

No. 703,987.

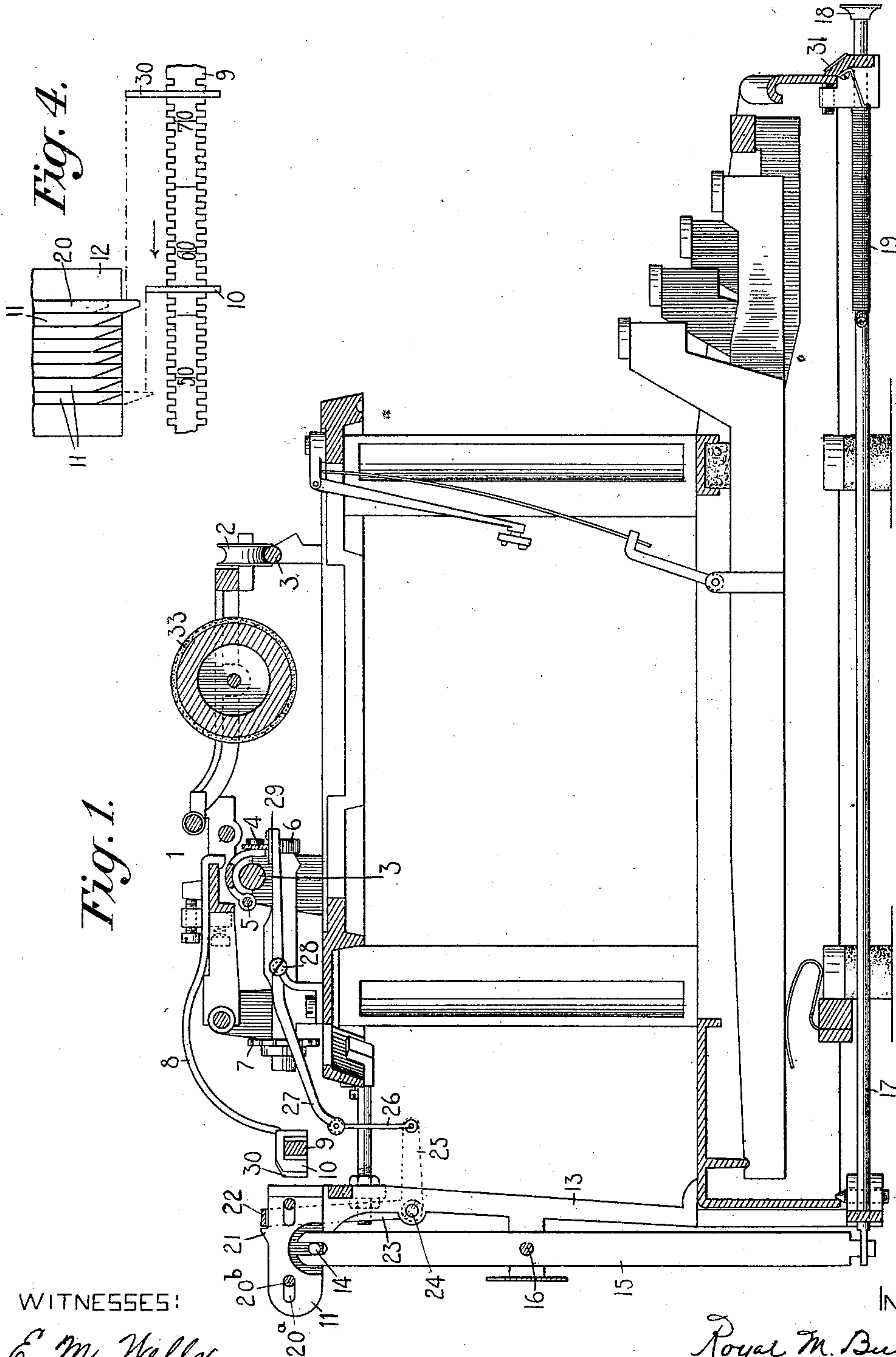
Patented July 8, 1902.

R. M. BULLARD.
TYPE WRITING MACHINE.

(Application filed May 9, 1902.)

(No Model.)

4 Sheets—Sheet 1.



WITNESSES:

E. M. Wells.

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INVENTOR

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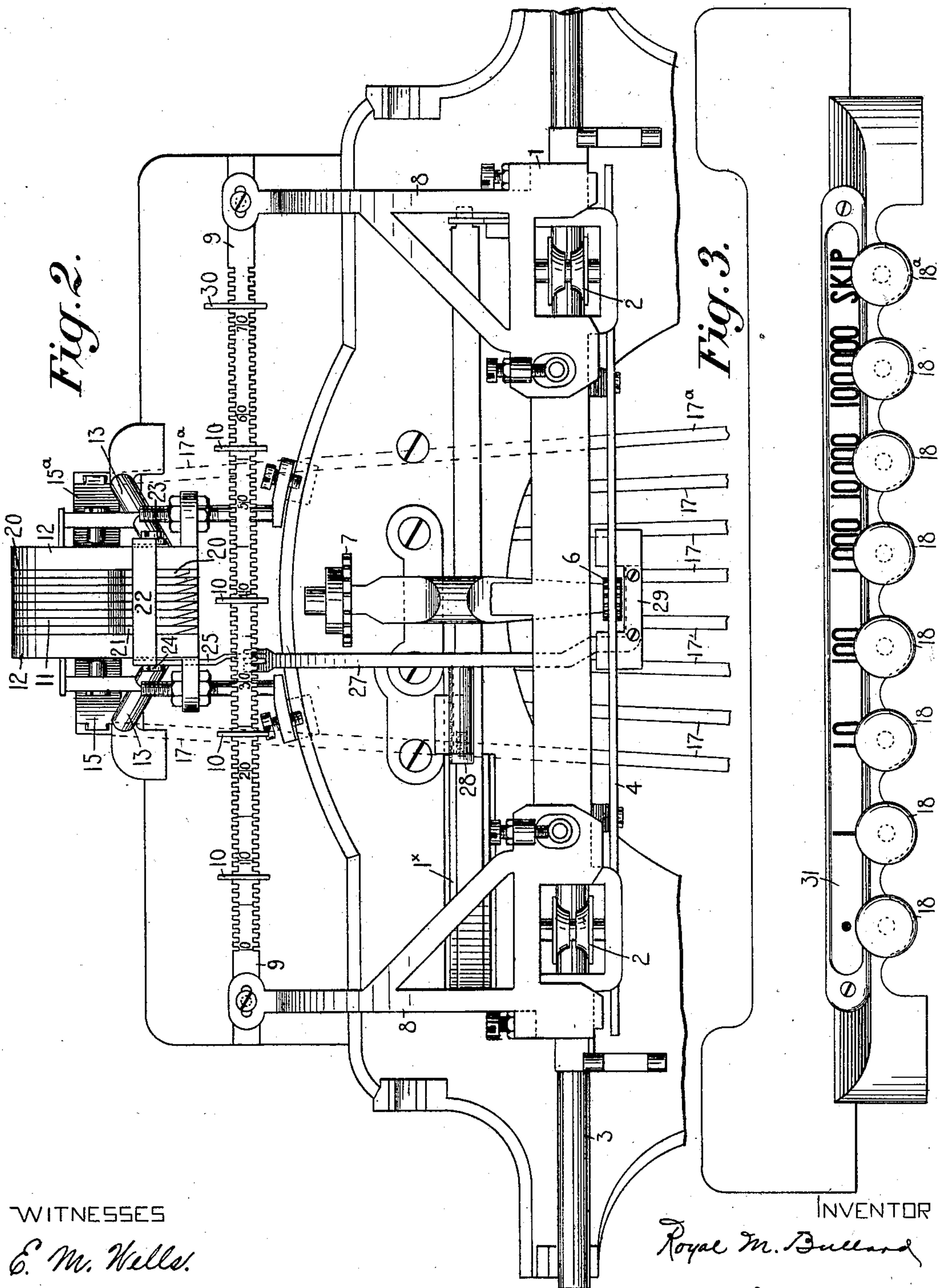
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4 Sheets—Sheet 2.



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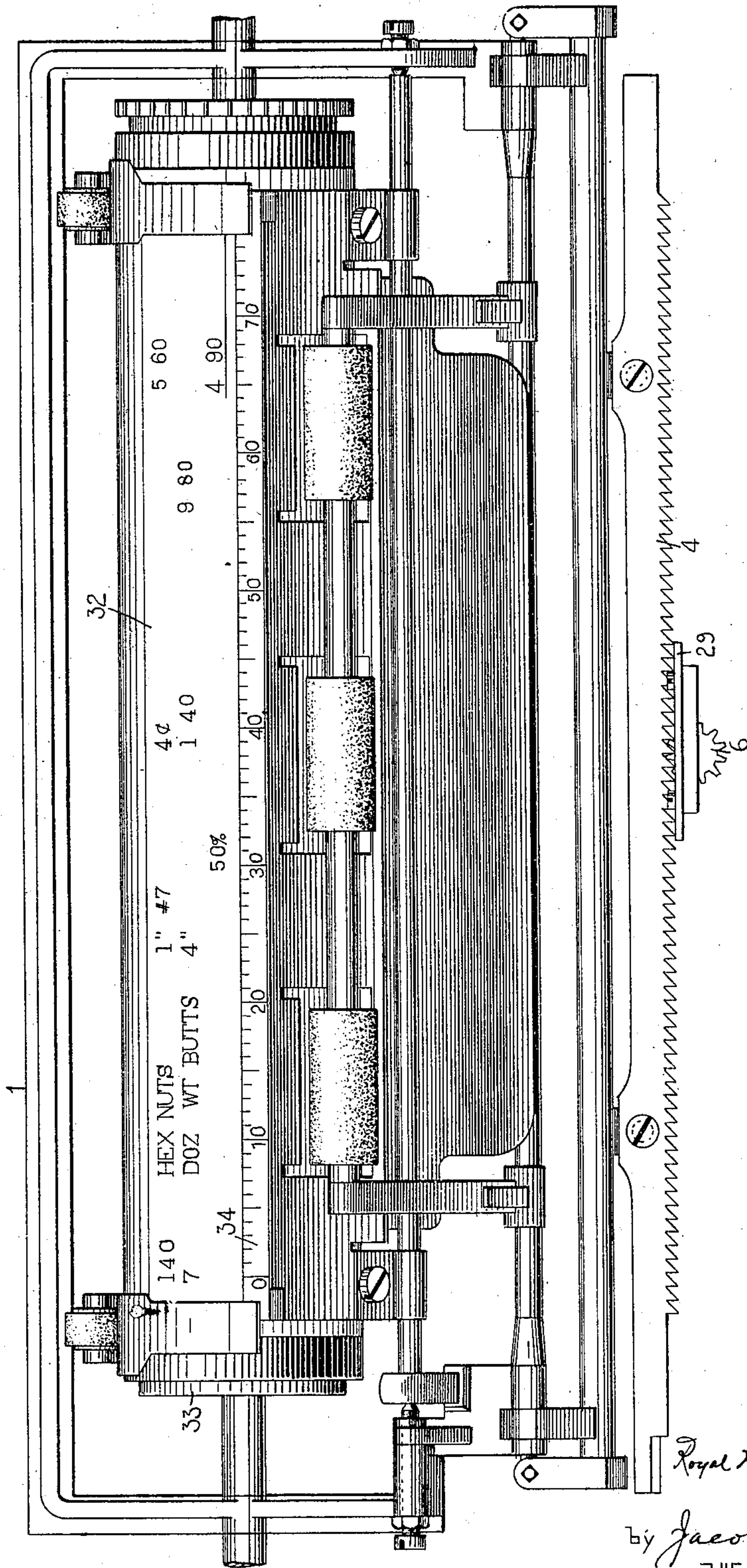
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Fig. 5.



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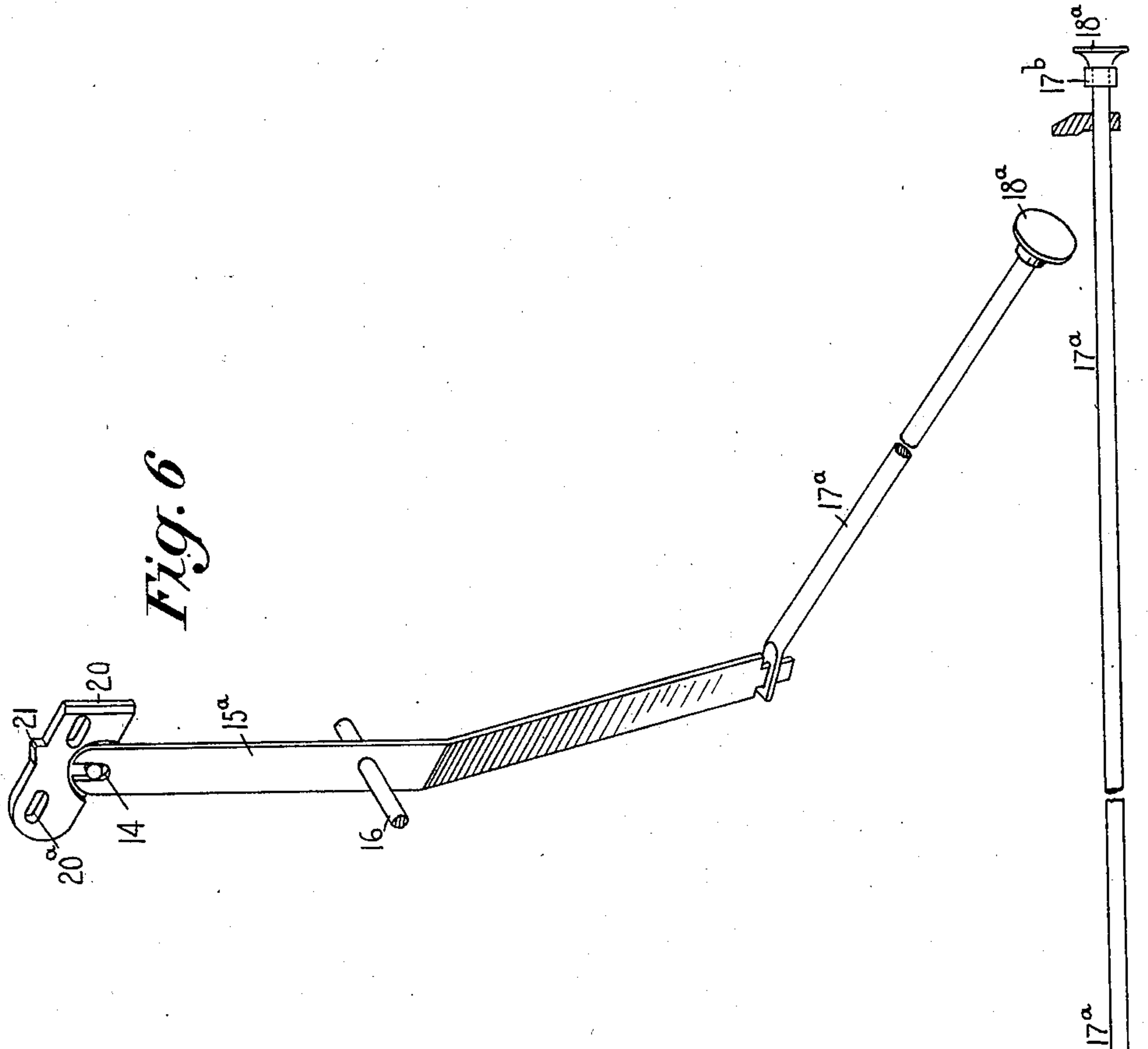
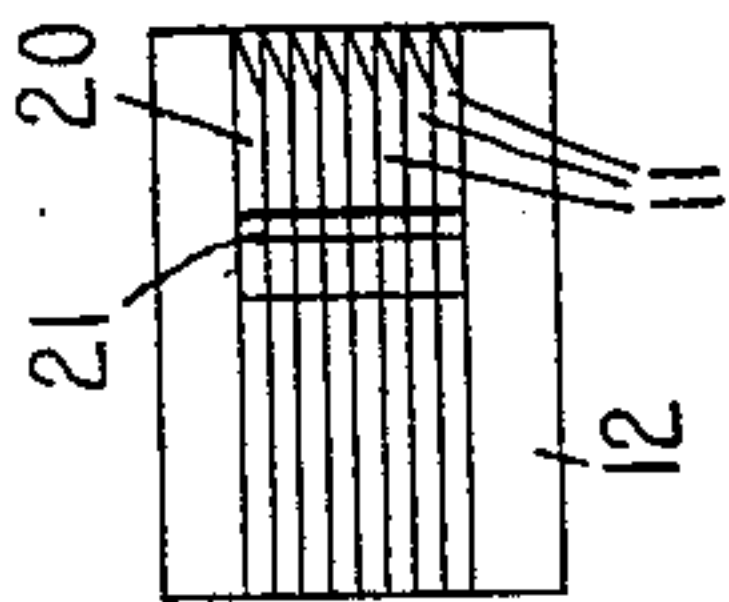


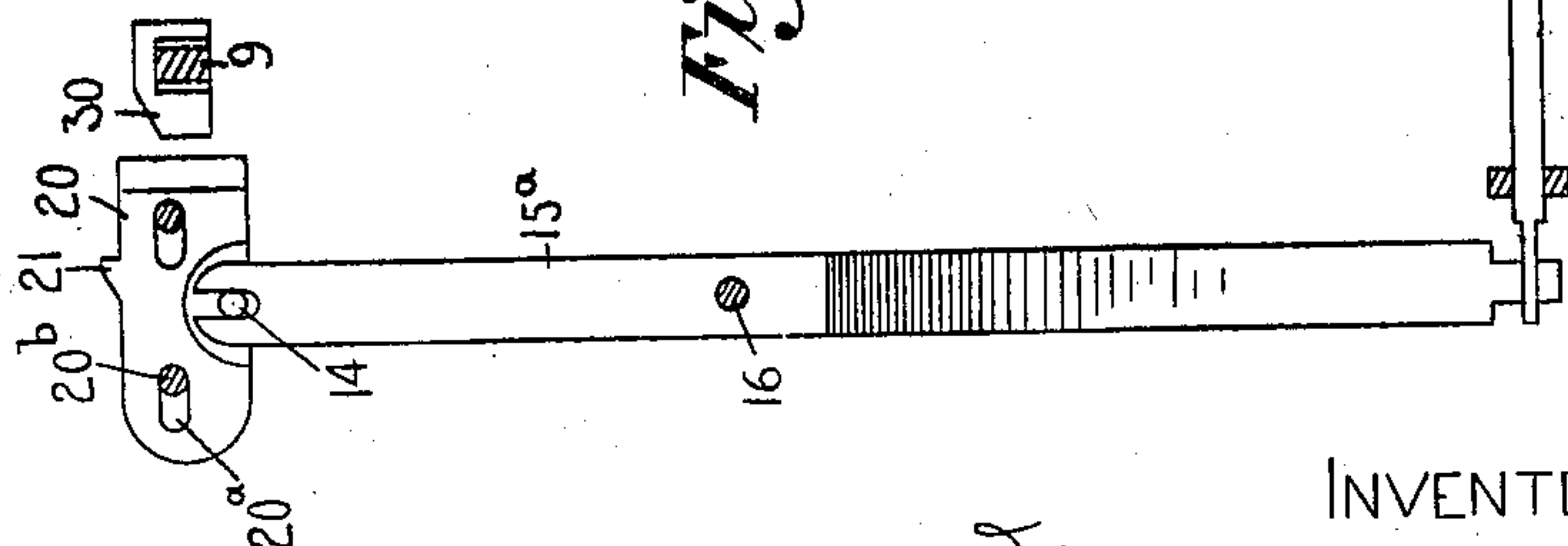
Fig. 8.



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Fig. 7.



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UNITED STATES PATENT OFFICE.

ROYAL M. BULLARD, OF CHICAGO, ILLINOIS, ASSIGNOR TO WYCKOFF,
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TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 703,987, dated July 8, 1902.

Application filed May 9, 1902. Serial No. 106,601. (No model.)

To all whom it may concern:

Be it known that I, ROYAL M. BULLARD, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

In the well-known Gorin tabulator as applied to type-writing machines the paper-carriage is provided with a toothed bar upon which are arranged a plurality of adjustable column-stops for arresting the carriage at predetermined points or columnar positions on the page. In connection with these column-stops is employed a series of denominational stops arranged on the framework of the machine and at the upper portion thereof opposite the column-stop bar. These denominational stops are connected to a series of keys arranged at the front of the machine and at the base thereof, there being one key for each denominational stop. Combined with the series of denominational stops is a carriage-releasing mechanism, whereby when any denomination-key is actuated not only will its associated stop be projected in the path of the column-stops on the stop-bar, but parts of the carriage-feed mechanism will be separated and the carriage will be released for rapid movement toward the left under the influence of its spring-drum, and the carriage will be arrested when the first column-stop on the right of the denominational stop projected reaches and contacts with said stop. The keys controlling the denominational stops are marked with characters representing the values of said stops, so that when, for example, the thousands-key is actuated the carriage will be arrested at the thousands position in the particular column controlled or governed by the first column-stop to contact with the projected thousands-denomination stop.

Heretofore it has been customary to make all of the denominational stops of equal length and also to give them an equal throw, and likewise it has been common to make all of the adjustable column-stops of uniform size, so that their rearmost or operating edges or portions all terminate in the same transverse vertical

plane. In consequence of this construction and arrangement when any denominational stop is projected and the carriage is released the carriage will be arrested by the first column-stop to arrive in the plane or path of the projected denomination-stop. In some cases this is found to be objectionable, because when a plurality of column-stops are employed in the production of a given piece of tabular work it is often desired or necessary in preparing or writing some of the items to skip one or more of the predetermined columns and go, say, to the last column on the page or to the extreme right-hand column to write therein some particular matter which should only be written in such column. This is accomplished now in the Gorin tabulator by releasing and stopping the carriage by separate manipulations of one of the denomination-keys as many times as there are column-stops or columns to be skipped. This mode of operation is not only objectionable, because it is time-consuming, but it involves much attention and care on the part of the operator to see that the carriage has jumped or skipped the requisite number of times and is finally brought to the columnar position desired.

The main object of my invention is to provide simple and effective means whereby the paper-carriage may be released and arrested at the desired column, regardless of the fact whether or not there be one or more column-stops in advance of the place at which the carriage is to be automatically arrested.

In carrying out my invention I provide on the carriage a special construction of column-stop and which is longer or has a greater projection rearwardly than the other column-stops and employ in connection therewith a key-actuated stop somewhat similar to the denomination-stops, but shorter than the same, (or having a shorter movement,) said key-actuated stop being also connected with the carriage-release mechanism and in a manner such that when it is projected it will free the carriage for rapid movement and will be moved to a position where it will stop or arrest the special elongated column-stop, but not far enough to engage any of the other or regular column-stops, and hence when the

carriage is released by said special key-actuated stop it will only be arrested by its associated special elongated stop on the carriage, all as will be hereinafter more fully explained, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a central longitudinal section of a No. 6 Remington type-writing machine with the Gorin tabulator and my improvements applied thereto. Fig. 2 is a top plan view, increased scale, of the rear upper portion of the said machine, certain parts being omitted to more clearly show other parts. Fig. 3 is an enlarged front elevation of the tabulating-keys at the front of the base of the machine. Fig. 4 is an enlarged view of a portion of the column-stop rack-bar having an ordinary stop thereon and also my special stop and showing also a series of denomination-stops and my special key-actuated stop to cooperate with said special column-stop. Fig. 5 is an enlarged front elevation of a part of the writing-machine with the paper-carriage turned up and showing some billwork to illustrate one of the uses to which my invention may be put. Fig. 6 is a perspective view of the special stops and parts connected therewith. Fig. 7 is a side view to show that the special skipping-stop may be made of the same length as the regular denomination-stops, but that it has a shorter movement than the same. Fig. 8 is a plan of the denomination-stops and the skipping-stop to show that they are of equal length, though the skipping-stop has a shorter throw.

In the several views the same part will be found designated by the same numeral of reference.

In view of the fact that the said Remington machine and the said Gorin tabulator are so well known by those skilled in the art and are also shown in so many Letters Patent heretofore granted it will be necessary only briefly to describe the same.

1 designates generally the paper-carriage of the type-writing machine, said carriage having wheels or rollers 2, which travel on parallel guide-rods 3. A spring-drum 1^x, as usual, is connected to the paper-carriage, so as to move it toward the left, and this movement is controlled during the course of writing by an escapement mechanism comprising a feed-rack 4, supported by spring-pressed arms, which are pivoted at 5 on the paper-carriage, a pinion 6, with which said rack normally meshes, an escapement-wheel 7, operatively connected with the shaft upon which said pinion is mounted, and key-controlled escapement-dogs which alternately engage the teeth of said escapement-wheel and give to the carriage a step-by-step feed movement toward the left as long as the feed-rack 4 and pinion 6 are in engagement. The escapement-dogs and the shaft of the pinion 6 are not shown.

Extending rearwardly from the carriage are

arms 8, that at their free ends support the column-stop rack-bar 9, which is toothed or notched on opposite sides to receive bifurcated column-stops 10 in the usual way and which are removable and adjustable to different positions on said bar, the latter being numbered or graduated to correspond with the usual carriage-scale. Cooperating with these column-stops are a series of slidable denominational stops 11, arranged in a group close together within a frame or housing 12, supported by a bracket 13, secured to the base of the machine and extending upwardly to a point in line with and in rear of the column-stop rack-bar, as shown more clearly at Fig. 1.

Each denomination-stop 11 by a pin and slot 14 is connected to an upright lever 15, pivoted at 16 in said bracket 13 and connected at its lower end to a horizontal push-rod 17, arranged beneath the base of the type-writer. Said rod is provided at its outer end with a key button or head 18 and also with a return-spring 19.

By reference to Fig. 2 it will be observed that the inner or operating beveled ends of the seven denomination-stops 11 all terminate in the same vertical plane, or, in other words, that the said stops are all of equal length, and it will also be noted that the rearmost or operative ends of all of the four column-stops 13, shown as adjusted on said rack-bar, terminate in the same vertical plane or have an equal projection toward the denomination-stops.

As will be seen at Figs. 2 and 4, on the right of the group of denomination-stops 11 there is a special stop 20 and which is shorter than the said denominational stops, or, in other words, it will be seen said stop 20 is not projected out quite so far as said stops 11. This stop 20, however, is otherwise constructed the same as the denominational stops and is connected to a lever 15^a and a spring-returned push-rod 17^a, having a key 18^a, so that it is operated in substantially the same manner as the denominational stops. The stop 20 and each of the denominational stops have a lug or shoulder 21, which is adapted to move a universal bar 22, supported by arms 23, pivoted at 24 in the bracket 13, the said arms being connected to a rocker-arm 25, which by a link 26 is connected to a lever 27, pivoted at 28 in a bracket on the framework. The other end of the said lever carries a shoe piece or lifter 29, which is adapted to raise the feed-rack 4 when the rear end of the lever 27 is pulled down and which occurs when any one of the stops 11 or 20 is moved forwardly. Thus the carriage is released from the control of its escapement or feed mechanism for rapid movement toward the left. At Figs. 2 and 4 it will also be observed that to the right of the last column-stop 10 is provided a special column-stop 30 and which, except that it is longer or has greater projection than the regular column-stops 10, is made in exactly the same way as the latter.

The horizontal pivot-pin 16 serves as a fulcrum for all of the upright levers 15 and also for the lever 15^a. All of these levers are parallel at their upper ends or at those portions situated above the common pivot 16, so as to connect, respectively, with the series of parallel denomination-stops 11 and with the special stop 20. The lower portions of said levers 15 and 15^a diverge or fan outwardly as they approach the base of the machine and so as to connect properly with the push-rods 17 and 17^a, which have a converging arrangement from front to rear, but which nevertheless occupy a greater space at their rear-most ends than the space occupied by the group of stops 11 and 20 considered widthwise; hence the divergence or outward bends of the lower ends of the upright levers 15 and 15^a.

Attached to the front face of the base of the machine is a scale or index 31, which opposite the various denomination-key heads 18 bears marks or characters indicative of the values of said keys—that is to say, numbers or characters that show which stop will be projected when any given key is actuated. For example, the first key on the left is connected to the first stop 11 on the left, which is the decimal-stop, the next key is connected with the units-stop, the next with the tens, the next with the hundreds, the next with the thousands, the next with the ten thousands, and the next with the hundred thousands stop. At the extreme right of the index or plate 31 and over the key 18^a is marked the word "Skip" to indicate the special or skipping stop 20, connected with said key.

When any one of the keys 18 is pushed rearwardly, its associated stop 11 will be moved forwardly, and during the same movement, through the operation of the universal bar 22 and the lever connections therewith, the feed-rack 4 will be disengaged from the pinion 6 and the carriage will be released and moved rapidly toward the left until the first column-stop on the right of the one projected strikes said projected stop, which will arrest the carriage. Depending upon the particular key 18 actuated, the carriage will be arrested either at the decimal or column position or at some denominational position to the right thereof. If, however, the key 18^a be actuated, the special or skipping stop 20 will be projected and the carriage simultaneously released, and any column stop or stops 10 which may at the time be on the right-hand side of said stop 20 will pass by the stop 20, and the carriage will not be arrested until the special stop 30 comes in contact with the stop 20.

Referring now to Fig. 5, it will be observed that the paper-carriage has been swung upwardly to exhibit the preparation of a bill or statement with my improved tabulating mechanism. It will be observed that the work is divided into six columns, and accordingly it is necessary to arrange four column-stops 10 and my special stop 30 in the proper

positions on the column-stop rack-bar 9 to enable the various columns to be produced at the desired places on the paper or bill 32, which is applied to the platen 33 and which is adapted to be fed in line-space direction in the usual manner. By referring to the scale 34 at Fig. 5 it will be seen that the first column extends from "0" to "8," and hence the first column-stop 10 must be placed at "8" on the column-stop bar. Further, it will be seen that the second column extends from "8" to "24," and hence the second column-stop must be placed at "24" on its bar; that the third column extends from "24" to "39," and hence the third column-stop must be placed at "39" on the bar; that the fourth column extends from "39" to "56," and hence the fourth column-stop must be placed at "56" on the bar; that the fifth column extends from "56" to "65" on the scale 34, but that the next column-stop or special stop 30 must be placed at "72" on the bar, and that the last column extends from "65" on the scale to the end of the same.

The stop 30 is placed at "72" on its supporting-bar, because the cooperating stop 20 is located seven letter-spaces to the right of the printing-point, and hence when the carriage is stopped by the stops 20 and 30 that portion of the platen opposite "65" on the platen-scale 34 will be in register with the printing-point. The denominational stops 11 are at letter-space distances apart.

It will be observed that the first line of the bill calls for "140 Hex. nuts 1' $\frac{7}{8}$ at 4¢, 5.60." This line of the bill is written or prepared in the following manner: The carriage is retracted, so that "0" or zero on the scale 34 registers with the printing-point. Then the figures "140" are written in succeeding letter-spaces, the carriage feeding letter-space distances to the left, as usual. The decimal-key 18 is then pushed rearwardly, and the first stop 11 on the left of the series is projected, and at the same time the carriage is released; but it is arrested as soon as the first column-stop 10, stationed at "8" on the column stop-bar, arrives at the projected decimal-stop, or, in other words, the carriage is arrested at "8" on the carriage-scale, whereupon the operator will write in the words "Hex. nuts" in the second column. Finishing this, the operator will push in the decimal-key again, and the carriage will skip and be arrested by the contact of the second column-stop 10, located at "24" on the column-stop bar, with the projected decimal-stop. The operator will then proceed to write in "1' $\frac{7}{8}$ " in the third column. The operator will then press in the decimal-key again and cause the carriage to skip until arrested by the third column-stop, located at "39" on its bar, coming in contact with the projected decimal-stop. The operator will then write "4¢" in the next column, and it remains then only to bring the head of the last column to the printing-point for the printing of the

amount or dollars and cents of the item in the "net" or last column provided therefor and which is the column-space extending from "65" toward the right of the scale; but
 5 it will be perceived that between the column-stop 10 at "39" and the column-stop 30 for the last column there is present a column-stop 10 for stopping the carriage at "56," and with the ordinary tabulating mechanism
 10 it would be necessary to actuate the decimal-key, which would cause the carriage to skip and be stopped at "56," and then actuate said key a second time to again release the carriage to enable it to skip to the last column,
 15 represented by the stop 30. With my improvements, however, this is now unnecessary, for after the rate price "4¢" has been written in it will only be necessary for the operator to actuate the key 18^a to project the
 20 special stop 20 and release the carriage, and owing to the fact that the said stop 20 cannot be moved out into the path of the column-stop 10, which is located at "56" on the stop-bar, the said column-stop will pass by said
 25 stop 20, and the carriage will not be arrested until the stop 30 comes into engagement with the stop 20, and which positions the carriage at once for the writing in of the net amount "5.60" in the proper column. It will be understood, of course, that if in this line it were
 30 not necessary to write in "1" \times 7 4¢, but to write only "140 Hex. nuts 5.60" when the operator had finished writing the description of the articles the special key 18^a might be
 35 actuated and the carriage caused to skip by the second, third, and fourth column-stops 10, located, respectively, at "24," "39," and "56" on the column-stop bar, thus avoiding releasing and stopping the carriage a number
 40 of times in order to bring the amount-column to the printing-point.

It will be observed that the second item of the bill calls for "7 doz. wt. butts 4" at 1.40," which equals "9.80," but that there is a discount of fifty per cent. from this price. The
 45 carriage is retracted, so that zero comes in register with the printing-point again, and "7" is written in the first column. The decimal-key is actuated and the carriage arrested, so that the "7 doz. wt. butts" may be written in the second column. The decimal-key is actuated again, so that the carriage is released and arrested for the writing of the size "4" in the third column. The decimal-key
 55 is actuated again for the release of the carriage and its rearrest at "39" for writing in the rate "1.40" in the fourth column. The decimal-key is operated again to release the carriage and arrest it at the fifty-sixth position for the writing in of the gross price "9.80" in the fifth column. Then the platen is rotated one line-space distance and the carriage retracted to any arbitrary position, as "30," on the scale for the printing of the amount
 65 of the discount on this item—namely, fifty per cent. Then it becomes necessary to release the carriage and arrest it in the net-column

position, beginning at "65." This is done by actuating the special key 18^a, which causes the carriage to travel uninterruptedly from
 70 "33" on the scale to "65," the third and fourth column-stops 10 passing by the projected stop 20 and not interfering with the continuous run of the carriage. Without the special stops 20 and 30 it would of course be
 75 necessary to release and arrest the carriage twice before it could be arrested at the sixty-fifth position. Thus it will be seen that by the use of my improvement there is a great saving of time in the making out of bills or
 80 statements and doing other tabular work and that said improvements conduce to greater accuracy, since the operator is not obliged to bear in mind how many stops have got to be skipped before the net-column is reached,
 85 and is not obliged to refer to the scales or observe the position of the carriage to determine how many movements or jumps the carriage must make to get it down to the net or final column position. It will further be understood that when the carriage is arrested at the net-column position or at "65" the operator has simply to write in the net amount, as "5.60" or "4.90," as the case may be. Between the dollars and cents of this column
 95 there may be left a space or there may be imprinted a period or decimal, as desired.

If it should happen that the net amount should be ten dollars or comprise two digits to the left of the decimal-point, the operator
 100 will move the carriage back one letter-space, so as to print the first numeral at "64," and if the net amount should be, say, fifty-five cents after the stoppage of the carriage at "65" the operator will space the carriage
 105 down two spaces by hand, so as to begin writing at "67."

While I have shown but one skipping-stop 20 and one column-stop 30 to cooperate therewith, it will be understood that there may be
 110 employed two and even three of the short skipping-stops 20, with a key for each such stop. If two such stops be employed, one next the other, it will be seen that if the left-hand stop be projected the carriage will be
 115 arrested at the tens position or, say, at "64" on the carriage-scale, whereas if the right-hand stop 20 be actuated the carriage will be arrested at the units position or at the sixty-fifth position on the carriage-scale, which enables the carriage to be stopped in the net column at different denominational positions.
 120

My improvements are so simple that an ordinary Gorin tabulator may be easily converted into one embodying said improvements—that is to say, it is only necessary to shorten the millions denominational stop, as 11, to change it into a skipping-stop, as 20, and to provide an elongated stop, as 30.
 125

Of course there may be as many denominational stops and as many column-stops 10 as may be desired, and the latter, as well as the special stop 30, may be variously arranged on the column-stop bar in accordance with
 130

the particular work to be done. In preparing other tabular work involving the use of higher figures or larger amounts in some of the intermediate columns it would be convenient to employ the various denomination-keys 18, so as to arrest the carriage at different denominational positions in the several intermediate columns, and in such cases instead of releasing the carriage by actuating the decimal-key it could be released by other of the denominational keys. For example, if the bill were to read "50 tons of steel rails at 29.50 per ton," the tens denomination-key might be actuated to arrest the carriage at the tens position in the rate-column. In still other work, where there is no rate-column—as, for example, where the invoice is to be written "1 locomotive at 25,500," the ten-thousands key may be actuated to arrest the carriage at the tens-of-thousands position in the final column or the column which is to be added if there is more than one item.

It will be seen, of course, that my invention may be employed in connection with what is sometimes called a mere "column-stop" mechanism—that is to say, one in which the carriage is released and arrested always in one or more columnar positions and not in denominational positions in any given column. For instance, there may be only one key, as the decimal-key 18, and one stop connected thereto which will always release the carriage and cause it to be arrested by engaging any one of the different column-stops 10 that may happen to be first on the right of said decimal-stop 11 when projected. In other words, my special stops 20 and 30 may be employed in connection with only one projectable stop, as 11, and a plurality of column-stops, as 10, so that when it may be desired to release the carriage and skip any one or more of the intervening column-stops 10 it is only necessary to actuate the key 18^a and its associated stop 20 to effect this result. Referring now to Figs. 7 and 8, it will be perceived that the stop 20 is made like the stops 11 and that it is of the same length as said stops; but it is arranged that this stop 20 shall have a movement or throw less than that of the remaining stops 11 in order that it may not be moved far enough to engage any of the column-stops 10, but only far enough to engage the elongated special column-stop 30, and so as to accomplish the same results as the construction shown in the remaining views, as hereinbefore described. The limited or reduced movement of the stop 20 may be obtained in a variety of ways, as will be apparent to those skilled in the art. I show for this purpose on the push-rod 17^a a collar or washer 17^b, between the base-frame and the head of the key, which by contacting with the said frame will arrest the key-rod and connected parts up to the stop 20 before the stop can be moved forward far enough to be in the path of any of the stops 10. It will be observed at Fig. 1 that none of the other push-

rods 17 is provided with a collar or stop, as 17^b, and hence said rods may be moved farther rearward than the rod 17^a before its head 18 strikes the frame, and hence its associated denominational stop 11 may be moved farther forward than the stop 20. Of course a suitably-constructed stop device, as 17^b, may be placed at any desired point between the skipping-stop 20 and its key, or in lieu thereof the slots 20^a, which embrace the fixed guide-pins 20^b, may be made shorter than shown, so as to limit the forward sliding motion of the stop.

While I have shown my invention embodied in one style of machines and in one form only, it will of course be understood that the same may be used in any description of type-writing machines and that said invention may be carried out in numerous other forms.

Although I prefer to use one key, as 18^a, both for projecting the stop 20 and releasing the carriage, it will be understood that in so far as the broad feature of my invention is concerned the release of the carriage may be effected by a separate operation somewhat after the fashion of known tabulating devices, wherein the column or denominational stop is projected by the stroke of one key and the carriage is released subsequently, as by the operation of a separate or different key.

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

1. In a type-writing machine and in a tabulating mechanism, the combination of a plurality of column-stops, a stop adapted to cooperate with each of said column-stops, a skipping-stop arranged to avoid each of said column-stops, and a special column-stop adapted to cooperate with said skipping-stop.

2. In a type-writing machine and in a tabulating mechanism, the combination of a plurality of column-stops, a stop adapted to engage with each of said column-stops, a supplemental column-stop having a greater projection than said plurality of column-stops, and a skipping-stop having a projection only great enough to cooperate with said supplemental column-stop.

3. In a type-writing machine and in a tabulating mechanism, the combination with a plurality of column-stops of uniform projection, a denomination-stop adapted to cooperate with each of said column-stops, a supplemental column-stop having a greater projection than the said plurality of stops, and a skipping-stop having a less projection than said denomination-stop, whereby the said skipping-stop when operated will cooperate only with the said supplemental column-stop.

4. In a type-writing machine and in a tabulating mechanism, the combination of a power-driven carriage, a column-stop bar thereon, a plurality of uniform column-stops on said bar and also a supplemental column-stop extending beyond the working faces of said plurality of column-stops, a key-actuated stop adapted to engage with each of said plurality of

column-stops, and a key-actuated skipping-stop adapted to cooperate only with said supplemental column-stop.

5 In a type-writing machine and in a tabulating mechanism, the combination of a power-driven carriage, a column-stop bar thereon, a plurality of uniform column-stops on said bar and also a supplemental column-stop extending beyond the working faces of said plurality of column-stops, a key-actuated stop adapted to cooperate with the said plurality of column-stops, and a key-actuated skipping-stop having a less projection than the other said key-actuated stop and adapted to cooperate
10 only with the said supplemental column-stop.

6. In a type-writing machine and in a tabulating mechanism, the combination of a power-driven carriage, a column-stop bar thereon, a plurality of uniform column-stops on said bar
20 and also a supplemental column-stop extending beyond the working faces of said plurality of column-stops, a key-actuated stop adapted to engage with each of said plurality of column-stops, a key-actuated skipping-stop adapted to cooperate only with said supplemental column-stop, and means connected to each of said key-actuated stops for releasing the carriage when either of said stops is projected.
25

30 7. In a type-writing machine and in a tabulating mechanism, the combination of a power-driven carriage, a column-stop bar thereon, a plurality of uniform column-stops on said bar and also a supplemental column-stop extending beyond the working faces of said plurality of column-stops, a key-actuated stop adapted to cooperate with the said plurality of column-stops, a key-actuated skipping-stop having a less projection than the other said key-actuated stop and adapted to cooperate only with the said supplemental column-stop, and means connected to each of said key-actuated stops for releasing the carriage when either of said stops is projected.
40

45 8. In a type-writing machine and in a tabulating mechanism, the combination of a power-driven carriage, a column-stop on said carriage, a key-actuated stop upon the framework to engage said stop, a second column-stop on said carriage and having a greater projection than the first, and a key-actuated skipping-stop on the framework to cooperate only with the said second column-stop.
50

9. In a type-writing machine and in a tabulating mechanism, the combination of a power-driven carriage, a column-stop on said carriage, a key-actuated stop upon the framework to engage said stop, a second column-stop on the carriage and having a greater projection than the first, a key-actuated skipping-stop on the framework to cooperate only with the said second column-stop, and means for releasing the carriage when either one of said key-actuated stops is projected.
55

60 10. In a type-writing machine and in a tabulating mechanism, the combination of column-stops projecting different distances and co-

operating stops one of which is adapted to engage only that one of the column-stops having the greatest projection.
70

11. In a type-writing machine and in a tabulating mechanism, the combination of a power-driven carriage, a column-stop bar thereon, a plurality of column-stops of uniform projection, a supplemental column-stop of greater projection, a key-actuated stop on the framework adapted to cooperate with each of said plurality of column-stops, and a key-actuated skipping-stop on the framework of less length than the other key-actuated stop and adapted
75 to cooperate only with the said supplemental column-stop.
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12. In a type-writing machine and in a tabulating mechanism, the combination of a power-driven carriage, a column-stop bar thereon, a plurality of column-stops of uniform projection, a supplemental column-stop of greater projection, a key-actuated stop on the framework adapted to cooperate with each of said plurality of column-stops, a key-actuated skipping-stop on the framework of less length than the other key-actuated stop and adapted to cooperate only with the said supplemental column-stop, and means connected with each of said key-actuated stops for releasing the carriage when either of said stops is projected.
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13. In a type-writing machine and in a tabulating mechanism, the combination of a plurality of column-stops of equal projection, a plurality of denomination-stops of equal projection, and each adapted to cooperate with said plurality of column-stops, a skipping-stop having a less projection than said denomination-stops, and a supplemental column-stop of greater projection than said plurality of column-stops.
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14. In a type-writing machine and in a tabulating mechanism, the combination of a plurality of column-stops of equal projection, a plurality of denomination-stops of equal projection and each adapted to cooperate with said plurality of column-stops, a skipping-stop having a less projection than said denomination-stops, a supplemental column-stop of greater projection than said plurality of column-stops, and means for releasing the carriage when any one of said denomination-stops or said skipping-stop is actuated.
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15. In a type-writing machine and in a tabulating mechanism, the combination of a power-driven carriage, a column-stop bar thereon, a plurality of uniform column-stops on said bar, a plurality of key-actuated denomination-stops of equal projection on the framework of the machine to cooperate with said column-stops, a key-actuated skipping-stop of less length or projection than the said denomination-stops, and an elongated column-stop on the column-stop bar adapted to cooperate only with said skipping-stop.
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16. In a type-writing machine and in a tabulating mechanism, the combination of a power-driven carriage, a column-stop bar thereon, a plurality of uniform column-stops on said

bar, a plurality of key-actuated denomination-stops of equal projection on the framework of the machine to cooperate with said column-stops, a key-actuated skipping-stop
5 of less length or projection than the said denomination-stops, an elongated column-stop on the column-stop bar adapted to cooperate only with said skipping-stop, and means for releasing the carriage when any one of said key-
10 actuated stops is operated.

17. In a type-writing machine and in a tabulating mechanism, the combination with a plurality of column-stops and cooperating key-

actuated denomination-stops, of a skipping-stop arranged on the right of said series of
15 denomination-stops, and a supplemental column-stop to cooperate only with said skipping-stop and arranged on the right of said plurality of column-stops.

Signed at Chicago, in the county of Cook 20
and State of Illinois, this 30th day of April,
A. D. 1902.

ROYAL M. BULLARD.

Witnesses:

G. H. OLMSTEAD,
GEO. B. HOWARD.