



A—Rubber spring for raising the jaws or knives.
B—Fly-wheel. C—Gear-wheel. D—Toggle.

E—Trough containing pig to be broken.
F—Connecting rod for moving toggle.

G—Sliding head.
H—Iron broken to size.

PIG IRON BREAKER.

similar in many respects to an ordinary rock breaker standing upon one end. The pig is fed on an incline or yielding drive, furnished with rollers. It passes over a V-shaped knife to an adjustable stop on the end of the sliding-head G. This head is provided with two knives, equi-distant from the center knife on which the pig is supported. As the head G descends, the piece of pig extending from the center bearing, or knife, out to the stop is broken off. As it ascends the pig is thrust forward, and another piece is broken from it by the subsequent motion. The strain of the work is taken upon the two heavy vertical rods seen in both the shaded and outline view of the machine. The toggle-joint arrangement, precisely like that upon the ordinary stone-breakers, is capable of exerting enormous power. The product of the machine is really limited only to the rapidity with which the pig can be fed into it. Usually the machine can be run by a belt upon the band wheel, shown behind the fly-wheel B. Two or three horse-power only is required for the purpose. When necessary, a small steam engine can be attached, as shown in the right-hand drawing. One of these machines is being set up for the Albany and Rensselaer Iron and Steel Co. At the present time the pigs are broken into two pieces. Better results can

be obtained, in both copulas and steel works, by breaking the pigs into smaller pieces, and thus securing a more intimate mixture of the fuel, the fluxes and the iron.

All pig iron has more or less sand upon it, and beneath the sand there is a hard scale, which strongly resists the action of the heat and prevents melting. The clean ends of a broken pig melt first, and it is well-known that pieces of pig dropped through the cupola only partly melted, show that the melting began on the ends where clean iron was exposed to the heat. Sometimes, indeed, pieces will be found that have melted out for an inch or more, leaving the scale standing. On this account it is always best to have the pig broken into as many pieces as possible. Mr. Kirk even recommends that it be broken into four pieces, but, owing to the difficulty of breaking, melters very frequently are satisfied with breaking it once. The machine which is described, by enabling the pig to be broken into a great number of pieces, will facilitate melting, by exposing more clean surface to the action of heat, and will greatly improve the quality and quantity of the product. These points should be carefully considered by foundrymen, among whom we anticipate this machine will have a large sale.—*Metal Worker.*