A. J. BRIGGS.

TYPE WRITING MACHINE.

APPLICATION FILED AUG. 28, 1916.

Patented Dec. 30, 1919.

4 SHEETS—SHEET 1.

1,326,474.

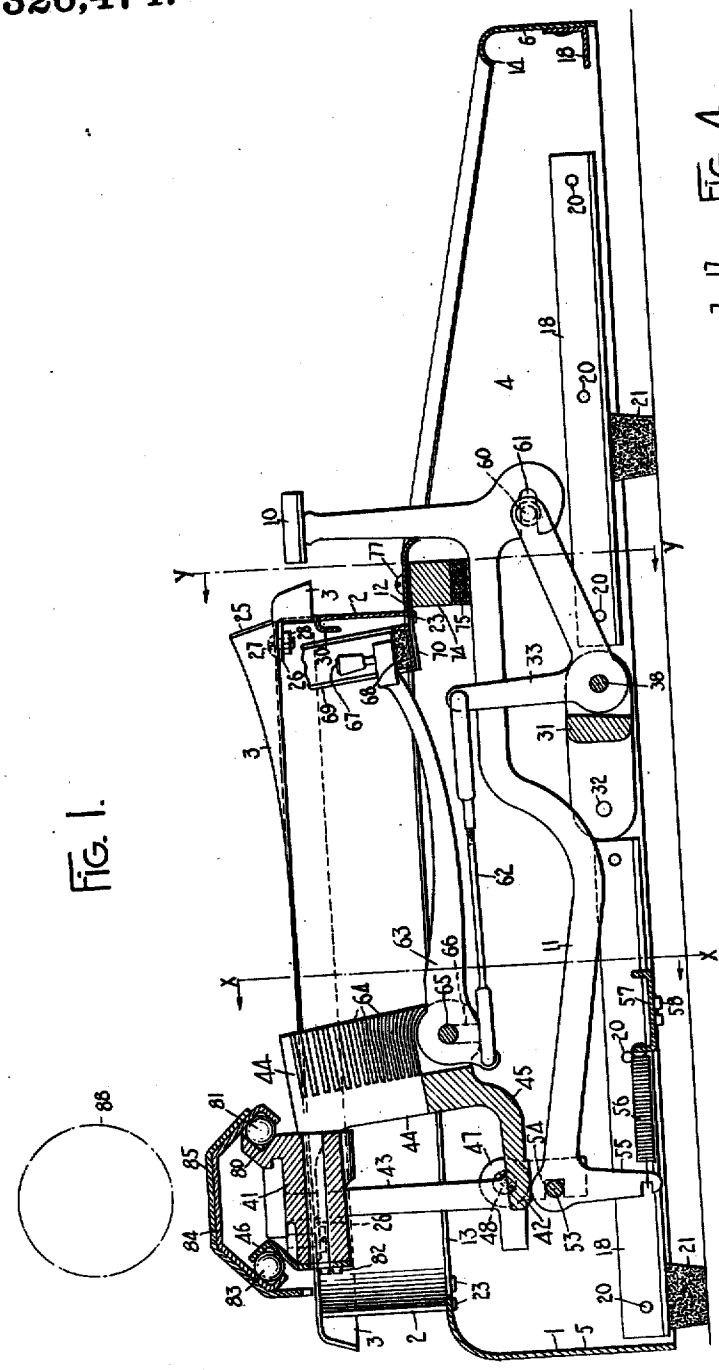


FIG. 1.

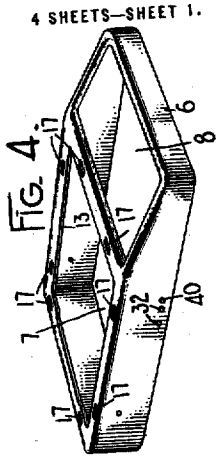


FIG. 4.

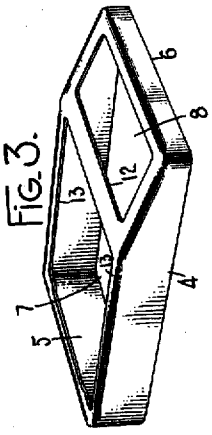


FIG. 3.

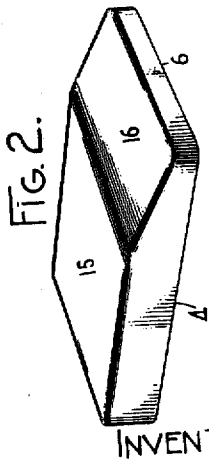


FIG. 2.

WITNESSES

L. Nelson.

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4 SHEETS—SHEET 2.

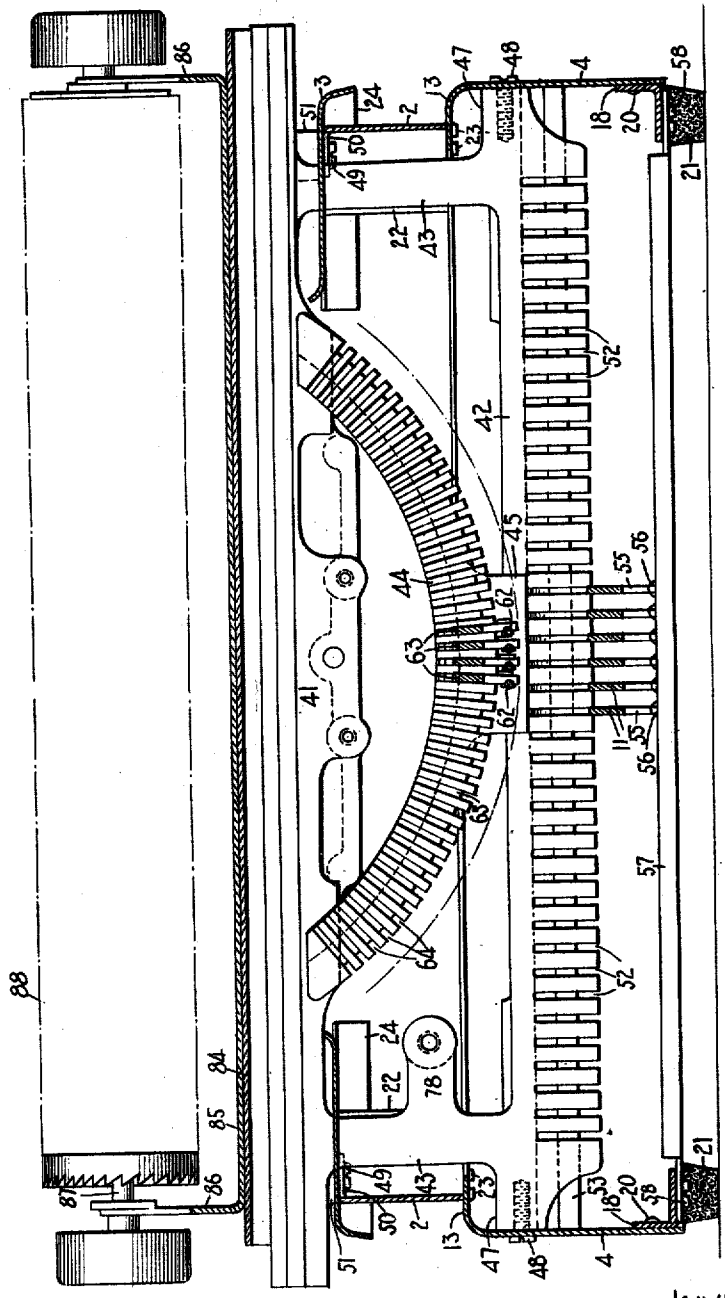


FIG. 5.

WITNESSES

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4 SHEETS—SHEET 3.

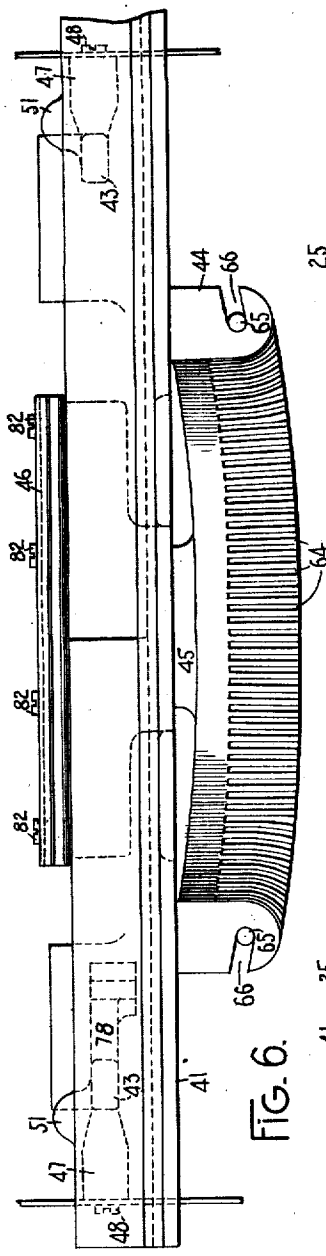


FIG. 6.

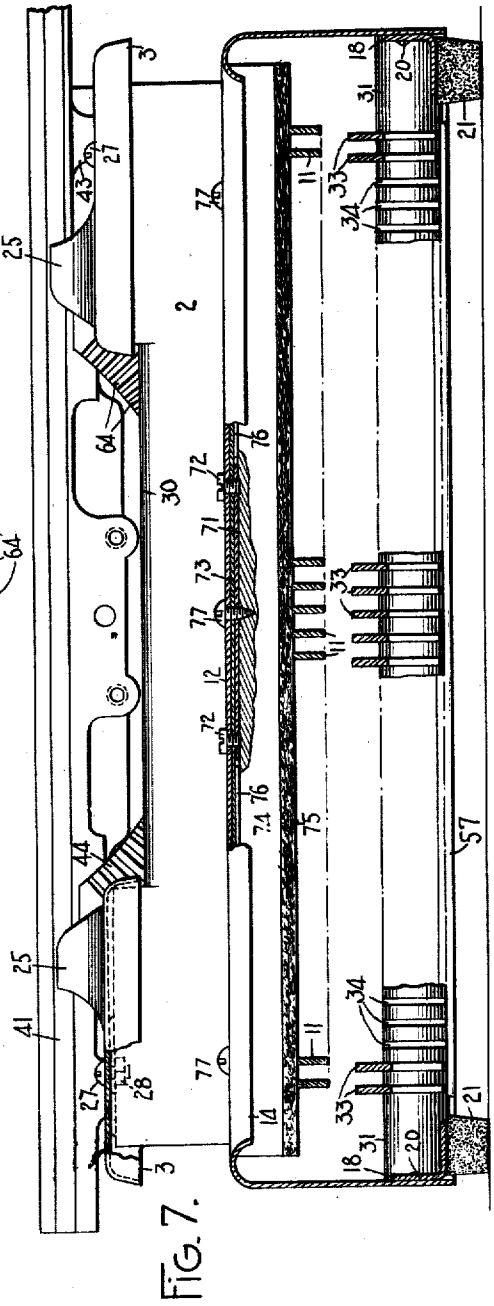


FIG. 7.

WITNESSES

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4 SHEETS—SHEET 4.

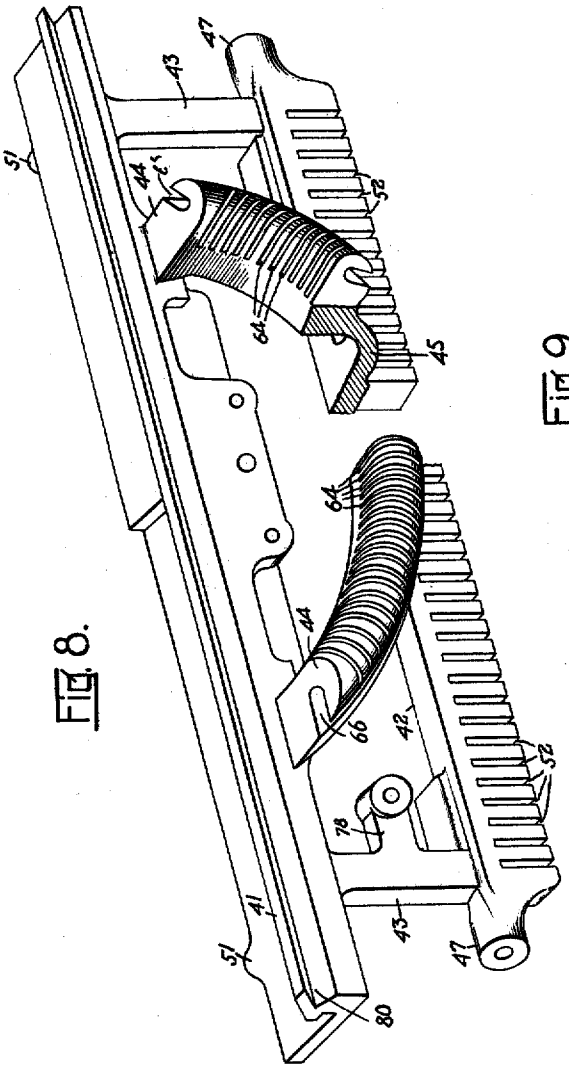


Fig. 8.

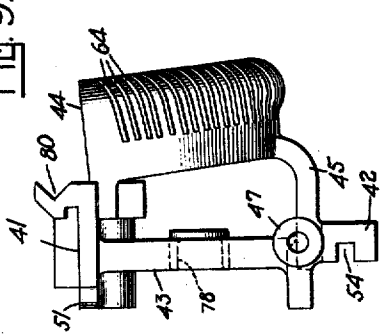


Fig. 9.

WITNESSES

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UNITED STATES PATENT OFFICE.

ARTHUR J. BRIGGS, OF SYRACUSE, NEW YORK, ASSIGNOR TO REMINGTON TYPEWRITER COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

1,326,474. Specification of Letters Patent. Patented Dec. 30, 1919.

Application filed August 28, 1916. Serial No. 117,261.

To all whom it may concern:

Be it known that I, ARTHUR J. BRIGGS, 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-Writing Machines, of which the following is a specification.

My invention relates to typewriting machines and more particularly to the main frames of such machines.

The principal object of the invention is to produce a frame and casing structure which shall be at once suitable, serviceable and strong and at the same time of little weight and capable of being manufactured at low cost.

To the above and other ends which will hereinafter appear my invention consists in certain features of construction and combinations and arrangements of parts, and also in a new method of manufacturing typewriter frame parts, all of which will be fully set forth herein and particularly pointed out in the claims.

In the accompanying drawings,

Figure 1 is a front to rear vertical sectional view of a typewriter frame made in accordance with my invention and with a few of the working parts shown in position therein.

Figs. 2, 3 and 4 are perspective views on a small scale illustrating steps in the manufacture of the base-part of the frame or casing.

Fig. 5 is a transverse vertical section of Fig. 1 taken on a plane a little in front of the type bar segment, about on the line *x*—*x* of Fig. 1.

Fig. 6 is a top plan view of the main casting, together with a few sheet metal parts.

Fig. 7 is a front view partly in section just back of the keyboard, on the line *y*—*y* of Fig. 1.

Fig. 8 is a perspective view, partly broken away, of a casting constituting a portion of the main frame of the machine.

Fig. 9 is a left-hand end view of said casting.

The outside part of the framework or casing consists chiefly of four pieces of sheet metal, namely, a base 1, an upright part or wall 2 surmounting said base and two top plates 3 surmounting said wall 2, one on the right, and the other on the left-hand side of the machine.

The base 1 consists essentially of a single integral piece of sheet metal drawn into the form shown in the drawings. This base is preferably seamless and it comprises side walls 4, a rear wall 5, and a front wall 6.

As seen from the top it is rectangular though with rounded corners and contains two substantially rectangular openings, namely, a rear opening 7 in which the type bars and some of the other working parts are situated and a forward opening 8, Fig. 3, through which the keys 10 project upward from the key levers 11, or from such other devices as may be connected with said keys. A cross bar 12 integral with the balance of the base, connects the two side walls 4 and separates the two openings 7 and 8. An integral horizontal marginal flange 13 surrounds the opening 7 and a marginal flange 14 around the opening 8 is bent into a curved form, best shown in Figs. 1 and 7. All of the parts thus far described are comprised in the integral seamless sheet metal base.

The mode or method of manufacturing the base can be understood from Figs. 2, 3 and 4, which illustrate successive forms through which said base passes in the process of manufacture. Fig. 2 shows the piece of sheet metal drawn up into the shape of a sort of rectangular pan with its vertical walls 4, 5 and 6 and a flat top 15 occupying the space subsequently to be occupied by the opening 7 and the flange 13, and the sloping top 16 occupying the space subsequently to be occupied by the opening 8 and flange 14. After the formation of this plan the top 15 is cut away to form the opening 7, leaving enough of said top to constitute the flange 13 and the horizontal part of the cross bar 12, all as shown in Fig. 3; and the sloping top 15 is cut away as shown in Fig. 3 to form the opening 8, leaving, however, a flange around said opening. The flange 14 is then pressed into the curved form that it is designed to have in the complete machine as shown in Fig. 4. Various holes are made in the base, as required, including certain holes 17 in flange 13, as shown in Fig. 4, and hereinafter to be

referred to. As shown in the present instance and preferably, all of the corners are rounded including the vertical corners between the walls 4, 5 and 6 and also the corners between the vertical walls and the flanges 13 and 14. The whole result is a base of neat and smooth outline and, as to its upper part, rigid. The rigidity of the base is, however, increased by some of the other parts added to the machine. Included among these are angle-pieces or strips 18 suitably secured around the inner surface and near the lower edge of the base at such points as needed. In the present instance there are two such strips on each of the side walls 4 and one along the front walls 6. In the present instance these flanges are shown secured in place by rivets 20. In addition to their function of stiffening the frame these flanges are or may be used for other purposes. For example, the rubber feet 21 of the machine are secured to the horizontal parts of these angle-strips.

The vertical wall 2 above referred to consists essentially of a strip of sheet metal bent transversely of its length to form the the three sides of a rectangle and parts of the fourth side. This strip extends across the front of the machine resting at its lower edge on the cross bar 12 and thence toward the back of the machine resting on the flange 13; and each end of it is thence bent toward the middle of the machine. The two ends of the strip in the present instance extend only part-way toward the middle of the machine, however, terminating at the points marked 22 in Fig. 5. This wall of the casing can be secured to the base 1 in a variety of ways but I prefer the means shown in the drawing which consists of a series of ears 23, Figs. 1 and 5, formed on the lower edge of the wall and projecting into and through the holes 17, Fig. 4, in the flange 13 and cross bar 12. The lugs 23, after being inserted in place are bent or clenched to the under side of the flange. In Fig. 4 I have shown eight holes 17 but in actual practice I employ a larger number.

The top plates 3 cover up the right and left-hand sides of the machine leaving a well between them for the operation of the type bars. Each of these is formed around its outer edge with a depending flange 24, said flange as shown in the present instance being along the front and rear edges and the outer edge of each of the top plates. Each of said top plates near its forward end has an upwardly curved part 25 struck up therefrom to assist in protecting and to some extent hiding the end type bars and their pad, as will be explained a little more fully hereinafter. Each of these top plates is pressed up out of an integral piece of sheet metal. They can be secured in place in a variety of ways. As shown in the drawing the front line of the wall 2 has near its right and left-hand ends ears 26 bent rearward therefrom and on which the top plates lie. A screw or bolt 27 passes through each of the top plates and its corresponding ear and has a nut 28 thereon underneath the ear 26. This bolt secures the forward part of the top plate in place and the rear part is secured in a manner to be described hereinafter. Between the two top plates the upper edge of the wall 2 is bent downward forming a stiffening flange or part 30, Fig. 1.

The sheet metal framework above described is supplemented by castings of which the frame shown in the drawing comprises two, the smaller one of which consists of a transverse bar 31 in the base of the machine, said bar being secured to the base casing 1 by means of four screws 32, two at each end of the bar. This bar is useful as a stiffening member for the frame, situated as it is between the lower edges of the two side walls 4 and at about midway of the lengths of said walls; but its principal function is to provide supports for the sub-levers 33, which are pivoted in slots 34, Fig. 7, in the front face of said bar and are pivoted on a wire or rod 38, which in the present instance is inserted in a long hole through the bar and extending the entire length thereof. Said hole preferably registers with holes 40, Fig. 4, in the side walls 4 so that the rod can be pushed through into place after the casting 31 is in the machine.

The main casting is near the rear of the machine and its general form will be best understood from Figs. 8 and 9, which show it detached from the machine. Said casting is shown in place in the machine in Figs. 1, 5 and 6. As viewed from the front in Fig. 6 this casting is seen to include a transverse horizontal bar 41 at the top of the machine, a parallel transverse bar 42 in the base of the machine, and right and left-hand vertical posts 43 connecting said horizontal bars. The type bar segment 44 is an integral part of this casting, being connected at its upper ends with the cross bar 41 and at its lower end being connected at 45 with the middle of the lower cross bar 42. The printing key levers 14 are pivoted in the cross bar 42. The upper bar 41 constitutes the main carriage rail, and the rear carriage rail 46 is mounted thereon. It will thus be seen that the key lever system, the type bar system and the carriage support are all on one integral casting, which is one of the features that makes the sheet metal framework practicable, especially the fact that the carriage rail and the type bar segment are integral, this insuring proper coöperation of the type bars and the platen.

The main casting is secured to the sheet metal casing at four points. Said casting includes two lugs 47, Figs. 5 and 8, constituting in effect prolongations of the bar 42 and these lugs are machined off at their ends to fit against the inner surfaces of the walls 4 of the base of the machine, where they are secured by screws 48 passing through said walls 4 and screwed into the lugs 47. Said casting is secured at its upper part to the sheet metal framework by means of two screws 49, Fig. 5, coming up from beneath and passing through ears 50 bent in from the wall 2 and also through the top plates 3 and screwed into lugs 51 at the upper part of the casting, Figs. 5 and 6. These screws bind rigidly together the main casting, the wall 2 and the rear ends of the top plates 3. Each of said top plates has a slot cut therein from the inner edge thereof, said slot being designed to receive the part 43 of the casting. It will be perceived that the main casting is secured in and supported by the sheet metal casing and also that it strengthens and stiffens said casing, being secured to the base of said casing at two points and being secured also to the upper part of said casing at two points, and the four said points being situated at the corners of an upright quadrilateral.

The bar 42 has a depending flange part formed with vertical slots 52, Fig. 5, in which the key levers 11 are pivoted on a pivot wire or rod 53, Fig. 1 which is laid into a longitudinal slot 54 cut in the back surface of said flange. Each of said key levers has a depending arm 55 to which is connected the restoring spring 56 of the key lever. Said springs in the present instance are shown as coiled tension springs, secured at their forward ends to a channel bar 57 lying transversely across the machine and secured at its ends to the under sides of the angle bars 18 by means of screws 58. Each of the sublevers 33, in the form of type action illustrated in the drawing, has a forwardly and upwardly inclined arm with a headed pin 60 at the front end thereof, said pin playing in a slot 61 formed in a depending part of the key lever so that when the key is depressed this inclined arm of the sublever is also depressed. The sublever has an upstanding arm which is connected by means of a link 62 with a type bar 63 which lies in one of a series of slots 64 cut in the type bar segment 44. All of said type bars are pivoted on a pivot wire 65 lying in a circumferential slot 66 cut in said type bar segment. Each of the type bars carries a type 67 at its forward end and all of said type bars rest on a pad 68. This pad lies in a segmental or arc-shaped channel bar 69 which is supported by two arms or ears 70, Fig. 1, to which the channel bar is riveted. These arms 70 project forward from a U-shaped plate of sheet metal 71, Fig. 7, which is secured by means of screws 72 to the under side of the cross bar 12 of the frame-piece. Preferably a long flat strip 73 is, however, laid immediately under the cross bar 12 for strengthening purposes. Beneath the plate 71 there is a wooden bar 74 having a felt pad 75 secured to its under edge and constituting the stop for arresting the upward motion of the key levers 11. Strips 76 of the same thickness as the plate 71 are shown inserted at the ends of said plate 71, and the bar 74 is secured in position by wood screws 77 passing down through the sheet metal parts into the bar 74. The left-hand post 43 is shown with a bracket 78, Fig. 5, projecting therefrom to support a spring drum to propel the carriage.

The carriage itself can, of course, be of any suitable construction as far as the present invention is concerned, but preferably the upper cross bar 41 of the main casting constitutes the support for said carriage. It is advantageous to have the support integral with the type bar segment 44 or at least to have these two parts rigidly connected together in order that the type bars may be certain to coöperate properly with the platen. I prefer to make said type bar segment an integral part of the casting as shown but the desired rigidity can, of course, be brought about by securing said segment to said main casting.

In the present instance the forward edge of the cross bar 41 is formed with a groove 80 for coöperation with bearing balls or rollers 81. The rail 46 can be made integral with the casting but in the present instance said rail is shown as a piece of sheet metal secured by screws 82 to the rear surface of the bar 41, said sheet metal being bent first forward and then backward to produce a rearwardly facing groove for coöperation with bearing balls or rollers 83. The carriage itself, as shown in the present instance, comprises a rail part 84 consisting of a bar or plate of sheet metal having an upper horizontal part and its forward and rear edges bent first downward at angles of 45° and thence inward at angles of 90° to form two grooves facing the grooved stationary rails and coöperating with the balls 81, 83, as shown. The rear rail 46 has sufficient resilience to take up all looseness in the bearings and to obviate the necessity for any adjustment of the bearings. As shown in the present instance the rail part 84 of the carriage is shown surmounted by another sheet metal plate 85 having its ends bent up to form brackets 86 in which are journaled the axles 87 of the platen 88.

It will be perceived that the main frame of the machine in the precise form shown in the drawings consists essentially of four pieces of sheet metal and two castings, that

these parts are of little weight and are very inexpensive to manufacture but that they are so joined together and designed as to be rigid and strong. This frame is in fact almost as strong and rigid and, perhaps, quite as strong and rigid as the much heavier and more expensive cast-iron frames heretofore employed, and it is very neat and pleasing to handle, with rounded corners, there being few sharp edges exposed.

It will be understood, of course, that various changes can be made in the details of construction and arrangement without departing from my invention.

By the term "drawn-up", used in this specification and in the following claims, applicant desires to distinguish his construction from other constructions, wherein the sheet metal is first cut or blanked out from a strip to the desired shape or contour that the parts are to have in the finished article, and wherein after such cutting out and shaping operation the strip is to be folded along predetermined lines and secured at its ends to produce the desired construction. The term "drawn-up" herein used concerns only the production of the base frame from a solid or uncut sheet of metal drawn, swaged or extruded into the construction claimed, as distinguished from a base frame having its four sides formed from a previously prepared blank folded transversely along predetermined lines.

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

1. In a typewriting machine, a main frame comprising in combination a base part drawn up out of an integral piece of sheet metal with integral side and end walls and flanges, and an integral cross bar; and an additional wall mounted on and secured to said cross bar and flanges.

2. In a typewriting machine, a main frame comprising in combination a base part drawn up out of an integral piece of sheet metal with integral side and end walls, and an integral cross bar; an additional wall mounted on and secured to said cross bar and flanges; and a top plate on said additional wall.

3. In a typewriting machine, a main frame comprising in combination a base part, a sheet metal wall surmounting said base part, a top plate on said wall and a main casting secured at the lower portion thereof to said base and at the upper portion thereof to said wall and top plate.

4. In a typewriting machine, a main frame comprising in combination a base part drawn up out of sheet metal, an upright part of sheet metal secured to said base part, at least one top plate on said upright part, and a main casting secured at the lower portion thereof in said base and secured at the upper part thereof by screws passing through said upright part and said top plate or top plates.

5. In a typewriting machine, the combination with a carriage, type bars, and key levers; of a sheet metal casing and a main casting secured in and supported by said casing; the upper part of said casting constituting a carriage rail, and another part of said casting constituting a segmental support for said type bars.

6. In a typewriting machine, the combination with a carriage and a series of type bars, of a main frame comprising a casing and a casting supported by said casing, one portion of said casting constituting a carriage rail, and another portion of said casting constituting a type bar segment.

7. In a front strike typewriting machine, the combination with a carriage, a series of front strike type bars and key levers and connections to said type bars, of a main frame comprising a sheet metal casing and a main casting, said casting having an upper transverse bar constituting a carriage rail, a lower transverse bar constituting a key lever support, and an intermediate segment to which said type bars are pivoted.

8. In a front strike typewriting machine, the combination with a carriage, type bars and key levers and connections to said type bars, of a main frame including as one element thereof a casting, said casting constituting the support for said carriage, said type bars and said key levers.

9. In a front strike typewriting machine, the combination with a carriage, type bars, key levers, and connections from said levers to said type bars; of a casting in the rear of the machine, said casting comprising a carriage rail portion, a portion to which the key levers are pivoted, posts connecting the two recited portions, and a type bar segment, the ends of the segment connecting with the carriage rail and the middle of the segment connecting with the key lever support; and a casing or framework in which said casting is mounted.

10. In a front strike typewriting machine, the combination with a carriage, type bars, key levers and connections, including sub-levers between said key levers and said type bars; of a main frame comprising a sheet metal casing, a casting supported by said casing and having one portion thereof constituting a carriage rail and another portion thereof constituting a type bar segment; and a cross bar supported by said casing and on which said sub-levers are mounted.

11. In a front strike typewriting machine, the combination with a carriage and front strike type bars, of a main frame comprising a casing and a casting mounted in said casing, said casting having a transverse upper bar and a transverse lower bar, said lower

bar secured in the base of said casing, and said casting comprising also a type bar segment connecting at its ends with said upper bar and connecting at its middle with said lower bar.

12. In a front strike typewriting machine, the combination with a carriage, and front strike type bars, of a main frame comprising a casing and a casting mounted in said casing, said casting having a transverse upper bar and a transverse lower bar, said lower bar secured in the base of said casing, and said casting comprising also a type bar segment connecting at its ends with said upper bar and connecting at its middle with said lower bar, and said upper bar constituting a carriage rail.

13. In a front strike typewriting machine, the combination with a carriage, type bars, key levers, and connections from said key levers to said type bars, of a main frame comprising a sheet metal casing having a base part and an upper part, and an upright casting in the rear of said casing, said casting secured at its upper part to the upper part of said casing and its lower part secured in the base part of said casing, and said casting comprising a carriage support and a type bar segment.

14. In a front strike typewriting machine, the combination with a carriage, type bars, and means for operating said type bars, of a main frame comprising a casing and a casting mounted in said casing, one portion of said casting constituting the carriage support and another integral portion constituting the type bar segment.

15. In a front strike typewriting machine, the combination with a carriage, type bars, keys, and connections including sub-levers from said keys to said type bars, of a main frame comprising a casing, a cross bar on which said sub-levers are mounted, and a main casting, said main casting including a carriage rail and a type bar segment.

16. In a front strike typewriting machine, the combination with a carriage, type bars, key levers, and connections including sub-levers between the said key levers and said type bars, of a main frame comprising a casing, a transverse bar on which said sub-levers are mounted, and a main casting, said casting including a carriage rail, a type bar segment, and a key lever support.

17. In a front strike typewriting machine, a main frame comprising in combination a sheet metal casing having a base part and an upper part, and a casting occupying an upright position in said casing and secured thereto at both sides of the machine both in said base part and also in said upper part of the casing.

Signed at Syracuse, in the county of Onondaga, and State of New York, this 24th day of August A. D. 1916.

ARTHUR J. BRIGGS.

Witnesses:
AUGUSTUS J. BARNES,
FRANK S. LEWIS.