passed out at the end of this screen and the rest of the material was separated into egg, stove, and chestnut. All coal finer than chestnut was run to a waste pocket and was transported from that point to a culm bank. This screen was revolved by man power, no mechanical energy of any kind being used in the preparation of the coal. The only impurities removed were those that the men took out when they broke the coal down through the cast-iron plate; the impurities were probably few. It is probable that this breaker was built about 1845, and was ten years old at the time it was described.

Perhaps the greatest improvement of this period was the introduction of mechanical power. This made it possible to use larger screens as well as to break down the lump coal by means of rolls, greatly increas-

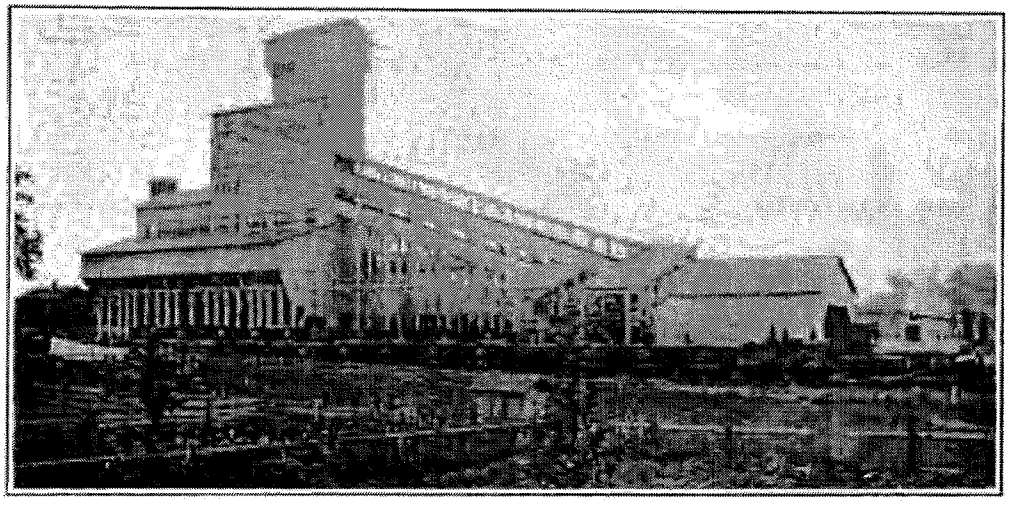

FIG. 3.—OLD DODSON BREAKER, PLYMOUTH, PA., BUILT IN 1869 AND BURNED IN 1897.

ing the capacity of these breakers over those employing the older hand methods. The hand-operated breakers were not, however, immediately superseded, for until about 1860 some were in existence.

The first rolls were made of cast iron with cast-integral teeth. About 1876, a roll having a cast-iron shell into which steel teeth were driven was introduced. In some places, a fluted roll was tried. In addition to these, sometime prior to 1865 a fluke roll was used. The teeth of the roll, in passing through slots in a cast-iron plate, crushed the coal in a manner exactly similar to that employed when breaking it with a hammer through cast-iron plates as has been already described. This method of crushing created as much waste but was more rapid than was the hand methods it displaced.

This brings us to the late sixties. At the old Dodson breaker, at Plymouth, which was built in 1869, Figs. 3, 4, and 5, the lump coal was separated from the smaller sizes and run directly to the lump pocket. The coal that was large and not very clean, together with the fine

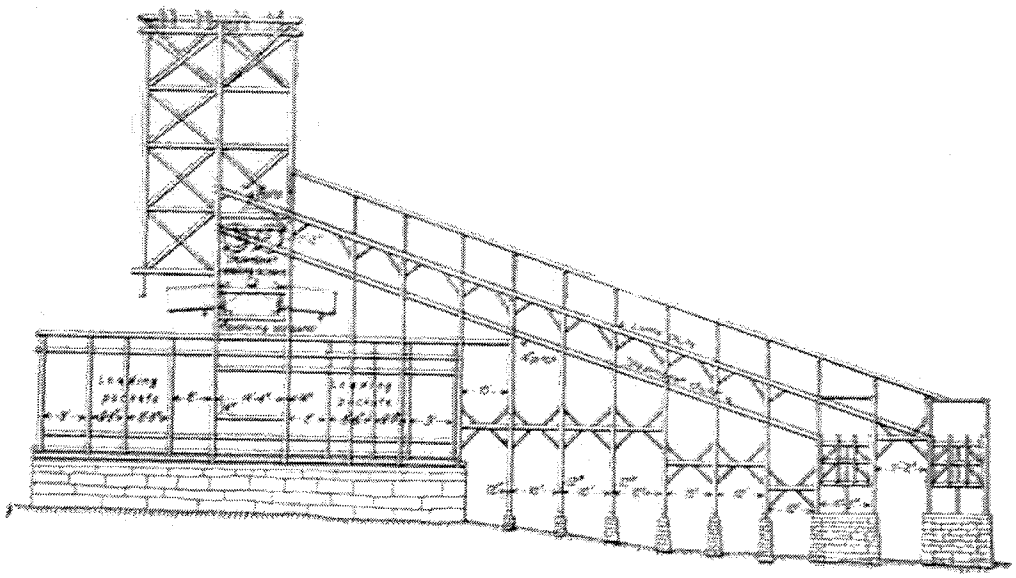

FIG. 4.—FRONT ELEVATION OF OLD DODSON BREAKER.

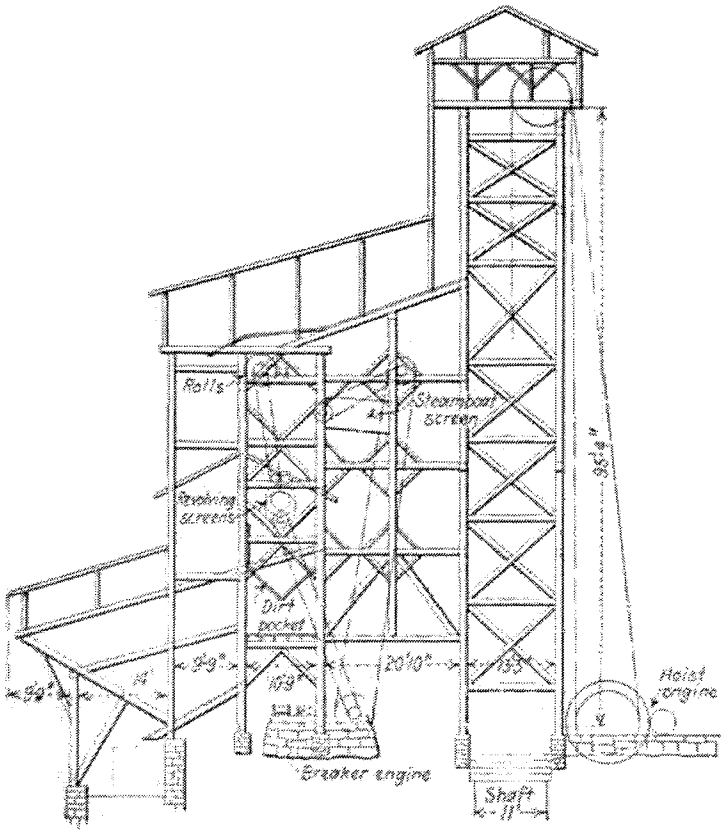

FIG. 5.—SIDE ELEVATION OF OLD DODSON BREAKER.