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Cranes — Vocabulary —

Part 3: Tower cranes

Appareils de levage à charge suspendue — Vocabulaire —

Partie 3: Grues à tour

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Foreword

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The committee responsible for this document is ISO/TC 96, *Cranes*, Subcommittee SC 7, *Tower cranes*.

This fourth edition cancels and replaces the third edition (ISO 4306-3:2003), which has been technically revised. It also incorporates the Amendment ISO 4306-3:2003/Amd 1:2011.

ISO 4306 consists of the following parts, under the general title *Cranes — Vocabulary*:

— *Part 1: General*

— *Part 2: Mobile cranes*

— *Part 3: Tower cranes*

— *Part 5: Bridge and gantry cranes*

Cranes — Vocabulary —

Part 3: Tower cranes

1 Scope

ISO 4306 as a whole establishes a vocabulary of the most commonly used terms in the field of cranes.

This part of ISO 4306 gives the general definition of a tower crane and illustrates the terminology used with each type of tower crane by the use of figures with referenced term numbers.

It is applicable to

— tower cranes that can be assembled and dismantled (by element or self-erecting cranes),

— permanently erected tower cranes, and

— mobile self-erecting tower cranes.

It is not applicable to

— mobile cranes, or

— erection masts, with or without jibs.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1
tower crane
power-driven slewing jib type crane with the jib located at the top of a tower, which stays approximately vertical in the working position

Note 1 to entry: A tower crane is equipped with means for raising and lowering suspended loads and for the configuration of such loads by changing the load-lifting radius, travelling of the load, slewing or travelling of the complete appliance. Some tower cranes perform several, but not necessarily all of these movements.

2.1.1
tower crane erected from parts
tower crane (2.1) which is transported to site in parts and erected with use of a separate lifting appliance where the design of the crane allows the crane to remain in the erected position in out-of-service conditions and to be dismantled for transportation to another site

2.1.2
self-erecting tower crane
tower crane (2.1) which is transported to site and mostly erected without use of a separate lifting appliance, where the design of the crane allows the crane to remain in the erected position in out-of-service conditions and to be lowered for transportation to another site

2.1.3
mobile self-erecting tower crane
self-erecting tower crane (2.1.2) mounted on a self-propelled or trailer mounted chassis

3 Types of tower crane

The following four groups of characteristics describe tower cranes:

a) assembly:
   - erected from parts;
   - self-erecting (rapid erection without use of an auxiliary appliance);

b) slewing level:
   - top slewing;
   - bottom slewing;

c) type of jib (boom):
   - horizontal jib (also hammerhead type);
   - luffing jib (boom);
   - articulated jib (also gooseneck jib);
   - extending jib;
   - jack-knife jib (boom);

d) configuration:
   - travelling;
   - stationary (fixed);
   - climbing.

4 Nomenclature

4.1 General

A selection of different types of tower crane is shown in Table 1, which refers to the appropriate figure.

The figures illustrate the terms, for which the definitions are self-evident. The terms are identified by their reference numbers.

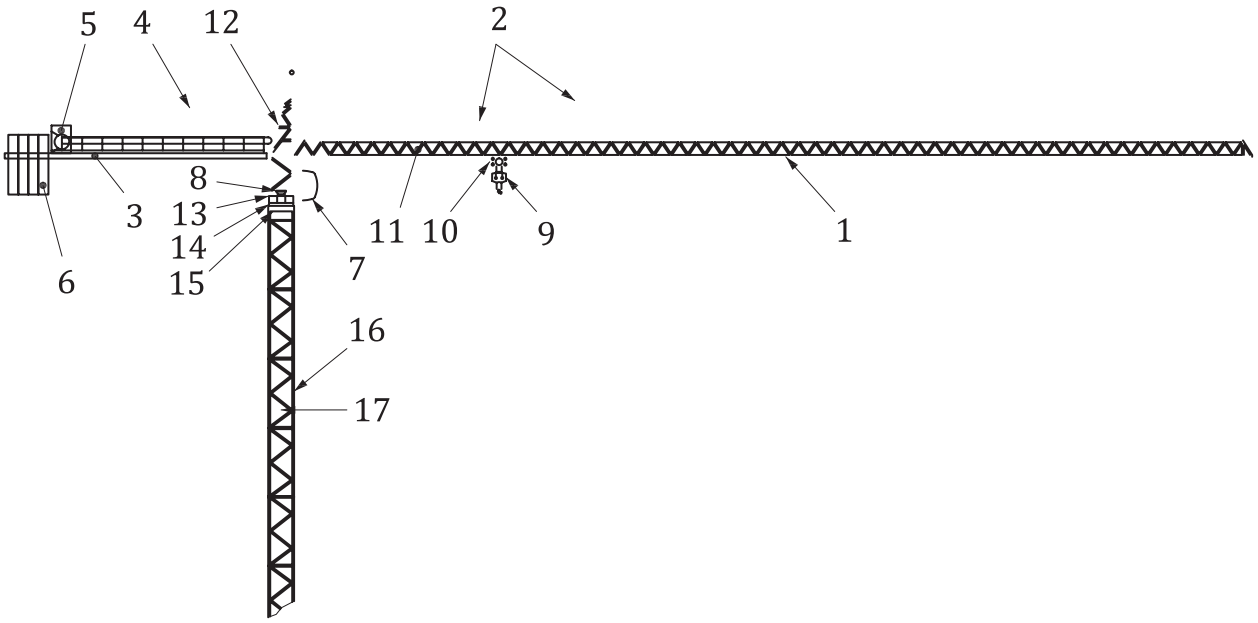
Table 1 — Types of tower crane

Type of crane	Section	Characteristic	Top slewing tower crane	Bottom slewing tower crane
Tower cranes erected from parts	Upper part	Horizontal jib	Figure 1	
		Luffing jib	Figure 2	
		Articulated jib	Figure 3	
		Extending jib	Figure 4	
		Jack-knife jib	Figure 5	
	Lower part	Travelling	Figure 8	
		Stationary	Figure 9	
	Climbing components	Climbing components for climbing inside a building (bottom climbing)	Figure 6	
		Climbing components for climbing outside a building (top climbing)	Figure 7	
Self-erecting tower cranes				Figure 10
				Figure 11
Mobile self-erecting tower cranes				Figure 12

4.2 Tower cranes erected from parts

4.2.1 Upper part

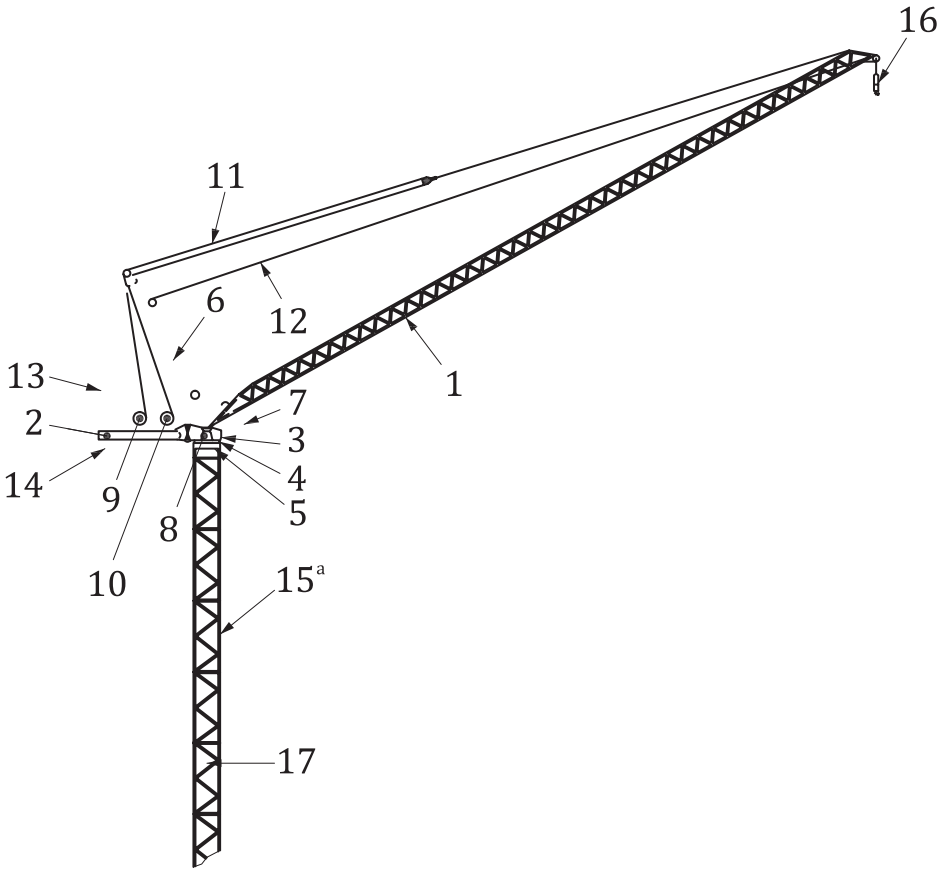
Examples are given in Figure 1 to Figure 5.



Key

1 jib
2 jib tie bar
3 counter-jib
4 counter jib tie bar
5 hoisting winch
6 counterweight
7 cabin
8 slewing mechanism
9 hook block
10 trolley
11 trolley travelling mechanism
12 tower top
13 slewing pivot
14 slewing ring
15 slewing ring support
16 tower
17 slewing axis

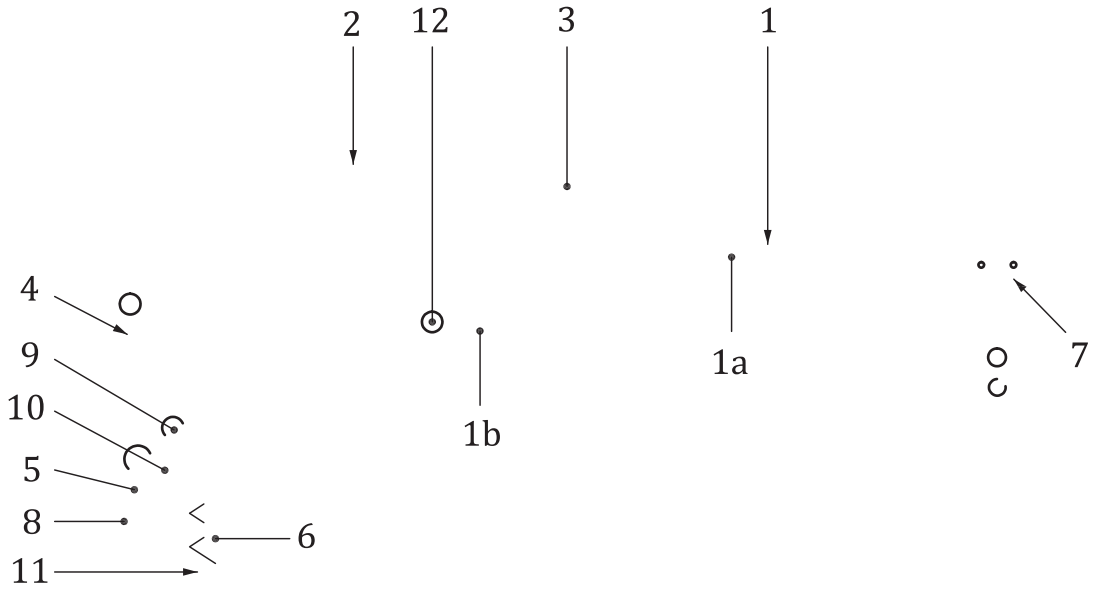
Figure 1 — Top slewing with horizontal jib



Key

1 luffing jib
2 counter jib
3 slewing pivot
4 slewing ring
5 slewing ring support
6 A-frame (gantry)
7 cabin
8 slewing mechanism
9 luffing mechanism
10 hoisting winch
11 luffing rope
12 auxiliary hoisting rope
13 fixed counterweight
14 movable ballast
15 tower
16 hook block
17 slewing axis
a See Figure 1.

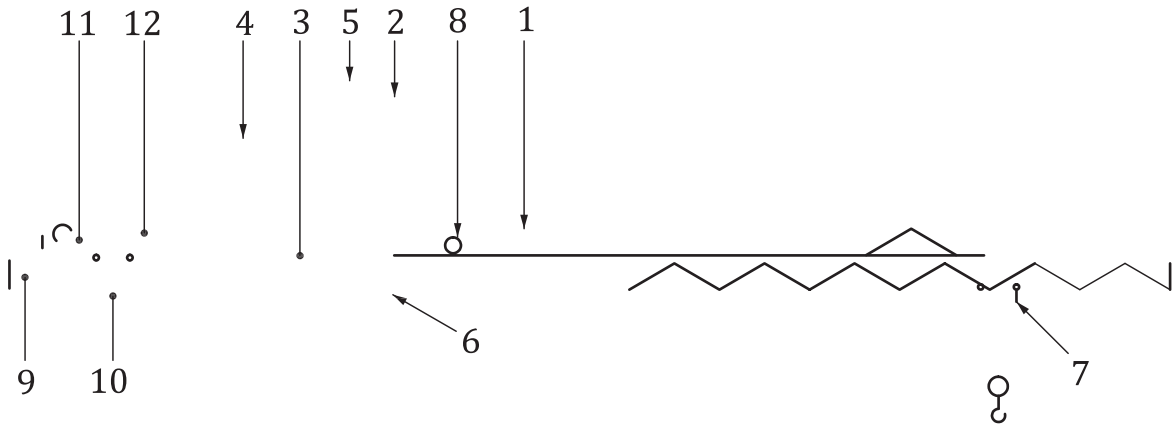
Figure 2 — Top slewing with luffing jib



Key

1 articulated jib
1a outer jib
1b inner jib
2 jib tie bar
3 jib guy frame
4 A-frame (gantry)
5 machinery platform
6 cabin
7 trolley
8 counterweight
9 luffing mechanism
10 hoisting winch
11 slewing mechanism
12 luffing rope pulley block

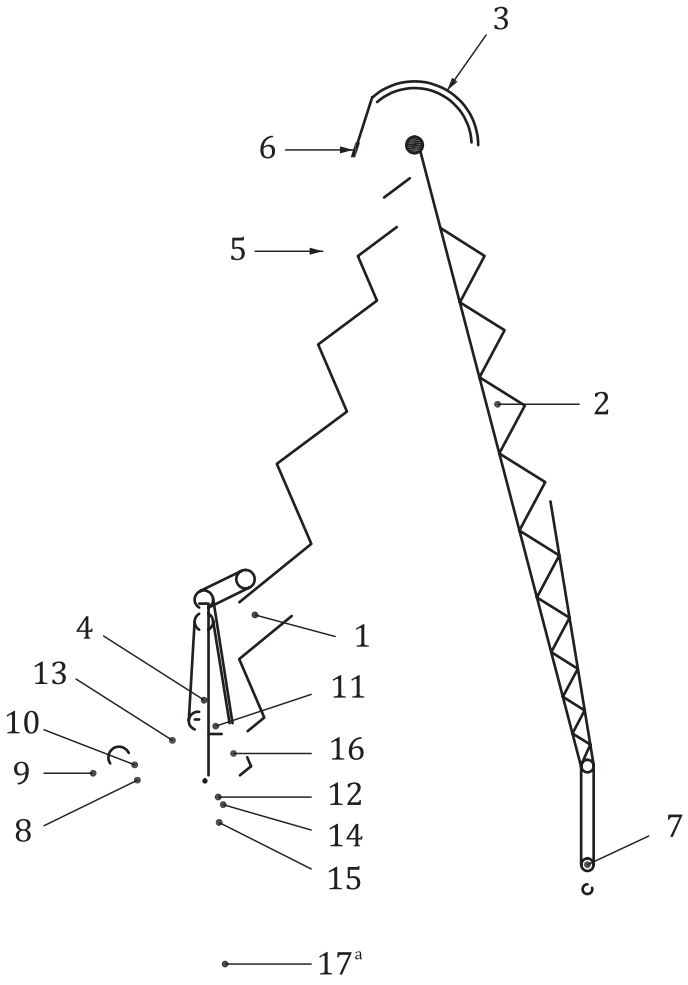
Figure 3 — Top slewing with articulated jib



Key

1 extending jib
2 jib tie bar
3 counter-jib
4 counter-jib tie bar
5 tower top
6 cabin
7 trolley
8 extending mechanism
9 fixed counterweight
10 movable counterweight
11 hoisting winch
12 electrical control cabinet

Figure 4 — Top slewing with extending jib



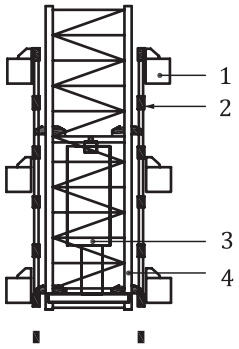
Key

1	inner jib	10	hoisting winch
2	outer jib	11	jack-knife luffing unit
3	rope guide support	12	slewing mechanism
4	A-frame (gantry)	13	electrical control cabinet
5	tie ropes	14	slewing ring
6	yoke	15	slewing ring support
7	hook block	16	cabin
8	counter-jib	17	tower
9	counterweight	[a]	See Figure 1.

Figure 5 — Top slewing with jack-knife jib

4.2.2 Climbing components

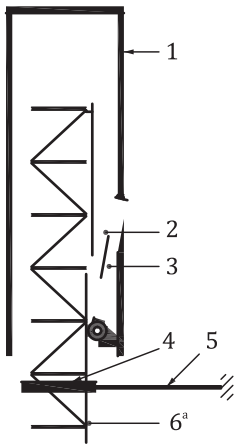
Examples are given in Figure 6 and Figure 7.



Key

1 climbing support frame
2 climbing ladder
3 hydraulic climbing cylinder
4 climbing tower section

Figure 6 — Climbing element for climbing inside a building (bottom climbing)



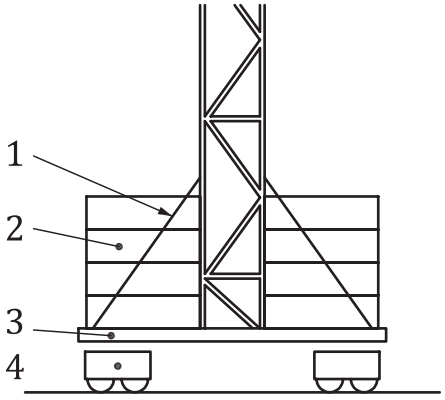
Key

1 climbing section
2 supporting shoe
3 hydraulic climbing cylinder
4 tie-in collar
5 tie in struts
6 tower
[a] See Figure 1.

Figure 7 — Climbing section for climbing outside a building (top climbing)

4.2.3 Lower part

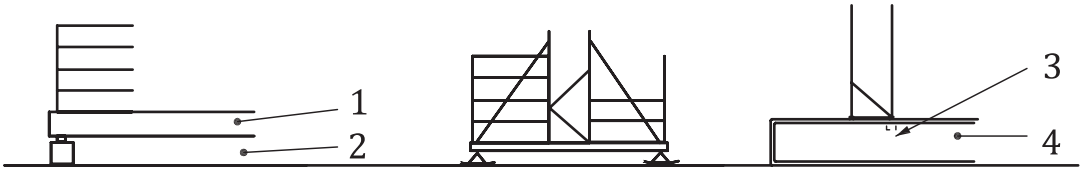
Examples are given in Figure 8 and Figure 9.



Key

1 tower strut
2 base ballast
3 undercarriage
4 bogie

Figure 8 — Travelling configuration



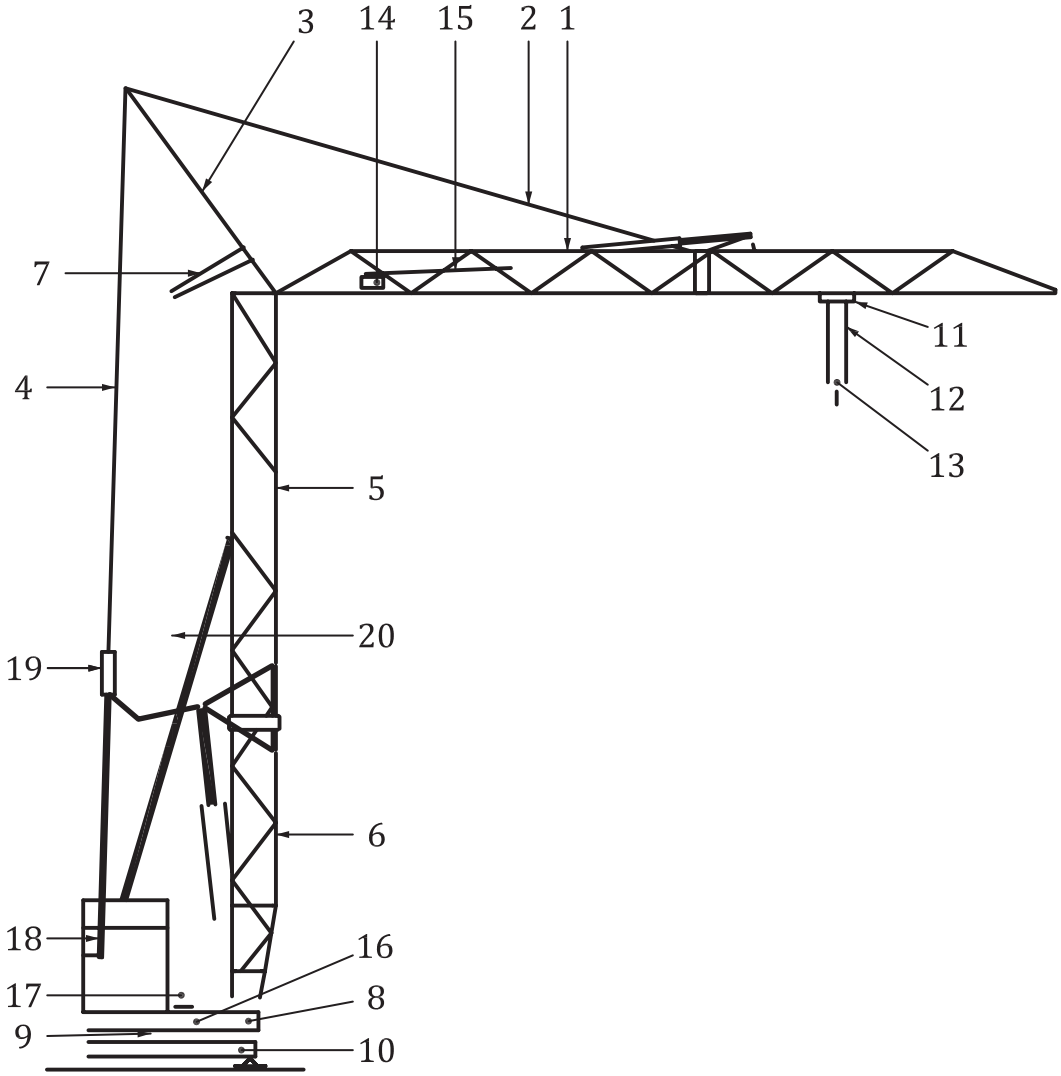
Key

1 base frame
2 footing blocks
3 foundation anchor
4 foundation

Figure 9 — Stationary configurations

4.3 Self-erecting tower cranes

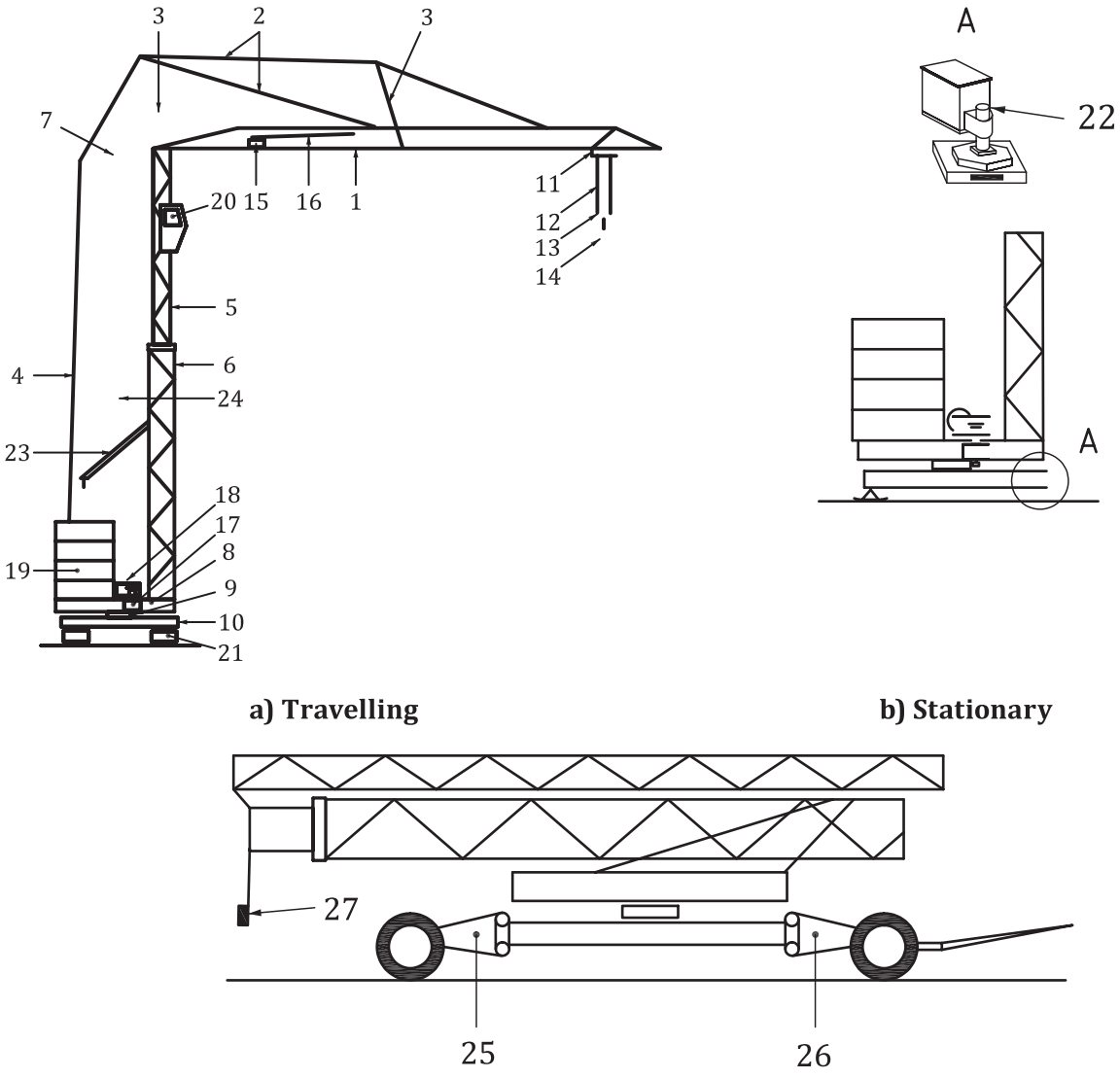
Examples are given in Figure 10 and Figure 11.



Key

1	folding jib	11	trolley
2	jib tie bar (rope)	12	hoisting rope
3	jib support	13	hook block
4	tie bar (rope)	14	trolley travelling mechanism
5	tower, upper part	15	trolley travelling rope
6	tower, lower part	16	slewing mechanism
7	support truss	17	hoisting winch
8	slewing section	18	counterweight
9	slewing ring	19	adjusting connection lug for jib inclination
10	undercarriage	20	slewing axis

Figure 10 — Bottom slewing with folding jib and folding tower



a) Travelling **b) Stationary**

c) Road transport

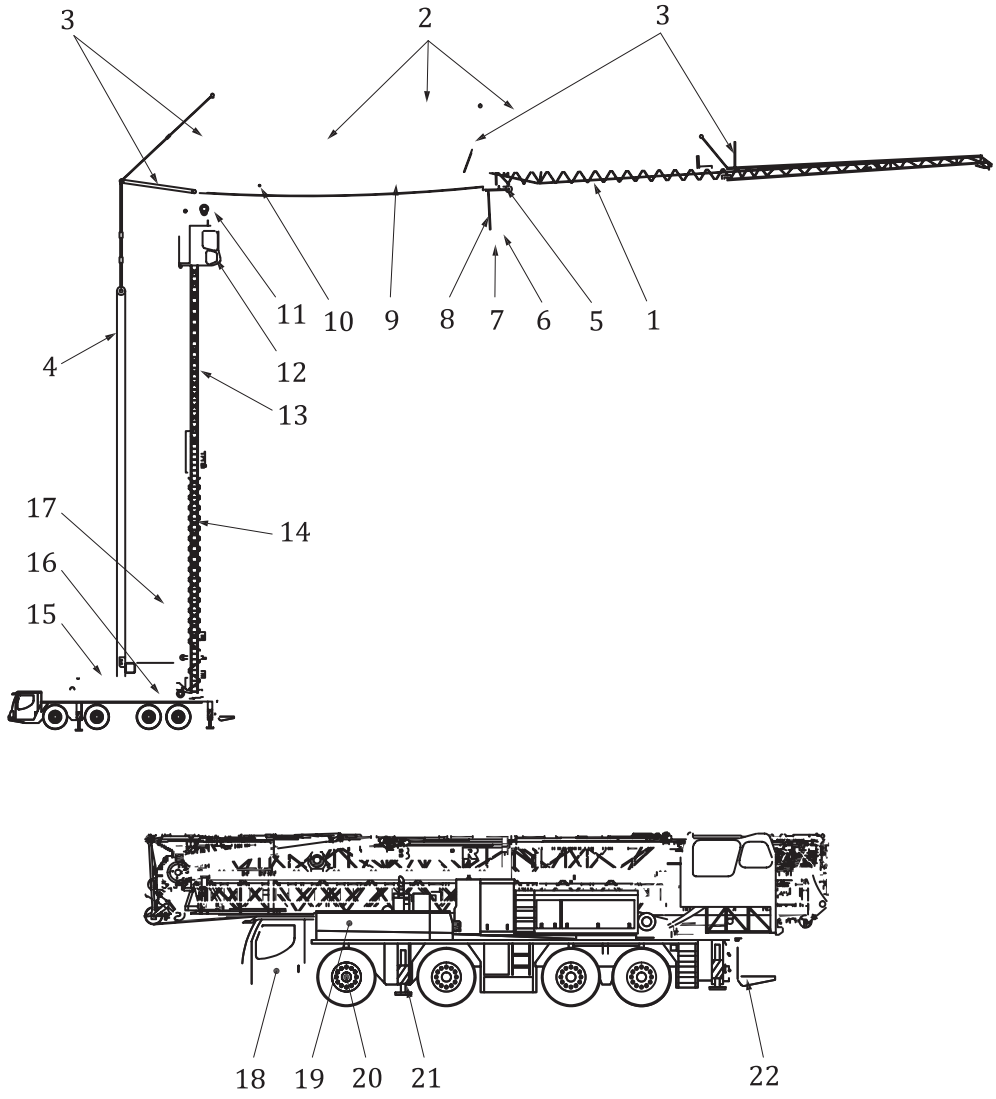
Key

1	jib	15	trolley travelling mechanism
2	jib tie bar (rope)	16	trolley travelling rope
3	jib support truss	17	slewing mechanism
4	tie bar (rope)	18	hoisting winch
5	tower upper section (telescopic)	19	counterweight
6	tower lower section	20	cabin
7	support truss	21	bogie
8	slewing section	22	screw jack
9	slewing ring	23	ballasting device
10	undercarriage	24	slewing axis
11	trolley	25	rear axle
12	hoisting rope	26	front axle, steering type axle
13	hook block	27	lighting of road undercarriage
14	hook		

Figure 11 — Bottom slewing with horizontal jib and telescoping tower

4.4 Mobile self-erecting tower crane

An example is given in Figure 12.



Key

1 jib
2 jib tie bar (rope)
3 jib support truss
4 tie bar (rope)
5 trolley
6 hook block
7 hook
8 hoist rope
9 trolley travelling rope
10 trolley travelling mechanism
11 elevating cabin drive
12 crane operator's cabin
13 tower upper section (telescopic)
14 tower lower section
15 counterweight
16 slewing section, including
— hoisting winch,
— slewing mechanism,
— jib erecting winch, and
— switchgear cabinet.
17 slewing axis
18 driver cabin
19 engine
20 axle
21 outrigger
22 working equipment carrier

Figure 12 — Mobile self-erecting tower crane

Bibliography

[1] ISO 4306-1, *Cranes — Vocabulary — Part 1: General*

ICS 53.020.20; 01.040.53

Price group A