June 15, 1965 J. N. M. WAERUM ETAL 3,189,189

COLLAPSIBLE CRANE WITH INTERIORLY HOUSED JIB

Filed June 25, 1963

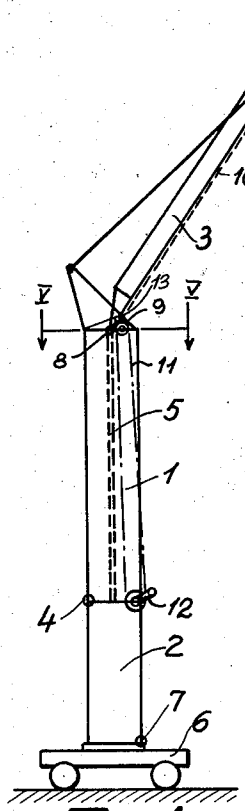

Fig. 1

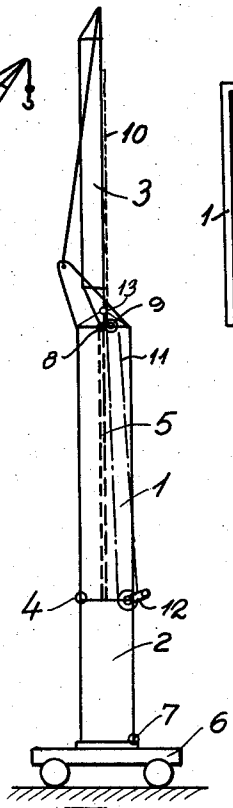

Fig. 3

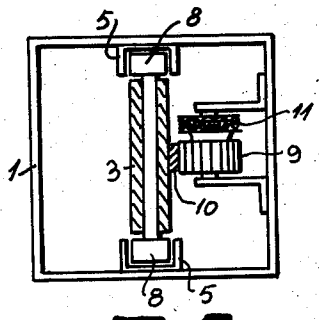

Fig. 5

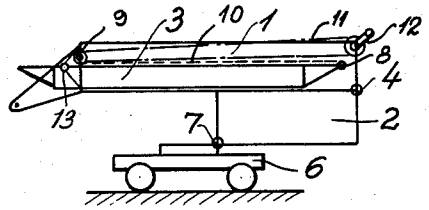

Fig. 2

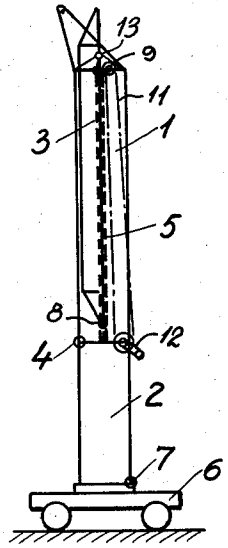

Fig. 4

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United States Patent Office 3,189,189 Patented June 15, 1965

3,189,189

COLLAPSIBLE CRANE WITH INTERIORLY HOUSED JIB

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Filed June 25, 1963, Ser. No. 290,443
Claims priority, application Denmark, July 3, 1962, 2,969/62
2 Claims. (Cl. 212—46)

This invention relates to a crane having a jib, and the stem of which consists of at least two parts which are pivotably connected with each other in such a manner as to permit said stem to be folded together.

Cranes of this type are e.g. used as building cranes, and the purpose of the subdivision of the crane stem is to facilitate transportation of the crane, the crane being transported in folded-up position either on a separate carriage or upon its own base, which is in that case provided with supporting wheels. In the known cranes of this type, the crane stem is folded up in such a manner that the parts will be located one above the other, and the jib is then titled down towards the upper part of the crane stem so that it will be supported on top of the folded-up crane parts. As a consequence of this, however, the crane will take up considerable space in the vertical direction which may be of inconvenience in the transportation of the crane e.g. under bridges and viaducts or through gateways.

It is the object of the invention to devise a crane of the type referred to, which takes up relatively little space in the vertical direction in folded-up position. With this object in view, according to the invention, the jib is slidably connected with the stem, and the upper part of the stem has a clearance which is greater than the cross section of the jib, said upper part being provided interiorly with longitudinal guide rails for co-operation with guide means on said jib. In this way the advantage is obtained that the jib can be slid into the upper part of the crane stem whereby the crane will take up relatively little space in the vertical direction in folded-up position.

In order to facilitate the handling of the jib in sliding in into the upper part of the crane stem, the jib may, according to the invention, be pivotably connected with the crane stem at the end of the guide rails.

According to the invention, a toothed rack may be mounted on the jib for engagement with a matching gear wheel mounted at the upper end of the upper part of the stem. Besides serving for sliding the jib into and out of the upper part of the crane stem, the said toothed rack and matching gear wheel may be used as a lock between the jib and the crane stem so that the jib is prevented from sliding out of the upper part of the crane stem during transportation.

The invention will now be described in further detail with reference to the accompanying diagrammatic drawing in which

FIG. 1 shows one form of a crane according to the invention in working position,

FIG. 2 shows the crane of FIG. 1 in position for transportation,

FIGS. 3 and 4 disclose two different positions assumed by the crane in the process of changing same from working to transportation position, and

FIG. 5 shows, on a larger scale, a section along the line V—V in FIG. 1.

The stem of the crane illustrated in the drawing consists of two parts **1** and **2**. A jib **3** is pivotably connected to the upper end of the upper part **1**. The parts **1** and **2** are pivotably connected with each other by means of a hinge **4**. The upper part **1** is hollow and has a clearance greater than the cross section of the jib **3**. A pair of

guide rails **5** are mounted in opposite positions interiorly of the upper part. In the embodiment shown, the jib **3** is pivoted at **13** directly above the upper end of the rails **5** to an upper portion of the part **1**. However, if desired, the jib may be mounted in a bearing, e.g. at one side of the part **1**. The lower part of the crane stem is carried by a carriage **6**.

When changing the crane from the working position illustrated in FIG. 1 to the position of transportation illustrated in FIG. 2, the jib **3** is first tilted to vertical position as illustrated in FIG. 3, and thereafter the pivotal connections **13** between the jib **3** and the upper part **1** of the crane stem is released, whereafter the jib is slid into the part **1**. For this purpose, the jib is provided at its inner end with guide means, e.g. in the form of rollers **8**, FIG. 5, engaging with the guide rails **5** which may e.g. be of U-shaped cross section. When the jib has been slid to the position illustrated in FIG. 4, the crane stem is folded about its hinge **4** and about a hinge **7** between the lower part **2** and the carriage **6**, so that the crane will assume the position illustrated in FIG. 2.

For producing the sliding movement of the jib, a gear wheel **9** may be mounted at the top of the part **1** for engagement with a toothed rack **10**, mounted on the jib **3**, said gear wheel and toothed rack also serving to lock the jib relative to the part **1** in the position of transportation illustrated in FIG. 2. The gear wheel **9** may be controlled by any suitable machanically or manually operated means such as a sprocket attached to said gear wheel and connected by means of a chain **11** with a hand crank operated sprocket **12**.

Obviously, during the pivotal movement of the jib about the disconnectable pivot means **13**, the lower end of the jib **3** must be steadied while the pivot **13** is being put into effect, and before the jib is swung away from the guiding means **5** and the gear wheel **9**. Any suitable known expedient may be employed to accomplish this, such as, for example, the provision of a shiftable upper section of the guide **5** or one of its flanges; or, for that matter, a means for detachably connecting the guide roller carrying portion of the lower end of the jib from the main part thereof.

It will be seen that in the position of transportation, the crane occupies little space in the direction of height, because the jib is received in the part **1** of the crane stem.

We claim:

1. A crane comprising a stem which consists of an upper stem portion and a lower stem portion, means pivotally connecting said stem portions to enable them to be folded from extended substantially aligned positions to collapsed positions alongside of each other, said upper stem portion being substantially hollow, a jib of cross-sectional dimensions somewhat smaller than those of the interior of said upper hollow stem portion so as to be housed within the latter, means for mounting said jib for sliding telescopically within said upper stem portion from housed position to an upwardly extending working position, and means for pivotally supporting said jib upon said upper stem portion when in such working position.

2. The crane as set forth in claim **1** in which said last-named pivotally supporting means serves to connect the lower end of the jib with the upper end of the upper stem portion, and is disconnectable to permit retraction of said jib to housed position.

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