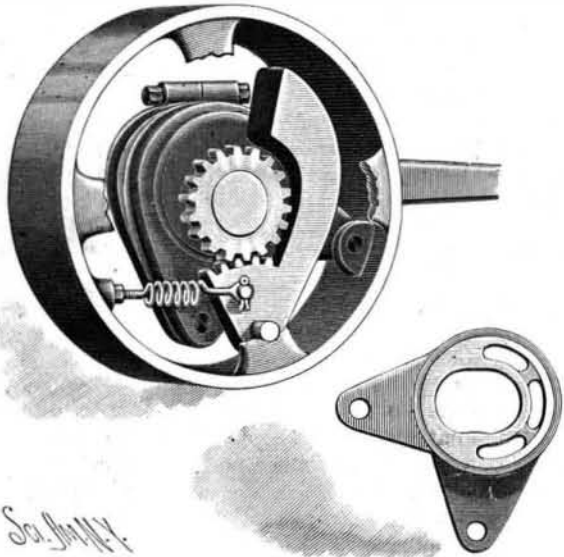


AN IMPROVED CENTRIFUGAL GOVERNOR.

A governor designed to act with great accuracy in cutting off the supply of steam to the cylinder, so made as to lock in every position, and of sufficient strength to work an unbalanced valve, is illustrated herewith, and has been patented by Messrs. Henry L. Berger and Edward Noel, of Youngsville, Lafayette County, La. It is a centrifugal governor, having two eccentrics pivotally connected with each other, and controlled by a weighted arm, the small figure showing a face view of the valve eccentric. A pulley is secured to the main driving shaft, the pulley having on the inside of its rim a lug, on which is pivoted the arm of an



BERGER & NOEL'S CENTRIFUGAL GOVERNOR.

eccentric, having an elongated central aperture, through which passes the main driving shaft, there being fitted on this eccentric the eccentric strap, connected in the usual manner by the eccentric rod with the slide valve in the steam chest. On the eccentric is also secured an arm, which extends nearly at right angles to the other arm, and is pivotally connected by a pin with the arm of an eccentric strap, mounted on an eccentric, which is held to rotate loosely on the main driving shaft, the latter eccentric having its center inside of the periphery of the shaft. On one face, also, of this eccentric is a gear wheel, the center of which is in the main driving shaft, and the gear meshing into a segmental gear wheel, pivotally connected to one of the spokes of the pulley. A spring is connected by one end to the segmental gear wheel, its other end being fastened to the rim of the pulley, and held in place by a jambnut, by adjusting which the tension of the spring may be increased or diminished to hold the

weight and the segmental gear wheel in proper position. The arrangement is such that the valve eccentric is controlled by the action of the weighted arm, and is locked in place by the second eccentric, actuated by this arm, whereby the admission of steam into the cylinder is regulated according to the desired normal speed of the engine.

A New Gunpowder.

A new gunpowder, the invention of Mr. Hengst, has recently been tested, and the results point to it as a promising substitute for black powder for military and sporting purposes. The new powder is prepared from straw, which is pulverized, chemically treated, and finished in granular form for use. It is claimed for this powder that it is smokeless, flameless, practically non-fouling and non-heating, and that both the recoil and the report are less than those of black powder, with superior penetrative power. From the powerful character of this explosive, which, weight for weight, is 150 per cent stronger than gunpowder, and is not explodable by concussion, it is probable that in a compressed form it will be found to be applicable to blasting purposes. In every respect it appears to be a powder of great promise.

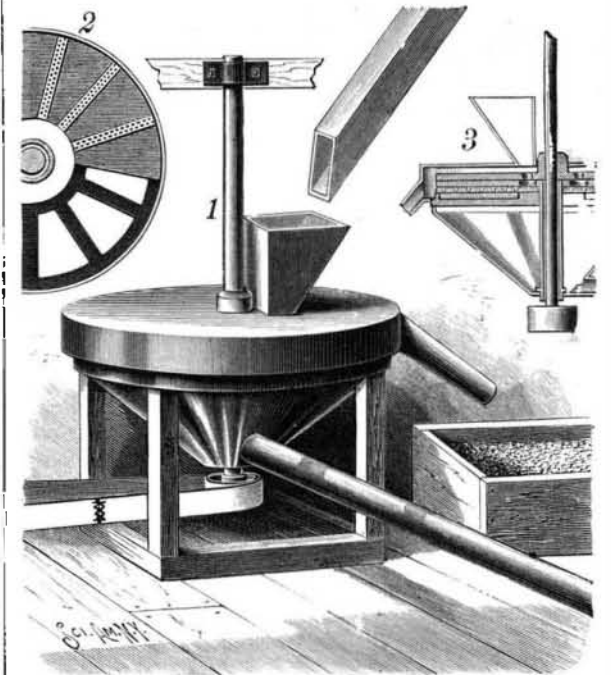
LARGE TWIN GAS ENGINE.

The large twin gas engine which we illustrate has a nominal collective power of thirty-two horses, and comprises two of Messrs. Crossley Brothers' ordinary sixteen horse power engines combined. Each cylinder has a diameter of 13 in. by 21 in. stroke, and the two collectively will indicate about seventy horse power with Dowson gas, or between eighty and ninety with coal gas. The engine is fitted with the makers' newly patented igniting arrangements, whereby all slides are dispensed with. It is started by a small separate starting engine, not shown on the engraving, so as to be under control of one attendant. It forms a very handsome and reliable job, and is probably no more liable to accident or stoppage than any high-class steam engine.

When using Dowson gas, this engine will run for about 1 1/4 lb. of anthracite coal per indicated horse power per hour. The makers affirm that the governing arrangements are more perfect than in any steam engine as regards reduction of fuel consumption with corresponding reduction of power. The friction of this particular engine has not been accurately measured, but is probably no more than one-sixth of the indicated horse power, if so much, and it is expected it will be capable of giving close on sixty brake horse power with Dowson gas. The cranks are placed opposite each other, thus balancing satisfactorily, the crankshaft and many of the working parts being, of course, made of steel.—*Engineering.*

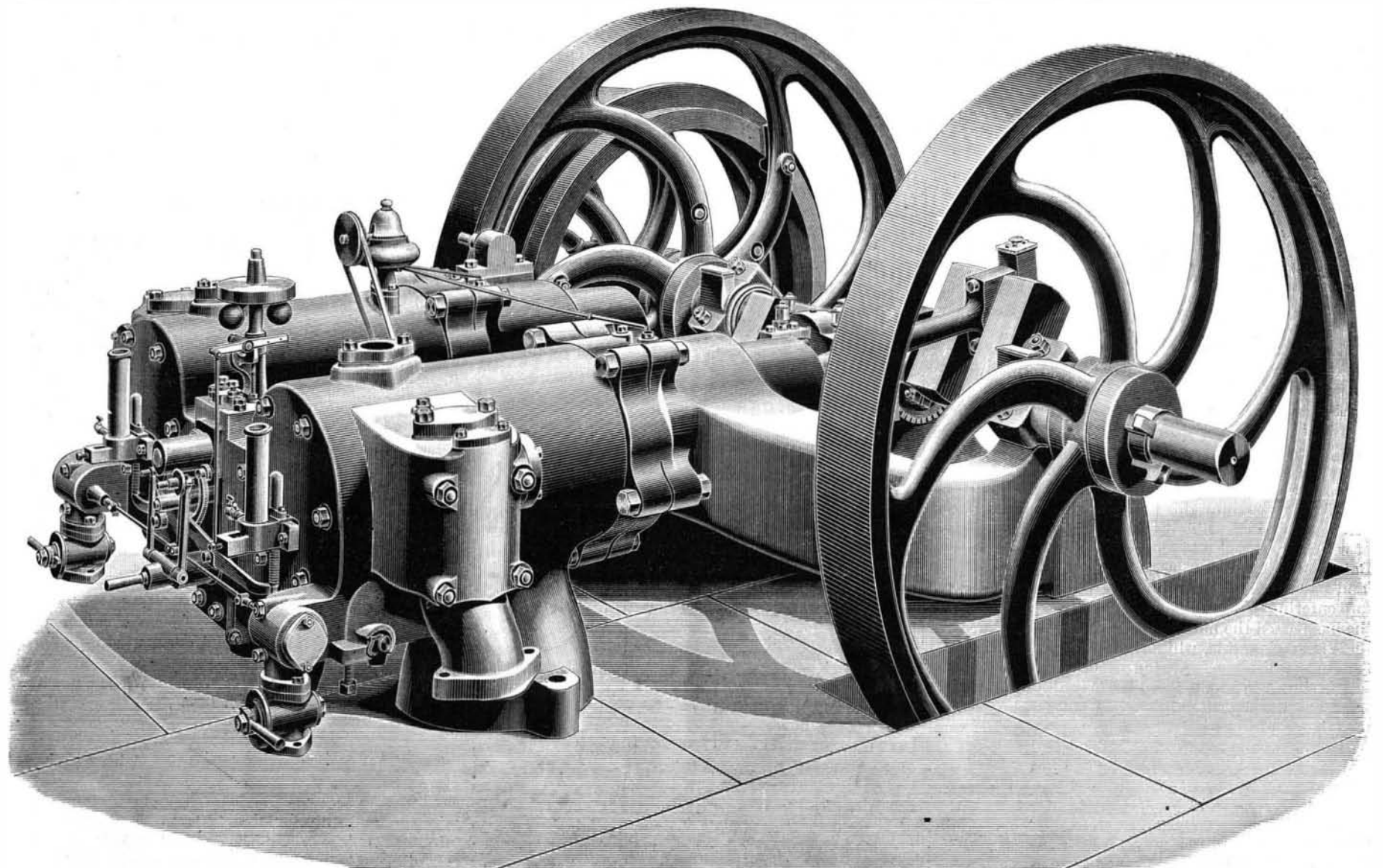
AN IMPROVED COTTON SEED CLEANER.

A cleaner designed to rapidly remove and separate all impurities from cotton seed is illustrated herewith, and has been patented by Mr. Christian Baumgarten, of Sebulenburg, Texas. Within an outer casing is secured a fixed table, consisting of an open wheel supporting on top emery slabs or plates and metallic perforated plates placed alternately with the emery slabs, as shown in Fig. 2, with parts removed. The upper



BAUMGARTEN'S COTTON SEED CLEANER.

surface of the table is in contact with the ends of the bristles of a brush, formed in disk shape and secured to a vertical shaft inclosed in a jacket passing centrally through the casing, as shown in Figs. 1 and 3. The brush has openings near its hub registering with the lower end of a hopper held on top of the casing, while from one side of the casing, near the top, leads an outlet pipe for the cleaned cotton seed. To the bottom of the casing is secured a cone-shaped receptacle, with which the openings in the metallic perforated plates of the table communicate. A pipe leads from the lower end of this receptacle and is connected with an exhaust fan, which assists in drawing the impurities cleaned from the seed through the perforations in the plates, and discharging them where desired. The seed, fed through the hopper on to the table, and cleaned by being whirled around between the brush and the table, finally passes through the upper outlet pipe to a suitable receptacle or bag.



LARGE TWIN GAS ENGINE.