

FLEXIBLE METALLIC
CONDUITS
WATER-STEAM-AIR-OIL



McLAUGHLIN FLEXIBLE CONDUIT
FRANKLIN BALL JOINTS
and
FRANKLIN SINGLE WATER JOINT

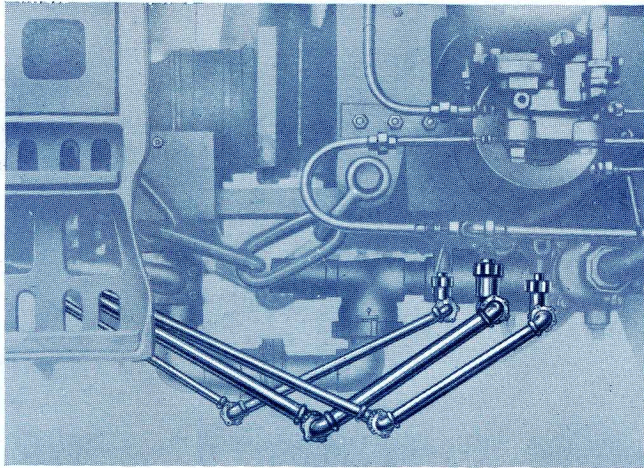
*Specialists in
Devices that
make for Economy*

FRANKLIN RAILWAY SUPPLY CO.
CHICAGO NEW YORK SAN FRANCISCO
U. S. A.
MONTREAL, CAN.





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New York
1916



McLaughlin Flexible Conduit

The McLaughlin Flexible Conduit is an all-metal connection for use between engine and tender on air, steam and oil lines, and between rigid and swivel engine units of Mallet Articulated Locomotives.

The use of McLaughlin Flexible Conduits to replace rubber hose, reduces the continuing failures in these services to a minimum and effects a substantial saving, as the necessity of frequent hose renewals is entirely eliminated, due to the life of the McLaughlin Conduit, which, with reasonable care and the occasional renewal of an inexpensive gasket, equals that of the locomotive.

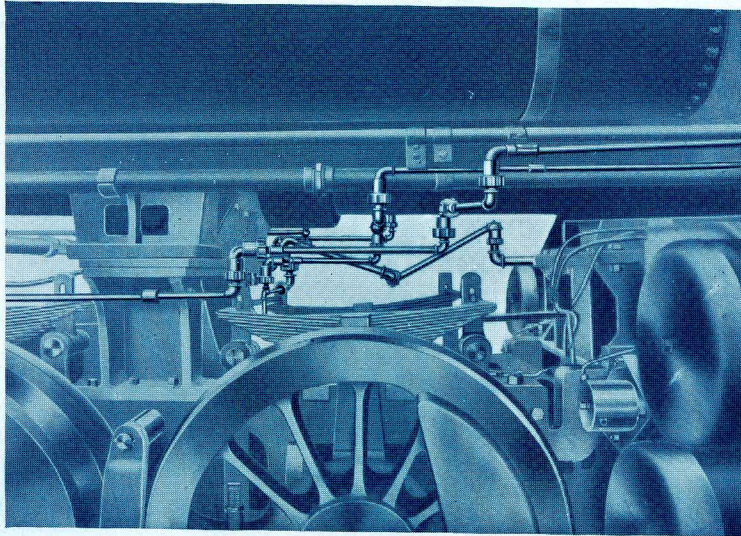
The complete conduit, when assembled for application, consists of two double joints, one single joint and two lengths of extra heavy wrought iron pipe.

Advantage and Saving Effectuated

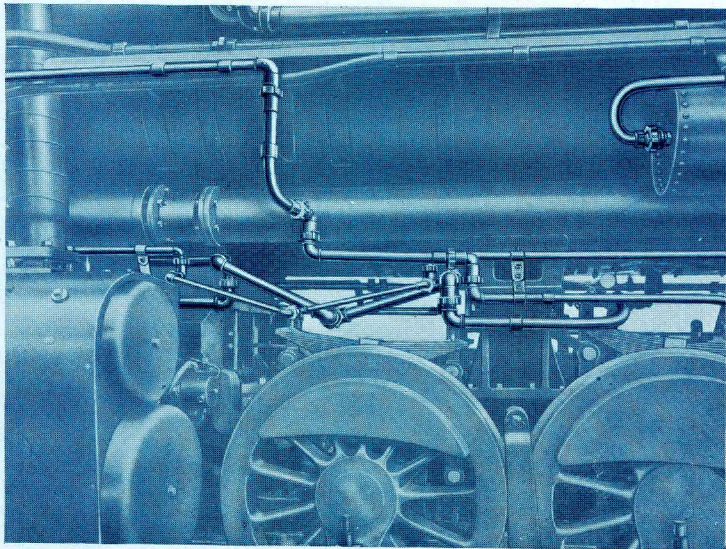
In considering the use of metal conduits versus rubber hose for lines between engine and tender, if the cost of hose application and renewals for a given period be compared with the initial cost of the McLaughlin Flexible Conduit, it will be very evident that the cost of the joint will be equalled many times during the life of the locomotive.

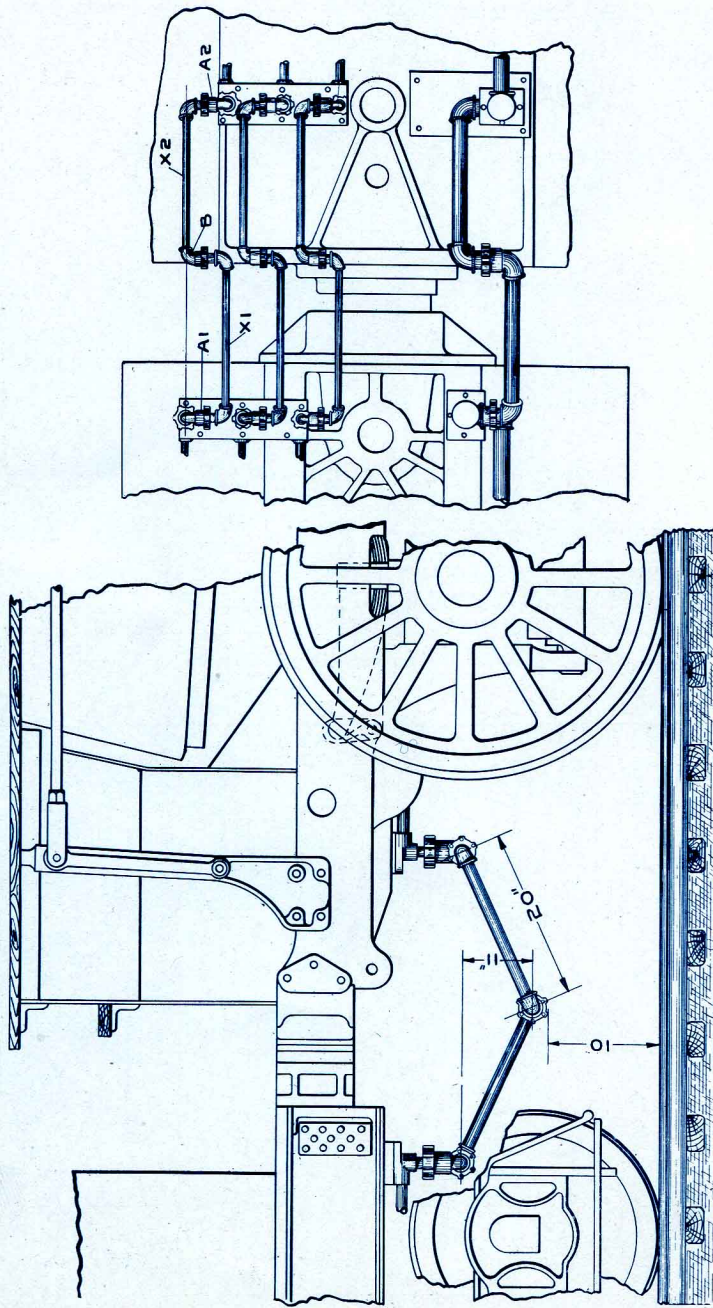
Motive power officials throughout the country have been alive to this fact for a number of years and as early as 1906, at the Master Mechanics' Convention in Atlantic City, declared themselves emphatically in favor of the metal conduit in preference to rubber hose. One of the strongest recommendations for the McLaughlin Flexible Conduit is that it has given continued successful service and is also included in the standard specifications of a majority of the large railroad systems.

The elimination of failures and the unavoidable annoyances necessarily arising from the delays due to burst hose, are worthy of great consideration, even greater, perhaps, than the mere saving in dollars and cents.



ILLUSTRATING APPLICATIONS OF McLAUGHLIN FLEXIBLE
CONDUITS FOR CONVEYING AIR, STEAM AND OIL
BETWEEN RIGID AND SWIVEL UNITS OF MALLET
ARTICULATED LOCOMOTIVES.





APPLICATION OF McLAUGHLIN FLEXIBLE CONDUITS.

Instructions for Assembling and Applying McLaughlin Flexible Conduits

When assembling a set of McLaughlin Flexible Joints (consisting of two double joints, one single joint and necessary lengths of extra heavy wrought iron pipe) the center of double joints "A-1" and "A-2" (as shown in diagram opposite) must be in line with pipe connections "X-1" and "X-2," which are joined by the single joint "B." The vertical distance between the center of the single joint and the center of the double joints should not be more than 11" or less than 8", with a minimum clearance of 10" above the rails. The distance between the centers of the single and double joints measured along the line of pipe, should be approximately 20".

It is important that the application be made as near as possible to the center line of the locomotive and parallel with it.

Lugs provided in the sleeve should be used when screwing them into the pipe connections. A stilson or an alligator wrench should never be used, as they are liable to distort and mar the sleeve so as to cause the joints to leak.

In assembling the joints, care must be taken to see that the springs are put in, gaskets placed on sleeve, the nuts screwed into place with a spanner wrench and cotter keys applied to prevent the nuts from working loose.

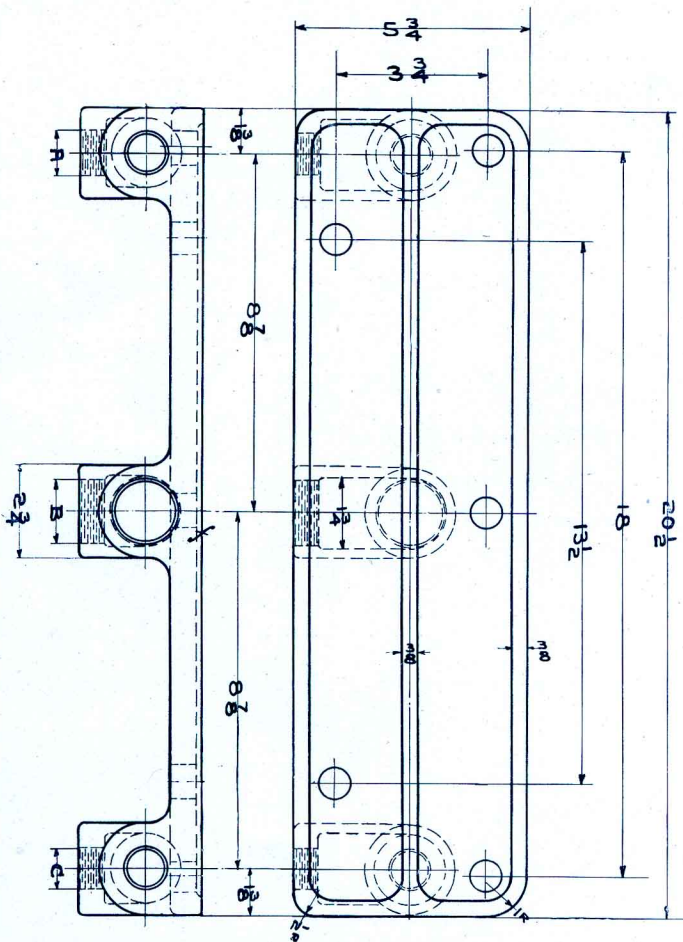
As the pipe to the flexible conduit must be rigid, we recommend, for a serviceable application, a Manifold Bracket (shown in detail on page 8), the use of which will eliminate the necessity for pipe clamps.

Manifold Bracket

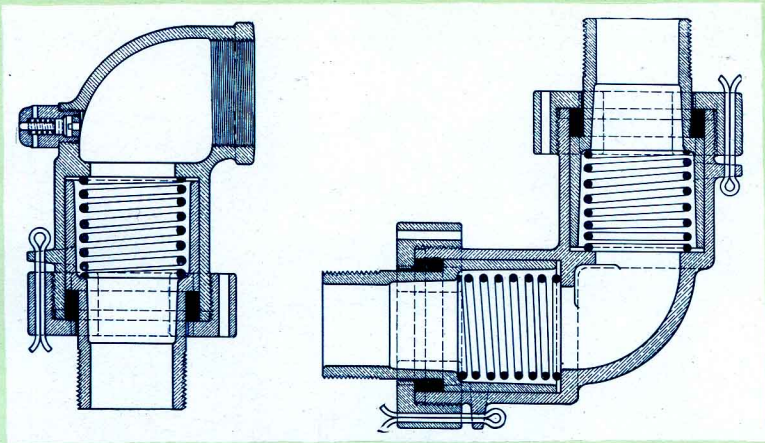
Rigidly Supports Joints—Eliminates Pipe Clamps

This Manifold is Suitable Only for Conduits From $\frac{1}{2}$ " to $1\frac{1}{4}$ ", Inclusive.

For Larger Sizes Design to Suit.



PIPE CONNECTIONS
TO BE TAPPED TO
REQUIRED SIZE.



Construction of McLaughlin Joints

The bodies and nuts are made of brass to prevent corrosion between the moving parts. The sleeves are of bronze to ensure strength where the connection is made to the engine and tender. The packing gaskets are made of different materials suitable for the different services (see page 17) and the function of the spring is to prevent vibration of the parts, should the engine be moving without pressure in the joints. It is not intended to assist in packing except in the oil joint where the pressure of the spring is depended upon to hold the sleeve in contact with the gasket.

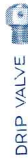
Lugs are provided on the nuts through which are drilled holes, which will come in line with the holes in the locking flange on the body, and when the joint is tightened up, cotter pin should be used through the lug in line with flange for locking the nut in place.

For steam services a drip valve is provided in the single joint to drain same when the steam has been turned off.

BODY
DOUBLE JOINT



GASKET



DRIP VALVE



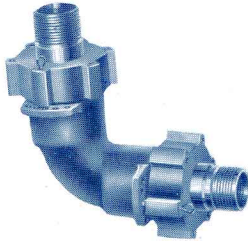
SPRING



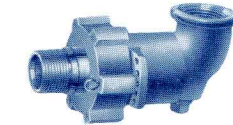
NUT



BODY
SINGLE JOINT



DOUBLE JOINT COMPLETE



SINGLE JOINT COMPLETE

List of Parts

BODY DOUBLE JOINT

- 1/2" Joint—Piece No. 5
- 3/4" Joint—Piece No. 10
- 1 " Joint—Piece No. 15
- 1 1/4" Joint—Piece No. 20
- 1 1/2" Joint—Piece No. 25
- 2 " Joint—Piece No. 30

SLEEVE

- 1/2" Joint—Piece No. 2
- 3/4" Joint—Piece No. 7
- 1 " Joint—Piece No. 12
- 1 1/4" Joint—Piece No. 17
- 1 1/2" Joint—Piece No. 22
- 2 " Joint—Piece No. 27

GASKET

- 1/2" Joint—Piece No. 36
- 3/4" Joint—Piece No. 37
- 1 " Joint—Piece No. 38
- 1 1/4" Joint—Piece No. 39
- 1 1/2" Joint—Piece No. 40
- 2 " Joint—Piece No. 41

DRIP VALVE.
Piece No. 33.

Used only on steam joints.

BODY SINGLE JOINT

- 1/2" Joint—Piece No. 4
- 3/4" Joint—Piece No. 9
- 1 " Joint—Piece No. 14
- 1 1/4" Joint—Piece No. 19
- 1 1/2" Joint—Piece No. 24
- 2 " Joint—Piece No. 29

NUT

- 1/2" Joint—Piece No. 3
- 3/4" Joint—Piece No. 8
- 1 " Joint—Piece No. 13
- 1 1/4" Joint—Piece No. 18
- 1 1/2" Joint—Piece No. 23
- 2 " Joint—Piece No. 28

SPRING

- 1/2" Joint—Piece No. 42
- 3/4" Joint—Piece No. 43
- 1 " Joint—Piece No. 44
- 1 1/4" Joint—Piece No. 45
- 1 1/2" Joint—Piece No. 46
- 2 " Joint—Piece No. 47

Information Required With Orders

Instructions for Ordering Complete Sets of McLaughlin Flexible Joints

First—Give size of pipe line on which joints are to be used.

Second—State whether the joints are to be assembled or unassembled, that is, with or without pipe. We recommend that joints be ordered assembled whenever possible to insure the proper length of pipe and a standard application.

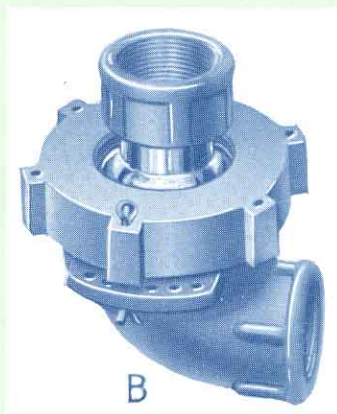
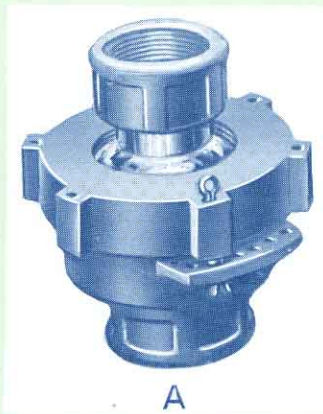
Third—State the service in which the joints are to be used—steam, air or oil. Steam joints require a hard gasket and a drain valve; a soft rubber gasket is furnished for air service, and for oil an asbestos gasket and heavier spring are used. (See page 17.)

Instructions for Ordering Replacement Parts for McLaughlin Flexible Joints

The parts comprising each of the several sizes of McLaughlin Flexible Joints are shown on the opposite page, each piece is identified by a number, by which duplicate parts should be ordered. To avoid error, the name and size of the part, as well as its number, should be given on requisitions.

As the single joint body, single joint complete, double joint complete, springs and gaskets differ according to the service in which the joints are to be used, requisitions should state whether parts are intended for joints in steam, air or oil service.

From the cut on the opposite page it will be seen that the single joint body and the double joint body are single castings; whereas the single joint complete and double joint complete consist of a double or single joint body, with nuts, sleeves, springs and gaskets. Orders should show plainly whether the single or double body is wanted, or whether the single joint complete, or double joint complete is required.



Franklin Ball Joints

The Franklin Ball Joint is a flexible metal pipe connection for replacing rubber hose used in roundhouses for conveying steam to blower connection of locomotives to create draft for a new fire, and to convey steam out of roundhouses when blowing off boilers (see cuts on page 15).

The Franklin Ball Joint is also effectively used in reservoir piping to prevent breakage due to vibration, as shown in cuts on page 18, and for coach heating in terminal stations and yards, as illustrated on page 14. It will also effect substantial saving on pump test racks and in many other places.

The same good results mentioned, as being secured through the use of the McLaughlin Flexible Conduit between engine and tender and on Mallet Articulated Locomotives, are also applicable to the Franklin Ball Joint for the above mentioned services.

Ball Joint Economy

A railroad having 395 steam connections for coach heating purposes used 1,150 ground hose, or an average of three for each connection, during one year. With ground hose at \$10.40 each, the cost of the season's maintenance was:

1,150 ground hose @ \$10.40.....	\$11,960.00
----------------------------------	-------------

An application of Franklin Ball Joints using two 1½" joints costs \$11.58 applied:

Two 1½" Ball Joints @ \$4.15.....	\$8.30
Pipes and fittings90
Labor	1.25
Shop expense08
Contingencies, 10%.....	1.05

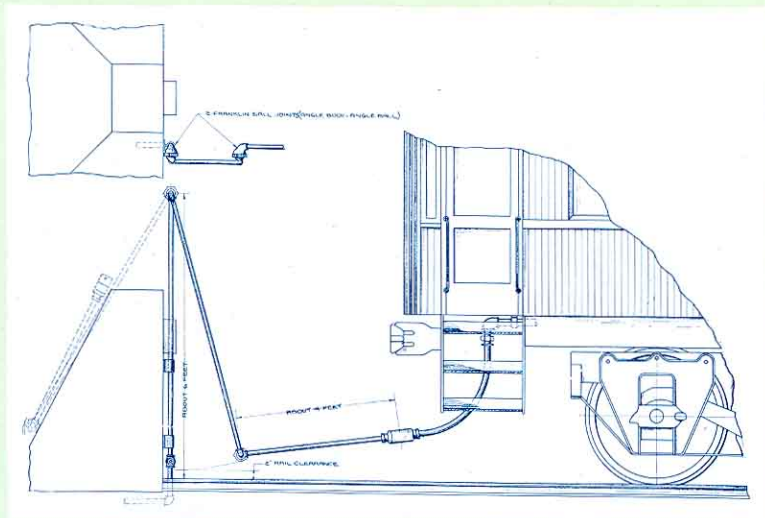
Total	\$11.58

395 Connections at \$11.58 each.....	\$4,574.10

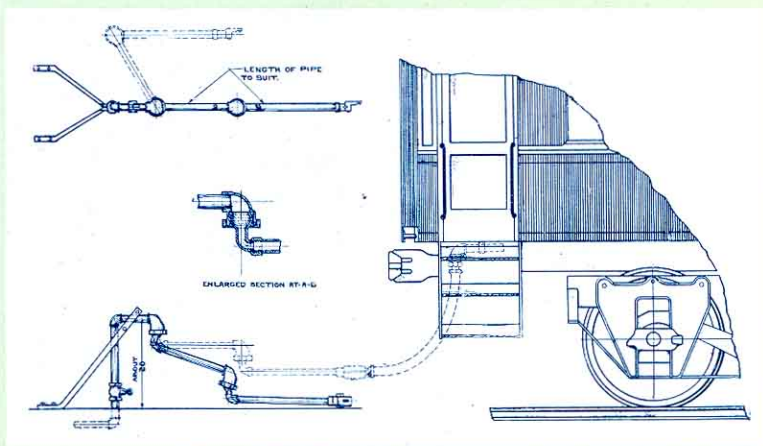
Saving effected the first year.....	\$7,385.90

The only part of the joint equipment requiring renewal is the gasket, it being necessary to replace same occasionally, and this can be done at a nominal cost. Therefore, the saving effected by the Franklin Ball Joint after application has been made will almost equal the cost of ground hose; or \$11,960.00 each year the joint remains in service. A corresponding saving will be effected in the roundhouse by using the Ball Joint for conveying steam.

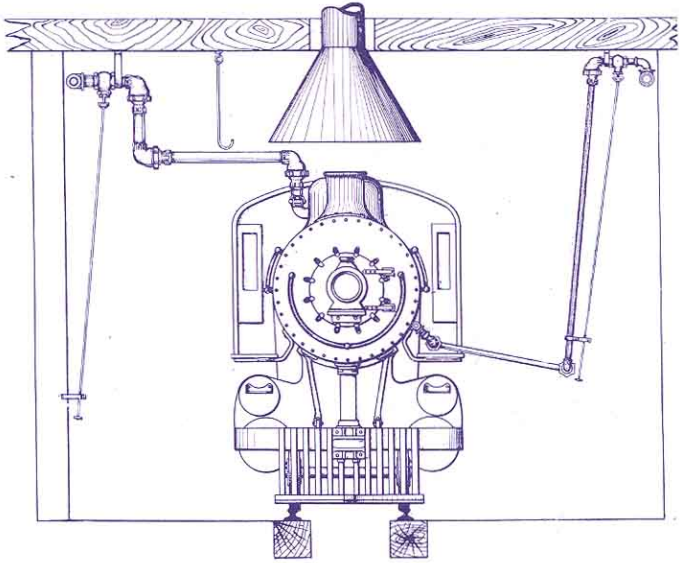
FRANKLIN BALL JOINTS FOR HEATING CARS IN TERMINAL STATIONS AND YARDS—BUMPER APPLICATION.



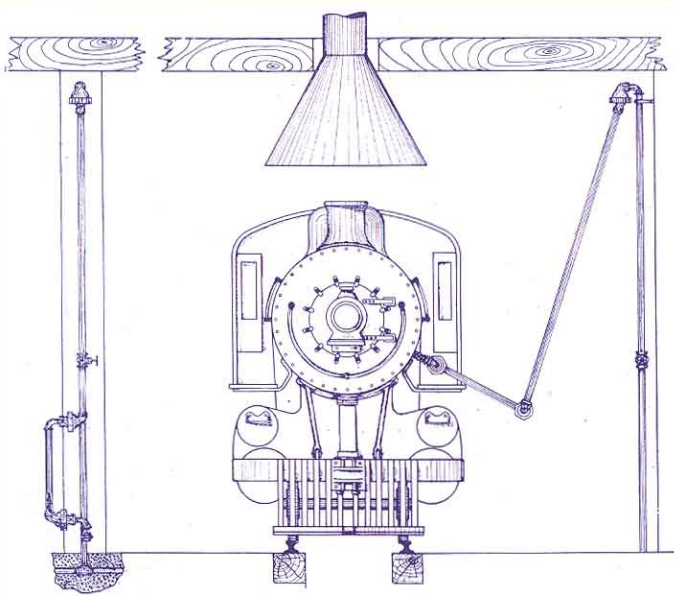
FRANKLIN BALL JOINTS FOR HEATING CARS IN TERMINAL STATIONS AND YARDS—APPLICATION WHERE BUMPERS ARE NOT USED.



FRANKLIN BALL JOINT APPLIED FOR BLOWER AND BLOW-OFF SERVICE—CONNECTING TO OVERHEAD PIPING.



FRANKLIN BALL JOINT APPLIED FOR BLOWER AND BLOW-OFF SERVICE—CONNECTING WITH UNDERGROUND PIPING.





Parts Comprising the Franklin Ball Joint

- No. 1—Body, Straight.
- No. 2—Gasket, Packing.
- No. 3—Gasket, Metal.
- No. 4—Nut.
- No. 5—Ball, Straight.
- No. 6—Body, Angle.
- No. 7—Ball, Angle.
- No. 8—Body, Reservoir Connection.

Complete Joints are Made Up in Styles as Listed Below:

- Style A—With straight body and straight ball.
- Style B—With angle body and straight ball.
- Style C—With straight body and angle ball.
- Style D—With angle body and angle ball.
- Style E—With straight ball and straight body, having a male pipe thread.

Information Required With Orders

When ordering Franklin Ball Joints, give size of pipe on which they are to be used, and as different gaskets are used for air, steam and oil service, it is IMPORTANT that the service be specified.

For reservoir connections the body is made with outside pipe thread to fit the tapped hole in reservoir. Size of tap in reservoir, also size of pipe leading from same should be specified.

The Franklin Ball Joint should be ordered singly—not by sets. If sets are specified, three joints per set will be furnished for roundhouse application and two joints per set for terminals.

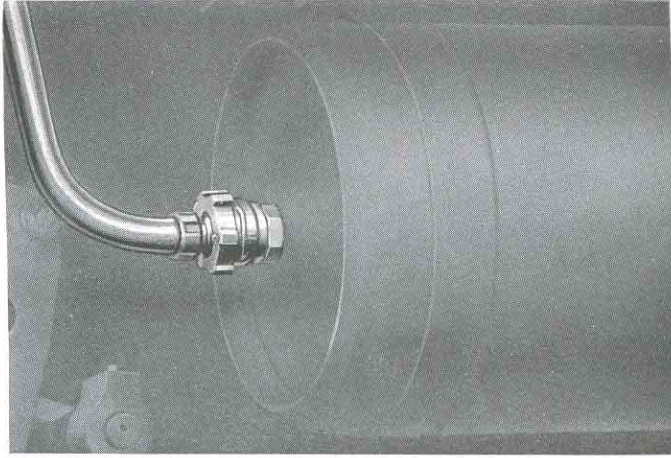
The joints are made with either angle or straight bodies and balls, and unless a combination is specified, the straight connection A (straight body and straight ball) will be furnished.

When ordering repairs order should specify the name and number of piece required, as well as the size of joint. When packing gaskets are required, information as to whether they are for use in air, steam or oil service is necessary.

Gaskets

To meet the requirements of the different services the composition of gaskets for both McLaughlin and Franklin Joints varies to suit the respective requirements; soft composition for air, hard composition for steam and asbestos for oil.

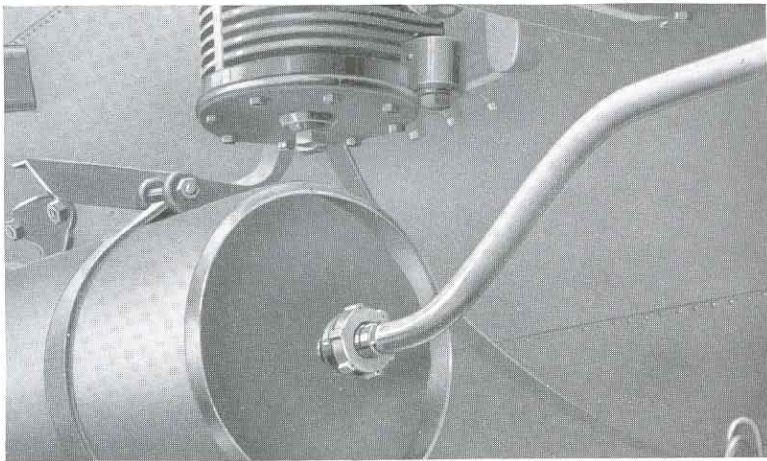
It is IMPORTANT that the gaskets applied be suitable for the fluid carried through conduit; an air gasket placed in an oil joint would soon swell and soften, so that the joint would move very stiffly and would not be packed tightly, neither would a hard steam gasket pack this joint tightly. The steam and oil gaskets are too hard to make a tight air joint, and for these reasons it is essential that the proper gasket be applied to obtain the best results.

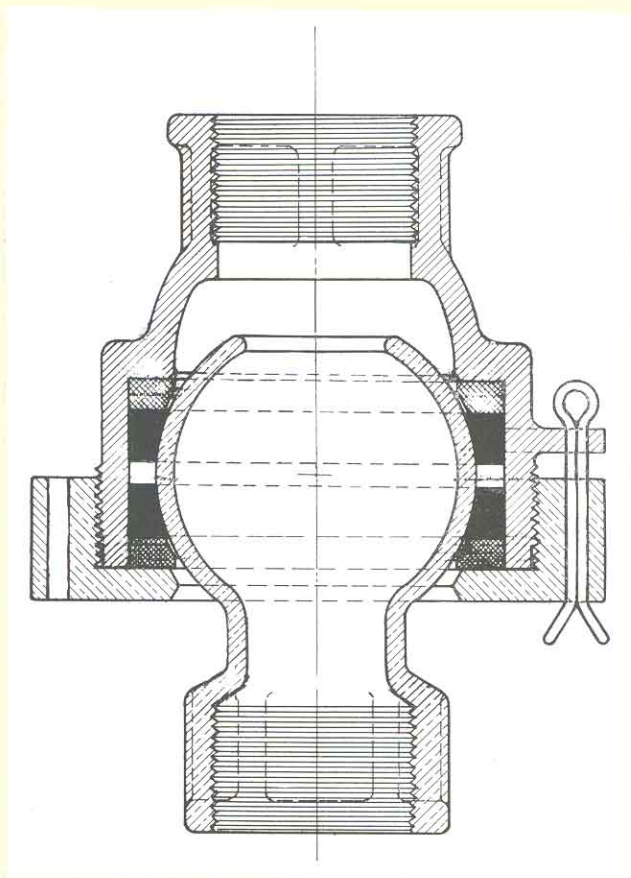


Reservoir Application of Franklin Ball Joints

The joint for this application is made with a male pipe thread to screw directly into the reservoir, so that no additional pipe fittings are required.

The joint will provide for all vibration in the pipe and prevent failures, due to pipe breaking, where connected to reservoir. Beside providing a flexible joint at this point, it will replace the union for this connection

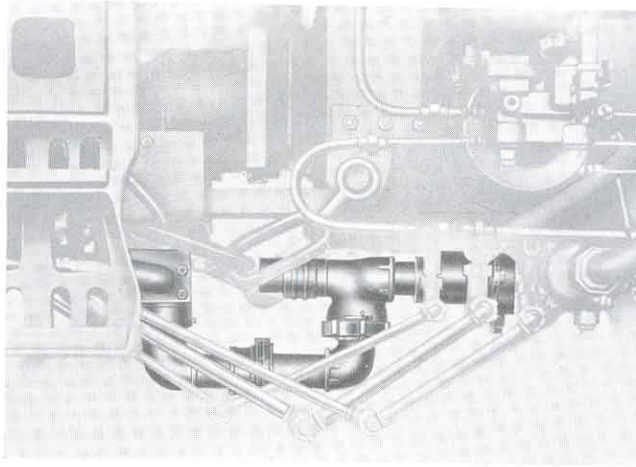




Construction of Franklin Ball Joint

The nut is made of brass, so that when necessary to replace gaskets, it can be easily removed from the body. A locking flange is provided on the body and on the spanner nuts the lugs are drilled so that a cotter key can be put through one of these lugs and the locking flange to prevent the nut working loose.

Two sets of gaskets are provided, one set of semi-hard composition packing gaskets, and one set of soft metal gaskets, which lessen the wear on the packing gaskets and prolongs their life.



Franklin Single Water Joint for Injector Connection

The Franklin Single Water Joint is made large enough to accommodate a supply of water for two injectors and is so constructed that it provides for connections to two tank wells unless otherwise desired.

The use of this all-metal conduit will eliminate the expense for injector hose and its capacity will insure furnishing a full supply of water to the injectors. It will insure against kinked hose and the hose lining working into the injectors. The probability of freezing is also reduced to a minimum, owing to the fact that either heater will keep it open while both heaters are required with the usual type of double connections.

Application and Construction of Franklin Single Water Joint

The single connection is made so that it can be located directly under the draw-bar on the center line of the locomotive, at which point the movement of the joint will be reduced to a minimum.

The joint is connected up with extra heavy wrought iron pipe, having a union at the center to be used when engine and tender are uncoupled. At either end of the joints tee heads are provided, the branches of each leading to the two tankwells on the tender and to the injector pipes on the engine. The flexible joint includes two ball joints and one slip joint, a combination which takes any motion occurring between the engine and tender. The inside sleeve of the slip joint is threaded into an elbow connection which turns downward and forms the outer casing for one of the ball joints. An extension is cast on this elbow, which is supported in a slide bearing, which is part of the slip joint supporting bracket. This arrangement serves as a guide for the slip joint and relieves it from lateral strain.

All the attention the joint requires is the occasional renewal of the gasket in the ball and slip joints. The joints are provided with flanges for bolting to the engine and tender, draw-bar castings or any suitable support which may be provided.

The slide bracket can be located on either engine or tender with the tee head pointing either forward or backward as is most convenient to make pipe connections.

Strainer valves should be applied in the injector pipes, the same as when hose connections are used, so as to catch any dirt which might get through the tank strainers.

Clearance between the coupling union and the rail should not be less than 8".

In the absence of hand cut-outs on check valves, straight way valves should be placed in the check pipes to prevent blow-backs in case of check valve failures.

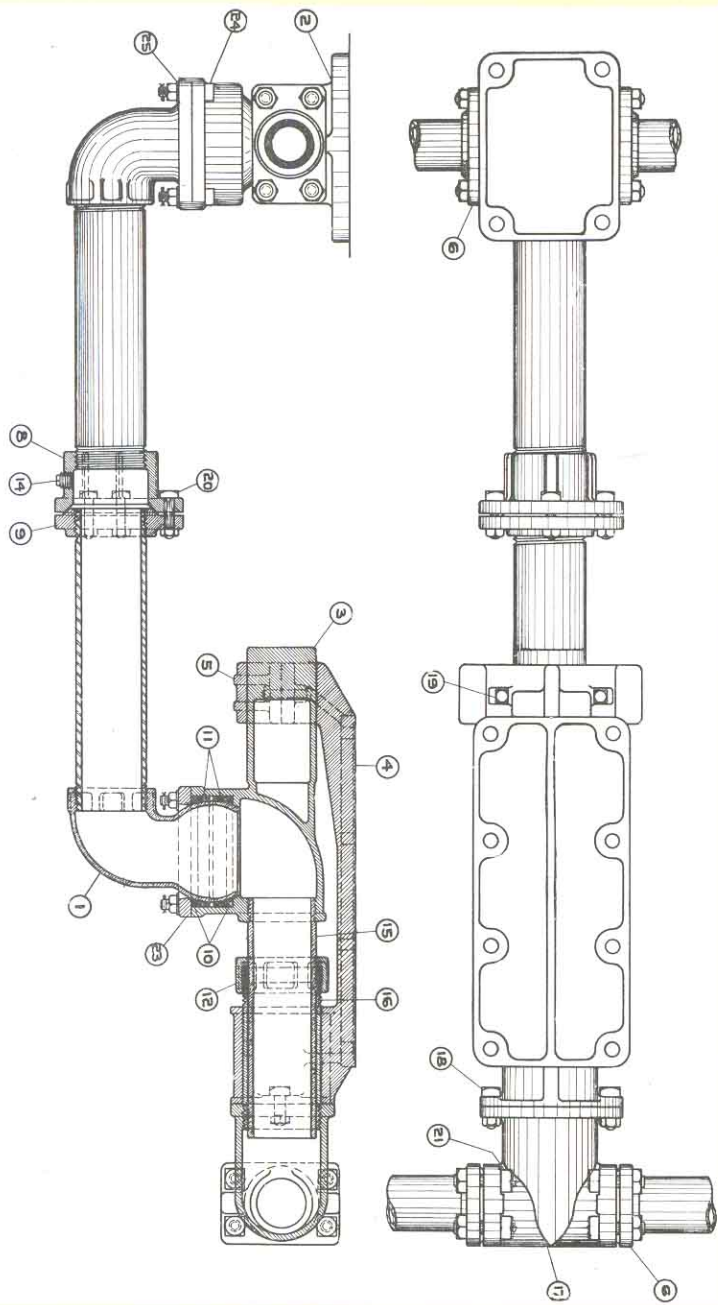
Parts Comprising the Franklin Single Water Joint

Name of Part

- No. 1—Ball, Angle.
- No. 2—Body, Side Outlet.
- No. 3—Body, Slide.
- No. 4—Bracket, Slide Bearing.
- No. 5—Cap, Slide Bracket.
- No. 6—Flange, Pipe.
- No. 7—
- No. 8—Flange, Coupling (Female).
- No. 9—Flange, Coupling (Male).
- No. 10—Gasket, Metal.
- No. 11—Gasket, Vulcabeston.
- No. 12—Nut, Packing.
- No. 13—
- No. 14—Plug, Pipe ($\frac{3}{4}$ ").
- No. 15—Sleeve, Inside.
- No. 16—Sleeve, Outside.
- No. 17—Tee, Reducing.
- No. 18—Bolt, Bracket (Square Head Hexagon Nut).
- No. 19—Bolt, Cap " " " "
- No. 20—Bolt, Coupling " " " "
- No. 21—Bolt, Pipe Flange " " " "
- No. 22—
- No. 23—Flange, Body.
- No. 24—Bolt, Body Flange (Square Head Hexagon Nut).
- No. 25—Washer, $\frac{5}{8}$ " Lock.

Information Required with Orders

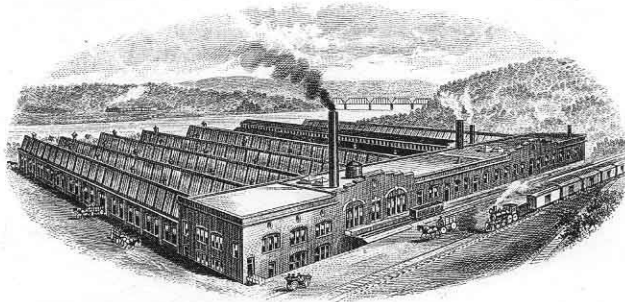
Blue prints showing side elevation of engine and tender, details of tank showing location of tank wells, details of tender draw-bar casting, engine foot plate, draw-bar and buffer should accompany the order. The size of the injectors to which water is to be supplied should also be given. When ordering repairs the name of the part with its proper number, as shown above, as well as size of pipe used between the two ball joints should be given.



Blue prints of any of the foregoing drawings, giving instructions for the application and care of the Flexible Joints, will be furnished upon request.



J. S. COFFIN
PRESIDENT.
SAMUEL G. ALLEN
VICE PRESIDENT.
C. L. WINEY
SECY & TREASURER



SPECIALISTS
IN DEVICES
THAT MAKE
FOR ECONOMY

Franklin Railway Supply Company

795 MONADNOCK BUILDING,

San Francisco, Cal., Apr. 25, 1916.

OFFICE OF
RESIDENT SALES MANAGER
PACIFIC COAST

Mr. C. J. Rulison,
Master Mechanic,
Virginia & Truckee Ry.,
Carson City, Nev.


SUBJECT:- JOINT CATALOGUE

Dear Sir:-

While we know you are more or less familiar with the McLaughlin Flexible Conduit, Franklin Ball Joint and Franklin Single Water Joint, we are sending you herewith a new catalogue just compiled, illustrating and describing these devices, which we believe will be interesting and perhaps bring out some additional points as to purpose for which they are designed, service rendered, economies effected and details required when ordering.

If you require more of these copies, we shall be glad to furnish same upon request.

Very truly yours,


Resident Sales Manager.

JHS-B