No. 676,590. Patented June 18, 1901.

M. SOBLIK.

TYPE WRITER.

(Application filed Sept. 6, 1900.)

(No Model.) 2 Sheets—Sheet 1.

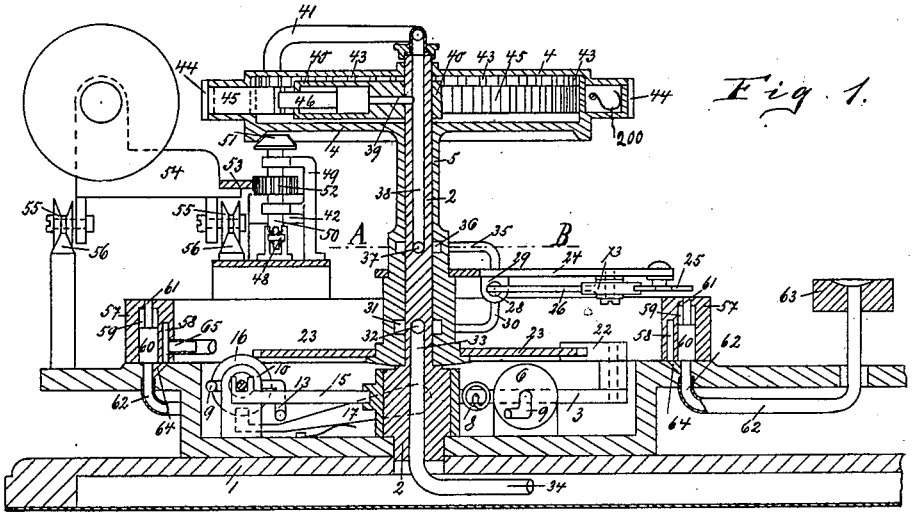

Fig. 1.

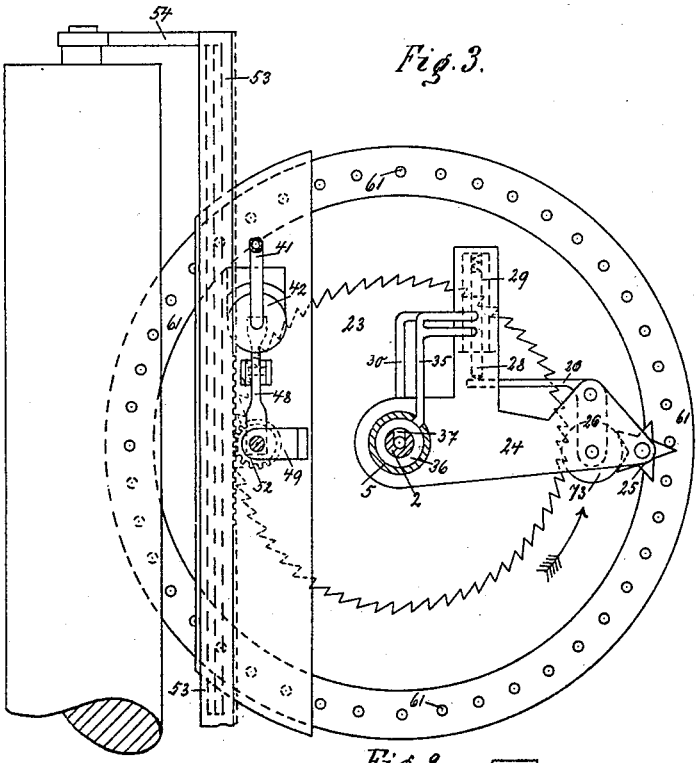

Fig. 3.

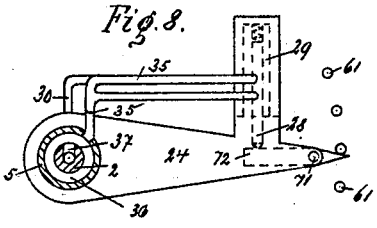

Fig. 8.

Witnesses:
John Hickman.
William Schulz.

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Max Soblik
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TYPE WRITER.

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(No Model.) 2 Sheets—Sheet 2.

Fig. 2.

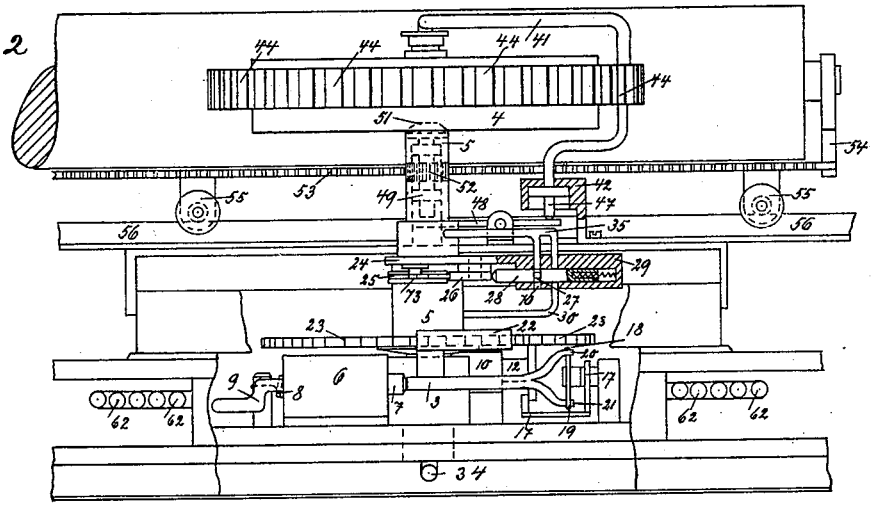


Fig. 5.

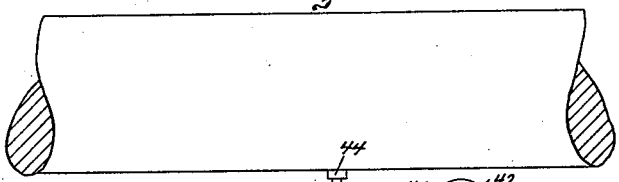
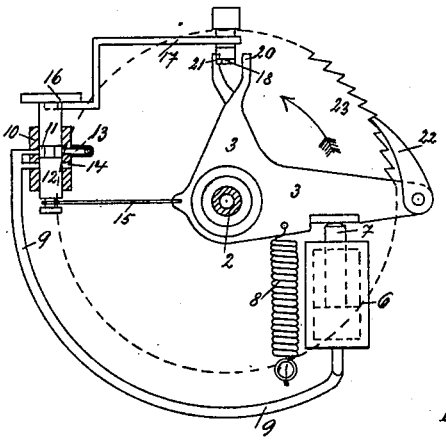


Fig. 4.



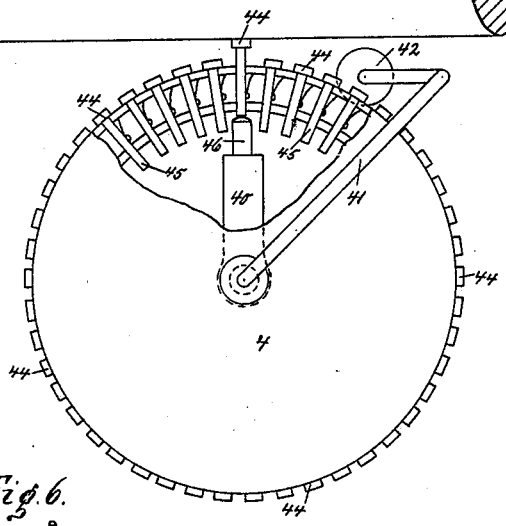


Fig. 6.

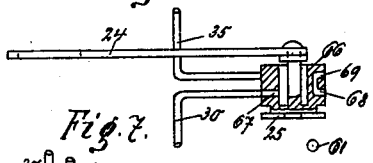
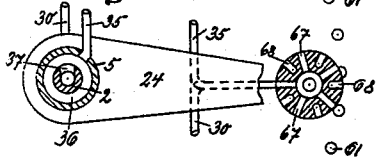


Fig. 7.



Witnesses:
John Hickman.
William Schulz.

Inventor:
Max Soblik
by his attorneys
Roeder & Briesen

UNITED STATES PATENT OFFICE.

MAX SOBLIK, OF MERXEM, BELGIUM.

TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 676,590, dated June 18, 1901.

Application filed September 6, 1900. Serial No. 29,146. (No model.)

To all whom it may concern:

Be it known that I, MAX SOBLIK, a subject of the King of Prussia, Emperor of Germany, residing at Merxem, near Antwerp, Belgium, have invented certain new and useful Improvements in Type-Writers, of which the following is a specification.

This invention relates to a pneumatic type-writer in which the type-holder is rotated continually during the working of the machine and when any key is touched a pin actuated thereby puts into operation at the moment when the type that corresponds to the said pin passes the printing-point mechanism that, on the one hand, causes the type to print and, on the other hand, moves the paper-carriage forward in accordance with the rotation of the type-holder, so that the character is printed without any stoppage of the type-holder. In consequence of this arrangement the typist is enabled to print characters in an exceedingly rapid succession and to turn out work at a rate not yet attained in any other type-writing machine.

The machine is represented in Figures 1 to 5, inclusive, of the accompanying drawings.

Fig. 1 is a vertical section; Fig. 2, a front view of the machine with its annular casing partly broken away. Fig. 3 shows the machine, partly in section, on the line A B of Fig. 1. Fig. 4 shows in plan and partly in section the parts that are below the ratchet-wheel shown in Fig. 3. Fig. 5 shows the type-holder with its covering-plate partly broken away and the paper-cylinder in plan. Figs. 6, 7, and 8 represent modifications of the reversing mechanism of the type-operating piston.

In the base-plate 1 of the machine there is fastened an axle 2, which is hollow in the lower and upper parts and solid in the middle. In the lower part of the axle 2 there is mounted a lever 3, while the upper part of the axle 2 is surrounded by a rotatable sleeve 5, which is enlarged at its upper end to form a casing 4. Further, the base-plate carries a cylinder 6 against the piston-rod 7, of which the lever 3 is pressed by a spring 8. From the cylinder 6 a pipe 9 leads to a cylinder 10, which is likewise fastened to the base-plate and in which is arranged a piston-valve 12, which is provided with a peripheral passage 11 and which is normally in such a position as to connect a pipe 13, leading from an air-compressor, with the cylinder 6, but when reversed connects the cylinder 6 with the external atmosphere through an opening 14.

One end of the valve 12 is connected by a spring 15 with the lever 3, while a flange 16 on the other end is opposite to an oscillatory lever 17, which is pressed upward by a spring and has a boss provided with two projections 18 and 19, which are arranged to be struck by the branches 20 and 21, respectively, of the forked end of the lever 3. On the lever 3 is mounted a pawl 22, which engages with a ratchet-wheel 23, that is rigidly secured to the sleeve 5, to which is also rigidly secured a lever 24, which at its outer end carries both a star-wheel 25, provided with an odd number of teeth, and a bell-crank lever 26.

The piston-valve 28 of a cylinder 29, which is provided with a peripheral groove 27, is pressed by a spring against one arm of the lever 26, and consequently a roller 73, mounted on the other arm of the lever 26, is kept against the star-wheel 25, normally lying between two of its teeth. The cylinder 29, on the one hand, constantly communicates through a pipe 30 with an annular passage 31, which in its turn communicates through a hole 32, the bore 33 of the lower part of the axle 2, and a pipe 34 with the air-compressor. On the other hand, a pipe 35 leads from the cylinder 29 through an annular passage 36 and a hole 37 to the bore 38 of the upper part of axle 2, which is connected, on the one hand, by means of a passage 39 to a cylinder 40, located within the casing 4 and fastened to the sleeve 5, and, on the other hand, by means of a pipe 41 to a cylinder 42. The cylinder 40 serves for operating the types, while the cylinder 42 serves for moving the paper-carriage.

The casing 4 is provided on its periphery with slots 43, in which fit so that they can be slid plates 45, that carry the types at their outer ends and are normally kept back by springs 200, but can be pushed out at will by the piston-rod 46 of the cylinder 40. This piston-rod is retracted by the springs 200 as soon as the compressed air has escaped.

The piston-rod 47 of the cylinder 42 is opposite to one arm of a two-armed lever 48, on the other arm of which rests a shaft 50, which

is mounted so that it can be slid in a frame 49 and on which are keyed a friction-disk 51 and a toothed wheel 52. The wheel 52 is in constant engagement with the rack 53 of the paper-carriage 54, whose rollers 55 rest on the rails 56, while the friction-disk 51 can be caused, by raising the shaft 50, to engage with the lower edge of the casing 4, which is suitably formed for the purpose.

Around the axle 2 there is arranged an annular casing 57, which is provided, on the one hand, with an annular passage 58 and, on the other hand, with holes 59, which are equal in number to the characters to be printed and in which are placed plungers 60, that carry pins 61 at their upper ends. From each of the holes 59 leads a pipe 62, which is provided at its outer end with a key 63, while a little below the junction of the pipe 62 with its hole 59 it is connected by a fine hole 64 with the annular passage 58, which in its turn is connected by a pipe 65 with the air-compressor.

The operation of the machine is as follows: Compressed air supplied through the pipe 13 passes through the annular passage 11 of the valve 12 and the pipe 9 to the cylinder 6 and forces outward its piston-rod 7, which moves the lever 3, and consequently by means of the pawl 22 rotates the ratchet-wheel 23 in the direction indicated by the arrow. During this movement of the lever 3 the spring 15 tends to move the valve 12, but is prevented from doing so by the lever 17, which is in front of its flange 16, until near the end of the stroke of the piston-rod 7 the portion 20 of the forked end of the lever 3 pushes against the projection 18 and causes the lever 17 to oscillate. Immediately the spring 15, which has been put under stress in the meantime, comes into action and draws the valve so far out that the pipe 9 is cut off from the pipe 13, but communicates through the peripheral passage 11 with the outlet 14. The compressed air contained in the cylinder now escapes, so that the spring 8 can draw back the lever 3, and thereby force back the piston-rod 7 and move the pawl 22 over the teeth of the ratchet-wheel 23. During this movement the valve 12 is prevented from moving back by the lever 17 (which now lies behind the flange 16) until shortly before the end of the stroke of the piston-rod 7 the portion 21 of the forked end of the lever 3 pushes against the projection 19 and causes the arm 17 to oscillate again. Immediately the valve 12, which has now become free, is pushed back by the spring 15 into its original position, so that compressed air can again enter the cylinder 6. In this way the ratchet-wheel 23, and therefore also the sleeve 5 and the type-casing 4, are rotated intermittently as long as compressed air is supplied through the pipe 13, the piston-rod reciprocating at an exceedingly high speed. During this time, however, also the annular passage 58 is supplied through the pipe 65 with compressed air, which escapes in small quantities through the holes 64, the pipes 62, and the keys 63. If now by putting the finger on one of the keys the corresponding pipe 62 is closed, the air is compressed in that pipe 62 and pushes out the corresponding piston 60, so that its pin 61 enters the path of the star-wheel 25. As soon, however, as that wheel during the rotation of the casing 4 strikes against the projecting pin 61 it is caused to turn by one tooth. By this the bell-crank lever 26 is caused to oscillate and the piston-valve 28 is pressed so far into the cylinder 29 that the peripheral passage 27 brings about a communication between the pipe 30, that comes from the bore 33, and the pipe 35, that leads to the bore 38. The compressed air passing into the lower bore through the pipe 34 can now enter the upper bore, from which it passes simultaneously through the passage 39 into the cylinder 40 and through the pipe 41 into the cylinder 42. The pistons of both of the cylinders are now forced out, so that the piston-rod 46 of the former pushes against the type-plate 45 that is just passing it and which corresponds to the pin 61 that has been operated, and thus presses the type carried by the plate just mentioned against the paper on the paper-cylinder, while the piston-rod 47 of the other cylinder by means of the lever 48 causes the friction-disk 51 to engage with the casing 4, so that the disk 51 is rotated thereby and by means of the toothed wheel 52 and the rack 53 causes the paper-carriage to move forward by the width of one type with the same speed as that of the type. Simultaneously with this, however, the star-wheel 25 has made a partial revolution and the piston-valve 28 is again pushed out by its spring, so that the bores 33 and 38 are disconnected, while the upper bore is placed in communication with the outer air by a hole 70 in the cylinder 29, so that the compressed air is allowed to escape from the cylinders 40 and 42 and their piston-rods return to their original positions. This action is repeated as soon as the arm 24 on rotating further meets the next pin 61 that is operated.

In lieu of the bell-crank lever for reversing the piston-valve 28, Fig. 3, the construction shown in Figs. 6 and 7 may be used. In this case a hollow cylinder 66 is mounted on the star-wheel 25 and is provided on a horizontal plane with twice as many radial holes as there are teeth in the star-wheel. One half 67 of these holes pass entirely through the wall of the cylinder, and thus communicate through the interior of the cylinder with the outer air, while the other half 68, which alternate with the others, penetrate only to a certain depth in the wall. Holes 69, which lie on another horizontal plane, communicate with the holes 68, and also penetrate only to a certain depth in the wall. The pipes 35 and 30 in this case join the cylinder 66 on the same planes, respectively, as those of the

holes 69 and the holes 67 and 68. The star-wheel and the cylinder 66 are so arranged that the compressed air normally escapes through the pipe 30 and one of the holes 67, but when the star-wheel strikes against a pin 61 it is caused to rotate, so as to bring a portion of the cylinder 66, containing one of the communicating passages 68 and 69, opposite to the pipes 30 and 35 to allow compressed air to pass from the lower bore 33 to the upper bore 38 of the spindle 2.

In lieu of the star-wheel and the bell-crank lever the lever 24 may also, as is shown in Fig. 8, be provided with a two-arm lever 72, which is pivoted at 71 and into the path of which the pins 61 project when raised by the operator, while the said two-arm lever acts directly on the piston-valve 28. In this case, however, the speed of the type-casing requires to be less or the pitch of the pins 61 requires to be greater in order to prevent the two-arm lever 72 from jumping over adjacent pins raised by the operator.

What I claim is—

1. In a pneumatic type-writer, the combination of a rotatable type-holder, with a paper-carriage, a pair of compressed-air cylinders adapted to actuate the types and paper-carriage respectively, and means for conducting compressed air into said cylinders, substantially as specified.

2. In a pneumatic type-writer, the combination of a rotatable type-holder, with a compressed-air cylinder 6, having piston 7, a lever 3, adapted to be oscillated by the piston, a pawl 22, connected to the lever, and a ratchet-wheel 23, connected to the type-holder and engaged by the pawl, substantially as specified.

3. In a pneumatic type-writer, the combination of cylinder 16, with valve 12, having peripheral channel 11, a forked lever 3, a connecting-spring 15, and a lever 17, which regulates the valve and is acted upon by the forked lever, substantially as specified.

4. In a pneumatic type-writer, the combination of a type-holder, with lever 24, star-wheel 25, lever 26, a piston-valve 28, actuated thereby, a reversing-cylinder 29, and means for rotating the star-wheel, substantially as specified.

5. In a pneumatic type-writer, the combination of a rotatable case, with spring-influenced sliding type-plates 45, a cylinder 40, mounted on the case-axle, and a piston-rod 46, adapted to actuate the type-plates, substantially as specified.

Signed at Hamburg, Germany, this 20th day of August, A. D. 1900.

MAX SOBLIK.

Witnesses:
MAX FOUQUET,
ADOLF THOMSEN.