

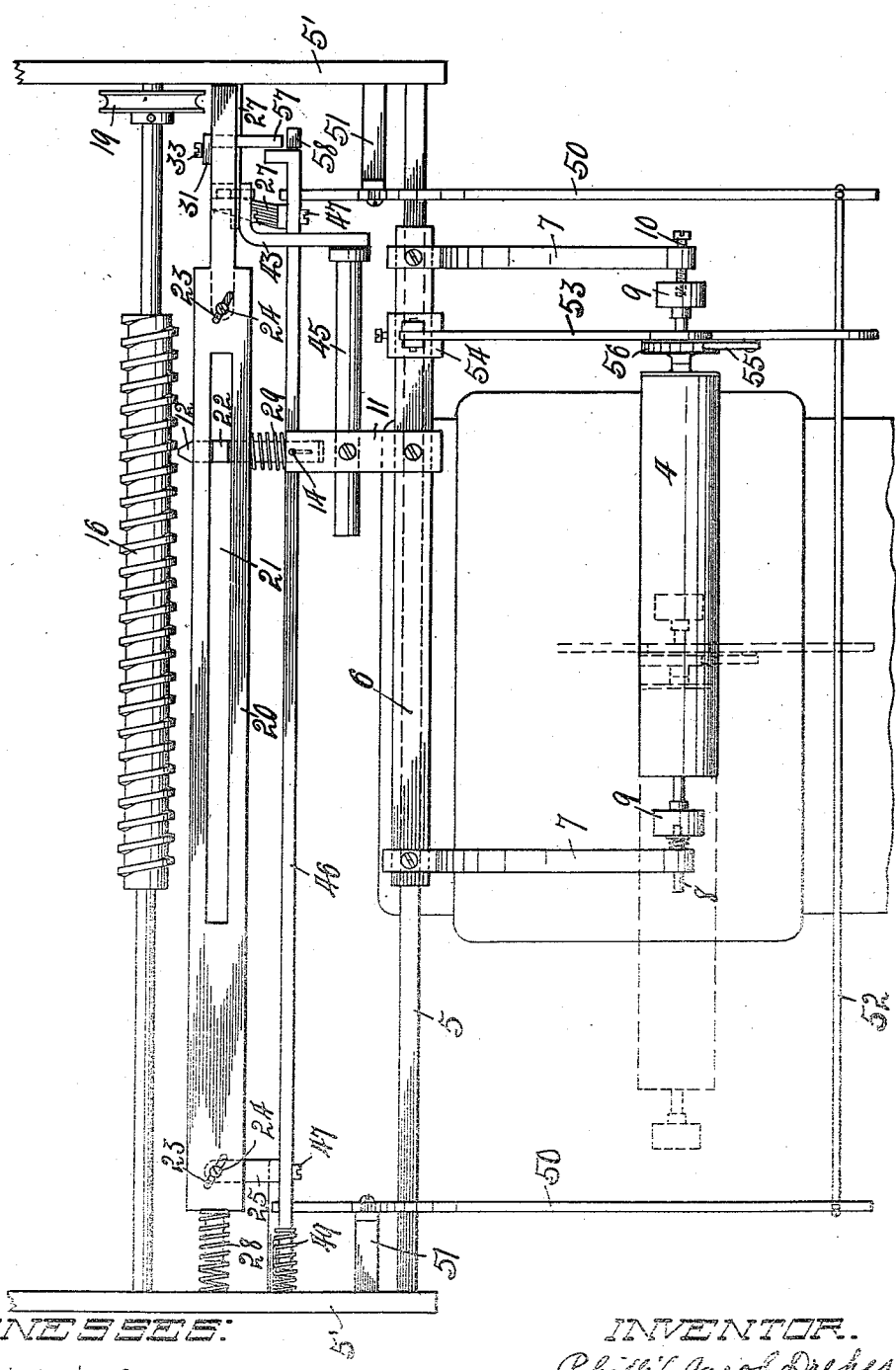
1,028,556.

P. J. DREHER.
TYPE WRITING MACHINE.
APPLICATION FILED JULY 31, 1911.

Patented June 4, 1912.

3 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

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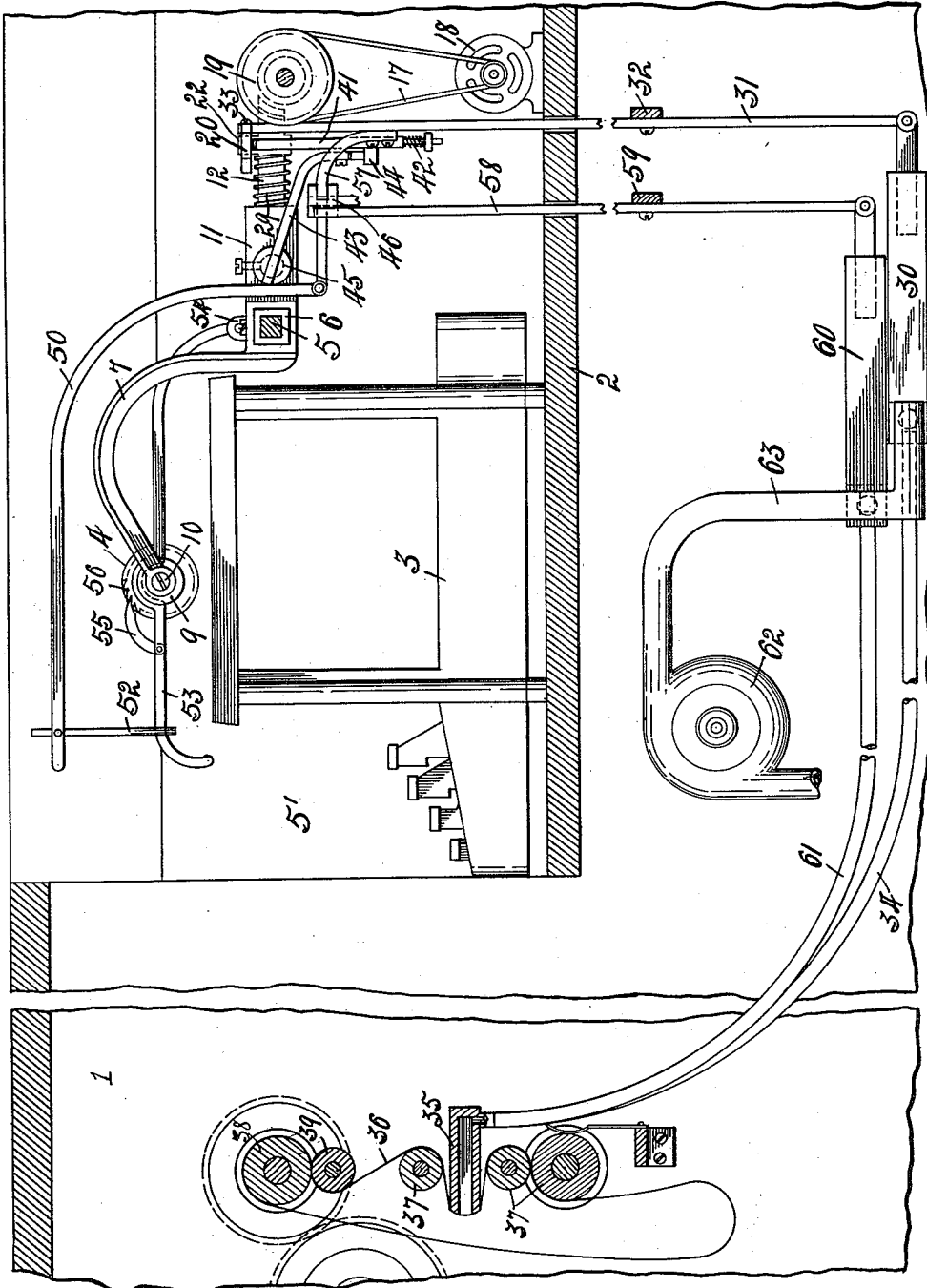
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3 SHEETS-SHEET 2.

1,028,556.

Fig. 2.



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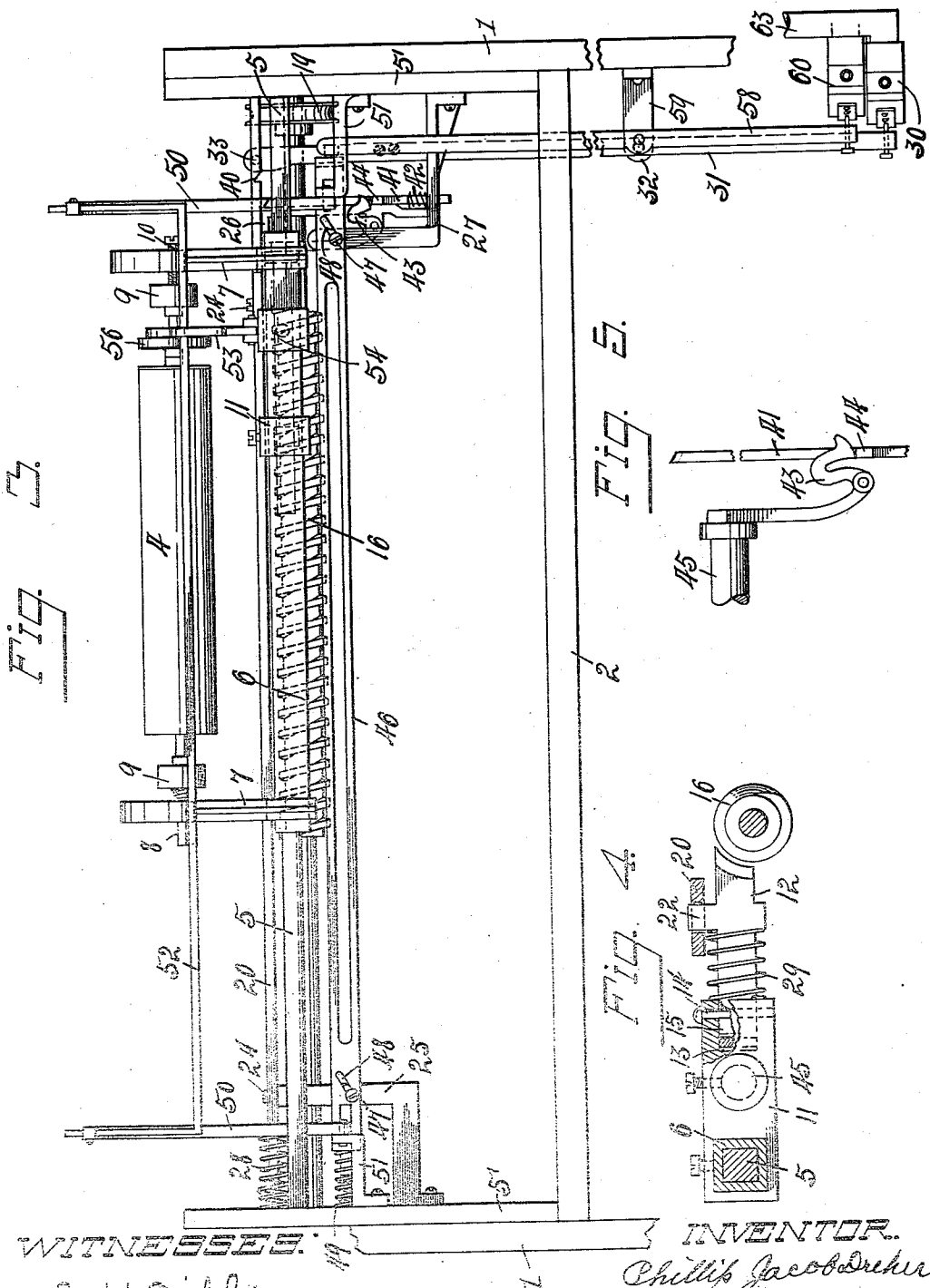
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TYPE WRITING MACHINE.
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Patented June 4, 1912.
3 SHEETS-SHEET 3.



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UNITED STATES PATENT OFFICE.

PHILLIP JACOB DREHER, OF TOLEDO, OHIO.

TYPE-WRITING MACHINE.

1,028,556.

Specification of Letters Patent.

Patented June 4, 1912.

Application filed July 31, 1911. Serial No. 641,560.

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 Type-Writing Machine; 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 or similar machines of the pneumatically operated type, and has particular reference to the line spacing and carriage returning or shifting mechanism thereof, but is not restricted to such use as it may be used in any connection for which it may be applicable.

The object of my invention is the provision of a simple mechanism of this class, which is efficient in its operation, strong and durable in its construction, inexpensive of manufacture, and capable of being easily attached to most if not all makes of typewriters on the market.

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 plan view of a typewriter and a portion of the mechanism comprising my invention associated therewith, with such mechanism in line starting position and with the typewriter shown in partial outline. Fig. 2 is a side elevation thereof with the associated control parts, portions of the same being broken away. Fig. 3 is a front elevation of the mechanism associated with the typewriter, with the typewriter platen in engagement therewith. Fig. 4 is an enlarged detail partly in section of a portion of the carriage returning mechanism, and Fig. 5 is an enlarged detail of a portion of the tripping parts of such mechanism.

Referring to the drawings, 1 designates a typewriter desk or case with which the in-

vention is associated, which is shown in the present instance as having a lowered top 55 portion 2 upon which the typewriter 3 may rest.

The usual rotary typewriter platen is indicated at 4, the movable typewriter carriage with which it is associated not being 60 shown as it forms no part of my invention and the styles thereof vary for different makes of machines.

A bar 5 forming a track for the carriage of my mechanism is mounted adjacent to 65 the upper rear portion of the typewriter transversely thereof in any suitable manner, as by having its ends attached to plates or frame standards 5' which are set vertically within the lowered portion of the desk or 70 case 1 against the sides thereof, as best shown in Figs. 2 and 3. The carriage referred to is shown in the present instance as comprising a beam 6, through which the track-bar 5 freely passes, and as having 75 arms 7—7 rigidly projecting upward and forward from the opposite end portions thereof and attaching to the ends of the platen-roll shaft in a suitable manner to impart longitudinal movements to the platen 80 when the carriage is moved upon its track and to permit a turning of the carriage relative to the track-bar. The bar 5 is squared or of other irregular form in cross-section, and the opening through the carriage beam 85 6 is of corresponding form to fit over the same. It will be understood that the weight of the platen is not supported by the carriage 6—7 but is borne entirely by the typewriter carriage (not shown) in the usual 90 manner, the carriage 6—7 only serving to impart retracting movements to the platen-roll and its carriage.

The means shown in the present instance for attaching the retracting carriage 6—7 95 to the platen-roll consists in providing one of the arms 7 of such carriage with a spring pressed plunger 8, which yieldingly bears axially against the associated platen knob 9, while the other arm 7 is provided with an 100 adjusting thrust screw 10 for bearing axially against the end of the other knob 9, as best shown in Fig. 1. The coaction of the plunger 8 and screw 10 with the platen knobs is such as to permit a free turning of 105 the platen-roll and its knobs relative to the

arms 7, while the yieldability of the plunger 8 cushions a stopping of the carriage when the platen-roll has reached the limit of its retracting stroke.

5 An arm 11 is fixed to and projects rearward from the carriage beam 6 and has a tooth 12 projecting rearward from its rear end for limited longitudinal reciprocatory movements relative thereto, as best shown in
10 Fig. 4. The tooth is shown, in the present instance, as having its inner end fitting within a socket 13 in the rear end of the arm 11, being held for limited longitudinal
15 movements within such socket by a pin 14 projecting through opposing walls of said socket and a transversely elongated opening 15 in said tooth. The tooth 12 when projected is adapted to have its rear end engage with-
20 in the groove of a worm 16 which is located immediately to the rear of said tooth transversely of the typewriter with its ends journaled in the plates 5', or supported in any other suitable manner. The worm 16 is con-
25 tinuously driven by a belt 17 running from a motor 18 to a pulley 19 on the worm shaft, or it may be driven in any other suitable manner. The tooth 12 is normally held re-
30 tracted from engagement with the worm 16 by a transversely extending bar 20, which has a longitudinal slot 21 therein in which a lug 22, projecting laterally from the tooth
35 12, works, and also has diagonally disposed slots 23 provided therein adjacent its ends through which carrying pins or screws 24
40 freely work. One of the pins 24 projects from an angled bracket 25 and the other from an angled arm 26 of a bracket 27, said brackets being attached to the respective
45 plates 5', as shown in Figs. 1 and 3. The tooth shifting bar 20 is normally held at the limit of its right hand stroke by the action thereon of a coiled compression spring 28
50 which is carried by a stud projecting from the associated end of said bar and has its outer end-thrust against the associated plate 5'. The inclination of the slots 23 relative
55 to the bar is such that a movement of the bar 20 to the left from retracted or normal position will impart a lateral movement thereto in the direction of the worm 16 to
move the tooth 12 into meshing engage-
ment with the worm as is apparent by reference to Fig. 1, the movement of the tooth
with the bar being actuated by the coaction
of the tooth lug 22 with the walls of the bar-
slot 21. To yieldingly prevent play of the
tooth-lug 22 within the bar-slot 21 and at
the same time permit said parts to have a
loose sliding fit, a coiled compression spring
29 encircles a portion of the tooth 12 and
has its opposite ends thrust against the arm
11 and lugs on the tooth to normally hold
the lug 22 in contact with the rear or outer
wall of the bar-slot.

65 The movements of the bar 20 against the

tension of the spring 28 are actuated by suitable pneumatic means, which is shown as comprising a pneumatically operated bellows 30 and a lever 31, which latter is fulcrumed to an arm 32 projecting from the associated side of the case 1, and has its upper end pivotally attached to the right hand end of the bar 20, as at 33, and its lower end attached to the movable part of the bellows 30. The arrangement and man-
75 ner of connection of the bellows 30, lever 31, and bar 33 are such that upon a collapsing movement of the movable bellows part to which the lever is attached, the upper end of the lever will be thrown to the
80 left to effect a consequent movement of the bar 20 in the same direction. The bellows 30 has a tube 34 projecting therefrom to an air passage in an associated tracker-board 35, in engagement with which a perforated
85 control sheet 36 passes to control the admission of air to the bellows through said tube, as is well understood in the art. The perforated sheet 36 may comprise a letter or
90 other matter as more fully described in my copending application Serial No. 638,894. The sheet 36 is shown as having its course directed by guide-rolls 37, and as being driven by a drive-roll 38 in coaction with an
95 idler-roll 39. The drive-roll 38 is driven in any suitable manner.

When the tooth controlling bar 20 has been shifted to the left, or in a direction to effect an engagement of the tooth 12 with the worm 16, a notch 40 will have moved
100 into register with a spring-pressed catch 41 to permit the upper end thereof to move into engagement with such notch to prevent a retraction of the bar 20 until said catch
105 has been withdrawn from engagement with the notch 40 for such purpose. The catch 41 is shown as being vertically disposed and guided by parts of the bracket 27, with its upper end in position to engage the notch
110 40 when moved into register therewith. A spring 42 acts on the catch to influence its engagement with said notch. For the purpose of effecting an automatic retraction of the catch 41 from holding engagement with
115 the bar catch 40 when the platen retracting carriage 6—7 has been moved to the limit of its right-hand movement by the coöperative action of the worm 16 and tooth 12, an angled lever 43 is pivoted to a portion of the bracket 27 adjacent the catch 41 and has
120 one end disposed to act upon a lug 44 on the catch 41 to impart a releasing movement to said catch when the lever is oscillated in one direction, as will be understood by reference to Figs. 3 and 5. The catch coacting end of
125 the lever 43 is preferably shaped substantially as shown to enable its end to impart a downward pressure upon the catch lug 44 when the lever is oscillated in one direction while the other end thereof extends upward
130

from its fulcrum and thence forward in position for a bumper or thrust-rod 45, which projects laterally from the carriage arm 11 to coact therewith, as shown. The bumper or thrust-rod 45 is adjustably carried by the carriage arm 11 to permit the carriage 6—7 to be stopped at predetermined points in a retracting movement thereof as the length of the lines being written may require. It is evident that when the bumper 45 moves into contact with the associated end of the lever 43 upon a retracting movement of the carriage, said lever will be oscillated to effect a retraction of the carriage 41 from engagement with the notch 40 of the tooth controlling bar 20, thus permitting said bar to move to normal position under the influence of the spring 28, which movement of the bar effects a withdrawal of the tooth 12 from engagement with the drive worm 16.

The line spacing means of my mechanism will now be described.

Mounted in the present instance in advance of the bar 20 and slightly below the plane thereof in parallelism therewith is a longitudinally shiftable bar 46, which is supported by pins 47 projecting from portions of the respective brackets 25 and 26 and working through diagonally disposed slots 48 in said bar. The bar 46 is normally held at the limit of its movement to the right by the action thereon of a coiled compression spring 49 which is mounted intermediate the left end thereof and the associated plate 5'. The slots 48 are so inclined relative to the bar 46 as to coact with the pins 47 to cause said bar to have a lowering movement when moved to the left or against the tension of the spring 49. Upon a lowering movement of the bar 46 it acts upon the rear ends of forwardly-projecting levers 50—50, which lever ends project within registering openings in said bar, to effect a raising of the forward ends thereof. The levers 50 are fulcrumed to brackets 51, projecting from the respective plates 5', and project at the ends of the platen-roll without the limits of reciprocatory movements thereof and have their forward ends connected by a rod 52, which, in the present instance, is of U-shape or bail-like form and is adjustably suspended from said levers. A line-spacing lever 53, which may be the spacing lever customarily employed in machines of this type, is pivoted to the rear of the platen-roll, as to a block 54 which is adjustably mounted on the carriage beam 6, and projects forwardly therefrom, in the present instance being looped over one end portion of the platen roll shaft and thence extending over the rod 52 in contact therewith whereby a lifting of the forward ends of the levers 50 will impart an upward movement to said spacing-lever. A pawl 55 is carried by the spacing lever 53 and co-

acts with a ratchet-wheel 56 on the associated end portion of the platen-roll shaft to impart predetermined rotary movements to the platen-roll when the lever 53 is raised for such purpose. The longitudinal movements of the bar 46 against the tension of its spring 49 are actuated both by a bar shifting movement of the lever 31, which has a finger 57 projecting therefrom in contact with the right-hand end of the bar 46, and by the movement in one direction of a lever 58 which has its upper end disposed in position to act on the right-hand end portion of the bar 46. The lever 58 is vertically disposed and fulcrumed to a bracket 59 projecting from the associated side of the case 1, with its lower end attached to the movable part of a bellows 60 in a suitable manner. A tube 61 leads from a passage in the tracker-board 35 to the bellows 60 whereby the collapsing of the same is controlled by perforations in the sheet 36 registering with the associated tracker-board passage. An exhaust pump 62 has connection with the bellows 30 and 60 through the pipe 63, as shown in Fig. 2.

The means which is operable to impart line spacing movements to the platen roll independently of the action of the platen roll retracting mechanism is claimed in a separate divisional application, Serial No. 651,269, filed October 24, 1911.

In the operation of my invention the perforated sheet 36 is set in motion and upon the completion of the writing of a line a perforation in the same moves into register with the tracker-board passage, which communicates through the tube 34 with the bellows 30, thus permitting the suction action of the pump 62 to effect a collapsing of the bellows 30 in a manner well understood in the art. Upon a collapsing of the bellows 30 in this manner the lever 31 is moved to throw the bar 20 to the left against the tension of its spring 28, which movement of said bar, due to the cooperating action of the diagonal slots 23 therein and the guide pins 24, effects a lateral movement of said bar in the direction of the worm 16 and a consequent moving of the tooth 12 into mesh with said worm. When the bar 20 has been moved into position to place the tooth 12 into engagement with the worm, the catch 41 will automatically move into engagement with a registering notch 40 in said bar to prevent a retracting movement of the bar until the catch is released for such purpose. The worm 16, which is continuously revolving, now acts upon the tooth 12 to effect a retraction of the attached carriage 6—7 to line starting position, the tooth-lug 22 moving in the bar-slot 21 during such retracting movement. It is obvious that the retracting movement of the carriage 6—7 imparts a corresponding move-

ment to the platen-roll 4 to which it is attached. When the carriage 6—7 has substantially reached the limit of its retracting movement the bumper 45 attached thereto coacts with and moves the lever 43 to effect a lowering of the catch 41 from engagement with the notch 40 in the bar 20 to permit a return of the bar 20 to full retracted position under the influence of its spring 28, thus effecting a disengagement of the tooth 12 and worm to permit a stopping of the carriage in line starting position. Upon a bar shifting movement of the lever 31 the finger 57 thereon acts on the spacer bar 46 to move the same against the tension of its spring 49 to impart oscillation to the levers 50—50 to raise the bar 52 and coacting spacing lever 53 to cause the pawl 55 to act on the ratchet 56 to effect a partial rotation of the platen roll 4. Should a perforation in the sheet 36 move into register with the tracker-board passage to the tube 61 and bellows 60 the lever 58 will be oscillated by a collapsing of the bellows 60 and effect a consequent movement of the bar 46 to move the line spacing levers as above described without effecting a retraction of the carriage and platen.

It is obvious from the above that I have provided a simple and efficient pneumatically operated mechanism for effecting a retracting movement of the typewriter platen to line starting position and a line spacing movement thereof.

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 the platen-roll of a typewriter, of a worm, means for driving said worm, and pneumatically controlled mechanism operable to cooperate with said worm to impart retracting movements to the platen-roll.

2. The combination with the platen-roll of a typewriter, of a rotating worm, pneumatically controlled mechanism operable to cooperate with said worm to impart retracting movements to the platen-roll, and means actuated by a part of said mechanism to impart line spacing movements to the platen-roll when said mechanism is actuated.

3. The combination with a rotating worm, of a carriage having engagement with the platen-roll and capable of longitudinal movements therewith, a tooth movably carried by said carriage for engagement with the worm, and pneumatically operated mechanism for controlling the worm engaging and disengaging movements of said tooth to cause it to cooperate with the worm to

retract the carriage and platen-roll a predetermined distance.

4. The combination with a platen-roll, of a rotating worm, means having longitudinal movements with the platen-roll and having a relatively movable part for engagement with said worm to cooperate therewith to communicate retracting movements to said means and platen, and pneumatically operated mechanism for controlling the movements of said part to engage and disengage the worm at predetermined intervals.

5. The combination with the platen-roll of a typewriter, of rotatable means, a carriage attached to and movable with said platen-roll and having a part capable of movement to engage and disengage said means to cooperate therewith to move the carriage and platen-roll to retracted position, and pneumatically controlled mechanism operable to move said part to engage said means at predetermined intervals.

6. The combination with the platen-roll of a typewriter, of power means, mechanism normally disengaged from said power means, and adapted when engaged with said means to cooperate therewith to impart retracting movements to the platen-roll and pneumatically controlled mechanism to engage and release the power means at predetermined intervals.

7. The combination with the platen-roll of a typewriter, of a rotating worm, a carriage attached to and movable with the platen-roll and having a part for engaging with said worm to cause retracting movements to be communicated to the carriage and platen-roll from a rotation of said worm, a member acting on said part to normally retain it out of engagement with said worm and movable to place it into engagement therewith, and mechanism operable to automatically move said member to engage the worm at predetermined intervals.

8. The combination with the platen-roll of a typewriter, of power means, a carriage attached to and movable with the platen-roll and having a part for engaging said power means to cooperate therewith to impart retracting movements to the carriage, a member acting on said part to normally retain it from engagement with said power means and movable to effect its engagement with the power means, means automatically operable to move said member to place said part in engagement with the power means, catch means for holding said member in shifted position, and means automatically operable to release said catch means to permit a disengagement of said part and power means when the carriage has been retracted a predetermined extent.

9. The combination with the platen-roll of a typewriter, of a rotating worm, a carriage attached to and movable with the

platen-roll and having a movable part for engaging said worm to cooperate therewith to move the carriage to line starting position, a member acting on said part to normally retain it from engagement with the worm and movable to engage said part with the worm, mechanism automatically operable to shift said member to effect an engagement of said part with the worm, a catch for engaging and holding the member in shifted position, a lever movable to effect a disengagement of said catch and member, and means adjustably carried by said catch for coacting with and moving said lever to release the catch at a predetermined point in a retracting movement of the catch.

10. The combination with the platen-roll of a typewriter, of power means, a carriage yieldingly attached to and movable with the platen-roll, means guiding the movement of said carriage, mechanism acting on a part of said carriage to normally hold said part out of engagement with the power means and automatically operable to move said part into engagement with said means to cooperate therewith to impart a retracting movement to the carriage and to release the engagement of said part and power means at a predetermined point in a retracting movement of the carriage, and pneumatic means for controlling the action of said mechanism.

11. The combination with the platen-roll of a typewriter, of a drive worm, a carriage movable with said platen-roll and having arms projecting therefrom and in thrust engagement with the opposite ends of said roll, a part carried by said carriage for engagement with the worm to cooperate therewith to move the carriage and platen-roll to line starting position, and mechanism automatically operable to move said part at predetermined intervals to engage and release said worm.

12. The combination with a rotating worm, of a platen-roll carriage capable of longitudinal movements, a platen-roll movable longitudinally therewith, a tooth movably carried by said carriage for engagement with the worm, mechanism for controlling the worm engaging and disengaging movements of said tooth to cause it to cooperate with the worm to retract the carriage a predetermined distance, and means actuated by a part of said mechanism to impart line spacing movements to the platen roll.

13. The combination with a platen-roll, of a rotating worm, means having longitudinal movements with the platen-roll and having a relatively movable part for engagement with said worm to cooperate therewith to communicate retracting movements to said means and platen, automatically operable mechanism for controlling the movements of

said part to engage and disengage the worm at predetermined intervals, and means actuated by a movement of said mechanism to impart line spacing movements to the platen roll.

14. The combination with the platen-roll of a typewriter, of rotatable means, a carriage attached to and movable with said platen-roll and having a part capable of movements to engage and disengage said means to cooperate therewith to move the carriage and platen-roll to retracted position, automatically controlled mechanism operable to move said part to engage said means at predetermined intervals, and means actuated by a part of said mechanism to impart line spacing movements to the platen roll.

15. The combination with the platen-roll of a typewriter, of a rotating worm, a carriage attached to and movable with the platen-roll and having a part for engaging with said worm to cause retracting movements to be communicated to the carriage and platen-roll from a rotation of said worm, a member acting on said part to normally retain it out of engagement with said worm and movable to place it into engagement therewith, mechanism operable to automatically move said member to engage the worm at predetermined intervals, and line spacing means actuated by a movement of said mechanism.

16. The combination with the platen-roll of a typewriter, of power means, a carriage attached to and movable with the platen-roll and having a part for engaging said power means to cooperate therewith to impart retracting movements to the carriage, a member acting on said part to normally retain it from engagement with said power means and movable to affect its engagement with the power means, mechanism automatically operable to move said member to place said part into engagement with the power means, catch means for holding said member in shifted position, means automatically operable to release said catch means to permit a disengagement of said part and power means when the carriage has been retracted a predetermined extent, and line spacing means actuated by a movement of said mechanism.

17. The combination with the platen-roll of a typewriter, of power means, mechanism normally disengaged from said power means and adapted when engaged with such means to cooperate therewith to impart retracting movements to the platen roll, and pneumatically operated perforated sheet controlled mechanism for engaging and releasing the power means at predetermined intervals.

18. The combination with the platen-roll of a typewriter, of power means, a carriage attached to and movable with said platen-

roll and having a part capable of movement
to engage and disengage said power means
to cooperate therewith to move the carriage
and platen-roll to retracted position, and
5 mechanism automatically operable to move
said part to engage said means at predeter-
mined intervals.

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,
E. E. THOMAS.