(No Model.)

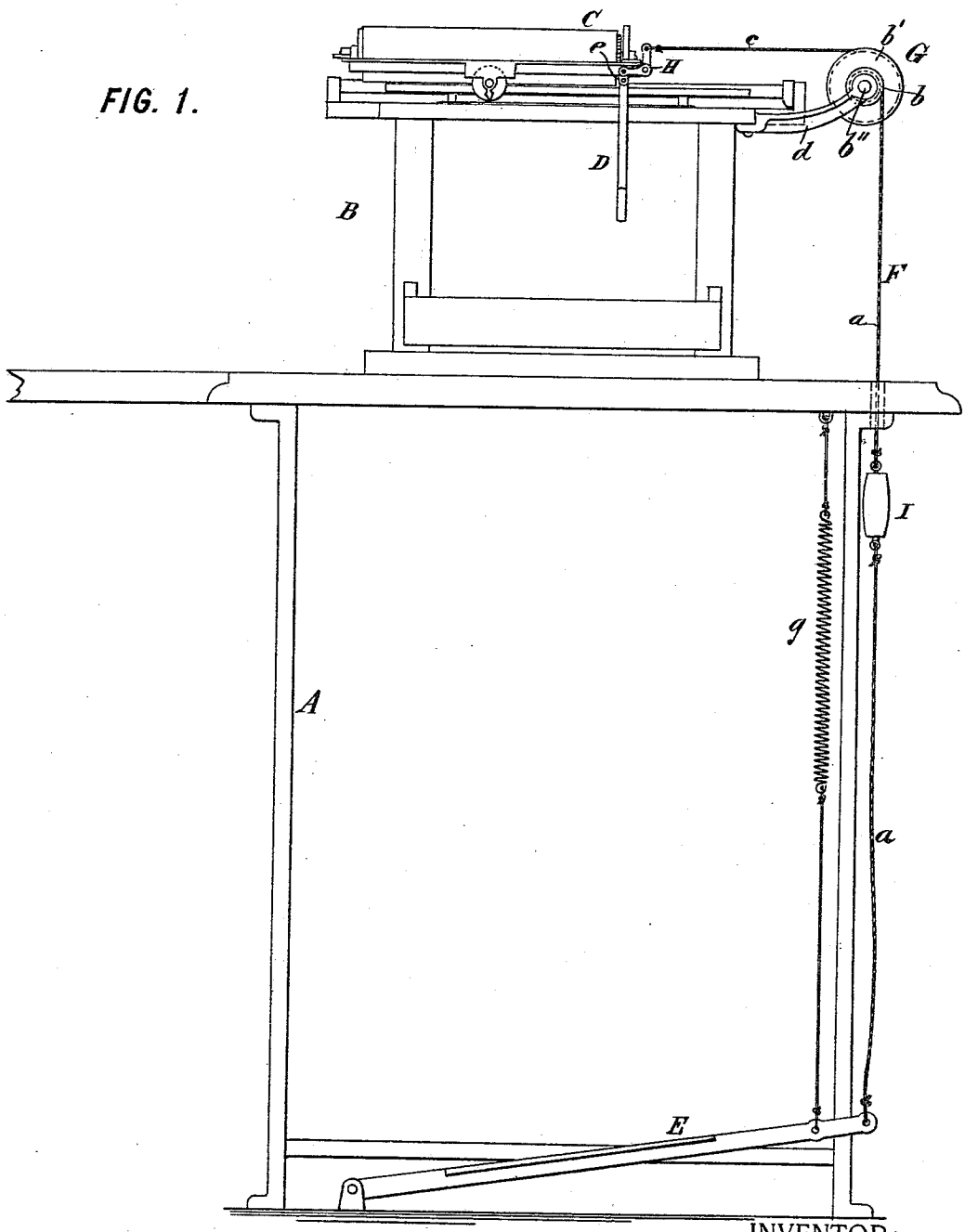
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B. METZ.

TYPE WRITING MACHINE.

No. 457,563. Patented Aug. 11, 1891.

FIG. 1.



WITNESSES:
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Fred White

INVENTOR:
Bernhard Metz,
By his Attorneys,
Arthur G. Fraser & Co.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.)

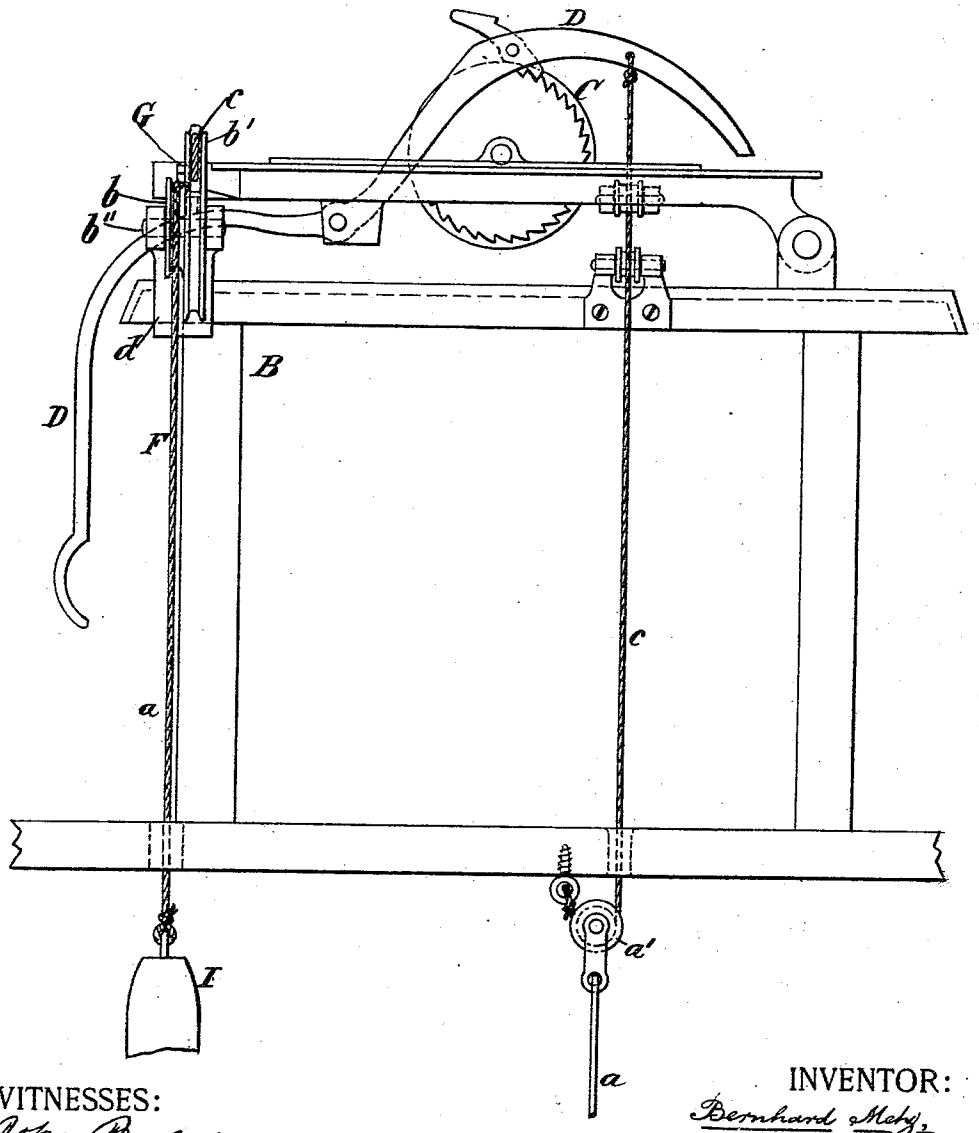
2 Sheets—Sheet 2.

B. METZ.

TYPE WRITING MACHINE.

No. 457,563. Patented Aug. 11, 1891.

FIG. 2.



WITNESSES:

John Becker

Fred White

INVENTOR:

Bernhard Metz,

By his Attorneys,

Arthur C. Fraser & Co.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

BERNHARD METZ, OF NEW YORK, N. Y., ASSIGNOR OF ONE-THIRD TO EDWIN D. GRAFF, OF SAME PLACE.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 457,563, dated August 11, 1891.

Application filed January 28, 1891. Serial No. 379,424. (No model.)

To all whom it may concern:

Be it known that I, BERNHARD METZ, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates especially to that class of type-writers wherein the paper is carried on a printing-roller mounted in a carriage which moves relatively to the machine during the printing and until a line is terminated, whereupon the roller is slightly turned to present a new line to the type and the carriage is restored to the initial position for the commencement of the new line. The turning of the roller is termed "line-spacing," and is accomplished in some of the best-known styles of type-writers by a lever pivoted to the carriage and projecting into the reach of the operator at one end and at its other end engaging a ratchet on the roller, and constructed when tilted by the operator's hand to turn the roller the space of one line, and also to free the feeding or letter-spacing mechanism, whereby on exerting a lateral pressure against the lever the carriage can be shifted to the initial position. Heretofore various devices have been employed to render it unnecessary for the operator to remove his hand from the key-board in order to manipulate this lever in spacing the lines and shifting the carriage.

My invention provides improved means whereby the lines can be spaced or the carriage shifted, or both done without removing the hands from the key-board.

To this end in carrying out the preferred form of my invention, I provide a treadle or its equivalent to be operated by the foot of the user of the machine, and I connect this treadle with the machine in an improved manner, to the end that, as heretofore, when the treadle is depressed it will automatically space the following line and restore the carriage to the initial position. I also provide means for multiplying the motion of the treadle, whereby the latter need be moved a distance equal to part only of the travel of the carriage.

In the accompanying drawings, Figure 1 is an outline elevation of one style of type-writer machine and its stand, showing my invention applied thereto in its preferred form; and Fig. 2 is a fragmentary end elevation thereof on a larger scale.

Referring to the drawings, let A represent a type-writer stand of any ordinary construction, B a type-writer machine of the class described, and C the roller-carriage thereon. Pivoted to the carriage C is a lever D, which, when tilted, turns the paper-roller to space for the next line and releases the feed mechanism, so that the carriage C may be shifted.

According to my invention I provide improved means for operating the carriage C and its lever D by the foot. This is preferably accomplished by a treadle E or other device to be operated by the foot and means for communicating the motion of such provision to the carriage—such, for example, as the connection F between the treadle and carriage.

As the travel of the carriage C is greater than it is desirable to move the foot in operating the treadle E, I prefer to provide means for multiplying the motion of the treadle E in communicating it to the carriage. This may be accomplished in various ways; but I prefer to use the double pulley G, which consists of two pulleys of different diameter.

In the form of my invention shown the treadle E is pivoted at one end to the floor and extends thence to the side of the stand A, where its free end terminates in an eye. A spring *g* or other equivalent device serves to normally hold the treadle E in the elevated position. This spring is fastened at one end to the stand A and at its other end to the free end of the treadle E in the form shown; but this arrangement is not essential.

The connection F consists, preferably, of a cord *a*, the double pulley G, and the cord *c*. The cord *a* is connected at one end to the eye of treadle E, extends thence upwardly, and is wound around and fastened at its other end to the smaller pulley *b* of the double pulley G. The pulley G consists of two pulleys *b* and *b'*, fixed together and rotating on a pin

b'', carried in a bracket d, secured to the machine B or elsewhere, as desired. The pulleys b b' are of different diameters, the latter being preferably about twice the size of the former. The cord c is at one end wound around and fastened to the larger pulley b' and at its other end engages some part of the carriage or its mechanism. By reason of the difference in size between the pulleys b and b' the movement of treadle E sufficient to cause one revolution of the pulley b will, owing to the greater diameter of pulley b', cause a proportionately greater portion of the cord c to be wound thereon, thus multiplying the motion of the treadle in transmitting it to the carriage.

I prefer to fulcrum a bell-crank lever H on the carriage C, and I connect one of its arms by a link e to the lever D in such manner that as the bell-crank H is tilted it will tilt the lever D, and thereby rotate the printing-roller for spacing the next line, and also thereby release the feed mechanism to permit shifting of the carriage C. Preferably the cord c of the connection F is fastened to the other arm of the bell-crank H, whereby when it is pulled the latter will be tilted.

To provide against looseness of the connection F and the disadvantages incident to such a condition, I provide means for taking up the slack of the connection F and for holding it taut. Preferably these consist of weight I, or its equivalent, arranged below the top of the stand A and exerting a tension on the connection F.

The operation of my invention is as follows: When the carriage C has reached the end of a line, the operator places his foot on the treadle E, depresses the latter, thereby tightening the cord a, rotating the pulley G, winding up the cord c, and tilting the bell-crank H, which, as it is first tilted, operates the lever D, and through it rotates the printing-roller the space of one line and releases the feed mechanism of the carriage. As the treadle E is further depressed, the connection F draws the carriage C to the right until the initial position is reached, whereupon, when the treadle E is released, it is restored to its raised position by the spring g, thereby relieving the connection F from strain, whereupon the bell-crank H tilts to its first position, permitting the lever D to fall, and thus throwing the feed mechanism into operation. The weight I, being insufficient to prevent the fall of the lever D, simply serves to tighten the connection F. As the machine is operated, the carriage C will be fed the length of a line, and it will then be restored to the initial position in the manner just described.

It will be understood that the construction shown and described is the preferred form of my invention and that I do not limit myself to this particular form and arrangement, as my invention may be variously modified as experience or the judgment of those skilled in the art may dictate without departing from its essential features. If desired, my invention may be used solely for restoring the carriage to the initial position.

Any known mechanical equivalent may be substituted for any of the parts shown and any suitable mechanical provisions other than those shown may be used without departing from the scope of my invention.

In dotted lines in Fig. 2 is shown a modified form, in which the cord a terminates in a block-pulley a', while the cord c is fastened at one end to the stand A and has a loop engaged by the block-pulley a', whereby the latter serves in lieu of the weight I to keep the cord c taut, and the double pulley G is dispensed with and its function is performed by the block-pulley according to a well-understood principle. This construction also shows the cord c connected directly to the lever D instead of to a bell-crank.

What I claim is, in a type-writer, the following-defined novel features and combinations, substantially as hereinbefore set forth, namely:

1. The type-writer machine having a movable carriage, in combination with a treadle or its equivalent constructed to be operated by the foot of the user of the machine, and a connection between said treadle and carriage, constructed to communicate the motion of the former to the latter, said connection constructed with a weight or its equivalent for holding it taut.

2. The type-writer machine having a movable carriage, in combination with a treadle or its equivalent constructed to be operated by the foot of the user of the machine, and a flexible connection between said treadle and carriage, constructed and arranged to communicate the motion of the former to the latter and to thereby effect the line-spacing and the return of the carriage, said connection constructed with a weight or its equivalent for holding it taut throughout its entire movement, substantially as set forth.

3. The type-writer machine having a movable carriage, in combination with a treadle or its equivalent constructed to be operated by the foot of the user of the machine, and a connection between said carriage and treadle, constructed to communicate the motion of the latter to the former, said connection constructed with a flexible portion a beneath the machine, and a weight I, carried by said flexible portion of said connection and adapted to hold the latter taut throughout its entire movement, substantially as set forth.

4. The type-writer machine having a movable carriage, in combination with a treadle or its equivalent constructed to be operated by the foot of the user of the machine, and a connection between said carriage and treadle, constructed to communicate the motion of the latter to the former, said connection constructed with a flexible portion a beneath the machine, and a weight I, carried by said flexible portion of said connection and adapted

to hold the latter taut throughout its entire movement, and a spring *g*, located beneath the table and above the treadle and connected to the latter by a flexible connection and adapted to maintain a slack condition of the flexible portion *a* between said weight and treadle of said connection during the retracted position of the carriage, substantially as set forth.

5. In a type-writer, the carriage C, carrying the roller, the lever D for turning the latter, projecting beneath and in front of the carriage, feed mechanism for the carriage, foot-treadle E, in combination with bell-crank H, pivoted to the front frame of the carriage, engaging said lever D and constructed when tilted to operate the latter, and connection F for communicating motion from the treadle to the carriage, said connection connected to one arm of said bell-crank and constructed when moved to first tilt the latter and thereby operate said lever D, whereby the line-spacing is effected, the feed mechanism freed, and the carriage returned to its initial position.

6. In a type-writer, the combination of the stand A, the machine B, having carriage C, constructed with operating-lever D, multiplying-pulley G, bracket *d*, carrying the latter, bell-crank H, pivoted to the frame of said carriage, engaging said lever and constructed when tilted to operate the latter, foot-treadle E, connection F, fastened at one end to said treadle and at its other to said bell-crank and adapted to communicate the motion of the treadle through said multiplying-pulley and to the carriage, weight I, carried by said connection and adapted to hold the latter taut between said pulley and the weight, and spring *g*, suspended from said stand, connected to said treadle by a flexible connection and adapted to support said treadle, all as and for the purpose set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

BERNHARD METZ.

Witnesses:
GEORGE H. FRASER,
CHARLES C. STRANG.