To all whom it may concern:

Be it known that I, JOHN P. HALGREN, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Adjustable Concrete-Forms, of which the following is a full and exact specification.

This invention relates to improvements in forms or molding devices designed for use in the construction of concrete walls, such as walls for silos, bins, tanks, and like structures.

The primary object in view is to devise a simple, durable and conveniently operated device for the purpose of forming a character adapted to be used in building such walls in a step by step fashion, the form being intermittently elevated in the course of the wall's construction.

It is a further object to produce a type of form especially adapted for the construction of bins and the like and which will permit convenient variation of the diameter of the form within suitable limits according to the size of bin desired. It is also sought to simplify and improve generally the type of apparatus whereby this particular character of concrete construction is carried out.

Having these general objects in view the invention will now be described with reference to the accompanying drawing illustrating one form of construction which has been devised for embodying the improvements in practice, after which those particular features deemed to be novel will be set forth and defined in the appended claims.

In the drawing—Figure 1 is a side elevation of a form constructed in accordance with the present improvements; Fig. 2 is a plan view of a portion of the form; Figs. 3 and 4 are sections on the lines III—III and IV—IV, respectively, of Fig. 2, being taken on a larger scale; Fig. 5 is an enlarged perspective view of one of the band-supporting members; and Fig. 6 is a plan view, on a reduced scale, of the molding walls and illustrating the bolt openings whereby the upright members are adjusted to different positions circumferentially of said walls.

Referring in detail to the drawing, the apparatus is illustrated as comprising a pair of molding walls, 2, 2, arranged in spaced relation and provided with a series of channel upright members 4, spaced at equal intervals around the form. The molding walls 2 are constructed of any suitable flexible material, such as sheet metal of appropriate gage, thus permitting the same to assume the cylindrical form illustrated, and allowing the ends thereof to be overlapped more or less in varying the size of the form for molding bins of different diameters. For this purpose the ends of the molding walls 2 are provided with the series of bolt openings 65, spaced apart the required distance to give the desired variation in diameter, and bolts 8 being used to secure the ends of each molding wall together.

The channel upright members 4 are arranged in pairs and secured by bolts 9 to the inner and outer faces of the molding walls, said bolts passing through openings 10 in said walls, these openings 10 in each set being arranged the proper distance apart for permitting the uprights to be spaced at equal intervals around the form when the latter is expanded or contracted to different diameters; i.e., the distance between the openings of each set gradually varies, being greater between the openings at the ends of the mold walls 2 than between the openings of the intermediate sets, as illustrated in Fig. 6, since the intermediate uprights require less adjustment of position than the remaining uprights for maintaining their equidistant relation. Each upright member 4 also carries by means of the bolts 9 a pair of slightly curved channel pieces 12, the passages through which are of T-shape in cross-section for slidingly receiving the adjoining ends of the band members 14, which are likewise of T-section and arranged in two or more series of sections conforming to the inner and outer faces of the molding walls 2.

The rib portions 16 of the channel or band supporting members 12, as well as the rib portions 18 of the sections 14, project outwardly away from the molding walls, and the rib portions 16 are cut to form the notches 20 for accommodating the upright members 4. The ends of the rib portions 18 of the band sections are provided with a series of bolt openings 22 for the bolts 24 for
securing to the rib portions 16, the latter being provided with the openings 26 for said bolts. This arrangement permits the parts 12 and 14 to be telescopically adjusted for accommodating the adjustment of the uprights 4, and the channel passage through the members 12 is of sufficient diameter (see Fig. 4) to provide the requisite clearance for permitting such relative lateral play of the ends of the sections 14 as will occur in making this adjustment for slightly varying diameters of the form.

The upright members 4 project above the upper margins of the molding walls 2, where they are provided with the bolts 28 and channel pieces 30 or equivalent spacing construction, and for attachment of such jacking mechanism as may be used for raising and lowering the form as operated. Any suitable cross-bracing for the interior of the form may be provided for large diameters; but neither this interior bracing nor the jacking mechanism are illustrated, since the same form no part of the present invention.

The manner of adjusting the form and the mode of use of the same will be apparent from the foregoing. In changing the form to a slightly different diameter, the sections 14 at the over-lapping ends of the walls 2 are unbolted at one end and the bolts 8 shifted to the proper openings 8 to give the required diameter of form; the uprights 4 being of course also shifted to the proper bolt openings 10 to equalize the intervals between said uprights, and necessitating a corresponding adjustment telescopically of the ends of the various band sections within the band supporting pieces 12. Having adjusted the parts to the desired diameter of form, the molding operation is carried on by pouring the concrete between the mold walls 2, the form being gradually elevated by any approved type of jacking means step by step, as the concrete construction is built up.

It will thus be apparent that a simple, strong and rigid form construction is provided for carrying out the desired objects of the invention, and that the same may be readily and conveniently assembled and adjusted within the limits provided for, and while the foregoing represents what is now deemed to constitute the preferred form of embodiment of the improvements, the right is reserved to such formal changes and modifications as may fairly fall within the scope of the appended claims.

Claims:—

1. In a concrete form construction, the combination of a pair of spaced molding walls adapted to be expanded or contracted to different diameters, a series of uprights adjustable horizontally along the inner and outer faces of said walls and provided with means for securing said uprights thereto in different horizontal positions for different diameters of forms, and band members arranged in circumferentially adjustable sections conforming to said inner and outer faces and secured to said uprights.

2. In a concrete form construction, the combination of a pair of spaced molding walls of flexible material adapted to be expanded or contracted to various diameters of form, a series of uprights provided with means for securing the same to said molding walls at different points horizontally along the latter, band members arranged in sections conforming to the inner and outer faces of said molding walls and adjustable circumferentially with reference to said walls, and means for adjustably securing said band sections to said uprights.

3. In a concrete form construction, the combination of a pair of spaced molding walls, a series of uprights adjustable horizontally along the inner and outer faces of said walls, band members arranged in sections extending between said uprights and conforming to said inner and outer faces, and band supporting members carried by said uprights and having adjustable connection with the adjoining ends of said band sections.

4. In a concrete form construction, the combination of a pair of spaced molding walls adapted to be expanded or contracted to different diameters, a series of uprights provided with connections for securing the same to the inner and outer faces of said walls and at different points circumferentially thereof, band members arranged in sections extending between said uprights and conforming to said inner and outer faces, and band supporting members carried by said uprights and having adjustable telescopic connection with the adjoining ends of said band sections.

5. In a concrete form construction, the combination of a pair of spaced molding walls adapted to be expanded or contracted to different diameters of form, a series of uprights provided with connections for securing the same to the inner and outer faces of said walls and at different points circumferentially thereof, band members of T-shaped cross-section arranged in sections extending between said uprights and conforming to said inner and outer faces, and band supporting channel members carried by said uprights and formed to slide and receive the adjoining ends of said band sections and provided with adjustable connections therewith.

6. In a concrete form construction, the combination of a pair of spaced molding walls adapted to be expanded or contracted to different diameters of form, a series of uprights provided with connections for securing the same to the inner and outer faces.
of said walls and at different points circumferentially thereof, band members arranged in sections extending between said uprights and conforming to said inner and outer faces, and band supporting channel members carried by said uprights and having adjustable telescoping connection with the adjoining ends of said band sections, said channel members being formed to permit slight relative lateral movement of the ends of said sections as the uprights are shifted to different positions.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D.C."