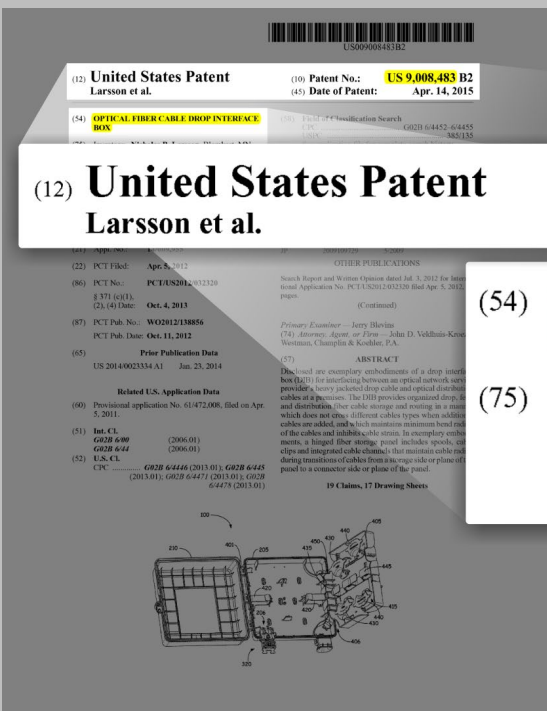


PPC BROADBAND, INC.
V.
CHARLES INDUSTRIES, LLC AND AMPHENOL CORPORATION

September 7, 2023
Plaintiff's Technology Tutorial

THE '483 PATENT



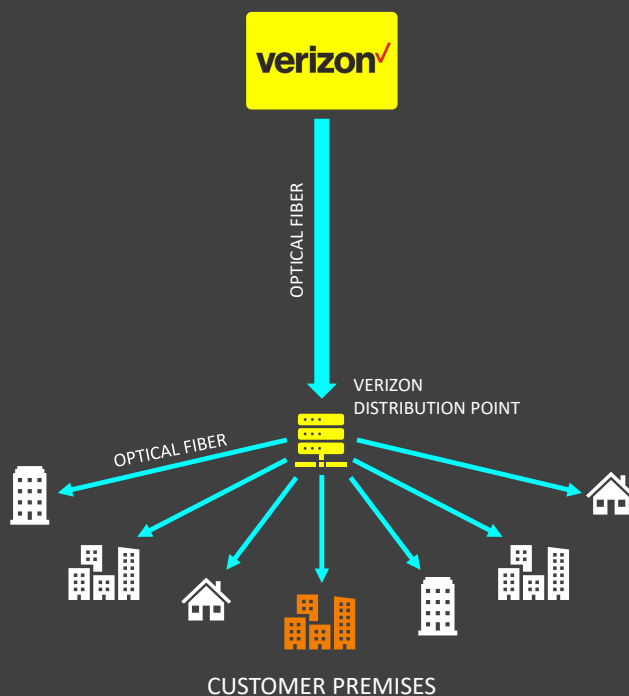
OPTICAL FIBER CABLING BACKGROUND

ADVANTAGES/CHALLENGES WERE IDENTIFIED WITH USING OPTICAL FIBER DISTRIBUTION ALL THE WAY TO THE CUSTOMER PREMISES

KEY POINTS

- Optical fiber distribution offers several benefits as compared to metal cabling. The benefits include higher bandwidth and lower signal loss.
- These benefits led service providers to offer optical fiber service all the way to the customer premises and even within the customer premises.
- But fiber optic cables led to new challenges.
- Exemplary customer premises in orange depicted in more detail on the next slide.

'483 Patent, Col. 1, lines 28 to 38

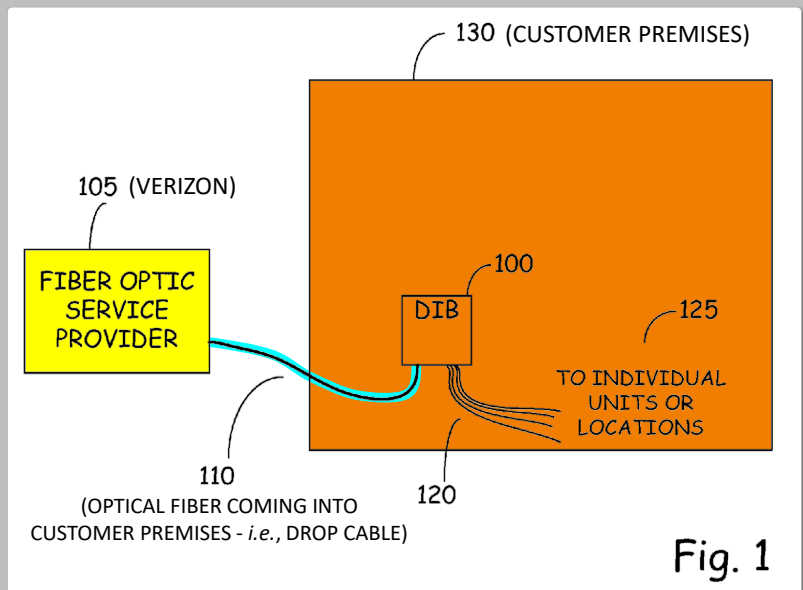


DROP INTERFACE BOX (DIB)

KEY POINTS

- To provide optical fiber service, a service provider uses a Drop Interface Box (DIB) located at the **customer premises**.
- The DIB is used as a demarcation between the service provider and the customer.
- The DIB receives a drop cable from the service provider and provides distribution cables to individual customer units or locations within the premises.

'483 Patent, Col. 1, lines 15 to 27



ADVANTAGES/CHALLENGES OF OPTICAL FIBER CABLES

KEY POINTS

- When deploying optical fiber service to a customer premises, either field-connectorized or pre-connectorized cables may be used.
- Field-connectorized cables require technicians to perform numerous steps to prepare and add connectors to optical fiber cables. This contrasts with metal cables which are easy to field-connectorize. Thus, service providers preferred to use pre-connectorized fiber optic cables.
- But pre-connectorized cables have their own problems. There will be excess cable length because the cable has the standard length it had when it left the factory. This extra cable must be stored securely and effectively.
- Storing this excess cable is a challenge because of the amount of cable, the need to organize the cable, and the need to protect the cable from being bent too much when stored (optical fibers cannot bend as much as metal cabling).

'483 Patent, Col. 1, lines 50 to 64

pre-connectorized
optical fiber cable



OPTICAL FIBER CABLING
THE '483 PATENT SOLUTION

OVERVIEW OF COMPONENTS: FIG 2-2

KEY POINTS

- The inventive Drop Interface Box (DIB) allows a pre-connectorized optical fiber drop cable from a fiber optic service provider to be received at a customer premises via the **drop cable entrance**.
- After receiving the drop cable, the inventive DIB allows optical network service to be distributed to multiple customers, dwellings, or locations within the customer premises, using pre-connectorized distribution cables via the **distribution cable entrance**.
- All internal connections and storage of excess cable is made within the box.

'483 Patent, Col. 3, lines 6 to 16

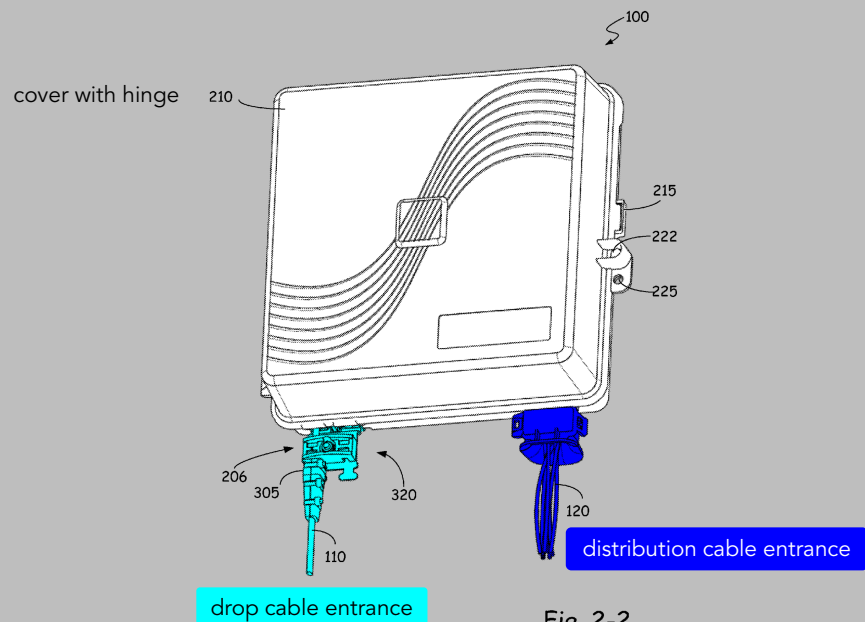


Fig. 2-2

OVERVIEW OF COMPONENTS: FIG 4-2

KEY POINTS

- The inside of the inventive DIB is used to organize the drop cable, breakout cables and distribution cables.
- The inventive DIB includes a **fiber storage panel** that includes an adapter bracket where the pre-connectorized cables may be connected.
- As explained below, excess cable length of both the drop cable and distribution cables is organized and stored within the inventive DIB and the cable connections are made inside the secure and weatherproof enclosure.

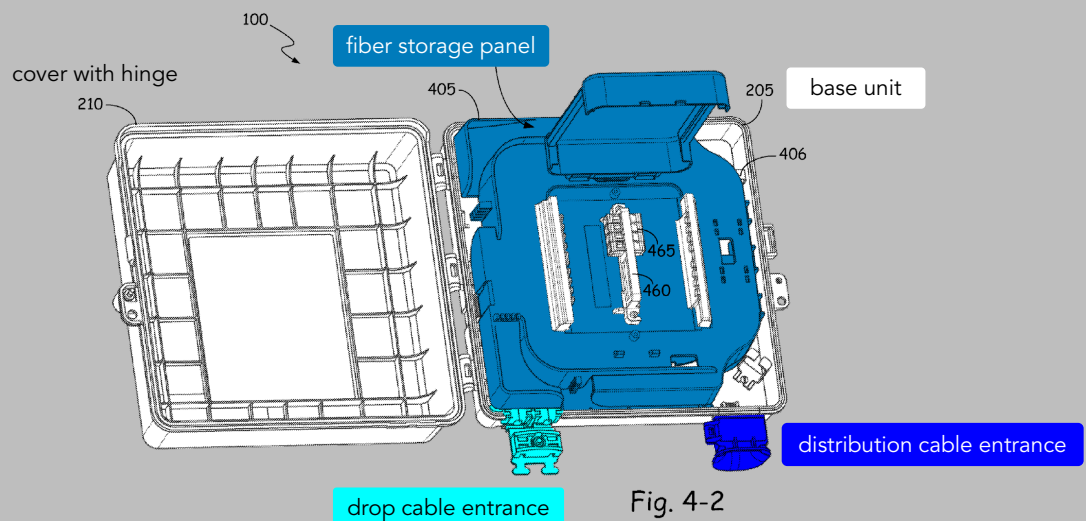


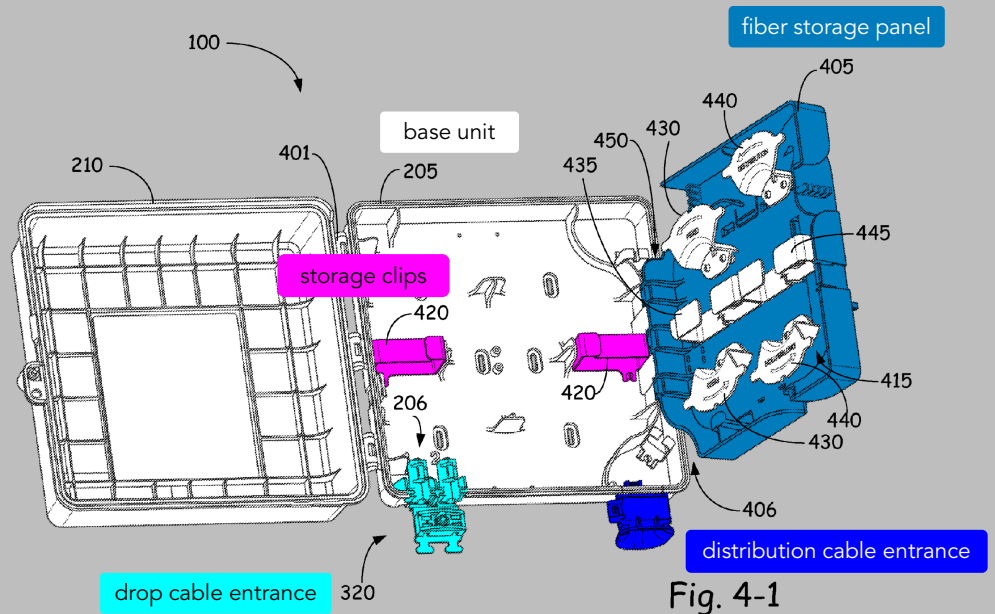
Fig. 4-2

'483 Patent, Col. 4, lines 49 to 57,
Col. 5 lines 3 to 15

HINGED FIBER STORAGE PANEL

KEY POINTS

- The hinged fiber storage panel allows for organization and separation of the drop cable.
- Storage clips on the back wall of the base unit allow for storage of excess drop cable.
- Two sets of spools on the fiber storage panel allow for storage of excess breakout and distribution cables.
- The hinged structure allows for enough room for storing drop cable on the back wall of the base unit and for easy access when installing the cables.

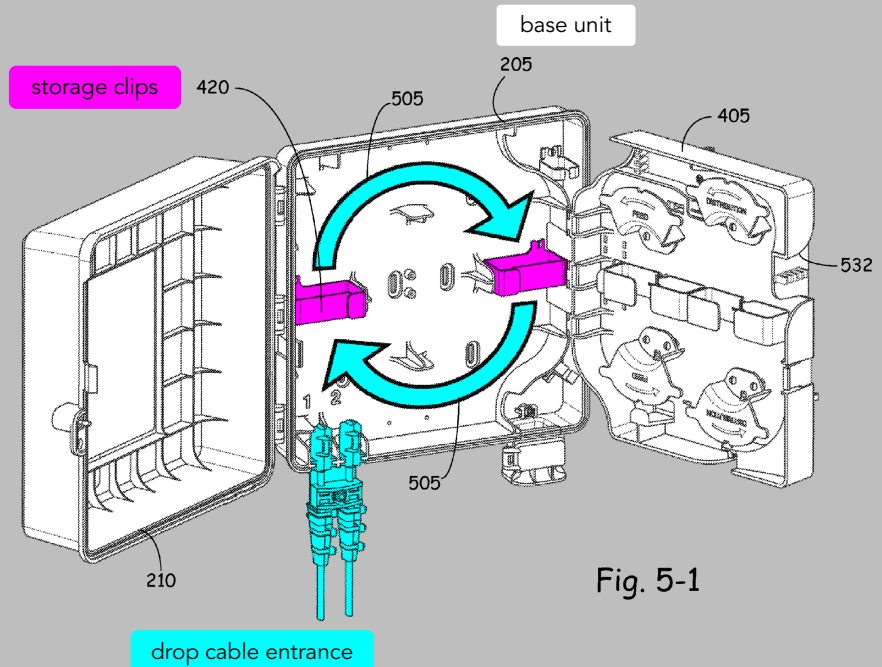


'483 Patent, Col. 4, line 49 to Col. 5 line 20

DROP CABLE STORAGE: BASE UNIT

KEY POINTS

- The back wall of the base unit **205** allows for storage of excess drop cable (light blue arrows).
- The drop cable enters at the drop cable entrance. Excess cable length may be wound and secured with storage clips **420** in the back wall of the base unit **205**.



'483 Patent, Col. 5, lines 21 to 29

HINGED FIBER PANEL: STORAGE SPOOLS

KEY POINTS

- Once opened, the fiber panel reveals two sets of spools, **feed spools 430** for storing the feed or breakout cables and **distribution spools 440** for storing the distribution cables.
- Two **feed spools 430** are to the left and two **distribution spools 440** are to the right of the inside portion of the fiber storage panel.
- After the drop cable is stored on the base unit, the cables may be routed to the fiber storage panel (**light blue arrow**).

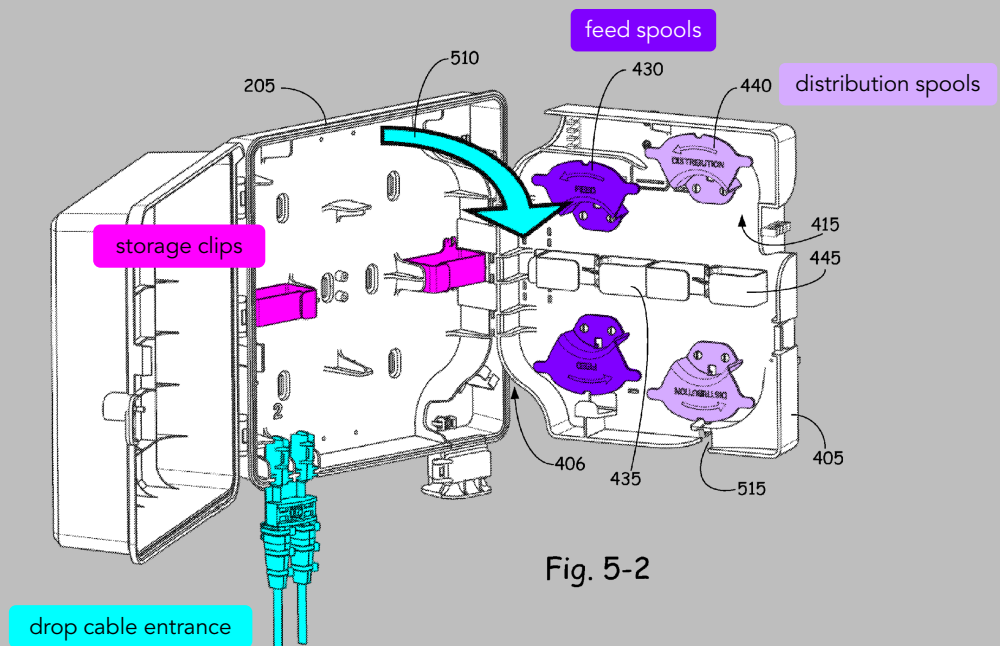


Fig. 5-2

'483 Patent, Col. 4, lines 58 to 66

CABLE PATHWAY: DROP CABLE TO BREAKOUT

KEY POINTS

- Next, the cable pathway is described starting with the drop cable (light blue) received from the service provider.
- The drop cable (light blue) enters the inventive DIB and excess length is wound around and secured with storage clips 420 in base unit 205 cavity.
- After the excess length of the drop cable has been stored, the drop cable exits the base unit 205 and is split into individual feed cables via breakout adapter located in the middle of the hinge of the fiber panel.

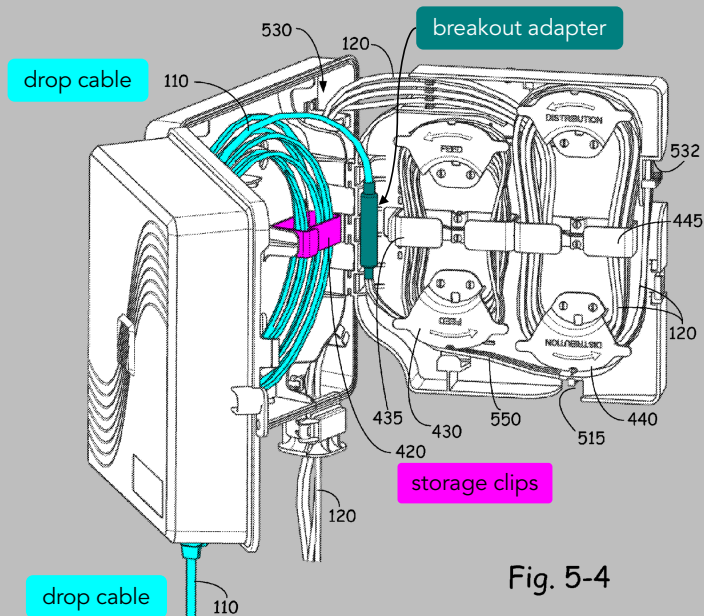


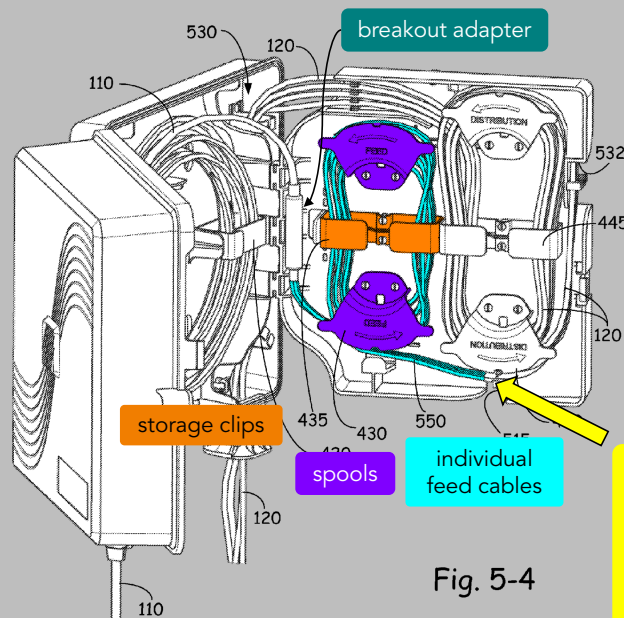
Fig. 5-4

'483 Patent, Col. 3, lines 27 to 34

CABLE PATHWAY: FEED / BREAKOUT CABLES

KEY POINTS

- After the drop cable has been broken out into individual feed or breakout cables, excess length of the feed or breakout cables are wound onto the feed spools 430 for storage.
- The feed or breakout cables then exit the inside portion of the fiber storage panel (yellow arrow) and travel to the outside portion.



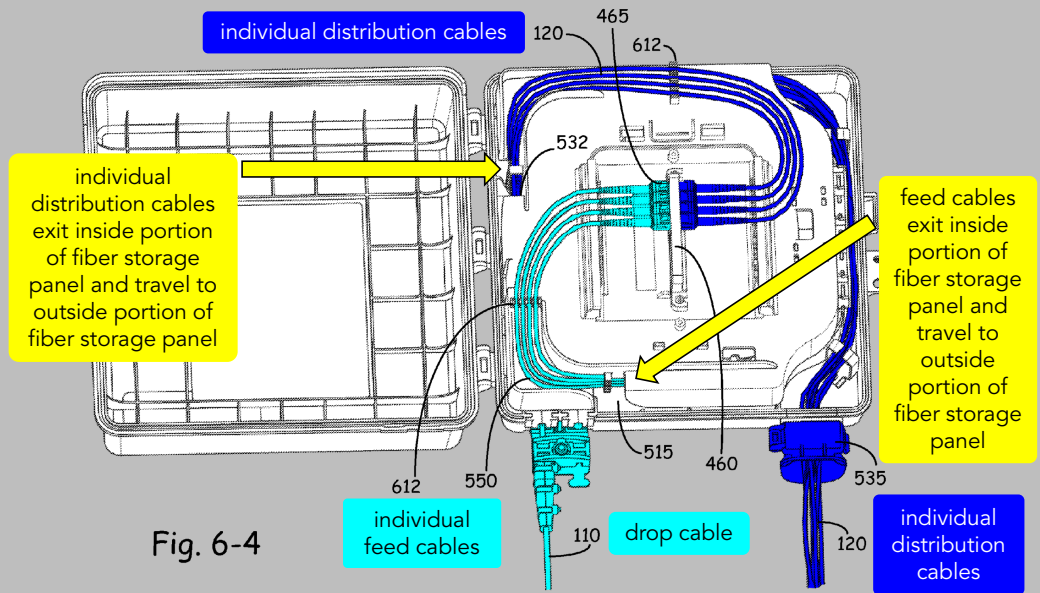
feed cables exit inside portion of fiber storage panel and travel to outside portion of fiber storage panel

'483 Patent, Col. 5, lines 30 to 61

CABLE CONNECTION AT ADAPTER BRACKET

KEY POINTS

- Next, the **feed or breakout cables** are connected to the adapter bracket on the outside portion of the fiber storage panel, using the pre-connectorized connectors.
- The **distribution cables** are connected to the right side of the adapter bracket, using their pre-connectorized connectors, and then routed back to the inside of the fiber storage panel.

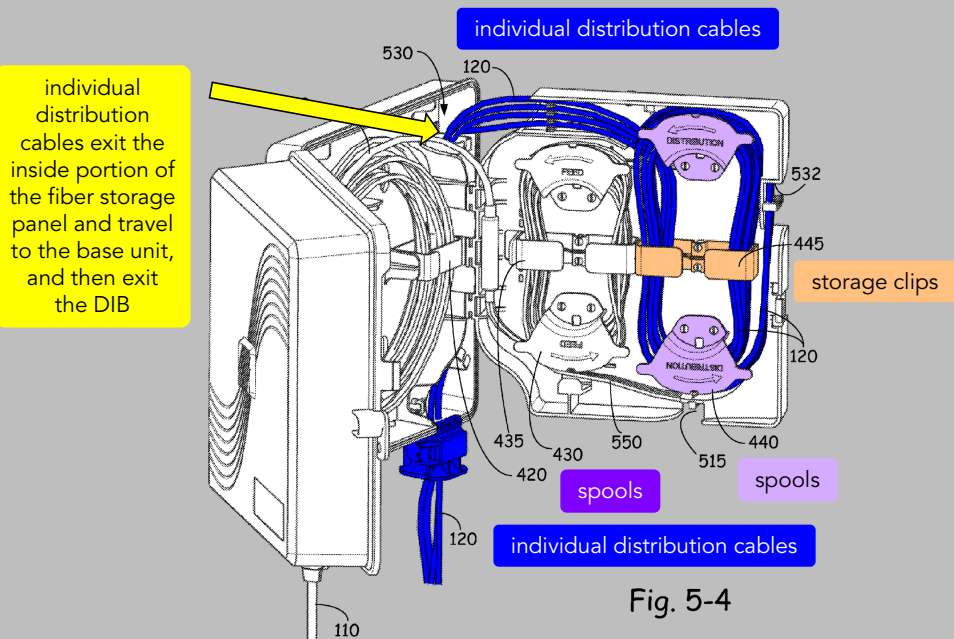


'483 Patent, Col. 7, lines 1 to 7

CABLE PATHWAY: DISTRIBUTION CABLES

KEY POINTS

- Next, the **distribution cables** are routed to the inside portion of the fiber storage panel **(yellow arrow)**, and excess cable length is wound around the **distribution spools 440**.
- Finally, the **distribution cables 120** exit the DIB and travel to multiple different locations.



'483 Patent, Col. 6, lines 2 to 17

OVERVIEW OF THE '483 PATENT SOLUTION

KEY POINTS

- The inventive DIB allows for secure and efficient organization and storage of the drop, breakout, and distribution cables, enabling the service provider to securely and efficiently distribute optical service to the customer premises even when using pre-connectorized cables.

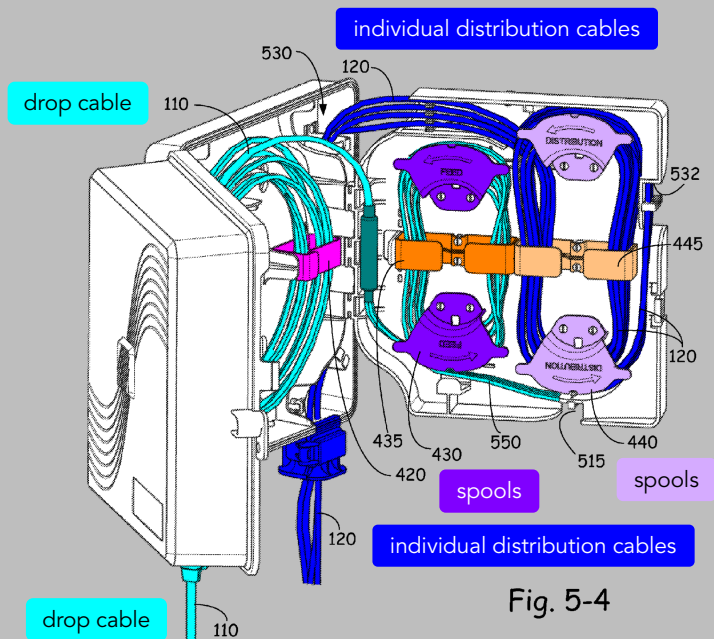


Fig. 5-4

'483 Patent, Col. 6, lines 19 to 21