

No. 725,855.

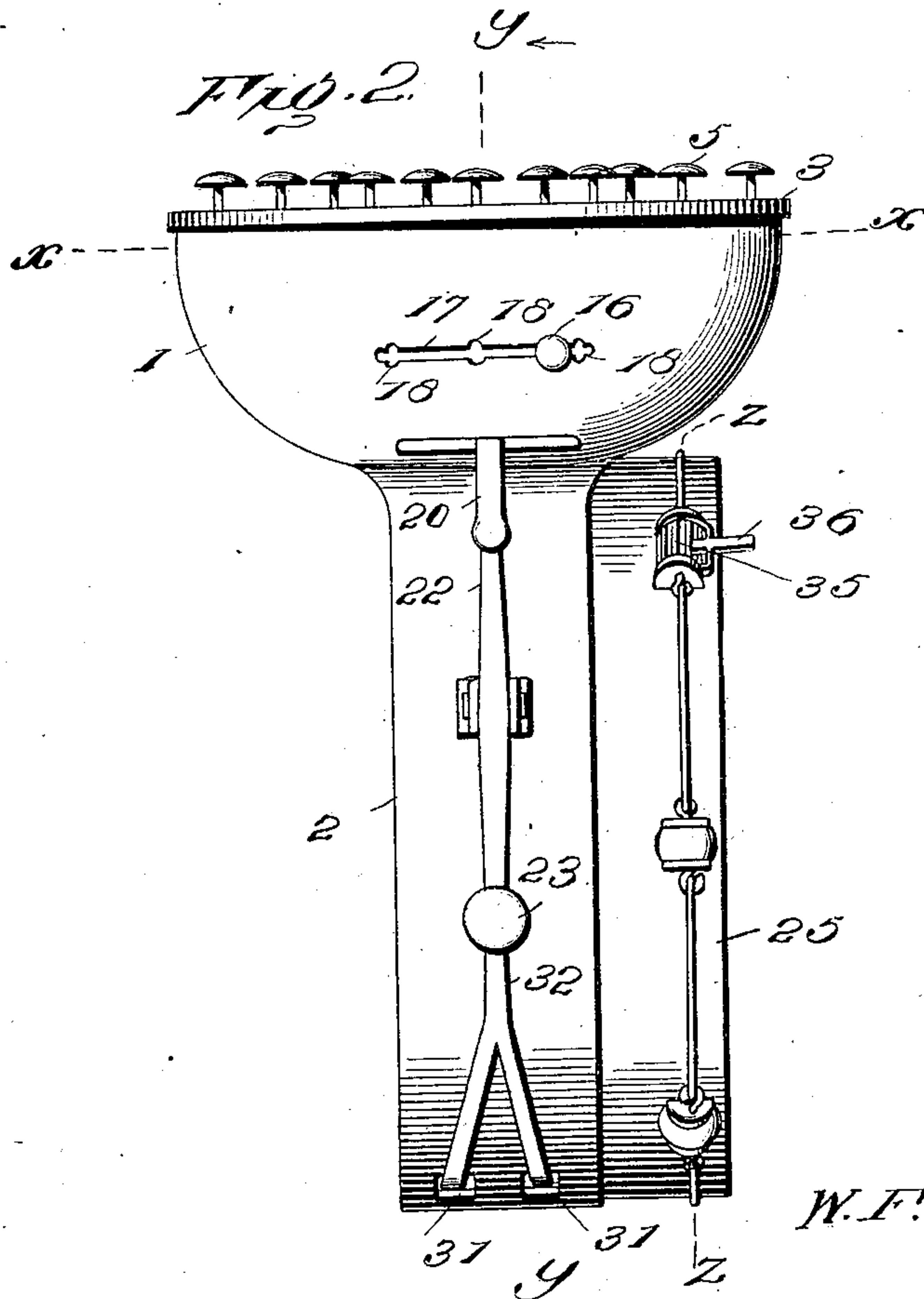
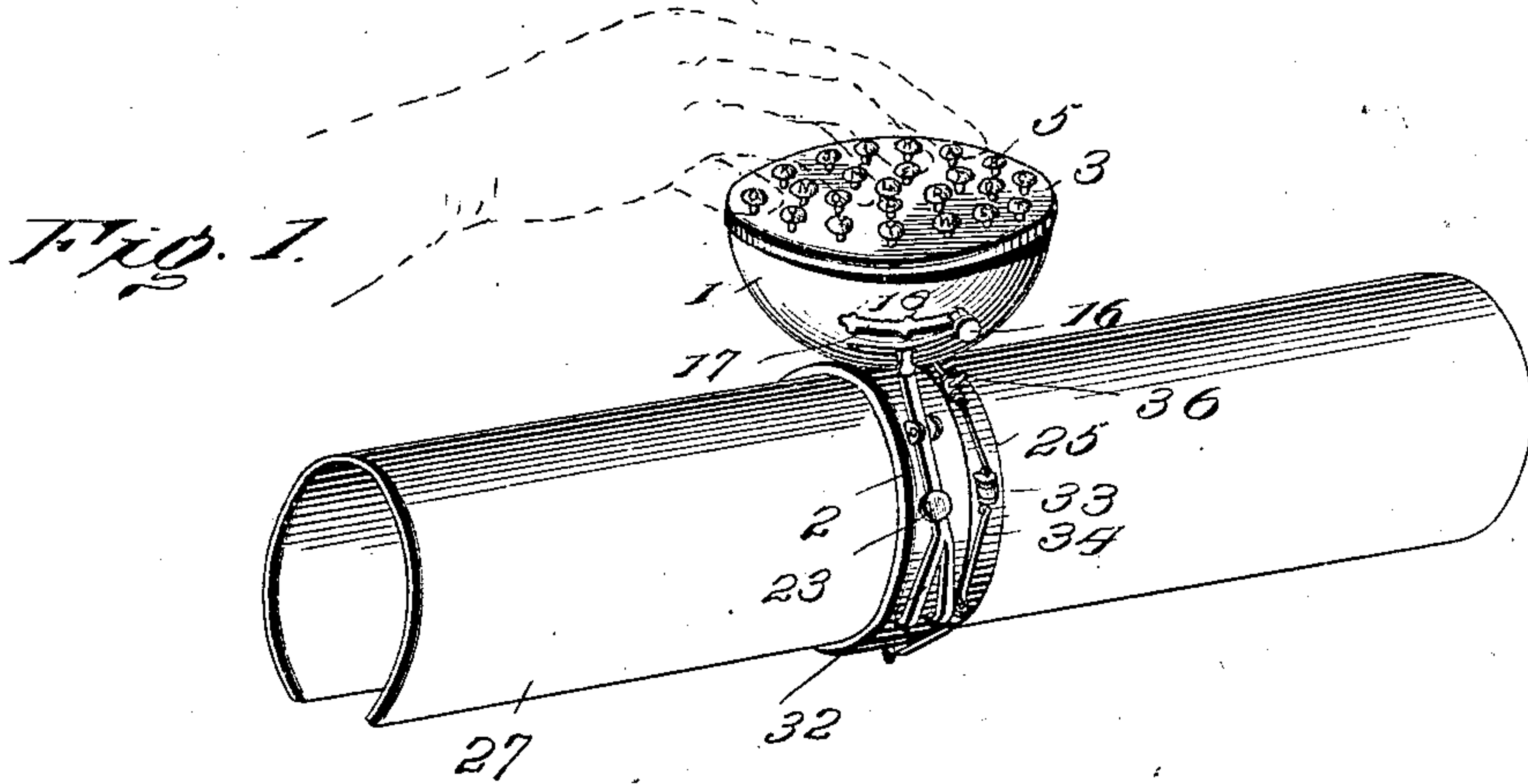
PATENTED APR. 21, 1903.

W. F. LOYD.
TYPE WRITER.

APPLICATION FILED AUG. 25, 1902.

3 SHEETS—SHEET 1.

NO MODEL.



Inventor

W. F. Lloyd

Witnesses

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3 SHEETS—SHEET 2.

NO MODEL.

FIG. 3.

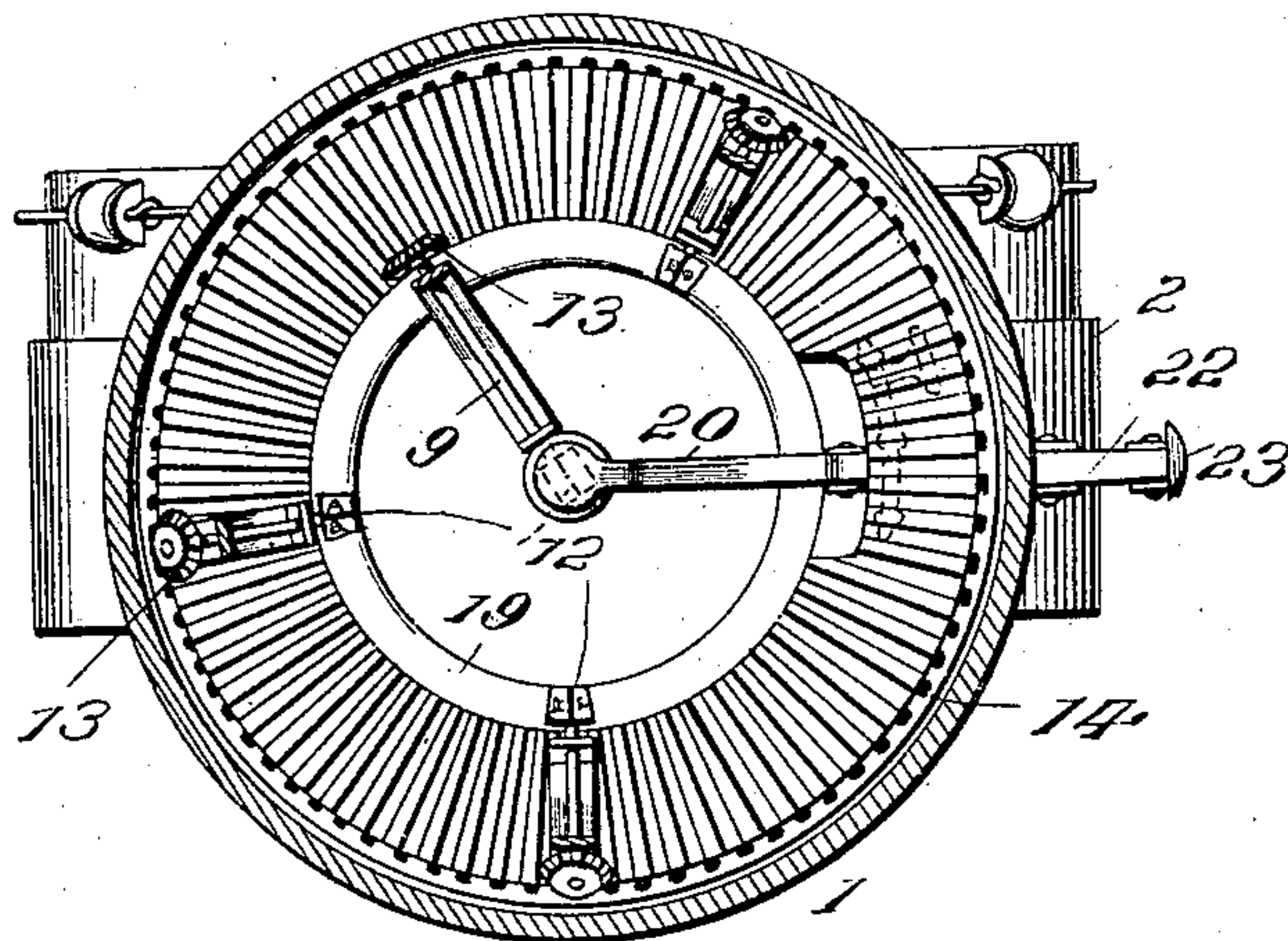
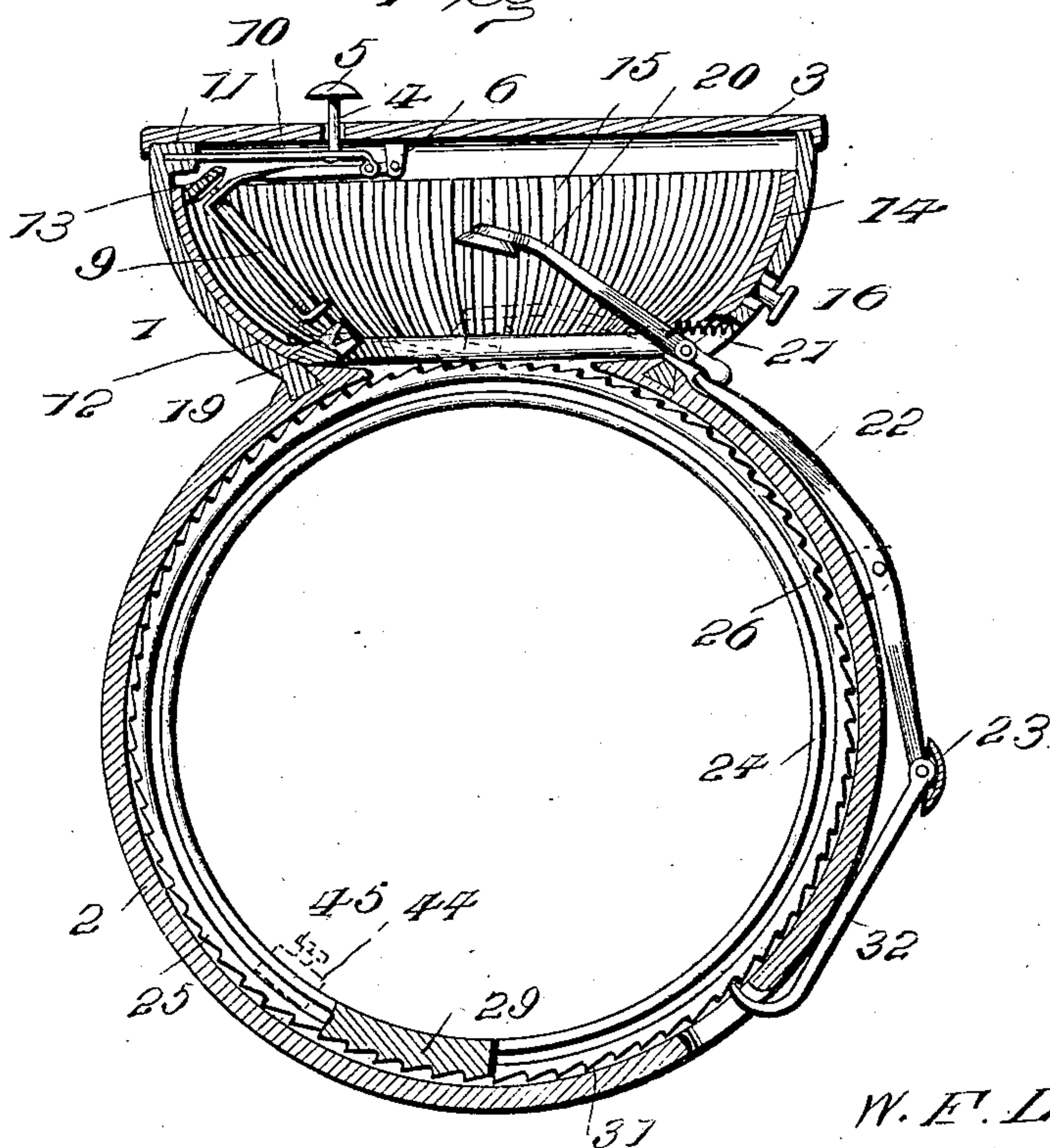


FIG. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM FRANK LOYD, OF GRANVILLE, OHIO.

TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 725,855, dated April 21, 1903.

Application filed August 25, 1902. Serial No. 120,965. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM FRANK LOYD, a citizen of the United States, residing at Granville, in the county of Licking and State of Ohio, have invented certain new and useful Improvements in Type-Writers, of which the following is a specification.

This invention aims to provide a type-writing machine embodying all the essential features of the commercial type-writers as to keys, type-bars, carriage for the paper, and feed mechanisms for spacing the letters and lines and which will be of a size to be conveniently carried in a hand-satchel or in the pocket, the parts being compactly arranged and of a minimum number.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and drawings hereto attached.

While the essential and characteristic features of the invention are susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a type-writer embodying the invention. Fig. 2 is a front view thereof. Fig. 3 is a plan section on the line X X of Fig. 2. Fig. 4 is a vertical section about on the line Y Y of Fig. 2 looking to the left, as indicated by the arrow. Fig. 5 is a view similar to Fig. 2, the body of the frame and the carriage being in section. Fig. 6 is a perspective view of a type-head. Fig. 7 is a section of the carriage on the line Z Z of Fig. 2. Fig. 8 is a perspective view of the type-bar and adjunctive parts. Fig. 9 is a modified form of hammer. Fig. 10 is a detail view of a paper-adjuster.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The frame of the machine comprises, essentially, two parts—a head 1 and a body 2—which are readily separable for convenience of carrying the machine in the pocket, suitable fastenings being provided for securing the parts when assembled. The body 2 is of annular form and the head 1 is of cup shape.

The cap-plate fitted to the head 1 is provided with openings through which the stems 4 of the keys 5 pass. Lugs 6 are pendent from the cap-plate 3 and the type-bars 7 are pivoted thereto. These type-bars are approximately of elbow form, and their lower ends are bent, as shown at 8, and are pierced to receive the type-carrying shafts 9, which are journaled in said ends and in the upper members of the respective type-bars. The type-bars are preferably formed of flat wires or strips twisted intermediate of their ends to cause the members of the type-bars to sit relatively at a right angle to each other, as shown most clearly in Fig. 8. The type-bar actuators 10 are resilient and serve in the capacity of springs to turn the type-bars to a normal position when operated. The actuators 10 are secured at their outer ends to the head 1, and their inner ends are pivoted or otherwise attached to the respective type-bars, so as to return them to a normal position when the spring-actuators regain themselves after being operated. The upper portion of the head 1 is thickened, as shown at 11, and the outer ends of the spring-actuators 10 are inserted therein. The keys 5 have their stems attached to the actuators near their connection with the type-bars, so as to insure proper operation of the latter when the keys are pressed upon.

The type-heads 12 are provided with a plurality of faces, and each face bears a letter, character, or symbol which is adapted to be brought into proper position for printing by turning the type-head in the required direction. As shown, each type-head is of triangular form in cross-section. Hence three faces and three types are provided upon each head. The shafts 9, carrying the type-heads 12, are journaled in portions of the type-bar, and their upper ends are provided with toothed heads or pinions 13 for coöperation with guides for holding the type-heads in an adjusted position and guiding them in their movements.

A ring 14, of cup shape, is snugly fitted within the head 1, and its inner side is ribbed, as shown at 15, to form guide-cogs for coöperation with the teeth of the parts 13 to bring the required type to active position and guiding it in its movements. The ribs or guide-

cogs 15 have a radial disposition and are of a size to match the cogs or teeth of the elements 13. The cup-shaped ring 14, with its ribs or cogs 15, constitutes a center and guide for the types and is mounted to have a limited movement, so as to turn the shafts 9 and the attached type-heads to bring the required type into position for printing. A finger-piece 16 is connected with the ring 14 and extends through a slot 17, formed in a side of the head 1, a movement of said finger-piece along the slot 17 serving to turn the ring and effect a corresponding turning of the type-shafts 9 to bring the required types into printing position. The slot 17 is provided with indicating-marks 18 to determine the degree of movement of the finger-piece 16, so as to bring the desired set of types into active position. The indicating means 18, as shown, consist of notches, although it is to be understood that any means admitting of determining the proper position of the types may be employed. When the ring 14 is turned either to the right or to the left, the ribs or cogs 15, meshing with the teeth of the parts 13, turn the latter and the shafts 9, thereby bringing the required types into operative position.

The pad for inking the type is located at the lower end of the ring 14, as shown at 19, and may consist of a ring of chamois, felt, or other absorbent material, said pad being secured to the ring by glue or in any desired way to admit of its ready renewal when required. The printing-types normally bear against the inking-pad, and the latter is adapted to yield to admit of turning of the type-heads when changing the types. Further provision is had to admit of turning the type-heads from the fact that the arms or members of the type-bar are adapted to yield.

The hammer 20 is pivoted to one side of the head 1 and occupies a central position, so as to strike any one of the type-heads and effect printing of the type. The hammer is held elevated by means of a spring 21, and its toe projects to be engaged by the upper end of the operating-lever 22, fulcrumed intermediate of its ends to a side of the body 2. A button 23 is provided at the lower end of the operating-lever to be pressed upon by the finger when it is required to actuate the hammer to cause printing of the type.

The carriage is of cylinder form and comprises an inner ring 24 and an outer ring 25, a space 26 being formed between the two rings for reception of the paper 27, which is formed into a roll or cylinder. The end of one of the rings is deflected to facilitate the insertion of the paper 27 into the space 26, and for convenience an end of the outer ring 25 is flared, as shown at 28. The rings 24 and 25 are joined for a short distance, as shown at 29, the remaining portions being separated for reception of the paper 27. The carriage is rotatably mounted in the body 2 and is adapted to be moved step by step to effect proper

spacing of the letters, the lines being spaced by a feed mechanism applied to the carriage, which hereinafter will be more particularly described. The outer ring 25 is provided with a circumferential slot 30, corresponding to the common point struck by the types when actuated. This slot 30 extends around the ring, with the exception of the part opposite the bond, tie, or union 29, and admits of the type reaching the paper, so as to print thereon. The carriage is provided with ratchet-teeth 31 around its circumference, and a feed-pawl 32 coöperates therewith to turn the carriage step by step as the letters or characters are printed or the lever 22 operated. The feed-pawl 32 is pivoted at its upper end to the lower end of the operating-lever 22, and when pressing upon the button 23 to move the lower end of the lever 22 inward the bent end of the feed-pawl is caused to ride upon the teeth 31, while at the same time the hammer 20 is actuated to effect a printing of the type. When pressure is removed from the button 23, the hammer 20 is thrown upward and the lower end of the lever 22 outward, thereby moving the pawl 32 upward and turning the carriage a distance to effect a proper spacing of the letters. The teeth 31 extend upon each side of the slot 30, and the feed-pawl 32 is bifurcated at its lower end, the bifurcations extending upon opposite sides of the slot 30, so as to engage with the toothed portions 31 of the ring 25.

The feed mechanism for advancing the paper to space the lines embodies feed-rollers 33, located at intervals around the circumference of the carriage and connected for simultaneous operation, so as to evenly and uniformly move the paper 27. These feed-rollers 33 are connected in series by means of tumbling-rods 34 or other means to effect simultaneous rotation thereof. The feed-rollers extend into the space 26 so as to come in contact with the paper and advance the same. To prevent slipping, the faces of the rollers are of rubber or like material to make positive engagement with the paper, so as to effect a movement thereof when the rollers are operated. A ratchet-wheel 35 is mounted upon one of the tumbling-rods, and a dog 36 coöperates therewith to effect rotation of the feed-rollers when it is required to move the paper to space the lines. Supporting-rollers 37 coöperate with the feed-rollers 33 and are journaled to the inner ring 24, and their outer portions extend into the space 26. Corresponding rollers 33 and 37 have their opposing portions touching, so as to grip the paper passing therebetween and through the space 26. Hence the turning of the feed-rollers 33 effects a positive feeding of the paper to the machine to space the lines.

The paper may be of any length, but it must be of a width corresponding to the circumferential length of the space 26, so that opposite ends of the paper will touch opposite sides of the joint or connection 29, thereby

preventing slipping of the paper. After the paper has been placed in position by being inserted into the space 26 the operation of the machine is as follows: The selected key 5 having been depressed, the type-bar is operated to bring the type-head to a central position, after which the operating-lever 22 is actuated by pressing upon the button 23. This causes the hammer 20 to strike the type- 10 head and project the type through the space 30 and cause it to print upon the paper. When the operating-lever is released, the hammer is thrown back into a normal position on the spring 21 and the carriage is 15 turned to bring the paper into position for the next letter or character. The type-bar is sufficiently flexible or possessed of spring action to normally hold the type-head clear of the paper and carriage and admit of the 20 type-head being driven toward the paper by the blow of the hammer. Upon releasing the key the spring-actuators 10 return the type-bar to a normal position. In one position of the ring 14 capital letters are printed, in another position small letters are printed, and 25 in the third position characters are printed, the several positions being determined by the indicating means 18 and the finger-piece 16 in the manner stated.

30 In the modification shown in Fig. 9 the hammer comprises a rod or bar 38, spring 39 bearing the hammer 40, stem 41, pivoted to the part 38 and provided with a head 42, and a spring 43, between the parts 39 and 41, to 35 normally hold them separated a given distance. The rod or bar 38 is pivoted to the head of the frame in substantially the same manner as the stem of the hammer 20, so as to be actuated by the operating-lever 22, 40 and carries the parts 39 and 41. When the rod or bar 38 is tripped, the head 42 is brought into engagement with the type-head in position for printing and presses the type upon the paper 27 by the action of the spring 45 43. An instant later the hammer 40 strikes the head 42 and makes an impression. As a result of this construction the letters are printed uniformly and with equal shade.

In order that paper of different widths may 50 be used, the paper-spacer 44 (shown in Fig. 10) is employed, and consists of parallel members joined at one end and having one of the members provided with a fastening, which in the present instance is a clamp-screw 45. One of 55 the elements of the paper-spacer is adapted to enter the space 26 between the rings 24 and 25, and the other member overlaps the inner side of the ring 24 and is secured thereto by the clamp-screw 45. The position of the pa- 60 per-spacer is indicated by the dotted lines in Fig. 4. This paper-spacer may be moved to any position in the length of the space 26, thereby adapting the machine for writing upon paper of any width, the paper being con- 65 fined between the paper-spacer at one edge and the connecting part 29 at the opposite edge, as will be readily comprehended.

Having thus described the invention, what is claimed as new is—

1. A type-writer, comprising a frame com- 70 posed of a head, a body of annular form, the keys and printing mechanism applied to the head, the paper-carrier rotatable within the annular body, cooperating letter-spacing mechanism between the said body and paper- 75 carrier, actuating means applied to the body for operating both the printing and letter-spacing mechanisms, and means applied to said carrier for imparting a line-spacing move- 80 ment to the paper independent of the movement of the carrier, substantially as described.

2. In a type-writer, a head, a body of annular form detachably connected to the head, the keys and printing mechanism applied to the head, the paper-carrier rotatable within 85 the annular body, cooperating letter-spacing mechanism between the said body and paper-carrier, actuating means applied to the body for operating both the printing and letter-spacing mechanisms, and means applied to 90 said carrier for imparting a line-spacing movement to the paper independent of the movement of the carrier, substantially as set forth.

3. In a type-writer, the combination of a cup-shaped head, an annular body detachably 95 connected therewith, the keys and printing mechanism applied to the head, the paper-carrier rotatable within the annular body, cooperating letter-spacing mechanism between the said body and paper-carrier, actuating 100 means applied to the body for operating both the printing and letter-spacing mechanisms, and means applied to said carrier for imparting a line-spacing movement to the paper independent of the movement of the carrier, 105 substantially as specified.

4. In a type-writer, and in combination with the printing mechanism, a circular carriage, means for loosely confining the paper thereon, means for turning the carriage step by step 110 to properly space the letters, and a feed mechanism applied to the carriage for moving the paper independently thereof to space the lines, substantially as described.

5. In a type-writer, and in combination with 115 the printing mechanism, a circular carriage comprising inner and outer members spaced apart for reception of the paper between them and connected for simultaneous rotation, means for turning the carriage step by step 120 to effect spacing of the letters, and a feed mechanism applied to the carriage for independent longitudinal movement of the paper in the space formed between the members thereof, substantially as described. 125

6. In a type-writer, the combination of the type-bars, keys for operating the type-bars to bring the types in position for printing, a hammer common to all the type-bars for driving the types to effect printing thereof, a car- 130 rier, feed mechanism for the carrier, and means operated by hand for actuating the hammer and the carrier-feed mechanism, substantially as specified.

7. In a type-writer, the combination with the type-bars carrying the types, flat springs constituting actuators secured at one end to the frame and at the opposite end to the re-
5 spective type-bars, and keys applied to the spring-actuators at a point between their ends, substantially as set forth.

8. In a type-writer, the combination of type-bars, and key-operated spring-actuators there-
10 for, a hammer common to all the type-bars to effect printing of the types, and independent actuating means for the said hammer, substantially as described.

9. In a type-writer, the combination of type-
15 bars, spring-actuators therefor, keys applied to the spring-actuators, a hammer common to all the type-bars to effect a printing of the types, and independent actuating means for the hammer, substantially as described.

20 10. In a type-writer, the combination of type-bars, type-heads journaled to the type-bars and having a plurality of faces, each face being provided with a character, a ring for setting and guiding the type-heads, and
25 positive interlocking means between said ring and type-heads to hold and guide the latter throughout their movements in any adjusted position, substantially as set forth.

30 11. In a type-writer, the combination of type-bars, type-heads journaled to the type-bars and provided with a plurality of faces, each face having a different character, a cup-shaped ring for setting and guiding the type-heads, and positive interlocking means be-
35 tween said ring and type-heads to hold and guide them throughout their movements in any adjusted position, substantially as described.

40 12. In a type-writer, the combination with the type-bars, and type-heads journaled there- to and provided with a plurality of faces hav- ing different characters, a cup-shaped ring provided with guide ribs or cogs, and toothed
45 heads connected with the type-heads and adapted to cooperate with the ribs of said cup-shaped ring to effect a turning of the type-heads and to hold them throughout the length of their movements in any adjusted position, substantially as described.

50 13. In a type-writer, and in combination with the printing mechanism, a circular car- riage comprising inner and outer members having a space between them to receive a
55 sheet of paper, and cooperating feed devices applied to the carriage at different points around its circumference to effect a uniform longitudinal movement of the sheet of paper through the space formed between the parts of the carriage, substantially as set forth.

60 14. In a type-writer, and in combination with the printing mechanism, a circular car- riage comprising inner and outer members having a space between them to receive a sheet of paper, feed-rollers located at inter-

vals around the circumference of the carriage 65 and adapted to engage with the paper to effect a uniform movement thereof through said space, means for connecting the feed-rollers in series for simultaneous operation, and op-
70 erating means for actuating the feed-rollers, substantially as described.

15. In a type-writer, and in combination with the printing mechanism, a circular car- riage comprising inner and outer members having a space between them to receive a
75 sheet of paper, cooperating feed-rollers arranged at intervals about the circumference of the carriage, and companion rollers adapted to cooperate with the feed-rollers, the different sets of rollers being adapted to grip
80 the paper between them, substantially as set forth.

16. In a type-writer, the combination of type-bars provided with type-heads, keys for operating the type-bars, a hammer common
85 to the type-heads, to effect a printing thereof, a circular carriage for the paper provided with teeth around its circumference, an operating-lever independent of the keys for actuating the hammer, and a feed-pawl actu-
90 ated by said operating-lever for cooperation with the teeth of the said carriage to effect a step-by-step movement thereof, substantially as set forth.

17. In a type-writer, in combination with 95 the carriage comprising spaced circular elements adapted to receive the paper to be written upon between them, and a paper-spacer to admit of different widths of paper being used, the same comprising a member
100 adapted to enter the circular space between the parts of the carriage, and means for securing the paper-spacer in place, substantially as set forth.

18. In a type-writer, a circular carriage com- 105 prising spaced members adapted to receive the paper to be written upon between them, said members being joined at one point, and a paper-spacer comprising parallel members joined at one end, one of the members adapt-
110 ed to enter the space between the parts of the carriage, and a fastener applied to the other member for securing the paper-spacer in place, substantially as described.

19. In a type-writer, means for effecting 115 printing of the type, the same comprising a single rod or bar, a head pivoted to said rod and adapted to come in contact with the type, a hammer having a spring-stem connected with said rod or bar for striking the head a
120 smart blow, and a spring interposed between the two parts, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM FRANK LOYD. [L. S.]

Witnesses:

M. M. KING,

JOHN M. SWARTZ.