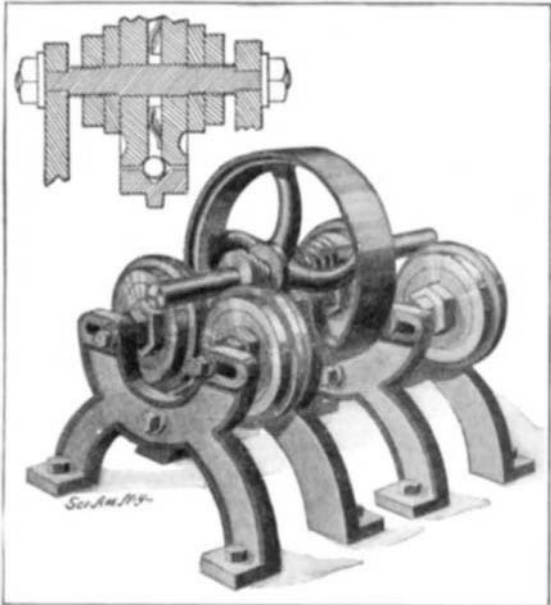




### AN APPARATUS FOR TESTING THE BALANCE OF ROTATING BODIES.

Pictured in the accompanying engraving is an apparatus for testing the balance of high-speed rotating bodies, such as grinding and polishing wheels, pulleys, and the like. The apparatus is arranged to detect existing inaccuracies, with a view to correcting the same prior to the use of the rotating body on the machine for which it is designed, and it allows of adjustment to accommodate larger or smaller testing shafts for heavier or lighter bodies to be tested. The following is a

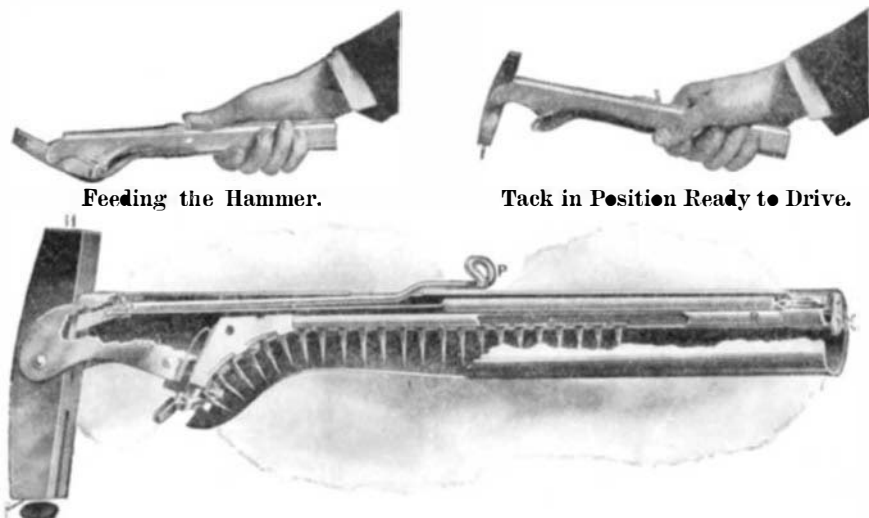


AN APPARATUS FOR TESTING THE BALANCE OF ROTATING BODIES.

description of the construction: The testing shaft is supported at each end between two rings which are mounted on ball bearings so as to turn with a minimum of friction. The details of one of these rings and its bearings are indicated in the section view. Supported in slots in two standards which are firmly secured to the base of the apparatus, is a spindle which carries two disks separated by a spring. Over these disks the ring above referred to is mounted. The inner peripheral edges of the disks are cut to form a V-shaped groove which, with the corresponding V groove in the ring, forms a ball raceway. The disks may be adjusted together against the pressure of the spring by means of nuts on the spindle. This permits of a very close regulation of the bearings, so as to insure perfect smoothness of action. The object to be tested is mounted on the testing shaft, as shown, and then permitted to seek its own balance, which will at once reveal any irregularity. By means of a scale the exact amount of overweight of the heavier side may be readily determined. The testing shaft may be provided with step-cones, which will fit into the central openings of articles in cases where these openings are larger than the diameter of the shaft. The rings may be shifted apart to support shafts of larger diameter by moving the spindles apart laterally in their slots. Mr. C. J. A. Heise, 58 Voorhees Street, Newark, N. J., is the inventor of this apparatus.

### A NOVEL MAGAZINE TACK HAMMER.

We illustrate herewith a very clever invention in the nature of a magazine tack hammer. The hammer carries a number of tacks in the hollow handle portion, and by a simple feeding device, the tacks are delivered singly, as required, to the hammer head, which is mag-



SECTIONAL VIEW OF THE MAGAZINE TACK HAMMER.

netized and thus holds the tacks in position for driving. The magazine consists of a channel or raceway, *R*, which supports the heads of the tacks, as shown. The hammer head is pivoted in the forked end of the handle, and is held in position for hammering by a spring within the handle, which, at the opposite end, is attached to a snap latch, *S*. The latter serves to close the rear end of the raceway, while an escapement device is provided at its forward end. A push rod, *P*, is attached at one end to the hammer head, and the other end projects through the upper face of the handle. By pushing this rod forward with the thumb, the hammer head will be swung on its pivots, and the magnetized or forked end, *F*, will thus be brought into engagement with the escapement device, as illustrated in one of our views. This operates the escapement which releases one of the tacks, and the latter thereupon adheres to the hammer head by magnetic attraction, so that on release of the push rod the hammer head will swing back to normal position, carrying the tack with it. When the hammer is not in use, an armature or keeper, *K*, is placed across the poles of the hammer head to conserve the magnetism. The tack magazine is loaded by means of a simple device, which quickly and readily lines up the tacks in a channel, whence they are poured directly into the raceway, *R*.

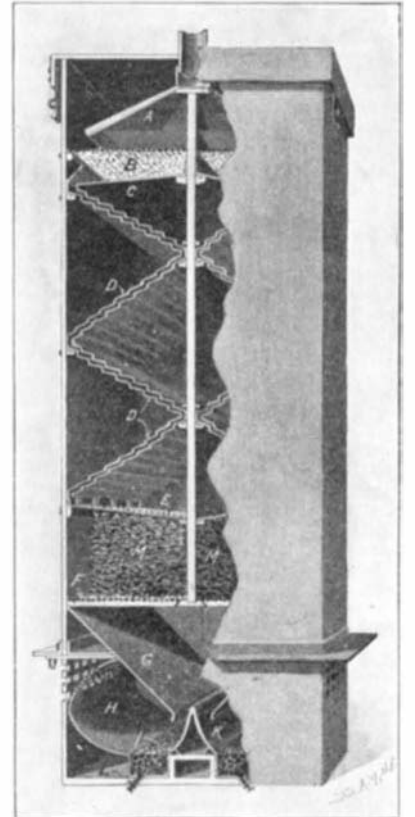
### A Cotton Picking Machine.

It has been long contended that the cotton crop of this country was in a large measure limited to the number and capacity of the laborers available for the work of picking. If there was more help or if some desirable means could be devised for performing the picking operation by machine, the size of the crop would be very much greater. A great deal of ingenuity has been expended in this direction, and most of the devices which have been brought out have been minor contrivances mounted on the arm or hand of the picker with the object of increasing his capacity. Some attention has been given to the matter lately by George A. Lowry, of Boston, Mass., who has already been largely instrumental in introducing the round bale, which greatly reduced the bulk of the baled cotton. He has devised a machine on entirely new lines, which has been given a severe test in actual work. The Lowry machine is not meant to be automatic in its action, but to increase the capacity of the picker and to lighten his burdens. He is not required to stoop, reach, and lean over as is necessary with the old method of hand-picking, but instead he sits comfortably on a wagon and gathers the cotton from his perch by mechanical means as the vehicle is moved along over the fields. The machine is manned by five men, one of whom is the driver. The four pickers are distributed on either side and each one has in his charge a long arm with an elbow, which makes it perfectly flexible, and through the center of this there is a constantly moving belt with hooks at close intervals. The belt is exposed at the far end of the tube, so that as the machine passes along, the picker has only to touch the cotton boll and it is seized by the hooks and carried to the other end of the tube, where it is brushed off into a bag. This machine with four boys and the driver does the work of twenty pickers following the hand method.

### AN IMPROVED AMALGAMATOR.

In the accompanying engraving we illustrate an improved amalgamator recently invented by Mr. B. A. Langridge, of Boulder, Colorado. One of the improvements, which will be observed at first glance, is the provision of means for locking the closures of the casing, so that the valuable contents of the amalgamator cannot be taken by unauthorized persons. But aside from this there are important improvements in the construction which will be evident from the following description of the parts. The pulp feed-pipe which leads into the top of the casing opens onto a spreader, *A*, which distributes the pulp over a sieve or a strainer, *B*, and through this it falls onto an amalgamated copper plate, *C*. Below this plate are a number of riffles, *D*, which zigzag downward between the outer walls of the casing and a central partition. The riffles are formed of parallel pairs of stepped plates so arranged that the water and pulp flowing down between them will be thrown from the lower plates against the rear of the upper plates, and then back again to the lower plates. Thus a sort of rolling motion is imparted to the water, bringing the pulp into intimate contact with the riffle plates which, being amalgamated, gather all the valuable contents. The bottom riffles discharge

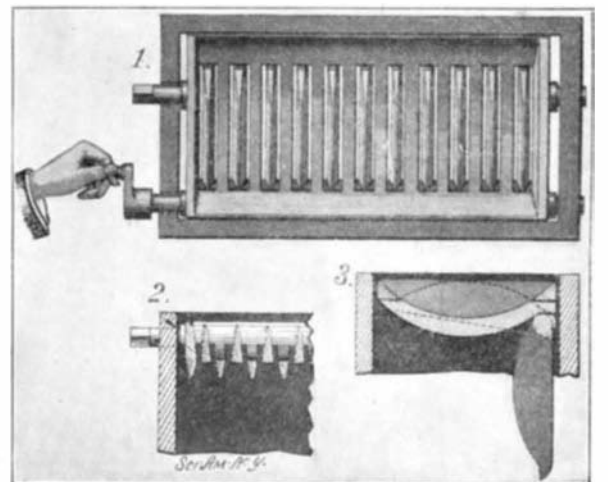
the pulp upon perforated copper plates, *E*, through which the pulp passes into a chamber, *M*, filled with soft annealed copper shavings. These shavings are previously subjected to a bath of quicksilver so that they will arrest any valuable particles which might possibly pass the riffles. This insures the recovery of "flour gold," which ordinarily floats on the surface of the pulp and is therefore lost. The bottoms of the chambers, *M*, are formed of screens, *F*, through which the pulp passes and is guided by a shoot, *G*, against a partition wall, *K*, whence it swirls into the bowls, *H*. Outlet openings are formed near the top of the bowls, through which the tailings may be drawn off. Boxes, *I*, formed in the bottom of the bowls are filled with rocks and serve to catch any particles of amalgam which may be washed down from the plates above. These may be drawn off through the pipes, *L*. The bowls are carried in a casing which is secured to the upper or main casing by means of padlocks. A similar provision is made for securing the cover of the amalgamator to the top of the main casing.



AN IMPROVED AMALGAMATOR.

### A NEW TYPE OF GRATE.

The type of grate most commonly used in stoves and ranges is the shaking grate, which is open to the objection that when it is operated to remove the ashes, coal and clinkers often wedge in between the grate and the stone lining of the stove, preventing the parts from returning to normal position. Another objection is that the shaking is often too violently done, disturbing the fire, and if fresh coal is added it is mixed with the glowing embers, cooling the fire for the time being and causing a considerable delay before it is again brought up to full heat. In the accompanying engraving we show a new type of grate which aims to overcome these objections. Instead of shaking the fire it operates to poke out the ashes in the manner that a poker is used. The construction comprises a grate proper and a poker device, the latter being provided with fingers which project through the spaces between the cross bars of the grate. The upper surfaces of the fingers are preferably curved, as indicated in the illustration, so as to extend up into the embers supported on the grate bars. The poker fingers are attached to a shaft which has bearings in the frame of the stove. Normally the fingers hang idly downward, but when it is desired to clear the ashes from the grate, they are moved into operative position by turning this shaft with a crank handle, as shown. The operation is noiseless and very simple. It may be performed rapidly or slowly, with equally good results. The grate proper is also mounted to turn on trunnions so that the contents may be readily dumped when desired. To Frederick Y. Jensen, of Ephraim, Utah (Box 30), belongs the credit of this invention.



A NEW TYPE OF GRATE.