

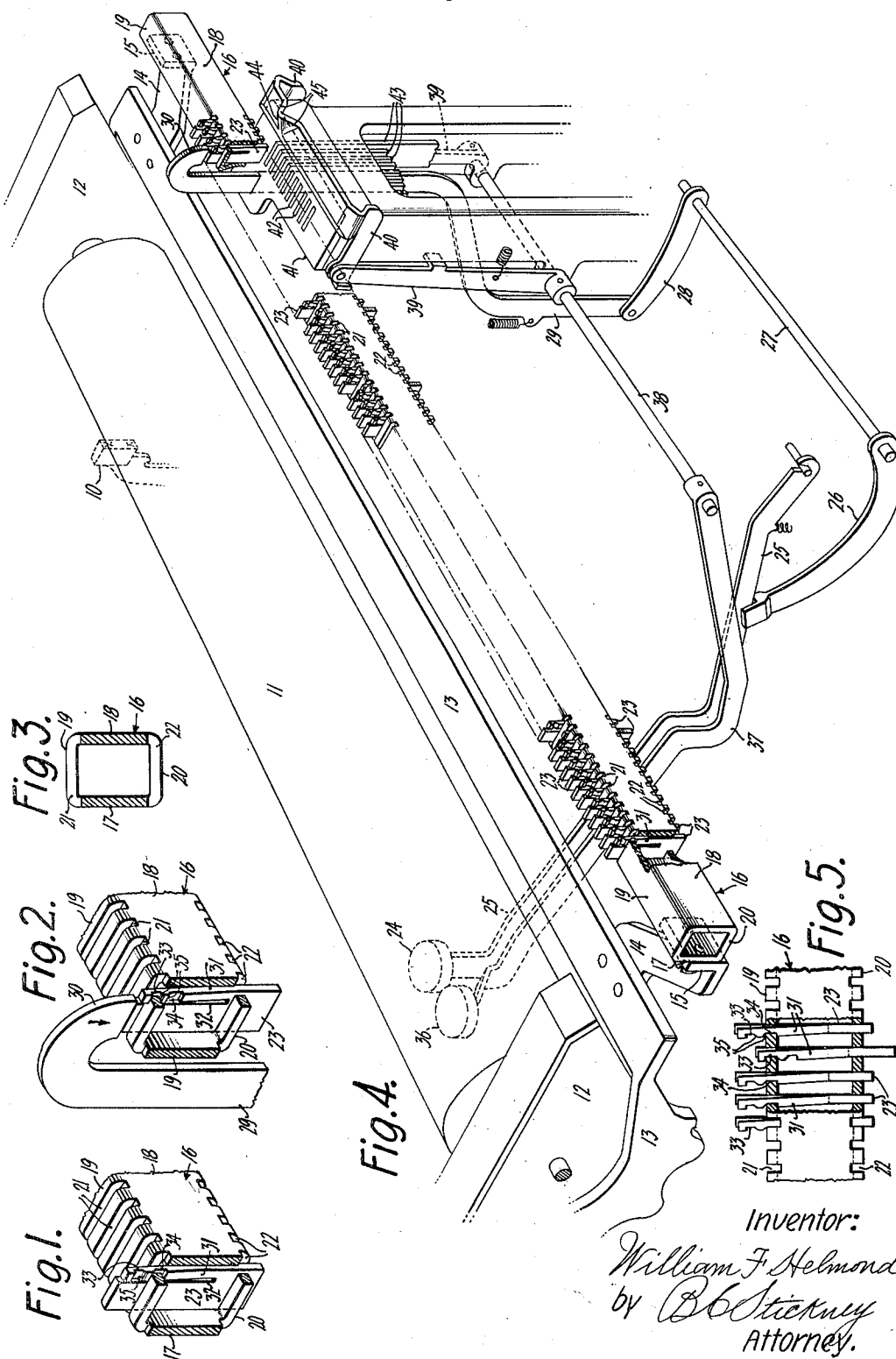
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TYPEWRITING MACHINE

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TYPEWRITING MACHINE

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This invention relates to racks used in typewriting and other machines, the pitch of the teeth corresponding with the spacing movement of the typewriter-carriage. The invention relates primarily to a rack, which is illustrated in connection with a tabulator, the novel rack being fitted up with novel tabulator-stops. A key-set tabulator is illustrated, although the invention may be used for racks upon which the column-stops are manually adjusted.

The present practice is to form a rack by milling teeth in one side of a bar, and inserting a column-stop in every notch in the rack, and holding them in by keepers. The stops are normally provided with spring-detents, substantially as set forth in the Corcoran Patent 1,247,084, of November 20, 1917, or the patent to Doane 1,157,683, of October 26, 1915. Such construction of the rack-bar is expensive. The assembling of the key-set stops is even much more expensive, since a skilled workman requires an entire day in properly assembling the individual stops in the rack. There is usually a spring-detent fitted for every notch in the rack, and sometimes a rack is two feet long, making a total of two hundred spring-detents, each consisting of a spring and a ball. If the workman finds that he has omitted one spring it devolves upon him to take the device all to pieces again in order to supply the missing part.

It is desired to make the carriage-racks of great strength, so that there will be no liability of springing, with resultant erroneous location of the carriage at the tabulating operation. Since there should be no spring in the rack-bar it is found necessary in practice to make it very heavy. It is desired, however, to make the racks very light, as well as inexpensive, and it is also desired to make the column-stops and detents cheaply, and to insert them easily and without liability of oversight or omission of a detent part.

A feature of this invention is the construction of a column-stop-bar in the form of a metal tube, which may be of oblong rectangular conformation. The tube may have rounded corners, and may be made of steel, the tube being a regular article of commerce.

This tube is converted into a rack by cutting cross-slots in its opposite narrow sides, each slot extending through three walls of the tube, and the slots on one side co-operatively registering with those on the other side.

For each column-stop there may be used a blade, which may be inserted endwise and passed through both companion slots, and may be guided edgewise by the longer sides of the tube. This tube is very cheap, and the slots may be cut therein very inexpensively and very accurately, and they may be cheaply supplied with key-set column-stops, although the invention is not limited to key-set stops.

A further advantage of the invention is in that the ball-and-spring detents disclosed in said patents may be eliminated, and the stop itself may be cheaply formed with an integral detent. This is done merely by slitting the stop near one of its side edges, the slit extending nearly the entire length of the stop, dividing it into a body-portion and a finger-portion. The finger is bent a little, out of line with the body, and in the end of the finger are stamped two notches, one of which detains the stop in projected position, and the other of which detains it in normal retracted or idle position, by reason of the inherent springiness of the finger, which causes the engagement of the finger-notches with the adjoining rack-tooth.

One of the features of the invention is the lightness, as well as the cheapness of the rack. This rack may be made from 8 to 24 inches in length, and its tubular form presents the advantage of great lightness with great rigidity, both of which are desiderata in typewriting machines. The lightness of the rack is of great importance when the rack is placed on the carriage, because the weight of the carriage must be limited to the point at which it is unnecessary to employ a speed governor. By using the tubular rack the weight of the entire carriage is kept within the desired limit, and the necessity of using a speed governor is avoided.

Other features and advantages will hereinafter appear.

In the accompanying drawing,

Figure 1 is a perspective sectional view of

a fragment of the improved rack-bar with improved stop therein, the stop being shown in idle or withdrawn position.

Figure 2 is a similar view, showing the manner of setting a stop at the operation of a key.

Figure 3 is a cross-section of the rack.

Figure 4 is a perspective rear elevation of the paper-carriage of an Underwood typewriter, showing the improved rack mounted thereon, and the improved stops mounted in the rack and settable selectively by means of a key.

Figure 5 is a sectional elevation of the rack, showing the manner in which the detents hold the stops in either idle or projected positions.

In said machine types 10 strike rearwardly against a platen 11 mounted in a platen-frame 12, the latter mounted upon a carriage 13.

From the ends of said carriage are extended rearward arms 14, having end flanges or ears 15 serving to support a novel rack 16. This rack is a metal tube having oblong rectangular cross-section, comprising a front side 17, whereby it is secured to the flanges 15, a rear side 18, a top 19 and a bottom 20.

The top and bottom of the rack are cut through at letter-space intervals to form slots or notches 21, 22. These notches or slots extend transversely of the bar, each slot having parallel sides and extending entirely through the top 19, or the bottom 20. The top slots are in line with the bottom slots. The slots are narrowed, so as to leave sufficient uncut metal between the notches to connect the sides 17, 18 firmly, to preserve the rigidity of the tube, and avoid danger of twisting or of collapse.

The top slot, the companion bottom slot, and the opposite sides 17, 18 of the tube, taken together form an all-around guideway for a column-stop 23. This is illustrated in the form of a rectangular blade, fitted freely to or between the inner faces of the rack sides, so that the stop can be readily raised or lowered as required. It is guided edgewise by the rack sides, and facewise in the top and bottom slots or notches. This produces an inexpensive rack and an inexpensive stop. There is great width of support for the stop, rendering it efficient and dependable. The lightness of the hollow rack is important, especially when used on a carriage. Former solid racks have in some cases proved prohibitive, as for example on wide carriages. This rack may be provided with 80 stops, and both rack and stops will be very light and adapted for the ordinary size of typewriter. The device is easy to assemble upon the carriage, and the stops do not require attention by a skilled machinist, as they are readily thrust into place, and the detent demands no

adjustment nor attention, and even little or no inspection.

The rack-tooth can be engaged upon both inner and outer sides by the detent-teeth, so to prevent accidental endwise displacement of the stop in either direction. The extreme tooth on the finger may lock the stop against withdrawal from the rack, but the operator may press said finger to one side and release said extreme tooth, so that it can be passed through the slot in the rack; this releasing operation being repeated for the opposite rack-slot. The stop may be inserted head first in either side of the rack, and pressed to position where it will be held by the springy detent.

The stop-blade may fit loosely in the notch-bearings in the rack, and said spring-finger may also serve for the purpose of holding the base end of the stop against one side of the rack-slot. Hence when the carriage strikes the end of the stop which projects from the opposite side of the rack, the impact of the carriage tends to rock the stop facewise, said rocking being opposed by the springiness of the finger or stops which serves as a take-up or check for gradually arresting the carriage or tending to prevent its rebound.

The stops may be set by means of a key 24, although the invention is not limited to key-set tabulators, nor is it even limited to a tabulator-stop mechanism, as it may be employed for margin-gages and so on, in typewriting and the like machines.

The key 24 depresses a lever 25, and the latter forces down an arm 26 of a transverse rock-shaft 27, upon the opposite end of which is another arm 28, which pulls down a stop-setting link 29, said link having a goose-neck 30 to engage the top of whatever column-stop 23 may be in its path at the time. Thus the column-stop 23 is selectively depressed by the key 24.

The stop may be practically and inexpensively detained in either projected or withdrawn position by means of a spring-detent 31 formed upon the stop by cutting a longitudinal slot 32 therein close to one edge, this slot defining the finger 31. In said finger are formed upper and lower notches 33, 34, to catch upon the edges of the slots 21. These fingers in manufacture are bent a little towards the left at Figure 5, and are therefore normally out of line with the stops, considered facewise. Each notch in the finger has upper and lower beveled sides 35, so that downward pressure upon the top of the stop, or upward pressure on its bottom, will force the stop down or up; the finger being caused to yield by reason of the beveled sides 35. The detent will therefore hold the stop either up or down, and is very simple, compact and efficient. The spring-finger also gives a little cushion-

ing effect at the arrest of the tabulating carriage.

If the invention is used for key-set stops, the latter may be restored in any conventional or suitable manner, as by depressing a key 36, which operates a lever 37 fixed upon a rock-shaft 38, which has upright arms 39 pivoted at their upper ends to a bail 40, surmounting a level top plate or bed 41, which has guides 42 for decimal-stops 43. Upon this bail is provided a cam 44, and by depressing the key 36 said cam can be moved forwardly to occupy an effective position in the path of the depressed column-stops, and thereupon a longitudinal movement of the carriage will cause all the said stops to be cammed up by 44 to normal positions. The cam 44 is provided with inclined ends 45, to engage and lift any stop that happens to be in its path at the moment that key 36 is being depressed.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. In a machine of the class specified, a column-stop-bar in the form of a metal tube, opposite walls of the tube being pierced by slots at regular intervals to divide said walls into duplex sets of rack-teeth, the slots on one side matching those upon the opposite side.

2. In a machine of the class specified, a column-stop-bar in the form of a metal tube of oblong rectangular form in cross-section and having rounded corners, opposite walls of the tube being pierced by slots at regular intervals to divide said walls into duplex sets of rack-teeth, the slots on one side matching those upon the opposite side.

3. In a machine of the class specified, a column-stop-bar in the form of a metal tube and having rounded corners, opposite walls of the tube being pierced by slots at regular intervals to divide said walls into duplex sets of rack-teeth, the slots on one side matching those upon the opposite side.

4. In a machine of the class specified, a column-stop-bar in the form of a metal tube and having rounded corners, opposite walls of the tube being pierced by slots at regular intervals to divide said walls into duplex sets of rack-teeth, the slots on one side matching those upon the opposite side, each slot extending entirely through the narrow wall of the tube, to enable the slots in each set to cooperatively match the slots in the other set.

5. In a machine of the class specified, a column-stop-bar in the form of a metal tube of oblong rectangular form in cross-section, opposite walls of the tube being pierced by slots at regular intervals to divide said walls into duplex sets of rack-teeth, the slots on

one side matching those upon the opposite side, and a column-stop in the form of a blade insertable endwise through any pair of companion slots and engageable edgewise with the broader sides of the tube to be guided thereby.

6. A four-sided column-stop-tube of rectangular cross-section and having opposite sides cross-slotted to form companion racks, the slots extending entirely through the tube-walls, and detachable stops confined in said tube and extending outwardly through the slots.

7. In a machine of the class specified, a column-stop-bar in the form of a metal tube of oblong rectangular form in cross-section and having rounded corners, opposite walls of the tube being pierced by slots at rectangular intervals to divide said walls into duplex sets of rack-teeth, the slots on one side matching those upon the opposite side, the slots narrow so as to leave sufficient uncut metal between the slots to form rack-teeth and connect the sides of the tube firmly to preserve its rigidity.

8. In a machine of the class specified, a column-stop-bar in the form of a metal tube of oblong rectangular form in cross-section, opposite walls of the tube being pierced by slots at regular intervals to divide said walls into duplex sets of rack-teeth, the slots on one side matching those upon the opposite side, and a column-stop in the form of a blade insertable endwise through any pair of companion slots and engageable edgewise with the broader sides of the tube to be guided thereby, the opposite slots and the broad sides of the tube taken together forming an all-around guideway for the column-stop.

9. In a machine of the class specified, a column-stop-bar in the form of a metal tube of oblong rectangular form in cross-section, opposite walls of the tube being pierced by slots at regular intervals to divide said walls into duplex sets of rack-teeth, the slots on one side matching those upon the opposite side, and a column-stop in the form of a blade insertable endwise through any pair of companion slots and engageable edgewise with the broader sides of the tube to be guided thereby, said detent having notches, one for detaining the stop in projected position, and the other for detaining the stop in normal retracted position, the detent being springy, to catch upon the teeth of the rack, the rack-tooth being engageable upon its inner and outer edges by the teeth of the detent, to prevent accidental endwise displacement of the stop in either direction.

10. A stop in the form of an oblong blade slitted near one of its side edges, this slit extending nearly the entire length of the stop, and dividing the stop into a body-portion and a detent-portion, the detent being bent out of line with the body of the stop, said detent

having notches, one for detaining the stop in projected position, and the other for detaining the stop in normal retracted position, the detent being springy, to catch upon the teeth of the rack, the extreme tooth on the detent locking the stop from withdrawal from the rack, said detent being formed to yield under pressure to release the stop, so that it can be removed through the rack-slot.

11. A stop in the form of an oblong blade slitted near one of its side edges, this slit extending nearly the entire length of the stop, and dividing the stop into a body-portion and a detent-portion, the detent being bent out of line with the body of the stop, said detent having notches, one detaining the stop in projected position, and the other for detaining the stop in normal retracted position, the detent being springy, to catch upon the teeth of the rack, the extreme tooth on the detent locking the stop from withdrawal from the rack, said detent being formed to yield under pressure to release the stop, so that it can be removed through the rack-slot, each notch in the detent having upper and lower beveled sides, to permit the stop to be pressed in endwise direction as the detent yields.

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