

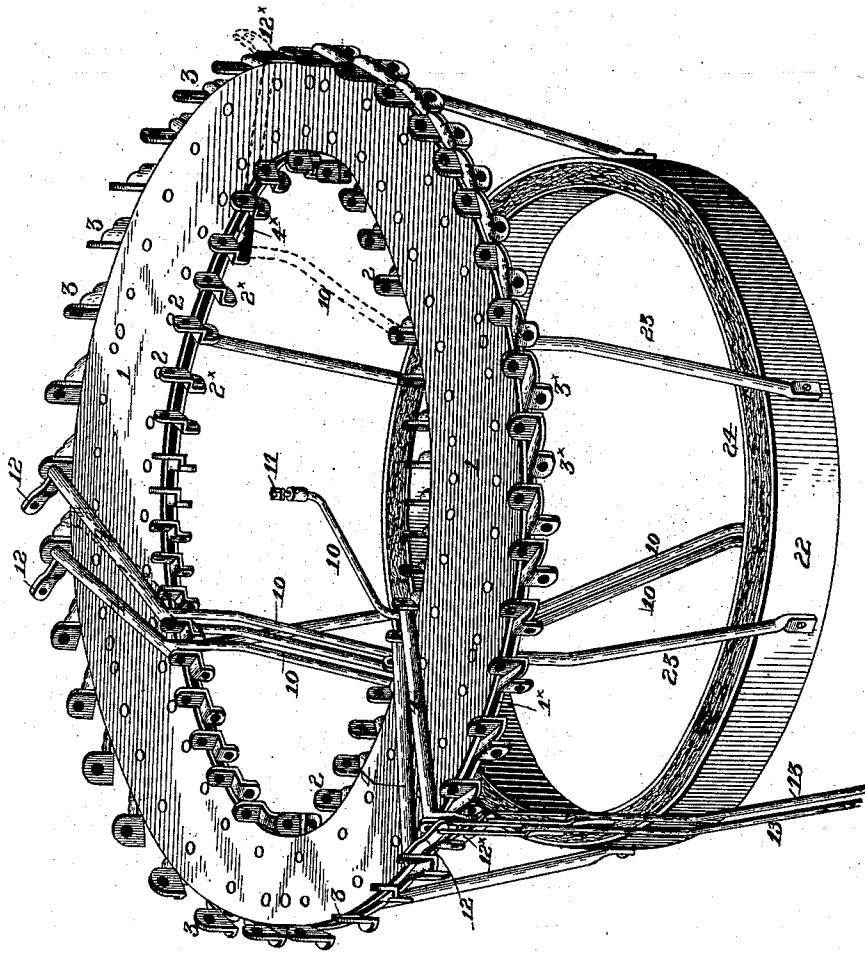
(No Model.)

A. T. BROWN.
TYPE WRITING MACHINE.

2 Sheets—Sheet 1.

No. 503,735.

Patented Aug. 22, 1893.



WITNESSES
F. L. Girard
W. L. Smith

Fig. 1

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Alex. T. Brown
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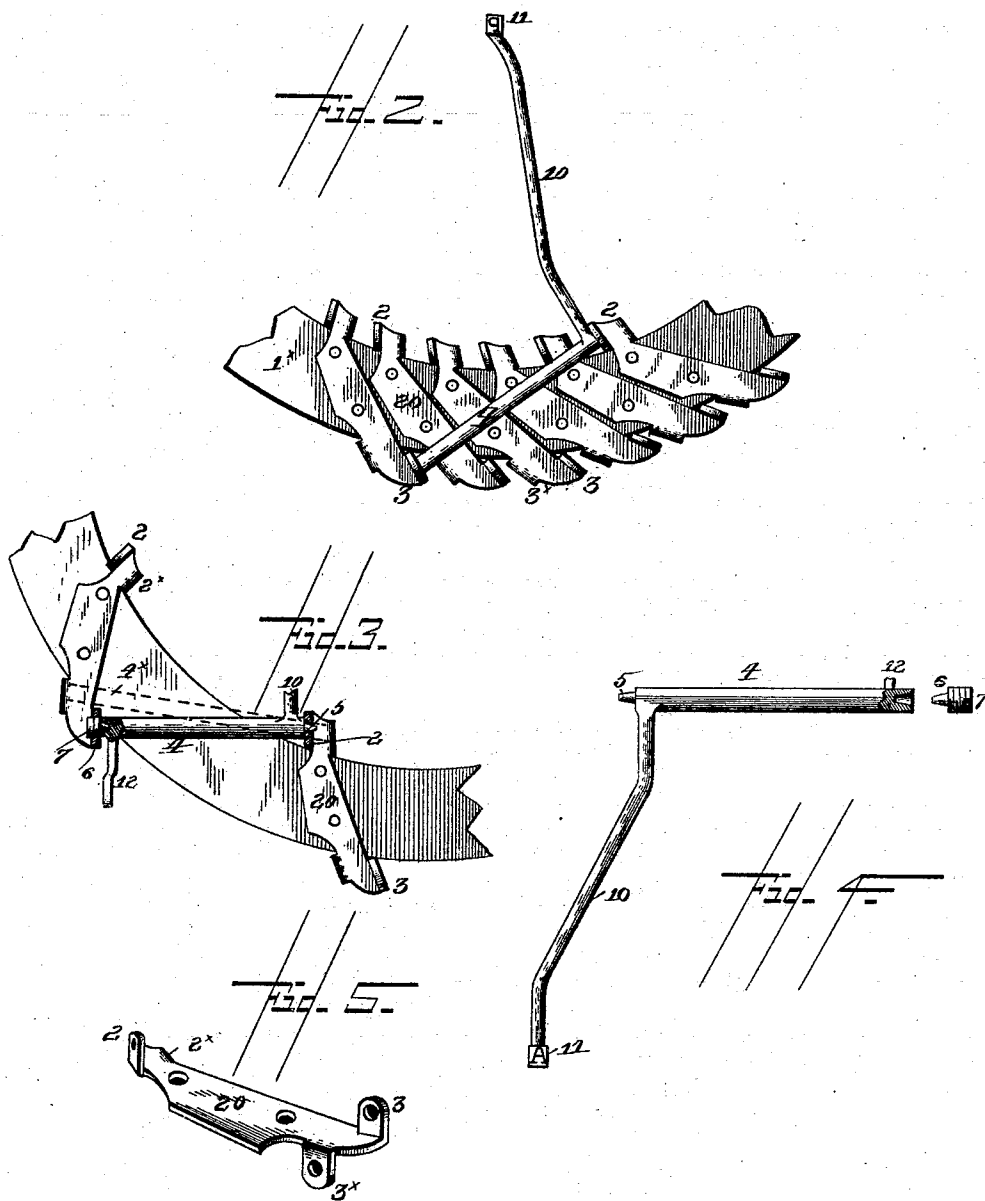
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INVENTOR
Alex. T. Brown
By W. A. Bartlett
Attorney

UNITED STATES PATENT OFFICE.

ALEXANDER T. BROWN, OF SYRACUSE, NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 503,735, dated August 22, 1893.

Application filed November 16, 1889. Serial No. 330,553. (No model.) Patented in Germany February 23, 1890, No. 55,310; in Belgium February 25, 1890, No. 89,636; in England September 1, 1890, No. 13,717, and in France September 6, 1890, No. 208,089.

To all whom it may concern:

Be it known that I, ALEXANDER T. BROWN, residing at Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, (patented in England, No. 13,717, dated September 1, 1890; in France, No. 208,089, dated September 6, 1890; in Germany, No. 55,310, dated February 23, 1890, and in Belgium, No. 89,636, dated February 25, 1890,) of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to type-writing machines, and more especially to the type-bar ring, basket, or support on which the type-bars are mounted, and to the construction and operation of the type-bars and the support thereof.

The object of the invention is to improve the construction of the type-bar ring or basket and the type-bar supports, also to increase the distance between bearings of the type-bar rock-shafts, without increasing the size of the ring, whereby the tendency of the type-bar to get out of alignment is materially reduced, also in general to improve the type-bars and their connections.

Figure 1 is a perspective view of the type-bar ring, having bearings for all the type-bars, but showing only a few of the type-bars mounted thereon. The figure also shows the guard ring and cushion below the type-bar ring. Fig. 2 is a broken plan of part of the ring or basket with six bearing plates and one type-bar in place. Fig. 3 is a similar view, partly in section, some of the bearing plates being omitted. Fig. 4 is a perspective view of a type-bar and rock shaft. Fig. 5 is a perspective view of one of the bearing plates detached.

The type-bar of a type-writing machine of the standard variety as usually constructed, is hung on a short pivot or trunnion, and as the bar swings on this pivot any looseness of fit or play of the pivot or trunnion is exaggerated as the distance from the pivot increases, so that the ends of the bars carrying the letters are or may be out of alignment, and as the bar or lever must be loose enough

in its bearings to turn easily on its pivot, it is difficult to preserve the alignment of the type-bars. To overcome this objection I mount the type-bar on a rock-shaft, pivot shaft or trunnion much longer than any heretofore constructed for this purpose, and in order to get in the full number of letters, I place these rock-shafts obliquely across the ring or basket, the ends lapping past each other. In this way the pivot shaft, trunnion or rock-shaft may be longer than the width of the ring or basket. The type bearing stems project from these rock-shafts obliquely, in order to bring the types to a common center, and the types are arranged on these stems with the proper relation to the position of the rock shaft. Technically the entire device consisting of the pivot shaft and the projecting stem, with or without the type attached, is known as a "type bar."

Referring now to the drawings, the numeral 1 represents the top plate or annulus of the type-ring, which is placed in the machine in the position common for the ring or basket of the standard machine. This plate has secured to it a number of upturned ears or shaft supports 2, 2, 3, 3, equal to the number of bearings for the type-bars which rest above the ring. For convenience of construction these ears 2, 3, are made separate from the ring 1, but it is evident that they may be made integral therewith so far as their function as bearings is concerned.

The ears 2 and 3 are perforated or cupped, to form bearings for the rock-shafts 4. These rock-shafts 4, 4, extend across the ring 1 in oblique direction, having one end supported in the cup or perforation in one of the inner ears 2, and the outer end supported in one of the outer ears 3. By preference the inner end of each rock-shaft has a conical head 5, and the outer end is countersunk to receive a conical point 6, on a screw 7, which screw has a thread engagement with one of the outer ears 3 and forms an adjustable cone point on which a bar 4 is supported. The bearings of the rock shafts thus overhang the edges of the ring or basket. By this arrangement convenient attachment to draw the rods 13 can be made, and a greater number of rock shafts

can be supported on a ring of a given size than if the bearings were in a vertical plane above or below the face of the ring. The rock shafts 4 carry type bearing stems 10, which are preferably made integral with the rock shafts, and are of such length as to support the printing characters in position to strike at the center of ring 1. These type bearing stems project from the rock shafts, near the inner ends of said shafts, and are bent to such an angle as to strike to the center of the ring aforesaid, the obliquity of the stems corresponding to that of the rock shafts on the ring 1. The printing characters carried by these type bearing stems face in the direction of the movement of the stem, so as to strike a square blow at the striking point, and at the striking point are in a plane parallel with the plane of the rock shafts.

The outer end of each shaft 4 has a crank arm 12, which crank arm is connected by a draw-rod 13 to the key, or key lever or shaft, in any manner common in type-writing machines.

The general principles of construction will probably be understood from the foregoing description. It will be seen that the type-bearing stem is close to one end of the rock-shaft 4, and is offset to come inside the ring 1, while the operating crank or lever 12 is near the outer end of the rock-shaft, and outside the ring. Any vibration of the shaft 4 in its bearings will have but little effect on the stem 10, owing to the distance between the ears 2, and 3, and by means of the cone bearings the shafts 4 may be mounted so as to rock smoothly in their bearings.

In machines using but one "font" or "case" of type (or where the carriage shifts to print capitals) enough bars can be hung above the ring 1 to sustain the usual number of printing characters or a type-ring of usual size. But to increase the number of type-bars it is only necessary to turn down alternate ears 2^x and 3^x and pivot alternate shafts 4^x below the ring 1, the pivots, crank, and type-bar being supported in the downturned bearings precisely as in the upturned bearings hereinbefore described.

As hereinbefore stated, the lugs 2, 3, 2^x, 3^x may be integral with ring 1, but I have found a more convenient construction to be by making the lugs 2, 3, &c., on separate plates 20, and then riveting these plates to ring 1, or between ring 1 and a corresponding ring 1^x. The plate 20 has an upturned ear 2 and a downturned ear 2^x at its inner end. The ears on the outer end of the plate 20 form bearings for the outer ends of two rock-shafts, which shafts have their inner bearings in ears 2, 2^x, a little distance away, on another plate 20, and obliquely across the ring from the outer bearings. Thus the rock-shafts 4 are hung alternately above and below the rings 1, 1^x.

To give stiffness and a satisfactory finish, the ring plates 1 and 1^x are firmly riveted together, inclosing all the plates 20 between

them. The rings and plates may all be struck up from sheet metal.

The guard or cushion 22 may be suspended from rings 1 1^x by hangers 23, and said ring 22 will have a cushion 24 against which the type-bars 10 will drop when in their depressed position.

The inner ends of the rock-shafts 4 overlap each other in one direction, that is, in a line tangent to the circle around which the shafts are arranged, and the outer ends overlap in the other direction, and the stems 10 and cranks 12 are set on opposite sides of the rock-shafts, the general direction of each, as it leaves the rock-shaft, being tangential to the outer and inner circles forming the edges of the ring.

The rock shafts or pivot shafts of the type bars may be made of any convenient or desirable length; by this construction the obliquity of the type bearing stem with reference to the bar will be such as to bring the types carried by said bars to a common printing point. The face of the type on said stem will be in the direction in which said type swings from its depressed to its operative position.

What I claim is—

1. A type bar or lever consisting of a pivot shaft, a type bearing stem extending obliquely therefrom, and a type on the stem facing in the direction of its swing, substantially as described.
2. A type-bar, comprising a pivot-bar and a type bearing stem, said stem bent or curved obliquely to the pivot bar at or from a point near one end of the axis of the latter.
3. In a machine of the character described, a type bar consisting of an axial shaft, a type bearing stem extending from the shaft in a general direction oblique to the axis of said shaft, and a type on the stem with its face substantially in a plane parallel with the plane of the axis of the shaft.
4. In a type writer, a plurality of type bars or levers of uniform length, grouped about a common center, each bar having a pivotal axis oblique to a line drawn from one end of the type bearing stem to the other.
5. In a type writer or analogous machine, a plurality of type bars or levers of uniform length grouped about a common center, each bar having a pivotal axis and a type bearing stem oblique thereto.
6. The combination with the bearings or supports, of a type bar or lever consisting of a pivot shaft, a type bearing stem extending obliquely therefrom, and a type on the stem facing in the direction of its swing, substantially as described.
7. The combination with the ring or basket of a writing machine, of a rock shaft supported in suitable bearings and extending obliquely across the face of said basket, a type bar projecting from the side of said shaft near the inner end thereof, an operating arm projecting from the rock shaft near the outer

end thereof, and a draw rod connected to said arm, substantially as described.

8. The combination with the ring or basket of a type writing machine, of a series of rock shafts extending obliquely across the face of said ring and overhanging the ring at each end, type levers projecting from the sides of said rock shafts near their inner ends, operating arms projecting from the rock shafts near their outer ends, and draw rods connected to said arms, substantially as described.

9. In combination with a suitable support, a plurality of banks of type bars in different planes, the bars each having a pivot shaft and a type bearing stem extending obliquely therefrom, and type on said stems facing in the direction of their swing.

10. The combination with the ring or basket of a type writing machine, of a series of rock shafts extending obliquely across the upper face thereof, said rock shafts carrying type bars, and a second series of oblique rock shafts below the ring, said second series also having type bars, and suitable connections, whereby the rock shafts and type bars are operated, substantially as described.

11. The combination with the basket ring of a type writer, of a series of rock shafts arranged obliquely across the face thereof, and a series of type bars attached to said shaft at a corresponding obliquity, so that the rocking of the shafts will bring the letter carrying ends of the type bars to the center of the ring, substantially as described.

12. The combination with the flat ring form-

ing the base on which the type bars are supported, of a series of plates secured to said ring and having upturned ears at the outer and inner edges of the ring, and a series of rock shafts journaled in said ears as described, said rock shafts carrying the type bars, as set forth.

13. The combination with the flat rings, as described, of plates secured between said rings, said plates having upturned and downturned ears outside and inside the rings and a series of rock shafts journaled in the ears and carrying type bars, substantially as described.

14. The combination with the type supporting ring of a type writer, of a series of rock shafts arranged obliquely across the face of said ring and having overlapping ends inside and outside the ring, a series of bars arranged inside the ring on the overlapping ends of the rock shafts as described, and a series of crank arms on the outer overlapping ends of the rock shafts, all substantially as described.

15. The combination with the ring or basket of a type writing machine, of a series of rock shafts supported thereon and overlapping at their inner ends, and a type bar projecting obliquely from each rock shaft, substantially as described.

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

ALEXANDER T. BROWN.

Witnesses:

W. L. SMITH,
OLIVER H. PHELPS.