



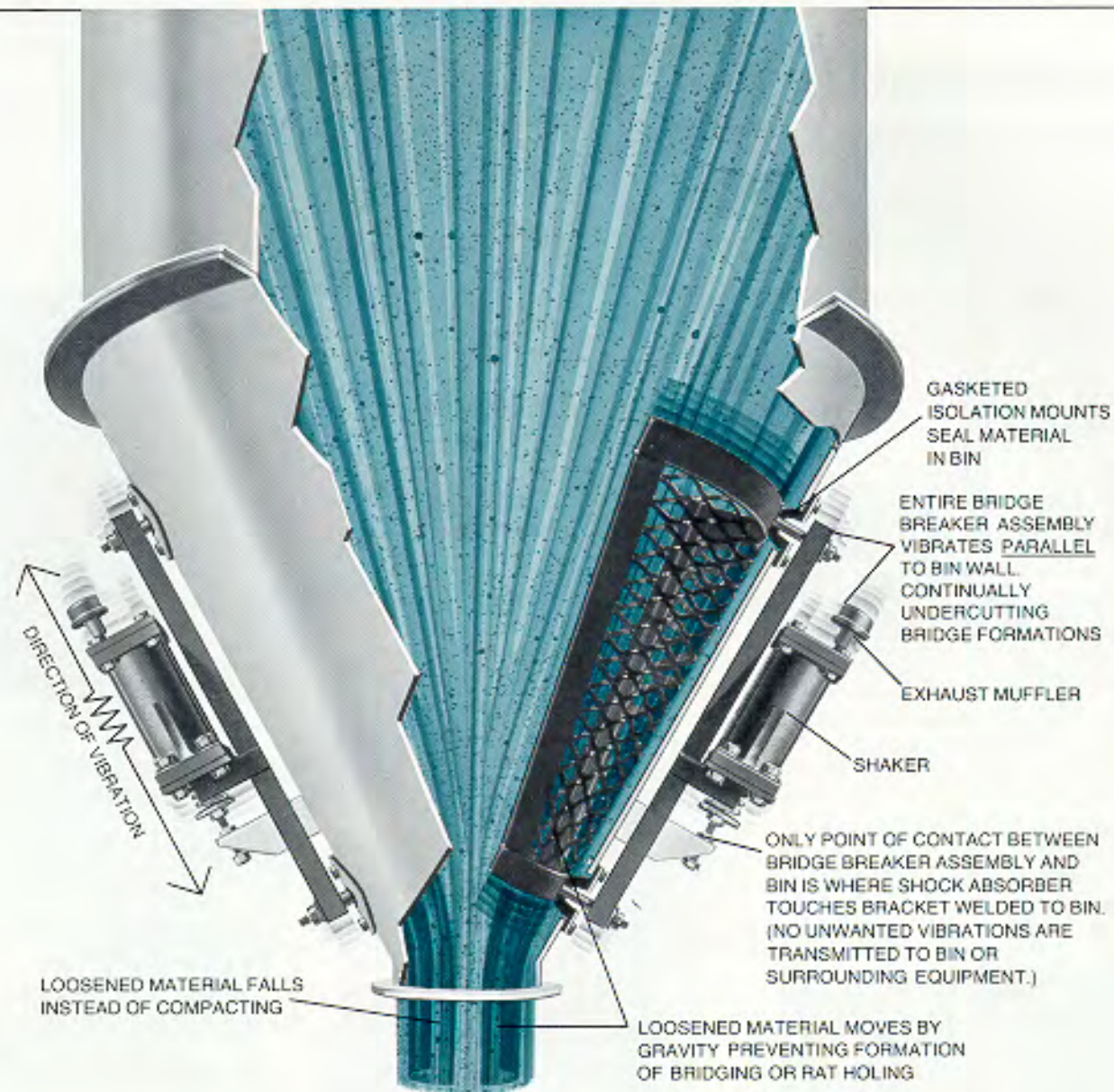
THAYER
SOLIDS FLOW CONTROL

Bridge Breaker[®]

BIN DISCHARGERS

- Vibrates Material-Not Bin
- Whisper Quiet
 - Low Cost
- Easily Installed
- Guaranteed
- Efficient

FREE FLOW



THAYER Bridge Breaker®

Operation:

An expanded metal screen is mounted inside of and parallel to the hopper wall. The shaker support frame is rigidly mounted to the screen through the use of two bolt and spacer assemblies. The bolts pass through elastomer sealing mounts which permit the screen to be actuated externally by the shaker assembly.

A support bar welded to the hopper supports the shaker reaction spring and shaker assembly. The shaker which is air operated imparts a thrusting action to the screen with an amplitude (typically $\pm 1/8"$) which is effective in shearing or under-cutting material — producing gravity flow. Quiet operation is assured.

Application Guide:

Selection of the number and size of BRIDGE BREAKER assemblies is based on several factors. Among them are the material density and flowability, and the hopper size, shape and outlet dimension.

Obtain a drawing or sketch of the problem hopper and the density of the material.

Note: Refer to THAYER Bulletin 2A08 for available screen sizes and dimensions.

Basic Guidelines:

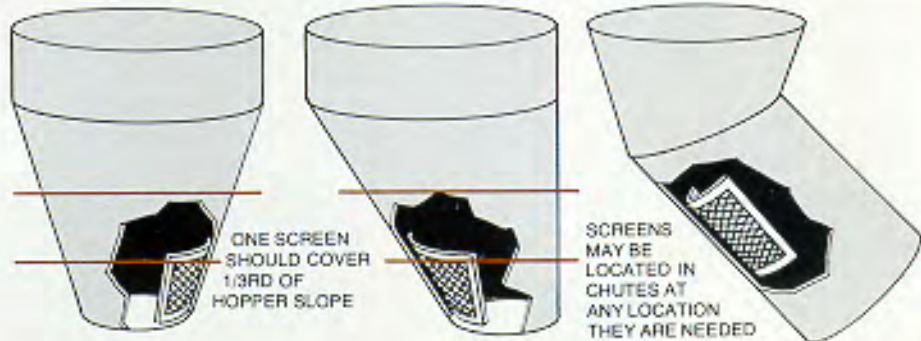
Use the FEWEST NUMBER OF SCREENS to do the job!

The BRIDGE BREAKER should extend from the outlet up to at least one-third (1/3) the length of the sloped wall to which it is to be attached. Each of the standard size screens has a maximum density rating and heavier density materials require shorter screens. It may be necessary to use two screens located 180° apart, one above the level of the other.

Size and Location:

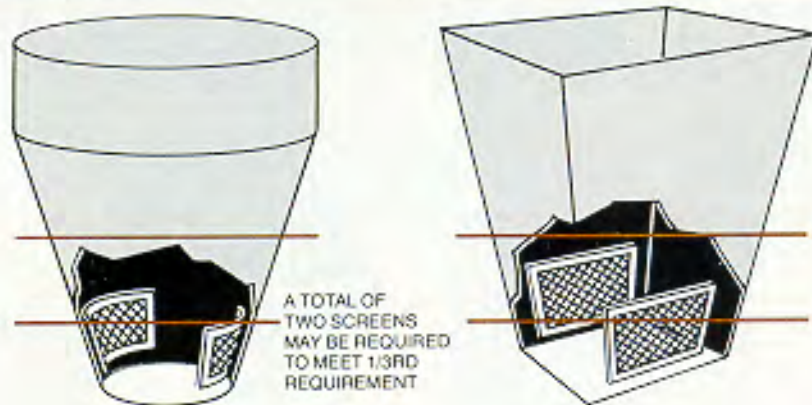
1 One Screen:

Can be used in applications where bridging only occurs during the initial stage of material withdrawal *OR* When the problem of bridging is not severe.



2 Two Screens:

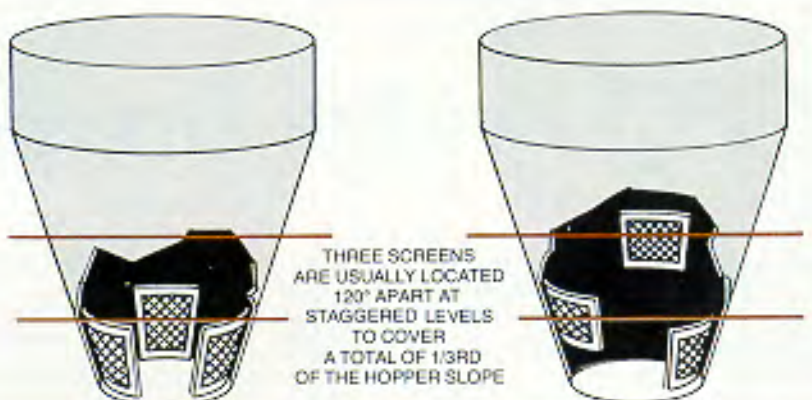
Can be used in applications when the hopper is no larger than 8'-0" square or circular at the top.



3 Three Screens or More:

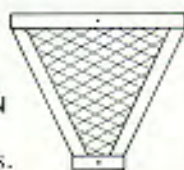
Can be used in applications when the hopper is larger than 8'-0" *OR* When bridging is severe.

Note: A cycle programmer may be required. See page 8.

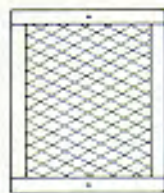


Shape:

TRIANGULAR SCREEN
Used for conical and pyramidal shaped bins.



RECTANGULAR
Used for rectangular bins.



DIAMOND
Used on conical, pyramidal and rectangular to provide extended length for more coverage.



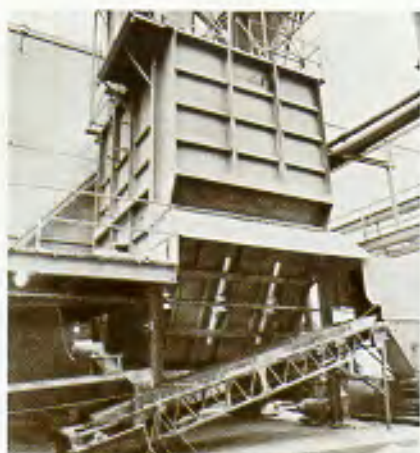
How Thayer Bridge Breakers[®] solved difficult materials flow problems



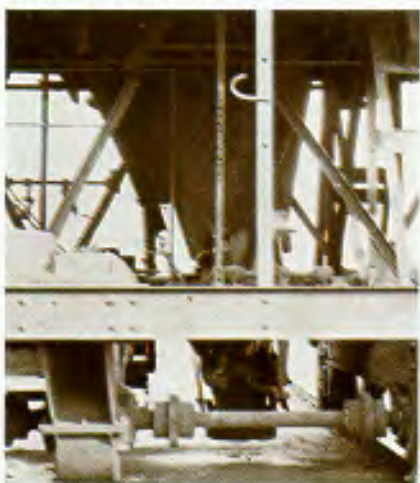
Spent grain in a 33 ton storage hopper was difficult to discharge when the material was allowed to settle. Standard vibrators proved too noisy and ineffective. Air lances were time consuming and costly. Manual hammering, deformed the hopper as shown in the photo. Three THAYER BRIDGE BREAKERS stopped bridging and permitted free flow.



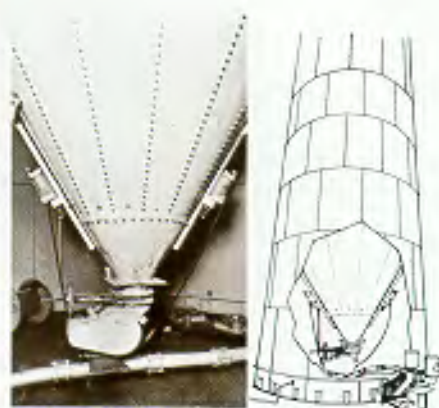
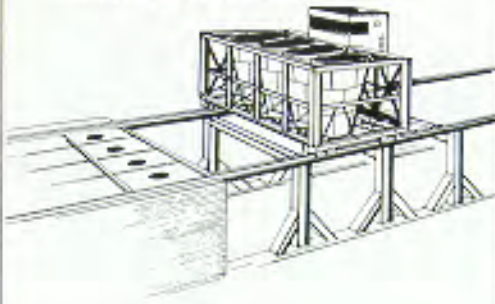
Alumina powder in a weigh hopper with 45° sloping walls and an 8" diameter discharge opening would not readily discharge in the time allocated. Two THAYER BRIDGE BREAKERS, 180° apart, eliminated bridging and complete discharge occurred in the specified time. Quieter operation met the Walsh-Healey Act requirements.



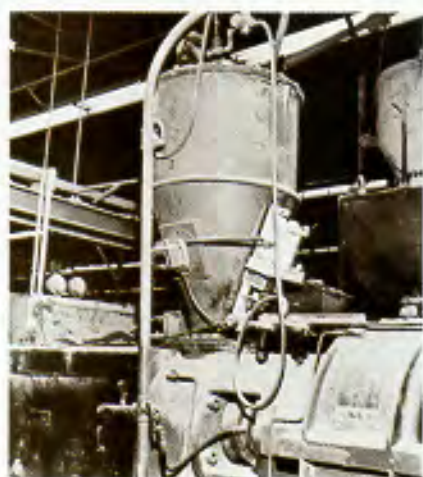
Wood particle board, fed from a dust collection system to a holding hopper, was discharged through a slot into a screw feeder. The light, fluffy material would bridge the entire length of the hopper. Six THAYER BRIDGE BREAKERS were interlocked to operate when the screw was turned on. Bridging was eliminated and consistent discharge achieved.



Damp coal in travelling larry hoppers over a coke oven failed to discharge in the allotted batch time cycle. Standard vibrators were ineffective. Two THAYER BRIDGE BREAKERS in the sloping walls eliminated bridging, achieved complete discharge on time and saved personnel from being exposed to hazardous conditions in relieving the bridging problem.



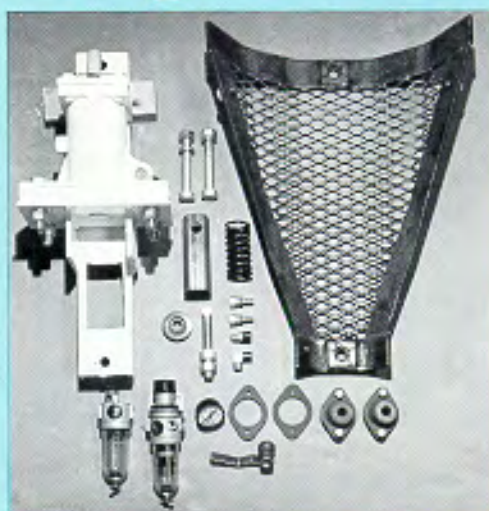
PVC pellets in a 21 ft. diameter x 70 ft. high storage tank were bridging so sporadic flow occurred when discharged through a rotary feeder into a pneumatic conveying system. Two THAYER BRIDGE BREAKERS achieved constant flow without bridging. Amplitude of screen vibration was controlled manually by the amount of air pressure used.



Various PVC resins pneumatically conveyed into a surge hopper were flowing poorly at a rate of only 10 lbs./min. into a thermatic extruder. The various resin components were also being unevenly dispersed. A single THAYER BRIDGE BREAKER, with an extension piece protruding into the throat of the extruder, increased material flow 100% and obtained complete product dispersion resulting in greater system throughput.

How to Install a Thayer Bridge Breaker[®]

1



All components and fasteners are included in the Bridge Breaker Kit.

2



A template is placed in position and marks for cutting and welding transferred. If more than one Bridge Breaker unit is to be installed on the hopper, the same process is repeated, usually at 180° positions.

3



Holes for the upper and lower bolts for the screens are cut. Holes for the isolation mount bolts are drilled.

4



External spring adjustment support is welded to the hopper wall.

5



The gasketed isolation mounts are inserted in the large holes. Two bolts are inserted to hold each isolation mount.

6



Large bolts are inserted into the screen. The screen is lowered into the bin and hopper with a removable sling. Fasten ends of rope together at the upper end so they can be untied and pulled free later. (Bin has been removed from hopper to permit photography.)

7



Reach up through outlet of hopper and position screen so lower bolt goes through lower hole in bin wall.

8



Maneuver screen with sling (and hand through outlet) so upper bolt goes through upper hole in bin wall. Pull out sling.

9



Place shaker assembly on outside wall of hopper so bolts from screen fit through the vibrator holes provided. Bolt firmly together with double nuts. Tension on the shaker spring can be lessened to facilitate positioning as it rests upon the welded bracket. (Note: This is the only contact the Bridge Breaker makes with the hopper.)

Connect to factory compressed air line and Bridge Breaker will be operational. Adjust tension on the vibrator spring so it comes in contact with the welded bracket and acts as an efficient shock absorber preventing transmission of vibrations to the bin. Cycling valve, manual or automated, may be inserted into the air line.

Technical Specifications

Frequency: 900-1200 CPM

Amplitude: 1/8"-1/4"

Thrust: 1200 lbs. approximate

Air Requirements: 30-40 PSIG, 5 SCFM
continuous duty
1 SCFM intermittent

Construction: Carbon Steel
304 Stainless Steel (Optional)

Temperature Limitation: 250°F standard
450°F (Special mount)

Noise Rating: Readings taken on the "A" Scale and "Slow" response settings as prescribed in the Walsh-Healey act.

Short Stroke Unit — (A) Shaker		
Distance in Feet	20 PSI	40 PSI
2	62 db (A)	65 db (A)
5	60 db (A)	61 db (A)
10	56 db (A)	58 db (A)
Long Stroke Unit — (B) Shaker		
Distance in Feet	20 PSI	40 PSI
2	69 db (A)	72 db (A)
5	65 db (A)	66 db (A)
10	62 db (A)	63 db (A)

Bin Wall Thickness: Minimum: 1/8" (Below 1/8" Reinforcement is Required)
Maximum: 1/2"

Applicable Bulk Materials

Bridge Breakers will, in general, work well with most fine powders and granules, regardless of their degree of sluggishness (lack of flowability). This applies even where the material packs due to either pressure or moisture. Examples:

PVC Resin	Fly Ash	Calcium Carbonate
Zinc Oxide	Powdered Sugar	Ferric Trioxide
Activated Carbon	Hydrated Lime	Condiments
Phenolic Resins	Flour	Sulfur
Dry Milk Powder	Titanium Dioxide	

A number of lumpy and irregular-shaped materials are suitable, providing they are not of high bulk density (more than 50#/cu. ft.), hard or abrasive. Examples of satisfactory materials:

Wood Chips	Plastic Chips	Hops
Sawdust	Asbestos	Plastic Packing Material

Bridge Breakers are not recommended for rock-like (over 1") particles that are hard and have a high bulk density (over 50#/cu. ft.). Examples of materials to be avoided:

Crushed Limestone	Iron Ore	Cement Clinker
Stone	Copper Ore	Furnace Slag
Steel Chips	Bauxite	Crushed Marble
Crushed Slate		



Thayer Programmer

cuts operational costs —
solves special discharge problems

Any pair of Thayer Bridge Breakers can be equipped with a BB Cycle Programmer. This controller is packaged in a NEMA 12 enclosure and is designed to:

- Minimize air usage
- Optimize Bridge Breaker performance
- Enlarge flow channel
- Reduce segregation of heterogeneous materials

A switch selects one of three cycling arrangements.

Cycle times are adjustable:

1. Simultaneous on-off cycling
2. Alternate on-off cycling
3. Continuous operation

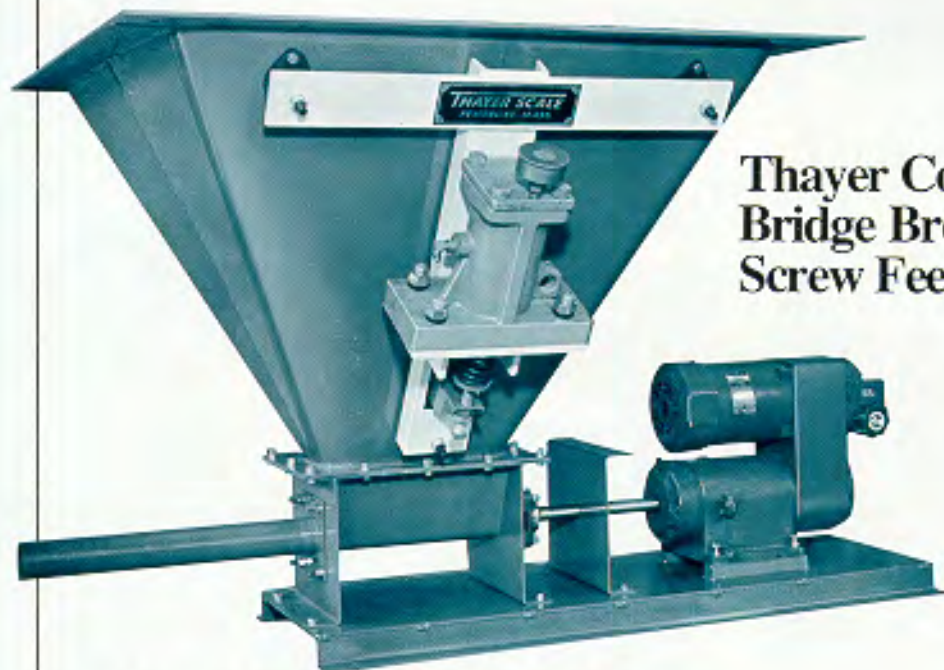


Patented

Thayer Complete Hopper with Bridge Breaker Assemblies

Try before buying —
RENT-A-BRIDGE BREAKER HOPPER
Send for our Rental Agreement 2A05-R.

Recommended as an extension to square or circular bins to assure reliable discharging of materials which have a tendency to bridge, cake, flush, or otherwise obstruct free and consistent flow. Particularly well suited to weighing applications where unwanted vibration can affect scale accuracy. See Bulletin 2A05.



Thayer Combination Bridge Breaker Hopper and Screw Feeder Series BB-SF

- Shakes the material; not the hopper or the screw.
- Single unit; no separate bin activator to purchase or install.
- Integral screw feeder section permits quick field changes — 1" through 4" diameters.
- Handles the most difficult materials up to 180 cu. ft. per hr.
- Variable speed drive provides 10:1 range. See Bulletin 2A06

How Thayer Can Help You

Thayer Application Engineers can help you select the best combination of Bridge Breakers or Bridge Breaker Hoppers that will meet your requirements. If you presently have hoppers in sound condition, we will recommend the sizes and shapes of Bridge Breakers to be installed within these hoppers. If your needs dictate new hoppers, we can select one of our many standard configurations or design a completely new arrangement. If you

require an integrated system (storage hopper, scales and controls), we will accept the single responsibility for its design and fabrication. This engineering assistance is yours for the asking. You can get our engineering recommendations with equipment prices quickly by completing the enclosed Data Sheet and returning it to us. *We are always ready to serve you.*



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