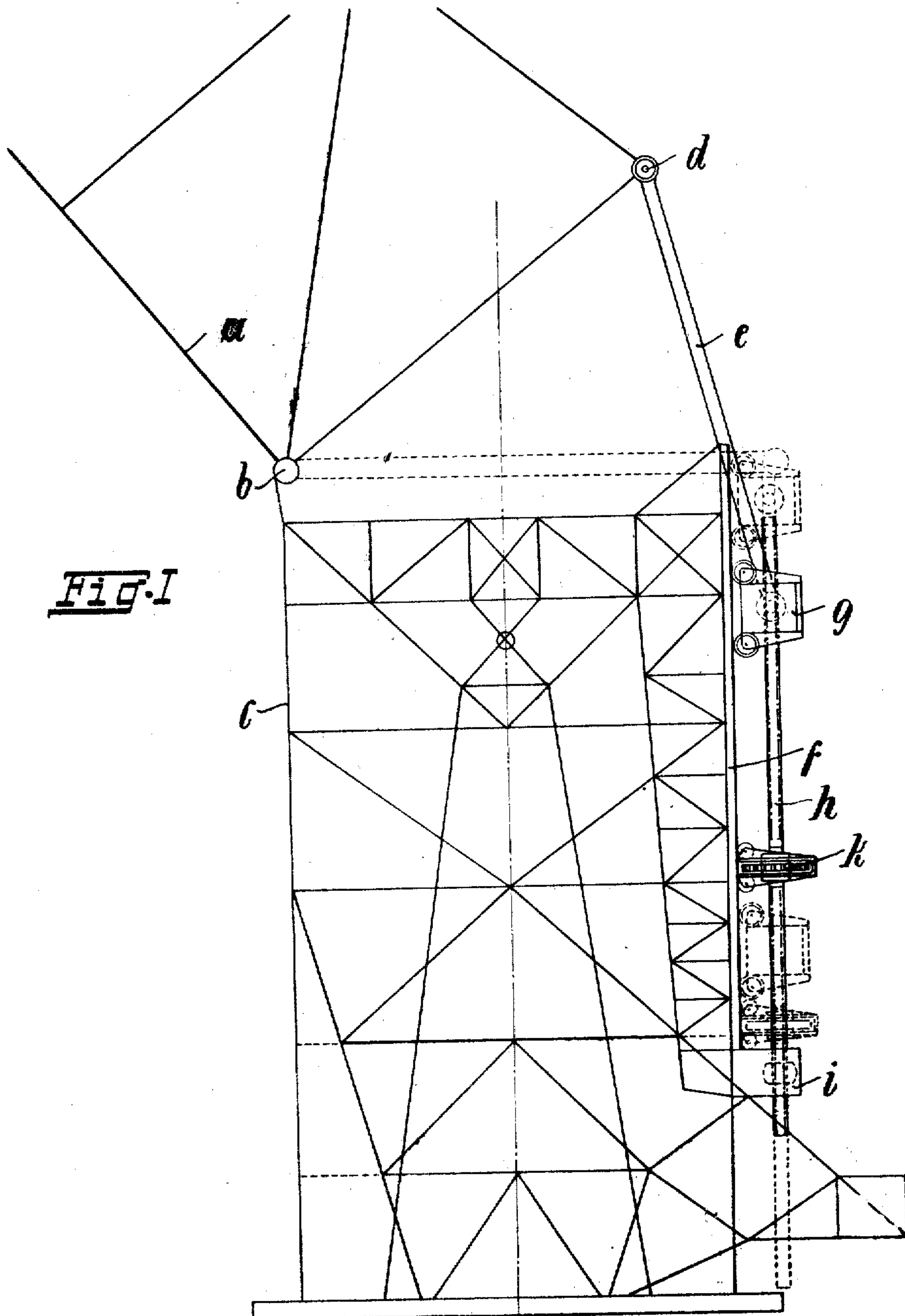


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 MECHANISM FOR RAISING CRANE JIBS AND THE LIKE WHICH MOVE IN A VERTICAL PLANE.  
 APPLICATION FILED JULY 11, 1908.

913,289.

Patented Feb. 23, 1909.  
 2 SHEETS—SHEET 1.

FIG. I



Witnesses:  
 Stanley Wood  
 Henry William Blake

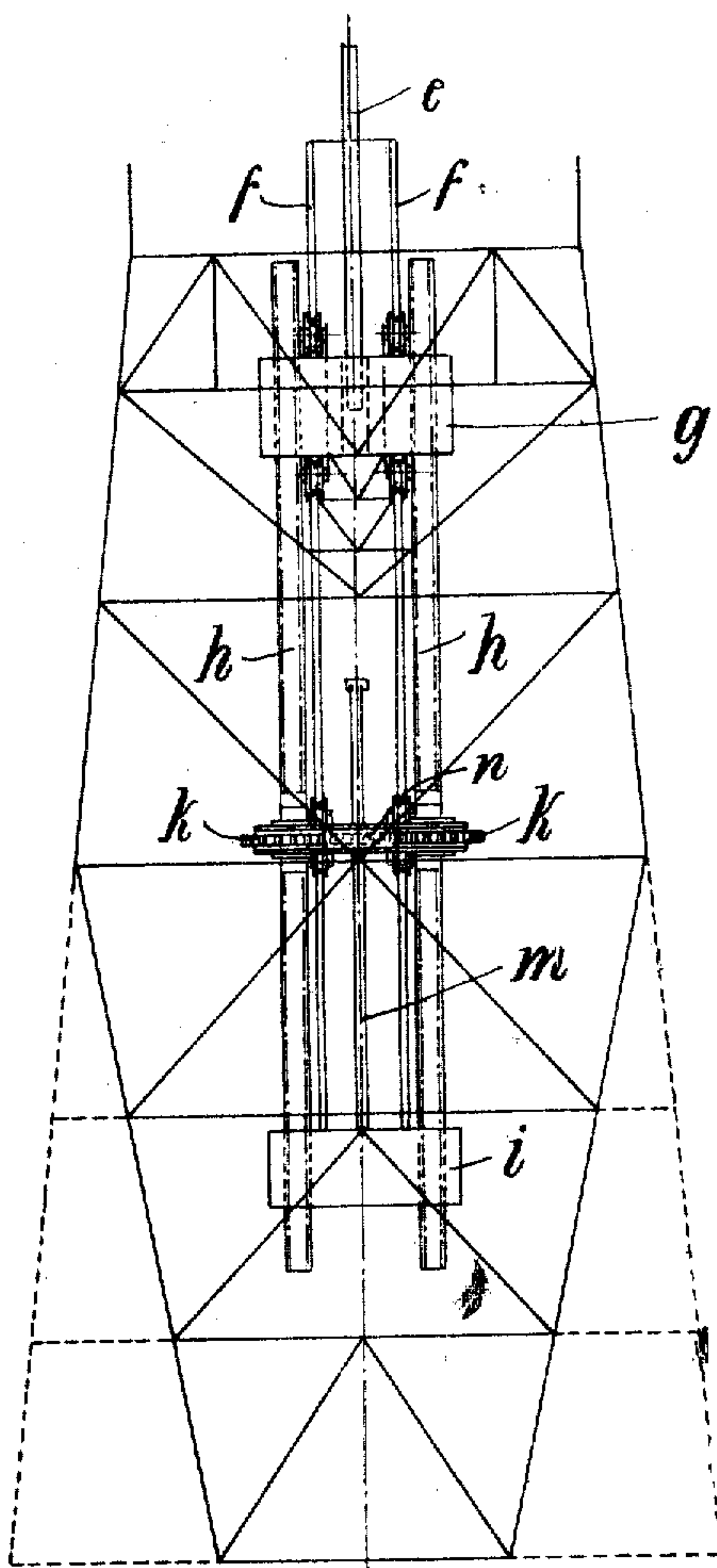
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Fig. 2



Witnesses:  
Stanley Wood  
Henry William Blake.

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Attorney



# UNITED STATES PATENT OFFICE.

FRIEDERICH HEYM AND RICHARD KIMMEL, OF BENRATH, NEAR DUSSELDORF, GERMANY.

## MECHANISM FOR RAISING CRANE-JIBS AND THE LIKE WHICH MOVE IN A VERTICAL PLANE.

No. 913,289.

Specification of Letters Patent.

Patented Feb. 23, 1909.

Application filed July 11, 1908. Serial No. 443,146.

To all whom it may concern:

Be it known that we, FRIEDERICH HEYM and RICHARD KIMMEL, subjects of the German Emperor, and residing at Benrath, near Dusseldorf, Germany, have invented a certain new and useful Mechanism for Raising Crane-Jibs and the Like which Move in a vertical Plane, of which the following is a specification.

1. This invention relates to mechanism for raising the crane jibs, bridges and the like wherein a loaded arm can be rotated in a vertical plane about one of its ends.

According to the present invention it is proposed effectively to utilize the material of the spindle by so arranging that when the moment of the jib is at its maximum the forces on the spindle are at their minimum and that these forces remain nearly uniform during a great part of the movement of the jib, the weight of the tilting device relieving the spindle of weight and decreasing the tensional strain thereon. This may be effected, for instance, by providing one or more spindles furnished with right-handed and left-handed threads and rotating at one end in one or more nuts rigidly connected with the frame of the crane and at the other end in one or more nuts connected by links with the jib. An essential feature of this arrangement is that the spindles are not rigidly attached to the frame of the crane, but are capable of axial displacement, so that there cannot occur, when the jib is raised, in the lifting mechanism any binding, the force required for raising the jib being thus considerably reduced.

The accompanying drawings illustrate by way of example one method of reducing this invention to practice, Figure 1 being a side view and Fig. 2 is a rear view.

The jib *a* is connected at *b* in the usual manner with the rotatable or stationary frame *c*. To the rear edge of the frame opposite to its axis of rotation there is pivoted at *d* one end of a connecting rod *e*, the other end of which is pivoted to a carriage *g* moving on stationary rails *f* on the rear of the frame *c*. This carriage is raised and lowered by means of screw spindles *h* provided with right and left-handed threads. The upper ends of the spindles *h* pass through correspondingly threaded nuts in the carriage *g* and their lower ends through a suitably threaded nut *i* rigidly mounted on the frame *c*.

The spindles are rotated by means of spur wheels *k* mounted thereon which engage with a pinion *n* arranged on a shaft *m* driven in the usual manner the said toothed wheels and pinion being disposed within a sliding carriage. The pinion *n* is movable on the shaft *m* in accordance with the forward movement of the screw spindle *h*, the shaft being for this purpose of square cross section.

Fig. 1 shows by means of dotted lines the extreme positions of the carriage *g* and of the spindles *h* as well as the highest position of the jib. It is obvious that the carriage *g* has about double the travel of the wheel mechanism *k, n, k*, the latter at each revolution of the screw spindles *h* traveling only a distance equal to the pitch of the screw thread on the spindles *h*, while the carriage *g* travels a distance equal to twice the pitch of the said screw thread as it is moved both by the spindles *h* screwing into the nuts mounted therein, and by the spindles *h* screwing into the nuts *i* rigidly mounted on the frame *c*.

What we do claim as our invention and desire to secure by Letters Patent is:—

1. Mechanism for raising crane-jibs that are movable in a vertical plane, consisting of screw threaded spindles, nuts through which the said spindles work at one end, said nuts being rigidly mounted on the frame of the crane, movable nuts in which said spindles work at the other end, and links connecting said nuts to the jib.

2. Mechanism for raising crane-jibs that are movable in a vertical plane, consisting of a spindle, a nut through which said spindle works at one end, said nut being rigidly mounted on the frame of the crane, a movable nut through which said spindles work at the other end, and links connecting the said movable nut to the jib.

3. Mechanism for raising crane-jibs that are movable in a vertical plane, consisting of spindles provided with right and left hand threads, nuts in which said spindles work at one end, said nuts being rigidly mounted on the frame of the crane and movable nuts in which said spindles work at the other end, links connecting the said nuts with the jib and means for giving to said spindles an axial movement.

4. Mechanism for raising crane-jibs that are movable in a vertical plane consisting of a spindle, a nut through which said spindle



works at one end, said nut being rigidly mounted on the frame of the crane, and a movable nut through which said spindle works at the other end, links connecting the said movable nut to the jib, and means for giving to said spindle an axial movement.

5. Mechanism for raising crane-jibs that are movable in a vertical plane, consisting of spindles provided with right and left hand threads, nuts rigidly mounted on the frame of the crane through which said spindles work at one end and movable nuts mounted upon a sliding carriage through which the said spindles work at their other ends links connecting said sliding carriage to the jib, and means for rotating said spindles.

6. Mechanism for raising crane-jibs that are movable in a vertical plane consisting of spindles provided with right and left hand threads, nuts rigidly mounted on the frame of the crane through which said spindles work at one end and movable nuts mounted upon a sliding carriage through which the said spindles work at their other ends, links connecting said sliding carriage to the jib and means for simultaneously rotating the said spindles and effecting their axial movement.

7. Mechanism for raising crane-jibs that are movable in a vertical plane consisting of spindles provided with right and left hand threads, nuts rigidly mounted on the frame of the crane through which said spindles work at one end and movable nuts mounted upon a sliding carriage through which the said spindles work at their other ends, links connecting said sliding carriage to the jib, and means for simultaneously rotating the said spindles and effecting their axial movement consisting of a sliding carriage within which are disposed toothed wheels mounted fixedly upon the respective spindles with means for rotating the said toothed wheels.

8. Mechanism for raising crane-jibs that are movable in a vertical plane consisting of spindles provided with right and left hand

threads, nuts, rigidly mounted on the frame of the crane, through which said spindles work at one end and movable nuts mounted upon a sliding carriage through which the said spindles work at their other ends, links connecting said sliding carriage to the jib, and means for simultaneously rotating the said spindles and effecting their axial movement consisting of a sliding carriage within which are disposed toothed wheels mounted fixedly upon the spindles, a pinion engaging with said toothed wheels and a driving shaft upon which said pinion is slidably mounted.

9. Mechanism for raising crane-jibs that are movable in a vertical plane consisting of a spindle provided with right and left hand threads, a nut rigidly mounted on the frame of the crane through which the spindle works at one end and a movable nut in which the spindle works at the other end and means for simultaneously rotating the said spindle and effecting its axial displacement.

10. Mechanism for raising crane-jibs that are movable in a vertical plane consisting of a spindle provided with right and left hand threads, a nut rigidly mounted on the frame of the crane through which the spindle works at one end and a movable nut in which the spindle works at the other end, and means for simultaneously rotating the said spindle and effecting its axial displacement consisting of a carriage within which a toothed wheel is disposed and mounted upon the said spindle and a pinion for rotating said toothed wheels, the said pinion being slidably mounted upon the driving shaft.

In witness whereof we have hereunto signed our names to this specification in the presence of two subscribing witnesses.

FRIEDERICH HEYM.  
RICHARD KIMMEL.

Witnesses:

BESSIE F. DUNLAP,  
LOUIS VANDORN.