

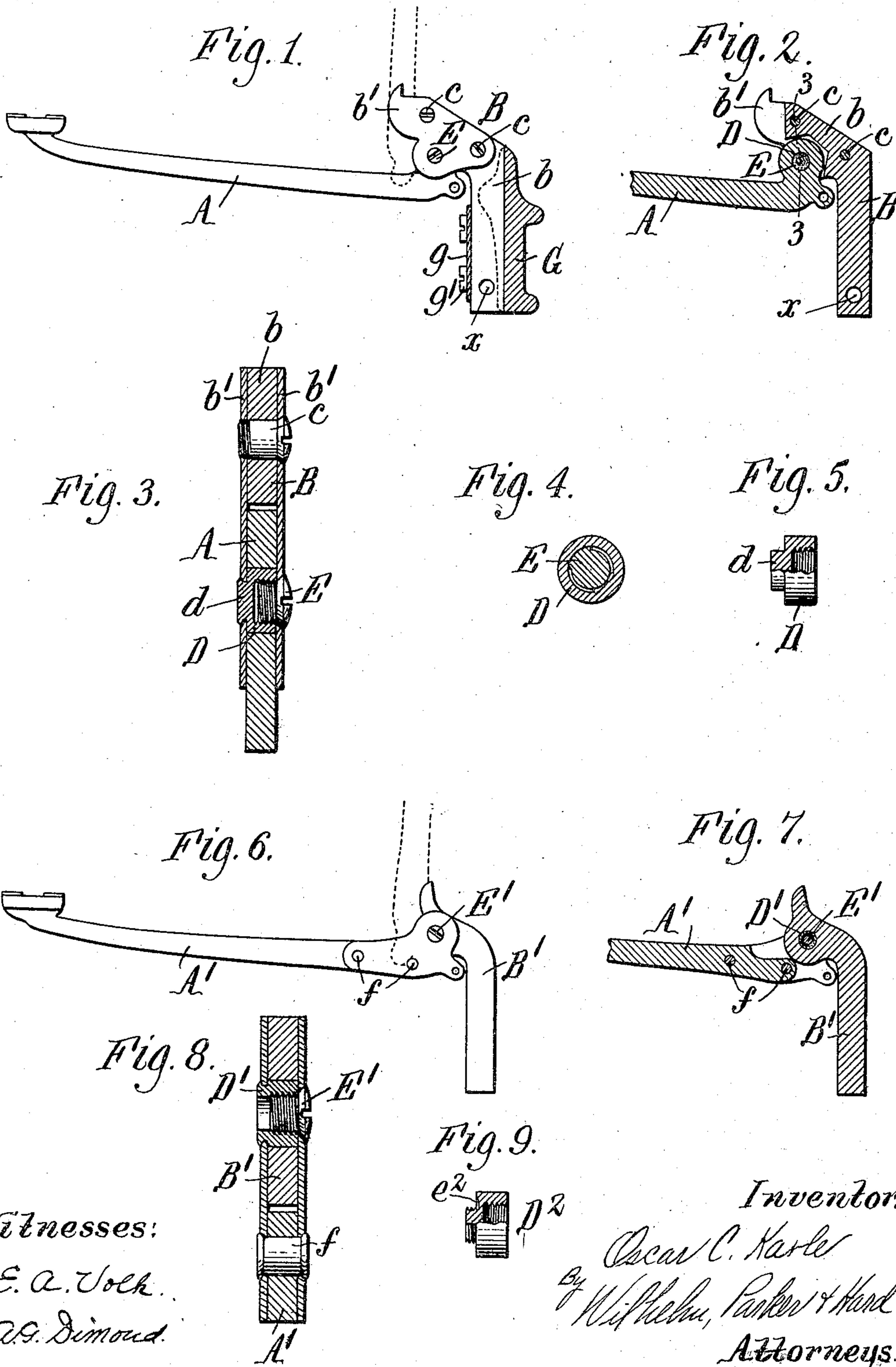
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O. C. KAVLE.

TYPE BAR BEARING FOR TYPE WRITING MACHINES.

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Witnesses:

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TYPE-BAR BEARING FOR TYPE-WRITING MACHINES.

No. 848,248.

Specification of Letters Patent.

Patented March 26, 1907.

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To all whom it may concern:

Be it known that I, OSCAR C. KAVLE, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented a new and useful Improvement in Type-Bar Bearings for Type-Writing Machines, of which the following is a specification.

This invention relates more particularly to the construction of the type-bars and their hangers or supports of type-writing machines and the connecting pivotal bearings.

The primary object of the invention is to produce a light, strong, and durable pivot-bearing which will insure freedom of movement of the type-bar without lateral play or looseness and which will occupy the minimum transverse space, thereby enabling a large number of type-bars to be arranged in a relatively short arc or segment and which at the same time can be manufactured with great precision and assembled at comparatively small cost.

Another object of the invention is to improve the construction of bearings for type-bars in the respects hereinafter described, and set forth in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a type-bar and its bearing embodying the invention, showing the supporting segment or part in cross-section. Fig. 2 is a fragmentary central longitudinal section thereof without the segment. Fig. 3 is a cross-section thereof, on an enlarged scale, in line 3-3, Fig. 2. Fig. 4 is an enlarged cross-section of the pivot-stud and screw. Fig. 5 is an enlarged side elevation, partly in section, of the pivot-stud. Fig. 6 is an elevation of a type-bar, hanger, and its bearing, of slightly-different construction. Figs. 7 and 8 are views similar, respectively, to Figs. 2 and 3 of the construction shown in Fig. 6. Fig. 9 is a detached sectional elevation of a pivot-stud of modified construction.

Like letters of reference refer to like parts in the several figures.

Referring first to the construction illustrated in Figs. 1-5, A represents a type-bar, and B the hanger or part to which the type-bar is pivoted. The type-bar is made of a single sheet-metal stamping having the sides thereof, at the pivot end of the bar at least, ground perfectly flat and parallel with

each other. The hanger is bifurcated, having separated branches or side walls, and preferably consists of a central flat-sided body *b* and two flat-faced side plates *b'*, secured to opposite sides of the body and projecting beyond one edge of the body to embrace the type-bar. The separate body and side plates of the hanger can be economically stamped from sheet metal and ground true, so that when the latter are secured to the body their inside faces, between which the type-bar is pivoted, will be exactly parallel. The type-bar is ground very slightly thinner than the body of the hanger, so that it can swing freely between the side plates, but will be prevented thereby from side play or movement. The side plates are secured to the body of the hanger by screws *c*. The hanger could be made of other construction having a bifurcated or recessed portion to receive the pivot end of the type-bar; but the construction described is preferred, because of the great precision possible in manufacturing the bearing.

D represents a pivot stud or post passing through a bearing-hole in the type-bar and secured at opposite ends to the side plates of the hanger. The stud has a cylindrical body portion between the side plates, which serves to hold them at the proper distance apart and constitutes the pivot on which the type-bar swings. In the construction shown in Figs. 1-5 the pivot-stud has a reduced end portion *d*, which is riveted in a hole in one of the hanger side plates, with the shoulder surrounding the reduced end bearing flat against the side plate to rigidly secure the stud perpendicularly to the side plate. The stud is secured to the other hanger side plate by a screw *E*, passing through a hole in the plate and screwed into a threaded hole in the stud. The hole in the side plate for the screw is preferably countersunk to receive the large head of the screw. The cylindrical body portion of the pivot-stud is made exactly the same length as the thickness of the body of the hanger. This can be conveniently done by securing or riveting the stud to the side plate and then inserting the stud in a hole *x*, Figs. 1 and 2, provided for the purpose in the shank of the hanger, with the side plate flat against the side of the hanger, and grinding the projecting end of the stud flat and ex-

actly flush with the face of the hanger-body. After the stud is ground it is removed from the hole in the hanger and inserted through the pivot-opening of the type-bar and is secured to the other side plate by the screw E. The side plates are then placed in position on opposite sides of the hanger-body and secured by driving in the screws E and e. The cylindrical body of the pivot-stud being, as explained, precisely as long as the thickness of the hanger-body, it will insure the exact parallelism of the hanger side plates, and it will be impossible to cause the side plates to bind on or pinch the type-bar in tightening up the screw E. Occasionally a type-bar will be found to be too tight to swing freely between the side plates or too loose. In such case one side plate can be detached and the hanger-body and pivot-stud or the type-bar ground as required to insure freedom of movement of the type-bar without lateral play or looseness. The side plates could be riveted or otherwise permanently secured to the hanger-body; but the detachable screw connection is preferable, as it permits the disconnection of the hanger and bar. The cylindrical body of the pivot-stud is hardened or tempered to give long wear, while the reduced rivet end thereof is left soft, so that the stud can be properly riveted to the hanger side plate. This can be accomplished by machining the studs from stock of the same diameter as the body of the stud and which has been previously carbonized to a slight depth. In turning the reduced rivet ends the carbonized portion of the stock is removed, and when the studs are afterward tempered the cylindrical surface of their bodies will be hardened, while their rivet ends will remain soft.

The pivot-stud could be of different construction. For instance, as shown in Fig. 8, the hole for the screw E' passes entirely through the stud D' to facilitate tapping the thread, but is not, however, threaded through the reduced end of the stud, as this would unduly weaken the rivet end, which it is desirable to make of as small diameter as possible. This form of the stud is somewhat cheaper to make than that above described; but the former is considered preferable, because its rivet end can be made considerably smaller in diameter, thus leaving a larger shoulder to rest on the side plate, and thereby making the stud more rigid and also permitting the same stampings with holes of the same size to be used for both side plates.

Fig. 9 shows a stud D² similar to that first described, except that the small end of the stud is threaded to be screwed into a threaded hole in the side plate. This shoulder of the stud is undercut slightly at e² to provide clearance for the thread. The construction is used when the stud is made of stock that

hardens throughout when tempered and could not be riveted to the side plate.

A bearing with the pivot stud or post constructed and rigidly secured to the hanger, as above described, has important advantages over one employing a central screw or rivet connecting the opposite sides or plates with a surrounding spacing-sleeve between the sides or plates, for the reason that the screw E has a much longer bearing in the pivot-stud than can be afforded in the side plate, which must necessarily be very thin, and the screw can be driven into the stud with great force without the same danger of stripping the threads. The stud is positively held against turning, and therefore cannot cause the screw E to work loose, while a detached sleeve surrounding a securing-screw is liable to work loose and loosen or cause wear on the screw which is not hardened. Furthermore, with a loose sleeve a close fit is required both between the sleeve and the bearing-hole in the type-bar and between the hole in the sleeve and the screw, but with the fixed stud only the fit of the stud in the hole of the type-bar need be exact. A spacing-sleeve with a rivet passing through it and riveted at both ends to the hanger sides is not desirable, because if it is found that the type-bar does not fit so exactly as required, which can be determined only after the rivet is headed, much labor and time would be lost in removing the rivet to detach the type-bar.

Obviously a pivot-stud constructed and secured in the manner stated could be employed in hangers or type-bars of different construction from those shown and described, and the invention is not necessarily restricted to the described construction of the hanger. For example, Figs. 6-8 illustrate a construction in which the type-bar has two side plates secured to the opposite sides thereof by rivets f and a single-piece flat-sided hanger B' is employed which is pivoted between the side plates of the type-bar by the stud D'. Again, it is not absolutely essential that the hanger or type-bar be made with detached side plates secured on opposite sides of a body part. Either the type-bar or hanger could be otherwise provided with a bifurcated portion for the reception of the cooperating part.

The hangers can be secured in radial slots in a segment or support G by a clamp-plate g and screws g', as shown in Fig. 1, or they can be mounted in the machine in any other suitable manner.

I claim as my invention—

1. The combination of a type-bar member and a hanger member, one of which is bifurcated to embrace the other member, a pivot connecting said members and having a reduced part rigidly secured to one branch of said bifurcated member, and means detach-

ably connecting said pivot to the other branch of said bifurcated member, substantially as set forth.

2. The combination of a type-bar member and a hanger member, one of which is bifurcated to embrace the other member, a pivot connecting said members and having a cylindrical part between the branches of said bifurcated member and a reduced end rigidly secured in a hole in one of said branches, and means connecting said pivot to the other branch of said bifurcated member, substantially as set forth.

3. The combination of a type-bar member, and a hanger member, one of which is bifurcated to embrace the other, a pivot having a cylindrical body arranged between the branches of said bifurcated member and having a reduced portion rigidly secured in a hole in one of said branches, and a screw passing through a hole in said other branch into said pivot, substantially as set forth.

4. The combination of a type-bar member, and a hanger member, one of which is bifurcated to embrace the other, a pivot having a cylindrical body arranged between the branches of said bifurcated member and having a reduced portion permanently secured in a hole in one of said branches, and a screw passing through a hole in said other branch into a threaded hole in said pivot, substantially as set forth.

5. The combination of a type-bar body and a hanger-body, one of which is slightly thicker than the other, two separate side plates rigidly secured to the thicker body, and a pivot connecting said side plates to the other body and having a cylindrical por-

tion rigidly secured to one side plate and detachably secured to the other side plate, substantially as set forth.

6. The combination of a type-bar body and a hanger-body, one of which is slightly thicker than the other, two separate side plates rigidly secured to the thicker body, a pivot connecting said side plates to the other body and having a cylindrical portion between said side plates equal in length to the thickness of said thicker body and a reduced end permanently secured in a hole in one side plate, and a screw connecting said pivot to said other side plate, substantially as set forth.

7. A pivot for type-bars having a cylindrical body with a reduced securing extension at one end and a screw-threaded hole in the other end, substantially as set forth.

8. A pivot for type-bars having a cylindrical body with a hardened surface, a reduced malleable extension at one end and a screw-threaded hole in the other end, substantially as set forth.

9. A pivot connection for type-bars and their hangers, comprising a cylindrical stud having a reduced securing extension at one end and a screw-threaded hole in its other end, and a headed screw with its threaded shank seated in said hole, substantially as set forth.

Witness my hand this 3d day of November, 1906.

OSCAR C. KAVLE.

Witnesses:

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