July 10, 1923. 1,461,426

M. L. LISOWSKI

APPARATUS FOR BUILDING CONSTRUCTION

Filed Sept. 8, 1919 3 Sheets-Sheet 1

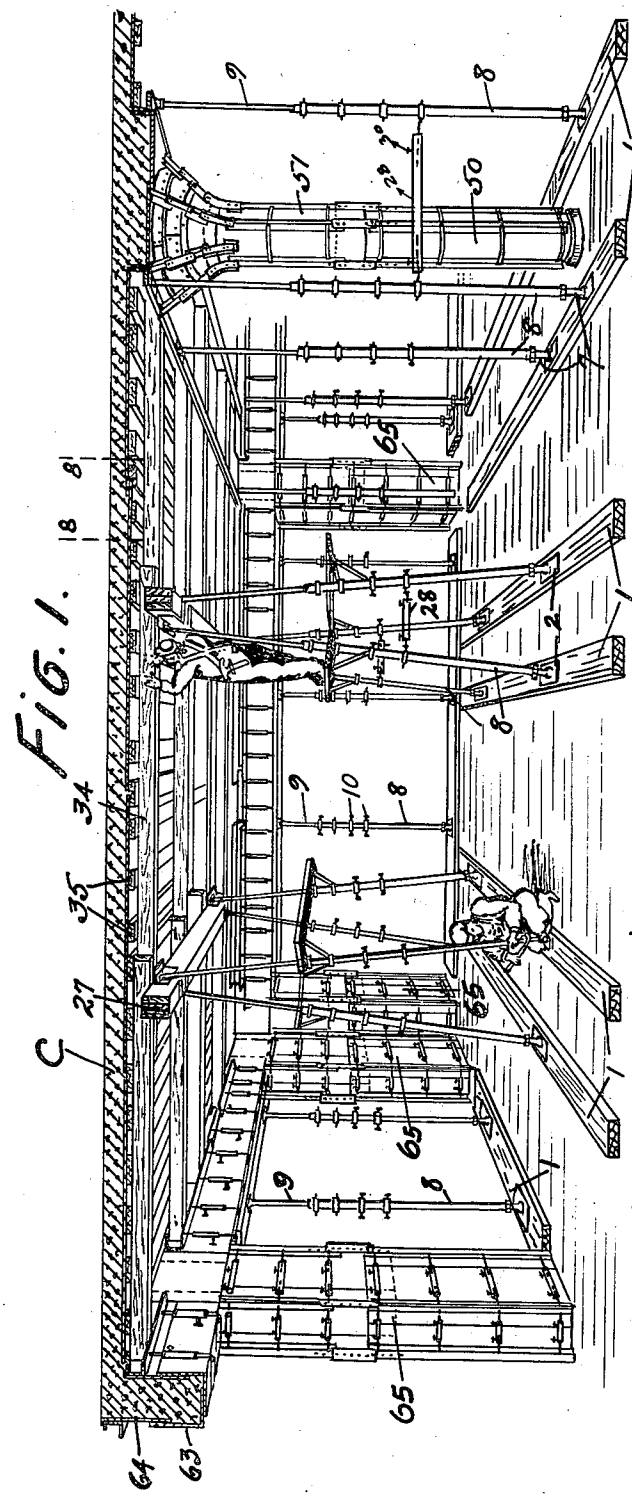


FIG. 1.

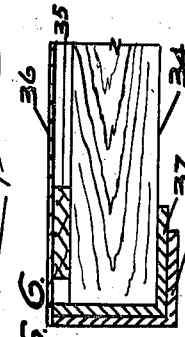


FIG. 6.

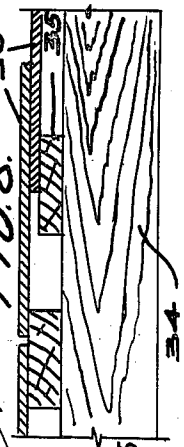


FIG. 8.

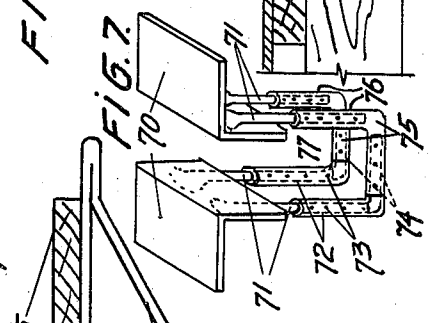


FIG. 7.

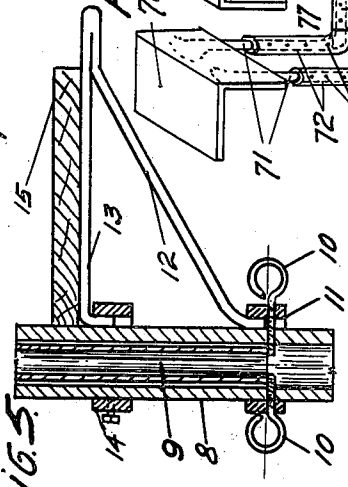


FIG. 5.

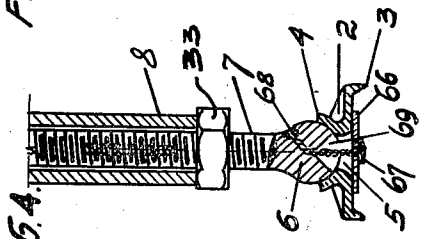


FIG. 4.

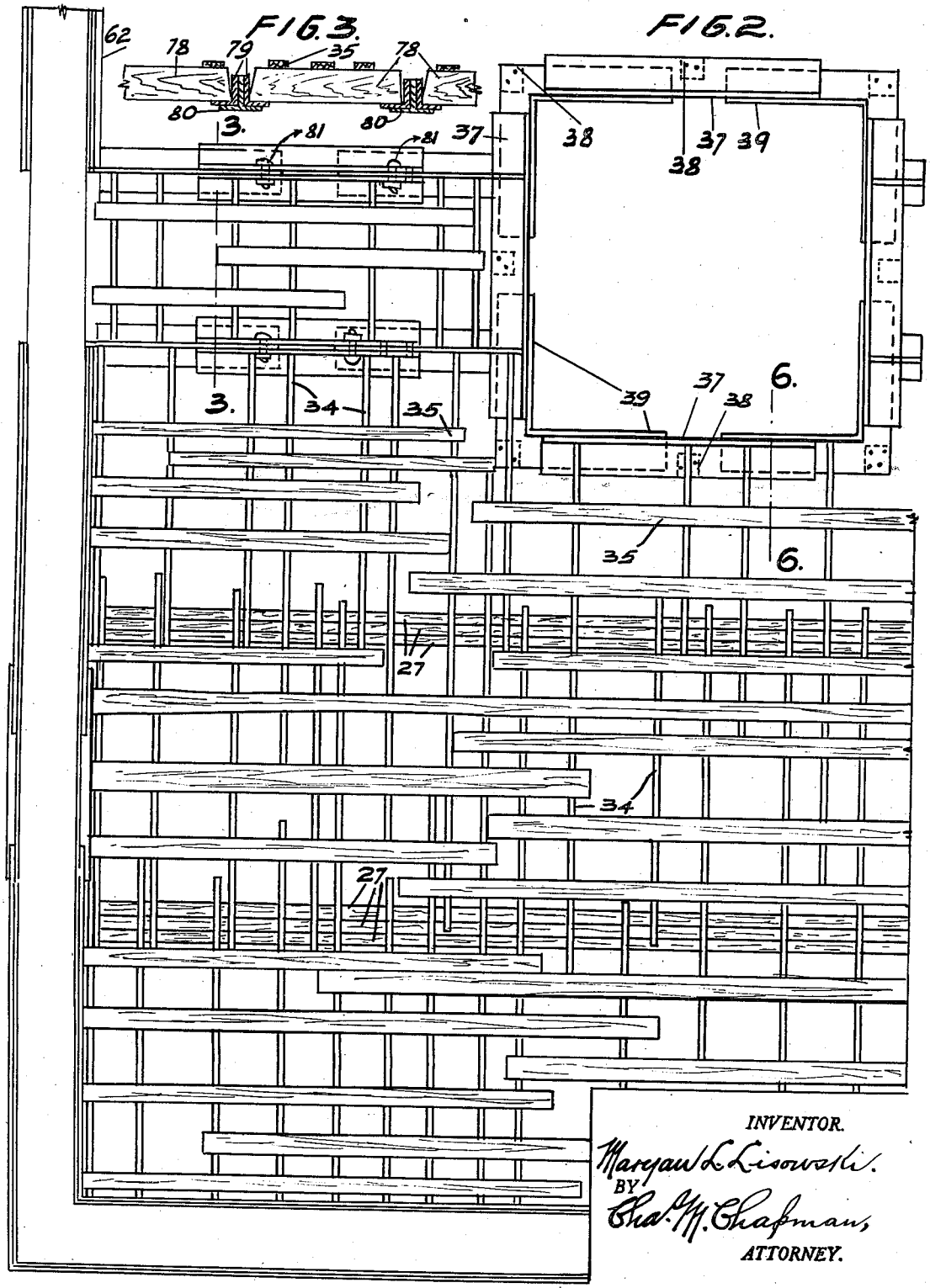
INVENTOR.
Maryan L. Lisowski.
BY
Chas. M. Chapman.
ATTORNEY.

July 10, 1923. 1,461,426

M. L. LISOWSKI

APPARATUS FOR BUILDING CONSTRUCTION

Filed Sept. 8, 1919 3 Sheets-Sheet 2



INVENTOR.
Maryan L. Lisowski.
BY
Chas. M. Chapman,
ATTORNEY.

July 10, 1923.

1,461,426

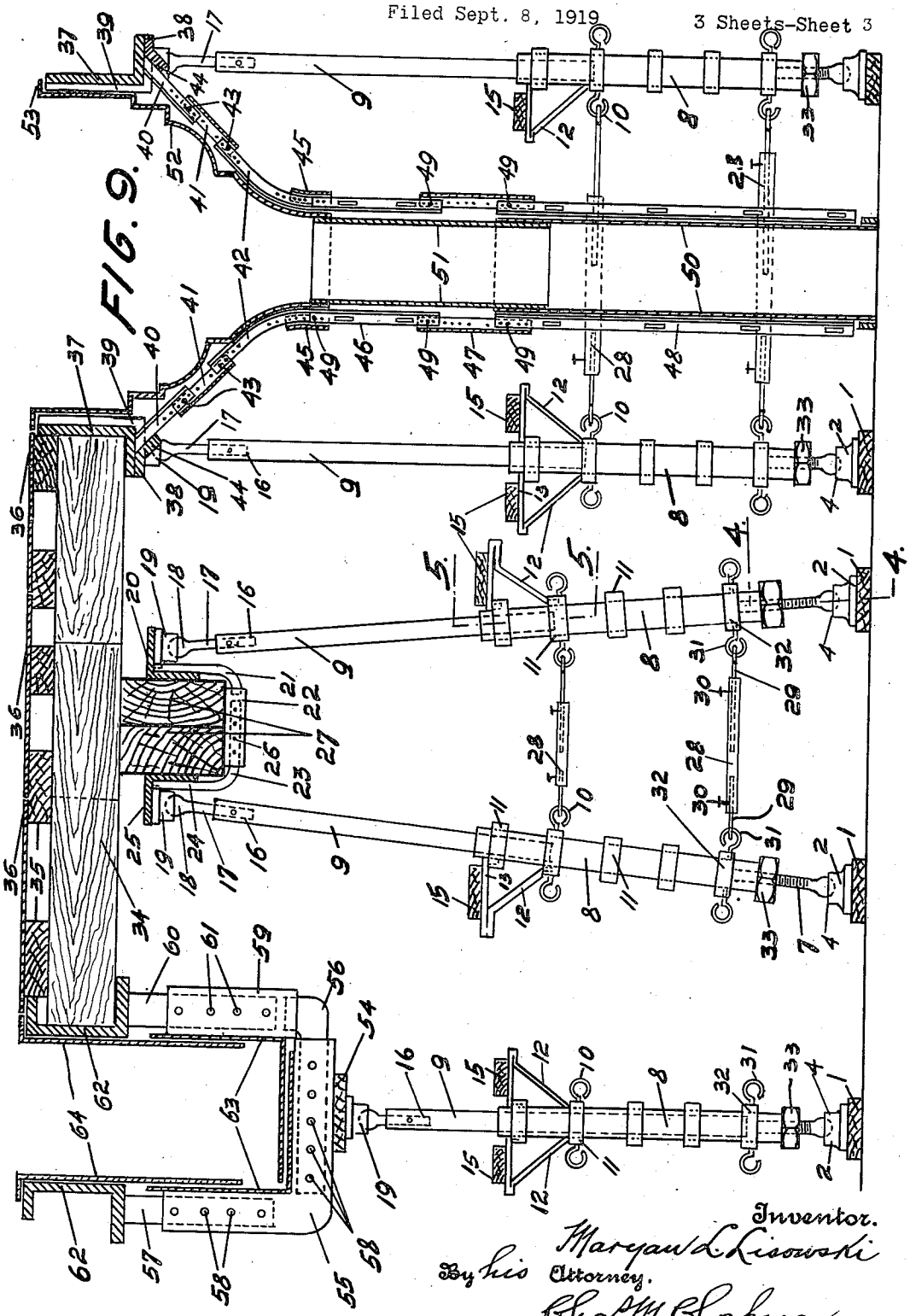
M. L. LISOWSKI

APPARATUS FOR BUILDING CONSTRUCTION

Filed Sept. 8, 1919

3 Sheets-Sheet 3

FIG. 9.



Inventor.
Maryan L. Lisowski
By his Attorney.
Chas. M. Chapman

Patented July 10, 1923. 1,461,426

UNITED STATES PATENT OFFICE.

MARYAN L. LISOWSKI, OF CRANFORD, NEW JERSEY.

APPARATUS FOR BUILDING CONSTRUCTION.

Application filed September 8, 1919. Serial No. 322,453.

To all whom it may concern:

Be it known that I, MARYAN L. LISOWSKI, a citizen of the United States, residing in Cranford, in the county of Union and State of New Jersey, have invented a new and useful Improvement in Apparatus for Building Construction, of which the following is a description.

This invention has reference to the art of constructing buildings such as dwellings, factories, apartment houses, storage buildings, garages, etc., from cement by the process of pouring and, particularly, has reference to means, devices, and apparatus by which the structures may be erected quickly, easily and with great facility.

Among the objects of my invention may be noted the following: to provide apparatus, which are strong, durable, quickly erected and capable of being used over and over again, by which to construct buildings of various sizes and forms having permanent structural features or characteristics essential to the particular building determined upon; to provide apparatus and devices by means of which large spans in buildings, such as ceilings, floors, etc., may be erected and simultaneously therewith pillars, columns, and other supporting formations may be produced; to provide apparatus which is simple, economical, capable of being quickly erected, strong and durable, and adapted to be used for the fabrication of cement structures and particularly in connection with buildings having unusual floor spaces and unobstructed areas; to provide means by which columns, pillars, stanchions, and other supporting means may be erected or constructed simultaneously with the construction of the ceilings or floors of buildings, and at the same time produce simulations of girders, beams, rafters, etc.

In order that my invention may be clearly understood, I have provided drawings wherein:

Figure 1 is a perspective view of a section of a structure which may be a pavilion, garage, department store, or other similar structure requiring large and unobstructed floor space, the view showing the way in which the pillars, columns, stanchions, or other supporting means are produced simultaneously with the ceiling and other structural features;

Figure 2 is a top plan view of Figure 1, showing the planking or supporting means for the form-plates employed;

Figure 3 is a section substantially on the line 3—3 of Figure 2;

Figure 4 is a sectional detail of one of the adjustable feet employed on the jack-scaffolding used in the contsruction of buildings according to my invention, the section being taken on the line 4—4, Figure 9;

Figure 5 is a sectional view of a feature of construction pertaining to the means for supporting the platform on which the workmen operate, forming part of the scaffolding, the section being taken on the line 5—5, Figure 9;

Figure 6 is a sectional view showing a detail on the line 6—6 of Figure 2;

Figure 7 is a perspective view of a means by which certain of the form-plates or the girders may be supported;

Figure 8 is a sectional view of a detail embraced between the lines 8—8, Figure 1; and

Figure 9 is a sectional elevation of a portion of the apparatus used in constructing buildings according to my invention.

Primarily, it should be understood that great difficulty has been experienced in constructing cement buildings with large floor areas and in producing for said buildings cement ceilings, pillars, stanchions or other supporting means, and in producing structures having wide spans from cement either poured or of a more substantial or plastic nature. It has also been found difficult in structures of the kind noted in the foregoing to produce the simulation of pillars, girders, moldings, etc., simultaneously with the construction of the span and the pillars supporting the same. According to my invention, the various features of construction set forth in the foregoing can be produced simultaneously and with great facility and rapidity by the use of simple apparatus which may be used over and over again, indefinitely, in constructing successive floors of the building and in constructing successive buildings. Thus, waste of material and the employment of skilled labor are reduced to a minimum. The details of apparatus and devices employed by me and their mode of use will be readily understood upon reference to the drawings wherein:

The numeral 1, Figures 1 and 9, indicates foundation planking on which socket-plates 2 are set, said socket-plates being provided

with a sharpened flange 3, Figure 4, adapted to more or less bite or sink into the planking 1, so that the socket-plates may not be readily shifted under lateral pressure. The socket-plates are provided with upwardly extending circular socket-members 4, bored centrally as at 5, the socket-members 4 being adapted to receive ball-feet 6 on the end of screw-threaded legs 7 adapted to enter the lower ends of threaded tubular bars 8, which, at their upper ends, receive rods 9 telescopically, the rods 9 entering the tubular bars 8, so as to engage and rest upon the screw-eyes 10 passing through the bars 8, said eyes also holding collars 11 in the proper position for the reception of the lower end of a bracket arm 12, the collars 11 being sufficiently large to permit the entry of the down-turned end of bracket-arm 12 between the same and the tubular bar 8. The supporting arm 13 of the bracket also has its down-turned end entering between the tubular bar 8 and a collar 14 surrounding the latter and held by a screw. Thus a support is provided for plank 15 on which the workmen may stand to perform such operations as may be required. The rods 9 at their upper ends are provided with sockets 16 (see Figure 9) for the reception of a leg 17 having a ball-end 18 adapted to enter the socket plate 19 on which rests the horizontal member of an angle-plate 20, carried by curved arms 21 having at their lower ends horizontally disposed sockets 22 for the reception of the horizontal portion 23 of arms 24 carrying angle-plates 25, the horizontal portion of which is adapted to rest upon similar socket-plates 19 cooperating with the ball-ends 18 of legs 17 entering sockets 16 in telescoping rod 9. The member 23 is adjustable in the socket 22 by means of apertures 26 in the latter into which screw-eyes may be inserted to bind against the member 23, or enter corresponding holes or depressions therein. Thus the U-shaped supporting device may be adjusted as to its lateral width for the reception of any desired number of beams 27. Each two sets of jack-supports, arranged in juxtaposition, as shown in Figures 1 and 9, may be linked and braced together by adjustable devices consisting of a tubular member 28 into the opposite ends of which are inserted eye-bars 29 held by screws or pins 30 and adjustable, as may be desired, to engage screw-eyes 31 inserted in collars 32 surrounding the bars 8. The jack-supports are raised and lowered by adjusting nuts 33 surrounding the legs 7, and the bars 8 are at rest upon the nuts 33 at their lower ends. According to the length of the telescoping members 8 and 9, as many of the connecting and bracing devices 28 will be used as may be found necessary. Thus, a plurality of jack-supports may be provided for supporting one, two or more beams 27 which, in turn, will support cross-beams or temporary girders 34 on which planking 35 is laid for the support of flat form-plates 36, the edges of which may be abutted or overlapped, as may be found desirable. (See Figures 1 and 8.) The structure just described is particularly adapted for the support of the framing over large spans or stretches of flooring or ceiling as needed.

For producing columns, pillars, or stanchions, circular in form, or in fact having any form desired, the mechanism shown at the right of Figure 9 is employed, the same consisting of a pair of telescoping members 8 and 9 with all the structural features and characteristics described and having all the devices cooperating therewith, as shown in the middle of Figure 9. At the ends of beams 34, an angular frame-plate 37 is applied, the lower portion of which underlaps the beams 34. Cooperating with the frame-plates 37 and riveted thereto is a slotted angle-plate 38 against which socket-plates 19 operate. The slots 39 of the angle-plates 38 are adapted to receive a bar 40 entering coupling 41 in which also enters a bar 42, the three being held together by screws, pins or similar devices 43 passing through apertures in the coupling 41 and registering apertures in the bars 40 and 42. The bar 40 at its upper end engages a flange 44 of the angle-plate 38, which maintains the bar 40 in the proper position relatively to said angle-plate. The bars 40—42 and coupling 41 are duplicated along the length of the column as often as may be necessary, as shown at the right of Figure 9 and indicated by 45—46, 47—48, and said couplings and bars are adjustably connected by means of screw-eyes or pins 49 passing through the couplings and bars to adjustably hold them together. The couplings and bars thus described are made of angle-iron for strength and rigidity and form stiffeners for the several form-plates 50—51, any number of which may be used according to the length of the pillar, stanchion, column, etc. The form-plates 50—51 may be cylindrical, or sections of a cylinder, as may be found most convenient, and capable of telescoping one another, as shown at the right of Figure 9. At the upper end of the column, where the same is joined to the ceiling, an ornamental header 52 may be employed, consisting of a single member or a plurality of members so connected together as to have the desired ornamental shape or form required at the head of the column. To support the ornamental header 52 in position, its upper edge is flanged at 53 so as to overlap the angle-members 37. Thus a column framing or casing is built up, into which cement may be poured, and the casing or frame thus produced may be braced by as

many jack-bars 8—9 as may be found necessary, and said jack-bars will be linked together by brace and tie members 28 similar to those shown in the middle of Figure 9.

When it is desired to produce, in any portion of the span or ceiling, a depending molding or simulation of a beam or girder, mechanism such as shown at the left of Figure 9 is employed, the same consisting of jack-supports 8—9, the sockets 19 of which are set under planks 54 on which rest socketed angle-members 55, in the horizontal portion of which rods 56 are inserted and in the vertical portion of which rods 57 are inserted. The rods 56 and 57 are rendered adjustable in the member 55 by means of pins passing through apertures 58 and entering registering apertures in the arms 56—57 respectively. The arm 56 supports in vertical position the socket 59 adapted to receive bar 60 which is adjustable in the socket 59 by means of pins passing through apertures 61 and into registering apertures in the bar 60. The bars 57 and 60 are set under U-shaped angle-beams 62 which encompass the ends of beams 34 or similar supports, thus completing the frame-work which may be U-shaped or any other suitable form and any number of which may be distributed along the structure, as shown in Figure 1. The supports thus provided receive angular form-plates 63 forming the bottom of the mold and which, as shown, overlap each other. The vertical members of the form-plates 63 are overlapped by angular form-plates 64, the horizontal members of which rest upon beams 62 and cooperate with the form-plates 36. Thus a mold is provided for producing a rectangular, pendent, cement member in similitude of a beam, girder, etc.

In order to provide additional supports or ornamental features of construction such as side pillars, etc., frames and casing members, angular in form, are provided and generally indicated at 65, Figure 1, the same being rectangular in form instead of cylindrical, as shown at the right of Figure 9. The stiffeners, couplings, form-plates and binding means, shown at the right of Figure 9, are all employed with such modifications as will be found necessary to adapt the same to the angular form as distinguished from the circular columns.

To overcome any possibility of separation of feet 6 and socket-plates 2, the latter are provided with an anchoring plate 66, to the bottom of which is welded the head 67 of a chain or wire-rope 68 extending upwardly into the flared aperture 69 of ball-foot 6, said rope being welded, or otherwise fixed, to the foot 6. The anchoring plate 66 is welded to the bottom of socket-plate 2. Thus the foot 6 may slide in the socket 4 universally; but, cannot in any condition of use jump or slide out of the socket.

Another form of device for supporting the beams 27 is shown in Figure 7, wherein the angle-plates 70 are welded to bars 71, which have socket-members 72 adjustably secured thereto by pins or screws 73 entering registering apertures in the bars and sockets. The sockets have arms 74 fixed thereto, which arms enter horizontal members 75 of angular sockets, the vertical members 76 of which receive the bars 71. Sockets 75—76 are adjustably secured to arms 74 and bars 71, respectively, by pins or screws 77 entering registering apertures in the several members.

At certain points in the supporting or framing structure, as in narrow spaces, or short stretches between pillars or other members, Figures 2 and 3, it may be found expedient and economical to render the supporting members adjustable, owing to variations in the distances between parts of the contemplated structure. To produce the results desired, I provide joists 78, which may be short lengths, supported by angles 79, where the joists have their ends adjacent, which angles are, in turn, supported by T-beams 80, which rest upon the angles 37 at one end and upon the angle-beams 62 at the opposite ends. Thus the several members can be adjusted lengthwise of the T-beams and may have a limited adjustment laterally of said beams. Registering apertures in the vertical flange of beam 80 and cooperating flanges of angles 79 are adapted to receive bolts 81 for holding any adjustment made. These adjustments become important in many positions in the framing.

From the foregoing description it will be seen that I have provided apparatus, mechanism, and devices by means of which scaffolding can be erected and supported, framing can be set up, and form-plates supported is position and in such manner as to produce a mold or molds for floors and ceilings, columns and pillars, circular or rectangular, as well as ornamental features and useful features of construction such as beams, girders, moldings, etc., all at one operation by pouring limpid cement into the molds and permitting them to become set. This is done according to my invention, by first pouring the cement into the various molds of the columns, pillars, or stanchions; then pouring the cement into the molds for the girders, beams, moldings, etc.; and then pouring the cement to the depth desired for the ceiling or floor, all of which will be readily understood upon viewing Figure 1. Thus I first pour and produce what may be termed the anchoring means for a given span, ceiling or flooring; then I pour and produce the beams, girders or moldings which are to be structures pendent from the span and which are to cooperate with certain stanchions, pil-

lars, or columns; and I then pour and produce the flooring, ceiling or span, constituting the connecting medium between, and which is to be separated by the pillars, columns, stanchions, beams, girders and moldings. Also, according to my method, I may build a single story structure, as shown and described with reference to Figure 1, or I may build additional stories in similar manner to that described with reference to Figure 1, as well as to that described in my companion application filed of even date herewith.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. Apparatus for use in constructing molds for cement buildings comprising jack-scaffolding made up of a plurality of telescopic stanchions; means for temporarily securing the stanchions to base planking; means for securing a plurality of the stanchions rigidly together; and U-shaped members connecting the upper ends of the stanchions for the support of one or more beams.

2. Apparatus for use in constructing molds for cement buildings comprising stanchions; means for vertically adjusting the stanchions; U-shaped beam-supporting means connecting the upper ends of the stanchions; means for laterally adjusting the upper ends of the stanchions through the medium of said U-shaped supporting means; and means for adjusting the supporting means vertically relatively to the stanchions.

3. Apparatus for use in constructing molds for cement structures comprising a plurality of beams arranged in alignment lengthwise; connecting means between the beams comprising a plurality of L-shaped angle-plates upon which the beam ends rest; a T-beam interposed between the L-shaped plates for supporting the latter; and means connecting the cooperating flanges of the T-beams and L-plates for longitudinal adjustment.

4. Apparatus for use in constructing molds for cement buildings comprising a plurality of telescopic stanchions; means for adjusting the members of the stanchions relatively to vary the length thereof; means applied to the bottoms of the stanchions to prevent the same from slipping; a column mold arranged between the stanchions, said column mold being composed of a plurality of circular, telescoping sections, and means for adjusting said sections relatively to vary the length thereof correspondingly with the stanchions; means rigidly connecting and bracing the stanchions adjacent the column mold; an ornamental header applied to the column mold; and cooperative means between the stanchions and header for maintaining the relation of the several parts.

5. Apparatus for use in constructing frame-work for cement buildings comprising a plurality of telescopic stanchions; means for adjusting the sections of the stanchions relatively to vary the length of the latter; means at the bottom of the stanchions for supporting and holding the same from slipping; means at the top of the stanchions for connecting the same in pairs, said means including a U-shaped support made up of a plurality of sections and means for adjusting the sections relatively to vary the distance between the tops of the stanchions; bracing means rigidly connecting the stanchions between their ends; and means for adjusting the length of the bracing means correspondingly with the width of the top connecting means.

MARYAN L. LISOWSKI.