

# Fluework in a Railway Shop.

The accompany engravings illustrate some of the methods and equipment used in connection with fluework at the Southern Pacific shops at Sparks, Nev. Figs

tube just withdrawn from the oil-fired heating furnace at the left and placed in the roll swager at the center of the illustration. At the right is the air-operated

cylinder and piston, placed in inverted position in a framework built up of a top plate, pipe and through bolts on an old machine bed. The air pipes may be seen

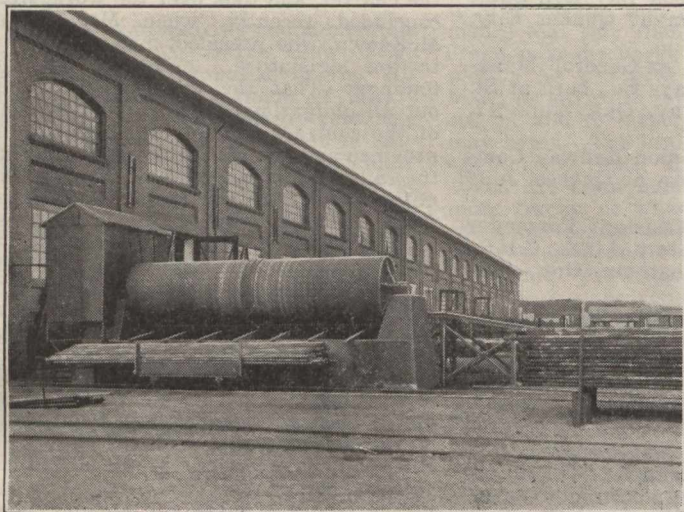


Fig. 1. Tumbling apparatus for tubes.

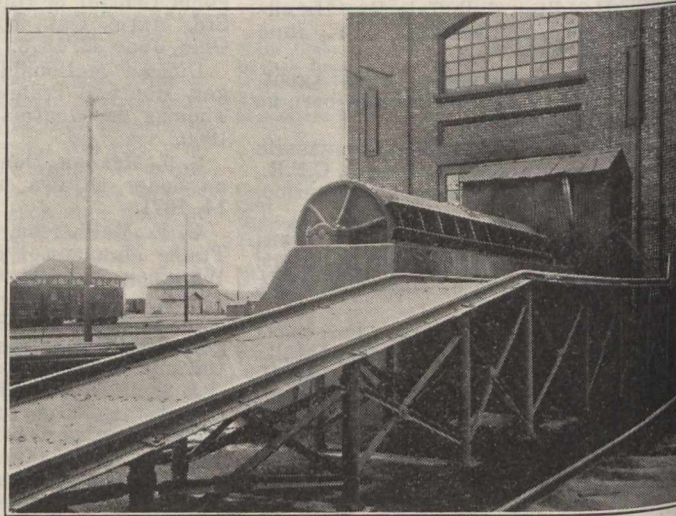


Fig. 2. Loading side of tumbling apparatus.

1 and 2 are views of the flue-tumbling apparatus located just outside the shop building. It consists of a perforated cylinder long enough to receive the tubes and provided at the end next the shop wall with power driving mechanism for rotating the cylinder upon its journals. At one side, as shown in Fig. 2, there is a longitudinal opening extending the full length of the cylinder to admit the tubes, which are hauled up on a car on the inclined track to a point directly in front of the cylinder. At the rear there is a series of inclined rails upon which the tubes fall when the cylinder is opened for their discharge. Down these rails the tubes roll on to a car placed on the track below, as shown by fig. 1. This track leads directly into the building, so the tubes are readily handled between tumbler and shop.

Fig. 3 shows a lot of tubes in the shop, stacked up on a sloping rack immediately

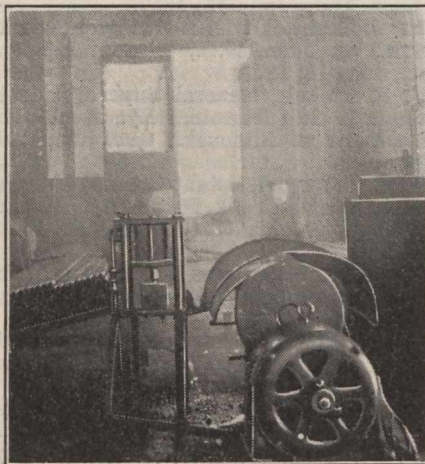


Fig. 7. Flue swaging equipment.

at the right-hand side of the structure. The machine is controlled by pressure of the foot upon a lever near the floor, so that the operator has both hands free to move the tube about under the dies as is required for the operation. The machine in fig. 6 is for trimming the tubes to length. It is another home-made device built up on a long bed, with supporting rollers at each end to receive the tube and hold it in horizontal position for the application of the trimming knife, which is a revolving disc about 6 in. in diameter. This disc is mounted upon the end of a spindle that is gear driven from an electric motor at the rear end of the head, as indicated in the engraving. The lever for forcing the cutting or trimming disc into the tube is at the top of the machine with the handle bent forward to convenient position for the operator.

Fig. 7 shows the apparatus for testing the tubes under water pressure. The

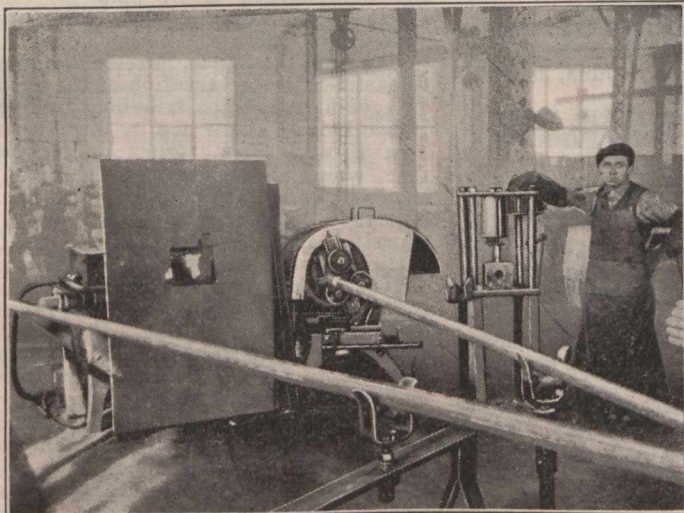


Fig. 4. Heater and swagers.



Fig. 5. A tube in the swaging dies.

behind the swaging machines. Figs. 4 and 5 illustrate the roll swager and the pneumatically operated dies for the tube ends. The front view, fig. 4, shows a

swaging die. A better view of this is given in fig. 5 with a tube in place for working under the dies.

The machine consists of a short-stroke

outer end of the tube rests against a closing gasket on a fixture adjustably mounted upon the long bed of the machine. The other end is closed by a pack-