# United States Patent

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## [54] DUCT WITH POWER AND COMMUNICATIONS OUTLET

**10 Claims, 4 Drawing Figs.**


[52] **U.S. Cl.** ..... **174/49,** 52/221
[51] **Int. Cl.** ..... **H02g 3/04**
[50] **Field of Search** ..... 174/48, 49; 52/220, 221, 300



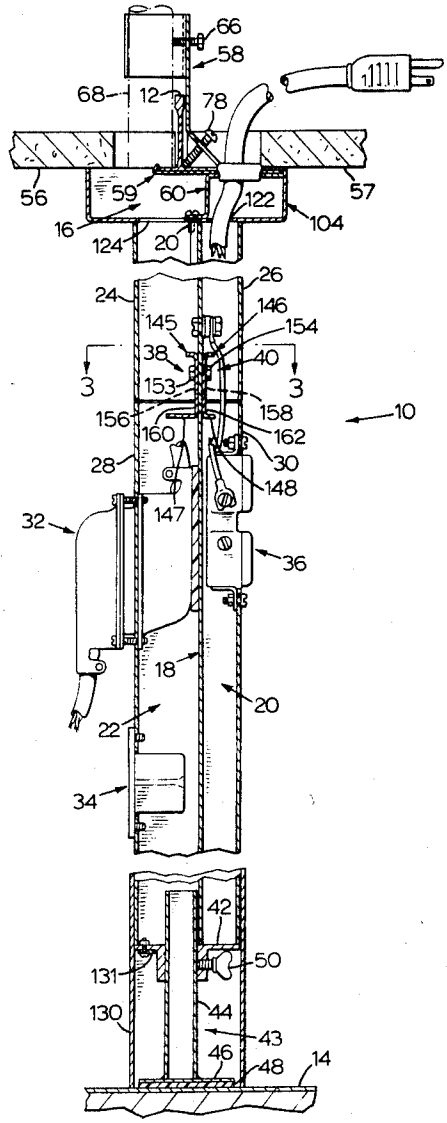
[56] **References Cited**
UNITED STATES PATENTS
3,082,290 3/1963 Ohmit ..... 174/49



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**ABSTRACT:** A service column for attachment to a suspended ceiling having inverted T-section girders to provide services at a work area. The column includes an upright main member attached by its upper end to a clamping bracket assembly which is adapted to be attached to the girders for longitudinal sliding movement on the girders. The clamping bracket assembly includes a fastener for locking the assembly to the girder in any predetermined position. Covers on the main member house service outlets, and the column has an adjustable foot for locating the column on a floor.

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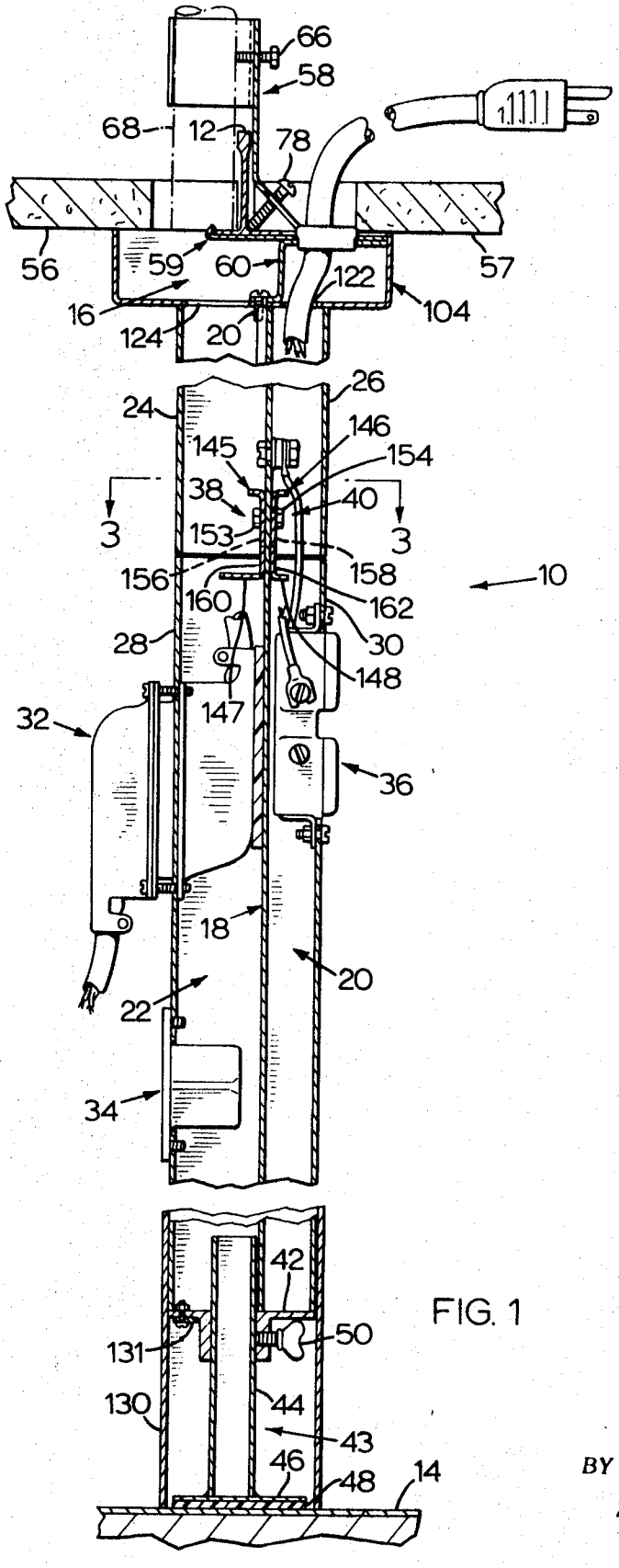



FIG. 1

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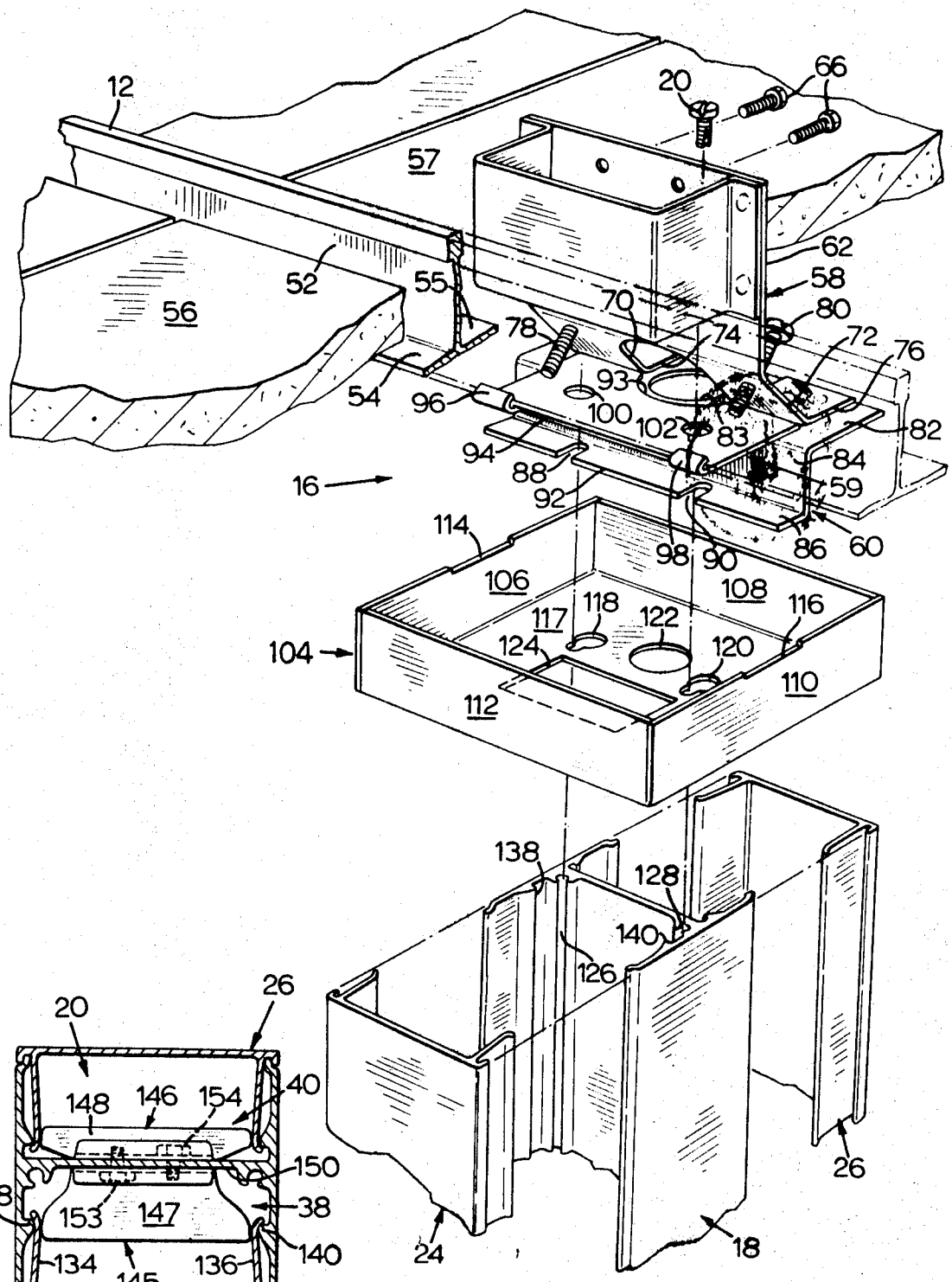



FIG. 3

FIG. 2

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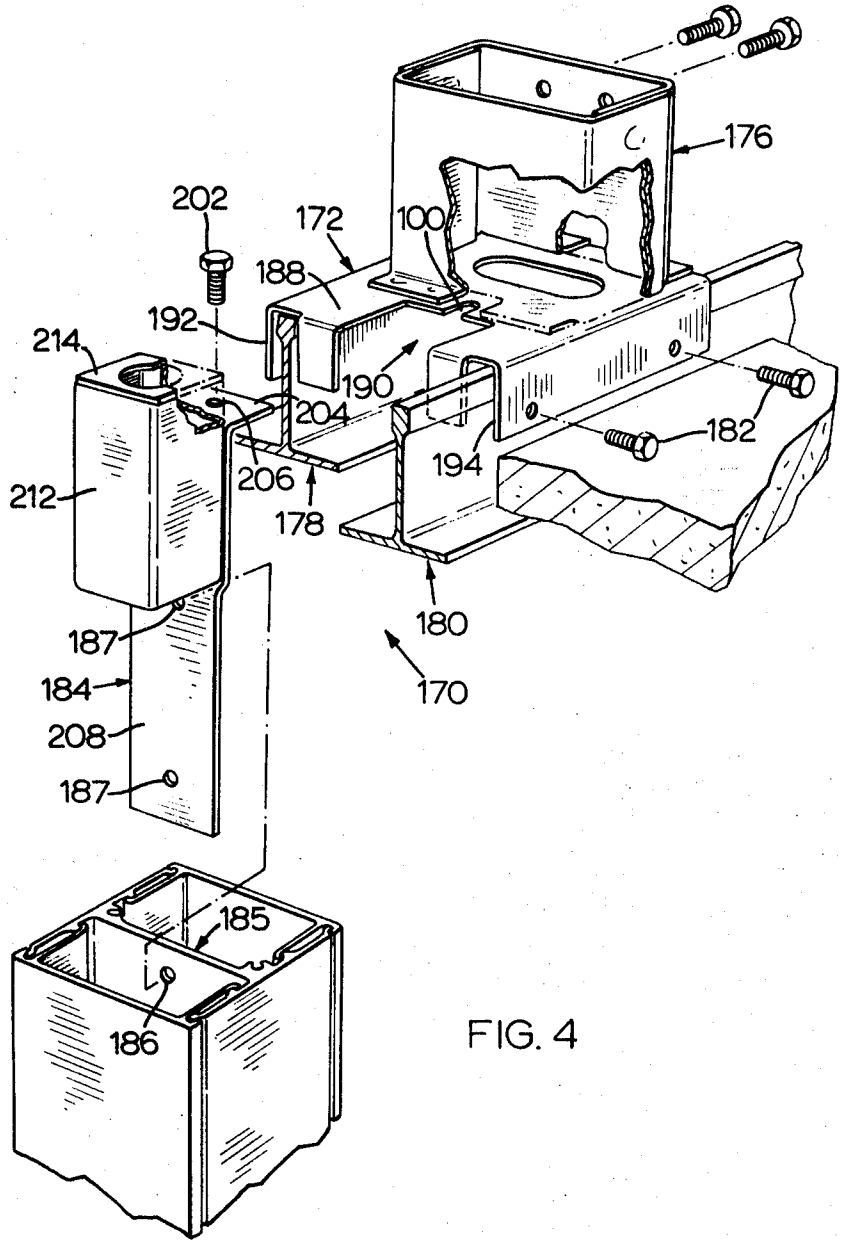



FIG. 4

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# DUCT WITH POWER AND COMMUNICATIONS OUTLET

This invention relates to a column for distributing services, and in particular electrical and communication services to a work area or other discrete position in an office.

A relatively large number of office buildings have been constructed having suspended ceilings above which the services for the building are located. The services are lead down from the ceiling through dividing walls and ducts to floor level and distributed to work areas where office machines such as typewriters and telephones are to be operated. However there is now a trend toward open-plan offices in which there are no walls between work areas. Instead, the work areas are separated only by relatively low partitions, screens, potted plants and the like so that by moving the partitions, the relative positions on the work areas can be changed. While open plans have the advantage of great flexibility, there is nevertheless the problem of providing electrical and communication services of the work areas.

According to a particular preferred embodiment of the present invention, a service column is provided which houses telephone outlets, power outlets and the like at a work area. The column is readily attached to a suspended ceiling and coupled to service connections above the ceiling. Also the column is adapted to be engaged frictionally on a floor to support the column in a vertical position between the ceiling and the floor. Upon rearranging work areas in an open-plan office, the column is readily disconnected from the ceiling and moved to a new location where it is again coupled to the suspended ceiling and to the necessary service connections above the ceiling.

In a particular preferred embodiment, the column comprises an upright main member which is attached at its upper end to a clamping bracket assembly for attachment to a girder in a suspended ceiling. The main member has a generally H-section defining two longitudinal channels each of which can be enclosed by a snap-on cover. Service leads such as electrical conductors for power and telephone are housed in the channels to service outlets which are conveniently set in the covers.

The invention will be better understood with reference to the drawings wherein:

FIG. 1 is a sectional sectional side view of a service column according to the invention;

FIG. 2 is an exploded perspective view of a clamping bracket assembly which forms a part of the service column;

FIG. 3 is a sectional plan view on lines 3—3 of FIG. 1; and

FIG. 4 is a view similar to FIG. 2 showing an alternative embodiment of the clamping bracket assembly.

Reference is first made to FIG. 1 which illustrates a service column **10** coupled to an inverted T-section ceiling girder **12** and resting on a floor **14**. The service column comprises a clamping bracket assembly **16** by which the column **10** is attached to the girder **12**, and an upright main member **18** which is attached to the clamping bracket assembly **16** by screws **20**, preferably of the self-tapping type. The member **18** is preferably an aluminum extrusion having a generally H-shaped cross section defining two longitudinal channels **20, 22** of which channel **22** is the deeper. The channels are adapted to receive longitudinal covers **24, 26** and lower covers **28, 30** which enclose the channels **20, 22**. Cover **28** is adapted to receive a connector **32** for a telephone outlet, and a communication outlet **34**, and cover **30** is adapted to receive an electrical power receptacle **36**. The lower covers **28, 30** are respectively locked in place by locks **38, 40** to member **18** as will be explained.

The lower end of the main member **18** is attached to a support plate **42** which journals an adjustable foot **43**. The foot has a vertical tubular upright **44** slidably engaged in the support plate **42** and a baseplate **46** attached to its lower end. Plate **46** has a friction pad **48** attached to its underside to prevent sliding on the floor **14**, and a locking screw **50** in the support plate **42** is engaged against the upright **44** to lock the adjustable foot **43** in place once the column has been positioned as will be described.



Reference is next made to FIGS. **1** and **2** with particular reference to FIG. **2** to describe the clamping bracket **16** which is adapted for attachment to the girder **12**. The girder **12** includes an upright web **52** and horizontal flanges **54, 55** on which ceiling panels **56, 57** rest, and the bracket assembly **16** has upper, intermediate, and lower elements **58, 59** and **60** respectively. The upper element **58** includes a generally rectangular vertical portion **62** which supports a conventional conduit clamp having bolts **66** for holding two conduits such as **68**. The portion **62** is integrally attached at its lower side to two spaced-apart inclined or leg portions **70, 72** which are in turn respectively integrally connected to feet **74, 76**. A pair of clamping screws **78, 80** are respectively threaded through the leg portions **70, 72** for locking the clamping bracket assembly in place on the girder **12** as will be described. The lower element **60** of the assembly **16** consists of a generally horizontal rectangular upper portion **82** which is attached to the feet **74, 76** with its upper surface spot welded to the feet. Upper portion **82** has a central opening **83** providing access for services into the channel **22** and is attached by one of its sides to an upper side of an upright portion **84** which is in turn attached at its lower side to a horizontal flange **86** extending away from the portion **82**. Spaced-apart recesses **88, 90** are formed in the flange **86** and extend inwardly from its outer side **92** to give clearance for screws **20** as will be described. The intermediate element **59** is generally rectangular in shape and has a curved portion **93** cut out of an inner side to provide clearance for services passing through opening **83** in the lower element **60**. Element **59** is attached, preferably by spot welding, to the upper face of the horizontal upper portion **82** and extends over the horizontal flange **86**. The outer side **94** of the intermediate element **59** is integrally connected to a pair of spaced-apart upwardly extending hook portions **96, 98** which are adapted to engage about the flange **54** of the girder **12**. A pair of apertures **100, 102** in the intermediate element **59** are in vertical alignment with the recesses **88, 90** in the horizontal flange **86** for inserting the screws **20** into the main member **18** of column **10** as will be described.

Because the lower element **60** extends downwardly below the girder **12**, a jacket **104** is provided to present a more pleasing appearance. The jacket **104** is generally square in plan view and includes four upright panels **106, 108, 110** and **112**. Each of the walls **106, 110** is notched at its upper face to form respective recesses **114, 116** for receiving the girder **12** so that upon assembly of the column the remaining upper faces of the sides are in contact with the ceiling panels **56,57**. The ceiling panels must be cut away to accommodate portions of the bracket assembly **16** but the amount of cutaway is such that the panels continue to be supported by upper faces of the jacket **104**. The floor **117** of the jacket **104** has keyhole-shaped openings **118, 120** spaced apart for receiving the screws **20** such that the screw heads can pass through an enlarged portion of the openings **118, 120** but by sliding the jacket sideways, smaller parts of the openings are engaged with the screws and then the jacket can not be pulled vertically off the screws. The jacket **104** also has a relatively large circular opening **122** intermediate openings **118, 120** for passing service connections from the opening **83** in the bracket assembly **16** into the channel **20**, and a rectangular opening **124** for passing service connections from conduit **68** into the longitudinal channel **22**.

To assemble the column, the screws **20** are first passed partially into rounded slots **126, 128** which extend longitudinally of the main member **18**. Next the heads of the screws **20** are passed through the keyhole-shaped openings **118, 120** in the jacket **104** (as previously described) and the jacket is then slid sideways to engage the screws in the smaller parts of the openings **118, 120**. The screws are then positioned next to recesses **88, 90** on the lower element **60** of the bracket assembly **16** and by moving the column towards the lower element **60**, the screws are engaged in the recesses **88, 90** with the heads of the screws above the flange **86**. A screwdriver is then passed down through the opening **100, 102** in the intermediate element **59** to tighten the screws in the slots **122, 124**

and thereby hold the main member **18** in registration with the jacket **104** which is in turn registered against the lower element **60**.

Next a loosely fitting sleeve **130** is slipped over the lower end of the main member **18** and the column is positioned against the girder **12** with the hook portions **96, 98** engaged loosely on the flange **54** of the girder **12**, and the underside of the flanges **54, 55** in contact with the upper surfaces of the intermediate element **59**. The screws **78, 80** are then moved into sliding engagement with the girder to allow sliding movement of the clamping bracket assembly, while also preventing removal of the bracket assembly off the girder. The column is then further adjusted by sliding the bracket assembly along the girder until it occupies a desired position. Clamping screws **78, 80** are then tightened into engagement with the girder **12** at the intersection of the web **52** and the flange **55** to connect the column to the girder **12**. Next the sleeve **130** is moved up the column and a latch **131** which is attached to the main member **18** is turned and the sleeve is then allowed to rest on the latch. The foot **43** (FIG. **1**) is then brought into contact with the floor by loosening the screw **50**. In order to ensure that there is sufficient reaction between the floor **14** and the pad **48** to prevent slipping, the column is first lifted slightly by using a crowbar or the like under the main member **18**, and then the adjustable foot **43** is positioned on the floor before tightening screw **50** and removing the crowbar. The latch **131** is then turned to permit the sleeve **130** to fall onto the floor. This procedure for positioning the column ensures that it will not slip on the floor **14** unless excessive forces are applied to the column.

With the column **10** in place, the electrical connections can be made. The lower covers **28, 30** are made with a variety of conventional knockouts to facilitate attaching telephone connectors, electrical receptacles, and the like to the covers **28, 30**. However, if preferred the service column can be factory assembled with the connectors for telephone and power etc. in place in the lower covers **28, 30**. In any event, once the electrical connections in the column have been made, the covers **28, 30** and **24, 26** can be attached as will be described.

As seen in FIG. **3**, each of the covers **24, 26** has a generally U-shaped cross section to interlock with the main member **18**. (The covers **28, 30** have the same cross section as the covers **24, 26**). The cross section of cover **24** will be described as typical of the covers **24, 26** and **28, 30**.

Cover **24** comprises a substantially flat outer portion **132** and a pair of longitudinally extending locking flanges **134, 136** which extend from the portion **132** to complete the U-shaped cross section of the cover. The locking flanges **134, 136** are curved slightly to diverge at their longitudinally extending free ends for lockingly engaging with respective inwardly extending longitudinal projections **138, 140** in the channel **22**. When the cover **24** is pushed into place over the channel **22**, the flanges **134, 136** deflect inwardly and then outwardly as their respective ends pass over projections **138, 140** to snap the cover in place over the channel **20**. The cover **24** and main member **18** are designed so that when they are assembled there are longitudinally extending recesses **143, 144** between them to provide access for a screwdriver which can be placed in one of the recesses and upon twisting the screwdriver the cover is forced off the member **18** to expose the service connections for telephone, power, etc.

Reference is now made to FIGS. **1** and **3** to describe locks **38, 40** for locking the covers **28, 30** to the member **18**. The locks respectively include locking plates **145, 146** which are generally L-shaped and have horizontal flanges **147, 148** adapted to lock the covers to the member **18** by engaging the inner surfaces of respective flanges **134, 136** so that the flanges **134, 136** can not ride over the projections **138, 140**.

The plates **145, 146** are respectively attached to web **150** of H-shaped main member **18** by bolts **153, 154** which pass through slots **156, 158** (FIG. **1**) in respective vertical portions **160, 162** of the plates **145, 146**. The plates are shown in FIG. **1** in a closed position and to move them into an open position the bolts **152, 154** are first loosened and the plates **145, 146** are moved vertically upwards out of engagement with the covers **28, 30**. The bolts can then be retightened to hold the plates **145, 146** in this position.

To assemble the covers, the locks **38, 40** are moved upwardly into their open positions and the lower covers **28, 30** are pushed onto the member by first entering their lower ends into the sleeve **130** and sliding the lower ends into their final longitudinal positions with the upper ends of the covers adjacent member **18**. Next the covers **28, 30** are snapped into place on the member **18** and the bolts **152, 154** are loosened to allow respective locking plates **145, 146** to be moved down into their closed positions as shown in FIG. **1**. Bolts **152, 154** are then tightened and the covers **24, 26** are snapped into place to complete the assembly. The covers **28, 30** are held in place near their top ends by respective locks **38, 40** and at their bottom ends by sleeve **130** so that should the telephone cable or another of the service connectors be pulled outwardly the corresponding cover will not come off the member **18**.

The girder **12** may be formed by folding sheet metal or by any other methods. However, it is to be understood that the term inverted T-section is used to describe any girderlike member having an upright portion and two opposed horizontal portions to give the overall appearance of an inverted T.

Reference is next made to FIG. **4** which shows a clamping bracket assembly **170** for use with a ceiling structure having spaced-apart parallel girders. The assembly **170** includes a support bracket **172** having an inverted U-shaped cross section, and on which is mounted a conduit clamp **176**. The bracket **172** is adapted to be clamped to respective parallel girders **178, 180** by bolts **182**, two of which are shown, and an angle bracket **184** is adapted to connect the bracket **172** to a main member **185** which is similar to member **18** (FIG. **1**) and has two holes **186** (one of which is shown) for connecting the bracket **184** to the member **185**. To this end holes **187** are provided in bracket **184** corresponding in position to holes **186** for receiving connecting bolts. (not shown)

The bracket **172**, is of a generally inverted U-shape having a horizontal upper portion **188** and upright outer portions **192, 194**. The upper portion **188** is cut away to form a recess **190** which terminates in slot **100** into which screw **202** can be inserted to connect the bracket **172** to a horizontal portion **204** of the angle bracket **184** through a threaded hole **206**. A vertical portion **208** of the bracket **184** is attached to a square-sectioned tubular member **212** having a cap **214** for locating a service connector.

On assembly, the bracket **172** is placed on the girders **178, 180** and the bracket **184** is attached to the main member **185** by passing bolts through the holes **186, 187**. A screw **202** is then threaded loosely into the hole **206**, and the upper surface of portion **204** of bracket **184** is engaged with the underside of the bracket **172** and the screw **202** is placed in the slot **100** so that upon tightening the screw **202** the angle bracket **184** is attached to the support bracket **172**. The column is then moved into its final position relative to the girders **178, 180** and the screws **182** are tightened to lock it in place. In this embodiment, the clamp **170** is hidden from view when assembled so that there is no need for a jacket **104** (FIG. **3**).

What I claim as my invention:

**1**. A service column for connection to services above a suspended ceiling to provide said services at a work area, said service column being adapted to be releasably connected to the suspended ceiling, and said ceiling being of a type having inverted T-section girders, said column comprising:

a. an elongated upright main member;

b. a clamping bracket assembly adapted to be mounted on one of said girders for sliding movement longitudinally of said one girder, and including means for releasably locking said clamping bracket assembly to said girder in a position generally above said work area;

c. means for fastening said clamping bracket assembly to the upper end of one main member;

d. service outlets for providing said services at said work area;

e. means removably attaching said service outlets to said main member; and

f. conductor means coupled to said service outlets for providing said services at said work area.

2. A service column as claimed in claim 1 wherein said inverted T-section girder comprises a longitudinally extending upright web and first and second horizontal flanges extending horizontally from the bottom of said web to complete said inverted T-section, and wherein said clamping bracket assembly comprises: at least one hook portion for engaging about an outer edge of said first flange; a vertical portion for engaging an upper vertical side portion of said web on the same side of said web as said second flange; an inclined portion rigidly coupled to said hook portion and to said vertical portion and adapted to threadably receive at least one screw for locking said clamping bracket assembly to said girder, said screw being adapted to engage said girder generally at the junction of said web and said second flange whereby said hook portion and said upright portion are forced into engagement with said girder to lock said clamping bracket assembly in place on said girder.

3. A service column as claimed in claim 2 wherein said main member is substantially H-shaped in cross section and defines first and second back-to-back channels, and wherein said attaching means comprises: first and second lower covers adapted for snap-fit engagement with respective first and second channels to enclose said channels, said lower covers being adapted to house said service outlets; and lock means adapted to prevent accidental removal of said lower covers from said main member.

4. A service column as claimed in claim 3 wherein said covers are generally U-shaped in cross section and have spaced-apart longitudinally extending flanges, and wherein said channel includes inwardly extending longitudinal projections cooperating with said flanges and snap fitting said cover over said channel by deflecting said flanges inwardly as outer ends of said flanges are pushed past said projections, and wherein said lock means comprises: a sleeve adapted to slide loosely over the lower end of said main member for enclosing lower ends of said lower covers; a locking plate; means mounting said locking plate on said main member for movement between an upper position out of contact with said lower covers, and a lower position wherein said locking plate engages said lower cover between said flanges to prevent deflection of said flanges thereby preventing removal of said cover from said main member.

5. A service column as claimed in claim 4 and further comprising: a foot attached to the bottom end of said main member; and means reciprocally mounting said foot on said main member for vertical adjustment to rest said foot on the floor when said clamping bracket assembly is attached to said girder, said sleeve being adapted to rest on said floor to hide said foot from view.

6. A service column as claimed in claim 1 wherein said ceiling includes two spaced-apart parallel girders and wherein said clamping bracket assembly comprises: an inverted generally U-shaped bracket adapted to rest on said girders and having outer downwardly extending portions for sliding engagement with outwardly facing sides of said girders; and wherein said locking means comprises screws threadably engaged in said downwardly extending portions for engagement with said faces of said girders to lock said U-shaped bracket on said girders.

7. A service column as claimed in claim 6 wherein said fastening means comprises an angle bracket having an upper horizontal portion for attachment to said U-shaped bracket and a vertical portion for attachment to said main member.

8. A service column as claimed in claim 7 wherein said main member is substantially H-shaped in cross section and defines first and second back-to-back channels, and wherein said attaching means comprises: first and second upper covers; and first and second lower covers, said first and second lower covers being adapted for snap-fit engagement with respective first and second channels to enclose said channels, said lower covers being adapted to receive service outlets; and lock means adapted to prevent accidental removal of said lower covers from said main member.

9. A service column as claimed in claim 8 wherein said covers are generally U-shaped in cross section and have spaced-apart longitudinally extending flanges, and wherein said channel includes inwardly extending longitudinal projections to cooperate with said flanges for snap fitting said cover over said channel by deflecting said flanges inwardly as outer ends of said flanges are pushed past said projections, and wherein said lock means comprises: a sleeve adapted to slide loosely over the lower end of said main member for enclosing lower ends of said lower covers; a locking plate; means mounting said locking plate on said main member for movement between an upper position out of contact with said lower covers, and a lower position wherein said locking plate engages said lower cover between said flanges to prevent deflection of said flanges thereby preventing removal of said cover from said main member.

10. A service column as claimed in claim 9 and further comprising: a foot for attachment to the bottom end of said main member; and means reciprocally mounting said foot on said main member for vertical adjustment to reset said foot on the floor when said clamping bracket assembly is attached to said girder, said sleeve being adapted to rest on said floor to hide said foot from view.