My invention has for its object to provide a derrick particularly adapted for the construction of walls formed of bonded slabs. The invention has possibly its greatest advantage in the construction of walls that are formed of stone staves, or cement blocks that are placed on their ends and have edge grooves and ridges that interfit, and wherein the walls are exteriorly bonded by tension members that produce inward pressure upon the wall. The invention particularly has for its object to provide a derrick which will coact with exterior bands to cause the blocks of alternate courses to flare whereby slabs may be easily placed in courses contiguous to those with which the blocks are interbonded in the formation of the construction. The invention also provides a means whereby the outward pressure that produces the flared condition may be easily removed while at the same time the workmen are supported so that they may tighten the bands to remove the flared condition and maintain the cylindricity of the structure as the work progresses.

The invention may be contained in derricks of different forms and for producing constructions that vary in shape and to illustrate a practical application of the invention, I have selected a derrick as an example of such structures and shall describe it hereinafter. The derrick selected for purposes of illustration is shown in the accompanying drawings.

Fig. 1 is a side view of a construction that is represented as being built and part of the structure being shown broken away to illustrate parts of the derrick and its operation. Fig. 2 is a top view of the structure and the adjustable derrick. Fig. 3 illustrates a step in the method of using the derrick. Fig. 4 illustrates a broken view of the connection between a part of the tripod and link forming a part of the derrick shown in Fig. 1.

In the particular form of the invention that has been selected for the purposes illustrating its application, a cylindrical structure is shown in the process of being formed. The building may be for the purpose of storing or containing coal, that is, it may be a coal bunker or it may be a silo or any similar structure. The structure is formed of slabs 1 having a groove 2 on one of its side edges and a groove 3 on one of its end edges, the latter is preferably on the lower end for the purpose of shedding water. Each block is also provided with a rib 4 on one of its side edges and a rib 5 located on its top edge that fits the corresponding grooves of the adjoining blocks. The slabs 1 are placed on their ends and half length slabs are placed alternately with full length slabs in starting the structure. The structure is bonded by means of bands or rods 7 that are located substantially at the points of alternate courses. The ends of the bands or rods 7 are tied together by suitable members that draw the ends together and thus tightly clamp the blocks. As illustrative of such a means, there is shown in the drawings a block 8 that is clamped between the nuts 9 that are threaded onto the ends of each rod 7.

In order to support the workmen so that they can readily place the blocks in position, and thus rapidly construct the building, a derrick 10 is supported on the upper edges of certain of the blocks. The derrick 10 is provided with a plurality of hooked members or frames 11 that have hooks 12 that fit over the upper edges of certain of the blocks. A plurality of links 13 are connected to the frames 11 by means of the ears 14 that are located at points that are a little less than the length of the blocks below the hooks 12. This places the pivot point of the connection between each link 13 a little above the lower end of the block on which its associated frame 11 is supported.

The links 13 are also pivotally connected to a ring 15 from which the links 13 radiate. The ring 15 is provided with lugs or ears 16 and bolts 17 extend through irons 18. The ears 16 pivotally connect the links 13 to the ring 15. The links 13 are somewhat longer than the distance between the center of the building and the pivot pins in ears 14 so that when the ring 15 is raised to near its highest possible point the links 13 slope upward to the frames or members 11 at a slight angle.

The ring 15 is connected to a U-member 20 that forms a bail for supporting the ring 15. A tripod 19 has its lower ends or feet supported on three of the links 13 at points...
that are near to the frames or members 11. The lower ends of the parts of the tripod 19 are pivotally connected to the ears 22 by means of the bolts 23. The upper ends of two of the members of the tripod 19 are provided with bent irons 24 and a bolt 25 extends through the third member of the tripod 19 to pivotally connect the tripod members together. A pulley 26 is also suitably connected to the upper end of the tripod and a pulley 27 is connected to the U-member 20. A rope or cable 28 extends over the pulleys 26 and 27 which may be operated to raise or lower the ring 15 and the end of the rope 28 may be suitably fastened in order to secure the ring in the position in which it is thus placed.

When the ring 15 is drawn upward the links 18, acting as members of a toggle joint, are pressed outward. Since the hooked members 11 are pivotally connected to the ends of the links 13 at a point slightly above the lower ends of the blocks on which they are supported, the thrust that is thus produced duces flares the blocks outward. Because of the rib and groove interconnection between the blocks, the blocks, adjoining those on which the frames 11 are supported, will likewise be flared outward. This increases the spaces between the side edges of the uppermost row of blocks and hence new blocks may be readily inserted between the higher alternate courses.

The flaring of the blocks is limited by a band or rod that is placed along a mid-point of blocks of alternate courses, among which are the blocks on which the hooked members or frames 11 are supported. This uppermost band is thus placed along the upper end edges of the blocks of alternate courses and by means of the nuts 9 it is adjusted to permit the desired play of the uppermost blocks to produce the required spaces between them and so as to permit the placement of the contiguous row of blocks in alternate courses.

When the new row of blocks has been placed in position, the derrick is loosened by lowering the ring 15 which operates to reduce the thrust of the links 13 against the members 11. The uppermost rod or band 7 may thus be tightened so as to draw the blocks into position and tightly bind them by reason of the groves and ridges and by the band 7 itself. The hooked members or frames 11 are then placed so their hooks engage the uppermost edges of blocks in courses contiguous to those that in the preceding operation supported the frames and at the same time a succeeding band 7 may be placed along the edges of the blocks where the hooks were previously located, the ends of the band being somewhat loosely connected so that when the ring 15 is drawn upward by the operation of the cable 28 the uppermost rows of blocks will be flared and spaced from each other to permit the ready placement of another row of blocks as before. The operations described are repeated as the structure of the building progresses.

The workmen are supported on a platform 30 that is supported by rods 31 that are secured to the lower ends of the hooked members or frames 11 and to bars 32 that protrude from the frames 11 and form a triangle that rigidly holds the rods 31 and 75 and the bars 32 in position. If desired the rods 31 may be extended upward and a protective railing or cable 33 may be located on or supported by the upper ends of the rods 31. Planks 34 are located on the bars 32 on which the workmen may stand while placing the blocks 11 in position. When the frames 11 are to be placed on the higher courses, the workmen will sit on the ends of the blocks and pick up the frames 11 and place them in position.

In order to handle the blocks 1 a suitable clamp or tongs 35 may be connected to a pulley or guide roller 36 that moves along a cable 37 when the cable is drawn upward and the tongs 35 and the blocks 1. The cable 37 may be passed over a pulley block 38 that may be supported on the ends of rods 39 and 40, one of which may be connected to one of the uppermost blocks and the other connecting to the upper end of the tripod as indicated in Fig. 1. As the blocks are raised they are taken by the workmen and placed in position.

The flaring of the blocks is limited by a band or rod that is placed along a mid-point of blocks of alternate courses, among which are the blocks on which the hooked members or frames 11 are supported. This uppermost band is thus placed along the upper end edges of the blocks of alternate courses and by means of the nuts 9 it is adjusted to permit the desired play of the uppermost blocks to produce the required spaces between them and so as to permit the placement of the contiguous row of blocks in alternate courses.

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in contact with the inner surfaces of the wall, a plurality of links substantially the same length and pivotally connected to the said members, means for supporting the outer ends of the said links above the lower ends of the next to the last row of slabs of the wall as it is being built, and means for forcing the outer ends of the links and the said members outward to flare the slabs of the last row outward.

In witness whereof I have hereunto signed my name to this specification.

FRANK H. GERDEMAN.