

(No Model.)

2 Sheets—Sheet 1.

O. COHN.
TYPE WRITING MACHINE.

No. 523,786

Patented July 31, 1894.

Fig. 1,

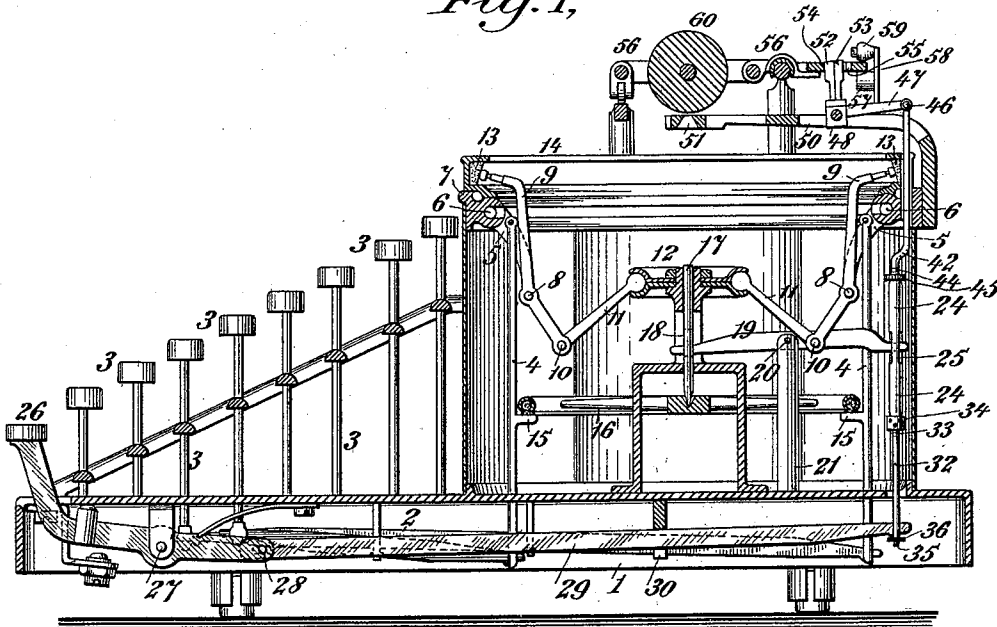
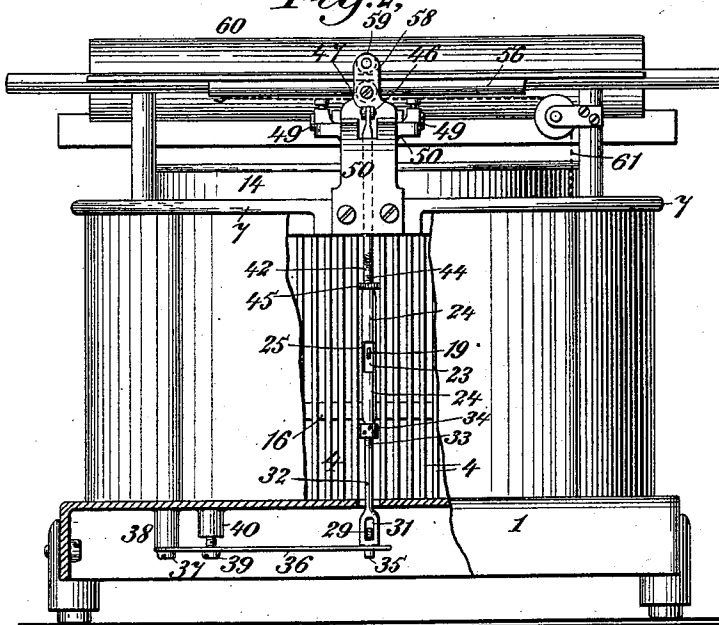


Fig. 2,



WITNESSES:

D. H. Maybrook

Ida C. Macdonald

INVENTOR

BY

Oscar Cohn

Jacob Felbel
ATTORNEY

(No Model.)

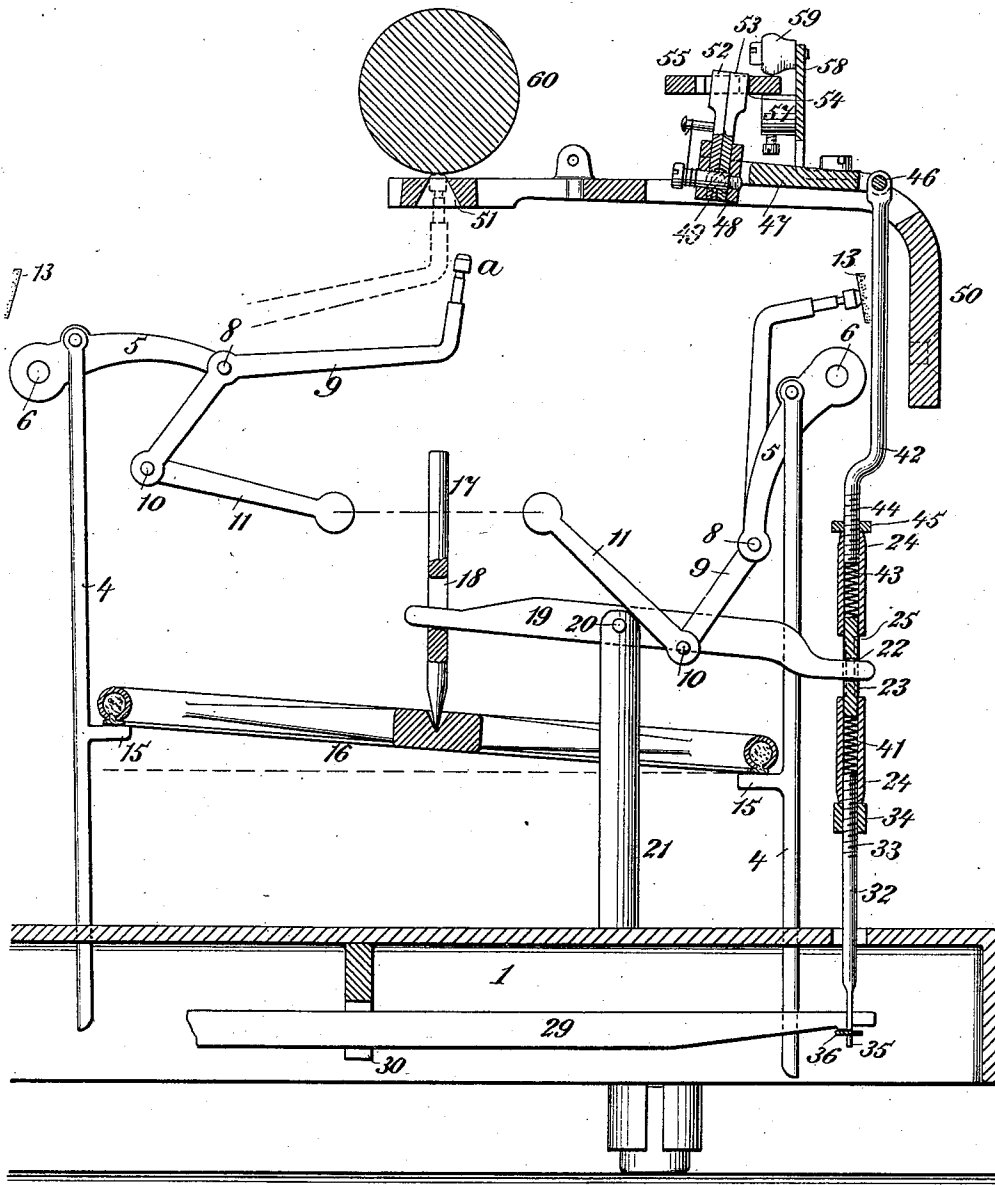
2 Sheets—Sheet 2.

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Fig. 3,



WITNESSES:

N. H. Haywood

Idw C. Macdonald

INVENTOR

BY

Oscar Cohn

Jacob Felbel
ATTORNEY

UNITED STATES PATENT OFFICE.

OSCAR COHN, OF BROOKLYN, ASSIGNOR TO THE YOST WRITING MACHINE COMPANY, OF NEW YORK, N. Y.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 523,786, dated July 31, 1894.

Application filed November 27, 1893. Serial No. 492,030. (No model.)

To all whom it may concern:

Be it known that I, OSCAR COHN, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention has for its main object to improve the paper-carriage escapement or feeding mechanism and the printing and key actions, and my invention consists in the various features of construction and combinations of devices hereinafter more fully described and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a central longitudinal vertical section of a Yost type writing machine embodying my improvements. Fig. 2 is a back view of the same, partly broken away and partly in section; and Fig. 3 is an enlarged central section to more fully exhibit the detail construction and operation of the improvements.

In the several views the same parts will be found designated by the same numerals of reference.

I have shown my invention embodied in a Yost machine, and have thus far in practice employed the same in connection with such a machine, but I desire it to be understood that some of the features of my improvement may be embodied in machines of other make, style or detail construction.

1 represents the bed-plate, 2 the key-levers, 3 the finger-keys connected thereto at their outer ends; and 4 the connecting rods coupled thereto at their inner ends. The upper end of each connecting rod is pivoted to a drive-link 5, fulcrumed on a wire ring 6 arranged in a circular groove in a top-plate 7, and at the pendent end of said drive-link is pivoted at 8 a type bar 9, the lower end of which is pivoted at 10 to a guide-link 11, pivotally supported at its inner end in a bracket or standard 12, which is attached to the base-plate. The upper, type end of the type-bar rests normally against an inking pad 13 contained in an annular holder 14 mounted on said top-plate. Upon inwardly extending radially arranged fingers or offsets 15 on the connecting rods, rests a circular

universal-bar 16, which at its hub or center receives the lower end of a vertically arranged sliding spindle 17, supported in the stand or bracket 12 and provided about midway of its length with a slot 18, through which passes the inner end of the universal bar lever 19, pivoted at 20 on a post 21 rising from the bed-plate, the outer end of said lever being passed through a slot 22 in a vertical slide or plunger 23 arranged within a tube 24, which is slotted or cut-away on its front and rear sides, as at 25, to permit the outer end of said lever to descend and ascend.

26 designates the space key which is arranged centrally at the front of the machine and is made in the form of a lever having a fulcrum 27 on the under side of the bed-plate. The inner end of the space key lever, by a pin and slot connection 28, is joined to the outer end of a lever 29, having a fulcrum at 30 and connected at its rearmost end to the lower slotted portion 31 of a vertical rod 32, which is threaded at its upper end at 33 and screwed into the lower end of the tube 24, the said threaded end being provided with a lock nut 34. The lower end of the rod 32 is provided with a pin 35 which passes through a hole in the free end of a horizontally arranged bar spring 36, upon which bears the lower end of said rod, and also the rear end of the spacing lever 29. The opposite end of said spring is attached by a screw 37 to a lug 38 depending from the bed-plate, and between the ends of said spring is arranged a tension-adjusting screw 39, whose threaded end takes into a stud 40 on the under side of the bed-plate.

Within the lower portion of the tube 24 and between the upper end of the rod 32 and the lower end of the sliding plunger is arranged a comparatively light coiled spring 41, and within the upper portion of said tube and between the lower end of a rod 42 and the upper end of the slide or plunger is arranged a similar spring 43 of about equal power to that marked 41. The lower end of said rod 42 is threaded at 44 and screwed into the upper end of said tube, and said threaded portion of the rod is provided with a set nut 45.

The upper end of the rod 42 is pivoted at 46 to the rear end of a rocker-arm 47, projecting rearwardly from a trunnion or dog-holder 48,

pivotaly supported on each side, by conical screws 49, upon an arm or bracket 50 which is screwed to the top-ring and projects forward to sustain a center guide 51 for the types.

- 5 In the dog-holder are mounted two dogs 52 and 53, the latter being the usual rigid or holding dog and co-operating with a rack or series of teeth 54, and the former being the usual pivoted spring-actuated feed dog, co-operating with a rack or series of teeth 55. The said racks face each other and are arranged in the same horizontal plane. They are connected together at their ends and the toothed portions are sufficiently distant from each other to enable the dogs to operate between the same. This duplex rack is attached at its forward edge to the rear edge of the paper-carriage 56, or some part connected therewith, and the rear edge of said duplex rack bears upon a support 57 projecting inwardly from a bracket 58 having at its upper end a guide roller 59 which overlies the upper side of the rack.

- In operation, when a finger-key is depressed the inner end of the key-lever operates to lift the connecting rod 4 which elevates the drive link 5, and through this movement and the action of the guide link 11, the type bar or carrier is moved to an extent such that the type passes from the pad or its normal position of rest to the paper on the platen 60. At the same time, the finger or projection 15 of the connecting rod acts to lift the universal-bar or ring, which at this time takes a bearing or fulcrum on the diametrically opposite projection or finger, and during the ascent of the universal bar the spindle is caused to rise and carry with it the inner end of the universal bar lever 19. As the outer end of said lever descends it operates to pull down the slide or plunger 23, which acts first to further compress the spring 41 and then through the same to cause the means for rocking the dogs, comprising the rods 32 and 42 and the tube 24, to descend against the tension or resistance of the strong returning spring 36. When said rocking means are thus caused to descend the trunnion or dog holder is oscillated and the dog 52 carried out of the front rack 55 and the dog 53 into the back rack 54. As the dog 52 leaves the front rack it is vibrated independently toward the right, and hence when the finger key is released, to enable all of the parts to resume their normal positions through the action of the returning spring 36, said dog engages with the next notch of its rack, and the usual carriage-driving spring acting through a cord or chain 61 operates to feed the paper-carriage one letter space distance.

- The main purpose of the present construction is to provide a yielding connection between the finger key and the dog, in order that the finger key and the type carrier may have an extra or additional movement in case the dog should come to a stop before the type has reached the paper.

In the previous construction, if the dog 53 should get to the bottom of the rack before the type should strike the platen, the type could not print, because the universal-bar lever, which connects with the means for rocking the dog, would come to a dead stop, due to the pressure of the dog at the bottom of the rack, and hence prevent any further upward movement of the universal-bar and of the type-carrier, connecting-rod, and finger-key lever connected thereto. In other words, in the previous machine it was impossible for the type bar to obtain any further motion after the dog had struck the bottom of the rack without greatly straining the parts, and for this reason types would frequently either be prevented from printing at all or else they would leave such faint impressions as to render the work objectionable.

In the new construction, it will be seen that provision is made for a further movement of the type, in case the dog should get to the bottom of the rack before the type strikes the paper, and that this is accomplished, in the case shown, by connecting the outer end of the universal bar lever to the plunger which slides in the tube forming a part of the means for moving the dog. When a finger-key is depressed the universal bar lever acts upon this plunger and against the lower spring in the tube, and as soon as the pressure on said spring is great enough, the larger and stronger returning bar-spring 36 is overcome and acted upon until the type strikes the paper and the key is released. If in this movement the back dog, by reason of some fault of construction or inaccuracy of adjustment of its connected parts, should get to the bottom of the rack before the type arrives at the paper, the finger-key may nevertheless be still further depressed and the universal-bar lever caused to go down slightly further at its outer end and enough to enable the type to complete its required movement to print, by reason of the capacity of the plunger and spring to descend or yield under the continued pressure of the finger-key after the stoppage of the dog. It will thus be seen that in the present construction the type may move on and make its impression although the dog may have gotten to the bottom of the rack and come to a dead stop. At Fig. 3 I have endeavored to illustrate this improved operation by showing the dog 53 at the bottom of its rack and stopped while the type has only been carried to the point *a* in its upward printing movement. When such a condition of affairs exists in the old construction of machine it is quite impossible to move the type enough further to print, but in accordance with the present invention the type may readily move up to the dotted line position shown in said figure and effect its impression notwithstanding the dog itself is held or locked against movement at this time.

It will of course be understood that the type may be moved from the point *a* to the

platen by simply continuing the pressure upon the finger-key, causing the connecting rod and universal bar to further ascend, which they may do by reason of the fact that the plunger may descend independently in the tube and permit the necessary vibration of the universal-bar lever under the continued pressure of the finger-key.

The trunnion rocking means may be readily adjusted to the desired length by screwing the rods 32 and 42 either further into or out of the tube, as may be necessary, and when the desired adjustment has been obtained it may be made permanent by means of the set nuts.

When the spacing key is operated the divided rocker rod 32 42 and the tube are pulled down and the dog holder or trunnion rocked to effect a feeding movement of the carriage without printing.

By my improvements the following additional advantages and desiderata are effected: The dog may now be adjusted at the factory to strike the bottoms of the notches, which it should do, but with the old construction this could not be done on account of the danger of the dog sticking in the rack and straining the operative parts. When the dog is once adjusted to strike the bottom of the rack, the use of the machine will not cause enough lost motion to change its action, and hence such adjustment is a permanent one. As the dog is thrown to the bottom of the rack each time a key is struck with sufficient force to print, an even wear is given to the rack as well as the dog, instead of a wear on the edges of the teeth and dog, as in the old construction. Since the dog is thrown into the rack during the time the spring 41 is being compressed with enough force to act on the rocker rod returning spring, any lost motion in either the universal ring, connecting rod, or dog will always be taken up before it is possible for the spring being compressed to act on the rocker rod returning spring.

Owing to the universal-bar lever resting on a light spring, which is compressed during the depression of the finger key and which subsequently acts on the stronger rocker-rod returning spring, the action of the finger-keys is rendered soft and springy and the so-called second resistance in the prior machine is eliminated.

As there is a spring above the universal bar lever and one below the same, each about balancing the other, upon a depression of a finger key and the compression of the lower spring the upper spring will, in consequence of the pressure from below being removed assist the action, thereby making the key tension lighter than it would otherwise be, as well as making the action quicker and also causing the type to ink better.

Inasmuch as there is always a strong spring having a tendency to force the dog out of the rack and cause the keys to follow the fingers up when the pressure has been released, it

follows that the speed of the machine will be and is materially increased thereby.

My improvements may be carried out in various types of machine and innumerable forms, and hence I do not wish to be limited either to the kind of machine shown or entirely to the details of construction exhibited; and since the improvement may be placed at some other locality than that shown I do not wish to be restricted to its present location, nor to a construction in which the improvement forms a part of the dog-holder rocker-rod.

I do not wish to be limited to any particular form of universal-bar, type-movement, or letter-spacing or feeding devices, since my improvements are adapted for nearly all types of machines.

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

1. In a type writing machine, a yielding connection arranged between the dog and the finger-key to enable the type to continue its printing movement after the dog has come to a stop.

2. In a type writing machine, the combination of an escapement dog having a limited movement, a type-movement, and an intermediate yielding connection, whereby the type may continue its printing movement after stoppage of the dog.

3. In a type writing machine, the combination of a dog having a limited movement, a type-movement, and an intermediate spring for permitting a continued movement of the type after stoppage of the dog.

4. In a type writing machine, the combination of a rack, a dog, means for rocking the dog, a type-movement and a universal-bar connected to said rocking means, and a spring forming part of said rocking means to enable the type to continue its printing movement after the dog has been arrested.

5. In a type writing machine, the combination of a rack, a dog, means for rocking said dog comprising a spring and a plunger, and a type-movement and a universal-bar connected to said spring and plunger.

6. In a type writing machine, the combination of a rack, a dog, a rocker-rod carrying a spring and a plunger, a type-movement, a universal-bar, and a universal-bar lever.

7. In a type writing machine, the combination of a rack, a dog, a rocker-rod carrying a spring, a lever adapted to act against said spring and connected to the universal bar, and a type-movement.

8. In a type writing machine, the combination of a rack, a dog, a rocker-rod carrying a tube, a plunger within said tube, a spring also within said tube and beneath said plunger, a type movement, a universal bar, and a universal bar lever connected to said plunger.

9. In a type writing machine, the combination of a rack, a dog, a rod 32, a rod 42, a tube adjustably connected to and between said rods, a plunger within said tube, a spring be-

neath said plunger, a type-movement, a universal-bar, and a universal-bar lever connected to said plunger.

5 10. In a typewriting machine, the combination of a rack, a dog, a rod 32, a rod 42, a tube adjustably connected to and between said rods, a plunger within said tube, a spring below said plunger and a spring above said plunger, a type-movement, a universal-bar, 10 and a universal-bar lever connected to said plunger.

11. In a type writing machine, the combination of an escapement dog, a type-movement, a comparatively light spring arranged between the dog and the type-movement, and 15 a stronger returning spring so arranged as to be acted upon by the compression or increase of resistance of the lighter spring in the progressive movement of the finger key forming 20 part of the type-movement.

12. In a type writing machine, the combination of a rack, a dog, a rocker-rod carrying a spring, and a second and stronger spring

adapted to oppose the rocker rod until its resistance is overcome by the compression of 25 the rocker-rod spring under the initial pressure of the finger-key.

13. In a type writing machine, the combination of a rack, a dog, a rocker-rod carrying a spring and plunger, a type-movement, a universal-bar connected thereto and to the plunger, and a stronger returning spring. 30

14. In a type writing machine, the combination with the carriage-feeding devices, of a type-movement and spacing mechanism elastically and loosely connected thereto, and 35 having a positive and independent printing movement after the feeding devices have come to a dead stop in the printing operation.

Signed at New York, in the county of New York and State of New York, this 24th day of 40 November, A. D. 1893.

OSCAR COHN.

Witnesses:

JACOB FELBEL,

D. S. RITTERBAND.