

Feb. 16, 1971

H. P. LITTLE, JR

3,562,969

SECTIONAL CATCH BASIN

Filed Oct. 22, 1968

3 Sheets-Sheet 1

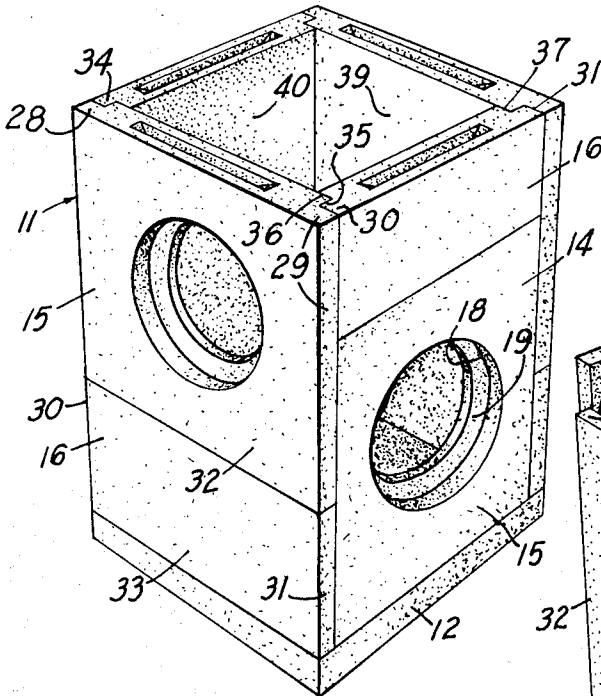


Fig. 1

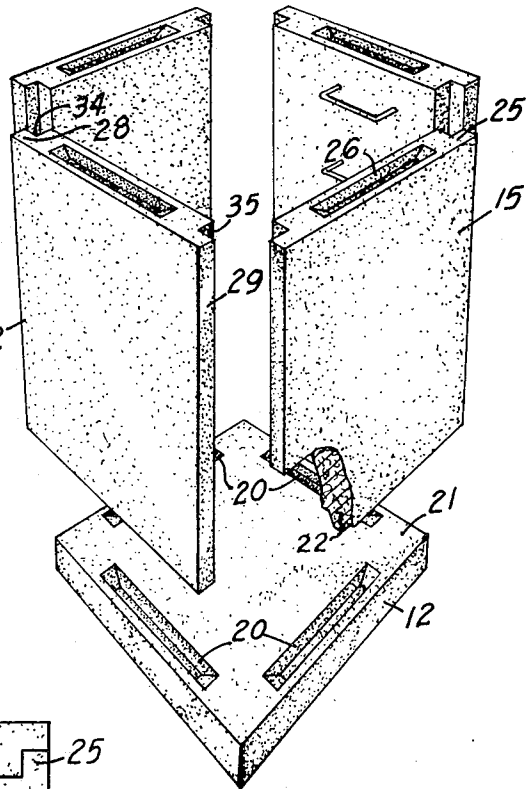


Fig. 2

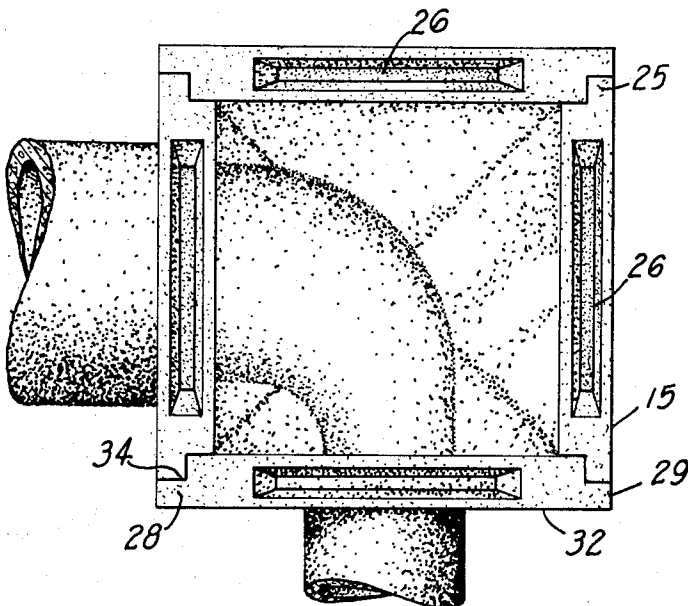


Fig. 3

INVENTOR
HOWELL P. LITTLE, JR.
BY
Jones & Thomas
ATTORNEYS

Feb. 16, 1971

H. P. LITTLE, JR

3,562,969

SECTIONAL CATCH BASIN

Filed Oct. 22, 1968

3 Sheets-Sheet 2

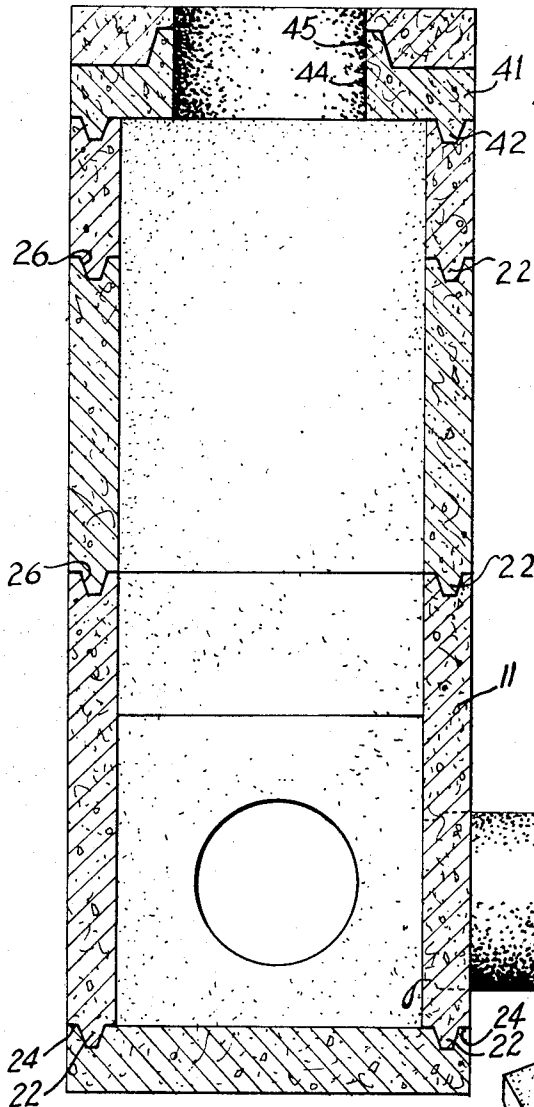


Fig. 4

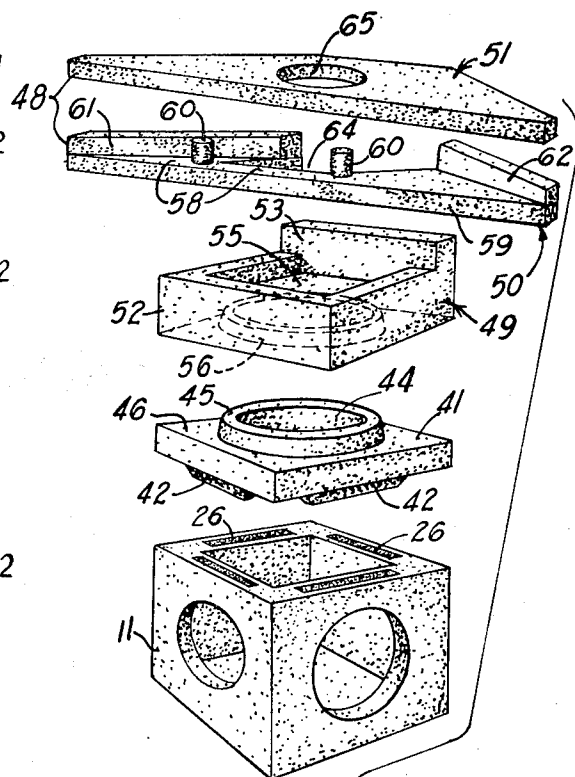


Fig. 5

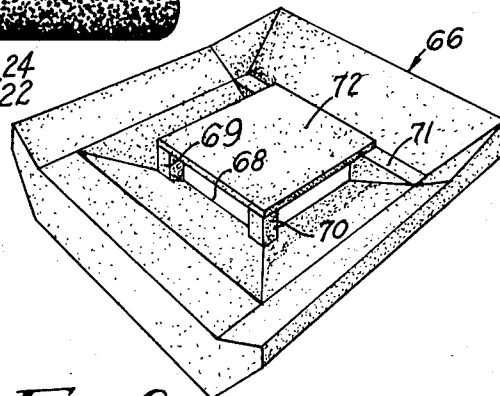


Fig. 6

INVENTOR
HOWELL P. LITTLE, JR.
BY
Jones & Thomas
ATTORNEYS

Feb. 16, 1971

H. P. LITTLE, JR
SECTIONAL CATCH BASIN

3,562,969

Filed Oct. 22, 1968

3 Sheets-Sheet 3

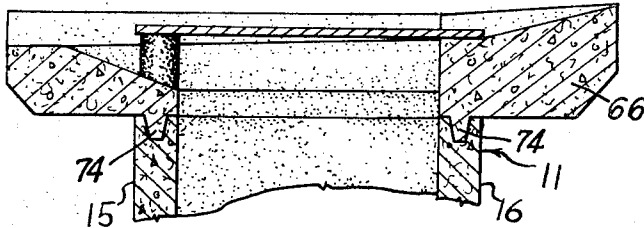


Fig. 7

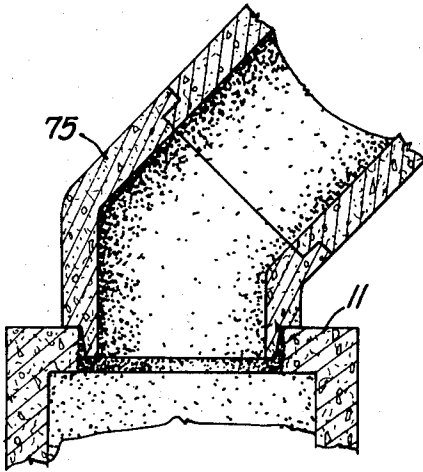


Fig. 8

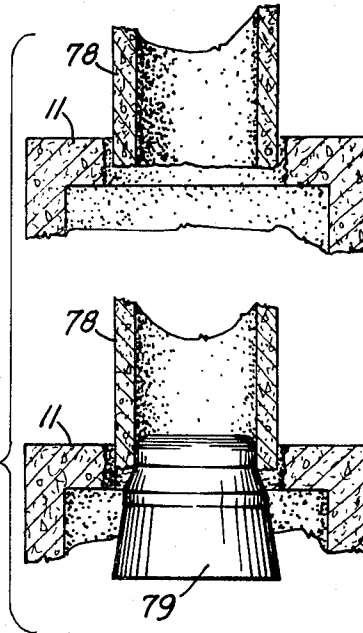


Fig. 9

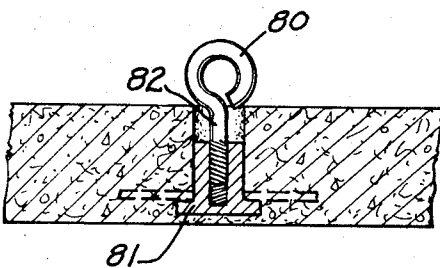


Fig. 10

INVENTOR
HOWELL P. LITTLE, JR.
BY
Jones & Thomas
ATTORNEYS

1

2

3,562,969

SECTIONAL CATCH BASIN

Howell P. Little, Jr., Box 296,

Commerce, Ga. 30529

Filed Oct. 22, 1968, Ser. No. 769,517

Int. Cl. E02d 29/12

U.S. Cl. 52—20

2 Claims

ABSTRACT OF THE DISCLOSURE

A sectional catch basin comprising pre-cast interfitting walls bases and covers. Each base and the cover can be various heights to meet the requirement of individual situations. Each base includes a groove in its upper surface along each edge, and each wall section includes a tongue protruding from its lower edge, which fits into the groove of the base. The upwardly extending edges of each wall include flanges and grooves which fit with the flanges and grooves of adjacent walls. The top edge of each wall includes a groove, and the cover which closes the top of the basin includes downwardly extending tongues along the edges of its bottom surface which protrude into the grooves of the walls.

BACKGROUND OF THE INVENTION

It has been the custom to construct catch basins of the type required along road-beds to collect water from the street at the individual locations at which they were to be positioned. This method of construction was necessary since the holes in the walls of the catch basin which were to be connected to the sewer pipes were not always uniformly located in particular ones of the walls of the basin, their elevation in the walls from the bottom of the basin varied, and the holes were occasionally located in different walls of the various basins; for instance, on adjacent walls, opposite walls, three walls, four walls, or in some instances, only in one wall. Thus, great flexibility is required in the construction of catch basins, and until the conception of the present invention, it was necessary to construct the catch basins at the location where they were to be used.

In the past, catch basins have been constructed by digging the hole for the basin, and constructing the basin by laying bricks and mortar. The contractor had a trench dug into which he inserted a sewer line, and at intervals along the ditch larger holes were dug into which the catch basins were formed. With this method of construction, the contractor encountered numerous environmental problems, the most serious of which was rain. If the trench for the sewer lines and the larger holes for the basins had been prepared and it began raining before the pipes and basins had been positioned in the trenches and holes, the water draining from the road-bed adjacent the trenches and holes usually drained into the trenches and the holes and carried a large amount of top-soil from the road-bed and bank around the catch basin into the holes. Thus, a large amount of erosion of the roadway and the shoulder, and loss of valuable top-soil was encountered, and the holes and trenches were usually at least partially filled with water, mud and dirt.

After it finished raining the contractor not only had a wait for a dry period to fill in the erroded area of his roadway and shoulders, but also for an extremely long dry period to allow the hole dug for the catch basin to dry up enough to be dug out again to support the catch basin to be constructed therein. Thus, it can be seen that a simple rain storm causes expensive delay to the contractor, and to the public.

SUMMARY OF THE INVENTION

The present invention comprises catch basins having pre-cast walls, bases and covers that are assembled at the site at which they are to be permanently located. The sections of the basins are manufactured at a central location in several standard sizes so that various different arrangements are available, to vary the configuration of each individual catch basin, as desired. For instance, for a standard size base, the walls of the basin will be of the same thickness and width, but can vary in height, by utilizing walls of various heights, and by stacking more than one wall section onto another wall section. The wall sections utilized with the basin can be selected from a supply of wall sections with or without holes for receiving pipes. Thus, wall sections can be selected so as to create a basin with one, two, three, four or even more holes, as desired. The covers utilized with the basin are also standardized.

The walls, bases and covers have interlocking elements which properly position and hold the sections of the basin together. Since a catch basin can be utilized in various different situations, various drainage aprons are available for use with the standardized catch basin. In most situations, the cover utilized with the catch basin is a universal cover in that it will connect various different types of drainage aprons to a catch basin, regardless of the disposition of the drainage apron with respect to the catch basin.

Thus, it is an object of this invention to provide a catch basin of precast sections that can be conveniently and expediently assembled at the site where it is to be permanently utilized.

Another object of this invention is to provide catch basins comprising precast interfitting walls, bases and covers.

Another object of this invention is to provide standardized catch basin sections suitable for assembling catch basins of various configuration.

Other objects, features and advantages of the present invention will become apparent upon reading the following specification, when taken in conjunction with the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of a catch basin assembled from the precast catch basin sections, with the cover of the basin removed.

FIG. 2 is an exploded perspective view of a catch basin.

FIG. 3 is a plan view of a catch basin, showing the manner in which pipe sections can be inserted through the openings of the catch basin walls.

FIG. 4 is a side elevational view, in cross-section of an assembled catch basin.

FIG. 5 is an exploded perspective view of a catch basin, a universal cover, and a drainage apron assembly.

FIG. 6 is a perspective view of another type drainage apron assembly.

FIG. 7 is a side elevational view, in cross-section of the drainage apron assembly of FIG. 6 as it would be inserted over the upper portion of a catch basin.

FIG. 8 is a plan view, in cross-section, of an adapter type for joining a pipeline to a catch basin at an angle.

FIG. 9 is a schematic view of a three step method of connecting a pipe line to a catch basin.

FIG. 10 is a detailed showing of the eye-bolts, and the manner in which they are embedded into the wall sections of the catch basin.

3 DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now more particularly to the drawing, in which like numerals indicate like parts throughout the several views, FIG. 1 shows an assembled catch basin 11 having a base 12 and side walls 14. Side walls 14 can include various sections so that various hole arrangements can be provided in the basin. For instance, a standard wall section 15 can be positioned adjacent base 12, and spacer section 16 can be positioned above standard section 15; or, spacer section 16 can be positioned adjacent base 12 and standard section 15 can be positioned on top of spacer section 16. Standard section 15 can include opening 18, or it can be formed without an opening. Opening 18 is usually stepped; that is, flange 19 extends inwardly about opening 18 adjacent the inside surface of standard section 15, thus providing hole 18 with a smaller diameter adjacent the inner portion of catch basin 11.

As is shown in FIG. 2, base 12 is generally rectangular in shape and includes grooves 20 in its upper surface 21 along each edge thereof. All four walls of grooves 20 are angled inwardly of the slot from upper surface 21, so that grooves 20 are substantially concave.

Standard wall sections 15 and spacer wall sections 16 all include tongues or protrusions 22 (FIG. 4) extending from their bottom surfaces 24. Each tongue 22 is tapered and conforms in size and shape with slots 20. The upper surface 25 of each standard wall section 15 and spacer wall section 16 defines a slot 26 similar to slots 20 of base 12. Thus, tongues 22 of standard wall sections 15 and spacer wall sections 16 can be fitted into slots 20 of base 12 or into slots 26 of other standard wall sections or spacer wall sections.

Wall sections 15 and 16 includes flanges 28 and 29, and 30 and 31, respectively, which extend along their side edges and are adjacent the outside surfaces 32 and 33, thereby leaving grooves or slots 34, 35, and 36, 37 adjacent inside surfaces 39 and 40. When the wall sections are assembled as shown in FIGS. 1 and 3, the flanges of opposite walls are fitted into the grooves of adjacent walls.

As is best shown in FIG. 5 cover section 41 fits over the upper edges of the walls of the basin. Cover section 41 includes tongues 42 protruding from its bottom surface which conform in size and shape with the grooves of the upper edges of wall sections 15 and 16. Cover section 41 defines circular opening 44, and circular flange 45 surrounds opening 44 and extends upwardly from the upper surface 46 of cover section 41. With this construction, cover section 41 is fitted over the wall sections of the basin, so that its tongues 42 protrude into the grooves of the wall section, thus, properly positioning cover section 41 with respect to the wall sections.

Drainage apron assembly 48 includes an adapter 49, drainage apron 50, and top slab 51. Adapter 49 functions to hold drainage apron 50 and slab 51 properly positioned over cover sections 41, and comprises body portion 52 and upwardly extending projection 53. Body portion 52 defines a rectangular opening 55 in its upper surface which merges with a circular opening 56. Circular opening 56 opens through the bottom surface of body portion 52 and is sized and shaped to fit over flange 45 of cover section 41. Because opening 56 of adapter 49 is circular and fits about a circular flange 45, adapter 49 is capable of being pivoted with respect to cover section 41, so that adapter 49 can be disposed at virtually any angle in a horizontal plane with respect to the catch basin.

Drainage apron 50 includes apron surface 58 which slopes in a downward direction from the forward edge 59 of the apron. Spacer blocks 60 are positioned adjacent the forward edge 59 of the apron and project upwardly from drainage surface 58. Water guides 61 and 62 angle inwardly from opposite ends of front edge 59 toward the rear of apron 50. Rectangular opening 64 extends through the center portion of apron 50 and

is sized and shaped in accordance with rectangular opening 55 of adapter 49.

Top slab 51 is arranged to rest on water guides 61 and 62 and spacer blocks 60. Top slab 51 is shaped in a horizontal plane in a manner similar to the shape of apron 50. A manhole opening 65 is defined in top slab 51, at a position above rectangular openings 64 of apron 50.

When drainage apron assembly 48 is assembled, upwardly extending projection 53 of adapter 49 will extend between water guides 61 and 62 at the rear of apron 50, so as to close rectangular opening 64 of apron 50. Top slab 51 will rest on spacer blocks 60, and water guides 61 and 62 of apron 50, and on the upper surface of projection 53 of adapter 49.

While drainage apron assembly 48 is of the type normally utilized at the curb edge of a street, FIGS. 6 and 7 show a drainage apron of the type used in a median or similar unpaved area. Apron 66 is generally rectangular in horizontal cross section, and its upper surfaces generally slope downwardly from its edges toward its center. A rectangular opening 68 is defined in its center, and spacer blocks 69 and 70 extend upwardly from the apron at adjacent corners of opening 68. Horizontal shelf 71 is formed on the opposite side of opening 68 from spacer blocks 69 and 70. Cover 72 rests on shelf 71 and spacer blocks 69 and 70 so as to extend over opening 68, yet allow entry to opening 68 between spacer blocks 69 and 70, and between the spacer blocks and shelf 71.

As is shown in FIG. 7, tongues 74 extend from the bottom surface of drainage apron 66 about opening 68, and fit into the slots of the upper edges of wall sections 15 and 16 of basin 11. Thus, a catch basin can be formed without its cover section 41, and drainage apron 66 can be fitted directly onto the walls of the basin.

As is shown in FIG. 8, there are some instances where a pipeline must be joined to a catch basin at an angle other than 90° with respect to one of the walls of the basin. In this situation, an adapter, such as adapter 75 can be connected to a basin 11, and the pipeline joined to the adapter. Adapter 75 is illustrated as including an angle of approximately 45°; however, adapters having various other included angles can be utilized in other situations, as needed.

In the event that an adapter similar to that shown in FIG. 8 is not available and the pipeline must be joined to the catch basin at an angle, or, in the event that the pipe section being joined to the catch basin does not intersect the catch basin at the end of a pipe section, the last pipe section can be joined to the catch basin in the manner as shown in FIG. 9. The internal flange 19 of the opening in the wall section of the catch basin is broken away, and the last pipe section is inserted completely through the opening into the catch basin. After the next to last pipe section has been properly positioned in the pipeline, the last pipe section is then slid back through the opening and joined to the next to last pipe section. The excess portion of the last pipe section which extends into the catch basin is broken away, thus exposing the reinforcing rods of the pipe section, which are bent or cut away, as desired. A plug 79 is then inserted into the last pipe section 78 from within the catch basin 11, and mortar is then inserted about the rim of pipe section 78 to seal the pipe to the wall of the catch basin. This procedure is more fully set forth in my copending application, Ser. No. 501,544, filed Oct. 22, 1965, and now abandoned.

As is best shown in FIG. 10, eyebolts 80 are positioned at various locations in the various sections of the elements disclosed in FIGS. 1-7 to facilitate rapid handling of these elements. Eyebolts 80 include a lifting insert 81 which is cast with the section, and threaded eyestem 82 which is threaded into insert 81. Eyestems 82 can be removed after their respective sections have been assembled, as desired, and stems 82 can be saved and utilized again with other sections.

It is anticipated that the various sections of the catch basin and its related components will be fabricated of

5

prestressed concrete. Cover 72 of drainage apron 66 (FIG. 6) its connecting screws, and other hardware, such as the ladder rungs of the wall section (FIG. 2) and man-hole covers will be fabricated of steel. Of course, it is anticipated that various other materials will be utilized, as desired.

At this point, it should be apparent that a catch basin and its associated elements can be assembled at the site at which the catch basin is to be utilized with a minimum of effort on behalf of the workmen. The base or platform 12 is placed in the hole dug for the basin, the wall sections connected to the base and to each other, with mortar or similar adhesive compounds inserted in the joints. The cover section can be inserted over the wall section, if desired, with or without mortar. The remaining associated elements can be positioned as desired. The location of the holes in the wall sections can be varied, as desired. The angle of the drainage apron with respect to the catch basin can be varied, as desired. The overall distance between the base of the catch basin and the uppermost drainage apron can be varied by the use of different ones of the standard wall sections 15 and panel 16. Thus, virtually any requirement can be met by the use of various ones of the catch basin sections and accessories.

Inasmuch as the sections of the catch basin and the accessories are prefabricated in a substantially flat configuration, the sections can be layed flat on a truck bed and transported long distances without wasting much, if any, space. The sections and accessories of the catch basin assemblies can be off-loaded along the roadway in groups which comprise the sections necessary to perform individual basins, or they can be off-loaded in a centralized location to create a stock pile of sections which will be available as needed during the construction of the sewer system. With the use of eyebolts, as shown in FIG. 10, the various sections can be off-loaded with the use of a simple boom erected on a truck, and operated by a single laborer. Furthermore, the relative light weight of the various sections and the simplicity of construction of the sections is such that the sections can be easily manipulated and assembled.

It will be obvious to those skilled in the art that many variations may be made in the embodiments chosen for the purpose of illustrating the present invention without departing from the scope thereof as defined by the appended claims.

I claim:

1. A precast sectional catch basin assembly comprising a generally horizontally disposed flat rectangular base, said base defining rectilinear grooves in its upper surface adjacent and extending along each edge thereof, a plurality of generally upright interfitting rectangular side wall sections and spacer sections each comprising upper, lower and side edges, inside and outside surfaces, a groove in its upper edge corresponding in size and in shape to the grooves in said base, tongues protruding from its lower edge corresponding in size and shape to the grooves in said base, and flanges extending along its side edges adjacent its outside surface, an opening for receiving a drainage pipe defined in some of said side wall sections, and a generally horizontally disposed rectangular cover section having a bottom surface and tongues protruding from said bottom surface adjacent and extending along each edge thereof, said grooves of said base, side wall sections and spacer sections being generally concave and the tongues of said side wall sections, spacer sections and

6

cover section being generally tapered, and each of said tongues and grooves being of a length shorter than the length of the edge of its base, width of its side wall section or spacer section, or length of the edge of its cover section, respectively, whereby the tongues of said side wall sections and spacer sections are insertable into the grooves of said base to locate the lower edges of the side wall sections and spacer sections at the edges of said base, the tongues of additional side wall sections and spacer sections are insertable into the grooves of the upper edges of lower ones of the side wall sections and spacer sections, the flanges of said side wall sections and spacer sections are engageable with adjacent side wall sections and spacer sections to prevent the side wall sections and spacer sections from moving inwardly of the assembly, and the tongues of the cover section are insertable into the grooves of the side wall sections and spacer sections to inhibit the side wall sections and spacer sections from moving outwardly of the assembly.

2. A precast sectional catch basin assembly comprising a generally flat horizontally disposed rectangular base defining slots in its upper surface at each of its edges, an upright wall section at each edge of said base and including protrusions extending into the slots, each of said wall sections including flanges along its vertical side edges at its outer surface which engage the next adjacent wall sections about said base to prevent the wall sections from moving inwardly of said assembly, and each of said wall sections defining a slot in its upper edge of a size and shape corresponding to the size and shape of its protrusion, and a cover section extending over the upper edges of said wall sections and including protrusions extending into the slots of said wall sections to hold said wall sections upright, and a conduit opening defined in at least one of said wall sections, the slots of said base and wall sections being generally concave, and the protrusions of said wall sections and cover section being generally tapered, and each of said protrusions and slots being of a length shorter than the length of the edges of its base, width of its wall section or length of the edge of its cover section, respectively.

References Cited

UNITED STATES PATENTS

871,977	11/1907	Winslow	52—20X
898,205	9/1908	Filskow	94—31.1
1,582,191	4/1926	Snooke	137—236
3,106,044	10/1963	Tullio et al.	52—20
3,250,189	5/1966	Peletz	94—31.1
3,251,159	5/1966	Trice	52—20
3,263,378	8/1966	Dorris	52—20

FOREIGN PATENTS

125,522	7/1949	Sweden	52—20
---------	--------	--------	-------

OTHER REFERENCES

"Precast Concrete for Cutting Costs," paper by R. C. Blankenburg, of Southern California Edison Co., presented at E.E.I.-T. and D. Committee meeting, Cincinnati, Ohio, May 17—19, 1961.

PRICE C. FAW, Jr., Primary Examiner

U.S. Cl. X.R.

94—31.1; 137—363