

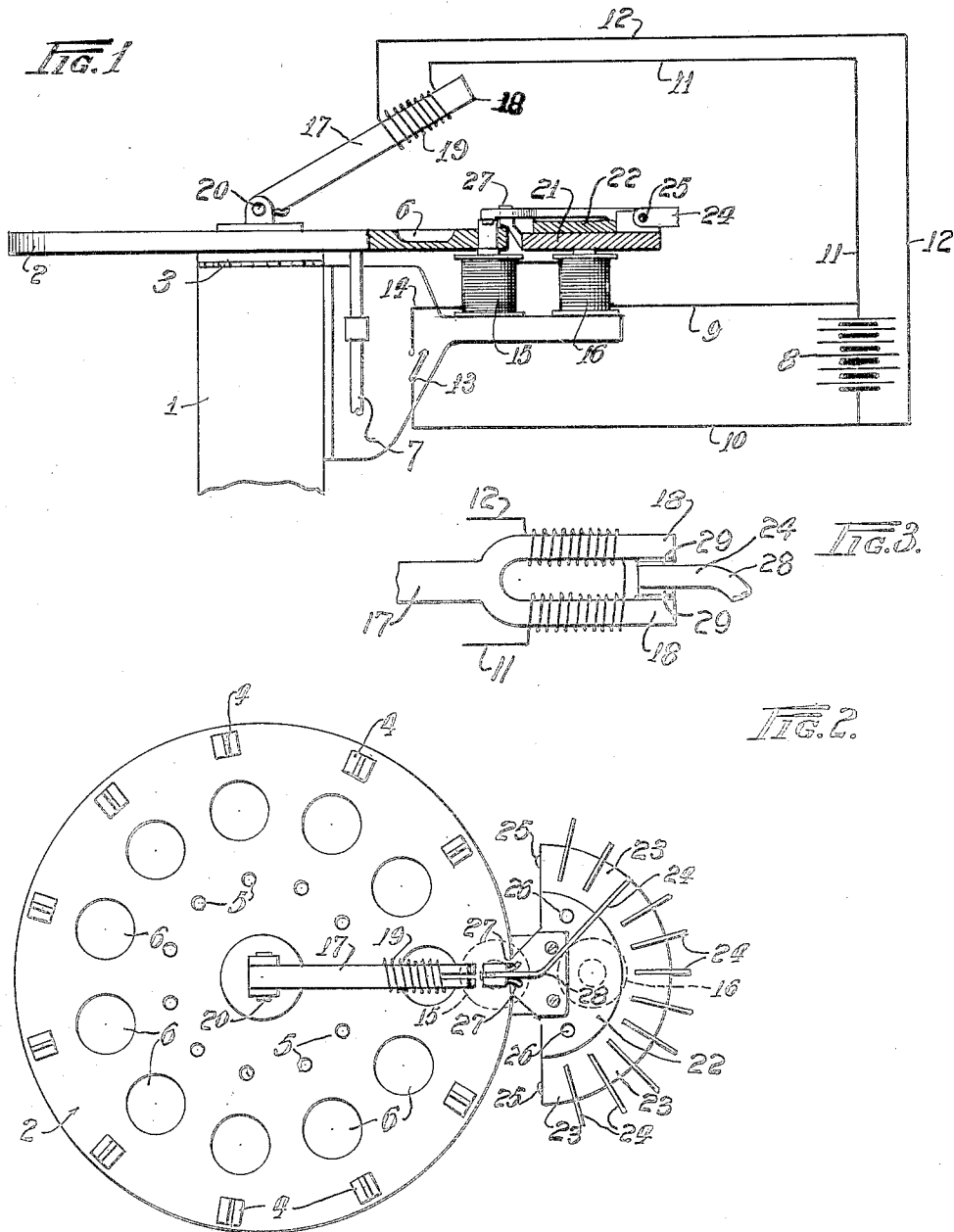
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PROCESS OF JOINING TYPE CHARACTERS AND TYPE BARS

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UNITED STATES PATENT OFFICE

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PROCESS OF JOINING TYPE CHARACTERS AND TYPE BARS

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This invention relates to the process of selecting, positioning and joining type characters and type bars for use on type writers, billing machines, and the like, by welding or soldering, as preferred, and has for its object to so select, position and join type characters and type bars that no alignment of the type characters is thereafter required to properly position successive imprints of said characters on a platen to obtain perfect alignment of said imprints.

In the drawing referred to I have illustrated a machine which I prefer to use in the carrying out of this invention.

15 In said drawing Fig. 1 is a side elevation of said machine, showing, in diagram, a source of electrical energy and conductors therefrom to electrically energized parts of the machine, in carrying out the process.

20 Fig. 2 is a top plan view of the machine illustrated in Fig. 1, and of a plate mounted on said machine, said plate provided with type bars pivotally mounted thereon, and

25 Fig. 3 is a detail of one end of an electrically heated soldering iron, of a type character in contact therewith, and of one end of a type bar in proper determined position relative to said type character to be joined thereto.

30 A reference character applied to designate a given part indicates said part throughout the several figures wherever the same appears.

1 represents a portion of the base or standard of said machine. 2 represents a disk which is mounted on the upper end of base or standard 1, preferably on ball bearings, and 3 represent balls of said bearing. 4 represent type matrices preferably of material suitable to be magnetized by an electromagnet and to form armatures of said magnet. 5 represent apertures in disk 2. The apertures 5 are in spaced relation to the center of disk 2, and also in spaced relation to the matrices 4. 6 represent depressions on the upper face of disk 2, which may serve as receptacles for determined type characters to be held loosely therein. 7 represents a longitudinally movable bar which is mounted on base 1. The upper end of bar 7 fits into each of the apertures 5 in disk 2, as said apertures are suc-

cively brought into a determined position by the manual turning of said disk and said bar is in its extreme upward position, and thereby the position of the several matrices 4 are determined. The longitudinally movable bar 7 is controlled by a pedal, or lever, not illustrated. 8 indicates a source of electrical supply. 9, 10, 11, 12, respectively represent an electric conductor from said source of electrical supply. 13 represents an electric switch. 14 represents an electric conductor from one terminal of switch 13 to coil 15 and also to coil 16. The conductor 9 extends from source of electrical supply 8 to coils 15, 16, respectively. The conductor 10 extends from source of electrical supply 8 to switch 13.

By the last above disclosed arrangement of conductors 9, 10, switch 13 and conductor 14, the coils 15, 16 are in parallel.

17 represents an arm or lever, the upper end 18 of which is designed to form an electrically heated soldering iron. Said upper end is forked, as is illustrated in Fig. 3, to provide parallel arms 18 between which, when a type character is mounted on a determined matrix placed in a determined position by manual rotation of disk 2, and the upper end of longitudinally movable bar 7 is in a corresponding aperture 5 in said disk 2, and said arm is manually brought down into determined position relative to said type character, said type character is positioned.

19 represents a coil on the upper end of arm or lever 17 adjacent to the parallel arms 18, by means of which said arms are heated to a determined temperature. Conductors 11, 12, extend from the source of electrical supply 8 to coil 19. The arm or lever is preferably pivotally mounted on base 1, as by bolt 20. 21 represents a table on the upper end of the core of the coil 16, which when said coil is energized forms an electromagnet, and 22 represents a plate made of material suitable to form an armature of an electromagnet, as soft steel or iron. 23 represent projections on the upper face of plate 22, which are in spaced relation to each other and to the center of the matrix which is in a determined position for the type character mounted thereon to be joined to a type bar.

24 represent type bars which are mounted between the several projections 23, on wire 25. The portions of said wire 25 which forms the pivotal axes of the type bars being
 5 a determined distance from the matrix which has been turned into position to have a corresponding type bar joined thereto, and also in a determined plane relative to the plane of the face of the type character which is
 10 mounted on said matrix.

The several matrices 4 are of soft steel, iron, or other material suitable to form an armature to the pole of coil 15, and when the disk 2 is turned to bring a determined matrix
 15 in determined relation to said core, the lower end of said matrix is in contact with said core, and coil 15 being thereupon energized said matrix becomes an electromagnet. A type character of material suitable to be an
 20 armature of an electromagnet being placed in said matrix will thereupon be held in place in said matrix. 27 represents a guide which is mounted on plate 22. The several bars 24 are successively manually turned on their
 25 pivotal axes, to come between the fingers or projections of guide 27, adjacent to the portion of said bars which are to be joined to type characters. When a determined type bar 24 is manually turned into contact with a deter-
 30 mined and corresponding type character, mounted on a determined matrix, said type bar being of suitable length and provided with the proper bend 28, the end of said type bar will be brought into proper angular position to a corresponding type character
 35 mounted on its matrix, to permit the joining of said bar and character. 29, Fig. 3, represents a type character.

In carrying out this invention by the use
 40 of the machine disclosed herein I put a plate on which type bars are pivoted in a determined position on table 22, and successively position matrices of the type characters which are to be joined to said bars, in spaced
 45 relation to said plate, by manually turning disk 2, and in correct angular relation to its corresponding type bar, and with the pivotal axis of said type bar in a determined plane relative to the plane of said matrix and the
 50 face of the type character mounted thereon.

After having placed a selected matrix in said spaced relation to said plate and in accurate angular position relative to the corresponding type bar, I put a type character
 55 fitting said matrix, thereon, and then turn the type bar to which it is to be joined into contact with said character. I then hold said character and bar rigidly in said contact, and
 60 said character in said matrix, preferably by an electromagnet, as hereinbefore described, as by closing switch 13, and, in case of welding, transmit a suitable electric current there-
 65 through, and in case of soldering, apply acid, heat and solder to said character, and to the

end of the type bar in contact with said character.

Where the machine hereinbefore disclosed is used, before applying the electric current to weld, or the acid, heat and solder, as last
 70 above set forth, and also before transmitting a flow of electricity through the coils of said electromagnets, I turn the type bar into contact with its type character, to make sure it comes into proper angular relation thereto
 75 without strain on said bar; and, if required, the bar is bent or straightened to bring it into correct angular relation. When said bar and character are in proper relation I close the circuit in which the coils of the electro-
 80 magnets are elements, thereby rigidly holding them in said relation while the electric current to weld, or the acid, heat and solder are applied, to join them.

To accomplish the placing of the matrices
 85 in spaced and angular relation to the plate and type bars thereon, and the rigid holding of the type characters in the matrices, and the type bars in contact with the characters, I prefer to use a machine constructed
 90 and operated as disclosed herein, and in my application for a patent filed on the 15th day of May, 1929, Serial No. 363,367; but I do not confine myself to the use of said machines or either of them; the principal advantage
 95 of my process being that I determine the spaced relation and correct angular position of the bars and characters without strain and thereafter hold them rigidly in said relation and position without the use of the hands of
 100 the operator, so that operator is left with both hands free to apply the current of electricity to weld, or the acid, heat and solder to join said bar and character.

I claim:

1. The process of joining type bars and type characters which consists in turning a rotatably mounted disk which is provided with a plurality of type matrices rigidly
 105 mounted thereon in spaced relation to the pivotal axis of said disk, to place a determined one of said matrices in a determined position, in holding said disk with said matrix in said position, in placing a corresponding type character in said placed matrix, in
 110 placing a plate provided with a plurality of type bars pivotally mounted thereon in spaced relation to said disk, and in holding said plate in said spaced relation, in turning a corresponding type bar into determined
 115 relation with said type character in said placed matrix, in holding said type character in said matrix and holding said type bar in said relation to said type character, and in heating said character and the portion
 120 of said bar in said relation thereto to a temperature sufficiently high to join, and joining said character and bar; substantially as herein described.

2. The process of joining type bars and

type characters which consists in turning a rotatably mounted disk which is provided with a plurality of type matrices rigidly mounted thereon in spaced relation to the pivotal axis of said disk, to place a determined one of said matrices in a determined position, in holding said disk with said matrix in said position, in placing a corresponding type character in said placed matrix, in placing a plate provided with a plurality of type bars pivotally mounted thereon in spaced relation to said disk, in turning a corresponding type bar into determined relation to said type character in said placed matrix, in energizing an electromagnet to hold said plate in said spaced relation and in energizing an additional electromagnet to hold said type character in said matrix and said type bar in said relation to said type character, and in heating said type character and the portion of said bar in said relation thereto to a temperature sufficiently high to join, and joining, said character and bar; substantially as herein described.

3. The method of soldering type characters to type bars comprising forming a magnetic circuit through the type character and through substantially the entire length of said type bar in such manner that one end of the type bar is held by the magnetic flux in a position wherein the type character is in close proximity thereto, and then soldering said type character to said type bar.

4. The method of soldering a type character to a type bar comprising placing said type character face downwards on a matrix adapted to prevent lateral displacement of the type character, bringing one end of said type bar into close proximity with said type character, forming a magnetic circuit through said matrix, said type character and substantially the entire length of said type bar, and then soldering said character to said type bar.

5. A process which consists of successively moving a plurality of matrices to a common point, in placing a corresponding type character in the matrix positioned at said common point, in selecting a pivotally mounted type bar and moving the free end thereof to said common point, in applying an electro-magnetic current through the length of said selected type bar and through said type character and the application of heat to permanently join said bar and character.

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