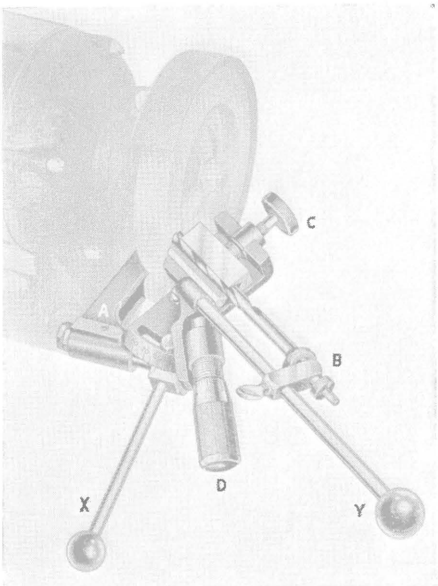
rail-head plug type bonds, accuracy of the holes with reference to diameter and exact roundness is essential as a means of insuring a tight fit of the plug in the hole.

In order to drill a hole which is accurate in diameter, both of the lips of the drill must be identical, the angle between the point and the lip must be proper, preferably between 120 and 135 degrees, and the lip clearance angle should be between 12 and 15 degrees. If the angle of lip clearance is too great, rapid wear and chipping results, but if the angle of clearance is too small, the drill cuts slowly and requires more power. The pitch of the drill depends on the type of steel being drilled; the proper pitch for drilling in ordinary steel rails is 59 degrees. If a drill is not properly ground it dulls more quickly and requires greater power for cutting, since one lip carries the full load. Insufficient clearance for expelling chips results in frequent drill overheating and breakage.

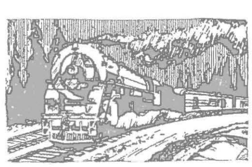


Drill grinding device attached to a grinder

The new Atlas micrometer drill grinding attachment provides a means for grinding drills to meet the requirements explained above and also for adjusting the pitch. The drills are ground on the side of the grinding wheel, and if this surface is not square it must be trued by means of an inexpensive diamond dressing tool. The far end of the mounting bracket A has a horizontal slot which fits over a bolt which extends into the base or fixed frame of the grinder. This connection must be of sufficient strength to be absolutely fixed and to prevent vibration when grinding. A horizontal shaft fits in the "near" end of the mounting bracket, and this shaft must be exactly parallel with the main spindle of the grinder, and so set that the face of a drill when being ground is about ½ in. above the line of center of the spindle of the grinder. In order to insure this condition, a special jig, furnished with each set of equipment, is placed on the shaft in the mounting bracket, with two arms extending against the side of the grinding wheel. If the shaft in the bracket and the spindle are not parallel, the fit between the bracket and the mounting to the machine can be fitted to secure the required result.

After removing the special jig from the shaft in the bracket, the device is placed on the shaft. As shown in the illustration, the attachment is set to grind drills at a pitch of 59 degrees, this adjustment being locked in place by the cap screw shown above the figure 60 in the radial slot. When preparing for a grinding operation, the drill is placed as shown in the chuck. The "near" jaw of the chuck is fixed and it has a pin which fits in one of the grooves of the drill to prevent the drill from turning. The shank stop mechanism B on operating arm Y is adjusted so that the upper end of the drill extends about ⅛ in. beyond the end of the chuck, and then the adjustment is locked by the thumb jam nut. The "far" jaw of the chuck is then tightened against the drill by the clamp screw C.

Lever X is raised until the lip surface of the drill is within ⅛ in. of the grinding wheel. The drill is advanced to the wheel by operating the calibrated feeding sleeve D. Lever X is held steady while lever Y is rocked, and between grinding strokes, the feed is made by turning the micrometer feeding sleeve D. When a lip surface is ground, the feed position is left as is, and lever Y is rocked until sparking ceases. The position of the feeding sleeve with reference to the witness mark is noted. The clamp screw C of the movable chuck is released and the drill is turned through 180 degrees and reclamped, so that the other half of the drill face can be ground until the calibrated sleeve is advanced to the same position as noted at the end of the previous grinding operation. A booklet furnished with each device explains in detail the proper methods for setting up the equipment and for grinding drills. The drill grinding attachment is designed for grinding drills between 3/32 in. and ½ in. diameter.



Letter to the Editor

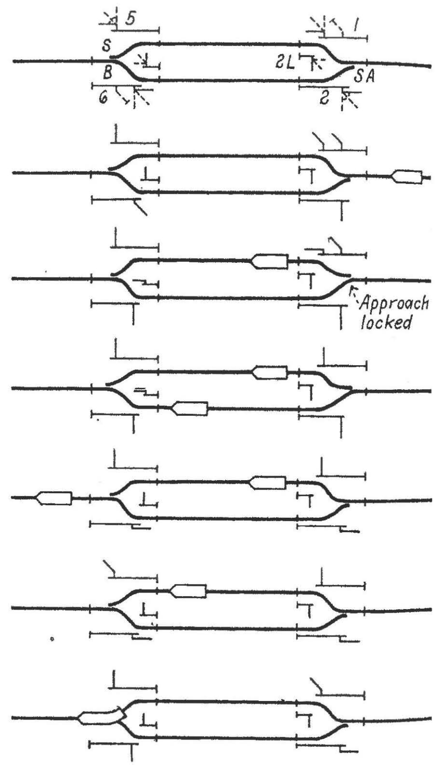
"Running" Passing Tracks

Wellesley, Mass.

To the Editor:

The article concerning passing tracks on the Missouri Pacific in the February issue of *Railway Signaling* has suggested to me a further development of the same general scheme to save time when making passes.

If you have your slow (freight) train pull into the normal right-hand track on a spring siding and stop as soon as comfortably past the clearance point, then the rear-end brakeman is in position to throw the switch behind him to the left track without any loss of time. If the signal controls are



arranged so that reversing this switch with the right-hand track occupied will line up cleared signals over the left-hand track, then the overtaking train can proceed at speed.

In the accompanying sketch I have incorporated a few refinements: Remote controlled leaving signals on the normal tracks together with distinctive lower units on the entering signals which serve to show (1) when a leaving signal ahead is at stop for a pass movement; (2) when a clear route is over the left-hand track; and an electric lock on the hand-throw stand for extra safety to the overtaking train.

H. B. Brainerd.