

S. M. MAVOR.
MINING MACHINE.
APPLICATION FILED MAY 12, 1914.

1,124,159.

Patented Jan. 5, 1915.
4 SHEETS—SHEET 1.

FIG: 1.

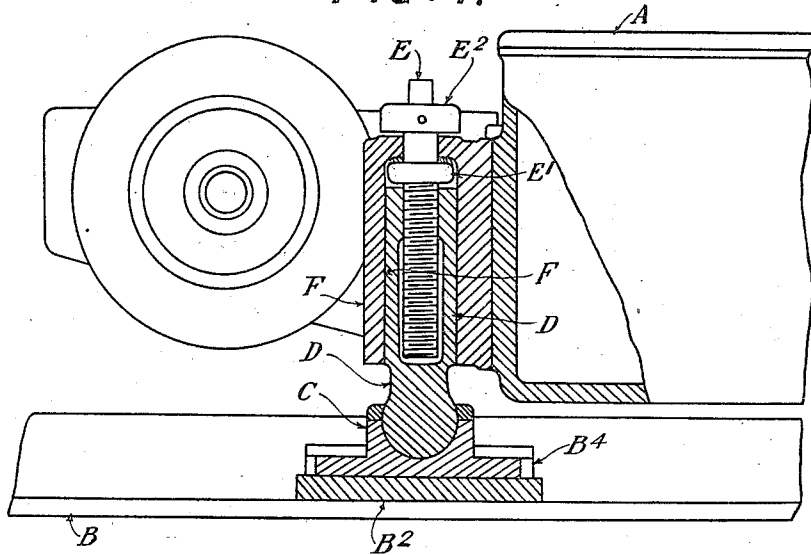
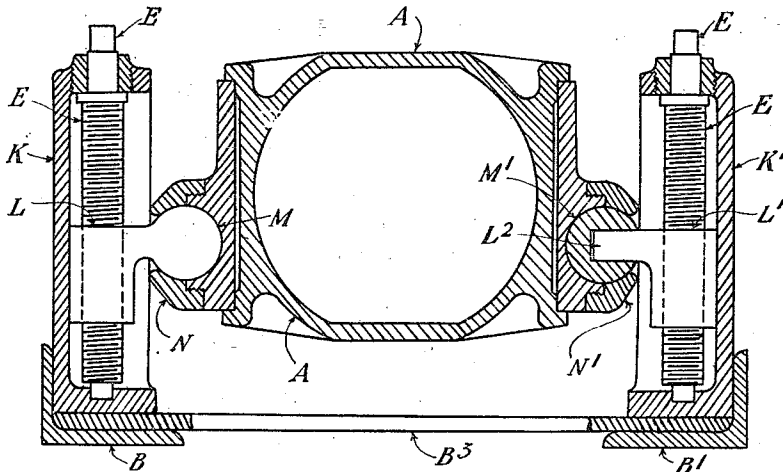


FIG: 8.



Witnesses.

G. Manning
H. W. Fowler, Jr.

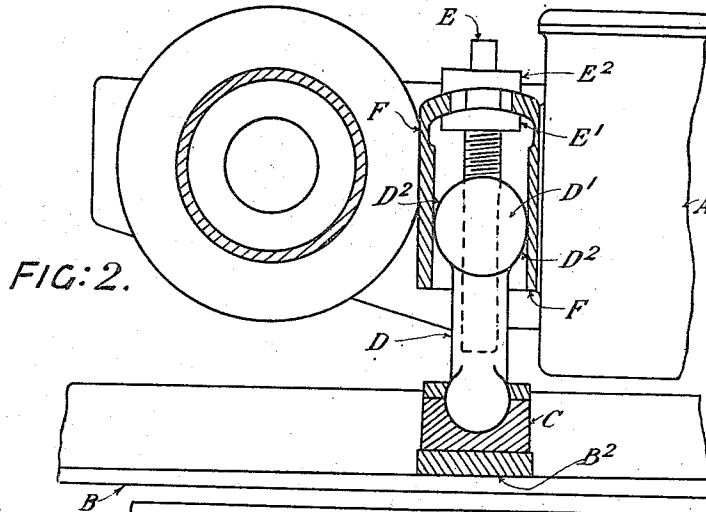
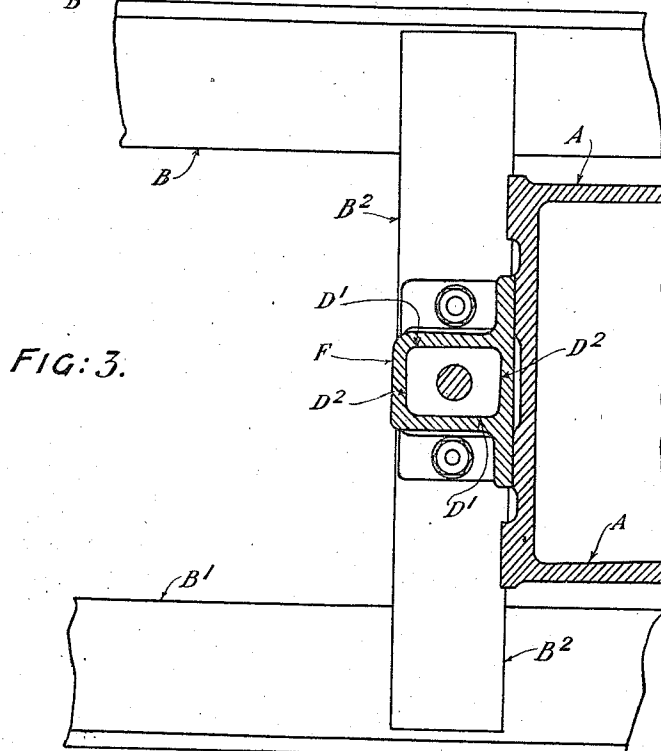
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4 SHEETS—SHEET 2.



Witnesses.

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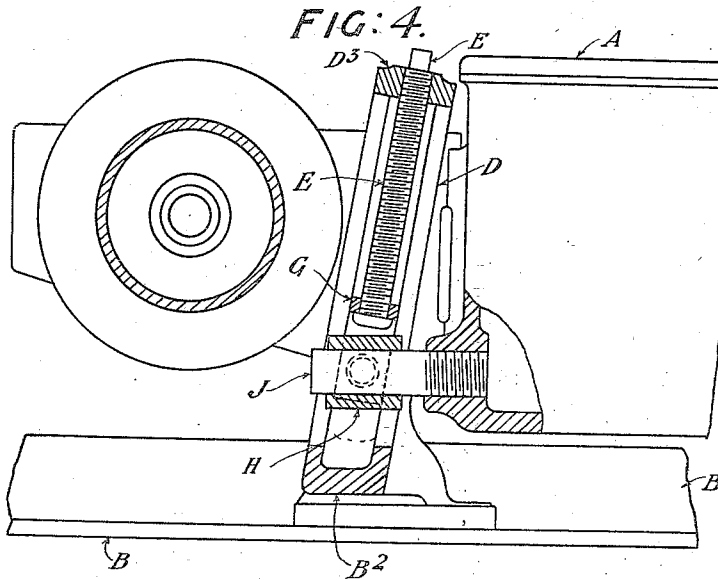
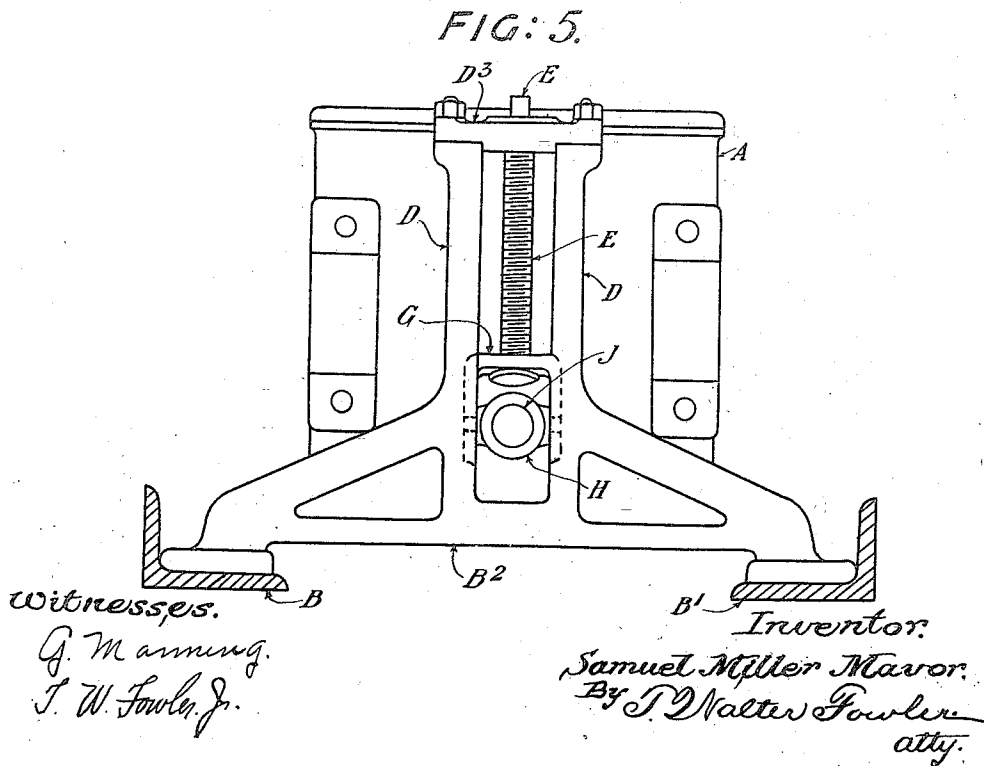
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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

FIG: 6.

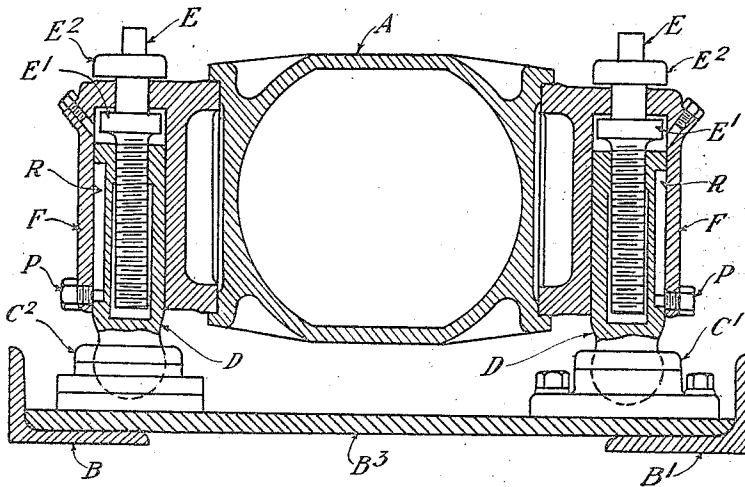
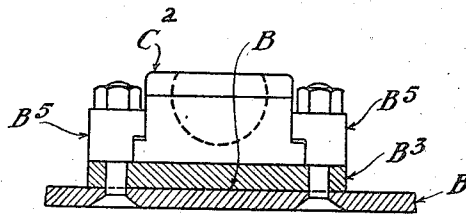


FIG: 7.



Witnesses.

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UNITED STATES PATENT OFFICE.

SAMUEL MILLER MAVOR, OF GLASGOW, SCOTLAND, ASSIGNOR TO MAVOR & COULSON, LIMITED, OF GLASGOW, SCOTLAND.

MINING-MACHINE.

1,124,159.

Specification of Letters Patent.

Patented Jan. 5, 1915.

Application filed May 12, 1914. Serial No. 838,118.

To all whom it may concern:

Be it known that I, SAMUEL MILLER MAVOR, a subject of the King of Great Britain and Ireland, of 47 Broad street, Mile-End, Glasgow, Scotland, have invented new and useful Improvements in Mining-Machines, of which the following is a specification.

Machines for use in mining coal have been provided with a carriage, consisting, for example, of runners, skids, or wheels, to bear upon the floor of the working or upon rails laid thereon.

One method of supporting a machine of this character upon its carriage has been to provide supports at three positions, namely, at one position midway between the sides in the region of the haulage end of the machine (hereinafter referred to as the tail of the machine) about an approximately horizontal longitudinal axis, the support at this position being incapable of vertical or other adjustment, except vertically by disconnection and reconnection of the support, and at two other positions in the region of the cutter member end of the machine (hereinafter referred to as the head of the machine) by means of screwed standards, one on each side, each standard being pivotally connected to the carriage about a horizontal longitudinal axis and so constructed that by vertical adjustment the body of the machine could be tilted on its carriage by being partly turned about its longitudinal axis, or raised or lowered at its head, or have a combination of these adjustments imparted to it, as required.

In the known type of mounting adopted, the axial support at the tail of the machine was such as would permit the body to turn about its longitudinal axis, and to some extent move endwise and angularly about the position of support, and the connections of the screwed standards with the carriage and the body at the head of the machine were made slack in order to give the freedom which the altered positions of the body of the machine upon its carriage due to adjustments required. In consequence of this slackness, the method adopted did not provide a rigid support for the body of the machine upon its carriage.

This invention refers to mining machines, and the like, having a cutter member at its

head, of the bar, disk, chain or the like type, hereinafter referred to as coal cutting machines, of the type wherein the body of the machine is mounted upon a carriage and supported at three positions corresponding to the positions defined with reference to the system of support explained above, and the objects of the invention are to provide improved means for rigidly supporting the body of the machine upon its carriage which will give the necessary freedom to enable the required adjustments to be effected without slackness in the connections, and, if desired, to obtain an additional or improved method of adjustment by providing a screw support at its tail.

In the method of support to which this invention refers, in consequence of adjustments at the tail or head of the machine which cause the longitudinal axis of the body of the machine to be altered relatively to its carriage, there occur alterations of the distance in the projection of the body on the carriage, or, in other words, in the distance apart of the actual longitudinal positions at which the body is supported above the carriage. In the same way, in consequence of adjustments which cause the body to be tilted about its longitudinal axis, there occur alterations of the distance apart of the actual transverse positions at which the body is supported above the carriage, and the improved means according to this invention are devised to give the freedom required to permit the alterations of these distances which occur without resorting to slackness in the parts; and the additional or improved method of adjustment according to this invention is obtained by providing a screw support whereby, with the system of support in question, the tail of the machine may be raised or lowered.

Some examples of construction according to this invention will now be described with reference to the accompanying drawings, in which:—

Figure 1 is a side sectional elevation showing a support, a modification of which is shown in side sectional elevation at Fig. 2, and in sectional plan at Fig. 3, and of which a further modification is shown in sectional side elevation at Fig. 4, and in end elevation at Fig. 5, each adapted for application at the tail of a machine. Fig. 6 is

an end sectional elevation showing supports, and Fig. 7 is a side elevation of a detail thereof, a modification of which is shown in end sectional elevation at Fig. 8, each example being adapted for application at the head of a machine.

In the drawings, A designates the body of a machine which is mounted upon a carriage consisting of longitudinal skids B B¹ connected together by transverse ties B² B³.

Referring to Fig. 1, which shows a support for the tail end of the body A of a machine, the transverse tie B², at a position midway between the skids B B¹, is provided with a longitudinal guide B⁴ in which a spherical socket C is mounted and adapted to slide, the guide B⁴ being formed so as to prevent the socket C from rising or moving transversely. In the socket C, the ball foot of a screwed standard D is mounted, the standard D being bored and screwed internally to receive a screwed elevating spindle E. Fixed to and extending from the tail of the body A is a bracket having a guide F into which the standard D fits, the head of the guide F forming an abutment which rests upon a collar E¹ of the spindle E. An extension of the spindle E passes through a more in the head of the guide F and is formed at its top to receive a key, spanner, or the like, for rotating the elevating spindle E. An additional collar E² may be fitted above the head of the guide F to prevent the elevating spindle from moving endwise in the guide F. In this form of construction freedom to permit changes in the actual longitudinal position of support is obtained by the socket C being allowed to slide longitudinally in the guide B⁴.

In the construction of support shown at Figs. 2 and 3, the socket C is rigidly fixed to the transverse tie B², and the standard D is formed with an upper part having flat and parallel sides D¹ D¹, which fit between the sides of the guide F which are correspondingly formed. The front and back faces D² D², of the upper part of the standard D are circular and fit between the back and front interior faces of the guide F which are flat and parallel. Each of the contacts of these faces is consequently about a straight line. The top of the elevating spindle E extends through a longitudinal slot formed in the head of the guide F, and the head of the guide is curved and the contiguous faces of the collars E¹ E² are correspondingly shaped. In this form of construction freedom to permit changes in the actual longitudinal position of support is obtained by the angular movements which the standard D is free to make about the transverse axes of the socket C and the circular front and back faces D² D² of the upper part of the standard.

In the construction of support shown at Figs. 4 and 5, D designates a standard which is rigidly fixed to and extends upwardly from the skids B B¹ of the carriage, preferably, as shown, at an angle inclined toward the head of the machine. The base of the standard D is constructed so as to form a transverse tie B². The standard D is formed to serve as guides for a slipper G which is adapted to be raised or lowered therein by means of a screwed elevating spindle E which passes through a correspondingly screwed head D³ of the standard. Within the slipper G a sleeve H is pivotally supported on transverse trunnions. Fixed to and extending from the tail of the body A of the machine is an axle J which fits and is free to slide longitudinally in the sleeve H, and provides freedom which permits changes in the actual longitudinal position of the support of the body of the machine upon its carriage.

An example of the construction of supports for use at the head of a machine will now be described with reference to Figs. 6 and 7. In construction each of the supports shown is substantially the same as that described and shown with reference to Fig. 1, with the exception that the socket C¹ of the support on the right hand side of the body A is rigidly fixed to the transverse tie B³ close to the skid B¹, and, as shown at Fig. 7, the socket C² of the support on the left hand side of the body A is mounted in a transverse guide B⁵ fixed on the transverse tie B³ in which guide the socket C² is mounted and adapted to slide, the guide B⁵ being formed so as to prevent the socket C² from rising or moving longitudinally. In Fig. 6, the socket C² is shown with the guide B⁵ removed, and Fig. 7 is a side view showing the complete guide B⁵ and associated socket C². In this form of construction, freedom to permit changes in the actual transverse position of support is obtained by the socket C² being allowed to slide transversely in the guide B⁵.

In supports constructed as shown at Figs. 1 and 6, the standard D, if cylindrical, may be prevented from rotating in the guide F, as shown at Fig. 6, by means of a stud P arranged to engage with a slot R in the side of the standard D.

Referring to Fig. 8, which shows a modified construction of supports for use at the head of a machine, upright standards K K¹ are provided, each rigidly fixed at its foot to the carriage and fitted with elevating screws E E. Upon the screw E of the standard K is a sleeve L screwed internally to receive the elevating screw E, and extending transversely from the sleeve L is a spherical shoulder M which fits within a corresponding socket N fixed to the side of the body A of the machine. The screw

E of the standard K^1 is provided with a sleeve L^1 from which there extends transversely a shoulder L^2 which fits into a slot formed in a ball M^1 which fits within a spherical socket N^1 fixed to the side of the body A of the machine. In this form of construction freedom to permit changes in the actual transverse position of support is obtained by the shoulder L^2 being allowed to slide transversely in the ball M^1 .

The body of a machine provided with a support at its tail, such as is described with reference to Fig. 1, or to Figs. 2 and 3, or to Figs. 4 and 5, may be mounted at its head upon supports such as are described with reference to Figs. 6 and 7, or to Fig. 8, and with these means freedom to permit changes in the actual longitudinal position of support is obtained at the support at the tail of the machine. This longitudinal freedom, however, may be obtained at the supports at the head of the machine, for example, in Figs. 6 and 8 the feet of the supports may be free to slide longitudinally, for example, the tie B^3 on which they are mounted may be made free to slide longitudinally. If longitudinal freedom is provided at the head it is then not required at the tail of the machine, and if a support such as is shown at Fig. 1 is provided, the socket C is then rigidly fixed to the transverse tie B^2 , or if a support such as is shown at Figs. 4 and 5 is provided, the axle J is fixed so as to be prevented from sliding endwise in the sleeve H.

By this invention a system of support is provided whereby the body A of the machine can be tilted about its longitudinal axis and is capable of being adjusted vertically to meet the required conditions. Vertical adjustments of the head of the body, and consequently of the cutter member, may be made by adjustments at the tail of the machine, the body then moving about the supports at the head of the machine as a fulcrum, or the vertical adjustments may be made at the head supports, the body then moving about the support at the tail as a fulcrum, or adjustments may be made at the tail support and also at the head supports. Tilting adjustments of the body of the machine are made by adjustments at one or both of the supports at the head of the machine.

Machines mounted according to this invention may be provided with a support at the tail of the machine which is incapable of vertical adjustment, in which case the adjustments of the body are all effected at the head supports.

I claim:

1. A coal cutting machine having the body of the machine mounted upon a carriage and supported at three positions, at one position midway between the sides in

the region of the tail of the machine about an approximately horizontal axis, and at two other positions in the region of the head of the machine, one on each side thereof, each of these head supports consisting of screw elevating means and their connection between the body of the machine and the carriage having means to permit changes in the actual transverse positions at which the body is supported above the carriage, and the supports of the body having means to permit changes in the actual longitudinal positions at which the body is supported above the carriage.

2. A coal cutting machine having the body of the machine mounted upon a carriage and supported at three positions, at one position midway between the sides in the region of the tail of the machine about an approximately horizontal axis, and at two other positions in the region of the head of the machine, one on each side thereof, each of these head supports consisting of screw elevating means, one connected to the body and carriage of the machine incapable of moving transversely at its connections, the other mounted to move transversely at one only of its connections, and the supports of the body having means to permit changes in the actual longitudinal positions at which the body is supported above the carriage.

3. A coal cutting machine having the body of the machine mounted upon a carriage and supported at three positions, at one position midway between the sides in the region of the tail of the machine about an approximately horizontal axis, and at two other positions in the region of the head of the machine, one on each side thereof, each of these head supports consisting of screw elevating means, one connected to the body and carriage of the machine incapable of moving transversely at its connections, the other mounted to move transversely at its connection with the carriage only, and the supports of the body having means to permit changes in the actual longitudinal positions at which the body is supported above the carriage.

4. A coal cutting machine having the body of the machine mounted upon a carriage and supported at three positions, at one position midway between the sides in the region of the tail of the machine about an approximately horizontal axis, and at two other positions in the region of the head of the machine, one on each side thereof, each of these head supports consisting of screw elevating means, each mounted at its foot in a spherical socket, one of the sockets being rigidly fixed to the carriage, the other socket being mounted so as to slide transversely on the carriage, and the supports of the body having means to permit

changes in the actual longitudinal positions at which the body is supported above the carriage.

5. A coal cutting machine having the body of the machine mounted upon a carriage and supported at three positions, at one position midway between the sides in the region of the tail of the machine about an approximately horizontal axis, and at two other positions in the region of the head of the machine, one on each side thereof, each of these head supports consisting of elevating means, having a screwed standard formed with a ball foot mounted in a socket, a screwed elevating spindle, a guide fixed to and extending from the body into which the standard fits having an abutment at its head, a collar on the elevating spindle on which the said abutment rests, the socket of one of these supports being rigidly fixed to the carriage, and the socket of the other support being mounted to slide transversely on the carriage, and the supports of the body having means to permit changes in the actual longitudinal positions at which the body is supported above the carriage.

6. A coal cutting machine having the body of the machine mounted upon a carriage and supported at three positions, at one position midway between the sides in the region of the tail of the machine about an approximately horizontal axis, and at two other positions in the region of the head of the machine, one on each side thereof, each of these head supports consisting of screw elevating means, and their connection between the body of the machine and the carriage having means to permit changes in the actual transverse positions at which the body is supported above the carriage, and the support at the tail of the machine having means to permit changes in the actual longitudinal positions at which the body is supported above the carriage.

7. A coal cutting machine having the body of the machine mounted upon a carriage and supported at three positions, at one position midway between the sides in the region of the tail of the machine about an approximately horizontal axis, and at two other positions in the region of the head of the machine, one on each side thereof, each of these head supports consisting of screw elevating means, and their connection between

the body of the machine and the carriage having means to permit changes in the actual transverse positions at which the body is supported above the carriage, and the support of the tail of the machine consisting of screw elevating means and having means to permit changes in the actual longitudinal positions at which the body is supported above the carriage.

8. A coal cutting machine having the body of the machine mounted upon a carriage and supported at three positions, at one position midway between the sides in the region of the tail of the machine about an approximately horizontal axis, and at two other positions in the region of the head of the machine, one on each side thereof, each of these head supports consisting of screw elevating means and their connection between the body of the machine and the carriage having means to permit changes in the actual transverse positions at which the body is supported above the carriage, and the support at the tail of the machine consisting of screw elevating means connected to the body and carriage of the machine, incapable of moving longitudinally at one of its connections and free to permit longitudinal movement at its other connection.

9. A coal cutting machine having the body of the machine mounted upon a carriage and supported at three positions, at one position midway between the sides in the region of the tail of the machine about an approximately horizontal axis, and at two other positions in the region of the head of the machine, one on each side thereof, each of these head supports consisting of screw elevating means, and their connection between the body of the machine and the carriage having means to permit changes in the actual transverse positions at which the body is supported above the carriage, and the support at the tail of the machine consisting of screw elevating means connected to the body and carriage of the machine, the connection with the carriage being incapable of permitting longitudinal movements and the connection with the body permitting longitudinal movements.

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Witnesses:

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