to a line in the transporter is determined automatically for any setting of the usual adjustable or left hand vise jaw.

To these and other ends, the invention consists in certain improvements and combinations and arrangements of parts all as will be hereinafter more fully described, the features of novelty being pointed out particularly in the claims at the end of this specification.

In the accompanying drawings:

Figure 1 is a front elevation, partly in section, of a portion of a typographical machine provided with a line stop embodying the present invention, the line transporter or first elevator being shown at its upper or line transferring level;

Figure 2 is a front elevation of a portion of the machine as shown in Figure 1, the line transporter or first elevator being shown at its lower or casting level;

Figure 3 is a vertical section on an enlarged scale through the line receiving channel of the transporter, showing the vise jaws in cooperation therewith, the vise jaws being in open relation and a sort matrix line being shown between the vise jaws, the line stop resting against the first or end matrix in the line;

Figure 4 is a view similar to Figure 3 but shows the right hand vise jaw and the short matrix line closed against the left hand vise jaw;

Figure 5 is a top plan view of the line receiving jaws of the transporter or first elevator and the

vise jaws closed against a short matrix line, as in Figure 4; and

Figure 6 is a vertical cross-section through the jaws of the line transporter or first elevator, taken on the line 6—6 in Figure 5.

Similar parts are designated by the same reference characters in the several figures.

The present invention, in its preferred embodiment, is shown in the accompanying drawings as applied to a typographical machine of the well known class hereinbefore referred to, 1 representing the usual assembling elevator which receives matrices and spacebands delivered from their respective places of storage in the machine as by manipulation of the keyboard of the machine in the usual manner, 2 represents the usual reciprocatory line delivery carriage the fingers of which receive the matrix line from the assembling elevator when the latter is lifted, as usual, the line delivery carriage being movable toward the left in its guides 3 to carry the matrix line through the usual delivery channel 4 into a channel formed between the front and rear jaws 5 and 6 carried on the upper end of the line transporter or usual so-called first elevator 7 when the latter occupies its normal or line receiving level in alinement with the delivery channel 4, the inner sides of the jaws 5 and 6 of the transporter having rails 8 and 9 on which the lugs on the upper ends of the matrices and spacebands rest whereby they are suspended in the transporter or elevator. The line transporter 7 is slidable vertically in guides 10 on a vise frame 11 which constitutes a part of the frame of the machine, as usual, and, as usual in machines of this class, the line transporter, after receiving a line, is lowered to the casting level to introduce the line between the right hand and left hand jaws 12 and 13 of a vise which serves to clamp the line endwise and hold it in casting position in front of a mold in which a type bar or slug is cast in the usual and well-known manner against the matrix line, after which the line transporter is lifted to an upper level as shown in Fig. 1 where a reciprocatory line transfer slide 14 operating in a guide 15 in the machine frame and carrying a finger 16 operates to remove the line from the line transporter to the usual transfer channel 17 from which the matrices are removed and conveyed to the matrix distributor and the spacebands used in the line are returned to their usual place of storage, as in the usual and well-known manner. After removal of the line from the line transporter, the latter descends, in the usual manner to its normal or line receiving position.

The right hand vise jaw 12 is retained in its normal open or line receiving position by a latch 18 which may be pivoted at 19 on the top of the vise frame 11 and engageable with a notch 119 in the upper side of said jaw when the latter is in its normal or line receiving position, this latch having an arm 20 which lies in the path of the end of one of the jaws of the line transporter and engageable thereby, as the latter approaches its lower or casting level whereby the latch is actuated to release the jaw 12, and this jaw, which is slidable in the vise frame 11, is movable inwardly or toward the left hand jaw 13 to close against short matrix lines or lines shorter than the line measure for which the machine is set, the jaw 12 being thus closed by suitable means as for example by a jaw closing arm 21 pivoted on the machine frame 22 and operated at appropriate intervals from a suitable moving part of the machine as disclosed in my prior application Ser. No. 612,349 filed May 19, 1932, the lower end of this arm being operatively connected by a link 23 to a slidable bar 24, the latter being connected to the movable right hand jaw 12 and acting to move this jaw inwardly or toward the jaw 13 after the line transporter has descended to its casting level and has introduced the matrix line between the vise jaws, and to return the jaw 12 to its normal line receiving position after a cast has been made. The left hand jaw 13, which is usually adjustable in machines of this class for full lines of different line measures, may be provided with any suitable adjusting means for this purpose, such for example as the jaw setting device 25 which conforms substantially with that shown and disclosed in U. S. Letters Patent No. 1,108,758 granted August 25, 1914.

The improved line stop 30 provided by the present invention comprises preferably a pair of parallel bars 31 which are connected at their outer ends by a cross member 32 and slidable longitudinally in guiding grooves 33 formed in the inner sides of the jaws 5 and 6 of the line transporter, these bars of the line stop having only a slight friction in said grooves in order to offer minimum resistance to the closing movement of the right hand vise jaw 12 when such jaw moves inwardly from its normal line receiving position shown in Figure 3 toward the jaw 13 to confine the line of matrices M which is shorter than the distance between the jaws 12 and 13 for which the machine is set in order to quad out such short matrix line. The stop rests against the first or end matrix in the line when the latter is lowered into position between the vise jaws and the closing movement of the right hand jaw 12 shifts the short matrix line toward the left until it closes against the left hand jaw 13, and during such shifting movement of the matrix line toward the left, the line stop moves with the line into the position shown in Figure 4.

Since the closing movement of the jaw 12 and the consequent shift of the matrix line against the jaw 13 is sudden and the shifting movement of the line is arrested suddenly by the engagement of the matrix line with the jaw 13, the line stop, under the propelling influence of the shifting matrix line and by reason of its slight friction in its guiding grooves, would overthrow or travel beyond the left hand end of the matrix line when the latter is arrested by its engagement with the jaw 13, thus leaving the first or end matrix in the line free to become dislodged from its compact position against adjacent matrices when the matrix line is lifted from between the vise jaws, incident to the usual upward movement of the line transporter after the cast, unless means were provided to prevent such overthrow of the line stop. The means provided by the present invention for preventing such overthrow of the line stop comprises a suitable abutment on one of the vise jaws, such as the vise jaw 13, against which the line stop may rest when driven toward that jaw by the line when shifted under the influence of the movable vise jaw. In the preferred construction shown, one of the slide bars 31, preferably the front one, of the line stop has its inner end bent or turned inwardly toward the jaw 13 to form a prong or hook 34 at the inner or matrix line engaging end of the line stop, and the jaw 13 is provided adjacent to its line engaging face with a vertical recess 35 into which the prong or hook 34 may enter, this recess forming a vertical shoulder 36 which serves as an abutment against which the

prong or hook 34 may rest. By this construction, when the line of matrices M is shifted endwise in the transporter under the influence of the closing movement of the jaw 12, the line stop shifted by the line of matrices will be stopped by the engagement of the prong or hook 34 thereon with the shoulder or abutment 36 on the jaw 13, and overthrow of the line stop will be thereby prevented, the line stop however being retained in the position to which it has been moved by the line so that it will stand against the first or end matrix in the line until the line of matrices is removed from the line transporter, the line stop thereby serving effectively to prevent dislodgment of the end matrix or matrices in the line, due to vibration of the machine and the stopping of the line transporter at its upper position and also serving to prevent dislodgment of such matrix or matrices in the line when the machine is set to permit the transporter to return the same matrix line to casting position for a recast therefrom. When the matrix line is removed from the line transporter by the line transfer slide 14 and the line engaging finger 16 thereon, the line stop is returned to its extreme right hand position ready to be advanced again to the left by the next incoming line, and the line stop may be automatically returned to its extreme right hand position by the line transferring movement of the line transfer slide 14 which may be provided for this purpose with a dog 37 arranged to act upon a lug 38, which may be extended upwardly from one of the slide bars of the line stop, substantially as shown in Figure 1.

The operation of the machine, provided with the improved line stop hereinbefore described, is as follows:—Assuming the line transporter occupies its normal line receiving position with respect to the line delivery channel 4 and the line stop 30 occupies its right hand position to which it was brought by the operation of the transfer slide 14 incidental to the removal of a line from the transporter as shown in Fig. 1, the delivery carriage 3 operates in the usual and well known manner to introduce a line of matrices and spacebands into the right hand end of the channel formed between the jaws 5 and 6 of the transporter, the first or end matrix at the forward end of the line engaging the right hand end of the line stop and advancing it more or less toward the left, according to the length of the line. While the line stop rests in this position against the forward end of the line and is retained in this position by the frictional engagement of the slide bars 31 of the line stop in its guiding grooves 33, the transporter descends in the usual and well known way to lower the line to the casting level, the right hand end of the line descending at the inner face of the right hand jaw 12, which is then held in its normal open or line receiving position by the latch 18, and the line stop remaining in engagement with the left-hand or forward end of the line, as shown in Fig. 3. As the transporter approaches the limit of its descent, one of the jaws thereon engages the arm 20 of the latch 18 and swings the same from its jaw holding position shown in Fig. 1, to its jaw releasing position shown in Fig. 2, the consequent release of the right hand jaw permitting the jaw operating arm 21, which is then set into operation, to move the right hand jaw 12 inwardly or toward the left hand jaw 13, moving with it the matrix line until the forward or left hand end thereof strikes the inner face of the left hand jaw, and such movement of the matrix line shifts or advances the line stop with it until, at the moment the line strikes the left hand jaw, the hook or abutment 34 on the line stop engages the shoulder or abutment 36 on the left hand jaw, as shown in Figs. 4 and 5. Such positive or effective stopping of the advance of the line stop during the shift or advance of the line against the left hand jaw under the influence of the line closing movement of the right hand jaw, precludes overthrow of the line stop beyond the forward end of the line by its momentum, even though the line stop is movable very freely or with very slight friction and the line is advanced very suddenly by the movable jaw and its advance is arrested abruptly upon striking the left hand jaw. After the vise jaws have been operated to clamp the line and the casting mechanism has operated to cast a type bar or slug, in the usual and well known manner, the transporter rises and lifts the matrix line from between the vise jaws and elevates it to the upper level where the usual transfer slide 14 operates in the well known manner to remove the line from the transporter to the usual transfer channel 17 from which the matrices are conveyed in the usual manner to the usual matrix distributor and the spacebands are returned to their usual place of storage in the machine, and during the line removing operation of the transfer slide 14, the dog 37 thereon engages the upwardly projecting lug 38 on the line stop and returns the latter to its normal right hand position ready to meet the next incoming line, as shown in Fig. 1, the transporter, after the transfer of the line therefrom, descending in the usual manner to its normal line receiving position.

During the lifting of the matrix line from casting position by the ascent of the line transporter, the hook or abutment 34 on the line stop will disengage from the left hand jaw 13 by upward movement in the vertical recess 35 therein, but the line stop will remain in engagement with the forward or left hand end of the line, it being maintained in such position by its frictional engagement in its guiding grooves, and the line stop will thus serve to effectively prevent squabbling or other displacement of the end matrix or matrices at the left hand end of the line suspended in the line transporter, due to the usual vibration of the machine or other causes, while the line is being elevated to the transfer level, and also while the line transporter is operated to again lower the line to casting position, as is sometimes done, to make a recast from the same line.

Setting of the left hand or adjustable vise jaw 13 in different positions for different line measures will correspondingly set the abutment shoulder 36 thereon, thereby automatically determining the limit of movement of the line stop when advanced by the matrix line, to accord with the position occupied by the adjustable jaw.

It will be apparent from the foregoing, that the present invention provides a line stop for the line transporter or usual first elevator of a typographical machine, which is freely movable in both directions in the line receiving channel of the transporter, so that it does not appreciably resist the movement of the line under the closing action of the movable vise jaw, as in quadding out short matrix lines, but which is positively controlled against overthrowing. The improved line stop therefore is maintained in the desired position of contact with the end matrix of the line and, during subsequent movement of the line away from the vise jaws, the tendency of the end

matrices to become dislodged is thereby inhibited.

By constructing and arranging the line stop so that it abuts against the left hand jaw, which is usually the adjustable jaw in the machine, the position into which the line stop is moved each time by the line will be determined automatically according to the setting of this jaw, and by providing the abutments on the front slide bar of the line stop and the front side of the vise jaw with which it cooperates, interference with the rear or casting face of the jaw which closes the front of the mold, is avoided. The mounting of the line stop and its abutment between the front and rear jaws of the transporter conveniently accommodates these parts compactly in the channel thereof in which the matrix lines move.

I claim as my invention:—

1. A matrix line stop for the first elevator of a typographical machine having vise jaws for closing against short matrix lines, said line stop being freely slidable in the elevator and engageable with one of the vise jaws to prevent excessive movement of said stop beyond the line engaging face of said jaw.

2. A matrix line stop according to claim 1, wherein the stop has a projection thereon, and one of the vise jaws is provided with a recess in its front face in which said projection on the stop is engageable.

3. In a typographical machine having a line transporter for conveying matrix lines to and from casting position, and a vise for clamping the lines in casting position, a line stop mounted in said transporter to be advanced by the advance of a matrix line therein, and rigid abutment means for limiting the extent of advance of said stop in accordance with the extent of advance of the matrix line.

4. In a typographical machine having a line transporter for conveying matrix lines to and from casting position and a pair of vise jaws adapted to be set for different predetermined line measures, at least one of said jaws being movable for closing against and clamping short matrix lines in casting position, a line stop carried by the transporter and arranged to be shifted by movement of the matrix line by the movable jaw toward the other jaw, and non-resilient means for controlling the extent of said shift of the line stop according to the position occupied by the latter jaw.

5. In a typographical machine having a line transporter for conveying matrix lines to and from casting position, and a pair of vise jaws, at least one of which is movable for confining the lines in casting position, a line stop carried by the transporter and arranged to be shifted by movement of the matrix line by the movable jaw toward the other jaw, and means cooperative with the latter jaw for arresting such shifting movement of the line stop.

6. In a typographical machine having a line transporter provided with a matrix line receiving channel and movable to convey a matrix line in said channel to and from casting position, and a pair of vise jaws, at least one of which is movable toward the other to close a short matrix line between the jaws and hold such line in casting position, a line stop freely slidable in said channel in a position to be engaged by an end of a matrix line therein and to be shifted thereby under the influence of the closing movement of the movable jaw, said stop having a portion adjacent to its line engaging end and engageable with said other jaw to prevent movement of the line engaging portion of said stop beyond the line engaging face of the latter jaw.

7. In a typographical machine having a line transporter for conveying matrix lines to and from casting position, and a vise for clamping the lines in casting position, a line stop mounted in said transporter to be advanced by the advance of a matrix line therein, and locking means for limiting the extent of advance of said stop in accordance with the extent of advance of the matrix line.

8. In a typographical machine having a line transporter for conveying matrix lines to and from casting position and a pair of vise jaws adapted to be set for different predetermined line measures, at least one of said jaws being movable for closing against and clamping short matrix lines in casting position, a line stop carried by the transporter and arranged to be shifted by movement of the matrix line by the movable jaw toward the other jaw, and locking means for controlling the extent of said shift of the line stop according to the position occupied by the latter jaw.

9. In a typographical machine having a line transporter for conveying matrix lines to and from casting position and a pair of vise jaws adapted to be set for different predetermined line measures, at least one of said jaws being movable for closing against and clamping short matrix lines in casting position, a line stop carried by the transporter and arranged to be shifted by movement of the matrix line by the movable jaw toward the other jaw, and locking means automatically operative at any position occupied by the latter jaw for limiting the extent of said shift of the line stop.

10. In a typographical machine having a line transporter for conveying matrix lines to and from casting position and a pair of vise jaws adapted to be set for different predetermined line measures, at least one of said jaws being movable for closing against and clamping short matrix lines in casting position, a line stop carried by the transporter and arranged to be shifted by movement of the matrix line by the movable jaw toward the other jaw, and locking means automatically operative at any position occupied by the latter jaw for limiting the extent of said shift of the line stop, said locking means being automatically released upon upward movement of the line transporter from the casting position.

SAMUEL E. SPERRY.