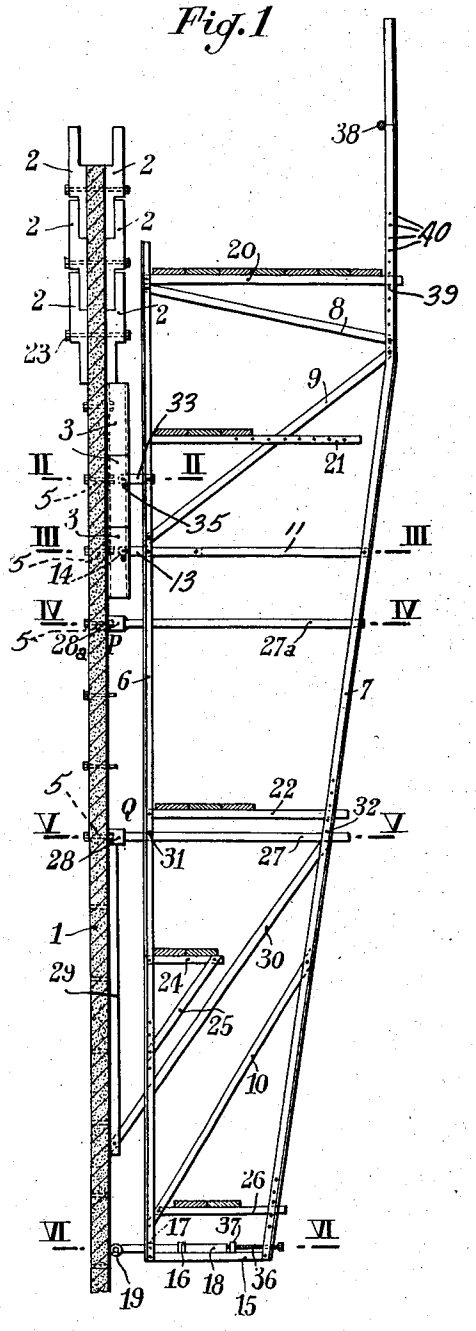
July 7, 1959 L. FAYE 2,893,786

BRACKET TYPE SCAFFOLDING, ADJUSTABLE IN HEIGHT, SLIDINGLY, FOR CONCRETE WALL ERECTION

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Fig. 1



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BRACKET TYPE SCAFFOLDING, ADJUSTABLE IN HEIGHT, SLIDINGLY, FOR CONCRETE WALL ERECTION

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Fig. 3

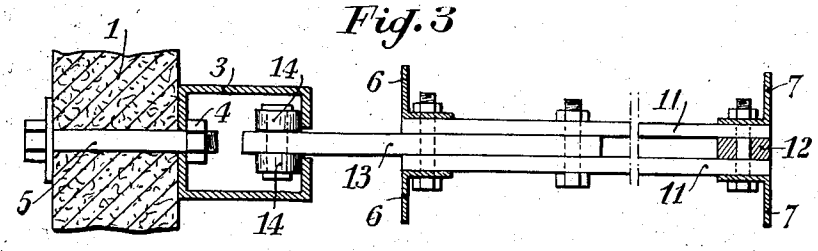


Fig. 4

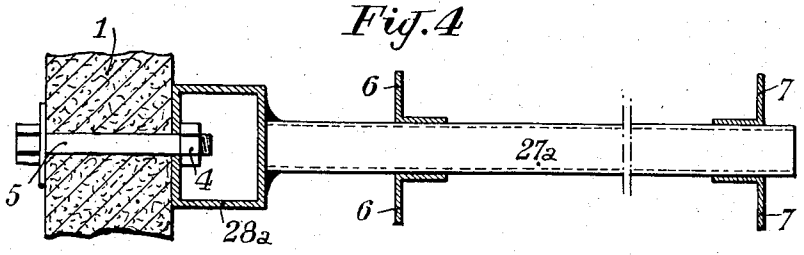


Fig. 5

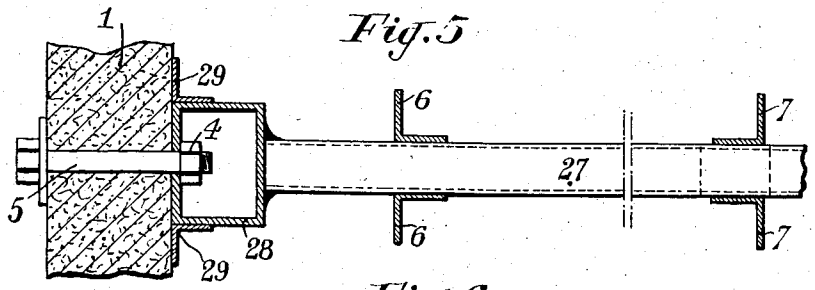


Fig. 6

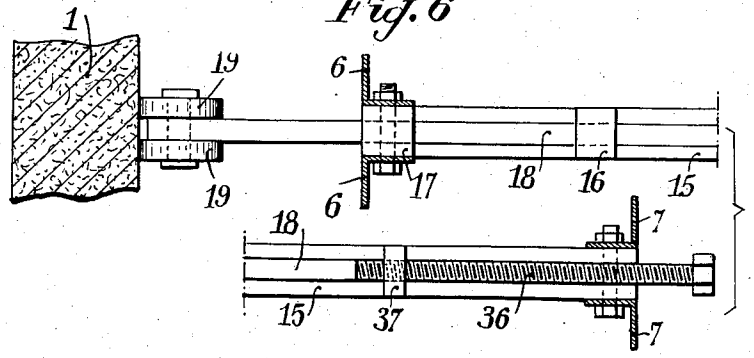
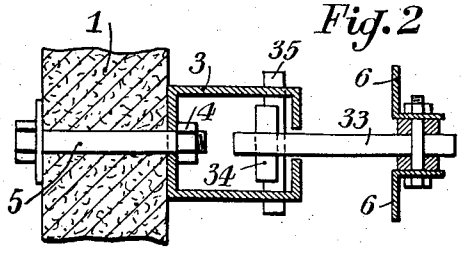


Fig. 2



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2,893,786

BRACKET TYPE SCAFFOLDING, ADJUSTABLE IN HEIGHT, SLIDINGLY, FOR CONCRETE WALL ERECTION

Louis Faye, Paris, France

Application February 11, 1957, Serial No. 639,470

Claims priority, application France February 10, 1956

8 Claims. (Cl. 304—14)

There has been disclosed, in applicant's previous French Patent No. 998,293, of October 28, 1949, and in the patent entitled Planking Apparatus for Concrete Walls, filed on February 15, 1955, a planking apparatus for the erection of concrete walls in successive courses, which consists essentially of pole elements, to be superposed on one another.

The positioning of this apparatus as well as the casting operations for the successive concrete courses require a scaffolding which, according to known methods and for walls of a certain height, is difficult to build and not very convenient in use.

The object of this invention is an apparatus which makes it possible to form a bracket type scaffolding mounted slidingly on the erected portion of the wall to be built, and movable upwards by the height of one course after the casting of each course.

In this apparatus, rectilinear elements of a rolling track should be secured vertically, end to end against the working face of the wall to be erected for forming a rolling track extending downwards of each column of pole elements or certain of these columns, one upright for each one of these columns of pole elements carries a pair of upper rollers for rolling engagement inside the rolling track and a lower roller for carrying, against the face of the wall, a removable bracket to be secured against the face of the wall and which supports the weight of the upright and holds it at the required height for the erection of each course, and also supports floors resting at various levels on two consecutive uprights serving as working stations.

The nature and advantages of this invention will appear more completely from the description of one type of embodiment which will be given hereinafter by way of illustrative and nonlimitative example, with reference to the appended drawing wherein:

Figure 1 shows, in section, a concrete wall being built on the completion of the casting for which the two pieces of planking and scaffolding apparatus have been placed in position.

Figures 2 to 6 are sections, on a larger scale, respectively along II—II to VI—VI of Figure 1 showing various details.

In the arrangement represented in the drawings, the concrete wall 1 is being erected by using, on each face, planking columns formed of three superposed pole elements 2. The scaffolding apparatus according to the invention is to be mounted along the working face. The right hand face, according to the section in Figure 1, comprises three identical rolling track elements 3 each having the height of a concrete course and to be arranged

vertically, end to end, and under the column of the three pole elements 2 against the working face. Each one of these rolling track elements 3 consists of a square tube bored with a hole in the face to be laid against the working face, and with two holes in register in the side faces and provided with a longitudinal slot on the front face. Each one of these elements 3 thus constituted is secured against the working face, as may be seen in Figures 2 and 3 by screwing a nut 4 on a bolt 5. Said bolt 5 which is engaged in one of the holes left free through the wall by the removal of the assembling rods 23 of the removed planking apparatus used for the erection of that portion of the wall. The head of this bolt 5 which bears on the face of the wall opposite the working face is shaped with a bearing collar and an anchoring spike entering the concrete when the collar is brought to bear and thus immobilizing the bolt in rotation.

The apparatus also comprises an upright which is formed, essentially, of a pair of angle irons 6, 6 spaced from each other and of another pair of angle irons 7, 7 with the same spacing, which angle iron pairs are connected together by tubes 8, 9, 10, each one of which is bolted, through each one of its ends, between two angle irons 6, 6 and 7, 7 of one of the two pairs. The two pairs of angle irons 6, 6 and 7, 7 are also connected by a tie bolt formed of two flat parts 11, 11 united by bolting on both sides of two flat irons 12 and 13. The flat iron 13, which is arranged between the two angle irons 6, 6 extends towards the working face beyond these angle irons and carries a pair of rollers 14 which engage inside the rolling track and, specifically, in that portion of the rolling track constituted by the first one, from the bottom, of the three elements 3. Each one of the two ends of a square tube 15 is bolted between the lower ends of the two angle irons 6, 6 and of the two angle irons 7, 7 and this square tube 15 carries ribs 16, 17 through which slides a flat iron 18, one end of which, extending beyond the pair of angle irons 6, 6 towards the working face is terminated by a pair of rollers 19, 19 bearing on that face. The pair of rollers 19, 19 is made to bear against the working face according to an adjustable position by a screw 36 engaging a fixed nut 37 welded on the square tube 15.

At the height of one concrete course above the tie-bolt 11—13 a flat iron 33 is mounted between the two angle irons 6, 6 in a similar manner to the flat iron 13 of that tie-bolt 11—13, towards the working face and carries a cross piece 34 engaged in that part of the rolling track constituted by the second one from the bottom, of the three rolling track elements 3. In addition, a removable pin 35 is engaged, transversely in that rolling track element 3 through the holes of its side faces, slightly underneath the level of the lower face of the cross piece 34. A tube 20, bolted at one end between the two angle irons 6, 6 rests by its other end, which is located between the two angle irons 7, 7 on the shank of a bolt 39 the position of which, in a pair of holes facing each other to be selected out of a series of pairs of holes 40 in these two angle irons 7, 7 makes it possible to adjust at will the inclination of that tube 20 with respect to the angle irons 6 along the working face. Two flat irons 21, bolted respectively at two points in register in the two angle irons 6, 6 are drilled with a series of holes and the shank of a bolt engaged into two corresponding holes to be selected in these series causes these two angle irons to rest on the

tube 9 with an adjustable inclination. At a lower level a tube 22 is arranged between the angle irons 6, 6 and 7, 7 in the same manner as the tube 8. Lower down, a tube 24, bolted between the two angle irons 6, 6 is braced on these angle irons by a bracing tube 25 also bolted between the angle irons 6, 6. Finally, about the bottom of the upright, two flat irons 26 bolted on both sides of the tube 10 are stopped with an adjustable inclination on the shank of a bolt to be mounted in one pair to be selected out of a series of pairs of holes drilled in the pair of angle irons 7, 7. On the tubes 20, on the pairs of flat irons 21, on the tubes 22, on the tubes 24 and on the pairs of flat irons 26 of two consecutive uprights, floors are mounted which constitute various working stations stepped in height and which may be arranged horizontally for the various inclinations of the working face and consequently of the pair of angle irons 6, 6 along that working face. Against the two angle irons 7,7 and above the tube 20 which supports the floor of the highest working station, a tube 38 is welded forming a guard, or hand rail. The upper ends of the angle irons 6, 6 and 7, 7 are provided with holes for the fastening of a gantry for supporting the pulley for hoisting the materials.

The apparatus also comprises a bearing element, in which the essential element is a tube 27 to be inserted between the angle irons 7, 7 and 6, 6 and terminated, about the working surface by a rectangular tubular fastening part 28, the face of which, facing the working surface is drilled with a hole. This tube may thus be secured normally to the working face by a bolt 5 and a nut 4 similarly to the rolling tracks 3. For constituting the bearing element, this assembly of the tube 27 and its fastening piece 28 is completed by two angle irons 29, 29, acting as rest pieces, the upper ends of which are welded on both sides of the fastening piece 28 and the lower ends of which are bolted on both sides of a tube 30 which braces the tube 27 to which it is welded. The upright is provided with two bolts 31 and 32 connecting the two angle irons, respectively of the two pairs 7, 7 and 8, 8. This upright, being positioned with the two angle irons of each pair on either side of the tubes 27 and 30, is supported by the shanks of the two bolts 31 and 32 on the upper tube 27 of the bearing piece, and thus this bearing piece supports the whole weight of the upright. Furthermore, this bearing piece maintains the correct orientation of the upright by preventing all side warping thereof.

The apparatus also comprises an orientation bar consisting of two elements 27*a* and 28*a* identical with the elements 27 and 28 of the bearing piece 27—30, and which is to be secured in the same manner, normally to the working face, at a higher level.

In order to pass from the arrangement of Figure 1 to the working arrangement for casting the next concrete course, the first elements 2 from below are dismantled, according to a known method disclosed in the two above-mentioned patents, and again on all consecutive columns of pole elements, for re-assembling them, by means of their assembling rods 23 above the third ones. By means of a hoist attached at P on the fastening part 28*a* of the orientation bar 27*a*—28*a* and tied at Q on the bolt 31 mounted between the two angle irons 6, 6 the upright 6—6 is raised by the height of a course corresponding to the vertical interval of two consecutive holes left free through the wall by the assembling rods 23 which were used for securing the planking apparatus. The pin 35 is removed from element 3 in which it is engaged and which has become the first one from the bottom for engaging it into the upper element which has become the second one. Should the hoist become slack, due to a wrong operation, the upright 6—6 is then suspended by the flat iron 33 bearing on that pin 35. The bearing piece 27—30 is disassembled by removing the nut 4 and bolt 5 which secures it and during this operation the upright 6—6 remains protected against any side warping by the action of the orientation bar 27*a*—28*a*. The bearing piece 27—30 is again secured by means of its bolt 5 and nut 4 to be engaged in the upper hole of the wall. The hoist is then removed and the upright 6—6 then rests again by its bolt 31 on the bearing piece 27—30 thus displaced. The first elements 3 from the bottom are then disassembled for assembling them again above the third ones at the locations left by the removed elements 2. The orientation bar 27*a*, 28*a* is then disassembled and raised by one course. The whole planking and scaffolding apparatus is then, in the working arrangement of the drawings, at a level which is higher by the height of one course. In cases when the inclination of the wall to be erected varies with height, the bearing of the roller 19 on the working face is controlled by acting on the screw 36 so as to place the working stations resting respectively on elements 20, 21, 22 and 26 and particularly the main working station resting on element 20 at the desired distance from the working face. By displacing the bracing bolts in the corresponding holes, the adjustable elements 20, 21, 22 and 26 are set horizontal and, consequently the floors resting on these elements. One may then proceed with the casting of the next concrete course, hoisting the materials by means of a pulley hanging from a gantry shaped extension, not shown, which is to be secured at the upper ends of angle irons 6, 6 and 7, 7.

Numerous modifications may be made in the above-described form of embodiment with reference to the drawing, without departing from the scope of the invention. In particular, the nature of the semi-finished products used for construction as well as the number and arrangement of the working stations may be chosen at will.

The use of the apparatus according to the invention brings about, especially in the case of high structures, a considerable saving in materials and labour as compared with usual methods, in which a scaffolding is used over the entire height of the structure. Another advantage is that the workmen are always placed at the height which has been selected as most suitable with respect to the portion of the wall being built.

What I claim is:

1. An apparatus for forming a bracket type scaffolding mounted slidingly on the built portion of a wall to be built by casting successive concrete courses in a planking held by columns of superposed pole elements in which the lowermost element is removed after the casting of one course for securing this element above the uppermost element and holding the planking of the next course to be cast, said apparatus comprising rectilinear elements of a roller runway to be secured vertically, end to end, against the working face of the wall to be erected for forming a runway extending downwards along the pole elements, an upright for each one of these runways, a pair of rollers mounted on each one of these uprights, said pair of rollers to be engaged for rolling inside the runway, a bearing for each upright, said bearing to be attached against the working face for supporting the weight of the upright while holding said upright at the proper height for the construction of the course to be cast, and platforms to be mounted at various levels between two consecutive bearings for serving as work stations.

2. An apparatus for forming a bracket type scaffolding mounted slidingly on the built portion of a wall to be built by casting successive concrete courses in a planking held by columns of superposed pole elements in which the lower-most element is removed after the casting of one course for securing this element above the uppermost element and holding the planking of the next course to be cast, said apparatus comprising rectilinear elements of a roller track to be secured vertically, end to end, against the working face of the wall to be erected for forming a runway extending downwards along the pole elements, an upright for each one of these rolling

tracks, a pair of rollers mounted on each one of these uprights, said pair of rollers to be engaged for rolling inside the runway, another pair of rollers mounted on the upright underneath the first pair of rollers, a bearing for each upright, said bearing to be attached against the working face for supporting the weight of the upright at an intermediate point, between the first and second pair of rollers while holding said upright at the proper height for the construction of the course to be cast, said upright tending to pivot by gravity about said intermediate point in the direction to move the first pair of rollers away from, and the second pair of rollers towards, said working face by urging the rollers of said first pair against said runways and the rollers of said second pair against said working face, and platforms to be mounted at various levels between two consecutive bearings for serving as work stations.

3. An apparatus for forming a bracket type scaffolding mounted slidingly on the erected portion of a wall to be built by casting successive concrete courses of equal height in a planking held by columns of pole elements superposed on one another in which the lowermost element is removed after the casting of one course, thereby leaving free, in the built portion of the wall, a hole which has been used for the fastening of this element in that position for securing this same element above the uppermost element and holding the planking of the next course to be cast, this apparatus comprising rectilinear roller runway elements, each one of these roller runway elements having the height of one course to be cast, being of a prismatic tubular shape and having a rear face drilled with a hole and a front face provided with a longitudinal slot, the pole elements having to be extended downwards by a rolling track to be formed by mounting end to end a series of rolling track elements each one of which is secured by its rear face against the working face by bolting through the hole of said rear face and of one of the holes left free, in the erected portion of the wall, an upright for each one of said roller runways, a pair of rollers mounted on each one of these uprights, said pair of rollers to be engaged inside the roller runway, another pair of rollers mounted on the upright underneath the first pair of rollers, a bearing for each upright, said bearing to be secured against the working face for supporting the weight of the upright at a point intermediate between the first and second pairs of rollers, while maintaining this upright at the height required for the construction of the course to be erected, said upright tending to pivot by gravity about said intermediate point in the direction to move said first rollers away from, and said second rollers towards, said working face, by engaging the rollers of said first pair behind the front face of the elements of said runway on either side of the slots formed in said front faces, and engaging the rollers of said second pair against said working face, and platforms to be mounted at various levels between two consecutive bearings for serving as working stations.

4. An apparatus for forming a bracket type scaffolding mounted slidingly on the erected portion of a wall to be built, by casting successive concrete courses in a planking held by columns of pole elements superposed on one another, in which the lowermost element is removed after the casing of a course, while leaving free in the erected portion of the wall a hole having previously served for securing said element in that position above the element occupying the topmost position and holding the planking for casting the next course, said apparatus comprising rectilinear roller runway elements to be secured vertically end to end against the working face of the wall to be built for forming a roller runway extending downwards along said pole elements, an upright for each one of these roller runways, said upright comprising two rectilinear angle irons arranged parallel to each other at a certain and relatively small spacing and on either side of a plane of symmetry of this upright, two other rectilinear angle irons arranged parallel to each other at the same spacing as said two first angle irons, and symmetrically with respect to said plane of symmetry of this upright, and cross-stays and braces rigidly connecting said two second angle irons with said two first angle irons, a pair of rollers mounted on each one of said uprights and protruding between the first two angle irons on the side opposite to the second two angle irons, said pair of rollers to be engaged for rolling inside the roller runway, another pair of rollers mounted on said upright and protruding between the first two angle irons above the first pair of rollers, a bearing for each upright to be secured normally against the working face underneath the roller runway by engagement in one of the holes left free in the erected portion of the wall, said upright thus secured against the working face being engaged between the first two angle irons and between the two other angle irons, while supporting the weight of the upright at a point intermediate said first and second pairs of rollers while maintaining said upright in a position in which said upright is at the proper height for casting the course to be built and in which the plane of symmetry of said upright extends at right angles to the working face, said upright tending to pivot by gravity about said intermediate point in the direction to move said first rollers away from, and said second rollers towards, said working face by engaging said first rollers against said runways and said second rollers against said working face, and platforms to be mounted at various levels between two consecutive bearings for serving as working stations.

5. An apparatus for forming a bracket type scaffolding mounted slidingly on the erected portion of a wall to be built by casting successive concrete courses in a planking held by columns of superposed pole elements in which the lowermost element is removed after the casting of one course for securing that element above the topmost element and holding the planking of the new course to be cast, said apparatus comprising rectilinear roller runway elements to be secured vertically end to end against the working face of the wall to be built, for forming a runway extending downwards along the pole elements, an upright for each one of said roller runways, a pair of rollers mounted on each one of said uprights, said pair of rollers to be engaged for rolling inside said roller runways, another pair of rollers mounted on the upright underneath the first pair of rollers, a bearing for each upright, said bearing to be secured against the working face for supporting the weight of the upright at a point intermediate said first and second pairs of rollers while holding said upright at the proper height for casting the course to be built, said upright tending to pivot by gravity about said intermediate point in the direction to move said first rollers away from, and said second rollers towards, said working face by engaging said first rollers against said runway and said second rollers against said working face, means for adjusting the position of said second pair of rollers relative to said upright and therefore the angular position of said upright to the vertical, and platforms to be mounted at various levels between two adjacent bearings, with an adjustable inclination to constitute working stations arranged horizontally whatever may be the angular position of the upright to the vertical.

6. An apparatus for forming a bracket type scaffolding according to claim 2, wherein each upright carries, above the first pair of rollers and at a height above said pair of rollers equal to the height of one rolling track element, a clip to be engaged inside the rolling track behind the front faces of said rolling track, said clip opposing the tipping over of the upright about the lower pair of rollers when dismantling the rolling track element in which the rollers of the first pair are engaged.

7. An apparatus for forming a bracket type scaffolding according to claim 3, wherein each rolling track element has side faces drilled with holes in register and which

comprises, at least for some of the rolling track elements a pin which can be engaged in these holes across a rolling track element underneath a clip engaged in said rolling track element, said pin supporting the weight of the upright when the bearing is dismantled.

8. An apparatus for forming a bracket type scaffolding according to claim 4, comprising in addition for each upright, an orientation bar to be secured normally against the working face between the rolling track and bearing by engagement in a hole which has been used for assembling a removed pole element, said orientation bar thus secured against the face being engaged between the first two angle irons and between the other two angle irons

while maintaining said upright in a position in which the plane of symmetry of said upright is oriented perpendicularly to the working face thus allowing the disassembling of the bearing with no risk of side warping of the upright.

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