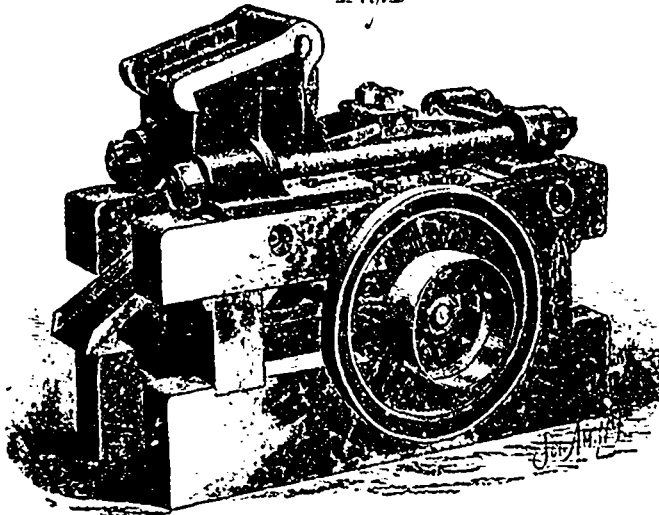


Between the broad flanged bases of the front and rear castings and the timbers on which they rest, are placed flat rubber cushions one quarter to three-eighths of an inch thick. Every revolution of the shaft brings the toggles more nearly into line, and throws the swing jaw forward; it is withdrawn by the rod provided with rubber spring. L. In this way a short

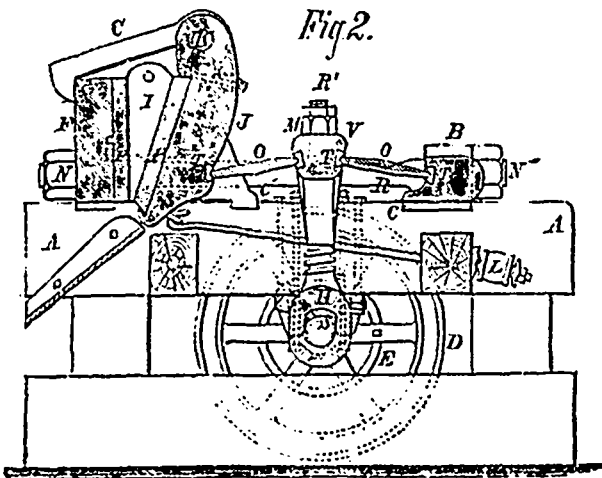
Fig. 1



BLAKE'S CHALLENGE ROCK BREAKER.

reciprocating or vibratory movement is communicated to the moveable jaw.

It is evident that this new construction of the Blake stone crusher—while the principle of crushing between upright convergent jaws is the same as in their old machine—possesses many and great advantages over the old forms. It is sectional. The weight of the heaviest piece in crusher, size 15x9



SECTIONAL VIEW.

inches, is about 2,400 pounds instead of nearly 8,000. The rigidity inseparable from machines with cast iron frames, and which is the cause of frequent breakages, is completely overcome, and the longitudinal as well as transverse strains are brought upon materials which are strong and elastic as compared with cast iron. The rubber cushions, while offering

sufficiently great resistance to compression in case of the breakage of stone or in doing the normal work of the machine, will, in case of the accidental intrusion of steel hammers or anything of that kind, be compressed and so permit the partial revolution of the fly-wheels before coming to a full stop, thus relieving the machine of those nearly infinite strains to which those of the old form were subjected, and which resulted in breakage of important parts. The toggles are long, and of equal length, and may be worn indefinitely as compared with those in the old machine.

The construction of the pitman is such as to admit of change of inclination of the toggles, and consequently of adjustment of the length of stroke of the moveable jaw. The jaw opening can be varied between any working limits by means of the nuts on the tension rods, and the machine be set to crush coarse or fine as may be desired. This Breaker can be run at a higher rate of speed with safety than either of the old forms of crusher with cast iron frames, and will consequently do a greater amount of work. It is very much lighter than the old forms, and has at least double their strength.

The new Challenge Rock Breaker has been repeatedly subjected to the test of a steel hammer being thrown between its jaws, when going at as high a rate of speed as 300 revolutions per minute, without injury to or breakage of the machine.

Full particulars will be furnished on application by the manufacturer. Mr. George Brush, Eagle Foundry, Montreal, Q.

BOILER LEGISLATION.

The Ontario Government has promised a bill for the regulation of the manufacture and use of steam boilers in this Province. In legislating on such an important and intricate matter as the manufacture of steam boilers, great care should be taken not to interfere unduly, or unnecessarily to impede the manufacturer in his business.

To lay down certain hard and fast rules for the guidance of makers, giving details as to construction, would be to assume that the framers of the bill were the most skilled engineers and boiler-makers of the day, and that no further improvements in boiler-making, or the use of steam, need be expected.

All that should be attempted in this direction should be to insist upon the application of such well-established principles as are absolutely essential for public safety. The public and the honest manufacturer require some protection against the cupidity of unscrupulous persons, who, for the sake of a little extra profit, will pass off inferior plate as being iron of the highest quality. When it is rivetted and painted, who can tell the difference? The steam pressure can, though perhaps an inspector could not.

It would be of great service in this direction if it were made compulsory that all plates used in boiler-making should bear a brand signifying their strength or quality, and that with every boiler sold a certificate should be given setting forth the quality of plate used and the safe working pressure. There is, however, as much need for legislation regarding the use of boilers as for their manufacture. It has been said by one who had good opportunities of judging that it was too much the custom to place boilers in this country under the care of men or boys whose chief qualifications were self-assurance and