CAR BRAKE ATTACHMENT.

In this attachment the body of the car is, as usual, provided with a brake shaft having an upper hand wheel. The lower end of the shaft is connected to the brake lever by a rod and chain. Upon the shaft is placed a sprocket wheel, with which engages a chain passing around a second wheel carried by a shaft mounted in a bracket secured to the bottom of the car. This second shaft carries a large hand wheel, by turning which the brake shaft may be turned and the brakes applied. The top of the brake shaft carries the usual ratchet wheel, engaged by a pawl forced into engagement with the wheel by a spring. The pawl is carried by a vertical rod, to the lower end of which is secured an outwardly extending lever arm, the arrangement being such that by throwing the lever forward (toward the right in the engraving), the pawl will be moved from engagement with the ratchet wheel, thus releasing the brake shaft and throwing off the brakes. In one modification of this construction the lower hand wheel is dispensed with, its place being supplied by a ratchet lever, the reciprocating movement of which imparts a rotary motion to the short shaft carrying a sprocket wheel of the chain. In another modification the sprocket wheels and chain are replaced by a train of gearing. It is evident that, by means of this attachment, the brakes may be applied or released from either the roof of the car or from the ground.

QUATERMASS' CAR BRAKE ATTACHMENT.

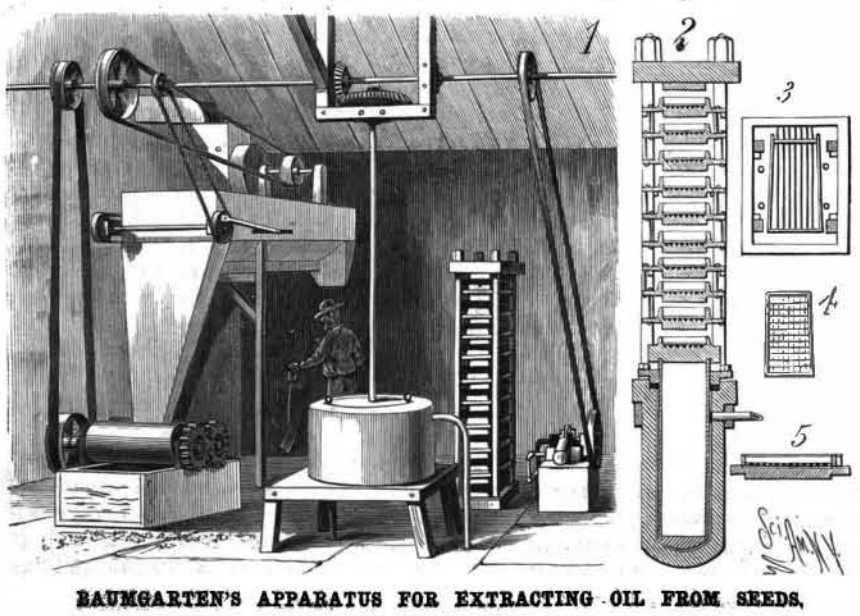
This invention has been patented by Mr. Reuben Quatermass, of Moline, Kansas.

APPARATUS FOR EXTRACTING OIL FROM SEEDS.

The apparatus here illustrated is designed for extracting the oil from cotton and other oil-bearing seeds. The seeds are led from a gin, by a conveyer, into the hopper of a huller, where the hulls are separated from the kernels, the former being allowed to escape through a chute to the outside of the building, while the latter pass by another chute directly into a crusher. The huller is provided with two metal burrs having slots in their faces to receive sharp knives; one of the burrs remains stationary while the other rotates. A sheet iron casing inclosing the burrs is provided with a spout, which conveys the hulled seed into a screen box or separator which has two sieves, rigidly connected together, and suspended within the box in such a manner as to receive a reciprocating motion. The sieves have opposite inclinati ns, the upper one discharging the kernels upon the lower one, from which they pass into a conveyer in the bottom of the separator, which leads them to the crusher. The next stage in the process is performed by the crusher, which is simply a strong iron frame carrying two geared and adjustable chilled rollers. From the crusher the kernels are conveyed to a heater, in which they are reduced to what may be termed "a condition of cooked meal." This meal is then wrapped in cloth in properly shaped packages to enter the hydraulic press, which is shown in vertical section in Fig. 2.

Water is supplied to the cylinder, within which is a hollow ram, through a pipe leading from a suitable pump. Extending upward from the top of the cylinder are guide rods, shown in the cross sectional view, Fig. 3, up and down which the pressing plates move. These plates, which are shown in section in Fig. 5, and the lower one of which is attached to the plunger, are built up in sets of two or more, the several plates in each set being loosely connected by bolts with each other, so that the lower plates of each set are suspended from the upper ones and are free to move upward, when pressure is applied, independently of each other, but are kept at their proper distances apart for charging with the meal when the ram is down. Each plate is cast in a single piece, then planed smooth, and grooved to allow the oil to escape. The upper faces of the plates are constructed with raised ribs at the inner ends and for a portion of the sides of the grooves; within the space thus formed is placed a screen, Fig. 4, of closely woven wire cloth, which allows the free passage of the oil to the grooves without exposing them to being choked by the material being compressed. From the above brief description it will be seen that this apparatus is very simple and compact, and that it is well adapted to the work required.

These inventions have been patented by Mr. Christian Baumgarten, of Schulenburg, Texas.



BAUMGARTEN'S APPARATUS FOR EXTRACTING OIL FROM SEEDS.

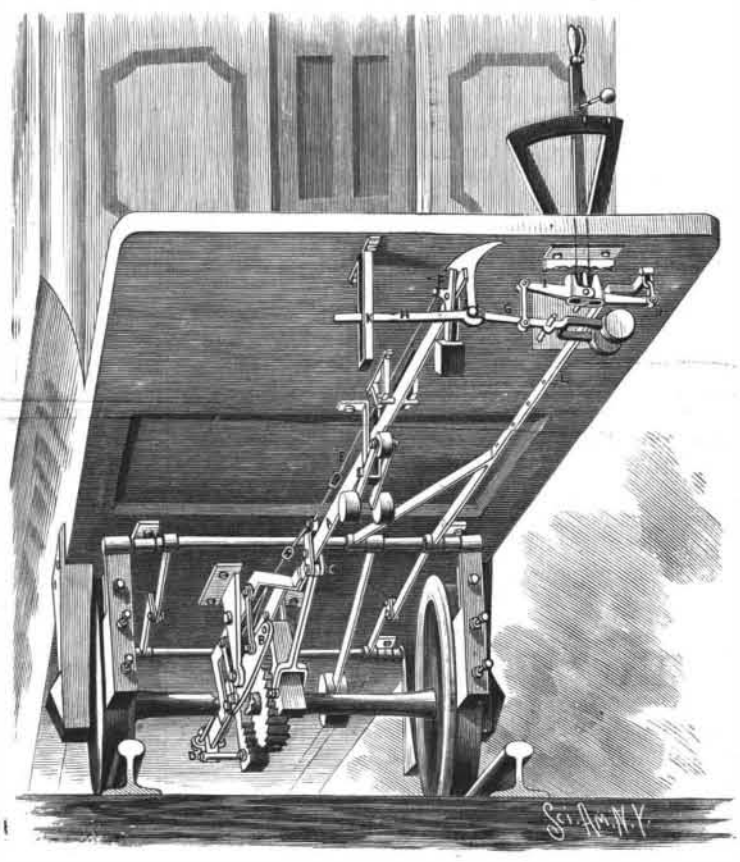
Causes of Boiler Explosions.

The *Ingenieur-Conseil*, of Brussels, has recently published a paper by Mr. Hochereau, formerly an artillery officer and director of the Haine-St. Pierre Works, upon the causes of the fulminating explosions of steam boilers, which are nearly always accompanied with, or preceded by, one or more violent detonations. Mr. Hochereau thinks that such explosions should be attributed principally, if not exclusively, to the inflammation, through an electric spark, of a mixture of air and pure or more or less carbureted hydrogen gas produced in the boilers. After citing numerous facts and calculating the expansive power of a mixture of air and pure or carbureted hydrogen, he concludes as follows:

1. In boilers that have exploded, there exists a mixture of air and more or less carbureted hydrogen. 2. Boilers fed with water containing organic matter, especially fatty substances, have been most frequently the ones subject to explosion. 3. Organic substances—animal or vegetable—are sources of an abundance of hydrogen, which is derived from their decomposition, probably when, contained in an insoluble soap, they ar highly heated. A sloping deposit may be a proof of the presence of such substances; it may be formed in the water at any depth; and it does not indicate that the water has lowered to that point. 4. The electric spark which is produced through the friction of globular steam in narrow passages is the firebrand that lights these mixtures of expansive gasses. The result is that the dangerous moment is that in which the engine is started. Engineer Parkes has observed that out of 24 marine boilers, 19 exploded at the moment of starting up, and 4 when the piston had reached the end of its stroke. But the explosion may occur when the engine is not running, since the gas, having filled a space, such as that in the dome, may, by flowing into the upper part of the boiler, reach an imperfect joint where an electric spark is produced. 5. The live expansive power of these inflamed gases is very great, and depends upon the proportions of the mixture. The accident may likewise occur without detonation. Thus, the inflamed gas, making its way between the valve chests and between the domes, is mixed with steam in such a proportion that it does not detonate, but acts like a burning quickmatch. 6. The lowering of the manometric pressure before the explosion is a consequence of the presence of the gas, and denotes danger.—*Chronique Industrielle.*

CAR STARTER AND BRAKE.

The main objects of this invention, which has been patented by Messrs. Thomas Cox and Thomas Cox, Jr., of Gloster, Montana, are to entirely dispense with the use of springs, and to so arrange the parts that the starting mechanism may be employed from time to time in quick succession, should the load upon the car be excessively heavy. Upon the axle is keyed a toothed wheel, and just above the axle is secured a downwardly extending bracket, which serves as a pivotal support for the main operating lever, A, and for a beam lever, B. These levers are connected by links arranged as closely as possible upon either side of the fulcrum of the beam lever, to each end of which is pivoted a clutch. One clutch is connected by a link with the rocker, C, carried by the lever, A, while the other clutch is connected with a sliding block, D, mounted upon the rear end of the lever, A. A connecting rod, E, extends from the upper end of the rocker, C, forward to a bell crank lever, F, pivotally attached to the forward end of the lever, A, the rod being connected to the vertical arm, the other arm extending forward in a plane just above that occupied by the forward end of the lever, A, and being provided with a weight.



COX'S CAR STARTER AND BRAKE.

These parts project outward through a vertical guideway formed by a bracket secured to the platform, the points of the two levers being in the path of a latch piece pivoted to the end of a lever, G, pivoted in a frame. The latch is formed with a heavy arm, H, which is guided in a vertical way formed in a bracket, K. The upper face of the latch is curved, and upon its lower end is a stop which bears against the under edge of the lever, G, which carries a weight. A shaft mounted in a frame carries two arms, I J, the ends of which are forked and formed with holes, through which the shaft passes. The forked ends of the levers are formed with shoulders, against which a lever mounted upon the same shaft may be brought to bear. The ends of the levers, I and G, are connected by a link. The normal position of the parts is shown in the engraving. When the operating lever is thrown to the left, the lever, I, will move to carry down the unweighted end of the lever, G. This motion will rock the bell crank lever, and thereby advance the rod, E, when the clutches will be thrown into engagement with the toothed wheel. As the motion of the main lever is continued, the rod, A, will be carried downward to rock the beam, B, and start the wheel forward, as will be understood. The extending end, H, of the latch then strikes the lower edge of the slot in the bracket, K, so that any continued movement of the main lever will cause the latch to free itself from the levers, which will be returned by the action of a pair of weighted arms, mounted in a bracket attached to the bottom of the car. These arms carry a roller, which bears against the under side of the lever, A. When the operating lever