J. McTAMMANY.

AUTOMATIC TYPE WRITER OPERATOR.

APPLICATION FILED FEB. 7, 1912.

1,106,397.

Patented Aug. 11, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

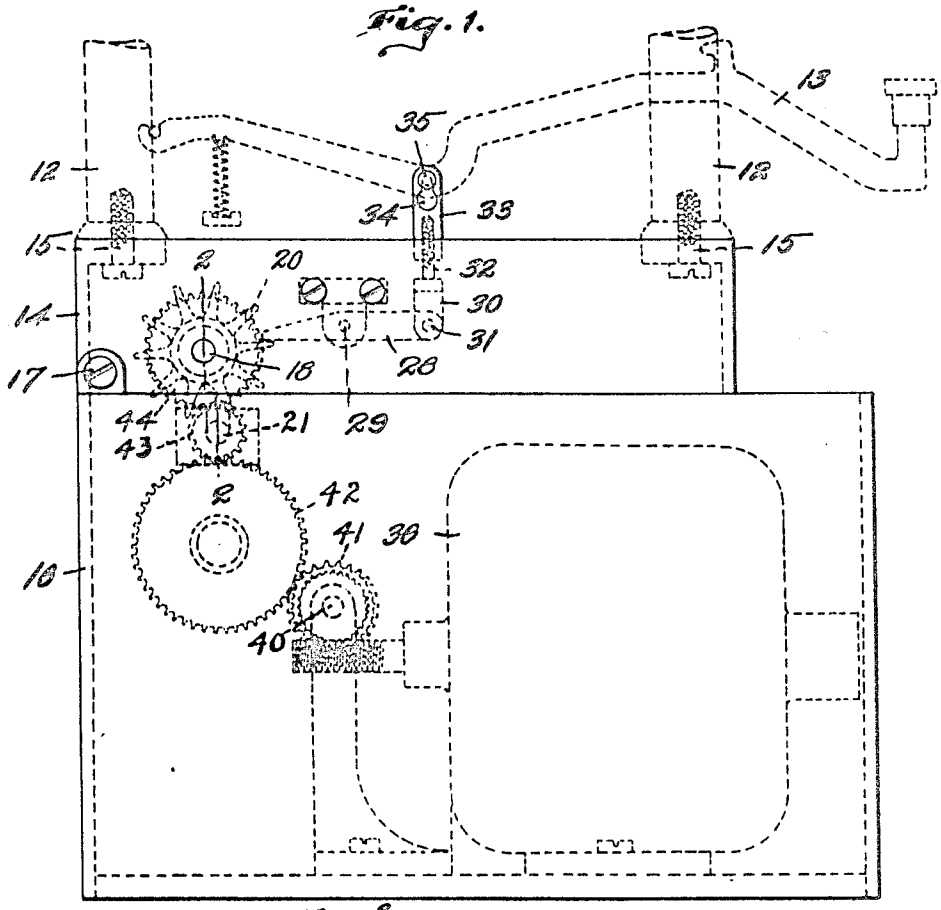


Fig. 2.

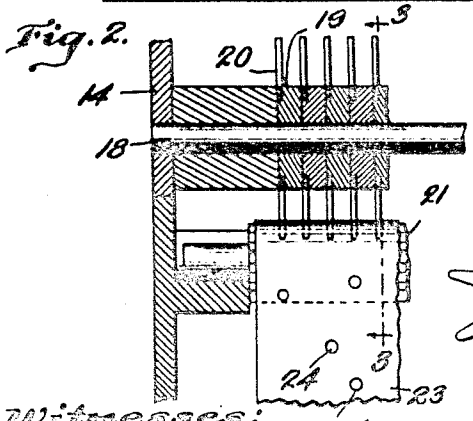


Fig. 3.

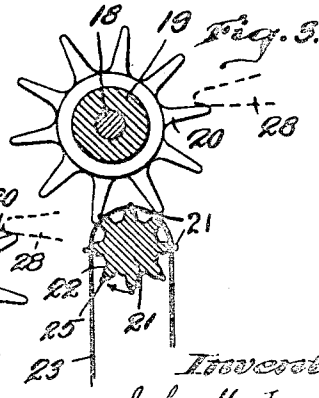
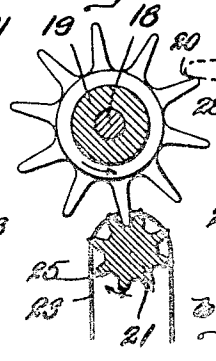


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

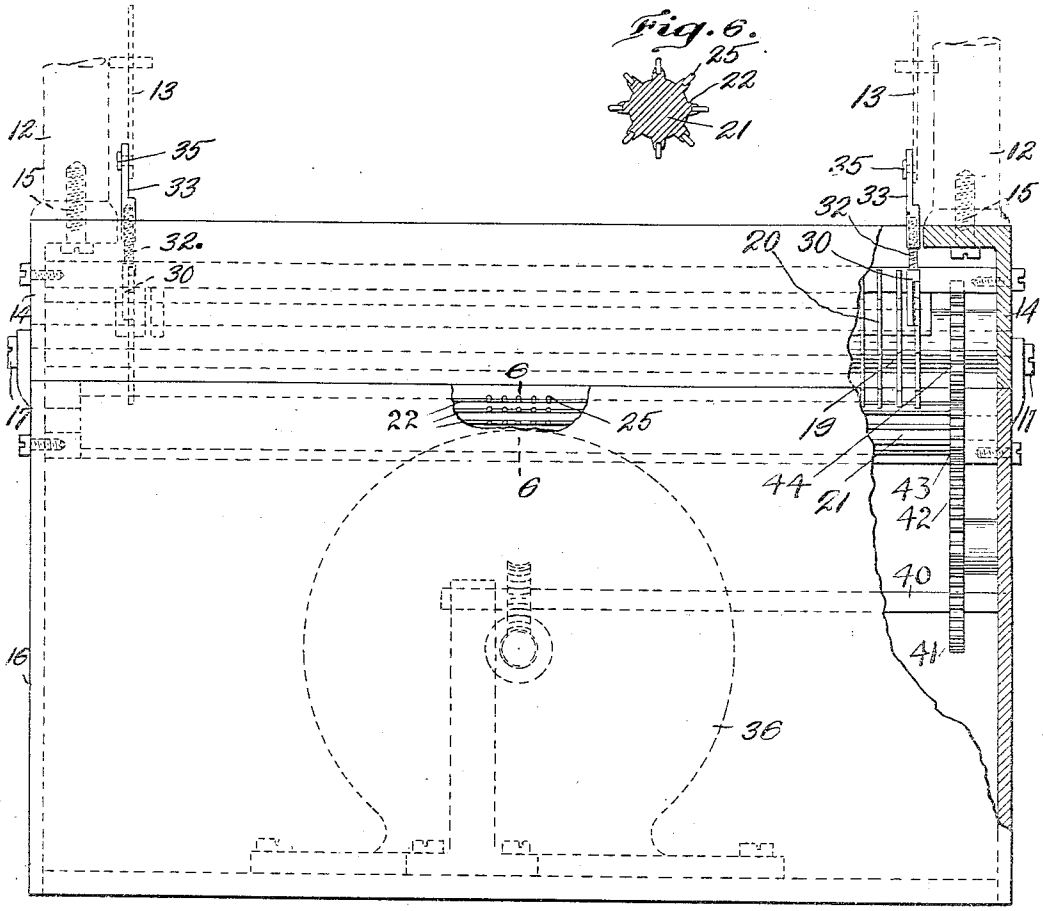
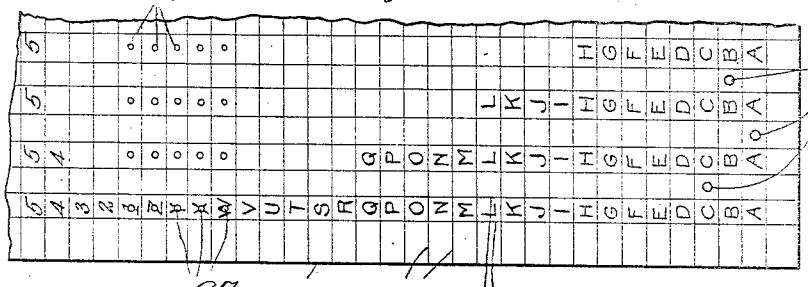


Fig. 6.

Fig. 7.



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UNITED STATES PATENT OFFICE.

JOHN McTAMMANY, OF STAMFORD, CONNECTICUT.

AUTOMATIC TYPE-WRITER OPERATOR.

1,106,397. Specification of Letters Patent. Patented Aug. 11, 1914.

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To all whom it may concern:

Be it known that I, JOHN McTAMMANY, a citizen of the United States, and a resident of Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Automatic Type-Writer Operators, of which the following is a specification.

This invention relates to an automatic machine controlled by a perforated master-sheet for depressing the keys of the ordinary typewriter in a predetermined order determined by perforations made in a master-sheet, the said sheet being combined with mechanism which supplies power to the typewriter keys in such manner as to depress the same one by one.

The invention has for its object, first, to provide a simple sheet-controlled operating mechanism in which the power employed is transmitted directly and positively to the typewriter keys without the employment of pneumatic or other like actuating means controlled by the sheet.

The invention also has for its object to provide an improved master-sheet, the key operating perforations of which are designated so that the letter or character which each perforation represents and is intended to reproduce in the typewriter, can be readily determined by an inspection of the sheet.

The invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings:—Figure 1 represents a side elevation of a typewriter operator embodying my invention; Fig. 2 represents a partial section on the plane of line 2—2 of Fig. 1; Fig. 3 represents a section on line 3—3 of Fig. 2; Fig. 4 represents a view similar to Fig. 3, illustrating the operation; Fig. 5 represents a rear elevation of the machine; Fig. 6 represents a section on line 6—6 of Fig. 5; Fig. 7 represents a view of a portion of the master-sheet.

The same reference characters indicate the same parts in all the figures.

In the drawings,—12, 12 represent the supporting portions of the frame of an ordinary typewriter, and 13 represents one of the keys or key levers, these being parts of the ordinary printing mechanism of the typewriter, which forms no part of my invention and need not be further described.

The mechanism embodying my invention is mounted in a casing which constitutes a base adapted to support the typewriter, said casing, as here shown, comprising an upper section 14 to which the parts 12 of the typewriter frame are detachably secured by screws 15, and a lower or base section 16 supporting the section 14 and hinged thereto at 17 so that said section 14, and the typewriter attached thereto, may be swung upwardly to expose the mechanism of the operator.

18 represents a shaft mounted at its ends in two opposite side pieces of the casing section 14 and extending horizontally across the interior of said section. Upon the shaft 18 are mounted hubs 19 corresponding in number to the printing characters and key levers of the typewriter and adapted to be independently rotated by friction as hereinafter described. To each hub 19 is attached a star wheel 20, the teeth of which are preferably formed as shown by Figs. 1, 3 and 4.

21, represents a feed roll which is formed as an elongated spur gear, said roll having longitudinal gear teeth 22 separated by interdental spaces of uniform width, the teeth being also of uniform width.

23 represents a master-sheet of paper or other suitable flexible material having key-operating perforations 24. The sheet 23 passes between the feed roll 21 and the series of star wheels 20 and is supported and driven by the feed roll, the latter being provided at its central portion with radial pins 25, Figs. 5 and 6, which are formed on the outer ends of the gear teeth 22 and are adapted to enter feed orifices 27 formed in the central portion of the sheet 23. The perforations 27 have a function distinct from from that of the key-operating orifices, namely, to engage the pins 25 so that there is always a positive feeding engagement between the feed roll and the sheet 23. The key-operating perforations 24 are formed in accordance with the matter which is to be printed by the typewriter, each perforation 24 representing a printing character and key lever.

As indicated by Fig. 7, the key-operating perforations alternate lengthwise of the sheet with the feed perforations 27 so that a perforation 24 in any part of the sheet that is passing over the feed roll 21 will coincide with the space between two of the teeth 22 of said feed roll.

The feed roll and each star wheel 20 are so relatively formed and arranged that when an imperforate portion of the sheet 23 is passing between the feed roll and a star wheel, the teeth of the latter will bear inoperatively on the sheet, as indicated by Fig. 3, so that no movement will be imparted to the star wheel by the feed roll, the latter being continuously rotated in the direction indicated by the arrow, Fig. 3. When, however, a perforation 24 reaches the point of one of the teeth of the star wheel, said tooth is immediately permitted to project through said perforation and enter the space between two adjacent teeth of the feed roll, so that the star wheel is interengaged with the feed roll and positively rotated thereby, as indicated by Fig. 4. This movement of the star wheel is utilized to depress the corresponding typewriter key 13 through the instrumentality of a lever 28 fulcrumed at 29 in the casing section 14 and having one of its arms extending into the path of the teeth of the star wheel, there being one lever 28 for each star wheel. The other arm of the lever 28 is provided with a coupling member adapted to detachably engage the corresponding typewriter key 13. As here shown, said coupling member includes an inner portion 30 pivoted at 31 to the lever 28, and provided with a screw-threaded extension 32, and an outer portion 33 having a tapped orifice to receive the portion 32 and a key-hole shaped slot 34 adapted to detachably engage a headed stud 35 on a key 13. When a star wheel is at rest the lever 28 bears on the upper side of one of its teeth, as indicated by Figs. 1 and 3, the key 13 being at the same time in its normal position.

When the star wheel is engaged by the feed roll through a key-operating perforation 24 in the master-sheet, the arm of the lever bearing on the star wheel is raised, as indicated by Fig. 4, and the opposite end is depressed, the depressed end acting through the described connection to depress the key 13 and cause the printing of the corresponding character. The rotation of the star wheel is continued until the engaged tooth recedes from the feed roll, the star wheel again assuming the inoperative position shown by Fig. 3, until the next perforation 24 reaches one of its teeth.

The feed roll may be rotated by any suitable means such as an electric motor 36 located in the casing section 16, and a train of gears connecting the shaft of the motor with the feed roll.

As best shown in Fig. 2, the hubs 19, to which the star wheels 20 are secured, are fitted close together and to the shaft 18 so that when said shaft 18 is rotated there will be a constant tendency to rotate the said hubs 19 in order that, whenever a perforation of the master sheet comes opposite the end of a tooth of a star wheel, the constant tendency of that star wheel to be rotated frictionally as described will cause the said tooth to pass through the perforation so as to be engaged by the ratchet actuating tooth of the feed roll 21, thereby imparting positive movement to the star wheel to actuate the lever 28. To rotate the shaft 18, so as to rotate the star wheels frictionally when the latter are freed by the passing of perforations under their teeth, the shaft of the electric motor 36 is connected by worm gearing to a shaft 40, said shaft having a pinion 41 which transmits motion through gear 42 to a pinion 43 secured to the shaft or feed roll 21. Said pinion 43 meshes with a toothed wheel 44 secured to the shaft 18.

It will be seen from the foregoing that when an imperforate portion of the master-sheet is interposed between the feed roll or driving member at one side of the sheet, and the star wheel or driven member at the opposite side of the sheet, said members are held out of engagement with each other and are permitted to interengage by a perforation 24 in the sheet, the described mechanism acting directly and positively to operate the keys of the typewriter.

To enable the attendant of the machine to conveniently read the key-operating perforations, I print on the outer side of the sheet intersecting longitudinal and transverse lines 37, 38, which sub-divide the surface of the sheet into rectangular spaces arranged in longitudinal and transverse rows. On the spaces of every alternate transverse row, I print the letters and other characters which are to be reproduced by the typewriter. Considering said characters as the letters of the alphabet, I print the entire alphabet in a transverse row extending from one edge of the sheet to the other. The spaces in which the letters are printed coincide crosswise of the sheet with the feed perforations 27, and are the portions of the sheet which bear on the outer ends of the gear teeth of the feed roll 21. The intermediate spaces are those in which the key-operating perforations 24 are formed. When the sheet has been provided with the key-operating perforations arranged to print a given combination of characters, the attendant can readily read the perforations, or, in other words, determine what characters they represent by reference to the characters printed on the master-sheet. For example, in one corner of Fig. 7, I show three key-operating perforations 24, one arranged in a space between two letters of the "C" row or column, another in a space between two letters of the "A" row or column, and a third in a space between two letters of the "B" row or column. In the operation of the machine these three perforations will

cause the printing of the word "cab" and this fact can be readily determined by the attendant by an inspection of the sheet.

I claim:

1. An automatic typewriter operator comprising a perforated master-sheet and mechanism controlled thereby for depressing the keys of a typewriter, said mechanism including a driving member at one side of the sheet, and a rotary driven member at the opposite side of the sheet mounted to project through the sheet when permitted to do so by a perforation, said members being held out of engagement with each other by an imperforate portion of the sheet, and interengaged by a perforated portion of the sheet.

2. An automatic typewriter operator comprising a perforated master-sheet and mechanism controlled thereby for depressing the keys of a typewriter, said mechanism including a driving member at one side of the sheet, a rotary driven member at the opposite side of the sheet mounted to project through the sheet to be engaged with the driving member when permitted to do so by a perforated portion of the sheet, and a lever adapted to be moved by the driven member, and having a coupling member adapted to engage a typewriter key.

3. An automatic typewriter operator, comprising a perforated master-sheet, a gear toothed feed roll bearing on one side of the master-sheet, a series of star wheels bearing on the opposite side of said sheet, the arms of said wheels being adapted to be held out of engagement with the feed roll by imperforate portions thereof and to move into engagement with teeth of the feed roll through the perforations in the sheet, levers adapted to be moved by the star wheels, and coupling members on said members adapted to engage typewriter keys.

4. An automatic typewriter operator comprising a perforated master-sheet provided with a longitudinal series of feed roll-engaging perforations, a gear toothed feed roll bearing on one side of the master-sheet and having feed pins on its gear teeth adapted to engage said perforations, a series of star wheels bearing on the opposite side of the sheet, and adapted to be relatively engaged with the feed roll through the perforated portions of the sheet, and means operated by the rotation of the star wheels for depressing the keys of a typewriter.

5. An automatic typewriter operator having key-operating mechanism comprising a feed roll having elongated rigid actuating teeth, a master-sheet having key-operating perforations spaced to coincide with the interdental spaces of the feed roll, and a series of rotary members having projections adapted to pass through said perforations.

6. An automatic typewriter operator having key-operating mechanism comprising a feed roll having elongated rigid actuating teeth, a master-sheet having key-operating perforations spaced to coincide with the interdental spaces of the feed roll, means being provided for positively engaging the sheet with the feed roll and causing the perforations of the sheet to coincide with the said spaces, and a series of rotary members having projections adapted to pass through said perforations.

7. An automatic typewriter operator having key-operating mechanism comprising a feed roll having elongated rigid actuating teeth provided with feeding pins on their apexes, a master-sheet having a longitudinal series of feeding perforations spaced to engage said pins, and key-operating perforations spaced to coincide with the spaces between the teeth of the feed roll, and a series of rotary members having projections adapted to pass through said perforations.

8. In an automatic typewriter operator, a master-sheet having a longitudinal series of feed perforations, and key-operating perforations alternating in position with the feed perforations crosswise of the sheet, whereby the key-operating perforations are caused to coincide with spaces between pins on a feed roll engaging the feed perforations.

9. In an automatic typewriter operator, a master-sheet having a longitudinal series of feed perforations, and key-operating perforations alternating in position with the feed perforations crosswise of the sheet, whereby the key-operating perforations are caused to coincide with spaces between pins on a feed roll engaging the feed perforations, the sheet being provided with printed characters designating the letters or other characters represented by the key-operating perforations therein.

In testimony whereof I have affixed my signature, in presence of two witnesses.

JOHN McTAMMANY.

Witnesses:
GEORGE R. CLOSE,
MABEL E. HAMILTON.