W. A. & B. S. H. HARRIS.
AIR BRAKE COUPLING.
No. 442,621. Patented Dec. 16, 1890.

[Diagram of air brake coupling]

Witneses

William H. Harris
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By their Attorneys,

[Signatures]

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AIR-BRAKE COUPLING.

SPECIFICATION forming part of Letters Patent No. 442,621, dated December 16, 1890.
Application filed May 8, 1890. Serial No. 351,006. (No model.

To all whom it may concern:

Be it known that we, WILLIAM A. HARRIS and BENJAMIN S. H. HARRIS, citizens of the United States, residing at Pelzer, in the county
5 of Anderson and State of South Carolina, have
invented a new and useful Air-Brake Coupling, of which the following is a specification.

This invention relates to railway-cars, and
more especially to the couplings for the airbrakes thereof.

The invention consists of a head carried be-
low the draw-head and having an automatic-
closing valve adapted to be opened when
the head is coupled with the companion head
and devices carried by said head for auto-
matically coupling it to and uncoupling it
from the companion head simultaneously
with the coupling and uncoupling of the cars,
all as hereinafter more fully described, and
illustrated in the drawings, in which—

Figure 1 is a side elevation showing two
car ends connected by the couplings and by
air-brake couplings of our improved construc-
tion. Fig. 2 is a plan view of the air-brake
couplings, also connected. Fig. 3 is an en-
larged perspective view of one of our coupl-
ing-heads and connections. Fig. 4 is a plan
view of one of the heads and its uncoupling
device, showing the latter in full lines as in
their coupled position and in dotted lines in
their uncoupled position. Fig. 5 is a longi-
dudinal section through the center of one of
the coupling-heads.

Referring to the said drawings, the letter
35 B designates the body of the car, carrying an
ordinary or any preferred car-coupling C, by
which it is connected to an adjacent car. Be-
low the car-coupling is a frame-work F, within
which is mounted loosely the head H of our
improved air-brake coupling, which head has
a hole h in its rear end. A pin P, carried by an
extension F' from the car-body, fits loosely in
this hole, and a coiled expansion-spring E
surrounds the pin between the extension and
the rear end of the head, whereby the latter is
pressed normally forward. The front end
of the head is flexibly sustained at about the
center of the frame-work F by means of a
number of springs S, which connect the cor-
ners or sides of the frame-work with the head,
and by means of which the latter is allowed
to move transversely to and longitudinally of
50 its length to a limited degree. The front end
of the head is provided with a buffer or
55 cushion of soft rubber R.

Within the head H, at its front end, is a
socket K, having its mouth slightly reduced,
and in this socket is seated a valve V, whose
head is of a size to fit within the body of
the socket, but to close said reduced mouth by
coming against the inner side thereof, and
the stem M of this valve projects outwardly,
as best seen in Fig. 3. Through the side of
the head is formed a large inlet-opening I,
located in such position that when the valve
is in its lowest position, with the inner end
M' of its stem resting against the inner end
of its socket K, the head V of the valve will
stand just inside said inlet-opening, and the
air may pass in through the opening around
the cylindrical portion m of the stem in front
of the head, between the several wings of the
stem proper M, outwardly through the re-
duced mouth of the socket, and through the
hole in the center of the rubber cushion R,
and so on to the next car. Slightly in rear of
the large inlet-opening I is a smaller opening
i, which is so located that it will open in rear
of the head V when the valve is in its lowest
position. A funnel f covers both these inlet-
openings and connects at its outer end with
the air-brake pipes A, which extend below the
car, as is well understood, a short piece of
rubber or flexible pipe r being inserted be-
tween the ends of the pipes A and the outer
85 end of the funnel, in order that the head may
be permitted to have the movements above
described.

Between lugs l on the side of the head H is
pivoted an outwardly-extending arm O, and
to the inner end of this arm is connected a
leaf-spring L, which projects forwardly along
the side and beyond the end of the head, be-
ing curved slightly outward at its free end
and provided with a hole a through its body
near such curved end, and the opposite side
of the head carries a pin or stud D, with which
the hole a of the companion spring L is adapt-
ed to engage. The outer end of the arm O is
connected by a link k with the frame-work
F, as shown. At suitable points around its
front end the head is provided with outward-
ly-inclined guide-arms G, by means of which two heads will be thrown into alignment when two cars come together.

With the above-described construction of parts the operation of this improved air-brake coupling is as follows: As the cars come together and are coupled the rounded ends of the leaf-springs L ride over the studs D, and the holes a engage said studs, whereby the two heads H are locked together. In this position the rubber cushions R are pressed tightly against each other by the expansion of the springs E, the valves V are both pressed inwardly by the abutting of the outer ends of their two stems M, and the air has a free passage through the coupling in a manner which will be understood. If now the cars be uncoupled and are separated, each head H I will be drawn forwardly through its connection with the other head and will move outwardly within the frame-work. When the head H I has moved outwardly to a considerable extent, the outer end of the arm O, which is connected by the link with the frame-work, will have thrown the outer end of the leaf-spring L off the stud D, and the two heads will thus be uncoupled. The guides G assist in aligning the two heads when they are brought together, as will be understood. As soon as the heads are uncoupled the pressure of the air within the car which is connected with the locomotive passes through the smaller inlet-opening i, behind the valve V, and forces the same outwardly, thereby closing the end of the coupling and preventing the escape of the compressed air. It will thus be seen that the operation of the device is automatic, and that the engineer has control of the brakes on all the cars which are coupled with the engine.

Where the link k is a chain, a construction we may sometimes prefer, whereby the outer end of the arm O will not be forced forward and the spring L will not be forced inward when the head H recedes from its normal position, we insert a spring X between the outer end of the arm O and the side of the head, which spring holds said arm normally forward and the leaf-spring L normally in operative position. It is not always desirable to use the expansion-spring E, especially when the springs S are strong enough to hold the head H centered in the frame-work, and we do not, therefore, limit ourselves thereto.

What we claim is—

1. The herein-described coupling for air-brakes, the same comprising a head flexibly centered within a frame-work, a stud at one side of the head, lugs at the other side thereof, an outwardly-extending bar pivoted between said lugs and flexibly connected at its outer end to said frame-work, a leaf-spring connected to the inner end of said arm, projecting beyond the front end of the head, curved outwardly at its free end, and provided with a hole, and a valve and connections within the head, all adapted to operate substantially as specified.

2. The herein-described coupling for air-brakes, the same comprising a head, a stud at one side thereof, lugs at the other side thereof, an outwardly-extending bar pivoted between said lugs, a link between its outer end and the fixed part of the car-body, a spring pressing said arm normally forward, a leaf-spring connected to the inner end of said arm, projecting beyond the front end of the head and provided with a hole, and a valve and connections within the head, all adapted to operate substantially as specified.

3. In an air-brake coupling, the head H, having the socket K, with a reduced mouth, and also having the large and small inlet-openings l and i in its side, the funnel f, covering said openings and connected with the air-brake pipes, the valve V, loosely fitting said socket, and a stem through said valve, the rear portion M' of which rests against the inner end of the socket when the head of the valve stands between said openings, the cylindrical portion m of which then stands opposite the larger opening, and the winged portion M of which stands forward of the cylindrical portion with its front end in and flush with said reduced mouth, the whole operating substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses.

WILLIAM A. HARRIS.

BENJAMIN S. H. HARRIS.

Witnesses:

C. D. SMITH,

W. S. RAMSEY.