This invention relates to new and useful improvements in a bus bar and strip bender. The invention has for an object the construction of a device as mentioned which is characterized by the fact that it has a base plate formed with a bottom bevel edge portion which is cooperative with a top bevel edge portion of an abutment bar arranged parallel to the base plate and with a slot therein through which a bus bar or other strip may be passed between these parts and bent upwards or downwards, or twisted against said beveled edges.

Still further the invention proposes the provision of another abutment bar arranged at right angles to the base plate and having a front beveled edge portion extending to its back face and said back face to be substantially in the same plane or an immediately adjacent plane as the free edges of said beveled edge portions mentioned in the previous paragraph and adjustably mounted in the direction of said plane so that the bus bar may be further bent or twisted subsequent to the bending or twisting previously mentioned.

Still further the invention proposes the provision of a pair of rigid support strips rigidly attached at their centers on the ends of the front edge portion and at right angles to the base plate and supporting a mechanism for the said adjustable supporting of the abutment bar which is at right angles to the base plate.

Still further the invention proposes the provision of a slotted block with a projecting handle and arranged to be adapted to act as a wrench for engaging upon the bus bar or strip to be bent and having an outwardly beveled edge portion at one or more of the edges of said slot by which the bus bar or strip may be bent, under a manual mechanical advantage.

Still further the invention proposes the provision of means mounted on the base plate and adjustable to guide between the bending abutments, bus bars of different widths.

The invention also proposes the association of mechanism with the slotted block which acts as a wrench by which bus bars of various widths may be guided through the slot so that they maintain a central position.

Another one of the objects of the invention resides in the specific means by which the abutment bar which is at right angles to the base plate may be adjustably held in various positions. Another object of this invention is the provision of guides and gauges for indicating distances and guiding the bending of the bus bar, said guides and gauges to be mounted at advantageous locations on the bender device.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a perspective view of a device constructed according to this invention.

Fig. 2 is a fragmentary sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a fragmentary sectional view taken on the line 4—4 of Fig. 1.

Fig. 5 is a perspective view of the wrench device used in conjunction with this invention.

Fig. 6 is a fragmentary sectional view taken on the line 6—6 of Fig. 5.

Fig. 7 is a fragmentary sectional view taken on the line 7—7 of Fig. 5.

Fig. 8 is a schematic view of certain parts of the device to illustrate the bending of a bus bar.

Fig. 9 is a schematic sectional view showing further bending operations of the device.

The bus bar and strip bender, according to this invention, includes a base plate 10 for attachment on a work bench or the like and having a bottom bevel edge portion 10a on the center of the front edge thereof. A pair of rigid support strips 11 are rigidly attached substantially at their centers on the ends of the said front edge of the base plate 10 and at right angles to the base plate.

An abutment bar 12 is arranged parallel to the base plate 10 and is adjustably spaced therefrom and has a top bevel edge portion 12a substantially above the bottom edge portion 10a (see particularly Fig. 4). Another abutment bar 13 is arranged at right angles to the base plate 10 and has a front bevel portion 13a extending to its back face which is substantially in a slightly adjacent plane as the said plane of the free outer edges of the beveled edge portions 10a and 12a. This abutment bar 13 is adjustably mounted in this plane.

The abutment bar 12 is adjustably mounted by means of several cap screws 14 which engage through slots 15 in, and longitudinally of the base plate 10. The rear edge of the abutment bar 12 engages against brackets 16 which are adjustably mounted by cap screws 17 engaging 18.
through slots 18 longitudinally of the base plate 10 and mounted in the base plate 10.

The arrangement permits the cap screws 14 to be screwed in for clamping and holding in a jaw-like manner a bus bar which is rested upon the base plate 10 and extended out between the beveled edge portions 10a and 12a. The arrangement also permits the cap screws 14 and 17 to be loosened and the abutment bar 12 to be shifted slightly rearwards longitudinal of the base plate 10, as for example, to a position schematically shown in Fig. 9. This is required when certain bends are made.

There are means upon the base plate 10 for guiding bus bars longitudinally over the base plate 10 and between the edge portions 10a and 12a. This means is adjustable to accommodate bus bars of different widths.

The support strips 11 are securely rigidly held by several reinforcement angle members 22, 23 and 24. The angle members 22 are arranged on top of the base plate 10 and against the rear faces of the top portions of the support strips 11. The angle members 24 are in the form of reinforcing strips between the ends of the angle members 22. Bolts 25 are engaged through the horizontal arms of the angle members 23 and 24 to secure these parts to the base plate 10. Bolts 26 are engaged through the horizontal arms of the angle members 22 and 24 to secure these parts to the base plate 10.

The abutment bar 13 is adjustably mounted in the following manner: There is a pair of strips 27, to the front of the strips 11, and held spaced therefrom by top spacer elements 28 and bottom spacer elements 29. Bolts 30 engage through the strips 27, the spacer elements 28 and the top arms of the angle members 22 and 24 for fixedly holding these parts together. Bolts 31 engage through strips 27, the spacer elements 28, the lower ends of the strips 11, and the layer members of the angle members 23 for holding these parts together. The end portions of the abutment bar 13 engage into the space between the strips 11 and 27. The abutment bar 13 may be removed by moving it laterally out from one end or the other end of the device so that it may be replaced with other abutment bars having different bending characteristics when desired.

There is a means for fixedly holding the abutment bar 13 in position when desired. This means comprises several cap screws 33 which engage through slots 34 formed in the strips 27 and which threadedly engage into the end portions of the abutment bar 13. When the cap screws 33 are tightly screwed in they clamp the abutment bar 13 against the rear faces of the strips 27.

To reinforce the lower ends of the abutment bar 13 the screws 33 there are auxiliary screws 35. These screws threadedly engage into the lower ends of the spacer bars 29 and above the bottom edge of the abutment bar 13. Each of the screws 35 have large head portions 35a by which they may be manually screwed. It is thus possible to engage the screws 35 against the lower edge of the abutment bar 13 in all elevated positions of the abutment bar. Thus, the bar will be firmly held as desired.

Scales 36 are imprinted upon the adjacent edges of the strips 27 and serve as a guide for properly positioning the abutment bar 13 in a true horizontal position relative to the plate 10. Without the scales 36 the bar 13 may be at a slight angle.

Strips 37 are attached to the top and bottom ends of the strips 27 and the immediately adjacent parts and are imprinted with scales 38 to guide the angular bending of bus bars. These scales 38 are calibrated so that there are the figures “zero” aligned with the top face of the base plate 10. From these “zero” positions the scales extend upwards and downwards in gradations of angles of 5° or portions thereof relative to the extreme edge of the beveled edge portion 10a.

A slotted block 40 has a projecting handle 41 and is adapted to act as a wrench for bending upon bus bars 10 which are disposed in a variety of abutment parts previously described and arranged to facilitate the manual bending of the bus bar due to a great mechanical advantage. The handle 41 may be as long as required, to act as a lever. The block 40 is formed from a top section 40a, an end spacer section 40b, and a bottom section 40c. These sections are held together with cap screws 42. The slot of the block is indicated by reference numeral 43 and is located between the sections of the block. One edge 43a of the slot 43 is formed with an outwardly beveled portion 43b which is cooperative with the beveled portions 10a, 12a and 13a as will be hereafter more fully described.

There is a means for holding a bus bar centrally in the slotted block. It consists of several set screws 44 selectively engageable in a plurality of threaded openings 45 in one of the side walls of the slot 43. It is necessary that the cap screws 42 be removed and the sections of the block separated before the set screws 44 may be adjusted. They should be adjusted to position in which they engage against the side edges of a bus bar engaged through the slotted block and located so as to keep the bus bar centrally of the said block.

The operation of the device is as follows:

A bus bar is placed on the base plate 10 and moved out any required distance beneath the abutment bar 12. The abutment bar 12 is then tightly clamped upon the bus bar by screwing in the screws 14. The wrench device shown in Fig. 5 is then engaged over the extended end of the bus bar. In Fig. 8 the bus bar is indicated by the letter A. It should be noted that because of the bevels 12a and 43b it is possible to turn the wrench device anti-clockwise as indicated by the arrow B, and to bend the bus bar upwards to the dotted line positions so that this portion now is at right angles to the portion on the base plate 10. The wrench is then removed and the abutment bar 13 moved upwards any required amount, as for example, the amount shown in Fig. 9. The wrench is then engaged over the extended portion of the bus bar and the wrench turned in the clockwise direction of the arrow B' to bend the bus bar downward to the position indicated by the dotted and dash lines. It will thus be seen that the bus bar may be bent with a slight offset and position parallel to the main portion of the bus bar. It is possible to bend bus bars and strips to have parts thereof at various angular posi-
tions relative to each other and at various slight distances.

While I have illustrated and described by invention with some degree of particularity, I realize that in practice various alterations therein may be made. I therefore reserve the right and privilege of changing the form of the details of construction or otherwise altering the arrangement of the correlated parts without departing from the spirit or the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by United States Letters Patent is:

1. A bus bar and strip bender, comprising a base plate for attachment on a work bench or the like and having a bottom bevel edge portion on the center of the front edge thereof, a pair of rigid support strips rigidly attached with their centers in the plane of said base plate and disposed at right angles to said base plate, an abutment bar parallel to said base plate and adjustably spaced therefrom and having a top bevel edge portion located substantially above said bottom bevel edge portion, and another abutment bar at right angles to said base plate and having a front bevel edge portion extending to its rear face and its rear edge being substantially in the same plane as the outer edges of said bevel edge portions and said latter abutment bar being adjustably mounted on said support strips for movement in the direction of said plane.

2. A bus bar and strip bender, comprising a base plate for attachment on a work bench or the like and having a bottom bevel edge portion on the center of the front edge thereof, a pair of rigid support strips rigidly attached with their centers in the plane of said base plate and disposed at right angles to said base plate, an abutment bar parallel to said base plate and adjustably spaced therefrom and having a top bevel edge portion located substantially above said bottom bevel edge portion, another abutment bar at right angles to said base plate and having a front bevel edge portion extending to its rear face and its rear edge being substantially in the same plane as the outer edges of said bevel edge portions and said latter abutment bar being adjustably mounted on said support strips for movement in the direction of said plane, and means mounted on the base plate and adjustable to guide bus bars of different widths beneath said abutment which is parallel to the base plate, the adjustable mounting of the abutment bar which is parallel to the base plate being accomplished with cap screws engaged through slots in and longitudinally of the base plate, and brackets adjustably mounted on the base plate and abutting the rear edge of the abutment bar.

3. A bus bar and strip bender comprising a base plate for attachment on a work bench or the like and having a bottom bevel edge portion on the center of the front edge thereof, a pair of rigid support strips rigidly attached with their centers in the plane of said base plate and disposed at right angles to said base plate, an abutment bar parallel to said base plate and adjustably spaced therefrom and having a top bevel edge portion located substantially above said bottom bevel edge portion, and another abutment bar at right angles to said base plate and having a front bevel edge portion extending to its rear face and its rear edge being substantially in the same plane as the outer edges of said bevel edge portions and said latter abutment bar being adjustably mounted along said support strips for movement in the direction of said plane, the adjustable mounting of said abutment bar which is at right angles to the base plate being accomplished by strips of material spaced from said support strips with end spacers and rigidly mounted thereon, and the ends of said abutment bar being engaged in the space between these parts.

4. A bus bar and strip bender comprising a base plate for attachment on a work bench or the like and having a bottom bevel edge portion on the center of the front edge thereof, a pair of rigid support strips rigidly attached with their centers in the plane of said base plate and disposed at right angles to said base plate, an abutment bar parallel to said base plate and adjustably spaced therefrom and having a top bevel edge portion located substantially above said bottom bevel edge portion, and another abutment bar at right angles to said base plate and having a front bevel edge portion extending to its rear face and its rear edge being substantially in the same plane as the outer edges of said bevel edge portions and said latter abutment bar being adjustably mounted along said support strips for movement in the direction of said plane, the adjustable mounting of said abutment bar which is at right angles to the base plate being accomplished by strips of material spaced from said support strips with end spacers and rigidly mounted thereon, and the ends of said abutment bar being engaged in the space between these parts.
10. Support strips with end spacers and rigidly mounted thereon, and the ends of said abutment bar being engaged in the space between these parts, cap screws engaging through slots in said supported strips and threadedly engaging the abutment bar by which the abutment bar may be clamped against the supported strips.

7. A bus bar and strip bender comprising a base plate for attachment on a work bench or the like and having a bottom bevel edge portion on the center of the front edge thereof, a pair of rigid support strips rigidly attached with their centers in the plane of said base plate and disposed at right angles to said base plate, an abutment bar parallel to said base plate and adjustably spaced therefrom and having a top bevel edge portion located substantially above said bottom bevel edge portion, and another abutment bar at right angles to said base plate and having a front bevel edge portion extending to its rear face and its rear edge being substantially in the same plane as the outer edges of said bevel edge portions and said latter abutment bar being adjustably mounted along said support strips for movement in the direction of said plane, and gauges mounted along said support strips for measuring the bending of bus bars by said bus bar and strip bender.

8. A bus bar and strip bender comprising a base plate for attachment on a work bench or the like and having a bottom bevel edge portion on the center of the front edge thereof, a pair of rigid support strips rigidly attached with their centers in the plane of said base plate and disposed at right angles to said base plate, an abutment bar parallel to said base plate and adjustably spaced therefrom and having a top bevel edge portion located substantially above said bottom bevel edge portion, and another abutment bar at right angles to said base plate and having a front bevel edge portion extending to its rear face and its rear edge being substantially in the same plane as the outer edges of said bevel edge portions and said latter abutment bar being adjustably mounted along said support strips for movement in the direction of said plane, and a slotted block with a projecting handle and adapted to act as a wrench for engaging upon said bus bar or strip and having an outwardly beveled edge portion on one edge of said slot.

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