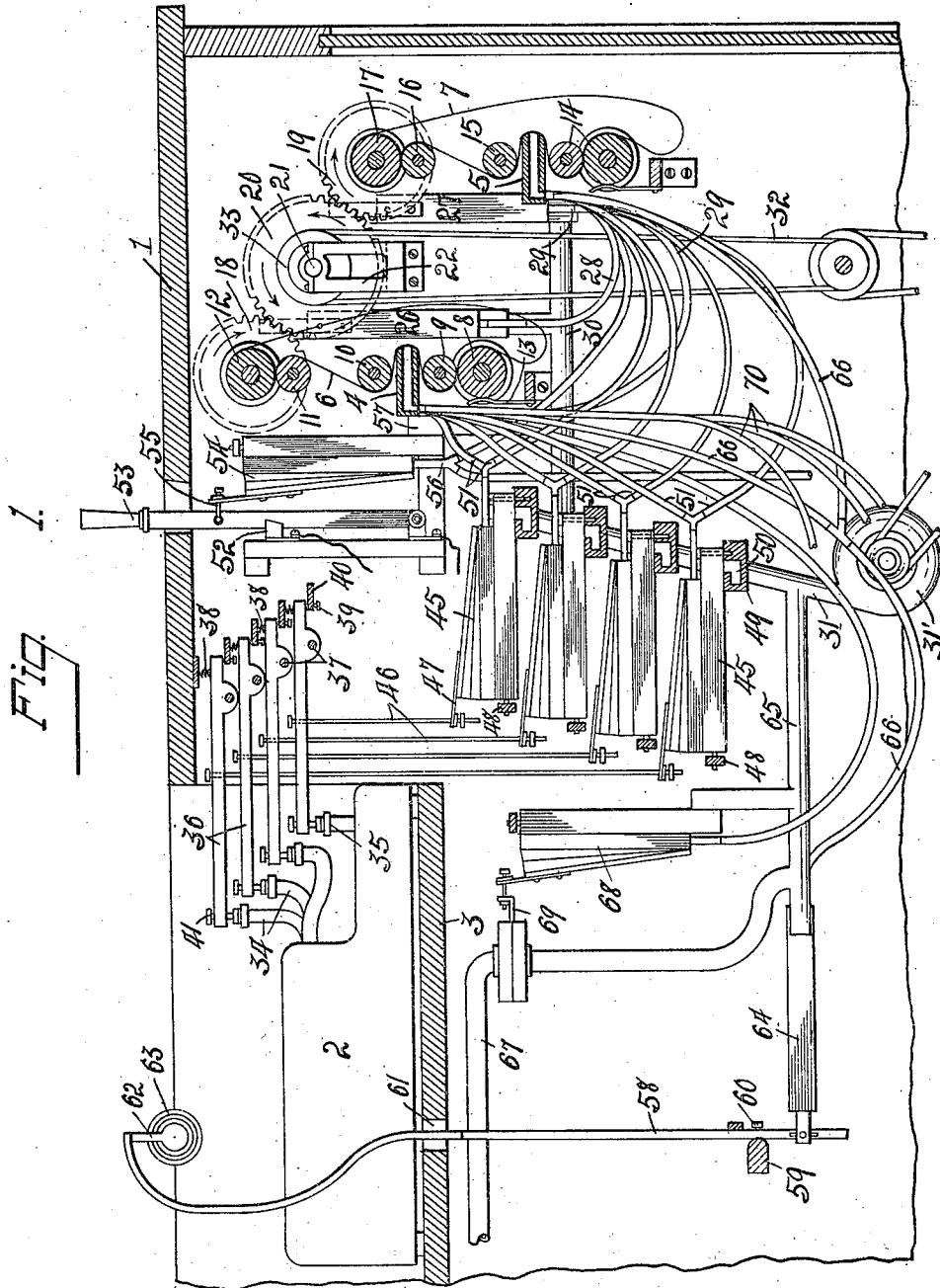


P. J. DREHER.
STRIKING MECHANISM FOR TYPE WRITERS.
APPLICATION FILED JULY 17, 1911.

Patented Nov. 5, 1912.

2 SHEETS—SHEET 1.

1,043,410.



WITNESSES:

E. H. Dells

M. L. Oppenheim

INVENTOR.

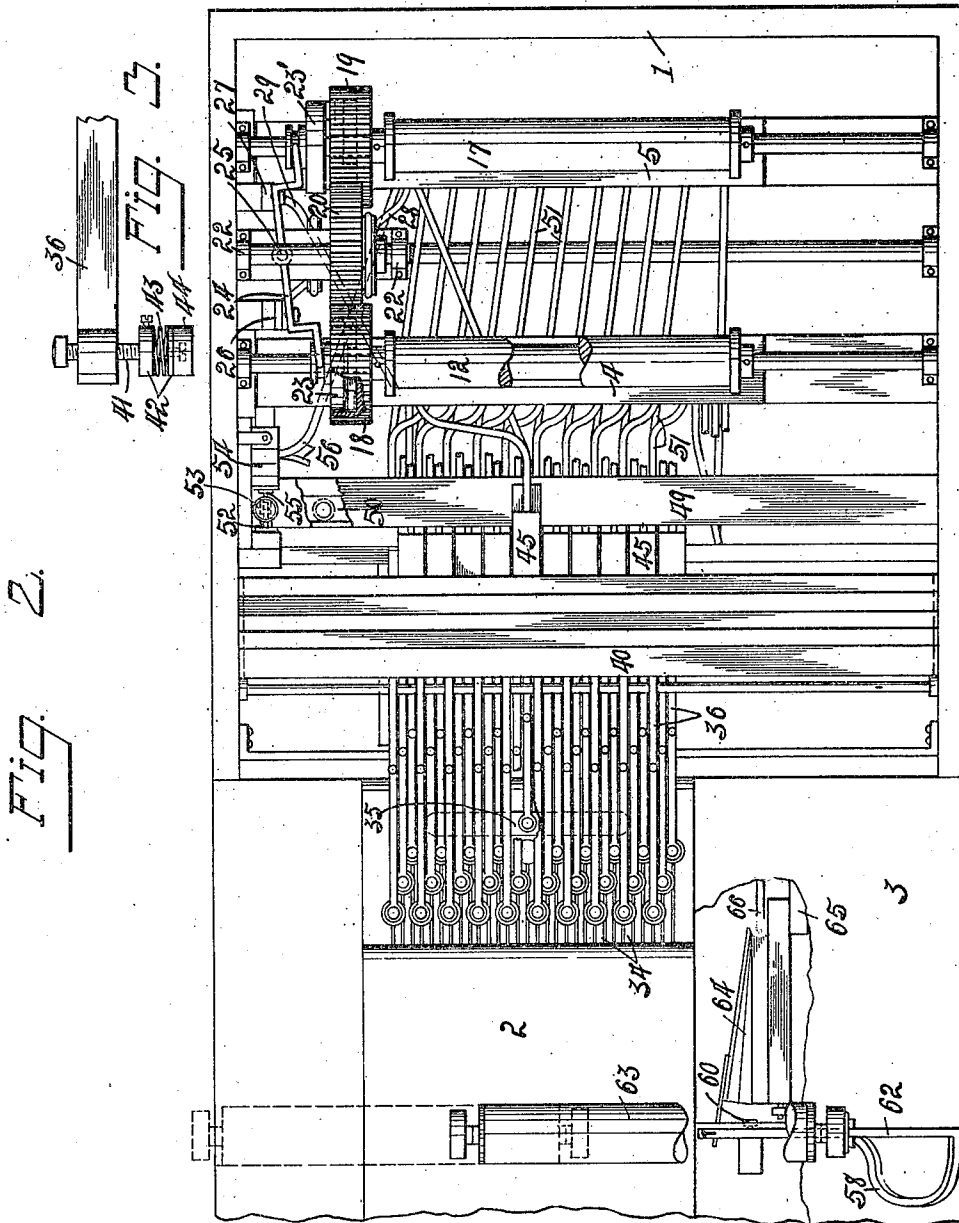
Phillip Jacob Dreher,
By Owen & Owen,
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UNITED STATES PATENT OFFICE.

PHILLIP JACOB DREHER, OF TOLEDO, OHIO.

STRIKING MECHANISM FOR TYPE-WRITERS.

1,043,410.

Specification of Letters Patent.

Patented Nov. 5, 1912.

Application filed July 17, 1911. Serial No. 636,894.

To all whom it may concern:

Be it known that I, PHILLIP JACOB DREHER, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented a certain new and useful Striking Mechanism for Type-Writers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to automatic typewriters of the pneumatically operated type, and has particular reference to the striking means thereof, but is not restricted to such use as it may be employed in any connection for which it may be adapted or appropriate.

The object of my invention is the provision of a key and spacer-bar striking mechanism of this class, which is simple and efficient in its construction, and adapted to operate a typewriter to accurately reproduce any number of letters, circulars or other matter from a perforated letter sheet, and which is also operable to reproduce the body of a letter or the like any desired number of times with a different address on each reproduction; or it may be used as an addressing machine for addressing envelopes, wrappers for papers, or the like.

A further object of my invention is the provision of simple and improved pneumatically operable means for returning the platen carriage to its line starting position upon the completion of the writing of a line.

The invention is fully described in the following specification, and while, in its broader aspect, it is capable of embodiment in numerous forms, a preferred embodiment thereof is illustrated in the accompanying drawings, in which,—

Figure 1 is a longitudinal vertical section through a mechanism embodying the invention mounted within a desk and in association with a typewriter. Fig. 2 is a top plan view thereof with the desk top removed and parts broken away, and Fig. 3 is an enlarged elevation of the key striking part of a striking lever.

Referring to the drawings, 1 designates an end portion of an ordinary typewriter desk, but may comprise any other suitable

inclosure and support for the parts herein-after described, and 2 designates a typewriter which is mounted on a platform or lowered top portion 3 of the desk.

The mechanism comprising the features of my present invention is located in one end portion of the desk and comprises in part the two tracker-boards 4 and 5 which are suitably mounted therein as by securing their ends to the opposite side walls of the desk, as indicated. It will be understood that the tracker-boards 4 and 5 are the parts of the pneumatic system embodying my invention over which endless perforated belts pass to control the admission of air to the tubes leading to the different bellows of the mechanism.

The perforated sheets which control the admission of air to the tracker-boards 4 and 5 are of the endless belt type and are designated 6 and 7, respectively. The sheet 6 passes upwardly between two coacting idler rolls 8 and 9 located beneath the tracker-board 4 thence loops around the mouth-piece of the tracker-board being held in looped engagement therewith by the idler rolls 9 and 10, and thence pass between an idler-roll 11 and feed roll 12 after which it passes downwardly to the rolls 8 and 9. The feeding movement of the sheet is resisted by the action of a spring finger 13 upon the roll 8, thus tending to draw the belt taut across the mouthpiece of the tracker-board, as is apparent. The course of movement of the belt 7 is similar to that of the belt 6, in that it passes between two idler rolls 14, 14 thence around the mouth-piece of the tracker-board 5 and the idler roll 15 located above the same and thence upwardly between coacting idler and feed rolls 16 and 17, respectively. The feed rolls 12 and 16 carry gears 18 and 19 respectively at an end portion thereof and rotation is communicated in the same direction to such gears by an intermediate drive gear 20 in mesh therewith, said drive gear being carried by a shaft 21, which is mounted in suitable bearings 22 within a side portion of the desk or case 1. In order to cause only one of the feed rolls 12 and 17 to be driven at the same time each of the gears 18 and 19 is loosely mounted upon its shaft, and clutch parts 23 and 23' are feathered upon the respective shafts therewith and adapted to be moved into or out of clutch engagement with the associated gears, as is apparent. The clutch

parts 23 and 23' are connected by a shift lever 24 which is pivoted intermediate said part, as at 25, and adapted to alternately throw the clutch parts into and out of engagement with the respective gears, as shown in Fig. 2. The shifting movements of the lever 24 are automatically controlled by the action thereon of a pair of bellows 26 and 27 the movable parts of which bellows have engagement with the lever at opposite sides of its fulcrum, as shown in Fig. 2. A tube 28 leads in the present instance from the associated end portion of the tracker-board 5 to the bellows 26 and a tube 29 leads from the tracker-board 4 to the bellows 27, whereby air may be admitted to said bellows upon a registering of perforations in the belts 6 and 7 with the respective inlet openings of tubes 28 and 29, as is apparent. The exhaust from the bellows 26 and 27 is through a pipe 30 having branches leading to each of said bellows, said pipe having communication through a pipe 31 with a suitable suction pump 31', which is driven by any suitable means.

The gear 20 is driven in the present instance by a belt 32 passing over a grooved pulley 33 on a side thereof, said belt being connected to a motor (not shown) or to any suitable source of power supply. The striking movements of the typewriter keys 34 and spacer-bar 35 are actuated by the striking lever 36, one of which is provided for each key of the typewriter, and the spacer-bar 35, and also for the shift keys of the typewriter should it be of the shiftable carriage type. The striking levers 36 are arranged in sets one above the other, being fulcrumed adjacent their inner ends to fulcrum rods 37, which extend across the desk or case 1 interiorly thereof in suitable positions for such purpose. The key striking levers 36 are yieldingly held raised in normal position by the action on their inner ends of springs 38; and the raising movements of the striking ends of the levers are limited by the coaction of their inner ends with stop-screws 39, which thread through cross pieces 40 arranged within the case 1. Said cross members 40 also serve to receive the thrusts of the associated springs 38 in opposition to the levers.

For the purpose of cushioning the striking action of the levers 36 upon the typewriter keys and spacer-bar each lever is provided at the striking end thereof with a stem 41, which preferably threads through the lever for the purpose of adjustment and carries a plunger head 42 at its lower end, which head has a coiled compression spring 43 disposed between two spaced parts thereof, as indicated. The lower or striking surface of the head 42 is faced with a soft substance 44, such as felt or the like. This form of striking lever causes the keys to

have a yielding action when the type arms strike the platen and avoids the dead action which would otherwise be present, thereby not only prolonging the life of the striking parts but causing a striking action similar to that which is caused by the fingers of an operator.

The striking movements of the levers 36 are actuated by the collapsing or closing movements of bellows 45, one of such bellows being attached to each of the levers by connecting rods 46, each of which rods preferably passes freely downward through the associated lever 36 intermediate its fulcrum and striking end and has its lower end passing through an aperture in the tongue 47 projecting from the collapsing portion of the associated bellows. The rods 46 are headed above the levers and below the tongues 47. The bellows 45 are mounted in rows one above the other and supported by front and rear cross pieces 48 and 49 respectively, the rear piece 49 being hollowed out, as at 50, to serve as portions of the air suction conduit with which the pipe 31 connects, communication being established between the suction opening of each bellows and the pipe 31 through the passages 40 in said rear cross pieces.

A branched tube 51 leads from passages in the tracker-boards 4 and 5 to each of the bellows 45 whereby each bellows may be operated upon the registering of a perforation in either perforated sheet 6, 7 with the associated passage in the respective tracker-board 4, 5. It is thus apparent that any printed matter which is represented on the belts 6 and 7 by perforations may be reproduced upon a sheet within the typewriter as each tracker-board has communication with the bellows of the several typewriter keys and spacer bar striking members.

If the driving parts for the perforated sheets 6 and 7 are to be run by electricity a knife switch 52 is provided, the lever of which is fulcrumed within the case and has its free end projecting without the same to permit a manual movement thereof to close the circuit. The opening movements of the switch lever 53 are automatically actuated by the collapsing movement of a bellows 54 which is secured to the case adjacent to said lever and has its movable part connected to the lever, as shown at 55, whereby a collapsing movement of said part will effect an opening movement of the switch lever. The bellows 54 preferably has communication through a tube 56 with a passage in the tracker-board 5 whereby the opening movements of the switch will be controlled by a perforation or perforations in the sheet 7 moving into register with the associated passage in the tracker-board 5 to open communication between the atmosphere and the bellows 54. The suction of air from the

bellows 54 is through a branch pipe 57 leading from the pipe 30.

For the purpose of retracting the carriage at the completion of the writing of a line, I provide a lever 58 which is fulcrumed below the desk part 3 to a cross-bar 59, as at 60, and has its upper long arm working upwardly through a transversely extending slot 61 in the part 3 and terminating in a finger 62 which bears against the outer end of the end roll which is located at the left hand end of the typewriter platen 63. The lower short arm of the lever 58 is attached to the movable part of a bellows 64 in such manner that a collapsing movement of the bellows will draw the lower end of the lever to the left and move the upper end portion thereof to the right to effect a retraction of the carriage to the limit of its right hand movement. The pipe 31 communicates with the suction end of the bellows 64 through a branch 65, while a branch tube 66 opens communication between each of the tracker-boards 4 and 5 and said bellows.

The purpose of the two tracker-boards 4 and 5 is to enable the use of one belt for the printing of the body of a circular letter and the use of the other belt for the printing of the addresses on the letters as they are successively written. In the present instance the sheet 6 is perforated for the body of the letter while the sheet 7 is perforated for the addresses of the persons to whom the letters or other matter are to be sent.

In the operation of the invention the perforated sheets 6 and 7 with the proper perforations thereon are placed in engagement with their respective guiding and feed rolls and the switch 53 is then closed to effect a driving of the gear 20 and feed rolls 12 and 17. Upon a starting of the mechanism the clutch part 23' is in engagement with the gear 19 and effects a driving of the feed roll 17. As the perforations upon the sheet 7 for the first address move by the tracker-board 5, a suction is created through the proper bellows to effect collapsing movements thereof and to impart consequent key striking movements to the typewriter keys 34 and spacer bar 35 as the writing of the address may require. Upon the completion of the writing of each line of an address a perforation in the sheet 7 coöperates with the tracker-board 5 and tube 66 to permit a suction through the bellows 64 whereby to move the lever 58 to retract the platen 63 and associated carriage (not shown). When the writing of an address is completed a perforation in the sheet 7 permits a suction through the bellows 26 from the tracker-board 5 thus effecting a collapsing of said bellows to shift the clutch lever 24 to release the clutch part 23' from its gear and to engage the clutch part 23 with its gear whereby to drive the sheet 6 and allow the

address sheet 7 to stand idle. As the letter-body sheet 6 moves past the tracker-board 4, the striker levers 36 are actuated to effect a writing upon the paper within the typewriter of the matter which is represented by the perforations in the sheet 6, the retracting of the carriage for each line being effected as above described. As the typewriter shown in the present instance is of the Oliver type no means is required to move the platen to shift the paper for the line spacing as such spacing is automatically accomplished upon the Oliver machine by the retracting movement of the carriage. When the writing of the body of a letter has been completed perforations in the sheet 6 coöperate with a passage in the tracker-board 4 and some of the tubes 70 to admit air to bellows (not shown) for controlling the sheet feeding mechanism which comprises another part of my invention and is described and claimed in a separate application. When a written letter sheet has been fed from the typewriter and a fresh letter sheet fed thereto, a perforation in the perforated sheet 6 coöperates with a passage in the tracker-board 4 and the tube 29 to permit a suction through the bellows 27 whereby to shift the clutch parts to release the roll 12 from and connect the roll 17 with the drive gear 20. This being done the address sheet 7 is moved to coöperate with the associated parts to effect a writing of a new address as above described, after which the letter body sheet is thrown into operation to write the body of the letter. It will be apparent that this operation is repeated for as many addresses as there are on the address sheet 7. After the writing of the letter for the last address on the address sheet, the address sheet is thrown into operation and moved to place a perforation thereon into register with the tube 56 leading to the switch bellows 54 whereby to effect a collapsing of such bellows and a consequent opening movement of the switch lever 53. The pipe 67 leads from the letter sheet feeding mechanism comprising the subject-matter of a copending application, and 68 designates a bellows for controlling the movements of a valve 69 therein.

It is evident that I have provided an efficient pneumatically operated mechanism for controlling the writing of circular letters or the like having different addresses, and also that it is not necessary to use the addressing sheet 7 and letter body sheet 6 with the associated parts in conjunction as either can be used alone if desired.

I wish it understood that my invention is not limited to any specific construction or arrangement of the parts, except in so far as such limitations are specified in the claims.

Having thus described my invention, what

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

1. The combination with a typewriter, of pneumatically operated key striking mechanism therefor, a control sheet for such mechanism, electric driving means for said sheet, an electric switch in circuit with said means, and means automatically operable to open said switch at a predetermined point in a movement of said sheet.

2. The combination with a typewriter, of pneumatically operated mechanism for selectively striking the keys and spacer-bar thereof, a perforated address sheet coacting with a part of said mechanism to control the action of the same for the writing of addresses indicated by perforations on said sheet, an electric switch for controlling the driving parts, and means automatically operable to open said switch at a predetermined point in a movement of the address sheet past the coacting part of said mechanism.

3. The combination with a typewriter, of a key striking lever, a stem projecting from

the striking end of such lever, and a striking head carried by the stem, said head comprising a pair of yieldingly spaced parts, the outer of which is faced with a cushion-like substance.

4. The combination with a pneumatically operated typewriter, of two control sheets, a drive roll for each control sheet, a gear loosely carried by each drive roll, a clutch associated with each gear for connecting or disconnecting it relative to its drive roll, a drive gear in mesh with both of said loose gears, means for driving said drive gear, and pneumatically operated mechanism for simultaneously moving the clutches to cause them to alternately engage and release the respective gears.

In testimony whereof, I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

PHILLIP JACOB DREHER.

Witnesses:

C. W. OWEN,

M. L. OPPENHEIM.