Sept. 11, 1923. 1,467,662

W. VAN AALST

CONCRETE MOLD SUSPENSION DEVICE

Filed Aug. 21, 1922 2 Sheets-Sheet 1

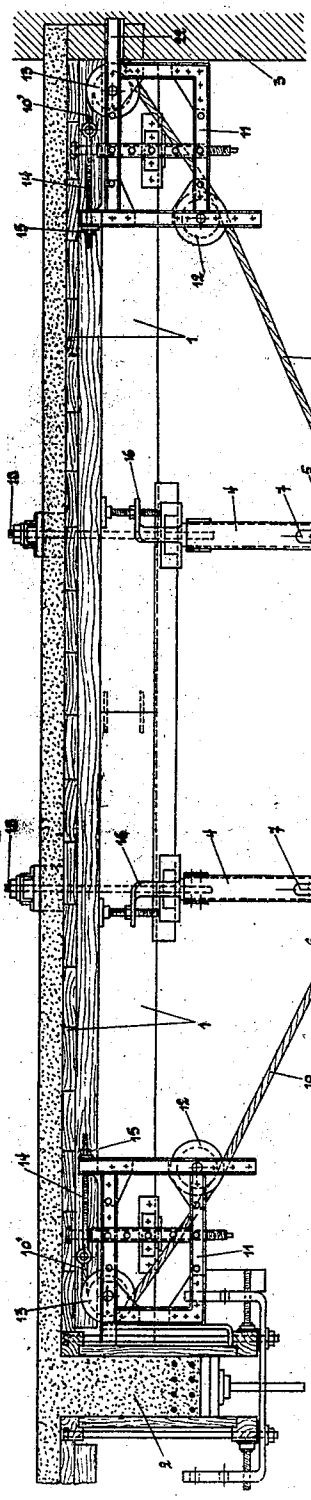


Fig. 1.

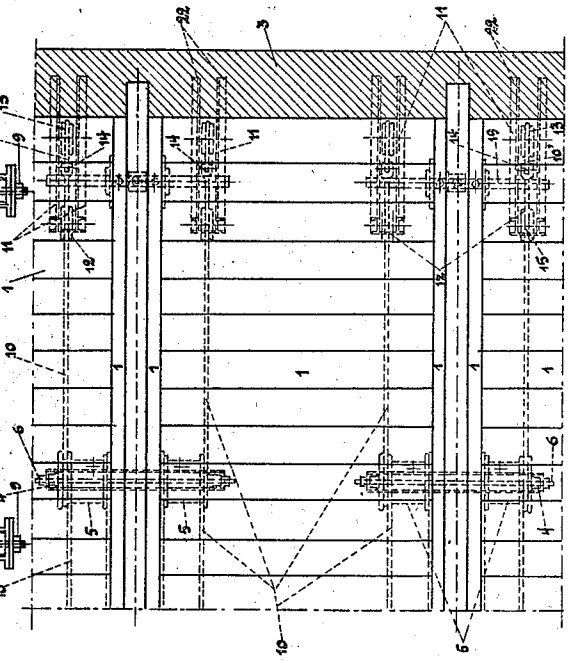


Fig. 2.

Inventor:
Willem Van Aalst
per: J. Severs
Attorney.

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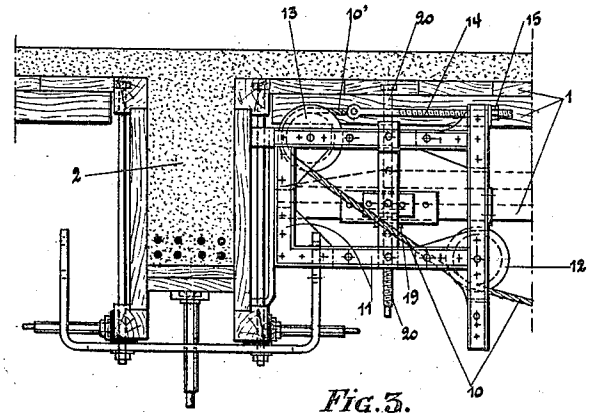


Fig. 3.

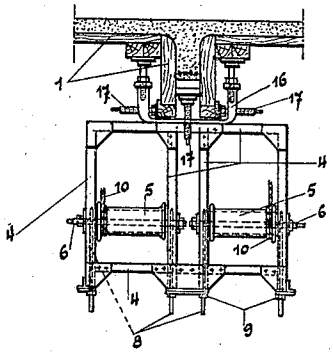


Fig. 4.

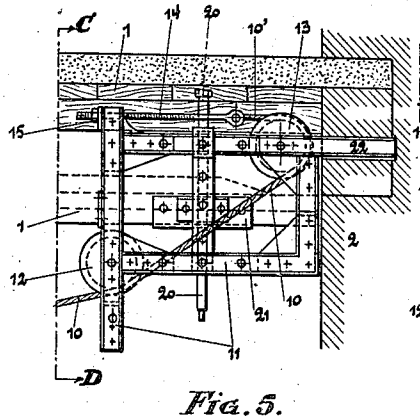


Fig. 5.

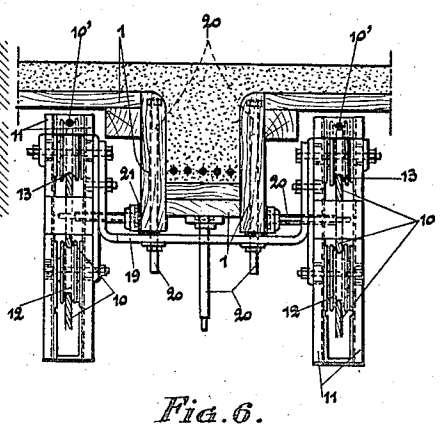


Fig. 6.

Inventor:
Willem Van Aalst
per [signature]
Attorney.

Patented Sept. 11, 1923. 1,467,662

UNITED STATES PATENT OFFICE.

WILLEM VAN AALST, OF MORTSEL, NEAR ANTWERP, BELGIUM.

CONCRETE-MOLD SUSPENSION DEVICE.

Application filed August 21, 1922. Serial No. 583,328.

To all whom it may concern:

Be it known that I, WILLEM VAN AALST, a subject of the King of the Belgians, residing at Mortsel, near Antwerp, Kingdom of Belgium, have invented new and useful Improvements in Concrete-Mold Suspension Devices, of which the following is a specification.

The present invention relates to an improved suspension device for supporting wooden and like frame-work used in the construction of concrete and ferro-concrete beams, joists, ceilings and the like extending over a relatively large span, the object of the invention being mainly to provide a device of this type which will be adjustable in every desirable way and ensure a most rational distribution of the efforts while being of simple and strong construction.

With these objects in view, the device according to the invention comprises a pair of vertical supporting steelwork frames for carrying the central portion of the span of the wooden or like framework, each fitted at or near the base with a pair of rollers whose height may be adjusted; these vertical supporting frames are, through the medium of their rollers, carried by means of steel or like cables of which the ends are secured to a pair of substantially rectangular steelwork bracket frames bearing against and fixed in relation to the permanent supports, such as walls and large transverse beams, at the ends of the span.

One of the main features of the invention consists therein, that the cables are at the ends of the span passed round turnback sheaves carried by the bracket frames and situated in the upper corner thereof adjacent the corresponding permanent end support, so that the end-portions of said cables, after passing round the sheaves referred to extend horizontally towards the center of the span, the end proper being secured to the bracket frames by means of a suitable eye bolt and nut, this method of fixation allowing the pull on the ends of the cable and the tension or tightness of the cables themselves to be adjusted at will.

In order that the invention may be more readily understood, certain embodiments thereof, are, by way of example only, illustrated by the accompanying drawings, wherein:

Fig. 1 is a longitudinal elevation showing the device according to the invention in position, the permanent end supports consisting of an existing transverse beam at one end of the span and a brick wall at the other end.

Fig. 2 is a plan showing the wooden framework for a concrete ceiling and beams, a pair of devices according to the invention being shown in position underneath in dotted lines,

Fig. 3 is a side elevation of one of the bracket frames at the ends of the span in position, the permanent support consisting of a transverse concrete beam,

Fig. 4 is a transverse section taken along the line A—B of Fig. 1 and showing one of the vertical supporting frames.

Fig. 5 is a side elevation showing one of the bracket frames at the ends of the span in position, the permanent support consisting of a wall, and

Fig. 6 is a transverse section on the line C—D of Fig. 5.

As may be seen from Fig. 1 of the drawing, the wooden framework 1 for the concrete beam and ceiling or floor to be constructed extends between a large existing reinforced concrete beam 2 and an existing brick wall 3. The central portion of the span of the said wooden framework is supported by means of two vertical steel work frames 4 (see also Fig. 4), which are at or near the base fitted with a pair of rollers 5. The spindles 6 of these rollers extend through vertical slots 7 in the frame-work 4 and are carried by means of threaded rods or bolts 8 which, through the medium of nuts 9 bearing against the base of the frames 4, allow the height of the rollers 5 to be adjusted at will.

The supporting frames 4 are themselves carried by means of a pair of cables 10. Each of the cables 10 extends between corresponding rollers 5 of the frames 4, passes round said rollers and from each of the latter leads upwardly towards the opposed ends of the span, where the ends of the said

cable 10 are attached, in the manner which will be described in detail hereunder, each to one of a pair of substantially rectangular steelwork bracket frames 11 bearing against and suitably fixed in relation to the corresponding permanent end supports constituted by the beam 2 and the wall 3. Each of the bracket frames 11 carries a pair of guiding sheaves 12 and a pair of turn back sheaves 13 for the cables 10, situated in diagonally opposed corners of said frames 11, the sheaves 13 being situated in the upper corner adjacent the permanent end supports 2, 3.

Each of the end portions of each cable 10 passes first under one of the guiding sheaves 12 (see also details in Figs. 3, 5 and 6) and then round one of the turn back sheaves 13 so that the ends proper 10′ of the cables 10 are directed from the ends towards the center of the span. The said ends 10′ are secured each to an eye bolt 14 which is at its free end fitted with a tightening nut 15 bearing against the top corner of the corresponding vertical member of the frame 11 nearest the center of the span. It will be understood that by means of the nuts 15 the tension of the cables 10 may be readily adjusted. Moreover, it will be noticed that owing to the method of securing the ends of the cables 10, combined with the fact that the horizontal eye bolts 14 are situated higher than the centre of the turn-back sheaves 13, the main efforts are only compression effort acting against the permanent supports, walls or beams, at the points where the bracket frames 11 bear against said supports. The vertical supporting frames 4 are maintained in position in relation to the wooden framework by any suitable adjustable means such as for instance straps 16 and screw bolts 17 (Fig. 4), wooden blocks being inserted where necessary. Where bolts such as 18 (Fig. 1) have to be ultimately enrobed in the concrete, they will before the operation be provided with a paper casing or the like so as to avoid adherence of the concrete and allow their removal to be effected readily when the concrete is set.

Similarly, the relative fixation of the wooden framework and the steel bracket frames at the ends of the span will be obtained by means of straps and bolts such as for instance 19 and 20 (Fig. 6) blocks of wood being inserted and angle irons such as 21 or the like being used where desirable, according to the needs of each particular case. When the permanent end support is constituted by a wall (Fig. 1ª) the horizontal top members of the bracket frames 11 may be made sufficiently long to provide an extension 22 for insertion in the brickwork of the wall 3.

It will be noticed that all the parts of the above described device are capable of being very easily adjusted everywhere desirable, although the device is of great simplicity. It will also be noticed that the device can be used for any length of span.

I claim:

1. In a suspension device for supporting wooden and like framework for concrete beams, joists, ceilings and the like extending over a relatively large span, the combination of: a pair of vertical steelwork supporting frames for the central portion of the span, having each a pair of rollers fitted at the base; a pair of substantially rectangular steel work bracket frames attachable to the permanent end supports having each a pair of guide-sheaves and a pair of turn-back sheaves in diagonally opposed corners, the last-named sheaves being situated in the upper corner adjacent the corresponding permanent end-support; a pair of suspension cables, each extending between corresponding rollers of the supporting frames and from each of the latter to the corresponding bracket frame, passing under the guide sheave and round the turn-back sheave towards the centre of the span; and combined adjustable means for securing the ends of each cable to the opposed bracket frames and applying a tension in a horizontal direction to said cable; substantially as described.

2. In a suspension device for supporting wooden and like framework for concrete beams, joists, ceilings and the like extending over a relatively large span, the combination of: a pair of vertical steelwork supporting frames for the central portion of the span, having each a pair of rollers fitted at the base; a pair of substantially rectangular steelwork bracket frames attachable to the permanent end supports having each a pair of guide-sheaves and a pair of turn-back sheaves in diagonally opposed corners, the last-named sheaves being situated in the upper corner adjacent the corresponding permanent end-support; a pair of suspension cables, each extending between corresponding rollers of the supporting frames and from each of the latter to the corresponding bracket frame, passing under the guide-sheave and round the turn-back sheave towards the centre of the span; and combined adjustable means for securing the ends of each cable to the opposed bracket frames and applying a tension in a horizontal direction to said cable, said means consisting of an eye-bolt forming an extension of the corresponding cable-end and fitted with a tightening nut bearing against a suitable portion of the bracket-frame; substantially as described.

3. In a suspension device for supporting wooden and like framework for concrete beams, joists, ceilings and the like, according to claim 2, means for adjusting the height of the rollers of the vertical supporting frames, said means consisting of screw

bolts carrying the roller-spindles and fitted with adjustment nuts bearing against the base of the frames, in conjunction with vertical guiding slots for said roller-spindles provided in the lateral members of said frames, substantially as described.

In testimony whereof I signed hereunto my name in the presence of two subscribing witnesses.

W. VAN AALST.

Witnesses:
G. D. HERSY,
A. DE CUYLER.