

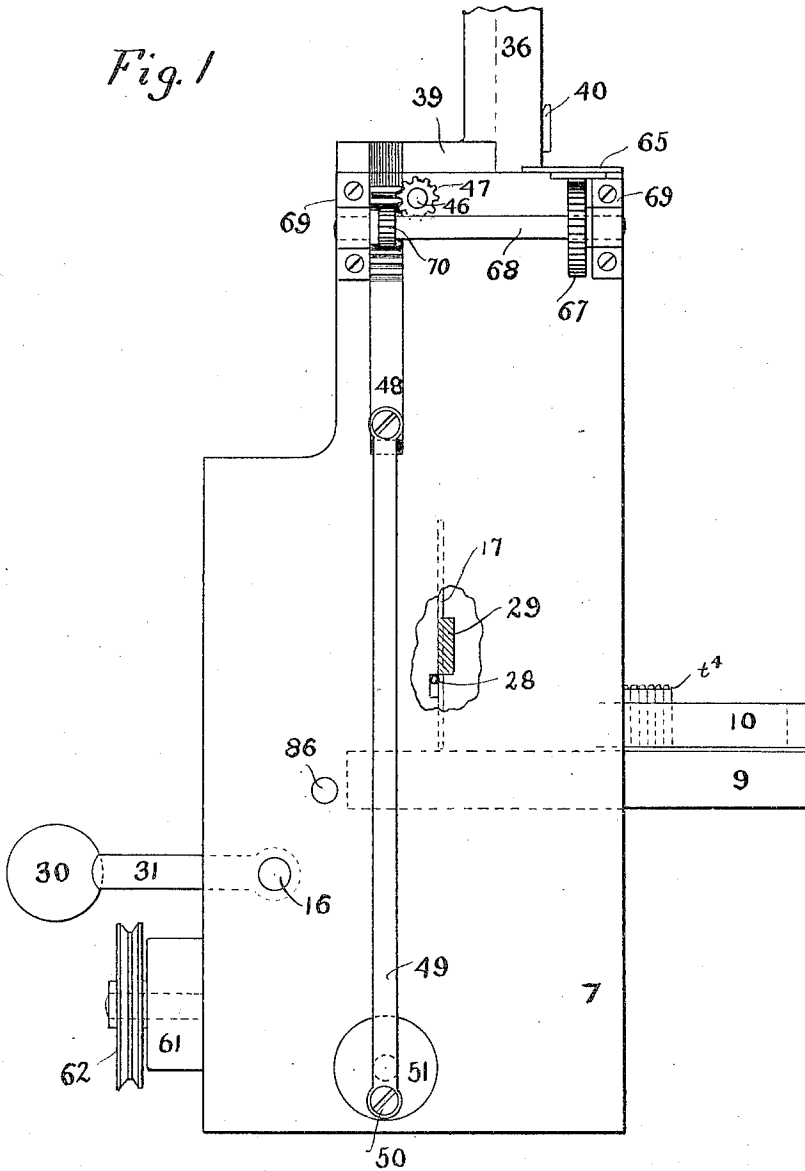
W. E. BRAND.
TYPE LINE QUADDER.
APPLICATION FILED NOV. 4, 1907.

1,051,385.

Patented Jan. 28, 1913.

5 SHEETS—SHEET 1.

Fig. 1



Witnesses
M. Newman.
J. S. Brand

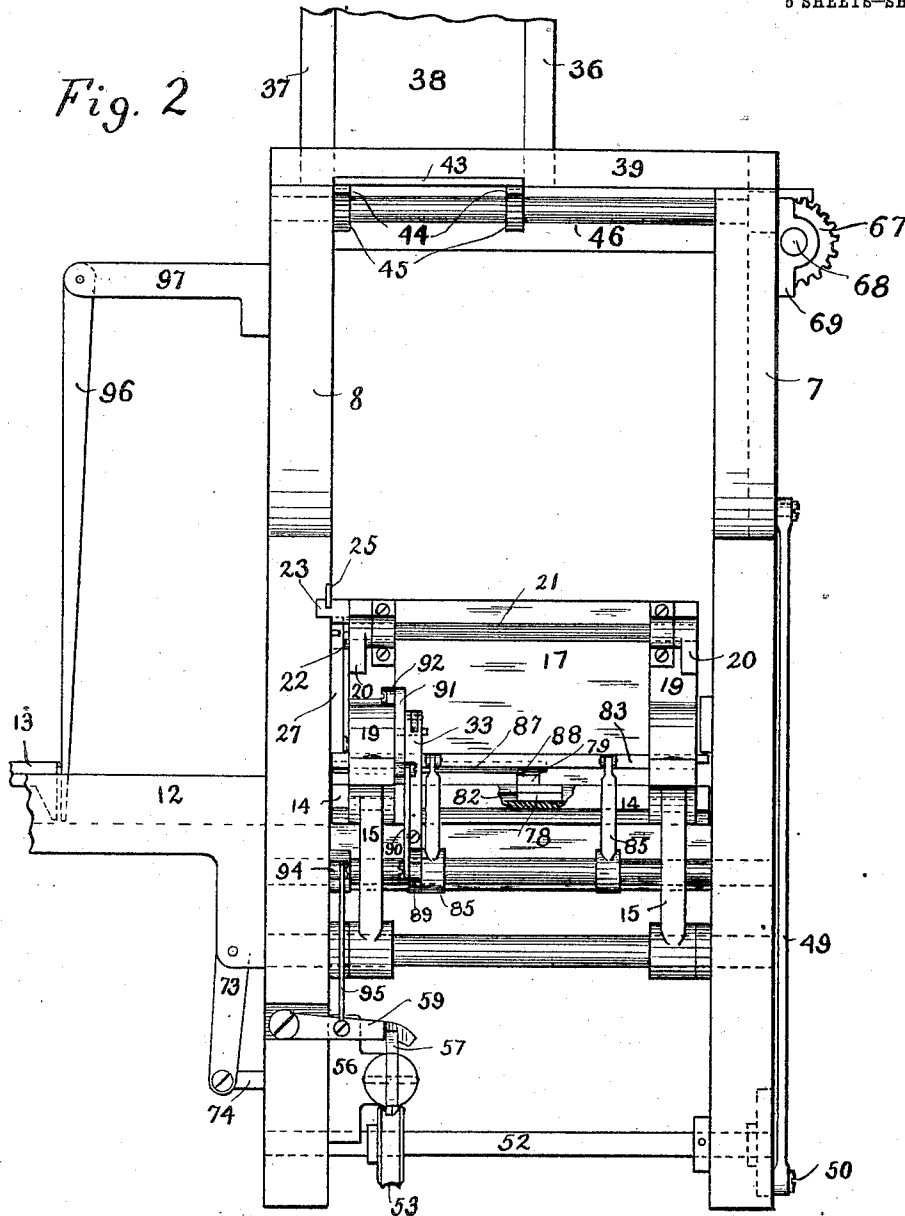
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by J. Amos Johnson
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5 SHEETS—SHEET 2.



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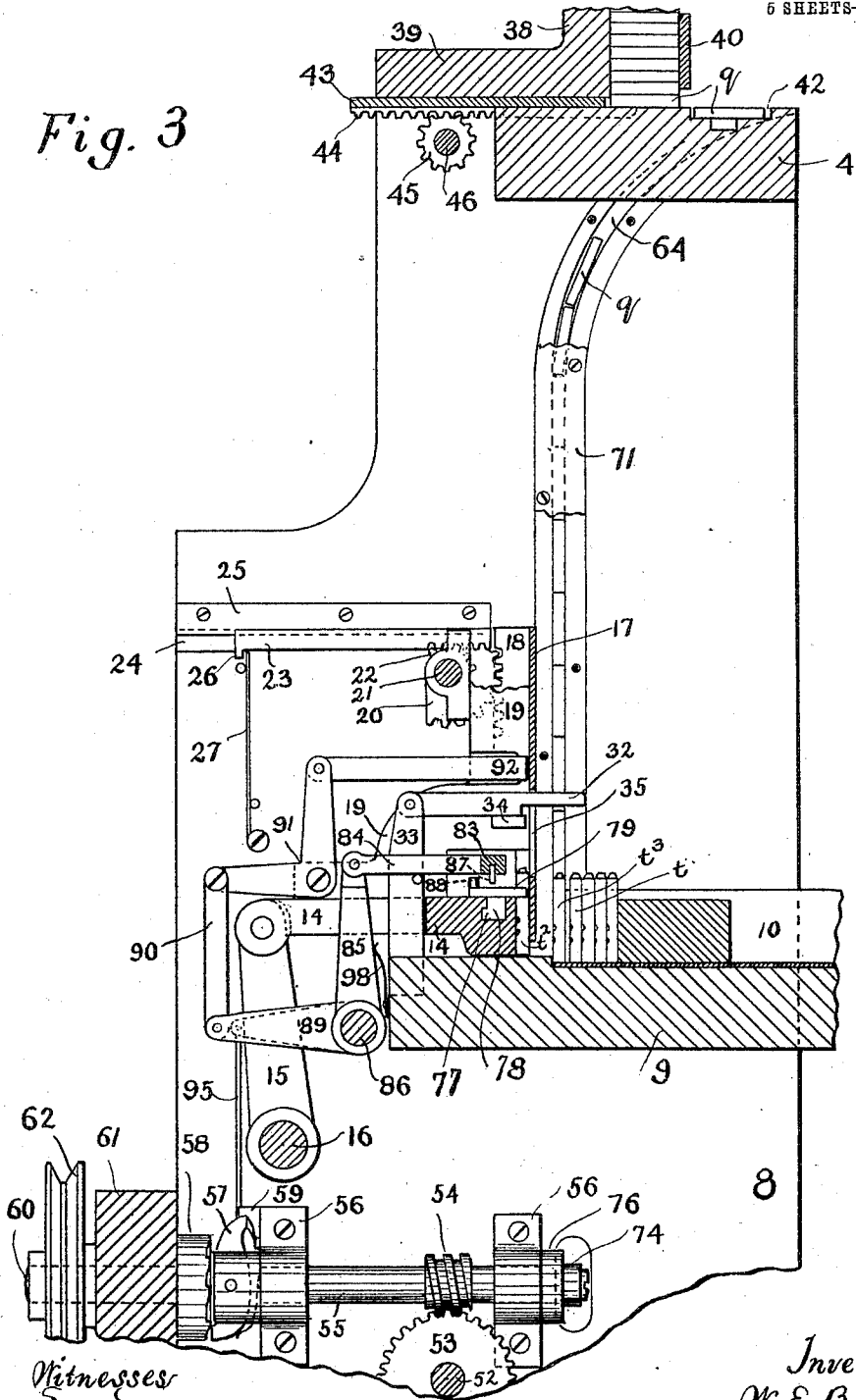
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5 SHEETS—SHEET 3.

Fig. 3

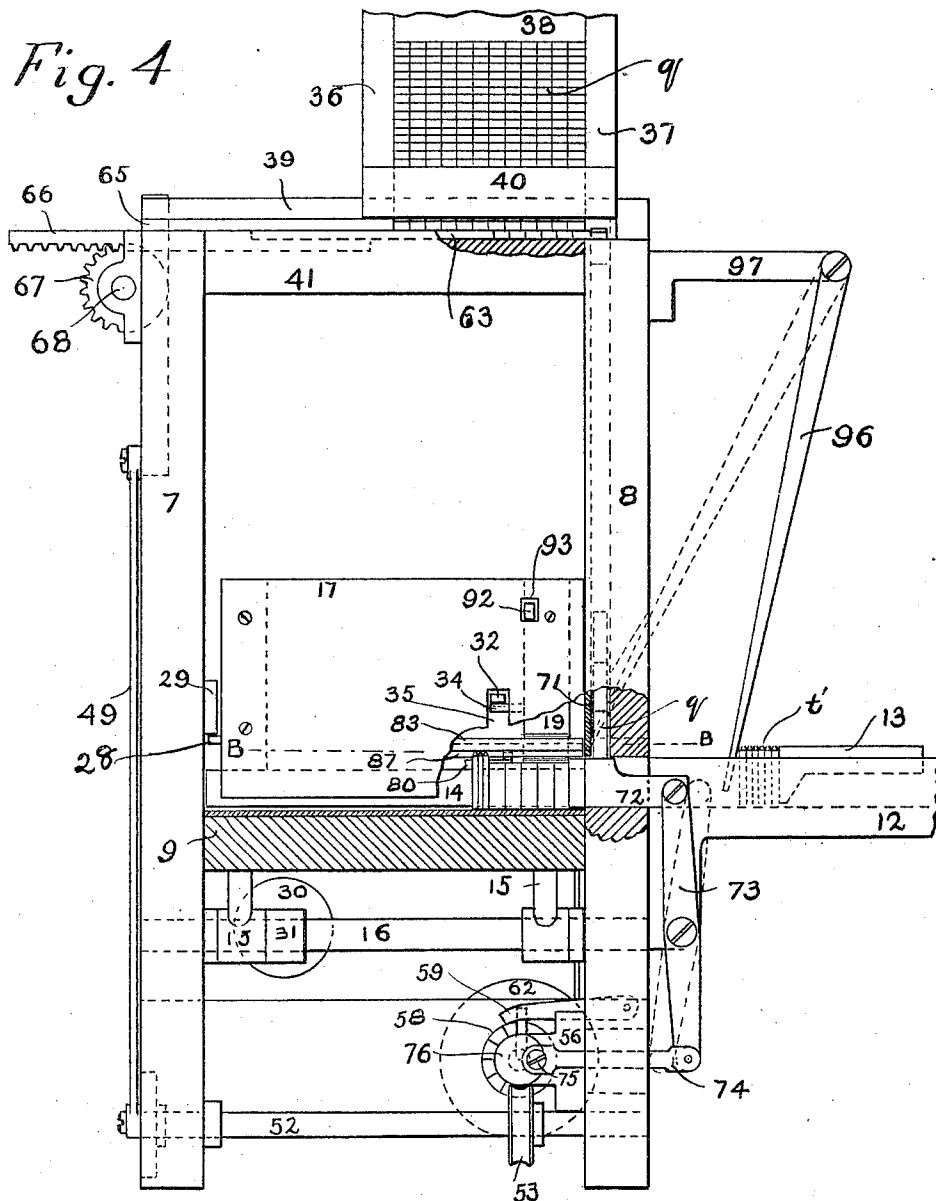


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5 SHEETS--SHEET 4.



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5 SHEETS—SHEET 5.

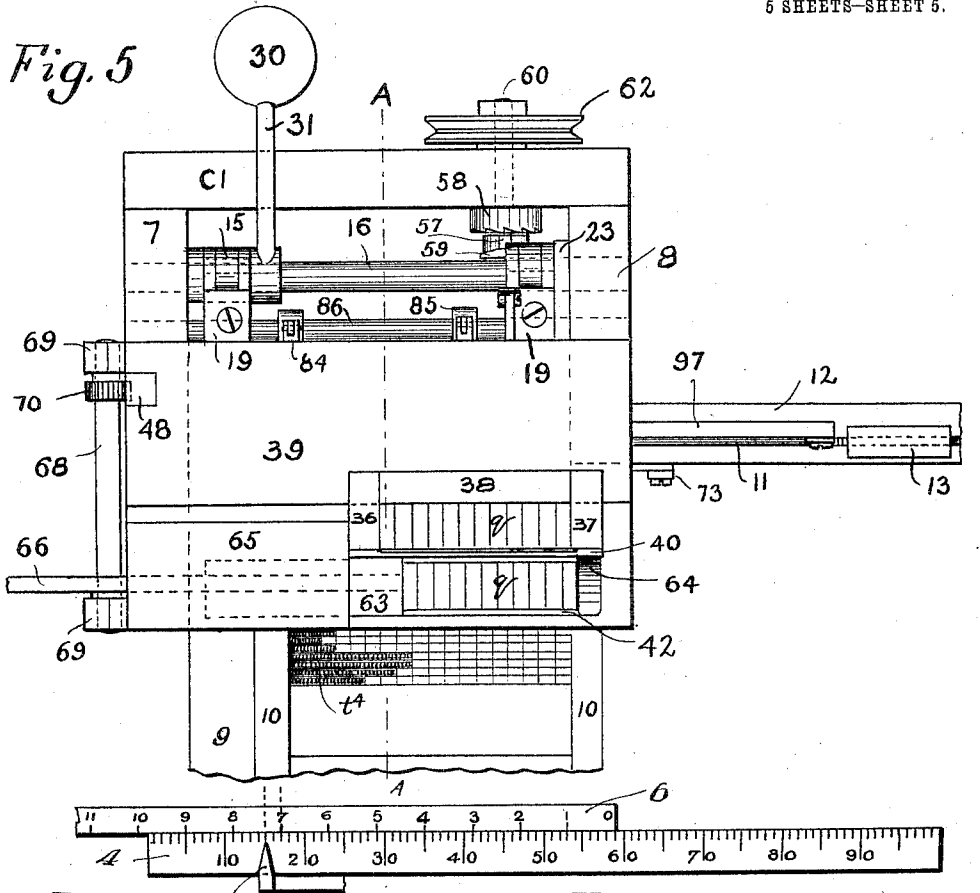


Fig. 8.

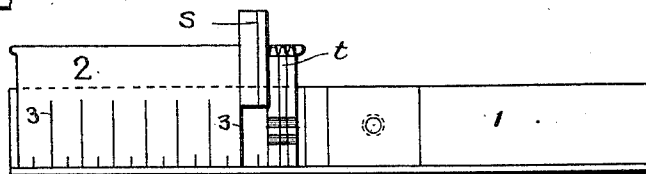


Fig. 6.

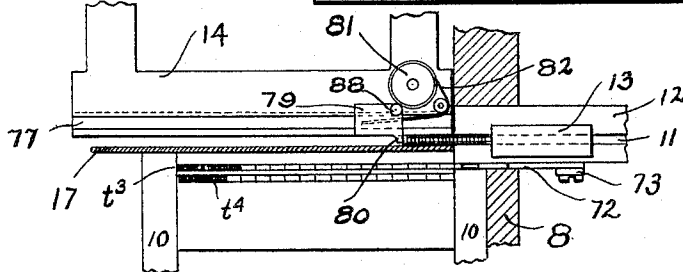


Fig. 7.

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UNITED STATES PATENT OFFICE.

WILLIAM E. BRAND, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO VITE-A-TYPE COMPANY, OF PORTLAND, MAINE, A CORPORATION OF MAINE.

TYPE-LINE QUADDER.

1,051,385.

Specification of Letters Patent.

Patented Jan. 28, 1913.

Application filed November 4, 1907. Serial No. 400,578.

To all whom it may concern:

Be it known that I, WILLIAM E. BRAND, a citizen of the United States, residing at Boston, in the county of Suffolk, State of Massachusetts, have invented a new and useful Type-Line Quadder; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to type-setting and comprises a device for automatically quadding out lines of type. It was designed especially for use in connection with type-casting and composing machines in which the lines are preliminarily represented on a controller—for instance, such a machine as is described and shown in U. S. Patent No. 862,800 to W. E. Brand. Heretofore the representations for spaces have been put in the controller the same as for type and the spaces have been cast for each line as needed. In some kinds of matter—such as testimony and short line locals—nearly or quite one-half the time of composition is taken up inserting space quads. I cast up a supply of space quads ahead, either on the type casting machine, at a time when it is not in use for regular work, or on a special quadding machine. I arrange these quads in a suitable magazine and as the line which needs spacing out—a paragraph line—enters the galley, quads are inserted from the magazine until the line is full. By so doing I greatly increase the speed of composition—considering the time between the striking of the keys and the putting of the type in the galley ready to print from. I also save unduly heating the type mold, as is done when a large number of large size quads are cast in succession, at the same speed at which the type are cast. The device may, however, be used in connection with type set by hand, as will appear from the following description, reference being made to the accompanying drawings in which:

Figure 1. is a front elevation. Fig. 2. is a left elevation. Fig. 3. is a front sectional elevation about on line A—A of Fig. 5. Fig. 4. is a right elevation, the galley and its support being shown in section so as to show the line of type t^3 of Fig. 3. Fig. 5. is a plan. Fig. 6. is a detail in plan—being a section about on line B—B of Fig. 4. Fig. 7. is an elevation of a compositor's stick, showing some type assembled therein.

Fig. 8 shows a scale and registering pointer of a type-setting machine.

I use the word "quad" instead of "quadrate" to mean a blank type for spacing purposes which is as wide as en-set or wider.

The last line of a paragraph, when it does not entirely fill the measure, I term a short or paragraph line.

Type are represented by t and its powers t^1 , t^2 , etc., the different powers representing different positions of lines.

For quadding out the lines I may use quads of any desired width runningwise—as the em quad, 2-em quad, 3-em quad, etc. I have illustrated a device in which the 2-em quad is used. In the first place, if the type in the assembled line which is to be quadded out, does not leave the remaining space to be filled a multiple of 2-em quads, I put in spaces until it does. For instance, in setting type by hand, I assemble them in the ordinary way, as shown at t in Fig. 7, in a stick 1. The composing rule 2 I graduate with lines 3 which are two ems apart, beginning at the end of the rule where the line is to end. Suppose the three type shown constitute a word which ends a paragraph. It needs the two spaces s in order to reach the nearest uncovered line 3. After these spaces are put in it will be seen that seven 2-em quads will just fill out the line to the measure for which the stick is set. The three type t and the two spaces s are now transferred to the quadding device, which automatically puts in the seven quads necessary to space out the line, as will be described. In the case of a type casting and composing-machine, where the running widths are registered in units on a scale, the same thing is done by reference to the scale.

In Fig. 8, 4 represents a scale of a type setting machine which has a pointer 5. This pointer is adapted to move along the scale to register the running widths of the various characters as the keys are struck in the keyboard. Adjacent to this scale I mount a second scale 6 whose graduations represent 2-em quads. The 0 graduation is placed opposite graduation No. 59 of the scale 4—the measure which is being set being 59 units. The pointer stands at graduation No. 15—showing that the composed type of the line amounts to 15 units. A 2-unit space is needed to carry the pointer 5 to the nearest graduation of the scale 6. On striking a key

representing a space of this size, it will be seen that seven 2-em spaces are needed to exactly fill up the line. The operator would then go on with the next line, without waiting to strike space keys to fill up the balance of the measure—the short line being automatically quadded out when it reaches the galley by the device hereinafter described.

Instead of putting the 0 graduation opposite the point on the scale 4 which represents the measure, any graduation might be put there—for instance graduation No. 5—and the same result obtained, *i. e.* the pointer 5 would be two units short of one of the lines on the scale 6. The figures on the scale 6 would then be useless; but by this arrangement the scale 6 needs to be adjusted only a short distance to meet all possible conditions. So far as the quadding out of the line is concerned only the registering pointer 5 and the scale 6 are necessary. In other words, in order to adapt a machine of this class to use my device the registering scale only, needs to be graduated from the end backward to the beginning with plain 2-em graduations.

The parts of the device herein described are mounted on two uprights or standards 7 and 8. As part of an organized machine these uprights would be attached to the main framework of the machine. Between these two uprights extending to the right is a base 9 for the galley 10 in which the lines are assembled. The type t^1 which are to be assembled in the galley, are placed in a runway 11 which is cut in a bracket 12 which bracket is attached to the rear standard 8. The lines may be transferred from the stick 1 as fast as they are composed; or, in the case of a type casting and composing-machine, they would be automatically delivered into the runway 11 as fast as they were cast.

The line, after being assembled in the runway, is moved forward by a slide 13, which may be operated by hand, or in any convenient manner, and is deposited in front of a line packer 14, which is moved to the right to deliver the lines into the galley. This line packer is operated by a pair of arms 15 which are on a shaft 16—said shaft being mounted in the standards 7 and 8. A plate 17 which serves as a "composing rule" has a pair of L-shaped racks 18 which are adapted to slide vertically in a pair of angle brackets 19 which are mounted on the line packer 14. By this means, the composing rule has a bodily movement with the line packer as the latter is reciprocated to the right and left. It has a vertical movement by reason of a pair of sector gears 20 which are on a shaft 21. This shaft is actuated by means of a gear 22 on the rear end of said shaft, which gear meshes with a rack 23 said rack being mounted in a horizontal slot 24 in standard 8, where it is held by a keeper 25.

The rack 23 has, on its left end a downwardly projection 26 which engages a spring 27. On the front end of the composing rule there is a pin 28, which travels around a rectangular switch block 29, which is fastened to the rear side of standard 7. As the line packer is moved to the right, it carries the line of type which are now standing at t^2 with it. The previous line t^3 is pushed by the composing rule farther back into the galley carrying all the lines t^4 previously set, with it. This movement is effected by rocking the shaft 16 which is done by lifting a ball 30 which ball is connected by an arm 31 to the shaft 16. The line packer is latched in its right hand position by a latch pawl 32 which is pivoted to the upper end of a standard 33. This pawl drops behind a latch lug 34 which extends forward from rear angle bracket 19. The right hand end of the latch extends through an opening or slot 35 in the composing rule. With the movement of the line packer to the right the pin 28 passes under the switch block 29 and prevents the composing rule 17 from raising, as it tends to do by reason of the spring 27 which puts the rack 23 under tension. As soon as the line packer reaches its extreme right hand position, the pin 28 passes from under the switch block 29. If the line is a normal justified line—one that does not need quadding out—the composing rule is immediately drawn upward and, as it reaches its highest position, the latch 32 is raised. This permits the weight of the ball 30 to draw the line packer to the left, leaving the line in the position shown at t^3 . As soon as the line packer reaches its starting position at the left, the composing rule will drop—the pin 28 having passed off the upper end of the switch block 29 and the tension of spring 27 having been withdrawn. If the line t^2 is one that needs quadding out, the line packer is held in its right hand position until necessary quads are inserted. After they have been put in, the composing rule is tripped and the parts return to starting position as already described.

The device for holding and inserting the quads will now be described. The quads q , are placed in a magazine composed of front and rear end pieces 36 and 37; left side 38 which has a horizontal portion 39 by means of which the whole is mounted on top of the standards 7 and 8; and a right side strip 40. As the quads are in the magazine they rest on a base plate 41 which extends between the standards 7 and 8. They are ejected into a channel 42 which is cut in the upper surface of base 41, by a blade 43. This blade has a pair of racks 44 which are in mesh with a pair of gears 45. These gears are on a shaft 46 which is mounted in front and rear standards and which has, on its front end, a gear 47. This gear is in

mesh with a vertically reciprocating rack 48 and is connected by a link 49 to a crank pin 50 which is in a disk 51. This disk is on the front end of a shaft 52 which is mounted in the front and rear standards and has a worm gear 53 which is driven by a worm 54—said worm being carried by an intermittently running shaft 55 which shaft is mounted in boxes 56 on the rear standard 8.

The shaft 55 carries in its left end, a pivoted clutch pawl 57 which is normally held out of engagement with a clutch 58 by a stop latch 59. The clutch ratchet 58 is carried by a shaft 60 which is mounted in a tie piece 61 extending between the standards and is driven by power applied to a sheave 62. On raising the latch 59, as will be explained, the pawl 57 is engaged by the ratchet 58, the shaft 55 is revolved and through the connections pointed out the lowest line of quads q in the magazine will be ejected and delivered into the channel 42. They are forced slowly to the rear by a plunger blade 63 and dropped one at a time, into a channel 64 which is cut in rear standard 8. The blade 63 has a keeper plate 65 and is attached to a rack 66 which engages a gear 67. This gear is carried by a shaft 68 which is mounted in a pair of boxes 69 on the front of standard 7 and which has at its left end a gear 70 which engages a rack cut on the front face of the reciprocating rack 48. It will be seen from this construction that the two blades 43 and 63 operate together to eject lines of quads from the magazine and deliver them into the channel 64. The channel 64 has a keeper plate 71 and is long enough to hold say, a dozen quads. This channel terminates at the bottom directly opposite the line of type marked t^3 and has an injecting blade 72 which is pivoted to the upper end of a lever 73. This lever is fulcrumed to the hanger 12 and has a connection rod 74 to a crank pin 75 which is in disk 76 on the right hand end of shaft 55. In its stopped or normal position the injector 72 stands as shown in Fig. 4, with its front end just even with the inside of the galley. As the shaft 55 is turned the lever 73 is drawn back to dotted position at which time the lowermost quad in the channel 64 will fall in front of it and will be carried forward by it into the line t^3 as will be further explained.

The line packer 14 (see Figs. 3 and 6) has an L-shaped slot 77 in which is mounted a slide 78, carrying a plate 79. This plate has a toe 80 which projects into the path of the type as they are driven forward in front of the packer. A light acting spring (not shown) in spring case 81 tends, through cord 82, to carry the plate 79 to the rear, and as a line of type is forced forward the toe 80 retreats, but serves to keep the forward or end type from falling over. Just

above the packer 14 is a bar 83 which is connected by arms 84 to a corresponding pair of arms 85 which are carried by a rock shaft 86. The bar 83 has a projecting flange formed by a piece 87 set in a suitable groove in its under side. The piece 87 is frictionally held and is changed as needed—different lengths being substituted for the different measures which are to be set. The plate 79 carries a pin 88 which is adapted to strike against the flange 87, as the packer 14 is carried to the right and thereby rock the shaft 86. The shaft 86 has an arm 89 connected by link 90 to a bell crank lever 91 which is mounted on rear angle bracket 19. The upper end of the bell crank lever has a latch bolt 92 the right hand of which slides in a slot cut in rear angle 19, and which is adapted to enter an opening 93 in the composing rule 17. The shaft 86 has also an arm 94 which is connected by a link 95 to the stop latch 59 already pointed out. As the type are placed in the channel 11 in front of the slide 13, the end type is kept from falling over by a pendant arm 96 which is pivoted to a bracket 97 on the rear side of standard 8. This arm is made of some light substance such as wood or celluloid. As the line is carried forward the end of the arm 96 rises (it being carried in an arc of a circle) and swings above the toe 80, supporting the end type until the toe 80 takes it.

The action of the device as a whole may now be stated. Lines of type having been set up in a stick from the case; or having been assembled from a type-setting machine; or having been cast on a type-casting and composing machine, are delivered, one at a time, into the runway 11 between the line carrier slide 13 and the preceder arm 96—paragraph lines being left without quadding out, but being spaced so that the amount of space to be filled is a multiple of the 2-em quads q . The line carried slide 13 is moved forward to deliver the line (which may be a full justified line, or short paragraph line) in front of the line packer 14. The plate 79 is driven forward. If the line is a full line, the pin 88 is carried beyond the flange 87. The shaft 16 is rocked by raising the ball 30. The line t^2 is carried to the right and stands at the point t^3 . The previous line t^3 is pushed by the composing rule 17 to position t^4 . The latch 32 drops behind its lug 34. The pin 28, passes under the switch piece 29 and prevents the composing rule 17 from rising and the rack 23 is carried to the right, putting the spring 27 under tension. As soon as the line has been delivered into the galley the pin 28 passes from under the switch 29 and as the locking bolt 94 was not driven the composing rule 17 is at once raised by the spring 27 which resumes its

normal position. This upward movement raises the latch 32 and permits the weighted ball 30 to withdraw the line packer and its connected parts to the left. When the composing rule 17 reaches its left position its pin 28 passes off the switch 29 and it falls to normal position. If however, the line of type is a short one—one that needs quadding out—the pin 88 will not be pushed beyond the flange 87 and as the line packer is carried to the right, the shaft 86 will be rocked, tripping the escape shaft 55. The action of this shaft injects quads *q* into the line which, at this time, is standing in position *7*². The plate 79 is driven forward and when the line is spaced out the pin 88 passes off the flange 87, permitting a spring 98, which acts against one of the arms 85, to return the shaft 86, and stop the action of the shaft 55. At the same time the bolt 92 is withdrawn, permitting the composing rule 17 to be raised and the parts to return to normal position as before. Of course it will be understood that in an organized machine the movements for actuating the line pusher 13 and for raising the ball 30 would be automatic and power-driven.

The number of teeth in the worm gear 53 is made to correspond to the length of the runway 64 and the width of the quad magazine—the arrangement being such that when, say, a dozen quads have been taken from the runway, a dozen more will have been ejected from the magazine and delivered into it. The quadding device is advantageous in filling up a short line that may occur accidentally from any cause—as the lines are thereby prevented from pieing in the galley. While it was designed especially for quadding out the short paragraph lines, it is of equal advantage in poetry, where many and sometimes all the lines are much shorter than the measure and have to be treated as paragraph lines. The galley mechanism herein described is advantageous in delivering the lines when they are all fully justified or spaced; inasmuch as the lines are held on their two sides and at both ends during the time they are being deposited in the galley.

What I claim is:

1. In a typographic device, the combination with means for holding a line of type of a scale having a pointer adapted to register type units thereon, another scale having graduations which correspond to fixed size space quads, said scales being adapted to exhibit the amount of composed matter in the line and the amount of space, if any, which it would be necessary to add thereto in order to leave the remaining space to be filled a multiple of the fixed size space quads, and a quad-inserting device for inserting space quads of said fixed size.

2. In a typographic machine, the combina-

tion with means for holding a line of type of two scales and a common pointer, one of said scales indicating the total amount of a composed line including the normal word spaces in terms of a small unit and the other scale showing the amount of space necessary to quad out the line in terms of a unit of very much larger denomination, and a quad-inserting device for inserting space quads of said larger denomination.

3. A type-line quadder for type-setting machines—said quadder having a magazine of space quads of uniform width and being adapted to receive partial lines of type from said type-setting machine, which lines have been spaced out so that the remaining space to be filled is a multiple of the space quads of said quadder; and means for inserting a sufficient number of said quads to exactly space out the line.

4. A quadding device for type-setting machines in which the short or paragraph lines are spaced out so that the remaining space to be filled is a multiple of a space quad of a fixed size—said quadding device having a magazine of space quads of uniform width; means for inserting said quads into certain lines and means for causing said inserting means to act on short or paragraph lines only.

5. The combination with a type runway, of a galley; a line transfer mechanism, adapted to transfer lines of type from the runway to the galley; and means, between the runway and the galley, for inserting space quads into certain lines.

6. The combination with a type runway adapted to receive composed lines of type, of means for transferring said lines to a galley and means for automatically spacing out the short or paragraph lines.

7. The combination with means for assembling lines of type in a galley, of means for automatically spacing out short or paragraph lines.

8. The combination with a line packer 14 adapted to transfer lines of type to a galley, of a composing rule 17, mounted to move bodily with said packer.

9. The combination with a line packer for delivering a line of type to a galley, of means for locking said packer after delivery of the line, means for automatically quadding out the line while the packer is in its latched position and means for releasing the packer after the line has been filled.

10. The combination with a line packer for delivering lines of type to a galley, of a composing rule carried by said packer, means for locking the packer and rule after delivering the line, means for inserting space quads to fill out a short line while in this locked position and means for raising the rule and releasing the packer after the line has been filled.

11. The combination with a line packer adapted to transfer lines of type to a galley of a composing rule carried by said packer, means for putting the rule under tension to rise as the packer is moved to deliver the line and means for releasing the rule immediately after delivery of the line is made when the line is of standard length.

12. The combination with a line packer adapted to transfer lines of type to a galley, of a composing rule carried by said packer, means for forcing a line between the packer and the rule, and means carried by the packer for supporting the foremost type of the line as it is forced between the packer and the rule.

13. The combination with a line packer adapted to transfer lines of type to a galley, of a composing rule mounted to move bodily with the packer and having a movement thereon at right angles to the movement of the packer.

14. The combination with a line packer adapted to deliver lines of type to a galley, of a composing rule and means for interposing said rule, during delivery, between the line which is being delivered and the line previously delivered.

15. The combination with a galley and mechanical means for delivering lines of type therein, of means for supporting each line on its two sides and two ends during the time of its delivery, a part of said supporting means being inserted between the line which is being delivered and the line previously delivered.

16. The combination with a space quad channel having a reciprocating plunger therein which is adapted to deliver space quads therefrom, of means for bringing lines of type successively to aline with the plunger and means for causing the plunger to act to inject space quads into the line wherever a short line is presented.

17. The combination with a space quad delivering device, of means for bringing lines of type successively to aline with it and means for causing said delivery device to act to inject space quads wherever a short line is presented.

18. The combination with a magazine of space quads of uniform size, of the quad channel 64, the blades 43 and 63 for ejecting the quads and delivering them one at a time into the said channel.

19. A space-quad channel, in combination with a magazine of space-quads, means for delivering quads from the channel and means for simultaneously delivering quads from the magazine to the channel.

20. A space-quad channel having an intermittently running delivery mechanism, in combination with a space-quad magazine having a mechanism adapted to deliver quads from the magazine into the channel and means for simultaneously and automatically operating the two mechanisms—the former to eject quads from the channel and the latter to deliver quads to the channel.

21. The combination with the line packer 14, (for delivering type to a galley) carrying the composing rule 17, of the spring-seated rack 23 adapted to put the composing rule under tension and the locking bolt 92 for preventing the raising of the composing rule when a short line is being carried into the galley.

22. The combination of the following elements, to-wit: A space quad inserting mechanism adapted to be driven by the intermittently running shaft 55; the line packer 14 carrying the sliding trip pin 88; the bar 83, having flange piece 87 coöperating with said trip pin and connections from the bar 83 to trip the shaft 55 when the packer 14 is actuated to deliver a short line to the galley.

23. The combination with a type channel of means for moving a line of type therein and a swinging pendant 96—said pendant being adapted to swing with the moving line and having its free end entering the type channel, to prevent the end type from falling.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM E. BRAND.

Witnesses:

ATHERTON W. ROGERS,
FLAVILLE G. KYLE.