

Feb. 7, 1950

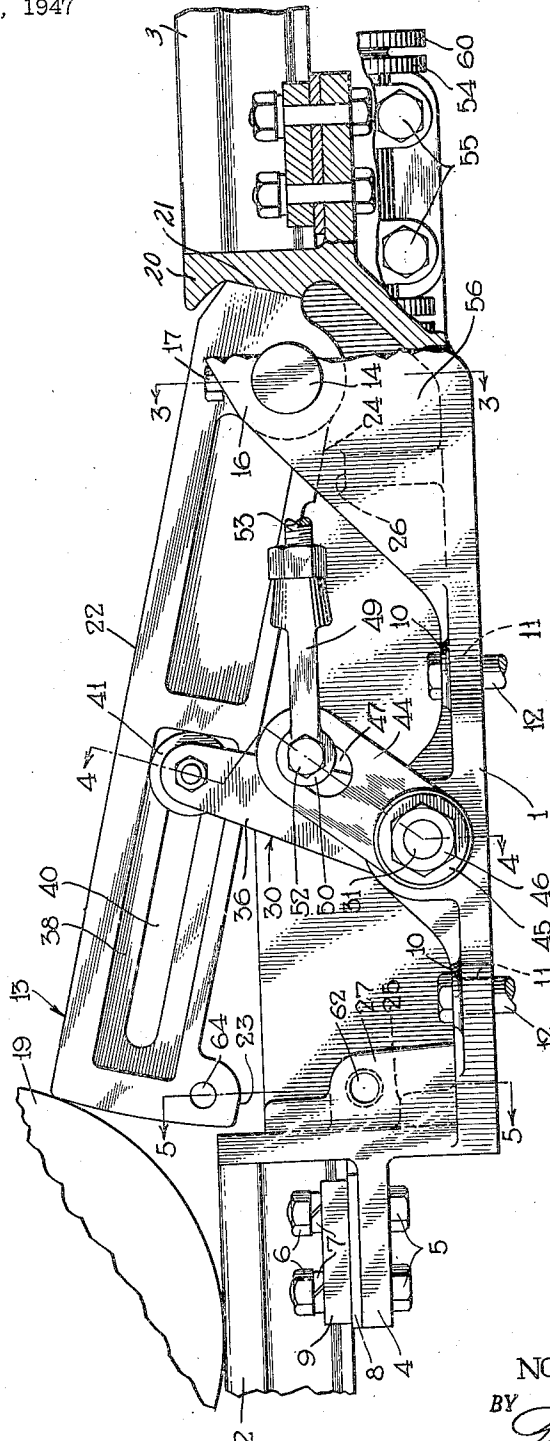
N. G. KERSHAW
SCOTCH BLOCK APPARATUS

2,496,916

Filed Jan. 14, 1947

3 Sheets-Sheet 1

Fig. 1



INVENTOR.
NORMAN G. KERSHAW
BY *Frank E. Miller.*
ATTORNEY

Feb. 7, 1950

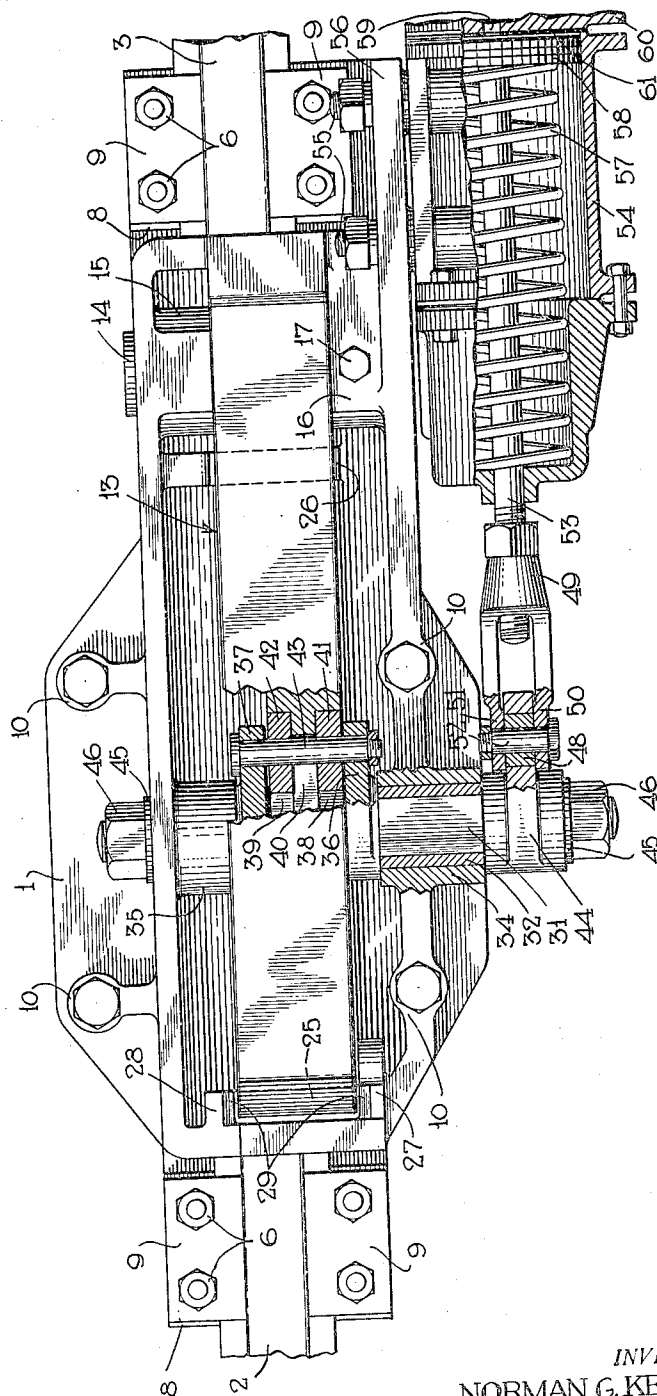
N. G. KERSHAW
SCOTCH BLOCK APPARATUS

2,496,916

Filed Jan. 14, 1947

3 Sheets-Sheet 2

Fig. 2



INVENTOR.
NORMAN G. KERSHAW
BY *Frank C. Miller*
ATTORNEY

Feb. 7, 1950

N. G. KERSHAW
SCOTCH BLOCK APPARATUS

2,496,916

Filed Jan. 14, 1947

3 Sheets-Sheet 3

Fig. 6

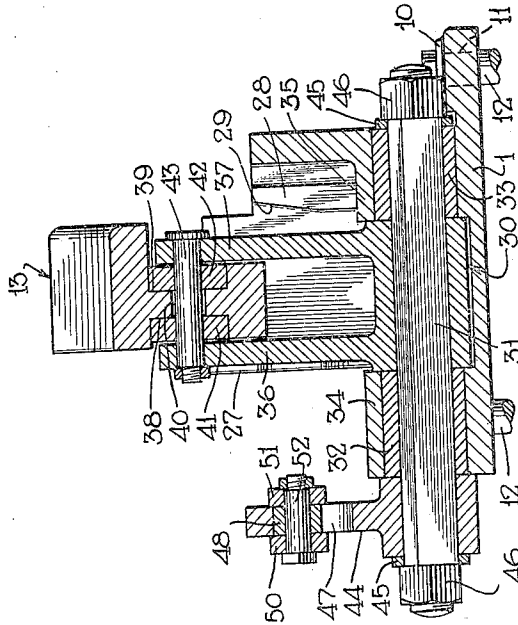
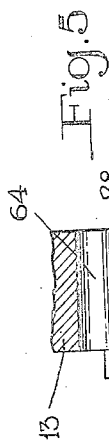
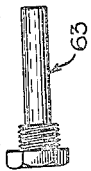


Fig. 4

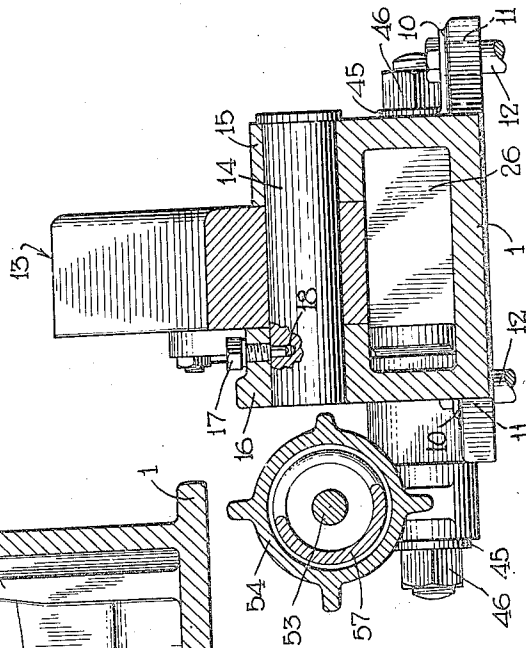


Fig. 3

INVENTOR.
NORMAN G. KERSHAW
BY *Frank E. Miller*
ATTORNEY

UNITED STATES PATENT OFFICE

2,496,916

SCOTCH BLOCK APPARATUS

Norman G. Kershaw, London, England, assignor,
by mesne assignments, to The Westinghouse
Air Brake Company, Wilmerding, Pa., a corpo-
ration of Pennsylvania

Application January 14, 1947, Serial No. 721,937
In Great Britain May 1, 1946

11 Claims. (Cl. 104—252)

1

This invention relates to scotch block or chock apparatus and more particularly to the type for use in a rail to stop movement of a vehicle, as at mines and colliery installations.

One object of the invention is to provide an improved scotch block apparatus of the above type.

Another object of the invention is the provision of a scotch block apparatus of the above type adapted to be employed in place of a section of rail to provide a track for mine cars or other railway vehicles.

Another object of the invention is to provide a scotch block apparatus particularly adapted for remote control whereby an operator at a remote station may control the scotch block to stop a vehicle at a fixed location or to release the vehicle so that it may be moved from said fixed location when so desired.

Other objects and advantages will be apparent from the following more detailed description of the invention.

In the accompanying drawings; Fig. 1 is a side elevational view of a scotch block apparatus constructed in accordance with one embodiment of the invention; Fig. 2 is a plan view, partly in section, of the apparatus shown in Fig. 1; Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1; Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1; Fig. 5 is a sectional view taken on the line 5—5 of Fig. 1, and Fig. 6 is a view of a pin for locking the scotch block in a chosen position.

Description

As shown in the drawings, the scotch block apparatus comprises an elongated base 1 adapted to be interposed between two sections of rails 2 and 3 of a track, said base being provided at each of its opposite ends with a flange 4 only one being shown in the drawing to which the end of the respective rail section is adapted to be fastened by means of bolts 5, nuts 6, washers 7, plates 8 and rail clamps 9. The base 1 is further provided with bosses 10 having bores 11 for receiving studs 12 which may be imbedded in concrete or any suitable foundation provided in the roadbed for firmly anchoring said base.

The scotch block apparatus further comprises a scotch block 13 fulcrumed at one end on a pin 14 for vertical movement between the adjacent ends of rails 2 and 3 said pin being carried in upstanding bosses 15 and 16 formed integral with base 1. The pin 14 is held in position by a set screw 17 having screw-threaded engagement with

2

the boss 16 and extending into a recess 18 formed in pin 14.

The scotch block 13 has a raised position (Fig. 1) in which the end opposite fulcrum pin 14 is elevated above the top of rail sections 2 and 3 for engaging a wheel 19 of a rail vehicle for preventing movement of said vehicle in a direction from rail 2 to rail 3. In this position a projection 20 formed integral with the base 1 between the bosses 15 and 16 engages a surface 21 on the end of the scotch block 13 opposite that engaged by the wheel 19 for taking the thrust of said wheel against the scotch block and thereby preventing the pin 14 from being subjected to such thrust.

The scotch block 13 also has a lowered position in which the top surface 22 thereof is adapted to be disposed in the plane of the top surfaces of the rails 2 and 3 to permit passage of the wheel 19 over the block from rail 2 to rail 3. In this lowered position of the block surfaces 23 and 24 at opposite ends thereof contact shelves 25 and 26 respectively, which are formed integral with base 1 for supporting the block and the weight of the vehicle as it passes over the block. The shelf 25 is provided between two walls 27 and 28 which with the block 13 in contact with said shelf maintain the block in alignment with the rails 2 and 3. The adjacent surfaces of said walls near their upper ends are tapered outwardly as at 29 to facilitate entry of the block 13 between said walls.

A crank 30 is provided for raising and lowering the block 13, said crank being carried by and having a driving connection with a square spindle or bolt 31 carried in bushings 32 and 33 which have a turning fit within bosses 34 and 35 respectively formed integral with base 1.

The crank 30 has two arms 36 and 37 disposed at opposite sides of the block 13 and said block has two elongated recesses 38 and 39, one on each side, extending in the direction of the length of the block and also having a slot 40 open at opposite ends to said recesses. Rollers 41 and 42 of slightly less diameter than the width of recesses 38 and 39, respectively, are disposed therein and mounted on a pin 43 which extends thru the slot 40 and the ends of the two crank arms 36 and 37, whereby upon rocking of the crank 30, the scotch block will be moved to either of its positions above mentioned.

The ends of the slots adjacent the fulcrum pin 14 are arranged for engagement by the rollers 41 and 42 upon clockwise movement of the arms 36 and 37 past the over-center position of said arms with respect to the block 13 for locking said block in its raised position.

3

A crank 44 has near one end a square opening into which fits the spindle or bolt 31 for providing a driving connection between said crank and spindle for operating the crank 30. The bushing 33, crank 30, bushing 32 and crank 44 are held on the spindle or bolt 31 and in the base 1 in the assembled relation shown in Fig. 4 by a washer 45 and a nut 46 on each of the opposite ends of said spindle. Adjacent the opposite end of crank 44 there is provided a slot 47 extending in the direction of the length of said crank and in which is disposed a roller 48.

A link 49 is provided at one end with two jaws 50 and 51 between which is disposed the roller 48, and a pin 52 extending through the ends of said jaws and roller connects the roller for movement by said link. The opposite end of link 49 is connected to the end of a piston rod 53 projecting from a pneumatic cylinder 54 which is secured by bolts 55 to an upwardly extending portion 56 of the base 1.

The pneumatic cylinder 54 is provided with a release spring 57, shown in Fig. 2, which acts against a piston 58 for actuating said piston, link 49 and cranks 44 and 30 to move the scotch block 13 to the raised position in which it is shown in Fig. 1. A passage-way 59 is provided in a pressure head 60 secured to one end of cylinder 54 for admitting fluid under pressure to a chamber 61 at one side of piston 58 for actuating said piston against spring 57 to rock the cranks 44 and 30 to move or permit movement of the scotch block 13 to its lowered position.

To provide for locking the scotch block 13 in its lowered position, if at any time this is desired, the wall 27 extended near its lower end has a tapped bore 62 through which may be inserted a bolt 63 having like screw-threads near one end and a portion of smaller diameter projecting from the screw-threaded portion for insertion thru a bore 64 provided in the scotch block 13.

Operation

When fluid under pressure is released from chamber 61 the release spring 57 will actuate the piston 58, the link 49, and thereby the cranks 44 and 30 to hold the block 13 in its raised position in which any rail vehicle approaching said block along track 2 will be brought to rest when the wheel 19 of said vehicle comes in contact with the end of said block.

When it is desired that the rail vehicle be advanced along the track from rail 2 to rail 3 fluid under pressure from any suitable source (not shown) is admitted through passageway 59 to chamber 61 wherein it will act on piston 58 to cause it to move toward the left hand against the force of spring 57. This movement of piston 58 is transmitted through piston rod 53 and link 49 to crank 44 which is thereby rotated counterclockwise. This in turn rotates the square spindle or bolt 31 and crank 30 in a counterclockwise direction which causes or permits movement of block 13 about pin 14 to its lowered position in contact with shelves 25 and 26. At this time the top surface 22 of the scotch block 13 is disposed in the plane of the top surfaces of the rails 2 and 3 and forms a continuous track from rail 2 to rail 3 to allow wheel 19 of the rail vehicle to pass from one rail to the other.

To prevent passage of a vehicle from rail 2 to rail 3 the scotch block 13 may be turned to its raised position by releasing fluid under pressure from chamber 61 to permit spring 57 to move the piston 58 toward the right hand until it comes

4

in contact with pressure head 60. This movement of piston 58 is transmitted through piston rod 53 and link 49 to the crank 44 which is thereby rotated clockwise to the position shown in Fig. 1. This clockwise rotation of crank 44 also causes clockwise rotation of the square spindle or bolt 31 and crank 30. As crank 30 is rotated clockwise rollers 41 and 42 will roll along the upper surfaces of the elongated slots 38 and 39 and cause the block 13 to be turned clockwise about pin 14 to its raised position, shown in Fig. 1, in which position surface 21 of said block contacts projection 20 of base 1, and the crank 30 is moved over its dead center for reasons hereinbefore described.

It will now be noted that, at the will of the operator, fluid under pressure may be admitted to chamber 61 at the right hand face of piston 58 to move the scotch block 13 to its lowered position to permit a rail vehicle to pass along the track from rail 2 to rail 3, or fluid under pressure may be released from said chamber to permit release spring 57 to move said scotch block to its raised position to stop a rail vehicle traveling along said track by preventing its passage from rail 2 to rail 3. In case of failure of the fluid under pressure for controlling operation of the scotch block 13 spring 57 will automatically render said block effective to stop a vehicle, or if desired, said block may be secured in its lowered position by pin 63.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:

1. A scotch block apparatus comprising a base, a scotch block fulcrumed on said base and having a raised position and a lowered position, an operating cylinder comprising a piston rod connected to said block, a release spring for actuating said rod to move said block to said raised position, and a piston connected to said rod operable by fluid under pressure to move said block to said lowered position.

2. A scotch block apparatus comprising a base adapted to be connected to two sections of a rail of a track, a scotch block fulcrumed on said base and having a lowered position to form a continuous track between said rail sections, and having a raised position in which one end is arranged to be engaged by a wheel to prevent movement thereof, said base having a thrust surface arranged for engagement by the opposite end of said block in its raised position, and means for raising and lowering the block.

3. A scotch block apparatus comprising a base interposed between and connected to two sections of a track rail, a fulcrum pin in said base, a scotch block fulcrumed at one end on said pin and having a raised position in which the opposite end is disposed above a plane including the top of said rail sections and having a lowered position in which a rail surface formed on the top of said block is disposed in said plane, said base comprising thrust means for engaging the end of said block adjacent said fulcrum pin in the raised position thereof, and means for raising and lowering said block.

4. A scotch block apparatus comprising a base for connecting two rail sections of a track, a scotch block fulcrumed on said base and having a lowered position to form a continuous track between said rail sections and a raised position in which a portion of said block is disposed above the plane of said track for engagement by a vehicle wheel to prevent movement thereof, said

base comprising means engageable by said block in said lowered position for supporting said block and further comprising means engageable by said block in said raised position for taking thrust of said wheel against said block, and means for effecting movement of said block to said positions.

5. A scotch block apparatus comprising a base for connecting two rail sections of a track, a scotch block fulcrumed on said base and having a raised position for interrupting the passage of a rail vehicle along said track, and a lowered position for forming a substantially continuous track from one of said rail sections to the other to permit passage of said vehicle along said track, means for moving said block to its different positions comprising a cylinder, a piston in said cylinder connected to said scotch block and operative by fluid under pressure to move said block to its lowered position and a spring operable upon release of said fluid under pressure on said piston to move said block to its raised position and means for locking said block in its lowered position when said fluid under pressure is released from said face of said piston.

6. A scotch block apparatus comprising a base member for connecting two rail sections of a track, a scotch block fulcrumed on said base member and having a raised position in which a portion of said block is disposed above the plane of said track for engagement by a vehicle wheel to prevent movement thereof and a lowered position to form a continuous track between said rail sections, operating means operatively connected to said block for raising and lowering said block, means integral with said base member having tapered surfaces for centering said block with respect to said base and having parallel surfaces for guiding said block to said lowered position, and means formed integral with said base member for supporting said block in said lowered position and for engaging one end of said block in its said raised position to prevent thrust of said block against its fulcrum.

7. A scotch block apparatus comprising a base for connecting two rail sections of a track, a scotch block fulcrumed at one end on said base and having a raised position in which the opposite end is disposed above a plane including the top of said rail sections and a lowered position in which a rail surface formed on the top of said block is disposed in said plane, said base comprising a shelf adjacent the fulcrumed end of said block between said fulcrumed end and the other end, and a second shelf adjacent the said other end of said block, said shelves being engageable by said block in its lowered position to support said block, and means operable to move said block from either of said positions to the other of said positions.

8. A scotch block apparatus comprising a base, a scotch block fulcrumed on said base and having a raised position and a lowered position, an operating cylinder comprising a piston rod connected to said block, a release spring for actuating said rod to move said block to said raised position, a piston connected to said rod operable by fluid under pressure to move said block to said lowered position and releasable locking means for holding said block in its lowered position against force of said spring upon release of fluid under pressure on said piston.

9. A scotch block apparatus comprising a base, a scotch block fulcrumed on said base and having a raised position and a lowered position, an operating cylinder comprising a piston rod connected

to said block, a release spring for actuating said rod to move said block to said raised position, a piston connected to said rod operable by fluid under pressure to move said block to said lowered position, said base having a bore, said block having a bore for registry with the base bore in the lowered position of said block, and a pin for disposal in said bores to hold said block in its lowered position against force of said spring upon release of fluid under pressure on said piston.

10. A scotch block apparatus comprising a base for connecting two rail sections of a track, a fulcrum pin carried by said base, a scotch block fulcrumed at one end on said pin and having a lowered position in which a rail surface formed on the top of said block is disposed in a plane including the top of said rail sections for forming a track between said rail sections and a raised position in which the opposite end of said block is disposed above said plane for interrupting said track, support means in said base separate from said pin for supporting said block in said lowered position, a thrust surface on said base engageable by the fulcrumed end of said block in its raised position, lever means fulcrumed in said base and operatively connected to said block for moving it to its different positions, means associated with said block cooperative with said lever means in the raised position of said block to limit block raising movement of said lever means to an overcenter self-locking position of said lever means, and means carried by said base for actuating said lever means.

11. A scotch block apparatus comprising a base for connecting two rail sections of a track, a fulcrum pin carried by said base, a scotch block fulcrumed at one end on said pin and having a lowered position for forming a track between said rail sections and a raised position for interrupting said track, support means in said base separate from said pin for supporting said block in said lowered position, a thrust surface on said base engageable by the fulcrumed end of said block in its raised position, lever means fulcrumed in said base and operatively connected to said block for moving it to its different positions, means associated with said block cooperative with said lever means in the raised position of said block to limit block raising movement of said lever means to an overcenter self-locking position of said lever means, a cylinder carried by said base, a piston in said cylinder connected to said lever means and operable by fluid under pressure to actuate said lever means to move said block to its lowered position, and a spring acting on said piston opposing pressure of fluid thereon and operative upon relief of such fluid pressure to actuate said lever means to move said block to its raised position.

NORMAN G. KERSHAW.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
417,330	Morse	Dec. 17, 1889
572,252	Floeter	Dec. 1, 1896
758,191	Robertson	Apr. 26, 1904
1,349,387	Simpson	Aug. 10, 1920
1,379,870	Lepley	May 31, 1921
1,408,089	Johnson	Feb. 28, 1922
1,584,031	Hannauer et al.	May 11, 1926

(Other references on following page)

UNITED STATES PATENTS

Number	Name	Date
1,738,008	Johnson -----	Dec. 3, 1929
1,850,446	Camerota -----	Mar. 22, 1932
1,977,819	Burner -----	Oct. 23, 1934
2,184,656	Stone -----	Dec. 26, 1939

FOREIGN PATENTS

Number	Country	Date
4,035 of 1911	England -----	Feb. 17, 1912
522,267	Germany -----	June 29, 1928

OTHER REFERENCES

Page 64, Figure 252 of 507 Mechanical Move-
ments, published in 1908 by Brown & Seward, 261
Broadway, New York, New York. (A copy is avail-
able for photostats in Division 34 of the Patent
Office.)