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Kritske

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[54] **VERTICAL FILING APPARATUS**

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[52] **U.S. Cl.**.....**211/46,** 211/96, 248/205 R, 248/316 B

[51] **Int. Cl.**.....**A47f 5/08,** A47f 7/16

[58] **Field of Search**.....211/46, 48, 47, 50, 211/89, 94, 96, 124, 162, 169, 168; 24/67.1, 248 R, 248 SA, 251; 248/205 R, 316 B, 316 R

[56] **References Cited**

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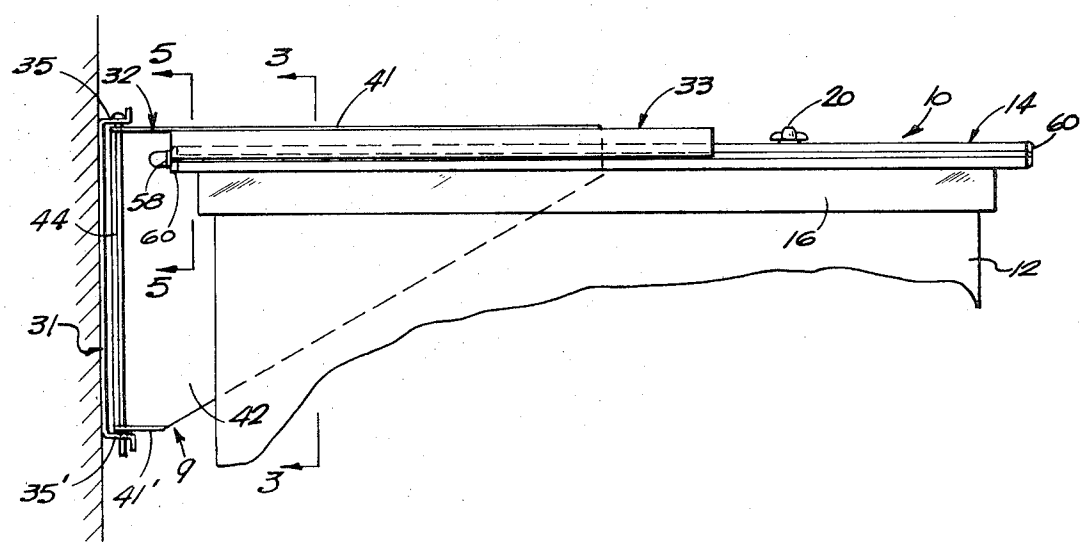
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Primary Examiner—Ramon S. Britts
Attorney—Robert Muir

[57] **ABSTRACT**

The apparatus includes a clamp assembly for holding at least one sheet of material in a vertical zone and a bracket assembly on which the clamp assembly is removably mounted. The clamp assembly includes a longitudinal member which has a longitudinally extending groove in each side. The bracket assembly includes a support member having, at its lower side, inturned flanges dimensioned for positioning in said grooves. A plastic end cap at each end of the longitudinal member also has longitudinally extending grooves therein; however, the top wall of the groove is disposed below the corresponding top wall of the groove in the longitudinal member to provide a bearing surface for riding on the inturned flanges during insertion and removal of the longitudinal member on the support member.

7 Claims, 7 Drawing Figures



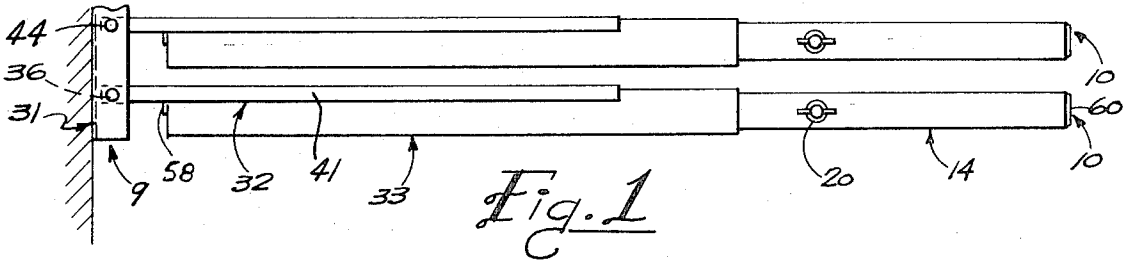


Fig. 1

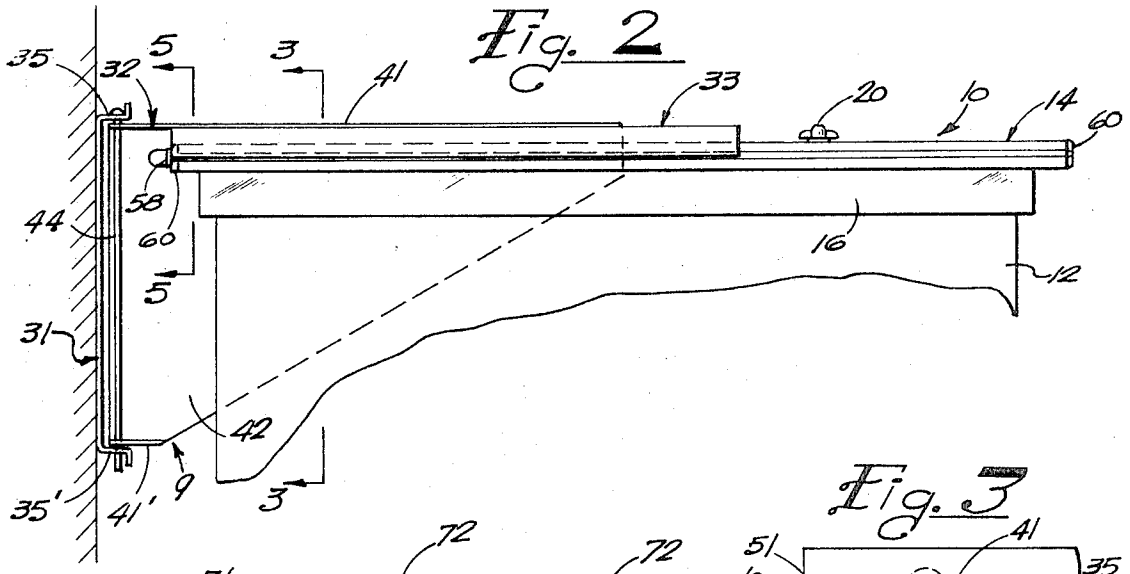


Fig. 2

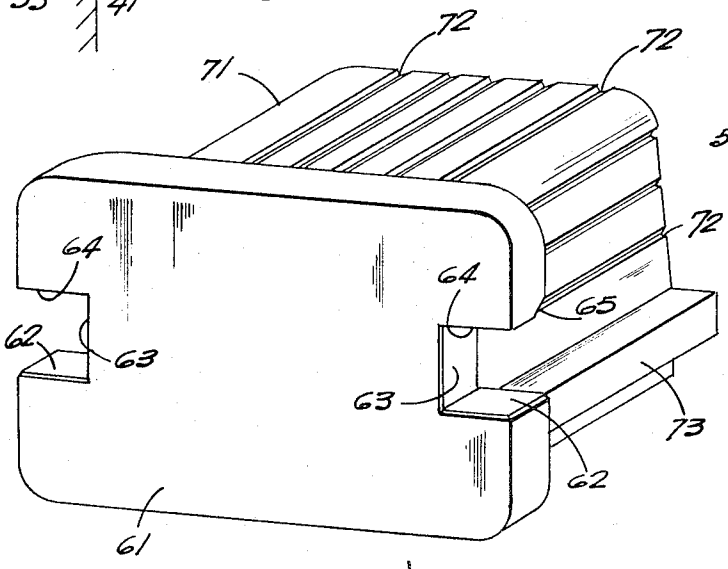


Fig. 4

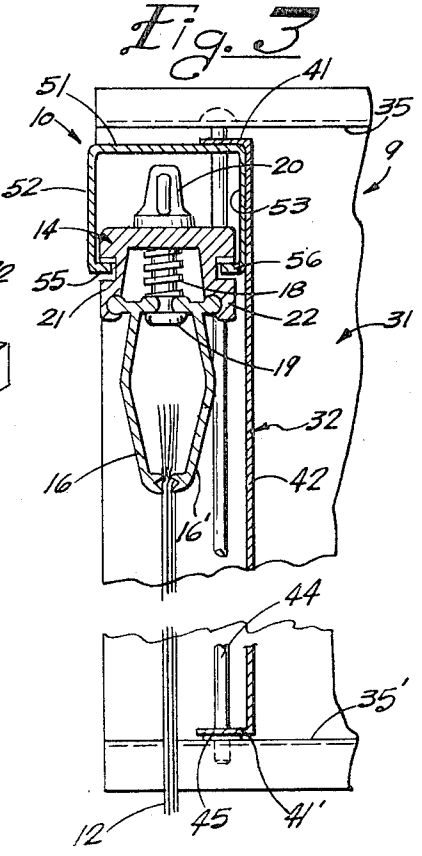


Fig. 3

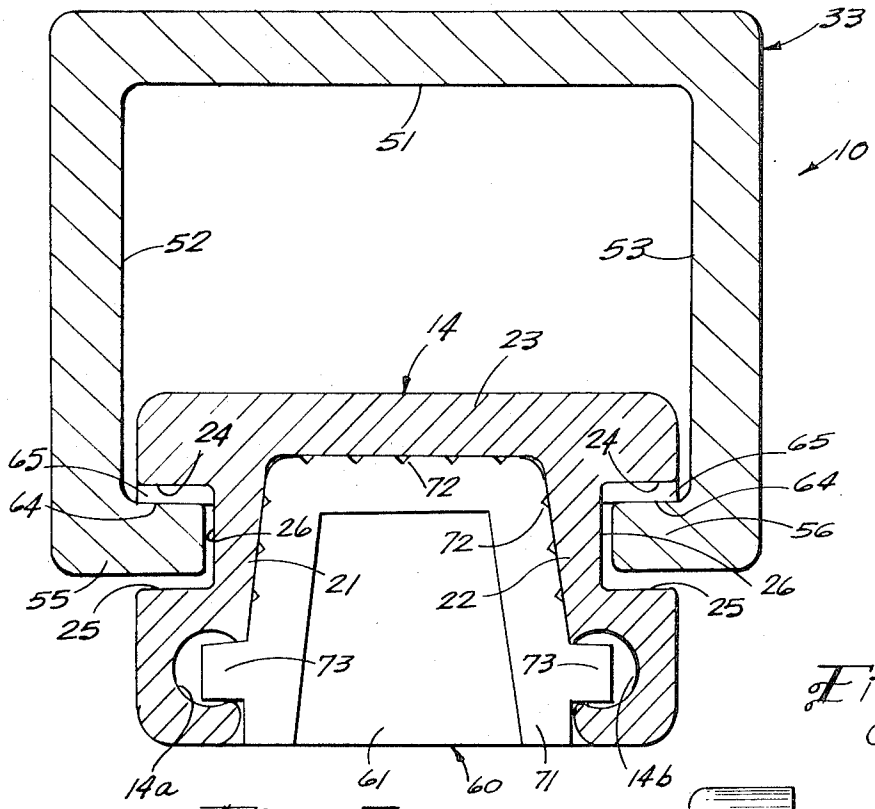


Fig. 5

Fig. 7

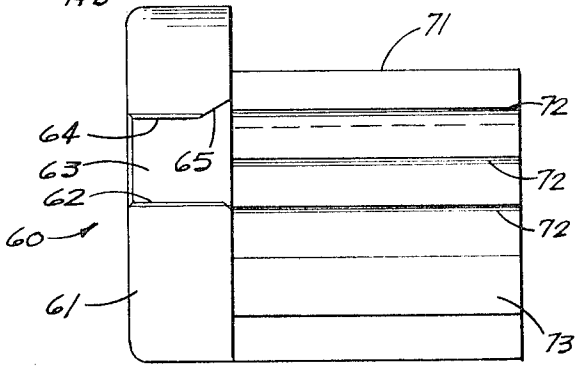
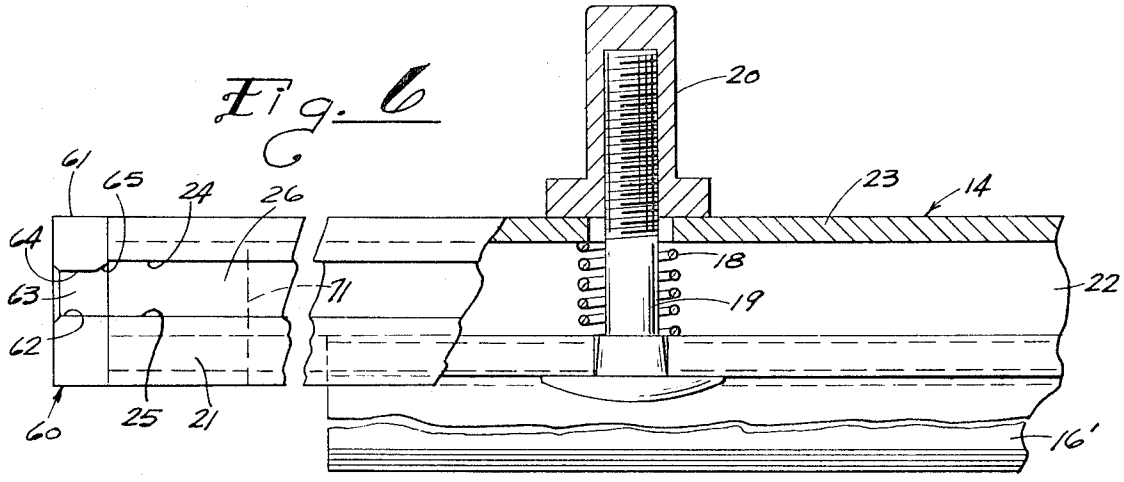


Fig. 6



VERTICAL FILING APPARATUS

BACKGROUND

The invention pertains generally to filing apparatus and more particularly to a filing apparatus for suspending one or more sheets of material in a generally vertical zone.

It is frequently desirable to store pieces of sheet material as, for example, engineering, architectural and construction plans, maps, swatches of fabric and the like. Such sheets of material are usually bound or held by a clamp assembly or binder. In the prior art such clamp assemblies have been removably mounted on bracket assemblies by sliding the clamp assembly onto supporting surfaces of the bracket assembly. One such prior art arrangement is shown, for example, in U. S. Pat. No. 1,135,310 issued to A. H. Memmler on Apr. 13, 1915. One disadvantage of such arrangements was that the clamp assembly was not easily inserted or removed due to the metal-to-metal contact between it and the bracket assembly. In a different prior art arrangement, glide buttons have been provided on the bearing surface of the bracket assembly, as shown in U. S. Pat. No. 3,185,309 issued May 25, 1965 to J. R. Radek. Such glide buttons are not totally satisfactory since there must be several of them on each bearing surface, they can be accidentally detached, and they present a vertical surface that the end of the clamp assembly can hit when being inserted into the bracket assembly. Thus, it is desirable that there be provided a vertical filing apparatus which overcomes the aforementioned problems of the prior art.

SUMMARY

The present invention provides a vertical filing apparatus which comprises a support member having oppositely facing inturned flanges at its lower side, a clamp assembly including a longitudinal member having a longitudinally extending groove in each side and dimensioned to allow the longitudinal member to be positioned on the support member with the inturned flanges disposed in the grooves, and a plastic end cap at each end of the longitudinal member and also having a longitudinally extending groove in each side thereof, the plastic end cap having a top wall disposed at a level below the top wall of the grooves in the longitudinal member to form a bearing surface at each side of the end cap for bearing on the inturned flanges during insertion and removal of the longitudinal member on the support member.

It is a general object of this invention to provide an improved vertical filing apparatus in which the clamp assembly may be easily inserted and removed from the bracket assembly.

Another object is to provide a filing apparatus which overcomes the above-mentioned problems in the prior art.

A further object of this invention is to provide a filing apparatus having an improved bearing arrangement between the clamp assembly and bracket assembly.

These, and other objects and advantages of the present invention, will become apparent as the same becomes better understood from the following detailed description when taken in conjunction with the accompanying drawings.

DRAWINGS

FIG. 1 is a top elevational view of a filing apparatus constructed in accordance with the present invention;

FIG. 2 is a front elevational view of the filing device illustrated in FIG. 1;

FIG. 3 is a cross-sectional view taken generally along line 3—3 of FIG. 2;

FIG. 4 is a perspective view, on an enlarged scale, of a plastic end cap utilized in the apparatus of FIG. 1;

FIG. 5 is a cross-sectional view, on an enlarged scale, taken along line 5—5 of FIG. 2;

FIG. 6 is a view, partly in section and partly in elevation of a clamp assembly utilized in the present invention; and

FIG. 7 is a side elevation of the end cap shown in FIG. 4.

DESCRIPTION

Reference is now made more particularly to the drawings wherein similar reference characters indicate the same parts throughout the several views. The embodiment of the filing apparatus illustrated includes a bracket assembly, generally designated **9** for holding a plurality of clamp assemblies, generally designated **10**. It should be understood that the invention could be embodied in a bracket assembly for supporting one such clamp assembly. The clamp assembly **10** is illustrated in FIGS. **2** and **3** as holding in assembled relationship a plurality of sheets of material **12** such as drawings, plans, sheets of fabric, and the like; it being understood that the device may be used to clamp a single sheet of material if desired.

In general, the clamp assembly **10** includes a longitudinal member **14**, first and second gripping members or jaws **16** and **16'**, means for resiliently urging the gripping members apart such as compression spring **18**, and a T-headed bolt **19** and a wing nut **20** threaded on the shank thereof for moving the gripping members toward each other. A preferred embodiment of the gripping members is described in detail in my U. S. Pat. No. 3,308,831, issued Mar. 14, 1967, and reference is made thereto for a more complete description.

Preferably, longitudinal member **14** is elongated and has a generally channel-shaped cross-section as best seen in FIGS. **3** and **5**. The elongated member includes side walls **21**, **22** which are connected by top wall **23**. The walls **21–23** have a generally smooth interior surface, especially adjacent each end, for a purpose which will hereafter become apparent. A longitudinally extending groove is located in each side wall **21** and **22** intermediate the top and bottom thereof. Each groove has a top wall **24**, a bottom wall **25** and an inner wall **26** extending between the top and bottom walls, as best seen in FIGS. **5** and **6**. In the preferred embodiment illustrated, each groove is preferably rectangular in cross section.

A typical bracket assembly constructed in accordance with this invention includes a horizontally disposed stationary support **31**, a plurality of pivotally mounted arms **32** extending outwardly from the stationary support **31**, and a support member **33** mounted on each arm **32**. The stationary support **31** may be fixed to a wall or other suitable mounting surface in any suitable manner, and may comprise an elongated chan-

nel section member having outwardly directed flanges **35**, **35'** provided with a plurality of longitudinally spaced, vertically aligned pairs of openings **36** (see FIG. 1).

The outwardly extending arm **32** is preferably formed of a channel section member having upper and lower flanges **41**, **41'** and a generally triangular web portion **42** (see FIG. 2). Flanges **41**, **41'** are spaced apart a distance less than the flanges **35**, **35'** of the stationary support **31**, and the flanges **41**, **41'** are provided with a pair of vertically aligned openings therein. A pin **44** passes through the aligned openings **36** in the stationary support and the aligned openings in the arm flanges **41**, **41'** to advantageously provide a pivotal connection between the arm **32** and the stationary support **31**. As best seen in FIG. 3, a washer **45** is conveniently provided between flange **41'** and flange **35'** to provide a convenient bearing for said pivotal connection.

The support member **33** is advantageously in the form of a box-like structure having a top wall **51** and generally parallel side walls **52**, **53**, depending therefrom, as best seen in FIGS. 3 and 5. Oppositely facing, inturned flanges **55**, **56**, are formed at the depending ends of side walls **52**, **53**, respectively. Flanges **55**, **56** are spaced apart to define a downwardly opening slot extending the full length of support member **33**. The flanges **55**, **56** and the grooves in the longitudinal member **14** are dimensioned to allow the longitudinal member **14** to be positioned on the support member **33** with the inturned flanges disposed in the grooves, as best seen in FIGS. 3 and 5. In the embodiment illustrated, support member **33** is connected to arm **32** in any convenient manner with side wall **53** contiguous to web **42**, and top wall **51** contiguous to flange **41**. As shown in FIG. 2, support member **33** preferably extends in a horizontal direction as does flange **41** at the upper edge or leg of triangular web **42**.

In the preferred embodiment illustrated, support member **33** has a length less than the length of longitudinal member **14** of the clamp assembly, and is generally open at opposite ends. A stop **58**, conveniently formed from a tab stamped out of web **42**, as shown in FIG. 2, is positioned at the rear end of support member **33** to prevent the longitudinal member **14** of passing through the rear opening thereof.

A plastic end cap, generally designated **60**, is located at each end of the longitudinal member **14**. The plastic end caps have an end portion **61** with an outer periphery coextensive with the outer periphery of the longitudinal member **14**. Each end portion **61** has a longitudinally extending groove in each side thereof as best seen in FIGS. 4, 6 and 7. Each end cap groove has a bottom wall **62** and an inner wall **63** coextensive with the bottom wall **25** and inner wall **26** of the corresponding groove in the longitudinal member **14**. Each end cap groove also has a top wall **64** disposed at a level below the top wall **24** of the corresponding groove in the longitudinal member **14**, thereby forming a bearing surface at each side of the end cap for bearing on the inturned flanges **55** and **56** (see FIG. 5). In this manner, the bearing surface **64** of the rearmost end cap **60** ride on the inturned flanges **55** and **56** during insertion and removal of the longitudinal member **14** on the support member **33**. In this manner, the end cap **60** functions as a glide and minimizes any metal-to-metal contact, thereby providing for easier insertion and removal of the longitudinal member **14**. In the embodiment illustrated, there is a ramp **65** extending between the top wall **64** of the end cap groove to the top wall **24** of the groove in the longitudinal member.

Referring now to FIGS. 4–7, it can be seen that the end cap **60** has an extension **71** with an outer surface generally coextensive with the inner surface of the longitudinal member **14**. The extension **71** is dimensioned to provide a frictional engagement with the inner surface of the longitudinal member and thereby provide means for mounting the end cap **60** thereon. In the embodiment illustrated, the extension **71** has a plurality of longitudinally-extending spaced grooves **72** in its surface adjacent the inner surface of the longitudinal member to allow a slight compression of the extension **71** so that it may more securely frictionally engage the longitudinal member **14**.

As best seen in FIG. 5, the longitudinal member **14** has inwardly facing internal grooves **14***a* and **14***b* in which are pivotally mounted the grippers **16** and **16'**. The extension **71** has a longitudinally-extending boss **73** on each side thereof and positioned for fitting in the grooves **14***a* and **14***b*.

It will be noted by viewing FIG. 1, that each of the clamp assemblies **10** is carried by a longitudinal member **33** each of which is pivotally mounted on the stationary support **31** in the manner described above. Thus, adjacent clamp assemblies **10** may be spaced apart so as to examine the sheet material **12** held thereby. Such pivotal movement also provides additional room, if necessary, for insertion of clamp assembly **10** into its support member **33** or removal therefrom. It will be noted that the clamp assemblies are not supported adjacent their outer ends, and spreading apart of adjacent support members makes the clamp assembly conveniently accessible for grasping a middle portion thereof for removal from the support member **33**. With the longitudinal member **14** being mounted in grooves intermediate the upper and lower portions thereof, it will be appreciated that the number of sheets or the thickness thereof does not effect the support of the clamp assembly **10** on flanges **55**, **56**. In this manner it is possible to support a thickness of sheet material even wider than the spacing of side walls **52**, **53** of support member **33**.

While a preferred embodiment of the invention has been herein illustrated and described, this has been done by way of illustration and not limitation, and the invention should not be limited except as required by the scope of the appended claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A filing apparatus for suspending one or more sheets of material in a vertical zone and comprising:

a bracket assembly including:

a support member having at least one open end and oppositely-facing inturned flanges at the lower side, the flanges being spaced apart to define a downwardly facing slot extending generally the full length of the support member, and

mounting means for mounting the support member in a horizontal plane;

a clamp assembly removably mounted on the bracket assembly and including:

a longitudinal member having a length longer than the support member, a width wider than said slot, and a longitudinally-extending groove in each side thereof, each groove having top, bottom and inner walls, and the grooves being dimensioned to allow the longitudinal member to be positioned on the support member with the inturned flanges disposed in the grooves, and

gripping means on the longitudinal member for gripping the sheet of material adjacent its edge; and

a plastic end cap at each end of the longitudinal member and having an outer periphery coextensive with the outer periphery of the longitudinal member and a longitudinally-extending groove in each side thereof, each end cap groove having a bottom wall and an inner wall coextensive with the bottom wall and inner wall of the corresponding groove in the longitudinal member, each end cap groove also having a top wall disposed at a level below the top wall of the corresponding groove in the longitudinal member and forming a bearing surface at each side of the end cap for bearing on the inturned flanges;

whereby the bearing surfaces of the end cap ride on the inturned flanges during insertion and removal of the longitudinal member on the support member.

2. A filing apparatus as set forth in claim 1 including means for mounting each plastic end cap on the respective end of the longitudinal member.

3. A filing apparatus as set forth in claim 2 wherein the longitudinal member has a generally uniform cross-section and an inner surface, and the plastic end cap has an extension coextensive with said inner surface and contiguous thereto to provide the means for mounting the end cap.

4. A filing apparatus as set forth in claim 3 wherein the end cap extension has spaced grooves in its surface adjacent the inner surface of the longitudinal member.

5. A filing apparatus as set forth in claim 3 wherein the longitudinal member has an inwardly-facing internal groove at each side thereof, the gripping means comprises two jaws pivotally mounted in said internal grooves, and the plastic end cap has a longitudinally-extending boss on each side of its extension and disposed in said internal grooves.

6. A filing apparatus as set forth in claim 5 wherein the mounting means includes an upright stationary support provided with vertically spaced flanges having at least one pair of vertically-aligned openings therein, a vertically disposed triangular shaped member having one leg of the triangle at the top thereof extending horizontally, and means extending through the aligned openings in the stationary support and engaged with the triangular shaped member for pivotally mounting the same to the stationary support; means on the triangular shaped member adjacent its one leg defining a stop which engages the plastic end cap; and the support member being mounted on the triangular shaped member with its rear end at the stop.

7. A vertical filing apparatus for use in the storage of sheets of material, such as blue prints, and comprising in combination:

a clamp assembly for holding at least one sheet of material adjacent an edge thereof and including:

a downwardly opening, channel-shaped longitudinal member having a longitudinally-extending groove in each side thereof, each groove having top, bottom and inner walls, and

spacing gripping members operatively connected to the longitudinal member adjacent the lower ends thereof;

a bracket assembly for supporting the clamp assembly and including:

an elongated box-shaped support member having a length shorter than the longitudinal member, oppositely facing inturned flanges at the lower side thereof defining a downwardly facing slot extending the full length thereof, said slot being dimensioned to allow the longitudinal member to be positioned on the support member with the inturned flanges disposed in the grooves, and the support member being open at both ends,

mounting means for mounting the support member in a horizontal plane, and

means at the rear end of the support member defining a stop thereat for the longitudinal member; and

a plastic end cap at each end of the longitudinal member and having a longitudinally-extending groove at each side thereof, each end cap groove having a bottom wall and an inner wall coextensive with the bottom wall and inner wall of the corresponding groove in the longitudinal member, each end cap groove also having a top wall disposed at a level below the top wall of the corresponding groove in the longitudinal member and forming a bearing surface at each side of the end cap for bearing on the inturned flanges;

whereby the bearing surfaces of the end cap ride on the inturned flanges during insertion and removal of the longitudinal member on the support member.

* * * * *