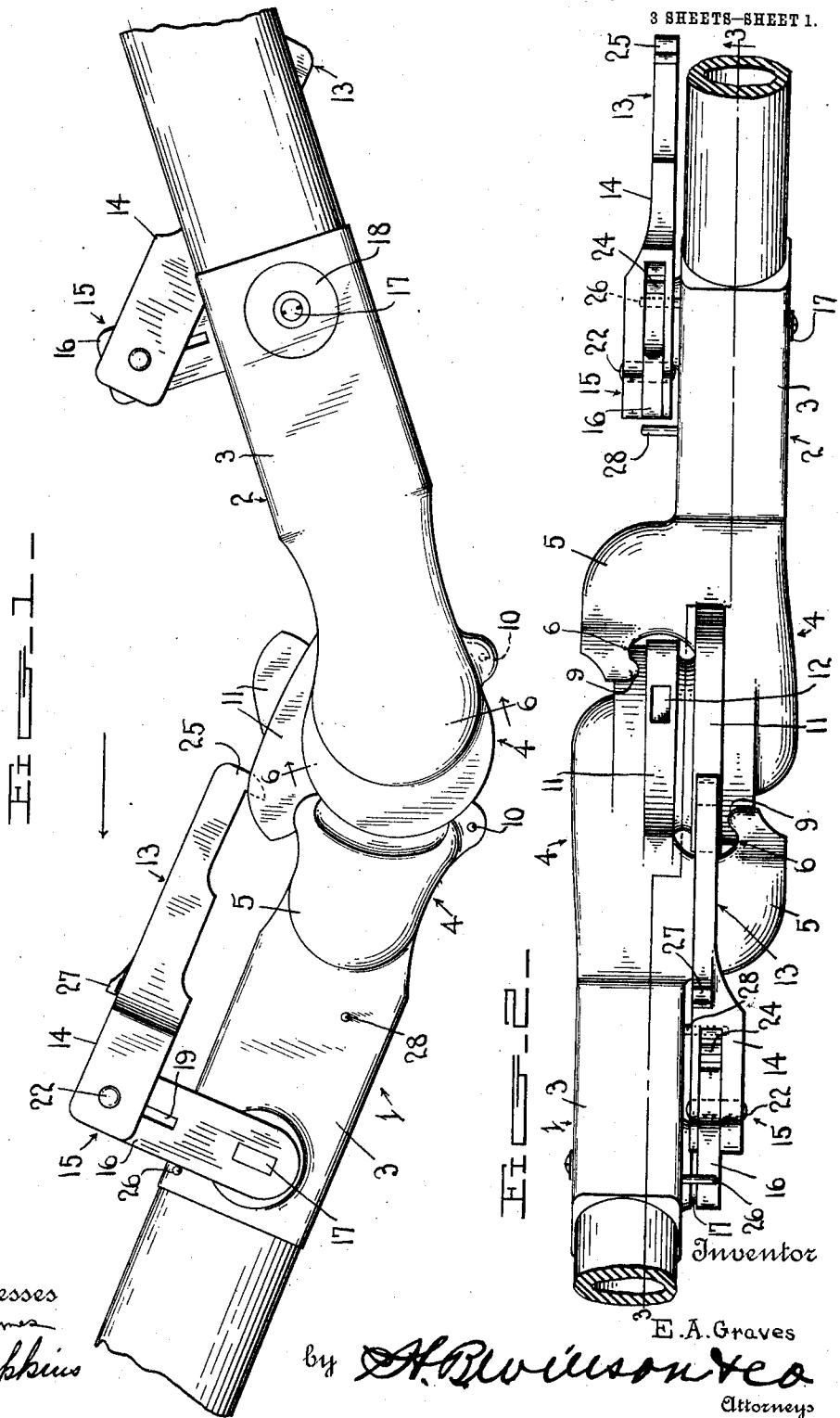


E. A. GRAVES.
 TRAIN PIPE COUPLING.
 APPLICATION FILED FEB. 6, 1911.

1,003,598.

Patented Sept. 19, 1911.

3 SHEETS-SHEET 1.

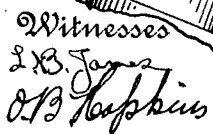


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1,003,598.

3 SHEETS—SHEET 2.



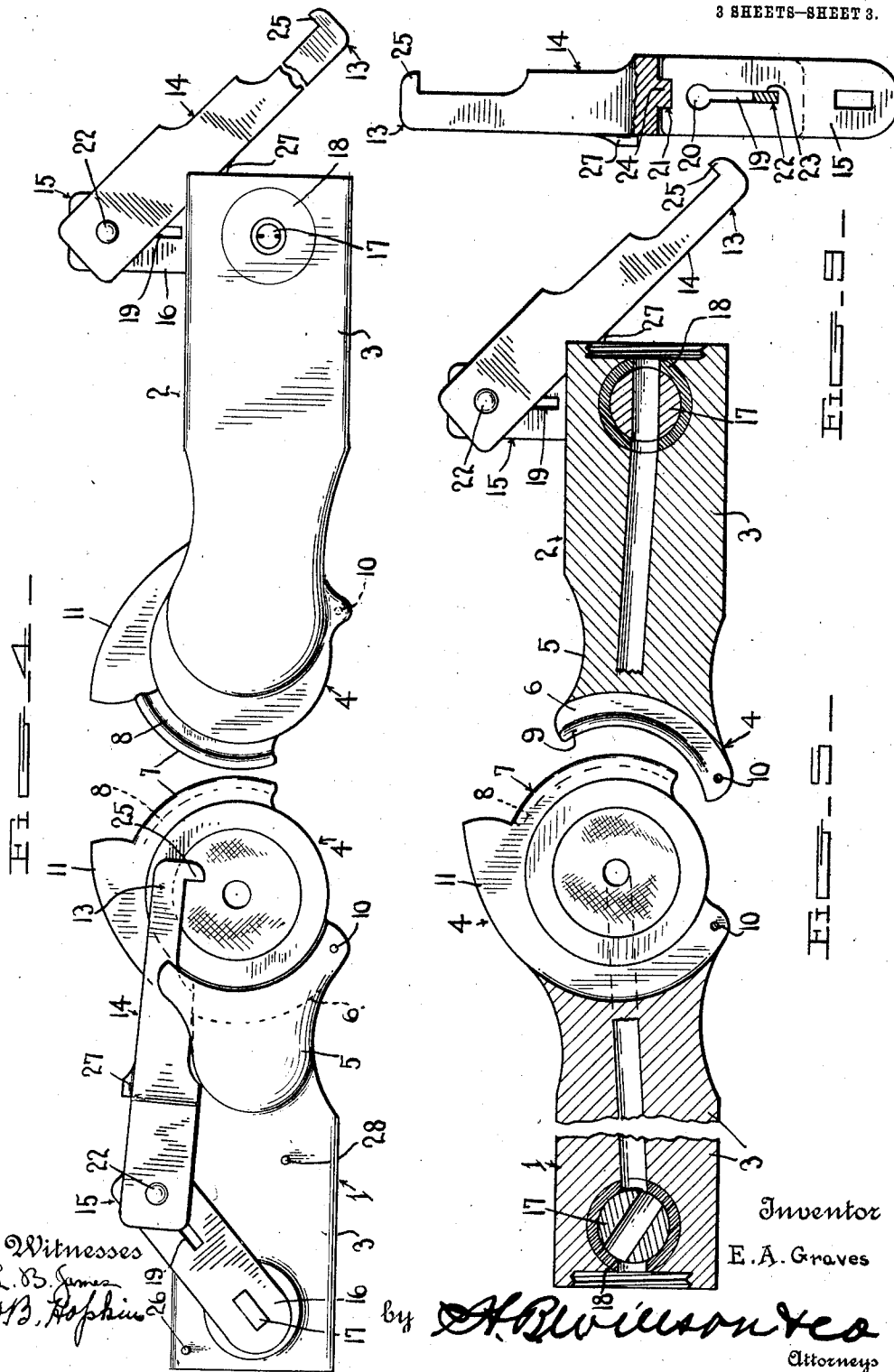
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UNITED STATES PATENT OFFICE.

EDWARD A. GRAVES, OF ALBION, MICHIGAN.

TRAIN-PIPE COUPLING.

1,003,598.

Specification of Letters Patent.

Patented Sept. 19, 1911.

Application filed February 6, 1911. Serial No. 606,874.

To all whom it may concern:

Be it known that I, EDWARD A. GRAVES, a citizen of the United States, residing at Albion, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Train-Pipe Couplings; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in train pipe couplings.

One object of the invention is to provide a train pipe coupling having an improved arrangement of valves in the coupling members of the air pipe and means whereby the same will be held open when the members are coupled and whereby, should the train pull apart and the coupling members become separated the valve of the coupling member on the front section of the train will be closed while the valve in the coupling member of the rear section of the train will remain open thereby permitting the air to escape and operate the brakes of the rear section of the train and thus preventing said rear section from running into the front section.

With the foregoing and other objects in view the invention consists of certain novel features of construction, combination and arrangement of parts as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings: Figure 1 is a side view of my improved train pipe coupling showing the parts in coupled position; Fig. 2 is a top plan view thereof; Fig. 3 is a vertical longitudinal sectional view of the same on the line 3—3 of Fig. 2; Fig. 4 is a side view showing the position the parts assume when the train separates; Fig. 5 is a vertical longitudinal sectional view of the same showing the position of the valves when the parts are in the position shown in Fig. 4; Fig. 6 is a cross sectional view through the coupled members on the line 6—6 of Fig. 1; Fig. 7 is a side view of one side of the coupling members showing the operating of the valve in position for holding the valve open; Fig. 8 is a similar view showing the position of the operating lever of the valve when arranged to serve as a hand lever; Fig. 9 is a side view partly in section of one of the valve operating levers.

Referring more particularly to the drawings, 1 and 2 denote the coupling members of my improved train pipe coupling, said members comprising tubular shanks 3 having on their outer ends heads 4 the inner faces of which are arranged to form a fluid tight connection when brought into operative engagement.

On one side of the heads 4 are formed right angular lateral enlargements 5 having in their outer ends curved recesses 6 which engage the rounded outer ends of the heads. On the outer ends of the heads are formed segmental ears 7 having in their outer surfaces segmental grooves 8 with which are adapted to be engaged segmental ribs 9 formed on the inner surfaces of the lugs 5 whereby an interlocking connection is formed between the coupling members when engaged with each other. Between the lower portion of the lugs 5 and the adjacent sides of the heads are arranged stop pins 10 which limit the pivotal movement of the coupling members on each other.

On the upper sides of the heads are formed valve operating extensions 11 having in their upper edges notches 12 with which are adapted to be engaged the hooked ends 13 of the outer members 14 of valve levers 15, the inner members 16 of which are operatively engaged with the stems of rotary valves 17 which are revolvably engaged with valve casings 18 arranged in the shanks of the coupling members 1 and 2 as shown. The inner members 16 of the levers are in the form of flat plates having in their outer portions longitudinal slots 19 which terminate at their outer ends in circular apertures 20. In the outer ends of the plates are formed notches 21 the purpose of which and the slot 19 and recess 20 will be hereinafter described.

The outer members 14 of the levers 15 have bifurcated inner ends which slidably engage the outer portions of the inner members 16 and in said bifurcated inner ends of the members 14 are arranged transverse connecting pins 22 which pass through the slots 19 in the inner members 16 whereby said members are slidably connected together. The portions of the pins 22 which engage the slots 19 are recessed to form flat surfaces 23 on the opposite sides of the pin whereby when said flat surfaces of the pin are engaged with the slot 19 the outer member of the lever may be

slipped inwardly on the inner member as shown in Fig. 8 of the drawings. On the inner wall of the bifurcated inner end of the members 14 are formed rectangular lugs or offsets 24 which, when the outer members 14 are slipped inwardly on the inner members 16, as just described, will engage the recesses 21 in the outer ends of the inner members thus holding said members in alinement and permitting the same to be employed as hand levers for operating the valves. When the members 14 are drawn outwardly to their full extent and the pins 22 are engaged with the circular passages 20 at the outer ends of the slots 19, said outer members of the levers may be swung backward or forward on the inner members.

On the outer ends of the members 14 are formed hooks 25. When the parts are in coupled position the hook 25 of the valve lever of one of the coupling members is engaged in the notch 12 in the extension 11 of the opposing member of the coupling and when in this position the valve to which this lever is connected will be held in an open position. When thus coupled the valve in the opposite coupling member is held in an open position by swinging the inner member 16 of the lever upwardly to a vertical position and in engagement with a stop pin 26 arranged in the side of the shank and swinging the outer member of the lever rearwardly and downwardly into the position shown in Fig. 7 of the drawing. When in this position these parts will be held against returning to the open position of the valve by a stop 27 formed in the side of the member 14 of the lever which engages the stop pin 26 as shown. If when the parts are thus arranged the train should pull apart and the coupling thus be separated the engagement of the hooked end of the lever of one coupling member with the notch in the extension of the other coupling member will cause the lever to turn the valve to a nearly closed position, said valve remaining open only far enough to permit a sufficient quantity of air to escape for operating the signal in the engine whereby the engineer may be notified of the separation of the train and can thus gradually slow down the forward end of the latter. When thus separated the valve in the separated coupling on the forward end of the rear portion of the train will remain open and thus cause the operation of the brakes on the rear section of the train whereby said section will be rapidly brought to a stop and thus prevented from bumping into the rear end of the forward section of the train. In one side of the shanks of the coupling members are arranged stop pins 28 which limit the downward movement of the inner members of

the valve levers when the latter are swung to a position for closing the valves.

From the foregoing description taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as defined in the appended claims.

Having thus described my invention, what I claim is:

1. A train pipe coupling comprising coupling members, said members having heads, means whereby said heads are coupled together in operative engagement, tubular shanks formed on said heads, valves arranged in said shanks, an operating latch lever connected with each valve, a catch for the opposing latch on each head, whereby the lever of one of said valves is engaged with the catch of the opposing coupling member to hold the valve in open position while the members are coupled together in their angular positions and the valve will be closed when the coupling members are pulled into line with each other or separated, and means whereby the valve in the opposite coupling member is held in an open position before and after the coupling members are separated.

2. A train pipe coupling comprising two coupling members provided with tubular shanks and rotary interlocking heads and catches on the periphery of the heads, the combination therewith, of valves in the tubular shanks and operating levers on the stems of the valves, the levers each comprising an inner section forming a crank arm on the valve stem, and an outer section pivotally secured to the inner section and provided with a latch tooth to engage the catch of the opposing head when the coupling is in operative position.

3. A train pipe coupling comprising two coupling members provided with tubular shanks and rotary interlocking heads and catches on the periphery of the heads, the combination therewith, of valves in the tubular shanks and operating levers on the stems of the valves, the levers each comprising an inner section forming a crank arm on the valve stem, and an outer section pivotally secured to the inner section and provided with a latch tooth to engage the catch of the opposing head when the coupling is in operative position and means for securing the operating lever sections together rigidly in alinement with each other to serve as hand levers.

4. A train pipe coupling comprising two coupling members provided with tubular

shanks and rotary interlocking heads and catches on the periphery of the heads, the combination therewith, of valves in the tubular shanks and operating levers on the stems of the valves, the levers each comprising an inner section forming a crank arm on the valve stem, and an outer section pivotally secured to the inner section and provided with a latch tooth to engage the catch of the opposing head when the coupling is in operative position, a stop on each member for preventing the turning of the inner sections of the operating levers beyond the closed positions of the valves, and means on the outer sections of said levers for engaging said stops and locking the inner sections against turning.

5. A train pipe coupling comprising coupling members, said members having on their outer ends heads and on their inner ends tubular shanks, means whereby said heads are coupled together in fluid tight engagement, valves arranged in the shanks of said coupling members, operating levers connected to said valves, said levers comprising inner members connected to the stems of the valve and having formed in their outer ends longitudinal slots, said slots terminating in circular passages and having in their outer ends locking notches, outer members slidably engaged with said inner members said outer members having bifurcated inner ends engaged with the slotted outer portions of said inner members, connecting pins arranged through said bifurcated ends of the outer sections and through the slots in said inner sections, said pins having their opposite sides recessed to form flat slot engaging portions, lugs formed at the inner end of said bifurcated part of the outer member, said lugs being adapted to engage the locking notches in the outer ends of the inner members whereby said members of the levers are rigidly secured when slipped together thereby forming hand levers, hooks formed on the outer ends of the outer members of the levers whereby the lever of the valve of one of said coupling members may be engaged with the opposing coupling member to hold the valve in open position while the members are coupled and whereby the valve will be closed when said members are separated, and means whereby the lever of the valve in the opposing coupling member is arranged to hold said valve in an open posi-

tion while the members are coupled and after the same have been separated.

6. A train pipe coupling comprising coupling members, a valve arranged in each of said members, an operating lever connected to the stem of said valve, said lever comprising inner and outer members, said inner member having formed in its outer portion a longitudinal slot which terminates in a circular passage and having in its outer end a rectangular notch said outer member of the lever having a bifurcated inner portion adapted to slidably engage the slotted outer portion of the inner member, a connecting pin arranged through the bifurcated inner end of the outer member, said pin having a flattened central portion adapted to slidably engage the slot in said inner member and to revolvably engage the circular passage at the end of said slot, a lug formed in the bifurcated end of said outer member, said lug being adapted to engage the notch in the outer end of the inner member when said members are slipped together whereby said members are held in rigid engagement to form a hand lever, a stop lug arranged on the upper side of said outer member of the lever, a stop pin arranged in one side of the coupling member and adapted to be engaged by the inner member of the lever when the latter is swung to a position for opening the valve and with which is adapted to be engaged said stop lug on the outer member when the latter is swung rearwardly and downwardly on the inner member thereby holding the valve in open position, a hook formed on the outer end of the outer member of the lever, extensions formed on the upper sides of the coupling members, said extensions having notches formed therein, the notch in the extensions of one coupling being adapted to receive the hook on the outer end of the lever of the opposing coupling when the couplings are in operative engagement whereby the valve in said coupling will be held open when the coupling members are engaged and will be automatically closed when said members are separated.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

EDWARD A. GRAVES.

Witnesses:

C. G. BIGELOW,
C. S. LOUD.