out the rock, and as "mass copper," which is solid copper of more or less irregular shape. The pitch of the vein is about 70° or 72°, and the width varies from 20′ to 50′. Parts of the vein are more or less barren of copper, and this rock, called "poor rock," is picked out by the "copper pickers," and forms a good part of the filling.

The vein was opened up by shafts and drifts, and when stoping began, the drifts were widened out to the full width of the vein. After the copper rock was cleaned out from the face, the poor rock was taken back in cars, and shovelled to one side. When the "wallers" had enough rock to start on they began and walled it up on each side of the track, leaving a space of 7′ for a tramway. The walls were made about 7′ high, and heavy stull timbers laid on them as caps. These caps were placed about 3′ apart and covered with cedar lagging, so that no rock could come through. (See Fig. 15.)

At intervals of about 40′ spaces were left for chutes on one side of the track. They were built up with rock and had a timber margin for planks to be spiked to. In the bottom of the chute flatted hemlock timbers were laid, and a heavy sheet iron plate was fastened to them with drive bolts. The bottom of the chute was made flat because very large bowlders were handled in it. For a gate a spout was used, one end of which was raised and lowered by means of a long stout lever. The copper rock thrown into the chute was pulled out by the trammers into two ton cars, taken to the shaft, and dumped directly into the skips.

When the work had progressed far enough on the station level, overhead stoping began above the caps and walls, by drilling with machines and blasting in the usual manner. The rock broken down was picked over by the copper pickers, the copper rock being thrown into the chutes, and the poor rock thrown back to fill up the excavation. As more and more filling accumulated, the chutes were carried upward in the form of a hole 5′ square, by means of heavy cribbing flatted at the ends and spiked. (See Fig. 16). Sometimes the pickers needed wheelbarrows to get the rock into the chute or "mill."

In stoping a good breast was carried along, and heavy holes drilled, since no damage could be done by heavy blasts, though it was not advisable to shatter the roof too much. As the room grew in height the back got farther and farther away from the filling. This necessitated the use of long posts for the machines and staging for the miners to work from. The idea, of course, was to work as much as possible from the top of the broken rock, but as there was 100′ between levels, and not a very high percentage of poor rock, it became necessary to cut out the foot or hanging walls to fill in, and thus reach the back. This should always be done after the copper rock has been picked out, as otherwise much poor rock would be