

G. F. BALLOU.
 TYPE BAR AND HANGER AND METHOD OF MAKING SAME.
 APPLICATION FILED JULY 5, 1912.

1,059,923.

Patented Apr. 22, 1913.

FIG. 2.

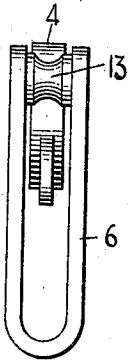


FIG. 1.

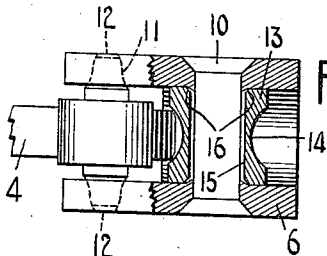
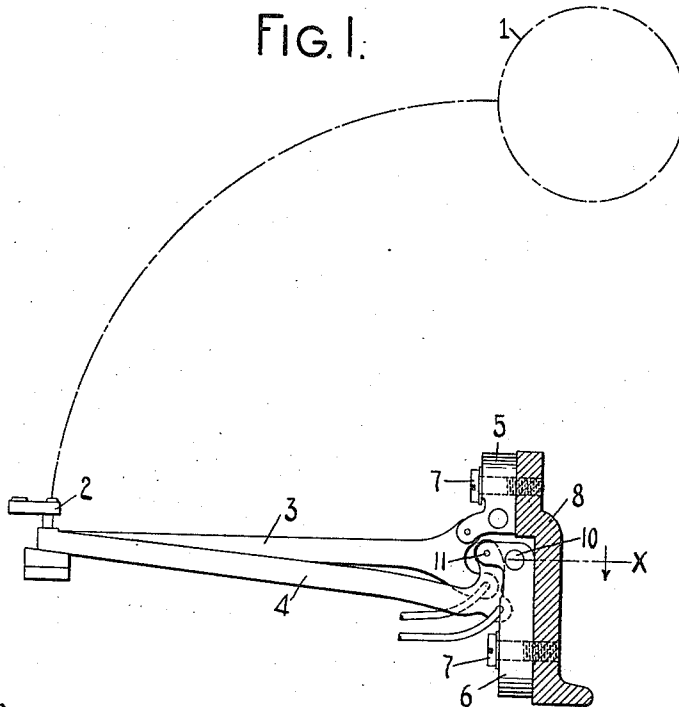


FIG. 3.

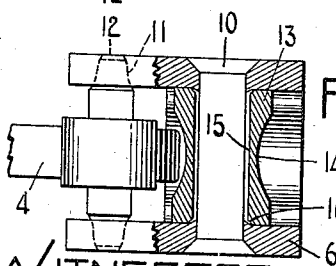


FIG. 4.

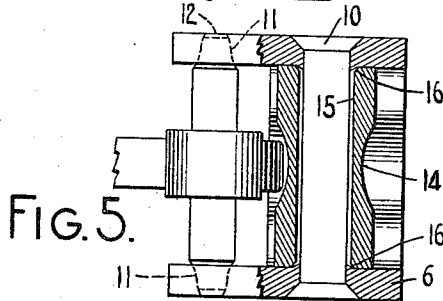


FIG. 5.

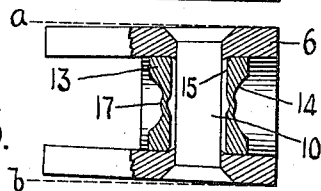


FIG. 6.

WITNESSES:

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INVENTOR:

George F. Ballou
By Jacob Felbel
 HIS ATTORNEY

UNITED STATES PATENT OFFICE.

GEORGE F. BALLOU, OF SYRACUSE, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO REMINGTON TYPEWRITER COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-BAR AND HANGER AND METHOD OF MAKING SAME.

1,059,923.

Specification of Letters Patent.

Patented Apr. 22, 1913.

Application filed July 5, 1912. Serial No. 707,759.

To all whom it may concern:

Be it known that I, GEORGE F. BALLOU, citizen of the United States, and resident of Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Type-Bars and Hangers and Methods of Making the Same, of which the following is a specification.

My invention relates more particularly to the type bars and hangers of typewriting machines, and to methods of assembling and fitting or adjusting such type bars and hangers.

My invention has for its principal object to improve the construction and facilitate the manufacture and assembling of the type bar system of a typewriting machine.

To the above and other ends my invention consists in certain features of construction and combinations and arrangements of parts, and in certain methods of manufacture, all of which will be fully set forth herein and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of two type bars and their hangers, and the type bar segment shown in section. Fig. 2 is a rear elevation of one of said hangers and its type bar detached. Figs. 3, 4 and 5 are sectional views of type bars and hangers taken on the general plane x of Fig. 1, the hangers in the different views being of different widths. Fig. 6 is a similar view of a hanger with its arms out of parallelism and over-riveted. Fig. 2 is on a larger scale than Fig. 1 and the remaining figures are on a still larger scale.

I have shown my invention applied to the type bar hangers of a Remington No. 10 typewriter. This machine comprises a platen 1 against the front face of which are adapted to strike types 2 mounted on the forward ends of front strike type bars 3, 4. These type bars are mounted in two sets having the relation shown in Fig. 1, the shorter type bars 3 being mounted in shorter hangers 5, and the longer type bars 4 being mounted in comparatively long hangers 6, all of said hangers being secured by screws

7 to the front face of a vertical segment 8. In this machine the hangers near the middle of the segment are comparatively narrow like those shown in Fig. 3, and the hangers near the ends of the segment are considerably wider like those shown in Fig. 5. The machine also contains an intermediate size of hanger like that shown in Fig. 4. The hangers 6 near the middle of the segment have the form in rear elevation, shown in Fig. 2, that is to say, they consist of a loop of sheet metal bent at its middle to form two parallel arms which are connected together by a cross-connecting device which, in this machine, consists of a rivet 10, Fig. 1, and the transverse pivot 11 of the type bar is seated in the hanger arms forward of said rivet 10. The pivots 11 are tapered at their ends, as shown in Figs. 3, 4 and 5. In the process of manufacture of the holes 12 in the hanger arms for these pivots are formed as accurately as possible by drilling and reaming but are made a little too small.

In assembling, the pivot is inserted in the holes 12 and said pivot is then swaged into the hanger arms by a succession of light rapid blows. Preferably this is done with a tool called a "vibrator" but of course it can be done in any other suitable way. After the pivot has been swaged to a suitable depth into the hanger arms the rivet 10 is put in and headed up to bind the hanger arms together at the proper distance apart. I have added to this hanger a spacing piece, collar or sleeve 13, which is shown in the drawings in the several forms in which it is now being used in the Remington machine. It will be seen that this sleeve surrounds the rivet 10, that it is comparatively broad at its ends, and is formed between its ends with a neck or reduced portion 14. The bore 15 of the sleeve is a trifle greater in diameter than the rivet 10 for reasons which will be presently explained. The difference in diameter has been exaggerated in the drawings in order to make this show. In the Remington machine at present the bore of the sleeve is about three one-thousandths of an inch larger than the rivet. Said sleeve at the ends of the bore

is counter-sunk as shown at 16 in order to accommodate the bur caused by drilling the holes for the rivet and to prevent said bur from getting between the ends of the sleeve and the walls of the hanger. In the Remington machine, the sleeves are of different lengths as has been explained but they are all of the same external and internal diameter except that the reduced part 14 is made slightly stouter or thicker as the sleeves are lengthened.

The sleeve 13 is made compressible both by reason of the material employed and also by reason of the form of the sleeve. In the specific instance herein described, namely, the construction now employed in the Remington typewriter, the sleeves are made of soft steel known as "screw-stock", and the compressibility is increased by the reduced middle portion 14 of the sleeve. This reduction in diameter or size at 14 should be made with judgment, the reduction not being so great as to sacrifice the stiffness required and at the same time being great enough to permit of the compression required. The proportions shown in the drawings are substantially those employed in practice with the exception above mentioned that the diameter of the bore has been exaggerated to show that it is greater than the diameter of the rivet.

After the pivot 11 has been swaged into the hanger arms to the proper depth, the sleeve and rivet are assembled and the rivet is headed up until it draws the hanger arms down tight and firm against the ends of the sleeve. It is the practice to swage the pivot into the hanger arms until said hanger arms are at a distance apart substantially equal to the length of the sleeve. When the rivet is headed up the hanger arms will usually be found to be drawn down to a point where the pivot has a tight running fit in said hanger arms. If the pivot is found to be too loose it is tightened by further riveting, the effect of which is to compress the sleeve 13. The pivot is eased to a loose running fit by the use of a special freeing tool by means of which further hammering is done against the hanger arms directly over and lengthwise of the pivot 11. This has the effect of momentarily forcing the hanger arms toward each other and deepening the bearings 12 in the hanger arms, said hanger arms then springing back and thereby giving the pivot a looser fit. If at a future time the pivot becomes loose from wear or other cause it can be tightened again by tightening the rivet 10 and thus compressing the sleeve 13 to a suitable extent. In the manufacture of these hangers it is the intention to have the hanger arms as nearly parallel as possible or at least as practicable. As a matter of fact said hanger arms frequently are not absolutely parallel. In such

case the sleeve 13 accommodates itself to this lack of parallelism by tipping, that is to say, by being compressed a little more on one side than on the other so that the two end surfaces of said sleeve come into planes corresponding with those of the hanger arms.

The deformation of the sleeve, due to non-parallelism of the hanger arms and also to over-riveting, is illustrated in Fig. 6 where the lines *a* and *b* are parallel and where the hanger arms therefore are out of parallel. It will be seen that the sleeve is thickened or bulged at 17. In actual practice this distortion of the sleeve will not ordinarily be as great as is shown in this figure. I have illustrated a somewhat exaggerated case of distortion in order to make it show more plainly in the drawing.

After the hanger has been assembled and adjusted in the manner above described, it will be perceived that the stiffness of it has been greatly increased by the addition of the sleeve 13 so that the hanger as a whole is practically proof against distortion due to the tightening of the screw 7 and to other causes.

Among the advantages of my construction are:—ease of assembling and riveting, each sleeve practically being its own gage for depth; time saved in assembling to type bar segments or supports, as the rigidity of the hangers prevents disturbance or change in the fit of the pivots when the hangers are screwed on to the segment; also avoiding the same disturbances and changes while going through the operations of driving the type and alining.

I am aware that it is not broadly new to place between the arms of a sheet metal hanger some form of spacing block or sleeve but I am unaware of any instance in which the hanger and said spacing block or sleeve have the peculiarities of construction, function and arrangement hereinbefore described and set forth in the following claims. I have shown and described my invention in the form in which it is used in the Remington machine but it will of course be understood that said invention is capable of modification.

What I claim as new and desire to secure by Letters Patent, is:—

1. In a typewriting machine, the combination of a pair of hanger arms, a type bar pivoted in said arms, a cross-connecting device near the pivotal ends of said arms, and a compressible spacing piece between said arms and against the ends of which said arms are drawn by said connecting device.

2. In a typewriting machine, the combination of a forked hanger comprising two arms connected together at one end, a type bar pivoted in said hanger arms at the other end, a cross-connecting device joining said hanger arms near said pivot, and a compress-

sible spacing piece against the ends of which said arms are drawn by said connecting device.

3. In a typewriting machine, the combination of a forked hanger, a type bar pivoted in said hanger, a cross-connecting device joining the forks of said hanger, and a compressible spacing piece against the ends of which the forks of said hangers are drawn by said connecting device, said spacing piece being comparatively wide at the ends and having a reduced portion between its ends.

4. In a typewriting machine, the combination of a pair of hanger arms, a type bar pivoted in said hanger arms, a compressible spacing piece between said hanger arms, and means for drawing said hanger arms forcibly against the ends of said spacing piece.

5. In a typewriting machine, the combination of a forked hanger, a type bar having a transverse pivot with tapered ends, said tapered ends being swaged into said hanger arms, a rivet joining said hanger arms near said pivot, and a compressible spacing piece against the ends of which said hanger arms are drawn by said rivet.

6. In a typewriting machine, the combination of a pair of hanger arms, a type bar pivoted in said arms, a rivet joining said hanger arms near said pivot, and a compressible sleeve surrounding said rivet.

7. In a typewriting machine, the combination of a pair of hanger arms, a type bar pivoted in said arms, a rivet joining said hanger arms near said pivot, and a compressible sleeve surrounding said rivet, said sleeve being reduced between its ends.

8. In a typewriting machine, the combination of a pair of hanger arms, a type bar pivoted in said arms, a rivet joining said hanger arms near said pivot, and a sleeve surrounding said rivet and bearing at its ends against said hanger arms, said sleeve being comparatively broad at its ends and contracted or reduced in its middle and capable of being compressed by tightening said rivet and of having the planes of its ends adapt themselves to any non-parallelism between said hanger arms.

9. In a typewriting machine, the combination of two sheet metal hanger arms connected together at one end, a type bar pivoted in said hanger arms near their free ends, a rivet connecting said hanger arms near said pivot, and a compressible sleeve surrounding said rivet and bearing at its ends against said hanger arms.

10. In a typewriting machine, the combination of two sheet metal hanger arms connected together at one end, a type bar pivoted in said hanger arms near their free ends, a rivet connecting said hanger arms near said pivot, and a compressible sleeve

surrounding said rivet and bearing at its ends against said hanger arms, said sleeve being comparatively wide at its ends and having between its ends a part of reduced diameter.

11. In a typewriting machine, the combination of a pair of hanger arms, a type bar pivoted in said hanger arms, a rivet connecting said hanger arms near said pivot, and a compressible sleeve surrounding said rivet and bearing at its ends against said hanger arms, the bore of said sleeve being a little greater in diameter than said rivet to facilitate the yielding of said sleeve to adapt itself to any non-parallelism of the hanger arms.

12. In a typewriting machine, the combination of a pair of hanger arms, a type bar having a transverse pivot journaled in said hanger arms, a rivet connecting said hanger arms near said pivot, and a compressible sleeve surrounding said rivet and bearing at its ends against said hanger arms, said sleeve being of comparatively wide diameter at its ends and of reduced diameter at its middle, and the bore in said sleeve being of slightly greater diameter than the rivet.

13. In a typewriting machine, the combination of a piece of sheet metal folded to make a pair of hanger arms, a type bar having a transverse pivot journaled in said hanger arms, a rivet connecting said hanger arms between said fold and said pivot, and a compressible sleeve surrounding said rivet.

14. In a typewriting machine, the combination of a forked hanger, a type bar pivotally mounted therein, a transverse rivet uniting the hanger arms, and a sleeve surrounding said rivet and held between said hanger arms under compression due to the heading of said rivet.

15. In a typewriting machine, the combination of a forked hanger, a type bar pivotally mounted therein, a transverse rivet, and a sleeve surrounding said rivet and bearing at its ends against the arms of said hanger, said sleeve being reduced between its ends and being distorted under compression and having its enlarged ends or heads parallel with the respective arms of the hangers against which they lie.

16. In a type bar and hanger construction, a transverse rivet in the hanger arms, and a sleeve surrounding the same and in contact with the inner walls of the hanger arms, said sleeve having a reduced portion between its ends and a bore of slightly greater diameter than the rivet.

17. The method of assembling a forked hanger and a type bar having a transverse pivot tapered at each end, which consists in swaging the free ends of the hanger arms upon the tapered ends of the pivot, then applying to the hanger a transverse rivet and surrounding sleeve, the sleeve being between the hanger arms and then heading the ends

of said rivet and drawing the hanger arms against the ends of the said sleeve until the said sleeve is distorted by compression.

18. The method of assembling a forked
5 hanger and a type bar having a transverse
pivot tapered at each end, which consists in
swaging the ends of the hanger arms upon
the tapered ends of the pivot, then applying
to the hanger a transverse rivet and sur-
10 rounding sleeve, the sleeve being between
the hanger arms, then heading said rivet
and drawing the hanger arms against the
ends of said sleeve until the said sleeve is
distorted by compression, and then suitably
15 freeing the pivot by a further swaging
operation.

19. The method of assembling a forked
hanger and a type bar having a transverse
pivot tapered at each end, which consists of
20 swaging the hanger arms upon the tapered
ends of the pivot, then connecting said
hanger arms by rigid connecting means, and
drawing said hanger arms together until
said pivot has a tight running fit, and then
25 freeing said pivot by a further swaging
operation involving the application of the
necessary force axially of the pivot and its

bearings; said last mentioned swaging op-
eration causing the hanger arms to ap-
proach each other, said arms at the com- 30
pletion of the swaging operation springing
away from each other.

20. The method of adjusting a forked
hanger to the tapered ends of the transverse
pivot of a type bar, said hanger having its 35
arms connected by a compressible connect-
ing device, which method consists in first
tightening the pivot by compressing said
connection and then freeing the pivot by
swaging the said pivot into said hanger 40
arms by forcing said hanger arms toward
each other by the application of the neces-
sary force axially of the pivot and its bear-
ings; said arms at the completion of the
swaging operation springing away from 45
each other.

Signed at Ilion, in the county of Herki-
mer and State of New York, this 2nd day
of July, A. D. 1912.

GEORGE F. BALLOU.

Witnesses:

ARLEIGH D. RICHARDSON,
GRACE S. BEECHWOOD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."