June 21, 1932. C. H. HOELFELDT-LUND 1,863,984

WORKING AND LOADING PLATFORM FOR GALLERY WORK IN TUNNELS

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Fig. 1.

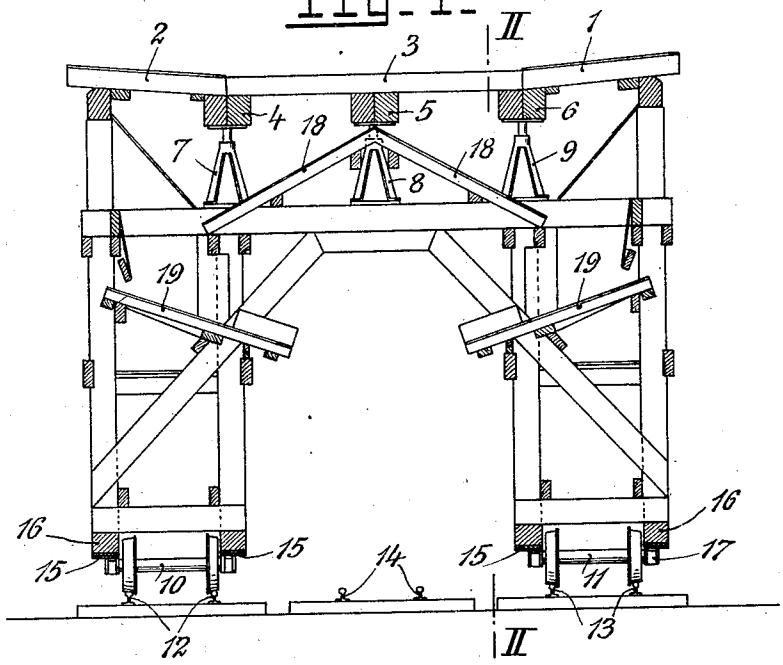
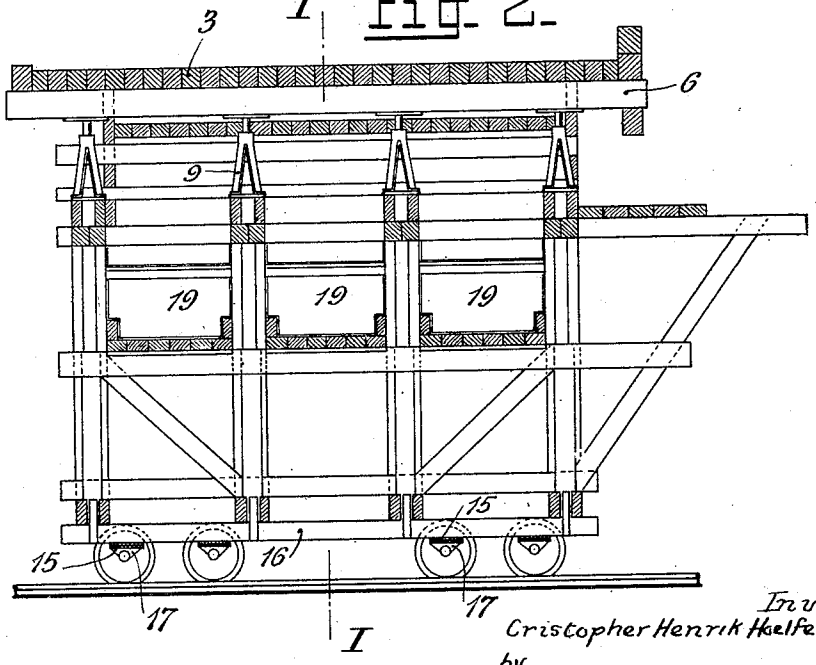


Fig. 2.



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Fig. 3.

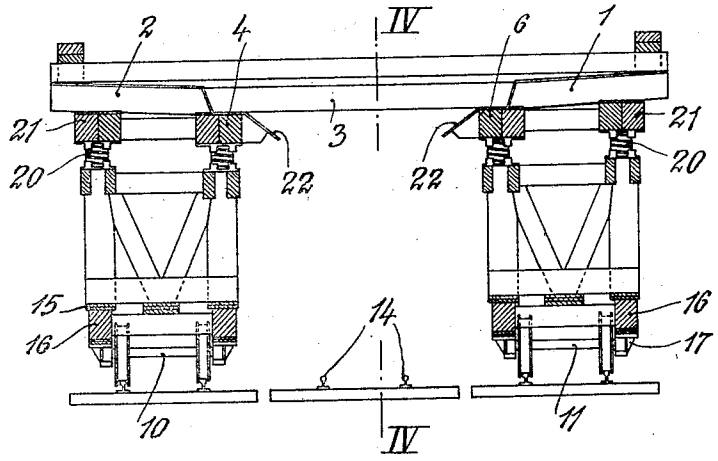
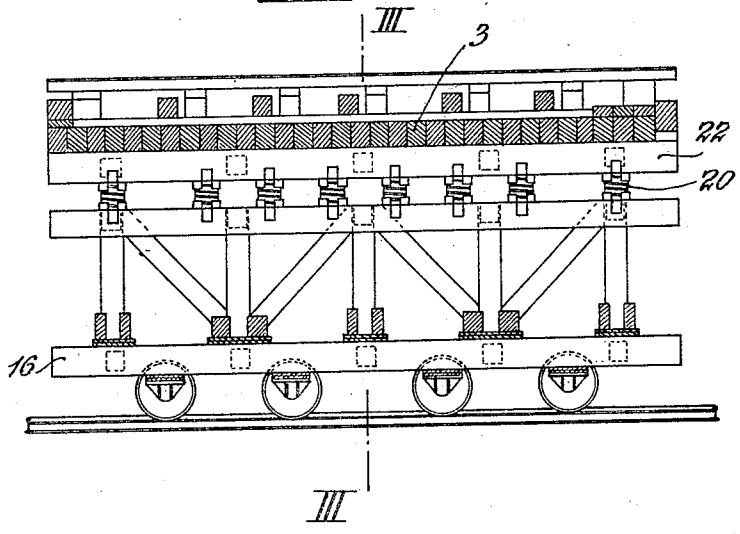


Fig. 4.



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Fig. 5.

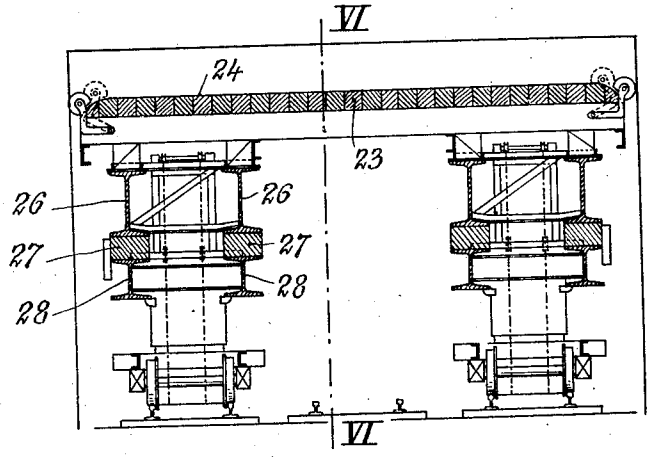


Fig. 6.

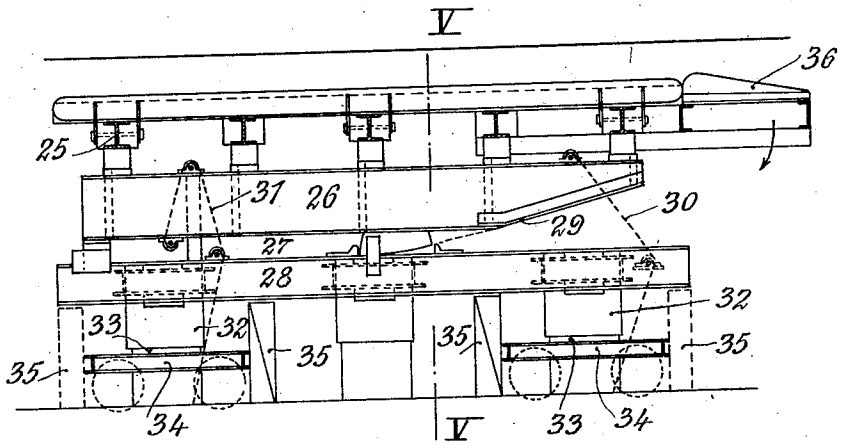
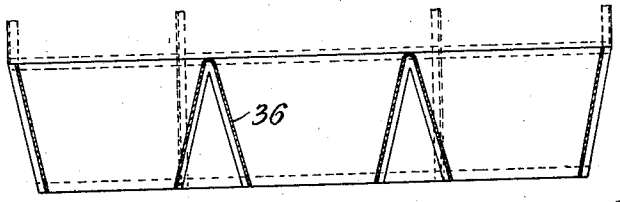


Fig. 7.



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UNITED STATES PATENT OFFICE

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WORKING AND LOADING PLATFORM FOR GALLERY WORK IN TUNNELS

Application filed November 11, 1929, Serial No. 406,438, and in Norway September 26, 1929.

In tunnels, in which the excavating or mining work is progressing in one or more successive roof galleries behind the heading, it is known to provide stationary platforms at a suitable level for carrying out the excavation work in the roof galleries. These gallery platforms are dismounted and re-erected as the work progresses.

The erection of the said gallery platforms as well as the loading of rock from the platforms on to the trains which serve to carry the rock out of the tunnel requires much work and time.

The present invention has for its object a combined working and loading platform which is adapted to move on rails along both sides of the tunnel floor, being supported on a structure or frame which leaves room in the middle for a central rail serving to carry the transport trains from the heading as well as from the galleries.

The gallery platforms according to the present invention comprise a horizontal floor or platform adapted to receive the rock shot down from the roof of the tunnel and from which the rock is let down by gravity into the cars of the transport train either by means of a tilting arrangement or through suitable openings, which are uncovered for loading purposes.

The said loading floor or platform according to the invention is yieldingly supported on the wheel base in order to reduce the strains to which the wheel base and the bearings are exposed.

On the drawings some forms of the invention are diagrammatically illustrated.

Fig. 1 is vertical cross section through one form of the invention on the line I—I of Fig. 2, and Fig. 2 is a longitudinal section on the line II—II of Fig. 1.

Figs. 3 and 4 show corresponding sections of a modified form of the invention, and Figs. 5 and 6 corresponding sections of a third form of the invention. Fig. 7 is a detail plan view on a slightly enlarged scale of the channelled rear part of the tilting platform illustrated on Figs. 5 and 6.

According to the form of the invention illustrated on Figs. 1 and 2, the structure comprises a floor or platform having two side portions 1, 2, preferably covered with sheet iron or the like, and a central part 3 consisting of separate loose cross beams supported by longitudinal wood or iron beams 4, 5, 6. The longitudinal beams 4 and 6 also serve to support the inner edges of the side elements 1, 2.

The longitudinal beams 4, 5 and 6 are supported by means of spring buffers 7, 8, 9 carried by the rigid lower frame work which is in the form of an inverted U, and which is constructed by means of suitable wood or iron beams.

The two downwardly extending members of the U-shaped frame work are provided with the usual trolley axis 10, 11, the wheels of which run on rails 12, 13 located along each side of the tunnel floor. Between the said downwardly extending side members there is room for the usual central rail 14, serving to carry the transport trains.

In order to further protect the bearings for the wheel shafts 10, 11, it is preferred to place an electric element such as a layer of rubber 15 between the lower beams 16 of the structure and the bearing boxes 17.

As the rock shot down from the roof of the tunnel is received by the platform 1, 2, 3, the shock is taken up by buffers 7, 8, 9, whereupon a sufficient number of the loose beams forming the middle section 3 are removed so as to let the rock drop over the inclined surface 18, 19 into the trolleys or cars running on the central rail 14.

The form of the invention illustrated on Figs. 3 and 4 in principle corresponds to the one illustrated on Figs. 1 and 2, and like numerals refer to corresponding parts of the several figures.

The buffers 7, 8, 9 according to the form illustrated on Figs. 3 and 4 are replaced by means of helical springs 20, serving to support the longitudinal beams 4 and 6 carrying the central part 3 of the platform as well as the longitudinal beams 21, supporting the outside edges of the platform sections 1, 2.

Whereas these side sections of the platform according to the form illustrated on Figs. 1 and 2 are adapted to tilt slightly about their exterior supporting beams, the platform 1, 2, 3 in accordance with the form illustrated on Figs. 3 and 4 will yield vertically as an entity.

The form of the invention illustrated on Figs. 3 and 4 is particularly adapted for a lower (inside) gallery and the yielding platform according to this form is supported on two side frames which are not rigidly connected with each other as the side members of the inverted U-shaped frame structure of Figs. 1 and 2.

The rock shot down on the platform 1, 2, 3 is dropped directly into the transport trolleys or cars by removing a sufficient number of the beams making up the middle section 3 of the platform, inclined guiding plates 22 being provided below said middle section 3.

According to the form illustrated on Figs. 5 and 6 the loading and working platform is made in the form of one rigid section composed of beams 23 and preferably covered by sheet iron 24. The platform or floor 23 is supported on transverse beams 25, which are again supported on longitudinal beams 26 to the underside of which there is preferably fastened wood beams 27. The said longitudinal beams 26, 27 are supported on other longitudinal beams 28, and their underside is inclined from a point approximately at the middle, as indicated at 29, in order that the complete platform may be tilted in the longitudinal direction by means of chains or the like as indicated by 30, 31.

The longitudinal supporting beams 28 carrying the tilting beams 26, 27 are rigidly connected with one member 32 of hydraulic or other buffer devices, the other member 33 of which is carried by suitable trolleys or boggies 34.

If so desired, suitable supporting devices 35 may be mounted below the longitudinal beams 28 in order to limit the yielding movement of the structure.

When the tilting platform is tilted as indicated by the arrow of Fig. 6, the rock will slide towards the lower end of the platform and will be guided by means of suitable guiding plates 36 (see Figs. 6 and 7) into the trolleys or cars of transport trains on the rails in the tunnel.

What is claimed is:—

In a working and loading device for excavating roof galleries in tunnels, a platform disposed at a substantial height above the tunnel floor so as to permit the passage of transport cars below the same, supporting means for said platform extending upon both sides of the track for said transport cars, elastic means disposed between said platform and said supporting means and means for tilting said platform longitudinally for unloading material by gravity from said platform to said transport cars disposed beneath said platform.

In testimony whereof I affix my signature.

C. H. HOELFELDT-LUND.