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(54) **A DEVICE AND A METHOD FOR CONSTRUCTING BRIDGE SUPPORTS**

(57) A device for constructing bridge supports, the device comprising a platform mounted to carrying girders (1). The carrying girders (1) are connected to each other by means of a truss reinforcement (2) and are mounted in roller guides (3) of a transport means (4); and to the ends of the carrying girders (1) there is mounted a cage (25) to which there is attached a left platform (30) and a right platform (31).

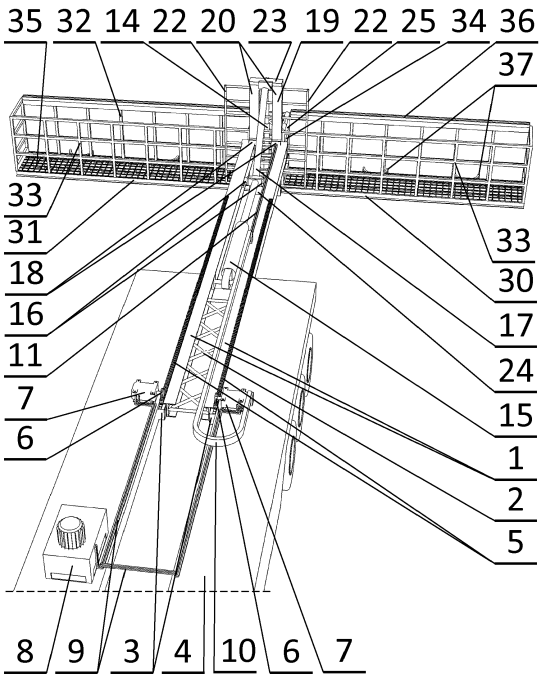

Fig. 1

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Description

TECHNICAL FIELD

[0001] The present invention relates to a device for constructing bridge supports, designed for trimming piles as well as fixing, to the piles, transverse and longitudinal braces and pile caps.

BACKGROUND

[0002] Currently, for the purpose of trimming piles and fixing transverse and longitudinal braces and pile caps to them, there are used floating bridge pontoons assembled into ferries, landing crafts connected to each other, scaffolds or lift cages attached to a lift arm.

SUMMARY

[0003] The object of the invention is a device for constructing bridge supports, the device comprising a platform mounted to carrying girders. The carrying girders are connected to each other by a truss reinforcement and are mounted in roller guides of a transport means. To the ends of the carrying girders there is mounted a cage to which there is attached a left platform and a right platform.

[0004] Preferably, toothed bars mating with gears mounted on rollers of hydraulic engines are mounted to the carrying girders.

[0005] Preferably, on the transport means there is further mounted a hydraulic power unit connected with hydraulic engines and, by first hydraulic hoses, with a guide of hydraulic hoses.

[0006] Preferably, a guide of hydraulic hoses is attached to the carrying girders, the second end of which is mounted to the transport means and it is connected, by second hydraulic hoses, with a first hydraulic actuator, a second hydraulic actuator, a telescopic hydraulic actuator and a third hydraulic actuator mounted between the carrying girders.

[0007] Preferably, a piston rod of the third hydraulic actuator is placed in roller guides and is attached to a coupler.

[0008] Preferably, a frame comprising side beams with guides and ladders, a top beam and a bottom beam is attached to the carrying girders by hinges.

[0009] Preferably, a cage is placed in the guides and has a single mounting handle in the lower part and a double mounting handle and a left hinge and a right hinge in the upper part.

[0010] Preferably, a coupler is attached to the top beam of the frame and one end of the telescopic hydraulic actuator which its second end mounted to the single mounting handle of the cage.

[0011] Preferably, the left platform is attached to the cage via a left hinge and the right platform is attached to the cage via a right hinge wherein both platforms have front walls, rear walls, side walls and a floor.

[0012] Preferably, first ends of a first hydraulic actuator and a second hydraulic actuator are mounted to the side walls wherein the other ends of the first and the second hydraulic actuators (12, 13) are mounted to a double mounting handle of the cage and guides of cutting devices and guides of piles are mounted to the front walls.

[0013] Another object of the present invention is a method for constructing bridge supports using the device as described above, the method comprising the steps of: rotating the left platform by means of the first hydraulic actuator; rotating the right platform by means of the second hydraulic actuator; rotating the frame to a vertical position by means of the third hydraulic actuator; sliding out of the carrying girders by means of gears and the toothed bars acted upon by the hydraulic engines; and causing movement of the cage by means of the telescopic hydraulic actuator, to set the height of the left platform and the right platform with respect to water level.

[0014] The device according to the invention can be quickly prepared for operation. It enables constructing bridge supports on wet and dry gaps. The device also enables to trim piles at equal height.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The invention is shown by means of exemplary embodiment on a drawing, in which:

Fig. 1 shows a device for constructing bridge supports in an isometric top view;
Fig. 2 shows the device in an isometric front view; and
Fig. 3 shows the device in an isometric front view without front walls of the left and right platforms and without the front wall of the cage.

DETAILED DESCRIPTION

[0016] The device for constructing bridge supports comprises carrying girders 1, connected to each other by a truss reinforcement 2, which are placed in roller guides 3 of a transport means 4.

[0017] Toothed bars 5 are mounted to the carrying girders 1, which are coupled with gears 6 mounted on rollers of hydraulic engines 7. A hydraulic power unit 8 is mounted on the transport means 4 and it is connected with hydraulic engines 7 and a guide of hydraulic hoses 10 by first hydraulic hoses 9.

[0018] One end of the guide of hydraulic hoses 10 is mounted to the transport means 4, and its another end is mounted to the carrying girders 1 and it is connected with a first hydraulic actuator 12, a second hydraulic actuator 13, a telescopic hydraulic actuator 14 and a third hydraulic actuator 15 which is mounted between the carrying girders 1 by second hydraulic hoses 11.

[0019] A piston rod of the third hydraulic actuator 15 is placed on roller guides 16 and mounted to a coupler 17.

[0020] A frame 19, which comprises side beams 20

with guides 21 and ladders 22, a top beam 23 and a bottom beam 24, is mounted to the carrying girders 1.

[0021] A cage 25 having a single mounting handle 26 and a double mounting handle 27 and a left hinge 28 and a right hinge 29 in its upper part, is placed in the guides 21.

[0022] The coupler 17 and one end of the telescopic hydraulic actuator 14 are mounted to the upper beam 23 of the frame 19 while the second end is mounted to the single mounting handle 26 of the cage 25.

[0023] A left platform 30 is mounted to the left hinge 28 of the cage 25 and a right platform 31 to the right hinge 29 of the cage 25. The left platform 30 and the right platform 31 have front walls 32, rear walls 34 and a floor 35.

[0024] One ends of the first hydraulic actuator 12 and the second hydraulic actuator 13 are mounted to the side walls 34 and their other ends are mounted to the double mounting handle 27 of the cage 25.

[0025] Guides of cutting devices 36 and piles guides 37 are mounted to the front walls 32.

[0026] The device operates as follows. The hydraulic power unit 8 is activated when a working liquid is supplied to the hydraulic actuators 12, 13, 15, the telescopic hydraulic actuator 14 and the hydraulic engines 7.

[0027] In the first stage of operation of the device, the first hydraulic actuator 12 rotates the left platform 30 and the second hydraulic actuator 13 rotates the right platform 31. In the second stage the third hydraulic actuator 15 causes a rotation of the frame 19 to a vertical position. In the third stage the hydraulic engines 7 cause sliding out of the carrying girders 1 by means of gears 6 and the toothed bars 5. In the final stage, the telescopic hydraulic actuator 14 causes movement of the cage 25, and as a result, there the left platform 30 and the right platform 31 are set to a correct height with respect to water level.

Claims

1. A device for constructing bridge supports, the device comprising a platform mounted to carrying girders (1), **characterized in that** the carrying girders (1) are connected to each other by means of a truss reinforcement (2) and are mounted in roller guides (3) of a transport means (4); and to the ends of the carrying girders (1) there is mounted a cage (25) to which there is attached a left platform (30) and a right platform (31).

2. The device according to claim 1, **characterized in that** toothed bars (5) mating with gears (6) mounted on rollers of hydraulic engines (7) are mounted to the carrying girders (1).

3. The device according to claim 1, **characterized in that** on the transport means (4) there is further mounted a hydraulic power unit (8) connected with hydraulic engines (7) and, by first hydraulic hoses (9), with a guide of hydraulic hoses (10).

4. The device according to claim 1, **characterized in that** a guide of hydraulic hoses (10) is attached to the carrying girders (1), the second end of which is mounted to the transport means (4) and it is connected, by second hydraulic hoses (11), with a first hydraulic actuator (12), a second hydraulic actuator (13), a telescopic hydraulic actuator (14) and a third hydraulic actuator (15) mounted between the carrying girders (1).

5. The device according to claim 4, **characterized in that** a piston rod of the third hydraulic actuator (15) is placed in roller guides (16) and is attached to a coupler (17).

6. The device according to claim 1, **characterized in that** a frame (20) comprising side beams (20) with guides (21) and ladders (22), a top beam (23) and a bottom beam (24) is attached to the carrying girders (1) by means of hinges (19).

7. The device according to claim 6, **characterized in that** a cage (25) is placed in the guides (21) and has a single mounting handle (21) in the lower part and a double mounting handle (27) and a left hinge (28) and a right hinge (29) in the upper part.

8. The device according to claim 7, **characterized in that** a coupler (17) is attached to the top beam (23) of the frame (19) and one end of the telescopic hydraulic actuator (14) which its second end mounted to the single mounting handle (27) of the cage (25).

9. The device according to claim 1, **characterized in that** the left platform (30) is attached to the cage (25) via a left hinge (28) and the right platform (31) is attached to the cage (25) via a right hinge (29) wherein both platforms have front walls (32), rear walls (33), side walls (34) and a floor (35).

10. The device according to claim 9, **characterized in that** first ends of a first hydraulic actuator (12) and a second hydraulic actuator (13) are mounted to the side walls (34) wherein the other ends of the first and the second hydraulic actuators (12, 13) are mounted to a double mounting handle (27) of the cage (25) and guides of cutting devices (36) and guides of piles (37) are mounted to the front walls (32).

11. A method for constructing bridge supports using the device according to any of claims 1-10, the method comprising the steps of:

    - rotating the left platform (30) by means of the first hydraulic actuator (12);
    - rotating the right platform (31) by means of the second hydraulic actuator (13);
    - rotating the frame (19) to a vertical position by

means of the third hydraulic actuator (15);
- sliding out of the carrying girders (1) by means of gears (6) and the toothed bars (5) acted upon by the hydraulic engines (7); and
- causing movement of the cage (25) by means of the telescopic hydraulic actuator (14), to set the height of the left platform (30) and the right platform (31) with respect to water level.

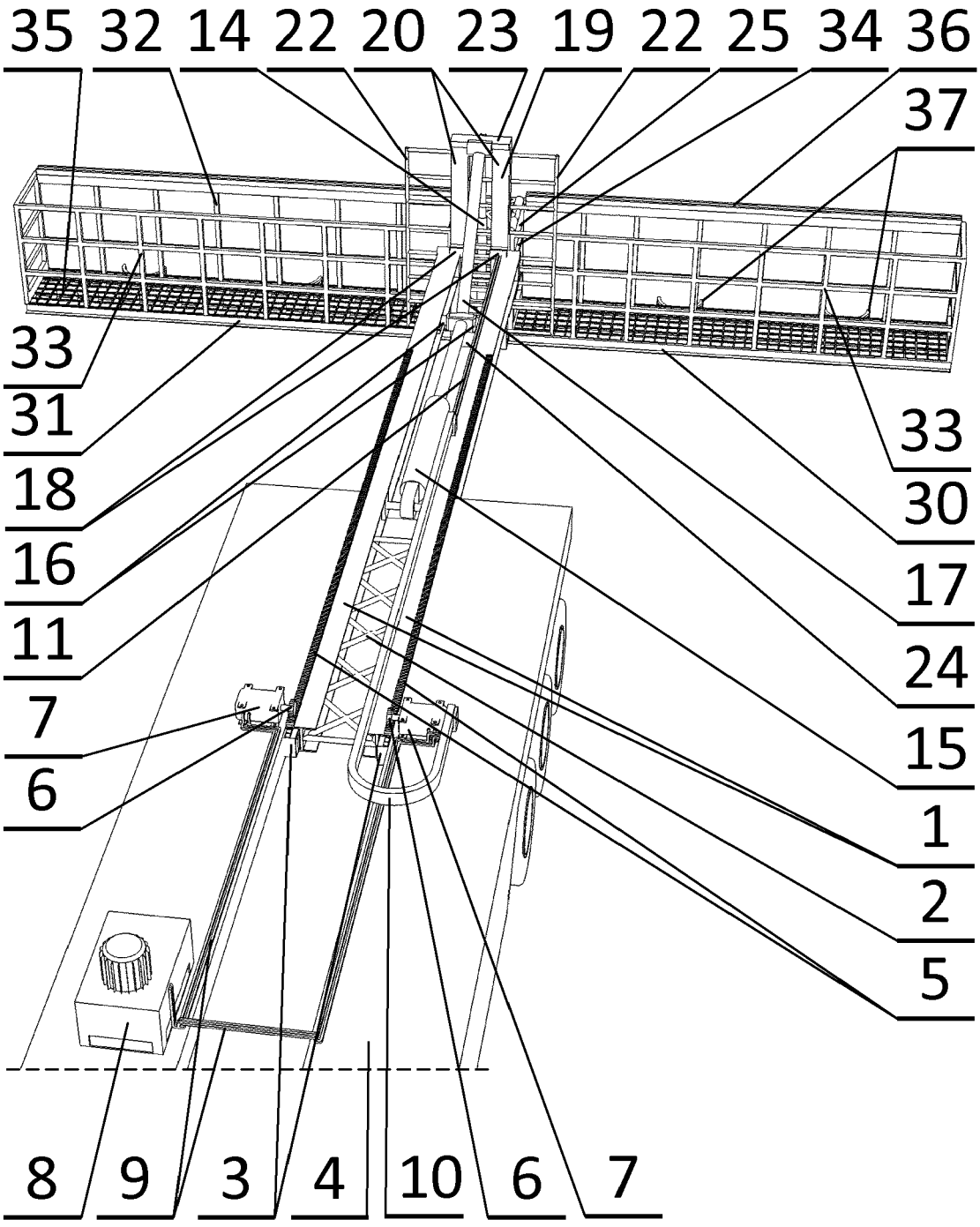
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Fig. 1

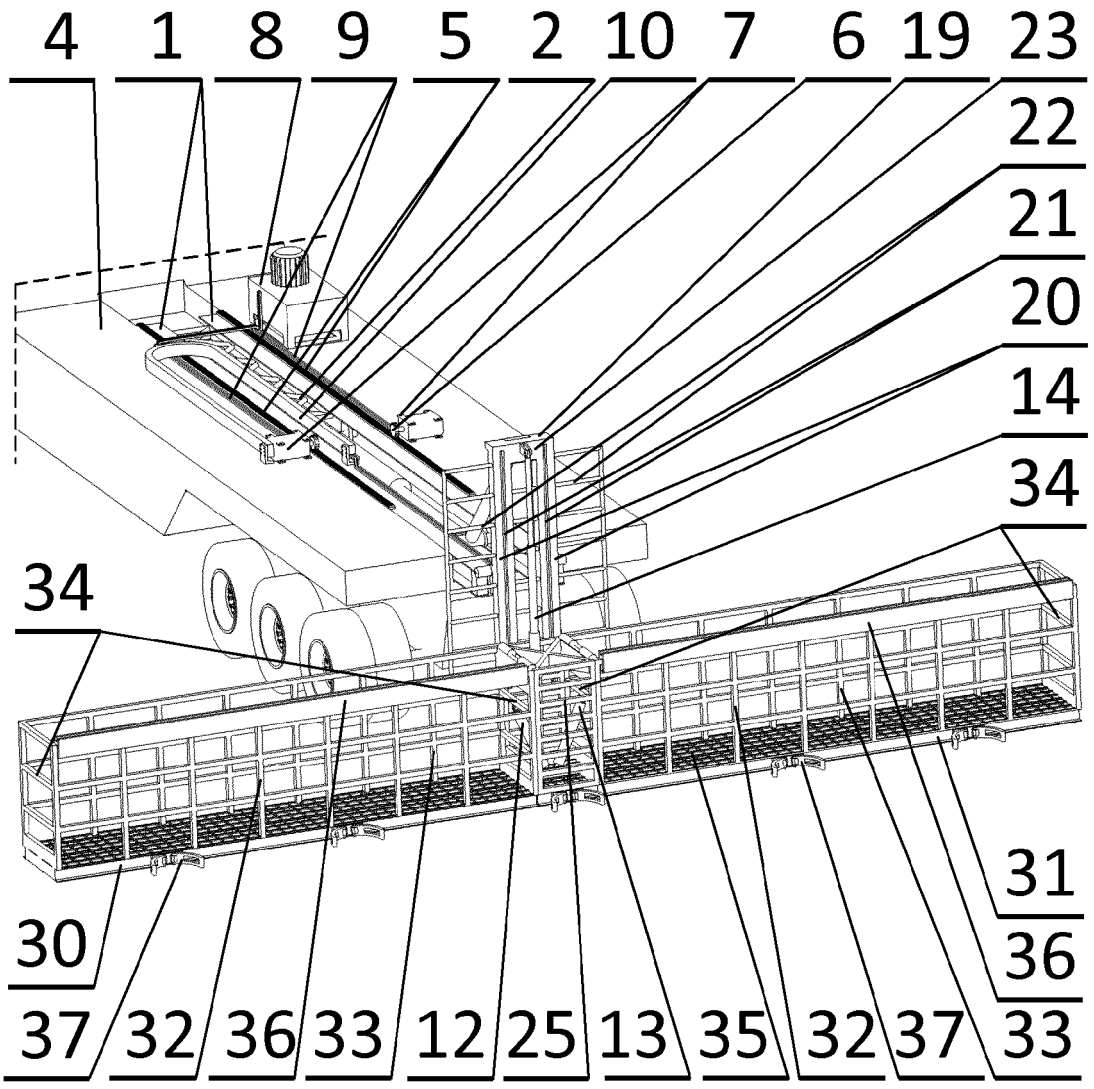
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Fig. 2

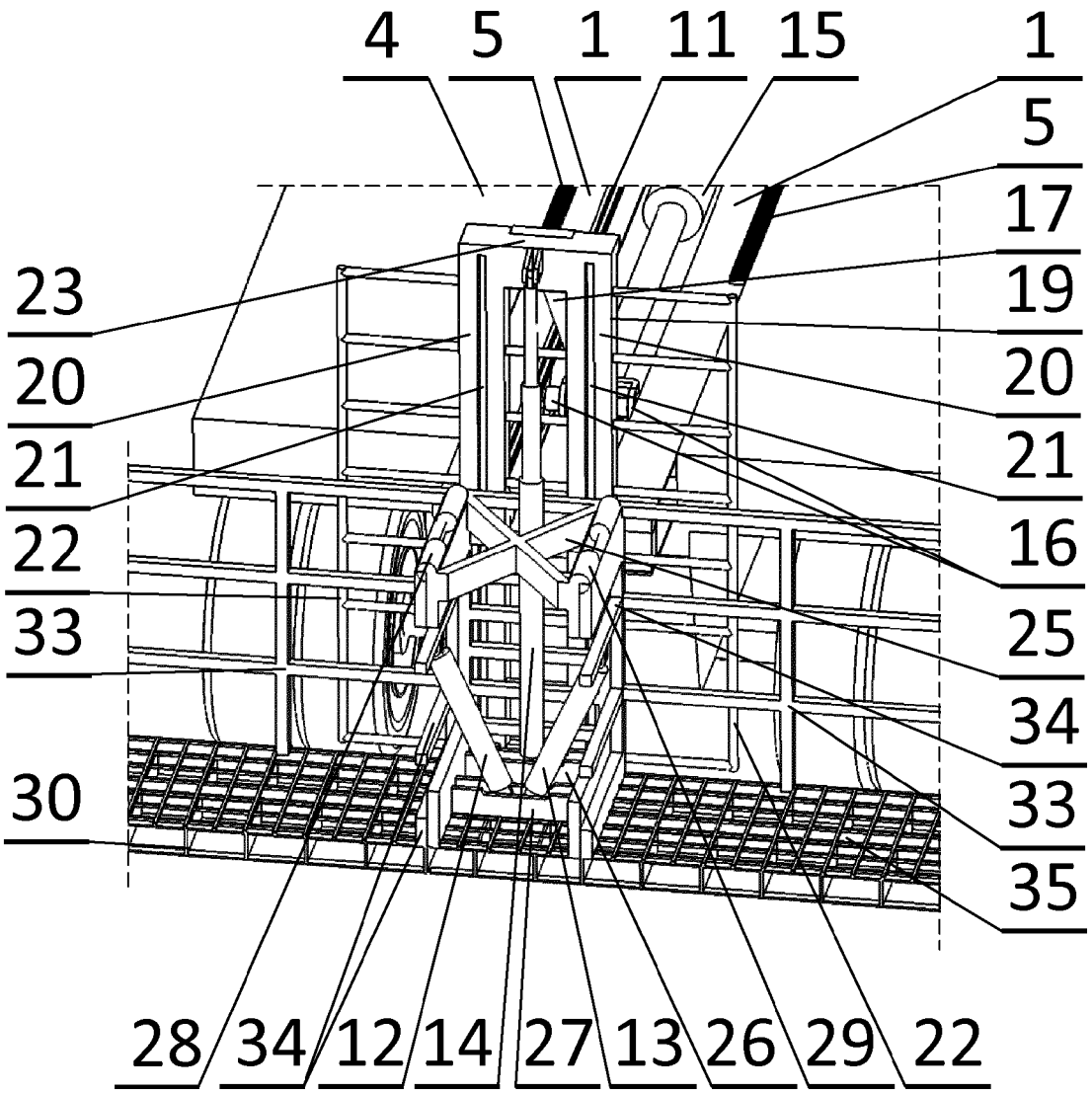
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Fig. 3

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EUROPEAN SEARCH REPORT

Application Number
EP 15 16 9297

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 0 381 629 A1 (CAVATTONI OMAR) 8 August 1990 (1990-08-08)	1-5	INV. E01D19/10
A	* the whole document *	6-11	B66F11/04 E04G1/22
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A	US 3 374 901 A (RAY FERWERDA) 26 March 1968 (1968-03-26) * figures 8,9 * * column 5, line 13 - column 6, line 46 *	1-11	

TECHNICAL FIELDS SEARCHED (IPC)

E01D
B66F
E04G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	7 January 2016	Schnedler, Marlon

CATEGORY OF CITED DOCUMENTS

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