R. G. PRENDES.

PRINTING MACHINE.

APPLICATION FILED JUNE 17, 1908.

Patented June 1, 1909.

923,703.

2 SHEETS—SHEET 1.

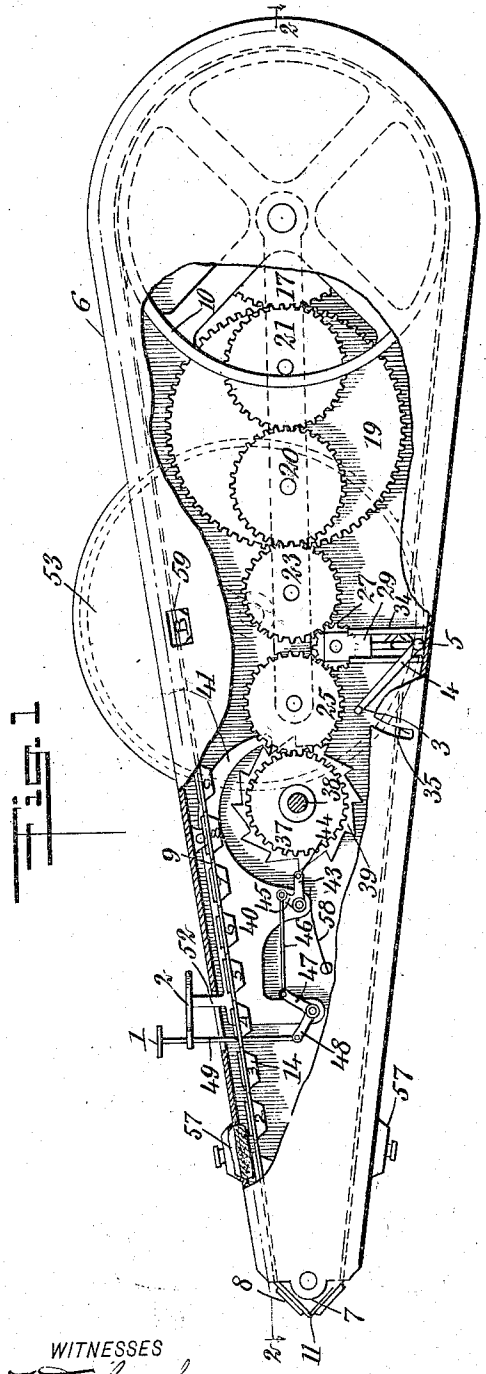

FIG. 1

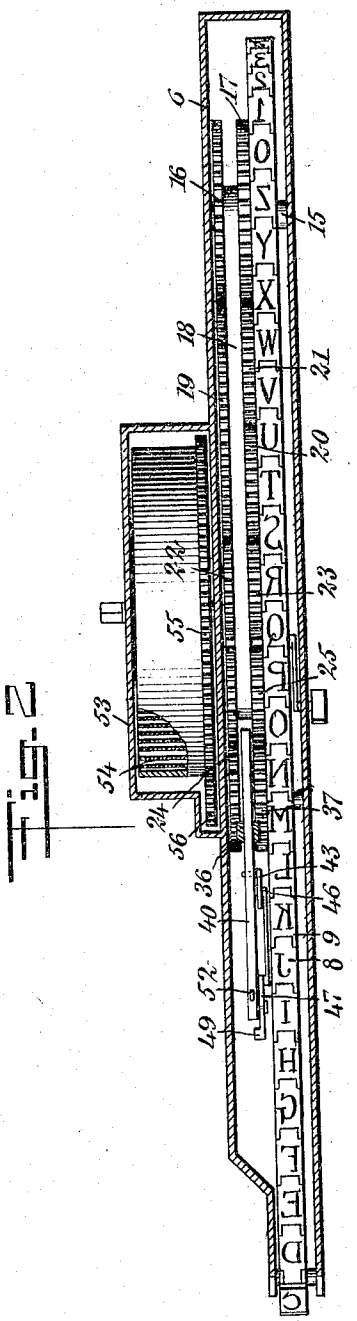

FIG. 2

WITNESSES

F. D. Sweet.

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BY Munn & Co

ATTORNEYS

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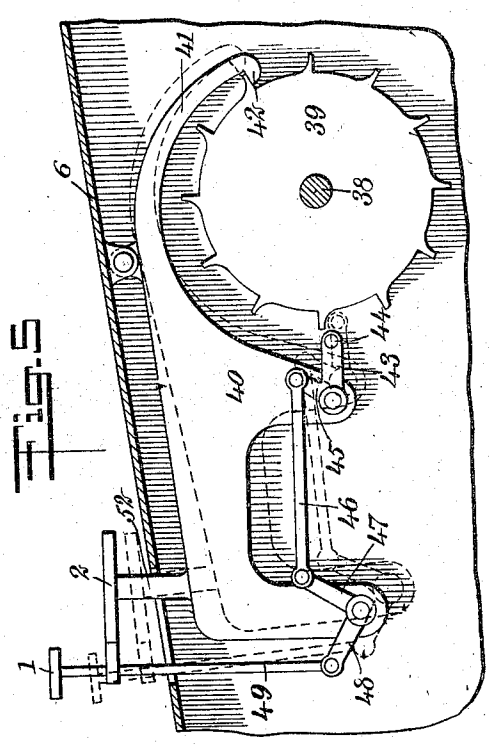

Fig. 5.

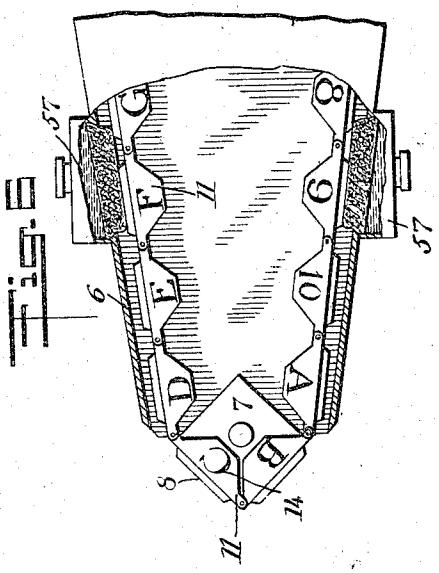

Fig. 6.

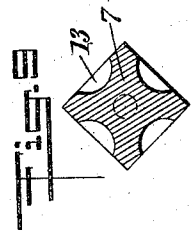

Fig. 8.

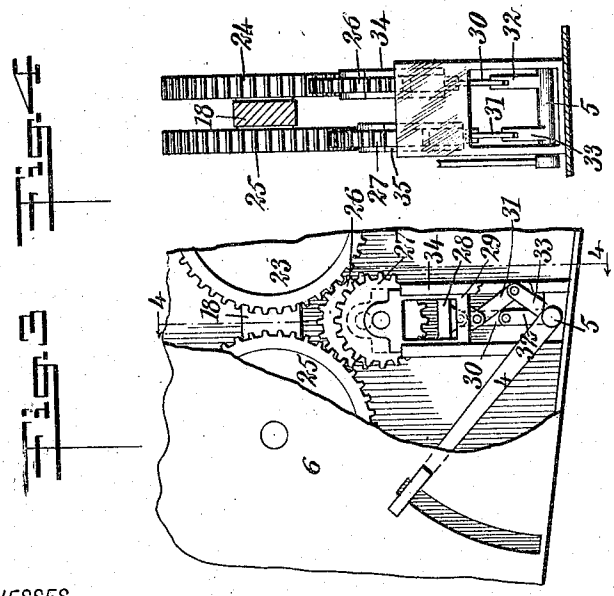

Fig. 4.

Fig. 3.

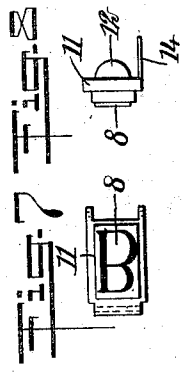

Fig. 9.

Fig. 7.

WITNESSES

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# UNITED STATES PATENT OFFICE.

RAFAEL G. PRENDES, OF HABANA, CUBA.

## PRINTING-MACHINE.

No. 923,703. Specification of Letters Patent. Patented June 1, 1909.

Application filed June 17, 1908. Serial No. 438,923.

*To all whom it may concern:*

Be it known that I, RAFAEL G. PRENDES, a citizen of the Republic of Cuba, and a resident of Habana, Cuba, have invented a new and Improved Printing-Machine, of which the following is a full, clear, and exact description.

The object of my invention is to provide a printing machine which has an endless belt to which the characters are secured, means being provided to ink said characters, and means being also provided to move the belt in either direction by a step-by-step movement, and also to move the belt rapidly so that a number of characters will pass the opening in the casing quickly in succession.

In this specification I will describe the preferred form of my invention, but I do not limit myself thereto, as I consider myself entitled to all forms and embodiments of the invention which may be held to fall within the scope of the appended claims.

In the drawings similar characters of reference refer to similar parts in all the figures, in which—

Figure 1 is a side elevation of the invention, part of the outer casing being removed; Fig. 2 is a sectional plan view on the line 2—2 of Fig. 1; Fig. 3 is an enlarged view showing my improved method of connecting and disconnecting the two lines of gearing; Fig. 4 is a sectional view on the line 4—4 of Fig. 3; Fig. 5 is an enlarged view showing the escapement, and my method of operating it; Fig. 6 is an enlarged view showing the endless belt with characters attached projecting through the casing, so that the characters may be stamped on the writing material; Fig. 7 is an enlarged plan view of one of the characters; Fig. 8 is a side elevation of the same, and Fig. 9 is an enlarged sectional view showing the sprocket wheel which is journaled at the base of the casing, which will permit the characters to protrude so that they may be stamped on the writing material.

As will be seen by referring to the drawings, the typewriter is in the form of a pencil, and is adapted to be held very much the same way as pencils and pens, but with the fingers on the thumb pieces 1 and 2, and the thumb on the arm 3 which is adapted to operate the crank 4 secured to a shank 5. In the casing 6, which may be of any approved form, is journaled a sprocket wheel 7 at the base of the casing, which will permit characters 8 on a belt 9 to project beyond the casing so that they may be stamped on the writing material, and there is also journaled in said casing 6 near its top a much larger wheel 10 on which the belt 9 also travels. The belt 9 may be constructed in the form of a sprocket chain with members 11 pivoted together, and on which may be secured the characters 8. At the rear side of the said members 11 are projections 12 which are adapted to fit in the concave surfaces 13 in the sprocket wheel 7. There are also flanges 14 on the members 11 on which may be printed marks which will identify the character which appears on the upper surface of the member 11.

The wheel 10 is secured to a shaft 15 which is journaled in the casing 6, and to this shaft 15 are also secured gear wheels 16 and 17, which may be approximately of the same diameter. There is secured between these said gear wheels 16 and 17 an elongated supporting member 18, which is adapted to support the two trains of gear wheels which are adapted to operate the gear wheels 16 and 17. At one side of the said elongated member 18 there is a gear wheel 19, which is adapted to mesh with the gear wheel 16, and immediately opposite this gear wheel 19 there are two gear wheels 20 and 21, the combined diameters of which are equal to the diameter of the gear wheel 19. The gear wheel 19 also meshes with a gear wheel 22 and the gear wheel 20 also meshes with a gear wheel 23. Gear wheels 24 and 25 are also journaled to the elongated member 18, but these gear wheels 24 and 25 are disposed at a slight distance from the gear wheels 22 and 23 respectively, and their motion is adapted to be transmitted to the gear wheels 22 and 23 by means of pinions 26 and 27. These pinions 26 and 27 are journaled in frames 28 and 29 respectively, and to these frames are pivoted links 30 and 31, which are pivoted to cranks 32 and 33 secured to the shaft 5, to which the crank 4 is also secured. These cranks 32 and 33 are secured at an angle to each other, so that it will be seen that as the crank 4 is operated the frames 28 and 29 will be operated in different directions. These frames 28 and 29 are adapted to move in guides 34.

The arm 3 extends through a slot 35 in the

casing so that it is adapted to be operated by the thumb or a finger of the user of the typewriter.

Enmeshing with the gear wheels 24 and 25 are gear wheels 36 and 37. These gear wheels 36 and 37 are secured to a shaft 38 to which is also secured therebetween the escapement wheel 39. Pivoted to the frame of the machine there is an escapement lever 40, which has a pallet arm 41, and at the outer terminal thereof there is a pallet 42. Opposite this pallet 42 there is pivoted to the lever 40 a bell crank lever 43, which has a stud 44 at the terminal of one of its arms, the stud 44 being adapted to engage the escapement wheel 39 as a pallet; the other arm 45 of the bell crank lever is connected by a link 46 with the arm 47 of a second bell crank lever pivoted to the lever 40, the other arm 48 of this bell crank lever being connected by a rod 49 which passes through an opening in the casing 6 to the thumb piece 2, and near the outer terminal of the rod 49 there is the second thumb piece 1 which is smaller in size than the thumb piece 2. The thumb piece 2 is connected by means of a rod 52 with the escapement lever 40. At one side of the casing 6 there is an auxiliary casing 53, in which there is a clock spring 54 mounted in the usual manner, and which is adapted to be wound up in the customary manner. Connected with this clock spring and adapted to be operated thereby is a gear wheel 55, which enmeshes with a pinion 56, said pinion being secured to the shaft 38 which projects through the casing into the auxiliary casing 53. In the casing are secured ink pads 57 which are so disposed as to press on the face of the characters 8 so they will be inked as they pass thereby. A spring 58 is provided to hold the escapement lever 40 upwardly in position, and a spring may also be provided to hold the arm 43 of the bell crank lever so disposed that the stud 44 will contact with the teeth of the escapement wheel 39. Openings 59 may be provided in the casing so that the identification marks of the flanges 14 of the members 11 will be exposed to the view of the operator of the typewriter.

In using my invention, ink is supplied to the pads 57, and the operator puts his thumb on the arm 3 of the crank 4 and his fingers on the finger pieces 1 and 2 secured to the rods 49 and 52. He then by looking at the characters exposed at the opening at the base of the casing, and also by looking at the characters over the openings 59 in the casing is enabled to learn the characters which protrude through the casing, and as these have been inked by their passage over the inkers 57, by stamping them on the writing material he is able to obtain the impression desired. When he wishes to use other characters, by means of the operation of the finger piece 2 he can operate the escapement lever 40 which will permit the escapement wheel to revolve under the pressure of the spring 53 until the new character is carried and is exposed in the opening at the bottom of the casing 6. The escapement lever 40 when operated by the finger piece 2, permits one tooth of the escapement wheel 39 to pass the pallet 42, and the teeth in both the lines of gearing are so adjusted as to permit the belt to travel such a distance as to project a character in the said opening in the casing. By means of the pinions 26 and 27 the belt 9 may be moved in either direction, and the characters may, therefore, be carried upwardly or downwardly over the sprocket wheel 7 as may be desired, the desired train of gearing being connected by means of the movement of the arms 3, which operates the mechanism which moves upwardly or downwardly the pinion which is adapted to connect the line of gearing respectively. When the operator desires to use a character at some distance from the opening in the casing 6, he may by pressing the thumb piece 1 draw the stud 44 away from the escapement wheel 39, permit the escapement wheel to rotate rapidly and thereby permit the gear wheels 36 and 37 which are secured to the shaft 38 to operate the gear wheels 24 and 25, and in this way obtain a quick movement of the desired line of gearing, which will quickly bring to the opening in the casing 6 the desired character.

As has been stated, the casing may be so constructed that it will permit of the letters being seen at desired places therein and any suitable means may be provided to designate the letter which is in position for printing. One method would be to have the characters on the sides of the members forming the belt at certain distances from the letters to which they refer, this distance corresponding with the distance between the letter which is in position for printing and an opening in the casing. The letter faces are much higher than the belt, so that when drawn over the inkers, the letters will be inked without smearing the ink on the belt.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a printing machine, a frame having an opening therein, pulleys journaled in the frame, a continuous belt mounted on the pulleys, the belt projecting through the opening in the frame, characters secured to the belt, an ink pad disposed in contact with the type, means adapted for moving the belt relatively to the frame by a step-by-step movement, and means which are adapted for moving the belt rapidly so that a number of characters will quickly pass the opening in the frame.

2. In a printing machine, a frame, wheels

journaled in the frame, a belt which is mounted on the said wheels, means adapted to drive one of the said wheels in either direction, and an escapement which is adapted to control the movement of the said means.

3. In a printing machine, a frame, wheels journaled in the frame, a belt which is mounted on the said wheels, characters secured to the belt, means which are adapted to drive one of the said wheels in either direction, means to control the direction of rotation of the said wheel, and an escapement which is adapted to control the movement of the first named means.

4. In a printing machine, a frame, wheels journaled in the frame, a belt which is mounted on the wheels, characters secured to the belt, means to drive one of the said wheels in either direction, an escapement which controls the said means, and a rod secured to the escapement which is adapted to actuate the escapement.

5. In a printing machine, a frame, wheels journaled in the frame, a belt which is mounted on the said wheels, characters secured to the belt, means to drive one of the said wheels in either direction, means adapted to control the direction of rotation of the said wheel, an escapement which is adapted to control the means to drive the said wheel, and a rod secured to the escapement which is adapted to actuate the escapement.

6. In a printing machine, a frame, wheels journaled in the frame, a continuous belt which is mounted on the said wheels, characters secured to the belt, means to drive one of the said wheels in either direction, an escapement which is adapted to control the said means, a rod secured to the escapement which is adapted to actuate the escapement, and means adapted to free the escapement to permit the rapid rotation of the said wheel in either direction.

7. In a printing machine, a frame, wheels journaled in the frame, a belt which is mounted on the said wheels, characters secured to the belt, means to drive one of the said wheels in either direction, an escapement which is adapted to control the lever which is adapted to actuate the escapement, and means to free the escapement to permit the rapid rotation of the wheel in either direction.

8. In a printing machine, a frame, wheels journaled in the frame, a belt which is mounted on the said wheels characters secured to the belt, means to drive one of the said wheels in either direction, means adapted to control the direction of rotation of the said wheel, an escapement which is adapted to control the said means to drive the said wheels, means which are adapted to actuate the escapement, and means to free the escapement which will permit the rapid rotation of the said wheel.

9. In a printing machine, a frame, wheels mounted in the frame, a belt which is mounted on the wheels, characters secured to the belt, means to rotate one of the wheels, and an escapement which is adapted to control the movement of the said means, the escapement having two pallets, one of which is adapted to be moved with reference to its companion pallet.

10. In a printing machine, a frame, wheels mounted in the frame, a belt which is mounted on the wheels, characters secured to the belt, means which are adapted to rotate one of the wheels, an escapement which is adapted to control the movement of the said means, the escapement having two pallets, one of which is adapted to be moved with reference to the other, means to move the said pallet, and means to actuate the escapement.

11. In a printing machine, a frame, wheels journaled in the frame, an endless belt mounted on the wheels, characters secured to the belt, means to rotate one of the wheels, a wheel which is adapted to drive the said means, an escapement wheel which is adapted to control the movement of the last named wheel, and pallet arms which are pivoted to the frame, the pallet on one of the arms being adapted to be moved with reference to its pallet arm.

12. In a printing machine, a frame, wheels journaled in the frame, an endless belt mounted on the wheels, characters secured to the belt, means to rotate one of the wheels, a wheel which is adapted to drive the said means, an escapement wheel which is adapted to control the movement of the last named wheel, pallet arms which are pivoted to the frame, the pallet on one of the pallet arms being adapted to be moved with reference to its pallet arm, means to actuate the movable pallet, and means to actuate the escapement.

13. In a printing machine, a frame, wheels journaled in the frame, a belt mounted on the wheels, characters on the belt, two lines of gearing which are adapted to drive one of the wheels in opposite directions respectively, gearing which is adapted to rotate in one direction, and means to connect the last named gearing with either of the two lines of gearing at the will of the operator.

14. In a printing machine, a frame, wheels journaled in the frame, a belt mounted on the wheels, characters on the belt, two lines of gearing, there being a space between two of the gear wheels on each of the lines of gearing, the lines of gearing being adapted to rotate one of the said wheels in opposite directions respectively, two pinions which are adapted respectively to connect each of the said lines of gearing, guides in which the pinions are mounted to travel, a shaft

journaled in the frame, two crank arms secured to the shaft at an angle with each other, and links connecting the said crank arms with the said pinions respectively.

15. In a printing machine, a frame, wheels journaled in the frame, a belt mounted on the wheels, characters on the belt, two lines of gearing, there being a space between two of the gear wheels on each of the lines of gearing, the lines of gearing being adapted to rotate one of the said wheels in opposite directions respectively, two pinions which are adapted respectively to connect each of the said lines of gearing, guides in which the pinions are mounted to travel, a shaft journaled in the frame, two crank arms secured to the shaft at an angle with each other, links connecting the said crank arms with the said pinions respectively, and means to rock the shaft.

16. In a printing machine, a frame, wheels journaled in the frame, a belt which is mounted on the said wheels, characters on the said belt, means to ink the said characters, means to drive one of the said wheels, in either direction, means to control the direction of rotation of said wheel, an escapement which is adapted to control the said means to drive one of the said wheels, and a rod secured to the escapement lever which is adapted to actuate the escapement.

17. In a printing machine, a frame, wheels journaled in the frame, a belt mounted on the said wheels, characters mounted on the belt, two lines of gearing which are adapted to drive one of the said wheels in opposite directions respectively, gearing which is adapted to rotate in one direction, means adapted to connect the last named gearing with either of the two lines of gearing at the will of the operator, and an escapement which is adapted to control the movement of the gearing which is adapted to rotate in one direction.

18. In a printing machine, a frame, wheels journaled in the frame, a belt mounted on the said wheels, characters mounted on the belt, two lines of gearing which are adapted to drive one of the said wheels in opposite directions respectively, gearing which is adapted to rotate in one direction, means adapted to connect the last named gearing with either of the two lines of gearing at the will of the operator, an escapement which is adapted to control the movement of the gearing which is adapted to rotate in one direction, and means to free the said escapement.

19. In a printing machine, a frame, wheels journaled in the frame, a belt mounted on the said wheels, characters on the belt, two lines of gearing which are adapted to drive one of the said wheels in opposite directions respectively, gearing which is adapted to rotate in one direction, means which are adapted to connect the last named gearing with either of the two lines of gearing at the will of the operator, an escapement wheel which is adapted to control the rate of rotation of the gearing which is adapted to rotate in one direction, two pallet arms pivoted to the frame, which are adapted to engage the escapement wheel, a pallet on one of the pallet arms being adapted to be moved with reference to its pallet arm.

20. In a printing machine, a frame, wheels journaled in the frame, a belt mounted on the said wheels, characters on the belt, two lines of gearing which are adapted to drive one of the said wheels in opposite directions respectively, gearing which is adapted to rotate in one direction, means which are adapted to connect the last named gearing with either of the two lines of gearing at the will of the operator, an escapement wheel which is adapted to control the rate of rotation of the gearing which is adapted to rotate in one direction, two pallet arms pivoted to the frame, which are adapted to engage the escapement wheel, a pallet on one of the pallet arms being adapted to be moved with reference to its pallet arm, means to actuate the escapement, and means to move the adjustable pallet.

21. In a printing machine, a frame, wheels journaled in the frame, a belt mounted on the said wheels, characters on the belt, two lines of gearing which are adapted to drive one of the said wheels in opposite directions respectively, gearing which is adapted to rotate in one direction, means which are adapted to connect the last named gearing with either of the two lines of gearing at the will of the operator, an escapement wheel which is adapted to control the rate of rotation of the gearing which is adapted to rotate in one direction, two pallet arms pivoted to the frame, which are adapted to engage the escapement wheel, a pallet on one of the pallet arms being adapted to be moved with reference to its pallet arm, means to actuate the escapement, means to move the adjustable pallet, and an inker which is adapted to ink the characters on the belt.

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

RAFAEL G. PRENDES.

Witnesses:
VICTOR NORMAND,
A. ROGERS.