

when they have to be broken to say 2 inches cube. Coal is not the only material that goes through the breakers. I have seen many interesting collections of articles other than coal that have gone through, such as pick-heads, chain-links, crow-bars, nuts and bolts, but in a well designed and strongly built breaker little damage will be done to the gear. The body of the breaker is made up of cast iron sides, $\frac{3}{4}$ inch, with flanges for bolting together 1 inch thick, the bearings are cast on to the body and supplied with iron renewable bushes, the shafts to carry the rolls are forged steel, machined at ends for bearings and gearing, the centre portions are left black and are of square section, on to this is threaded the rolls supplied with teeth. Different manufacturers employ different shape teeth, but I myself prefer the form shown, these "crab claw" shaped teeth crack the coal as it were, and tend to lessen the production of undue dust. These are made of good strong material preferably manganese cast steel. One method of fixing to shaft is by running up with white metal or suphur. The speed of the rolls is about 5 revolutions per minute for the top rolls, and 15 revolutions per minute for the bottom rolls. There are various types of feeds working in conjunction with these breakers, the most common being the Jigger feed, with adjustable stroke made to deliver fast or slow depending on the size of coal to be broken. This is usually driven from a sprocket wheel driving a shaft with an eccentric. This machine regulates the feed to the breaker to a nicety and prevents choking. The power to drive the breaker amounts to very little, a double roll breaker for say 50 tons per hour for instance, requires about 6 to 8 horse power.

Now as to the class of conveyor best fitted for filling coal stores of large capacity, undoubtedly to my mind, the bucket conveyor is the best, as the same conveyor lends itself to both filling and emptying the store.

The bucket is of steel plate about $\frac{1}{2}$ inch thick bent to the desired shape, in some types the sides are separate, on others the bucket is stamped out all in one piece, the links of the chain are secured to sides of the bucket, each bucket has a lip that engages with a similar projection on the next bucket to it, thereby forming a continuous conveyor and preventing leakage between buckets. Each bucket is carried on two rollers running on a track. In filling the store the coal is carried in the top curved part of bucket, and the dumping gear places the bucket in such a position as to empty it, either into the store or into the conveyor carrying the coal into the retort house. This conveyor is carried directly over the storage hopper that runs along the entire length of the retort bench and is usually of the swing bucket type running in a track similar to the other type. The movable tipper for the buckets is