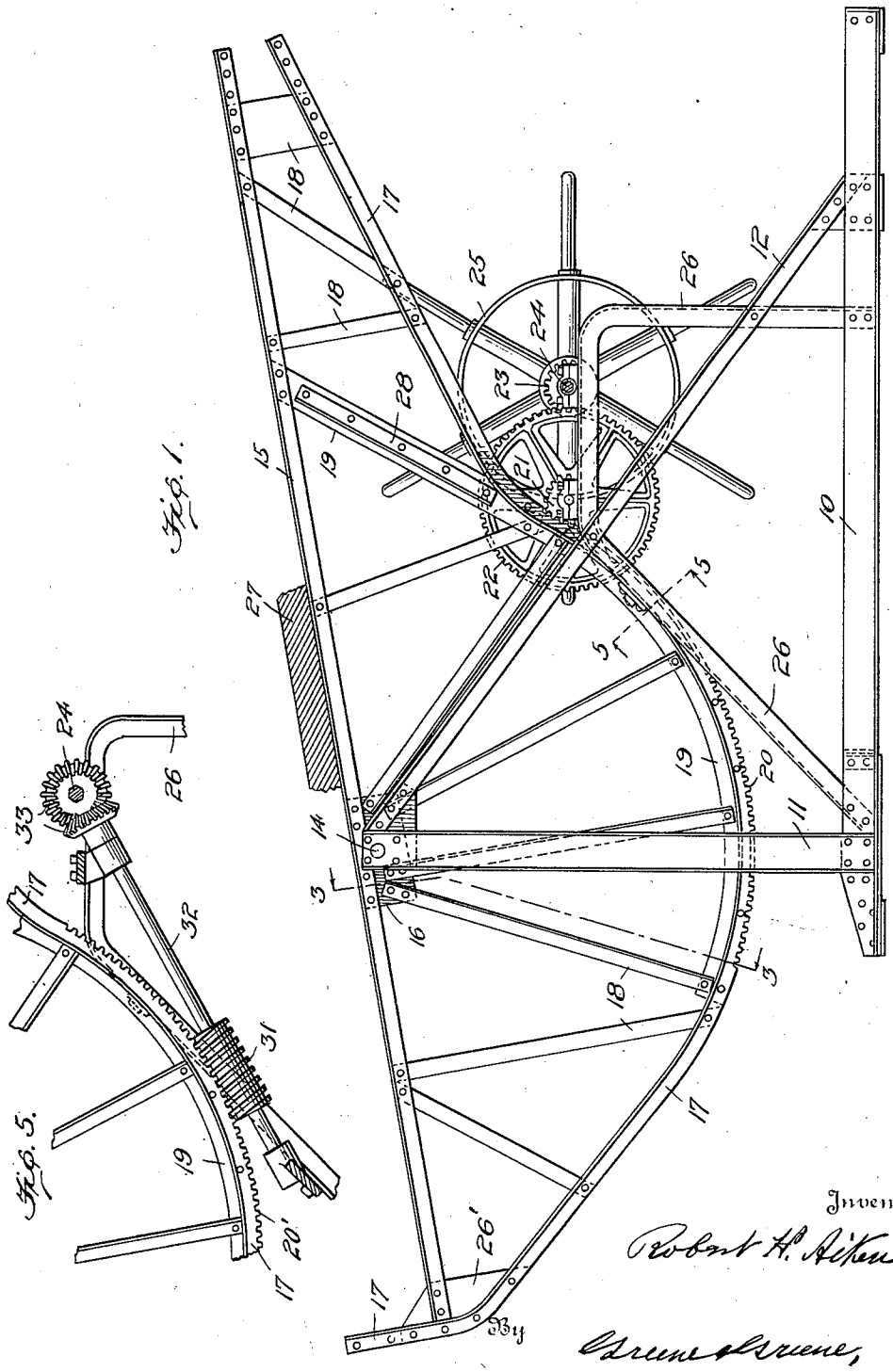
June 5, 1923. 1,457,684

R. H. AIKEN

ERECTION OF CONCRETE BUILDINGS

Filed April 17, 1922 2 Sheets-Sheet 1

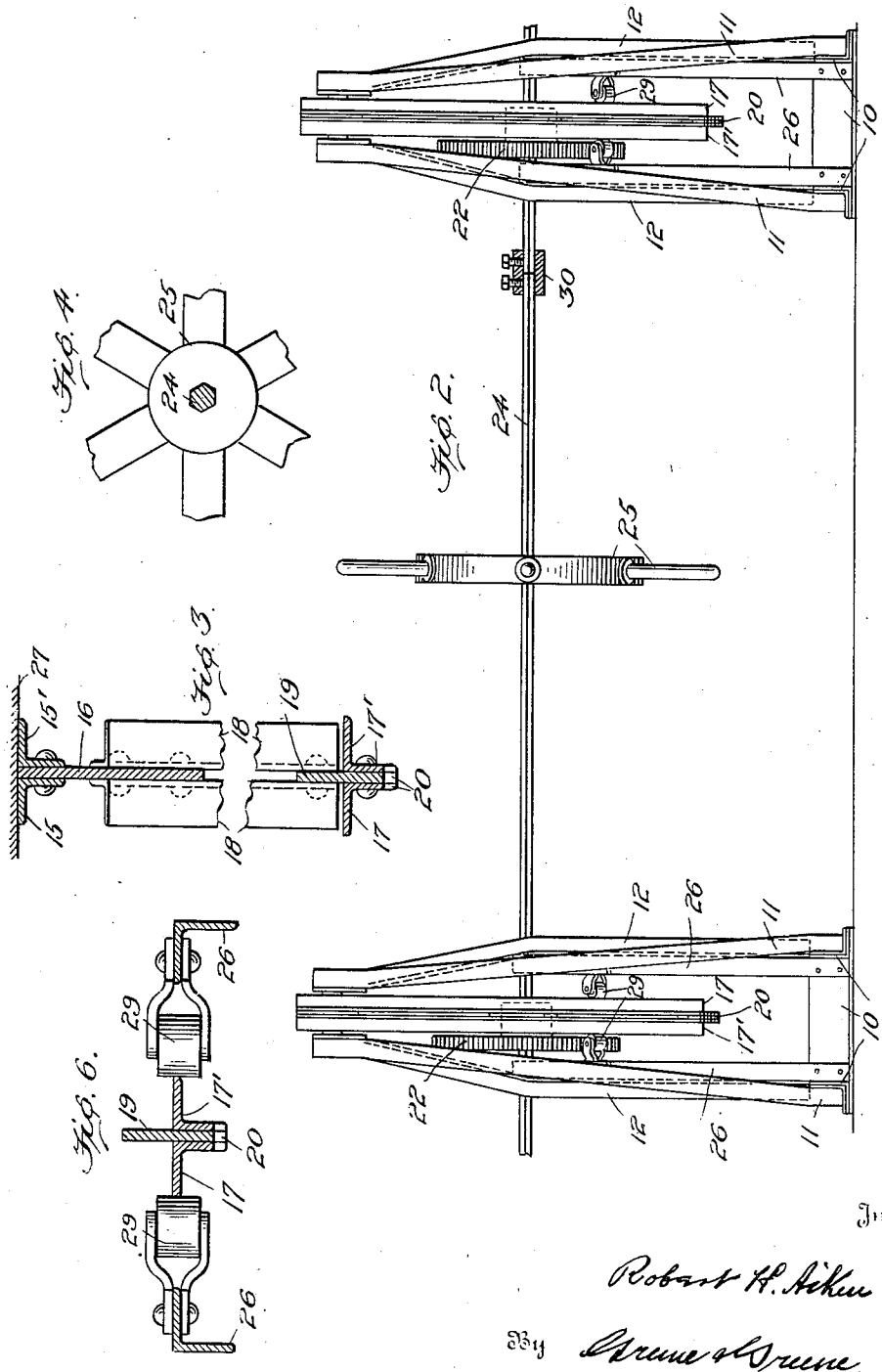


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Patented June 5, 1923. 1,457,684

UNITED STATES PATENT OFFICE.

ROBERT H. AIKEN, OF WINTHROP HARBOR, ILLINOIS.

ERECTION OF CONCRETE BUILDINGS.

Application filed April 17, 1922. Serial No. 553,510.

To all whom it may concern:

Be it known that I, ROBERT H. AIKEN, a citizen of the United States, and resident of Winthrop Harbor, in the county of Lake and State of Illinois, have invented certain new and useful Improvements in the Erection of Concrete Buildings, of which the following is a specification, reference being had therein to the accompanying drawing.

The walls and partitions of reinforced concrete buildings are sometimes formed in nearly horizontal or slightly inclined position alongside the support on which they are to rest and are then swung up to vertical position, preferably by a series of suitable jacks aligned under the wall and acting upon it at some distance from what is to be its lower margin.

The object of this invention is to produce simple, inexpensive quick-acting, readily transported devices for raising such walls. However, where very heavy walls are concerned, screw threaded jacks are preferred although they lack some of the advantages just suggested.

For the simpler forms such as are involved in this invention, I use a series of spaced, parallel, vertical, floor-supporting beams having their lower sides constituting large circularly curved geared segments which rotate with the frame about a common horizontal axis and between suitable supports, respectively, the geared segments being rotated by pinions, of the spur or worm type, as may be desired.

In the accompanying drawings,

Fig. 1 is a side elevation showing one beam and its geared segment, with operating devices.

Fig. 2 is an elevation looking from the left in Fig. 1 and showing duplicate jacks such as are seen in Fig. 1.

Fig. 3 is a section on the line 3—3, Fig. 1.

Fig. 4 is a side view of the central portion of a wheel by which a power shaft may be rotated to force the rotation of the geared segments.

Fig. 5 is a fragmentary view similar to Fig. 1 showing a modification in the use of worm gearing to swing the beams and their segments.

Fig. 6 is a detail view showing roller guides for geared segments.

In these figures 10 represents any suitable rigid base for supporting the rest of the apparatus and any wall thereon, 11 a pair of slightly separated vertical posts of U-shape in cross section and having their lower ends fixed to the base and their upper ends held by strong angle-iron braces 12 extending obliquely to a distant part of the base. At the upper end of each pair of posts a beam is supported upon a horizontal pivot 14, the beam being slightly inclined and made up as to its upper members of two oppositely turned registering members 15, 15′ of steel and of angular cross-section riveted to an intervening plate 16. The lower members of the beam, or truss, consist of two angle bars 17, 17′ analogous to the members 15, 15′ but at some distance below those members, in their planes, connected thereto by several ties or struts 18, 18, bent downward to form a curve having the pivot 14 as a center, and riveted to an intervening curved plate member 19, which like the adjacent members has its margin cut to form gear teeth 20 which are engaged by gearing 21, 22, 23 from a non-cylindrical power shaft 24 rotated by hand or otherwise through the action of one or more wheels 25 longitudinally adjustable upon any portion of the shaft 24. The gearing is mounted on frame members 26 rigidly connected to the base and to the braces 12.

The members 17, 17′ project upwardly beyond the lower and upper beam members, so that the wall cannot slide down the incline, and as the tendency to slide is very material as the wall is swung up and the upper and lower beam members are here rigidly fixed to plates 26′. Upon the beams or trusses is placed flooring 27 of wood or metal. Preferably the gear segment members 19 are carried up tangentially to meet the members 15, 15′ and to secure lateral stiffness. I fix to the extended portion an angle-iron 28.

The segmental portion of the beam which swings in a vertical plane is held in that plane by rollers 29 carried by the frame and resting against the edges of the members 17, 17′, respectively.

As indicated in Fig. 2, the lifting devices seen in Fig. 1 are duplicated at intervals, the number depending upon the length and weight of the wall, and are all actuated synchronously by the single power shaft 24.

Obviously a wall formed on the slightly inclined floor 27 will be raised slowly as the power shaft is rotated until it is in erect position alongside the posts 11, and at the

proper time the raising devices are removed, the shaft 24 being separated at suitable points where connecting devices 30 rigidly unite its parts.

Instead of the spur gearing connecting the power shaft 24 to the geared segment of the beam, this segment may have worm gearing teeth 20′ engaged by a worm 31 upon a shaft 32 or driven from the shaft 24 by bevel gears 33, all as indicated in Fig. 5.

What I claim is:—

1. In apparatus of the class described, the combination with a supporting frame, of a series of like truss beams all pivotally supported between their ends on a transverse axis with their upper members in an approximately horizontal plane and bearing a floor upon which a concrete wall may be formed, the lower members of all the trusses being marginally geared, far below the upper members, curved about said axis, extending obliquely toward the ends of the upper members, and engaged, respectively, by worm gears mounted on a power shaft.

2. For supporting concrete building walls and swinging them from nearly horizontal to erect position, the combination with a primarily nearly horizontal plane platform upon which a wall may be formed, of a series of parallel truss beams supporting said platform and all pivoted to swing about a common horizontal line and each having a geared lower member forming a circular curve far from, and with its center in, said line, a series of worm gears engaging said members, respectively, and means for rotating all the worms equally and simultaneously.

3. For supporting concrete building walls and swinging them from nearly horizontal position to vertical position while positively holding each against accidental movement, the combination with a series of truss beams having their upper and lower members widely separated near the middle of the beam and each member consisting of spaced parallel angle bars riveted to interposed ties connecting the two members, each truss beam so formed being pivoted near upper side on an axis common to all and the lower member having a geared segment curved about said axis, and devices engaging all the geared segments to compel equal and simultaneous rotation.

4. The combination with a wall supporting platform normally approximately horizontal and having below marginally geared circular segments in parallel vertical planes, of a frame supporting the platform to rotate upon an axis parallel to its lower edge, members carried by said frame and rigidly resisting lateral movement of said segments, means for rotating all the segments equally and holding them against accidental tilting.

5. The combination with a wall supporting platform normally in slightly inclined position and having below marginally geared segments in parallel vertical planes, of a frame revolvably supporting said platform upon an axis approximately parallel to the lower margin, members carried by said frame and holding said segments in vertical planes as they rotate, a transversely separable power shaft, and speed reducing gearing transmitting the rotary motion of said power shaft to each geared segment.

In testimony whereof I hereunto affix my signature.

ROBERT H. AIKEN.