Oct. 4, 1927. 1,644,586

J. N. HELTZEL

CONCRETE FORM

Filed Jan. 6, 1926 3 Sheets-Sheet 1

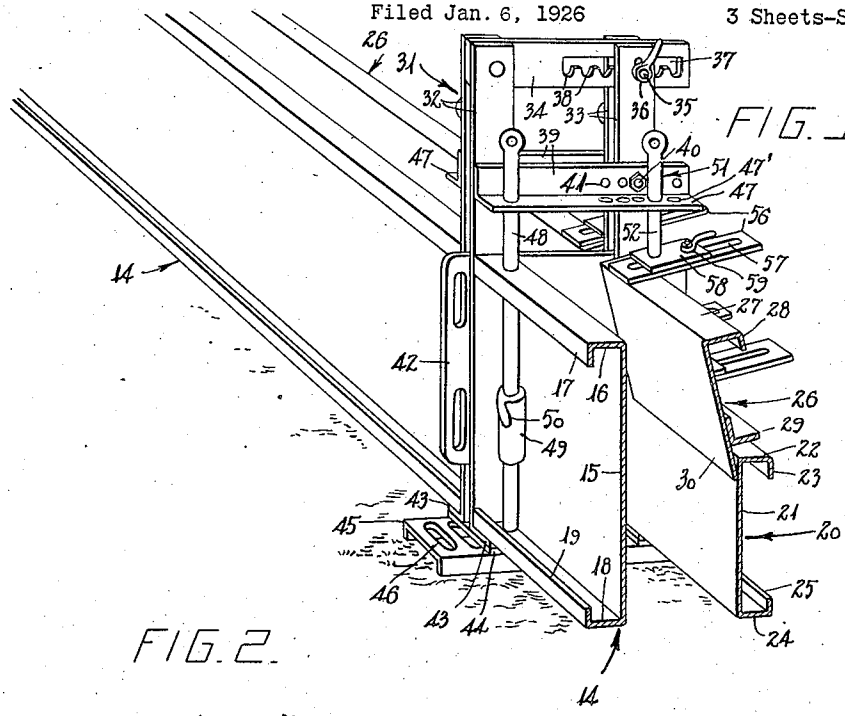

FIG. 1.

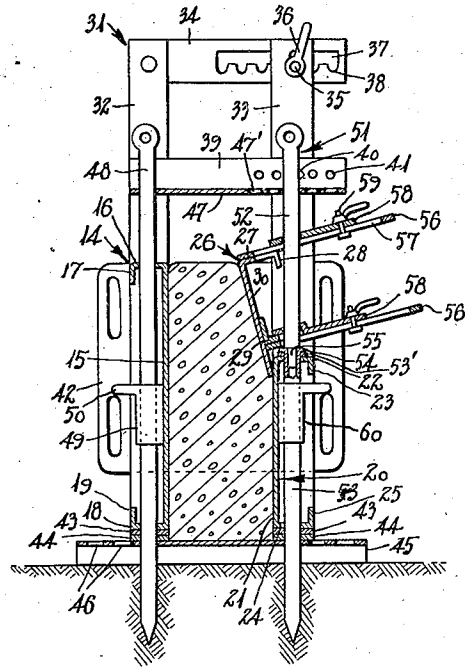

FIG. 2.

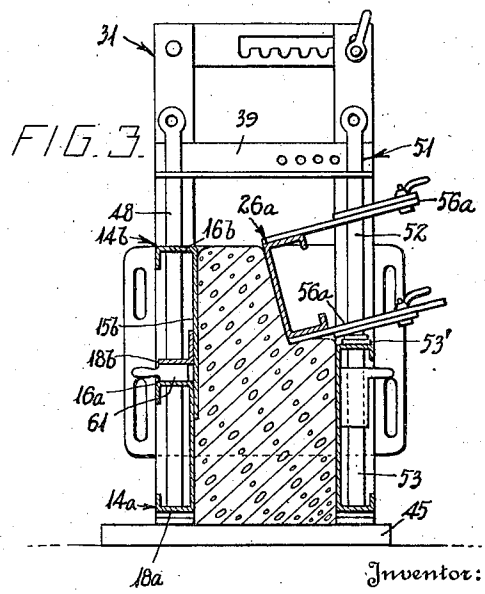

FIG. 3.

Inventor:

John N. Heltzel

By Monroe E. Miller

Attorney.

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J. N. HELTZEL

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FIG. 4.

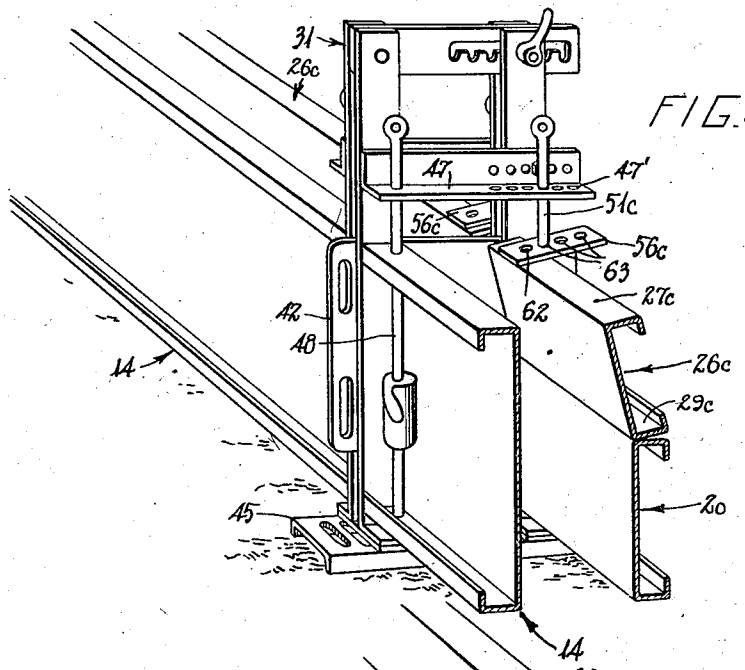


FIG. 5.

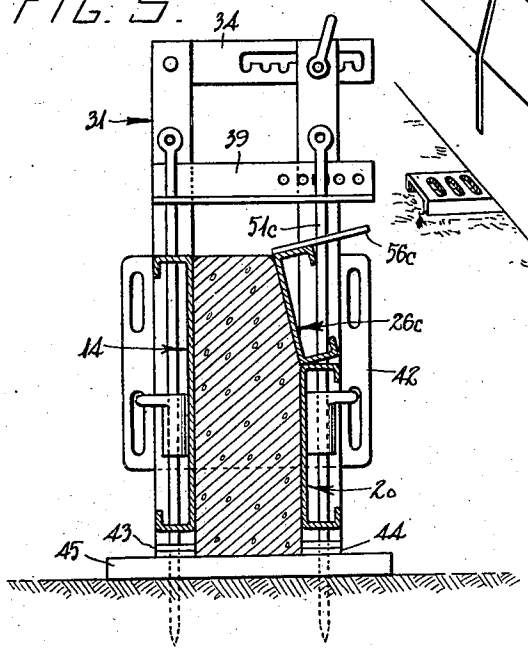
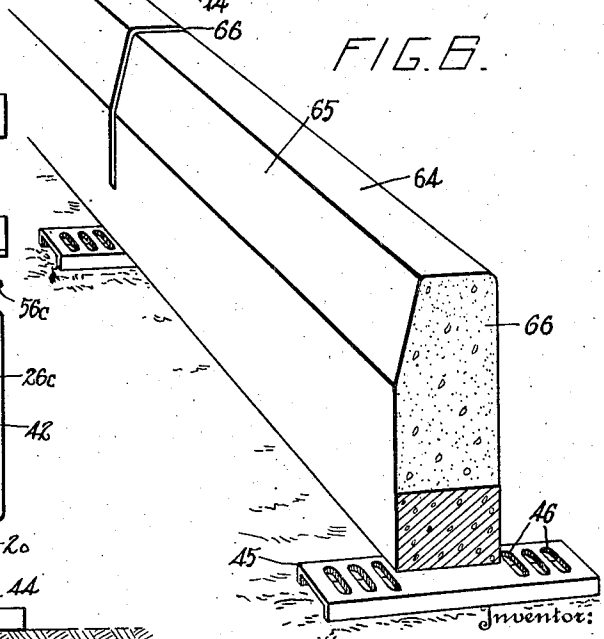


FIG. 6.



Inventor:

John N. Heltzel

By Monroe E. Miller

Attorney.

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J. N. HELTZEL

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FIG. 7.

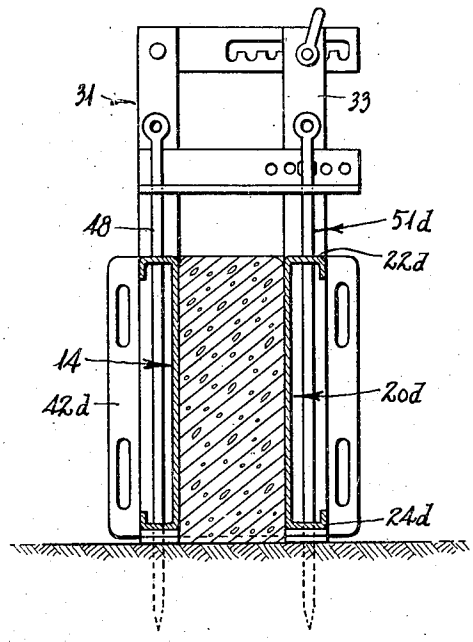


FIG. 8.

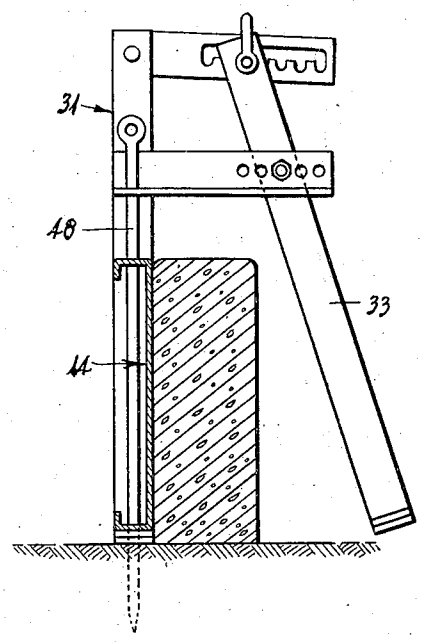


FIG. 9.

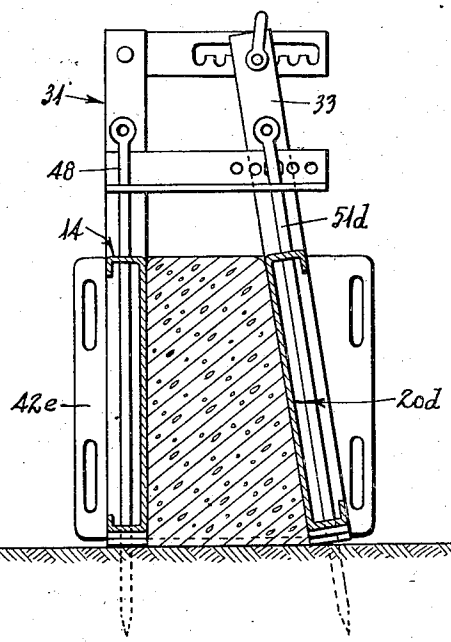
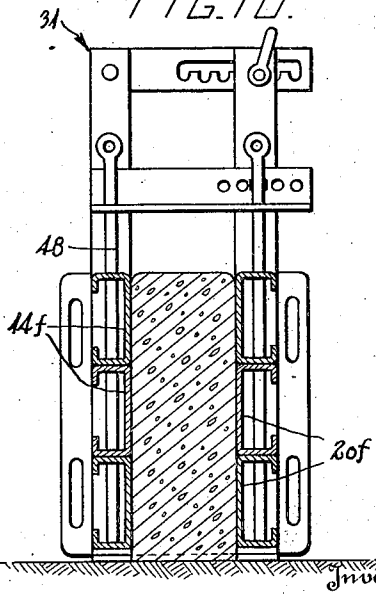


FIG. 10.



Inventor:

John N. Heltzel

By Monroe C. Miller

Attorney.

Patented Oct. 4, 1927. 1,644,586

UNITED STATES PATENT OFFICE.

JOHN N. HELTZEL, OF WARREN, OHIO.

CONCRETE FORM.

Application filed January 6, 1926. Serial No. 79,656.

The present invention relates to concrete forms, and aims to provide improvements in forms used for molding curbs, curbs and gutters, walls, sidewalks, and the like, this invention being an improvement over the types of concrete forms disclosed in my copending applications Serial Nos. 17,211 and 66,806 filed March 21 and November 4, 1925, respectively.

Another object is the provision of a concrete form of the kind indicated comprising a novel arrangement and assembly of the component elements whereby the device is practical and efficient in use, and adjustable for different conditions.

A further object is the provision of a novel connection between the adjacent ends of the alining side rails or form members permitting the form to be built to any desired length with the rails or rail sections connected together end to end, without the necessity of using division plates between the rails or other connections between the rails intermediate the ends thereof, and the connections permitting the rails to be readily assembled, adjusted and separated.

A still further object is the provision of such a structure by means of which the side rails or form members may be adjusted vertically and transversely, and may be positioned in either vertical or transversely inclined positions, to suit various requirements and conditions.

Still another object is the provision of a novel adjustable yoke or joint device for use between the ends of the rails or form members, and another object is the provision of novel means for detachably connecting the rails with such yoke or device for the adjustment of said rails or members with or relatively to said yoke or device without disturbing adjoining rails.

With the foregoing and other objects in view, which will be apparent as the description proceeds, the invention resides in the construction and arrangement of parts, as hereinafter described and claimed, it being understood that changes can be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a perspective view of a concrete curb form embodying the improvements, with the face rail or form member adjusted for producing a "battered" curb.

Fig. 2 is a cross section of said curb form substantially in the vertical plane of two of the stakes, portions being shown in elevation.

Fig. 3 is a cross section of another curb form showing modifications.

Fig. 4 is a perspective view corresponding with Fig. 1 illustrating other modifications.

Fig. 5 is a cross section of the form shown in Fig. 4.

Fig. 6 is a fragmentary perspective view of the curb completed by either the form shown in Figs. 1 and 2 or the form shown in Figs. 4 and 5.

Fig. 7 is a cross section of a simplified curb form adjusted to produce a curb with a vertical face.

Fig. 8 is a corresponding cross section with the inner or face rail or form member and the division plate removed, and the inner limb of the yoke swung away from the curb to facilitate finishing the concrete.

Fig. 9 is a cross section corresponding to Fig. 7 illustrating the form adjusted to produce a battered curb.

Fig. 10 is a cross section corresponding with Fig. 7 illustrating the use of superposed rails for building up the side walls of the form.

Referring to the concrete form shown in Figs. 1 and 2, the outer wall of the form is composed of sheet metal rails or form members 14 arranged end to end, each of said rails having a web 15, an outwardly extending top or tread flange 16 at the upper edge of the web 15 and provided with a depending secondary flange or lip 17, and a bottom or base flange 18 extending outwardly at the lower edge of the web 15 and provided with an upturned secondary flange or lip 19.

The inner wall of the form is composed of lower sheet metal rails or form members 20 and upper face rails or form members 26 also constructed of sheet metal. Each rail 20 is of a cross section similar to the rail 14, but of less height, being composed of the web 21, upper flange 22 having the depending secondary flange 23, and lower flange 24 having the upstanding secondary flange 25. Each face rail 26 which is disposed above the corresponding rail 20 to build up the inner wall to the same height as the outer wall, comprises the web or plate 30 having the top or tread flange 27 at its upper edge provided with a secondary flange

or lip 28 depending therefrom, and the rail 26 has a lower flange 29 above the lower edge of the plate or web 30, so that the lower edge portion of the plate 30 can overlap the rail 20. The flange 29 may be provided by welding or otherwise securing an angle iron to the plate or web 30. By the provision of the flange 29 spaced above the lower edge of the plate 30, the rail 26 may be adjusted vertically or inclined, with the flange 29 spaced above the flange 22 of the lower rail 20, without leaving a space or slot between the rails 20 and 26, inasmuch as the lower edge portion of the plate 30 extends downwardly across the space between the flanges 22 and 29 and overlaps the web 21 of the rail 20.

A yoke or joint device 31 is disposed between the adjacent ends of the alining rails that are disposed end to end. The outer limb of the yoke which is disposed between the rails 14 comprises a pair of spaced bars 32, and the inner limb of the yoke which is disposed between the rails 20, 26 is also composed of a pair of spaced bars 33. An adjustable connection between the upper portions of the bars 32 and 33 is provided in order to space the bars or limbs of the yoke different distances apart and to position the inner limb or bars 33 either vertically or inclined. Thus, a cross bar 34 is secured between the upper terminals of the bars 32, so as to be pivoted or rigid therewith, and also serves to space said bars apart, and the cross bar 34 projects between the upper terminals of the bars 33, thereby also spacing said bars 33 apart. A clamping bolt or element 35 extends through the bars 33 and 34 and has a nut 36 thereon, the bar 34 being provided with a longitudinal slot 37 receiving said bolt or element 35 to permit the bars 33 to be adjusted toward and away from the bars 32, for spacing the limbs of the yoke different distances apart and adjusting the inner limb to vertical or inclined positions. The bar 34 is formed with notches 38 along the lower edge of the slot 37 to receive the bolt 35 in predetermined adjustments, the bolt 35 being preferably mounted for vertical movement in slots in the bars 33 to be moved downwardly and upwardly into and out of the notches 38. The bars 33 may also be clamped on the bar 34 with the bolt 35 between the notches 38 when smaller adjustments are wanted. A pair of cross bars 39 below the bar 34 and above the rails is secured to the opposite sides of the bars 32, by welding or otherwise, and extend across the bars 33. Each bar 39 is secured to the corresponding bar 33 by a clamping and pivot bolt or element 40, and the bars 39 have series of apertures 41 to receive the bolts 40 for adjusting the bars 33 toward or away from the bars 32. Individual elements 40 are preferably used for the two bars 39 so as to clamp them to the bars 33 without extending across the space between the bars 33.

By positioning the elements 40 in the different apertures 41, the limbs of the yoke may be adjusted to different distances apart, according to the thickness of curb desired, and by loosening the element 35, the inner limb or bars 33 of the yoke may be adjusted about the elements 40 as pivots, to position the bars 33 either vertically or inclined. The yoke is thus adjustable to suit various conditions and requirements, and the limbs of the yoke have slots between the bars 32 and 33 thereof to receive a division plate 42 as disclosed in application Serial No. 66,806 above referred to. The division plate 42 may be inserted and withdrawn laterally, as well as vertically, inasmuch as the yoke may be of suitable height to enable the division plate to move upwardly and downwardly out of and into the mold space between the outer and inner walls or rails.

The bars 32 and 33 of the yoke have their lower terminals bent away from one another to form the feet 43, and the feet 43 of each pair of bars are secured on a base plate or member 44 which serves to space the lower ends of the bars apart, as well as to support the limb of the yoke.

As shown, a transverse tie or sleeper 45 is disposed under the rails below the yoke to assist in supporting the yoke and rails on the ground or sub-base. The tie 45 constitutes an inverted channel member as shown, with its flanges extending downwardly to enter the ground. The tie 45 has series of slots or openings 46 therein for the reception of the stakes as will hereinafter more fully appear.

The ends of the rails abut the limbs of the yoke, and stakes or rods are used for attaching the rails removably to the yoke and enabling the rails to be adjusted vertically relatively to the yoke. For this purpose, the bars 39 have flanges 47 overhanging the ends of the rails, said bars 39 being preferably formed from angle irons. Vertical stakes or rods 48 connect the rails 14 with the outer limb of the yoke, said stakes 48 being inserted downwardly through apertures in the flanges 47, 16 and 18, and said stakes also pass through apertures in the feet 43 and base plate 44 of the bars 32, thereby holding the ends of the rails 14 against the outer limb of the yoke. The stakes 48 also pass through the corresponding slot or opening 46 of the tie 45. It will be apparent that when the stakes 48 are withdrawn the rails 14 may be shifted laterally into and out of position, and when said stakes are inserted to connect the rails 14 and yoke 31, the rails may be slid upwardly and downwardly on the stakes. Suitable cams 49 are disposed on the stakes or rods

48 to bear against the webs 15 of the rails 14 for clamping the rails 14 on the stakes 48 at different vertical positions, or the rails 14 may seat on the feet 43. The cams 49 have handles 50 for conveniently turning them, and the cams 49 may or may not be used according to the conditions.

The stakes 51 for the rails 20 and 26 are composed of the upper and lower sections 52 and 53. The lower sections 53 pass downwardly through apertured ears or lugs 53′ welded or otherwise secured to the bars 33 and projecting from the opposite sides of said bars similar to the flanges 47, and said stake sections 53 also pass downwardly through apertures in the flanges 22 and 24 and in the feet 43 and base plate 44 of the bars 33, and through the corresponding slot or opening 46 in the tie 45. The stake sections 53 have flanges 54 at their upper ends to seat on the lugs or ears 53′ and thereby limit the downward movement of said stake sections 53, and the lugs or ears 53′ overlap the flanges 22. The stake sections 53 are either tubular or have sockets in their upper ends to receive the reduced lower ends 55 of the upper sections 52. The stake sections 52 pass downwardly through apertures 47′ in the flanges 47, the series of apertures 47′ permitting the stakes 51 to be positioned different distances from the outer limb of the yoke without changing the pivots or bolts 40.

The face rails 26 are connected with the stakes 51 for lateral adjustment. Thus, lateral bars 56 are secured to the flanges 27 and 29 and have slots 57 receiving the stakes 51, and the slots 57 extend into the flanges 27 and 29 in order that the rails 26 may be adjusted to vertical position above the rails 20. The slots 57 permit the face rails 26 to be adjusted toward the outer rails 14, and to maintain the rails 26 in adjusted position plates 58 have apertures receiving the stakes 51 and are clamped to the bars 56 by bolts or securing elements 59 engaging through the plates 58 and working in the slots 57. When the bolts 59 are loosened the bars 56 may slide inwardly and outwardly for adjusting the rails 26. It is thus possible to position the rails 26 vertically above the rails 20 for a curb having a vertical face; to incline the rails 26 toward the rails 14, as seen in Figs. 1 and 2 to construct a curb with an inclined or battered face; and to offset the face rails away from the rails 20, as hereinafter described in connection with Fig. 3. In addition to such adjustments it is also possible, as hereinbefore described, to adjust the inner limb of the yoke to space the inner wall of the form different distances from the outer wall and to adjust the inner wall to either vertical or inclined positions. The stakes 48 and 51 passing down through the tie 45 will assist in preventing accidental separation of the lower ends of the limbs of the yoke, and the tie 45 when used will also assist in supporting the yoke and rails. The use of the tie 45, however, is optional, and the yoke and rails may rest directly on the ground or sub-base when the tie 45 is omitted.

When the form has been set up and properly adjusted, the grout or aggregate is poured between the outer and inner walls or rails, and the upper surface finished off, it being noted that finishing tools may move within the yoke. By withdrawing the upper sections 52 of the stakes 51 this will release the face rails 26, so that said rails may be readily removed, to enable the face of the curb to be finished. The bars 56 and plates 58 engage the upper sections of the stakes 51, and when said sections are removed the lower sections 53 remain in place to hold the rails 20 in position. In some instances the sectional stakes 51 may not be necessary, and solid stakes similar to the stakes 48 may be used in lieu of the stakes 51, it being noted that the sections 52 and 53 are of the same diameter and may therefore be replaced by stakes similar to the stakes 48. It is also possible to use cams 60, similar to the cams 49, on the stakes 51 for securing the rails 20 in elevated positions on the stakes.

Fig. 3 illustrates the outer wall of the form composed of superposed rails or form members. The lower rail 14^a has the upper and lower flanges 16^a and 18^a, and the upper rail 14^b comprises the plate or web 15^b having the upper flange 16^b and a lower flange 18^b spaced above the lower edge of the plate 15^b so that the lower edge portion of said plate may overlap the rail 14^a. This enables the upper rail 14^b to be adjusted vertically to increase and decrease the height of the outer wall by using the same rails, the plate 15^b closing the space between the flanges 16^a and 18^b. Suitable spacers 61 may be inserted between the flanges 16^a and 18^b for supporting the upper rail 14^b. The overlapping relation of the rails 14^a and 14^b is somewhat similar to the relation of the rails 20 and 26 hereinbefore described to provide for vertical adjustment of the upper rail. Each stake 48 passes through the flanges 16^b, 18^b, 16^a and 18^a.

When a form is desired in which both walls are adjustable the rails 14^a and 14^b of Fig. 3 may be used for the outer wall, and the rails 20 and 26 of Figs. 1 and 2 used for the inner wall, so that both walls may be adjusted to different heights.

Fig. 3 also shows a face rail 26^a of a cross section similar to the rails 20 with the slotted bars 56^a secured to the upper and lower flanges of the rail 26^a. The rail 26^a is shown as adjusted toward the outer wall

in an offset relation with the rail 20, to produce a curb having a relatively thick base portion and a shoulder below the face of the curb forming a narrow gutter portion, and the form may be of sufficient size to produce an integral curb and gutter, as will be apparent to those skilled in the art.

The rails 14 and 20 shown in Figs. 4 and 5 are similar to those shown in Figs. 1 and 2, but are illustrated as being supported by the cams 49 and 60 above the feet 43 of the yoke. The face rails 26^a is of C-shaped cross section similar to the rails 14 and 20, and similar to the face rail 26^a shown in Fig. 3. This construction is simplified inasmuch as the bars 56^c are only secured on the upper flanges 27^c of the rails 26^c, the stakes 51^c passing through apertures in the lower flanges 29^c of said rails 26^c. The flanges 27^c and bars 56^c have apertures 62 to receive the stakes 51^c with the rails 26^c disposed vertically above the rails 20, and the bars 56^c have a series of apertures 63 to receive the stakes 51^c with the rails 26^c inclined to different angles toward the outer rails 14.

Fig. 6 is a perspective view of a fragmentary portion of a curb as produced by the forms shown in Figs. 1 and 2 and Figs. 4 and 5. The curb 64 has the battered or inclined face 65, and rests on the ties or sleepers 45 which may be removed for repeated use. The division plates 42 produce divisions 66 in the curb, and by using division plates 42 having their lower edges spaced above the lower edges of the rails, the sections of the curb will be integrally united below the divisions 66. The curb will fracture below said divisions, thereby producing irregular breaks so that the sections are locked together below the divisions 16 to prevent relative lateral or vertical displacement, and keep the curb sections in alinement. However, if desired, the divisions 66 may extend completely through the curb.

Figs. 7, 8 and 9 illustrate the use of a single inner or face rail 20^d opposing each outer rail 14. Solid stakes or rods 51^d are used to engage through the upper and lower flanges 22^d and 24^d of the rails 20^d. The division plates 42^d and 42^e shown in Figs. 7 and 9, respectively, also extend the full height of the curb so as to form complete divisions in the curbs. Fig. 7 shows the inner rail 20^d disposed vertically for producing a curb with a vertical face, and the ties or sleepers 45 are omitted. After the concrete has set, the inner limbs of the yokes may be loosened and swung away from the curb to remove the rails 20^d from the face of the curb, and the stakes 51^d may also be withdrawn and the rails 20^d removed, as seen in Fig. 8. This exposes the face of the curb in order that same may be finished by suitable finishing tools. Fig. 9 illustrates the rail 20^d adjusted to an inclined position for producing a battered curb.

Fig. 10 shows the outer and inner walls of the form composed of superposed rails 14^f and 20^f, respectively, showing how rails of small height may be used for building up the form walls to desired height, in place of using rails of larger height as shown in Figs. 7, 8 and 9.

Having thus described the invention, what is claimed as new is:—

1. A concrete form comprising rails disposed end to end, a joint device between the ends thereof, and stakes connecting said rails and device and adapted to enter the sub-base.

2. A concrete form comprising rails disposed end to end, a joint device between the ends thereof, and rods engaging the rails, said device having portions above and below the rails engaging said rods.

3. A concrete form comprising rails disposed end to end, a joint device between the ends thereof, and stakes engaging the rails and adapted to enter the sub-base, said device having portions above and below the rails engaging said stakes.

4. A concrete form comprising rails disposed end to end and having upper and lower flanges, a joint device between the ends of the rails, and stakes connected with said device and adapted to enter the sub-base, said stakes passing through said flanges of the rails to hold the rails in abutment with said device.

5. A concrete form comprising rails disposed end to end and having upper and lower flanges, a joint device between the ends of the rails, and rods extending through said flanges, said device having portions above and below the rails engaging said rods.

6. A concrete form comprising rails disposed end to end and having upper and lower flanges, a joint device between the ends of the rails, and stakes engaging through said flanges of the rails and adapted to enter the sub-base, said device having portions above and below the rails engaging said stakes.

7. A concrete form comprising rails disposed end to end, a joint device between the ends thereof, rods connecting said rails and device, and means for clamping said rails to said rods.

8. A concrete form comprising rails disposed end to end and having upper and lower flanges, a joint device between the ends of the rails, rods connected with said device and extending through said flanges to hold the rails in abutment with said device, and cams on said rods between said flanges to bear against the rails for clamping them on said rods.

9. A concrete form comprising superposed

relatively adjustable rails having webs, the web of one rail projecting to overlap the web of the other rail.

10. A concrete form comprising superposed relatively adjustable rails having webs, the web of one rail projecting to overlap the web of the other rail, and means for mounting said rails for relative vertical and lateral adjustments.

11. A concrete form having superposed relatively adjustable rails having webs and flanges, the web of the upper rail projecting downwardly to overlap the web of the lower rail.

12. A concrete form having superposed relatively adjustable rails having webs and flanges, the web of the upper rail projecting downwardly to overlap the web of the lower rail, and means for mounting said rails for the vertical and lateral adjustment of the upper rail.

13. A concrete form including rods, rails, and means for connecting the rails with said rods for the sliding adjustment of the rails on the rods and for the lateral adjustment of the rails relatively to the rods.

14. A concrete form including rods, and rails having slotted bars engaging said rods for the lateral adjustment of the rails relatively to said rods.

15. A concrete form including rods, rails having slotted bars engaging said rods for the lateral adjustment of said rails, and means for securing said bars in different adjustments relatively to said rods.

16. A concrete form including rods, rails having slotted bars engaging said rods, plates engaging said rods, and means for clamping said plates and bars together in the different adjustments of the rails.

17. In a concrete form, superposed rails, means for mounting the upper rail for lateral adjustments relatively to the lower rail.

18. In a concrete form, superposed rails, rods engaging the lower rails, and means adjustably connecting the upper rails and rods for the lateral adjustment of said upper rails.

19. In a concrete form, superposed rails, rods engaging the lower rails, and slotted bars secured to the upper rails and engaging said rods.

20. In a concrete form, superposed rails, rods engaging the lower rails, slotted bars secured to the upper rails and engaging said rods, and means engaging said bars and rods for maintaining relative adjustments therebetween.

21. In a concrete form, superposed rails, stakes engaging the lower rails and adapted to enter the sub-base, and means adjustably connecting the upper rails and stakes.

22. In a concrete form, superposed rails, stakes engaging the lower rails and adapted to enter the sub-base, and means for adjustably connecting the upper rails and stakes for the lateral adjustment of said upper rails.

23. In a concrete form, superposed rails, stakes engaging the lower rails and adapted to enter the sub-base, the upper rails being adjustable laterally relatively to the stakes, and members carried by the upper rails to engage said stakes for maintaining the upper rails in different lateral positions.

24. A concrete form comprising rails disposed end to end, a joint device between the ends thereof, and an adjustable connection between said rails and device permitting adjustments of the rails relatively to said device.

25. A concrete form comprising rails disposed end to end, a joint device between the ends thereof, and rods connected with said device, the rails being adjustably connected with said rods.

26. A concrete form, superposed rails, and stakes having separable upper and lower sections, the lower stake sections engaging the lower rails, the upper rails being connected with the upper stake sections.

27. In a concrete form, superposed rails, and stakes having upper and lower sections, the lower stake sections engaging through the lower rails, and adapted to enter the sub-base, the upper rails being connected to the upper stake sections, and the adjacent ends of the upper and lower stake sections having interengaging portions.

28. A concrete form comprising superposed rails disposed end to end, a joint device between the ends of the rails, stakes having lower sections engaging the lower rails and adapted to enter the sub-base and having upper removable sections, the upper rails being connected with said upper stake sections, and the joint device having portions engaging said stakes above and below the rails.

29. In a concrete form, rails, stakes engaging through said rails to enter the sub-base, and means on the stakes for clamping the rails on the stakes at different elevations thereon.

30. In a concrete form, rails having upper and lower flanges, stakes engaging through said flanges to enter the sub-base, and means on the stakes for clamping the rails on the stakes in different elevations.

31. In a concrete form, rails having upper and lower flanges, stakes engaging through said flanges to enter the sub-base, and cams on said stakes between said flanges to contact with the rails and clamp them on the stakes.

32. A concrete form comprising opposite walls, one wall being composed of superposed rails, and means for mounting the upper rail for adjustment toward and away from the opposite wall.

33. A concrete form comprising opposite

walls, one wall being composed of superposed rails, and means for mounting the upper rail for adjustment toward and away from the opposite wall and to different inclined positions.

34. A concrete form comprising opposite walls, one wall having upper and lower rails, and means for mounting said rails to space them different distances from the opposite wall.

35. A concrete form comprising opposite walls, one wall being composed of superposed rails, and means mounting said rails to space them the same or different distances from the opposite wall.

36. In a concrete form, a joint device to be disposed between the ends of rails having portions to be disposed above and below the rails, and rods engageable through said portions and adapted to engage the rails.

37. A yoke having adjustably connected limbs to be disposed between and connected to the ends of opposite side rails.

38. A yoke having limbs to be disposed between and connected to the ends of opposite side rails, and means adjustably connecting said limbs.

39. A yoke having limbs to be disposed between and connected to the ends of opposite side rails, and vertically spaced cross members adjustably connecting said limbs.

40. A yoke having limbs to be disposed between and connected to the ends of opposite side rails, and vertically spaced cross members secured to one of said limbs, the other limb being adjustably connected to said members.

41. A yoke having limbs to be disposed between and connected to the ends of opposite side rails, a pivotal connection between said limbs, and an adjustable connection between said limbs spaced vertically from the aforesaid connection.

42. In a concrete form, a yoke having limbs to be disposed between and connected to the ends of opposite side rails, vertically spaced cross members secured to one of said limbs, the other limb having an adjustable pivot connection with one of said members, and means for clamping the last named limb and other cross member together in different adjustments.

43. In a concrete form, a yoke having limbs to be disposed between the ends of opposite side rails, feet at the lower ends of said limbs and flanges above said feet, and stakes insertable through said flanges and feet to engage said rails.

44. In a concrete form, a yoke having limbs to be disposed between the ends of opposite side rails, a sleeper to support the yoke, and stakes engageable with said yoke, said sleeper having openings for the passage of the stakes.

45. In a concrete form, a yoke having limbs to be disposed between the ends of opposite side rails, a sleeper to support said yoke, rail-engaging stakes, said yoke having portions to receive said stakes, and the sleeper having openings for the passage of the stakes.

46. A concrete form comprising a yoke having adjustably connected limbs to be disposed between opposite side rails, a sleeper to support said yoke, and rail-engaging stakes engageable with said yoke, the sleeper having a series of openings to receive said stakes in the different adjustments of said limbs.

47. In a concrete form, a yoke having limbs to be disposed between and connected to the ends of opposite side rails, and means connecting said limbs and permitting the separation thereof.

48. In a concrete form, a yoke having pivotally connected limbs to be disposed between and connected to the ends of opposite side rails.

49. A concrete form comprising opposite side rails, and a yoke having adjustably connected limbs disposed between and connected to the ends of the opposite side rails.

50. A concrete form including a yoke having adjustably connected limbs to be disposed between the ends of opposite side rails and having portions to be disposed above and below the rails, and rail-engaging stakes insertable in said portions.

51. A concrete form comprising opposite side rails, a yoke having adjustably connected limbs disposed between the ends of said opposite side rails and provided with portions above and below the rails, and stakes inserted through said portions and rails.

52. A concrete form comprising rails disposed end to end, a joint device, and means connecting the rails and joint device for the lateral and vertical adjustments of the rails relatively to said device.

53. A concrete form comprising opposite side rails disposed end to end, and a yoke between and connected to the ends of the rails and having pivotally connected limbs.

54. A concrete form comprising opposite side rails disposed end to end, and a yoke between and connected to the ends of the rails and having pivotally and adjustably connected limbs.

In testimony whereof I hereunto affix my signature.

JOHN N. HELTZEL.