

# Franklin Automatic Adjustable Driving Box Wedge

FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

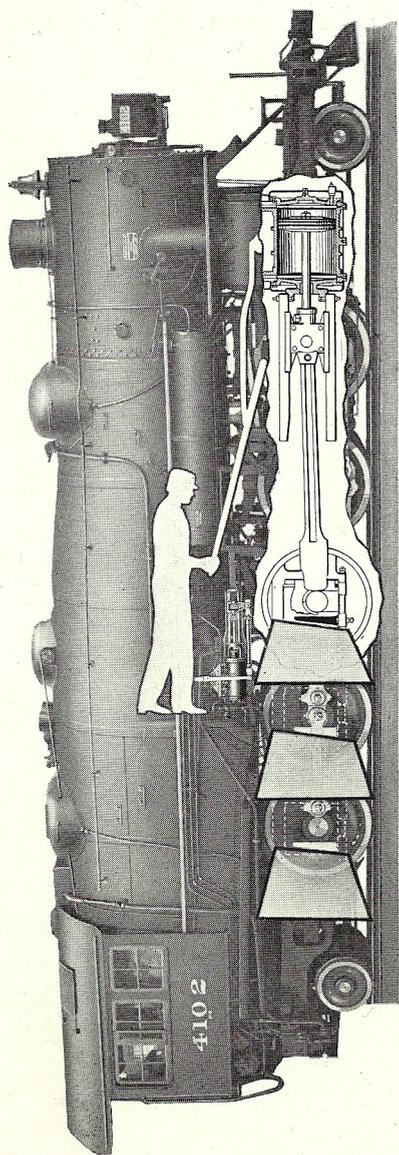
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BULLETIN NO. 603

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Slack shoes and wedges produce a steam hammer blow on driving boxes.

This hastens the pounding out of crown brasses and rod bushings.

It begins crystallization of frames and axles and affects the entire running gear of a locomotive.

The slightest slack in the wedges starts an engine toward the back shop.

Franklin Automatic Wedges maintain wedge adjustment under all conditions.

They keep the engine out of the back shop.

They stop the pound and at the same time eliminate "stuck" boxes.

This increases the life of crown bearings and rod bushings and eliminates one of the principal causes of broken rods.

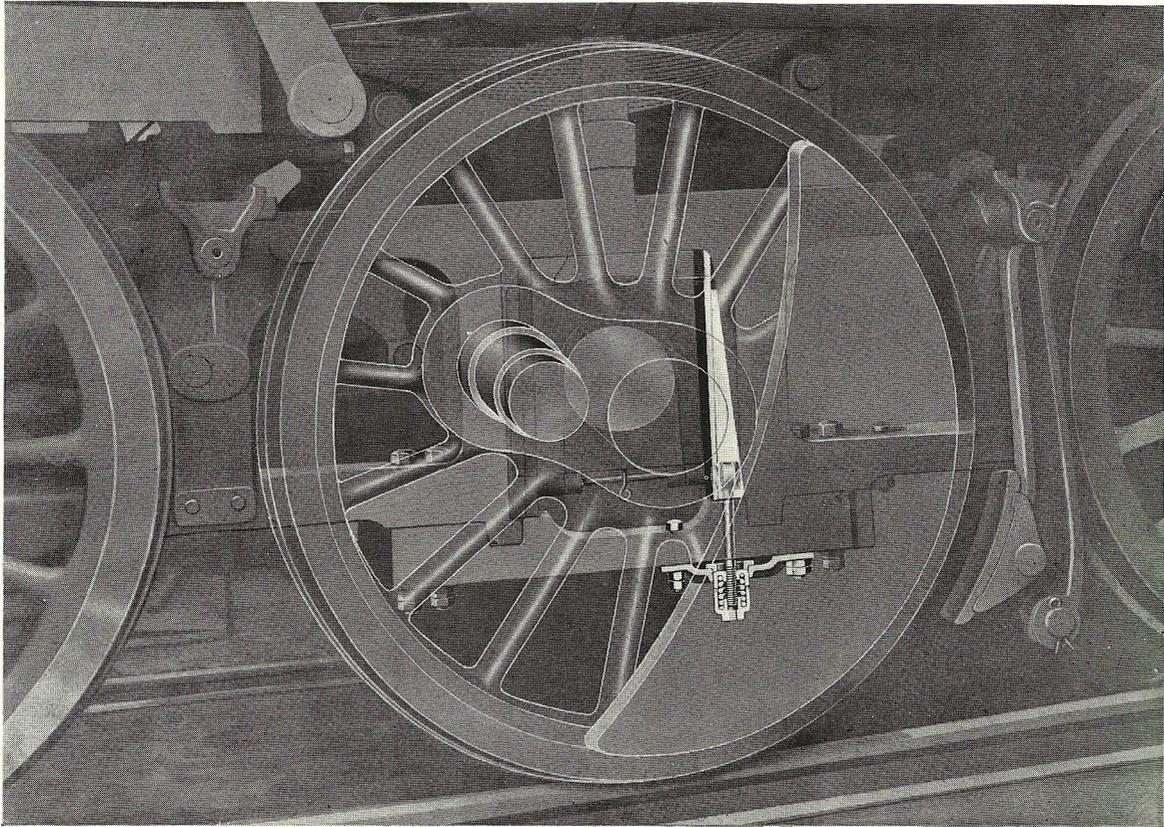
Franklin Automatic Wedges save roundhouse labor because engines come in with the wedges automatically adjusted.

They take engines through full mileage without replacement of rod bushings or any attention to shoes and wedges.

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*Franklin Automatic Wedges Eliminate the Shocks  
that Turn Pistons and Rods into Steam Hammers*

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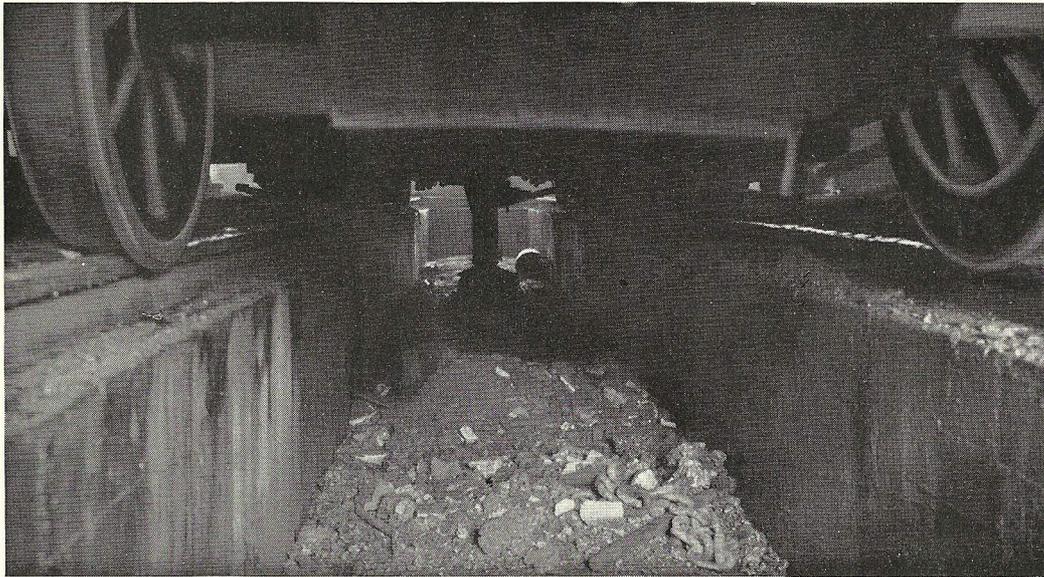
More intensive use of locomotives is the most promising means of increased net earnings. Many roads are making continuous daily runs of 500 to 700 miles. These long runs can be made more profitable if driving boxes are kept in perfect adjustment. The roads having self-adjusting driving box wedges are securing the best results and enjoy a marked freedom from rod trouble.

Spend a few hours in the round house just observing why it is practically impossible today to manually adjust wedges on a busy engine. If you per-

sonally undertake to do it on a modern locomotive you will find that you cannot get under the engine or between the wheels. The engine must be over a pit. You must work in the dark and under other physical handicaps in trying to do the job properly.

You know the requirements, but will the average man consider wedge taper, and whether the parts are under temperature, is the box up against the shoe and the engine on a straight track? You would, because you realize the importance of those things. Automatic Wedges give complete relief from all

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*In such a pit as this, workmen are expected to adjust wedges accurately. Is it any wonder engines go clanking over the road? This can be remedied by using Franklin Automatic Wedges that adjust themselves as the engine runs.*

these difficulties because they adjust themselves under motion before the slack has had an opportunity to do damage to driving box brasses, axles, rod bushings, and pins. The money value of keeping the most essential bearings of the engine adjusted to their work is difficult to calculate.

It is not only a mechanical matter but also an operating question to keep the running gear of the engine in shape with the minimum of high-priced labor and without the necessary long detentions of manual wedge adjustment. Make the operation automatic and get maximum results and more rapid turning of locomotives. There is nothing more important on the entire locomotive than maintaining proper ad-

justment of driving box wedges and the importance of automatic adjustment cannot be overestimated.

Driving box wedges protect the locomotive's foundation. Slack wedges throw everything out of line. They increase the cost of fuel, make a slippery engine, start flues leaking and make it practically impossible to maintain proper cut-off adjustment. They intensify piston thrust by multiplying slack. Properly adjusted wedges maintain and protect the adjustment of the entire running gear and keep driving axles in parallel.

Consider the time locomotives are out of service for running repairs. Aside from boiler repairs everything else is largely an indirect result of im-

proper wedge adjustment. If this isn't true why have wedges? Parts wear, but with improper alignment they wear many times as fast and necessitate holding engines out of service for repairs that would never happen with self-adjusting wedges.

With self-adjusting wedges on your power, running repairs and idle engine hours are reduced. *Fewer engines will handle the same business.* Self-adjusting wedges take care of, mechanically and automatically, the greatest causes of running gear trouble—hot bearings and pounded-out bushings. They will eliminate pounding rods from any railroad.

Franklin Automatic Driving Box Wedges on many roads increase rod bushing mileage over 300%. A number of big Pacific Type engines, with self-adjusting wedges on all drivers, are making from 123,000 to 147,000 miles per set of rod bushings. Elsewhere, locomotives in similar service, but with ordinary hand adjusted wedges, are

making from 21,300 to 25,344 miles per set of rod bushings.

The extra locomotive hours the wedge gives mean many thousands of dollars increased earnings per year. The fixed charges alone—interest, depreciation and taxes—for a locomotive costing \$40,000 to \$60,000, are three dollars or more for every hour the engine is working. Every additional hour the engine works reduces this hourly charge and helps it earn \$150,000 to \$300,000 per year.

Franklin Automatic Wedges cost only about \$10.00 per box above the cost of the ordinary wedge, depending on material specified.

Ask your Mechanical Officers about the hours the Franklin Wedge will save and figure the value of these extra hours in savings and earnings for those big engines. Then remember that it takes the place of \$1.00 per hour labor for hand adjusting wedges, and start a program for monthly applications.

## CONSTRUCTION AND OPERATION

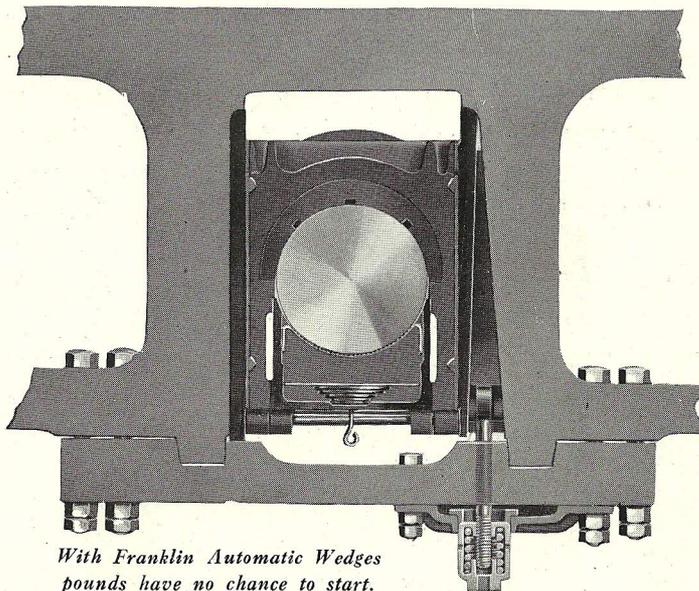
This device consists of an adjusting and a floating wedge held in proper relationship by a coil spring. The adjusting wedge is tapered on one side to suit the taper of the pedestal jaw and on the opposite to accommodate the lesser taper of the floating wedge.

To the adjusting wedge is attached the wedge bolt. This bolt passes down through the pedestal binder and spring

pocket, held in support attached to the binder. An adjustable spring cap or follower is mounted on the wedge bolt with the spring between the cap and the bottom of the spring pocket. The spring holds the adjusting wedge in position and automatically maintains proper adjustment of the driving box.

Between the double tapered adjusting wedge and the driving box is placed

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*With Franklin Automatic Wedges  
pounds have no chance to start.*

an oppositely-tapered floating wedge. This floating wedge is from  $\frac{3}{16}$  in. (minimum) to  $\frac{5}{16}$  in. (maximum) shorter than the distance between the binder and frame rail.

When the box moves up or down the floating plate is carried with it until it strikes the frame or binder. On the upward movement this gives relief between the floating wedge and adjusting wedge. On the downward movement the floating and adjusting wedges will move together and the taper on the back of adjusting wedge will give relief. Absolute prevention of stuck driving boxes is assured by the Franklin Wedge

Combination.

Franklin Automatic Driving Box Wedges maintain driving boxes in proper adjustment without undue pressure that might cause heating or binding.

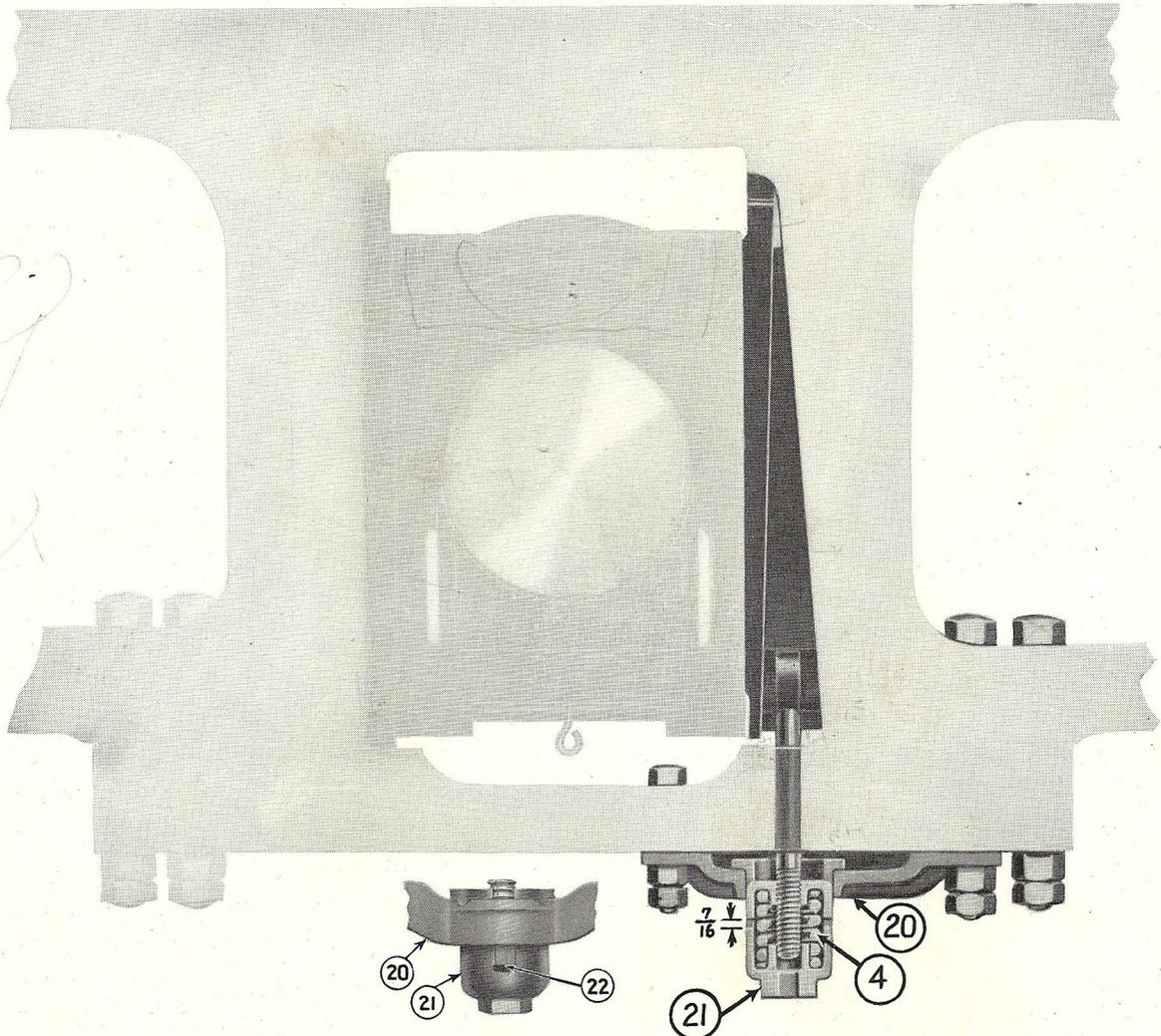
Usual shoe and wedge oiling and setting up of the spring nut when sufficient wear has accumulated to allow the wedge to travel  $\frac{3}{4}$  in. is the only care required. Necessity for wedge adjustment while on the road is eliminated. This is particularly appreciated on engines with small drivers, as it is next to impossible to properly adjust wedges on such an engine without having the locomotive over a pit.

### MATERIAL SPECIFICATIONS

In that the question has often been raised as to material best suited for different driving box conditions, we are showing below for ready reference, our recommendation in this connection:—

Driving Box	Adjustable Wedge	Floating Wedge
Cast Steel—Shoe and Wedge face plain	Cast Iron	Bronze
Cast Steel—Shoe and Wedge face brass lined or spotted with babbitt		
Cast Iron	Cast Iron	Cast Iron
	Cast Iron	Cast Iron

Material other than shown above can be supplied if so specified.



### WEDGE LUBRICATION AND ADJUSTMENT

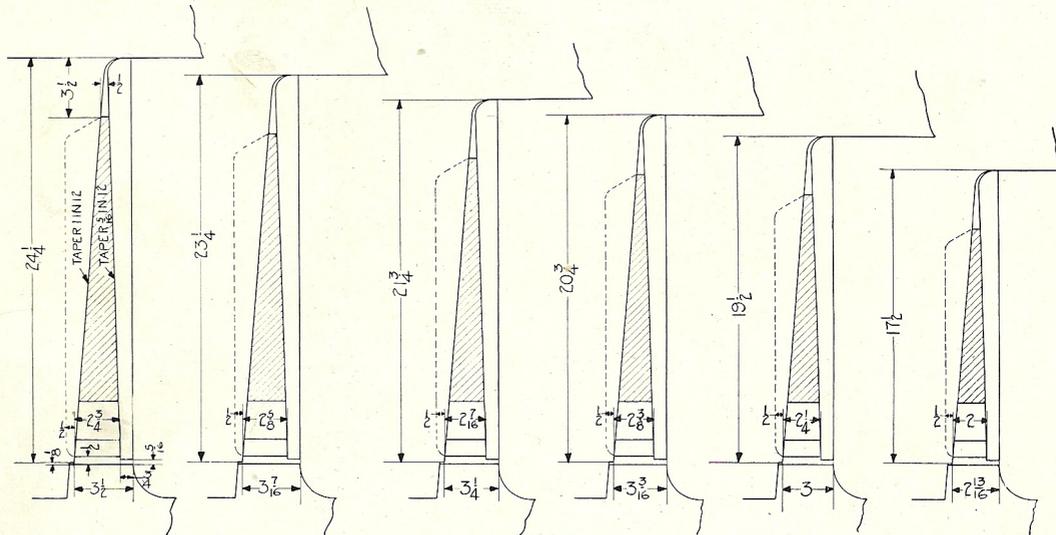
It is important that wedges be thoroughly and regularly lubricated. Oil cavities on the top of driving boxes should be packed three-fourths with clean mattress hair and covered with a layer of waste. Oil should be applied through the holes in the top of the floating plate to insure lubrication reaching the wedge. It is often due to lack of lubrication that the spring adjustment is thought too strong.

When the spring follower indicator (22)

moves up and becomes flush with the bottom of the spring pocket support (20), adjustment is necessary.

Turn the Spring Pocket (21) to the left with a wrench until the bottom of the Spring Follower Indicator (22) moves down and becomes flush with the top of the notch in the slot of the Spring Pocket (21). The bottom of the Spring Follower Indicator is then  $\frac{7}{16}$  inches above the bottom of the slot in the Spring Pocket.

## WEDGE PROPORTIONS



As the Franklin Automatic Adjustable Wedge is made in two pieces, the space required for its application is somewhat greater than that needed for the ordinary wedge.

When designing new engines the space for wedges should be provided as shown in the above illustration. This will allow for an automatic wedge of substantial design.

To limit the movement of the floating plate the top face of pedestal binder should extend out to meet the face of this plate.

For application of wedges to existing power the thickness of wedges at the bottom of pedestal jaw can be reduced to  $\frac{3}{8}$  in. less than the dimension shown and still provide for a wedge of sufficient thickness to obtain a satisfactory application.

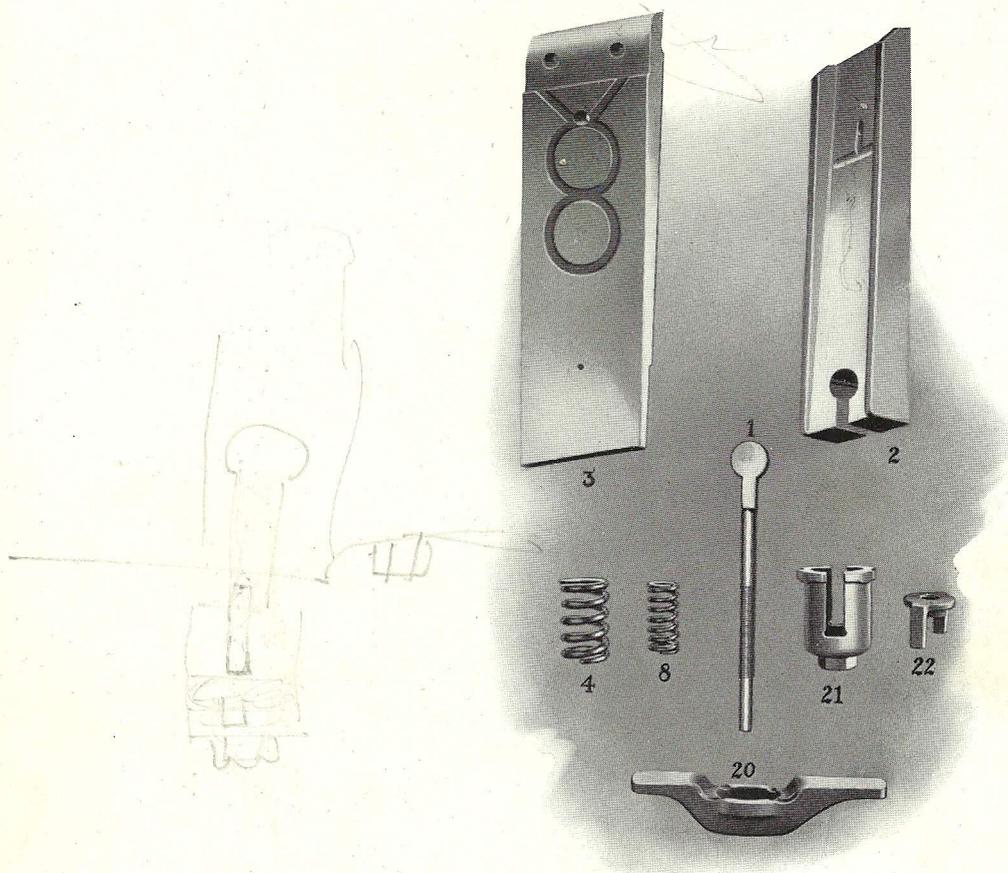
As a means for securing sufficient space for wedges on existing power where the

size of the present wedge is less than mentioned, the following changes in boxes will, in many cases, allow for a substantial design.

If the box is brass faced, the removal of brass will allow for an equivalent increase in the thickness of that wedge.

If the thickness of box between journal brass and wedge face is over one inch, some material can be removed from the face of the box. If this is done, the same amount should be removed from both faces of box, and the shoe shimmed to the amount removed from the shoe face of box. This eliminates right and left hand boxes.

If the above does not give sufficient space, the shimming can be left off shoe and all the boxes moved forward so as to give for wedge application an additional space equivalent to the total amount machined from box.



## PART LIST

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|--------------------|---------------------------|
| 1. Adjusting Bolt  | 8. Auxiliary Spring       |
| 2. Adjusting Wedge | 20. Spring Pocket Support |
| 3. Floating Wedge  | 21. Spring Pocket         |
| 4. Standard Spring | 22. Spring Follower       |

For filling orders, we require the following blue prints: Detail of frame, drilling, slotting and dimensions, driving box, binder, shoe and wedge, and when application is for extended main box, drawing of main cross-tie. Also information as to height from rail to underside of pedestal cap and piston thrust both simple and compound (if engine is so worked) of locomotive.

When ordering repairs, specify the name of parts, engine class, and for which box parts are required, and when possible, specify pattern number for castings.