

the crusher of a good deal of unnecessary work, and increases therefore the life of the jaws, toggle, and check-plates.

I have introduced, further, a little improvement at the lower end of the bin. In case the automatic feeder should be once out of order, a trap door which swings in a quadrant in nearly the middle of the lower bin-opening, closes the feed opening to the automatic feeder and opens another one right over the grizzly, from which the ore can be fed into the crusher with a hand-rake.

From the bin below the breaker the ore drops into a hopper with automatic feed, which forwards the ore into the mortars of the stamps.

I selected here, notwithstanding the partly fine state of the gold in the ore, a heavy stamp, in order to crush coarse and as uniformly as possible, to avoid a large amount of slimes.

We have seen above that I prevent thereby to some extent the amalgamation of the fine gold in the mortars, but you will see that this does not matter so much, if you have learned more about the amalgamator used here. On the other hand, I have gained by the selection of these stamps some important advantages, through the avoidance of fine crushing; that is, the lessening of the proportion of muddy slimes, and the coarser grinding of the concentrates, which if too fine have partly a considerable floating capacity and partly when in such masses, as is often the case in our ores, crowding the surfaces of the other machines to the disadvantage of the saving of gold. For one who is not familiar with the conditions which prevail inside the mortar box, it sounds strange to say that a heavier stamp should not grind as fine or finer than a lighter, and that the weight should not balance the high drop of the light stamp; but if we know what is going on in the mortar it is readily understood. The splash of the lighter stamp, although having a drop of sometimes up to 16 to 18 inches, is not so effective on the ore lying on the die through the resistance of the deep water which is standing in the mortar. The capacity is further hampered through the slow speed; and naturally on account of the higher discharge, the particles cannot escape so easily through the sieves at every splash of the stamp, and are therefore retained longer in the mortar and undergo the grinding process more frequently. The consequence is a larger amount of slimes, but on the other hand also a more ready amalgamation in the mortar, because the gold particles are left more time to settle and to amalgamate with the quicksilver. The