



Comparing Bricking Solutions Bricking Machine to Other Methods

Bricking Solutions (Pneumat-O-Ring and Mult-O-Ring)
Spring Loaded Pogo Sticks
Ring with Mechanical Jackscrews
Jack and Timber Method

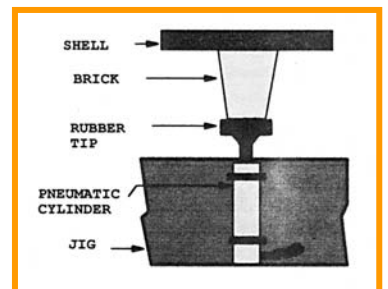
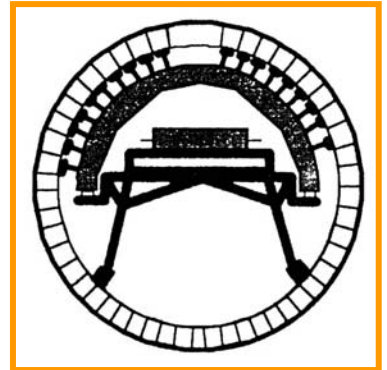
Bricking Solutions Double Arch Bricking Machines

Developed by Bricking Solutions (USA), this custom built ring is safe, fast, and flexible. It consists of a pneumatically operated half-circle aluminum jig that holds each brick tight to the kiln shell until the key brick is installed. It has a main control valve that retracts or extends all pneumatic cylinders simultaneously, allowing the ring to be advanced to the next course. The jig is assembled on top of a platform mounted on heavy duty casters that allow rolling the unit along the kiln.



Advantages

- Safest system known for refractory installation
- Built to international design, welding, fabrication and safety standards.
- Allows installation of two rows of brick simultaneously and has proven to be the most productive machine on the market.
- Anti fall guards and lighting on every machine.
- Relatively easy assembly in kiln.
- The cut-away front ring design of the Mult-O-Ring allows easy access to the rear bricking ring.
- Pneumatically operated cylinders reduce the fatigue of the workers on the job.
- Air cylinders can be operated individually or simultaneously to facilitate advancement of ring to next course.
- Flexible rubber cylinder bumpers closely follow circumference of brickwork.
- Spacer assemblies enable the Mult-O-Ring to accommodate a wide range of brick lengths, shape, arch, wedge or R.K.B.
- A rail and mover cart system allows the ring sections to be easily advanced along the length of the platform.
- Allows for tighter installation.
- Platform design allows easy access to overhead kiln shell.
- Platform design maximizes clearance underneath the platform allowing for the easy flow of materials and supplies to other parts of the kiln as required.
- Four position casters allow the machines to be moved along the length of the kiln and also allow the kiln to be rotated while keeping the unit in place.
- Two pallets of brick can be placed on the work platform.
- The work platform has a 10,000lbs net load capacity. The highest in the industry. With a 3 to 1 safety factor.
- No unkeyed brick overhead.
- Even during power failure, it is safe due to an in line safety check valve and emergency shut off valve
- Easy maintenance.
- Machine is custom designed for each customers needs.
- Adjustable models available to accommodate different kiln diameters
- Has proven to be the most productive and safest machine on the market.
- Standard ladders for platform access

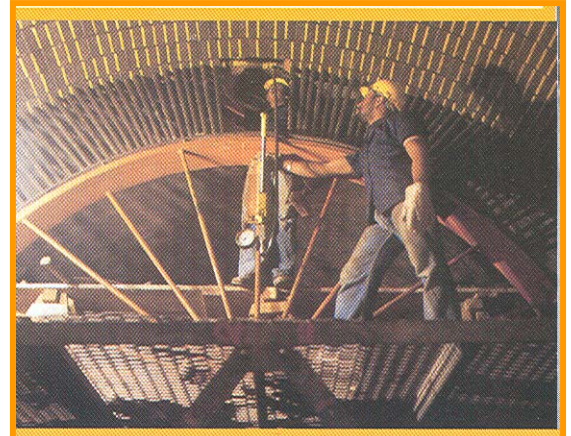


Disadvantages

Requires air compressor for operation and operation is dependent upon continuous supply of air pressure.

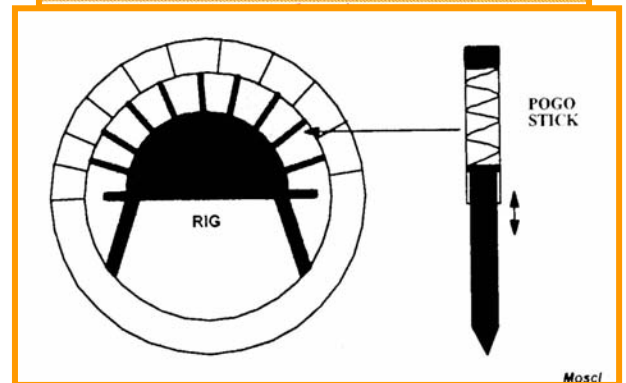
Spring Loaded Pogo Sticks

This method, like the previous ones, does not require turning of the kiln. The bottom half of the lining is built in the normal way. The semi-circle rig is then installed, and the upper half of the lining is built by spring-loaded pogo-sticks compressed against the rig. A pogo-stick is required for every brick. This method is simple and can be reasonably fast in the hands of a trained brick crew.



Advantages

- Turning the kiln is not required.
- It suits any brick shape, arch, wedge or R.K.B.
- No electrical power or compressed air is required.
- It suits different kiln diameters and shapes.
- Quick set up time.
- Low cost and little maintenance.



Disadvantages

- More dangerous than pneumatic ring method, no protection should a pogo stick fail.
- Unkeyed brick overhead. Potential for catastrophic failure or collapsing of brick rings.
- Loose or poor installation, more likely unless sticks are used by a trained and experienced mason.
- Can only install one course at a time, slower installation.
- Pogo sticks must be individually set and retracted, resulting in slower installation.
- Requires much more physical force to operate resulting in greater fatigue on the workers.
- No standard platform design available to facilitate the bricking procedure.
- Cannot achieve as tight brick installation as can be achieved by pneumatic ring methods.
- Must install brick equally or jig will collapse.
- No international design or safety standards. Pogo sticks are generally home made.

Ring with Mechanical Jack Screws

Advantages

- Low cost and maintenance.
- Relatively easy to set up.

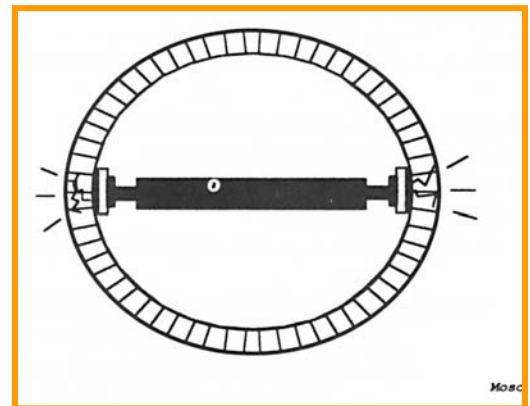
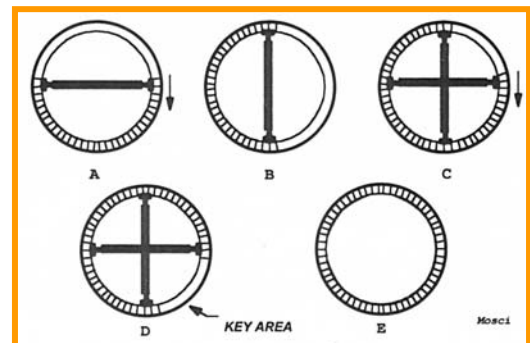
Disadvantages

- Requires much more physical force to operate resulting in greater fatigue on the workers.
- Too cumbersome and too slow.
- Jack screws must be individually extended or retracted slowing down the entire process.
- One course installed at a time, slowing installation.
- Unkeyed brick overhead. Potential of collapsed brick rings.
- Difficult to maintain consistent quality installation.
- No international design, fabrication or safety standards.

Jack and Timber Method

This lining method requires turning of the kiln. The bottom half is lined in the normal way, along a 3 to 4.6 m (10 to 15 ft.) section. Staggering of the rings is somewhat difficult in this method and therefore should be avoided. The screw jacks are customized to the specific kiln diameter. Before jacking the lining, longitudinal 76 x 152 mm (3 x 6 in.) timbers are inserted between the jack head and the bricks. On the brick side, the timbers should have a layer of conveyor belt rubber glued and nailed. The rubber layer increases the traction and helps absorb irregularities on the lining thickness. A jack is required every 1 m (3 ft.) along the lining. At least three men are required to hold and fasten each jack in place.

Tightening of the jacks must be done very carefully, in a progressive way. Too much pressure can damage the kiln shell and crush the bricks. Too little pressure can cause the lining to collapse, as the kiln is being turned. Eventual suspicious rings behind the timber can be corrected with wooden wedges inserted between the brick and the rubber. The jacks should never be positioned exactly against the lining diameter, but slightly above the diametric position. In the next step, the kiln is turned ninety to one hundred degrees, and the free end of the lining is brought as far as possible.



For smaller diameter kilns, 3 m (10 ft.) and under, one more turn is all that is required to bring the lining to final keying position. Larger kilns, however, require a second row of jacks perpendicular to the first row. This minimizes the lining thrust against the timber when the kiln is turned for the second time. Afterward, the kiln can be safely brought into a keying position.

The jack and timber method is slow and requires a certain level of skill from the masons to be used successfully. It is very useful in small areas, like brick patches, and whenever the installation requires mortar. The heavy jacks are cumbersome and require extra physical effort from the brick installation crew.



Advantages

- Little maintenance is required.
- It suits any brick shape, arch, wedge or R.K.B.
- No electrical power or compressed air is required.
- Convenient for doing small patches.
- No rig or platform is required.
- It is amenable to the use of mortar.
- Least capital expense.
- Quickest method to set-up.
- Able to install multiple courses.
- Efficient for short lengths of repair.

Disadvantages

- Slow
- Extremely unsafe due to unkeyed brick overhead. Potential for catastrophic brick ring failure.
- Have to rotate the kiln to continue.
- Difficult to maintain radialignment.
- Difficult to maintain adjustment due to periodical kiln shrinkage and expansion.
- Loss of effectiveness over long repairs due to worker fatigue.
- No international design, fabrication or safety standards.

Safety

The bricking machine is the safest know method of installing over head arched brick. It utilizes pneumatic cylinders to hold un-keyed brick in place until the keying function is complete with a safety check valve that prevents the cylinders and un-keyed brick from dropping should there be a pressure loss. All other installation systems install brick with dangerous un-keyed brick over the heads of the installer and other workers