Bucket elevators and Screw Feeders

A bucket elevator works by connecting many buckets via chains or a conveyor belt around a powered pulley system. The buckets are first filled with bulk material at the bottom of the elevator. Then the buckets ascend the elevator ramp, until they reach the very top where the material is discharged. The buckets are designed to stay upright to prevent spillage

Continuous bucket elevators are fed by direct flow only. There are virtually no gaps between buckets to prevent material from spilling out and to increase the amount of material being carried per rotation. Continuous bucket elevators are typically assembled vertically, however they can also be assembled horizontally or on an angle to facilitate bulky materials

The positive discharge bucket elevator is a type of centrifugal bucket elevator. Positive discharge elevators are used for materials that tend to stick to buckets, which prevents the material from being discharged by a centrifugal bucket elevator.

Positive discharge elevators are able to dislodge stuck material by passing over an extra sprocket after the head pulley, which provides a jolt.

Centrifugal Discharge Elevators

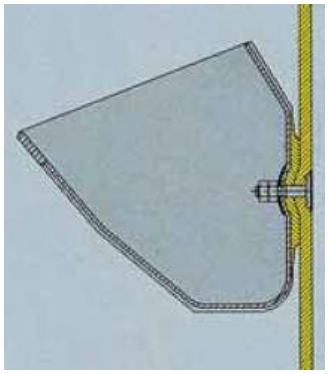
In a centrifugal discharge elevator is mostly vertical in operation and can handle practically any free flowing fine or small lumpy materials. The material is fed into the boot of the elevator and scooped up by the buckets.

The material is discharged by centrifugal force as the buckets pass over the head or sprocket.

CENTRIFUGAL DISCHARGE ELEVATORS

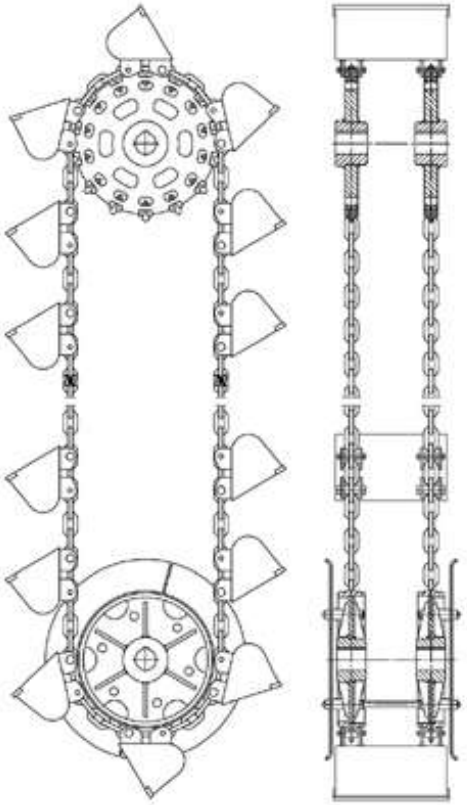
Bucket elevators

Belt bucket elevators



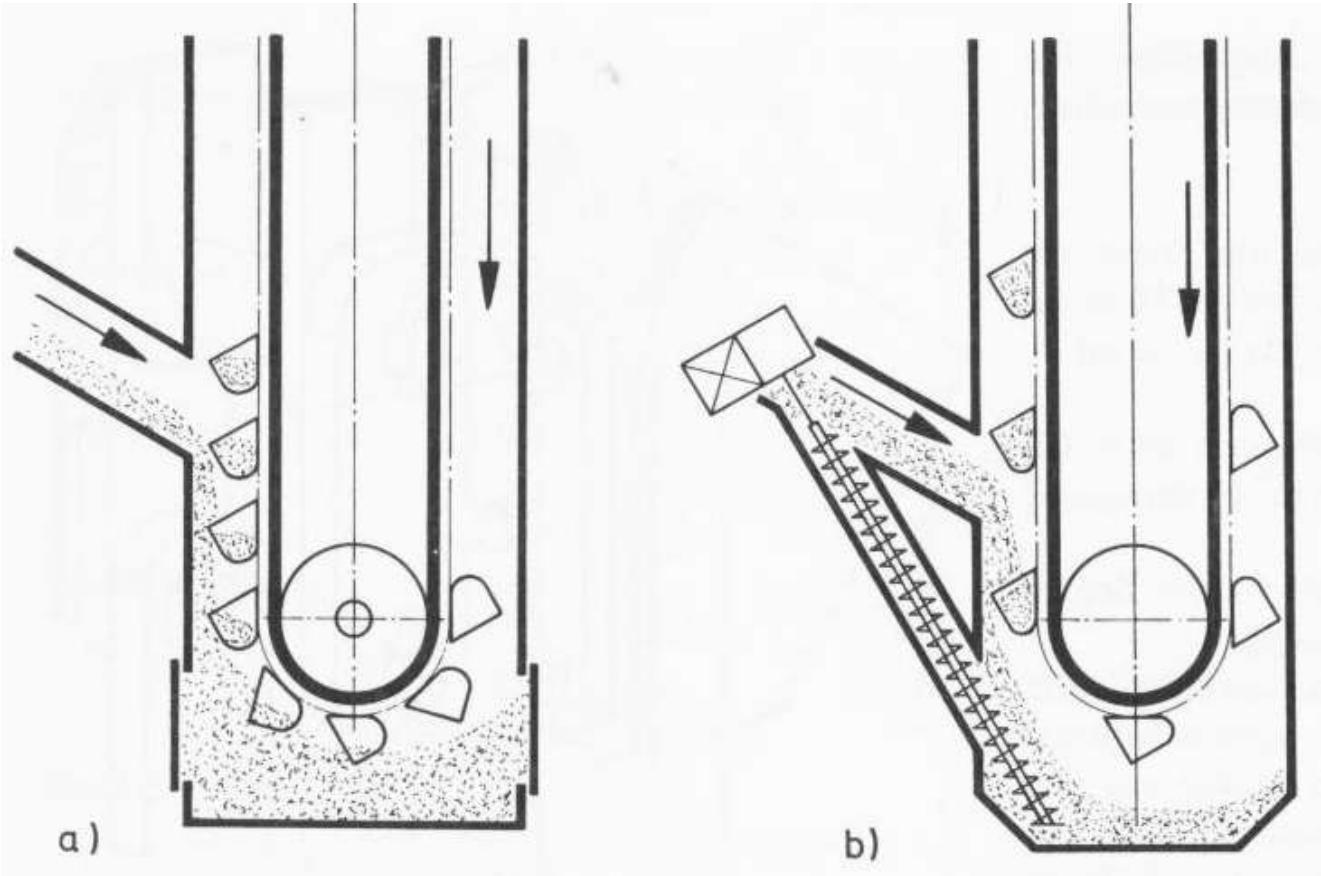
Chain bucket elevators

Central chain



Round steel chain

Feeding methods

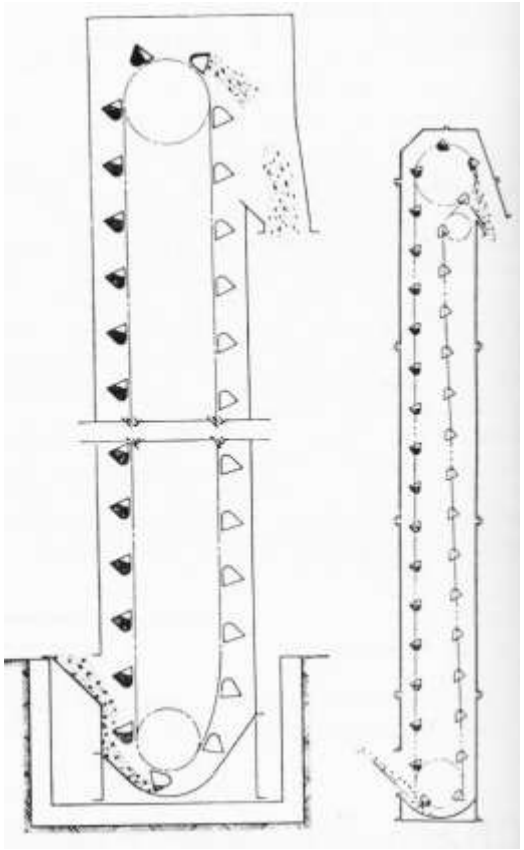


Scoop-feeder

Fly-feeder

Bucket elevators

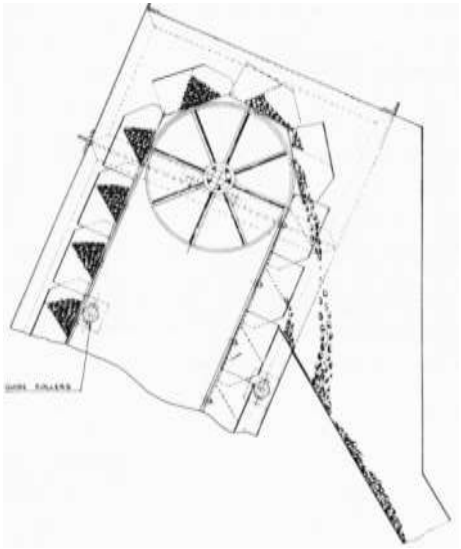
Pitched Discharge methods

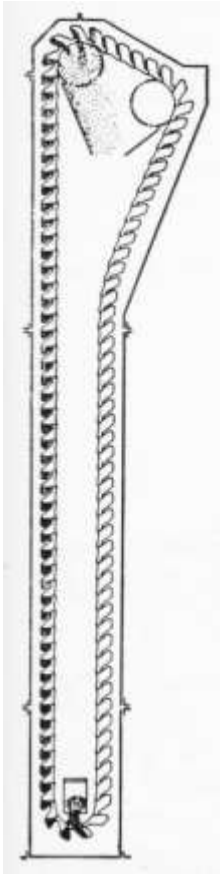


Cetrifugal is the
Perfect discharge

Bucket elevators

Continuous discharge methods





Inside discharge

Typical in-service damage

Screw conveyors

THE screw conveyor is one of the oldest and simplest methods of moving bulk materials, and consists basically of a helical screw rotating in a stationary enclosed trough. Bulk materials fed into the trough are moved along to the discharge opening by the rotation of the screw.

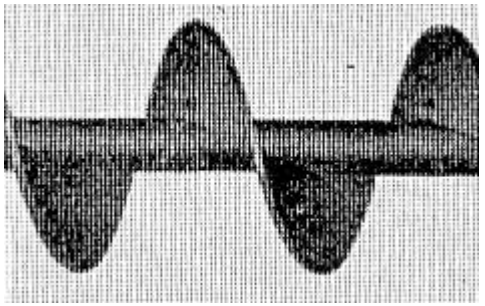
Of an extremely compact nature, screw conveyors can be installed in the horizontal, inclined or vertical position with little or no deleterious effect on the capacity of the unit.

Transported materials: material not sensitive to the crunching effect of the screw (ashes, chemicals, fertilizers, food products, meal, ores, paper pulp, salt, sand...)

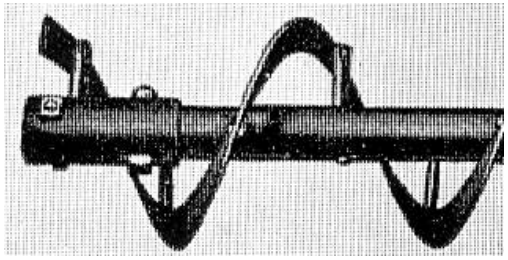
Screw conveyors

Screw types

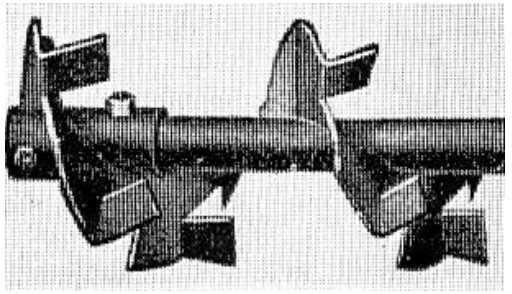
Standard Helical Screw — The most commonly used, ideal for the majority of average conveying installations.



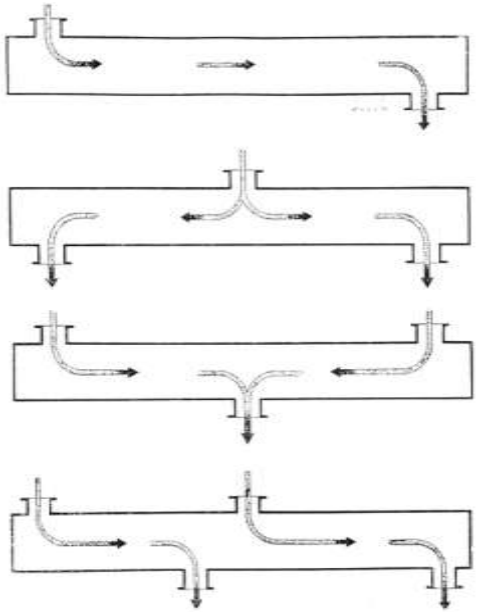
Ribbon Spiral — Of particular value for handling hot tar, molasses, asphalt and similar materials.



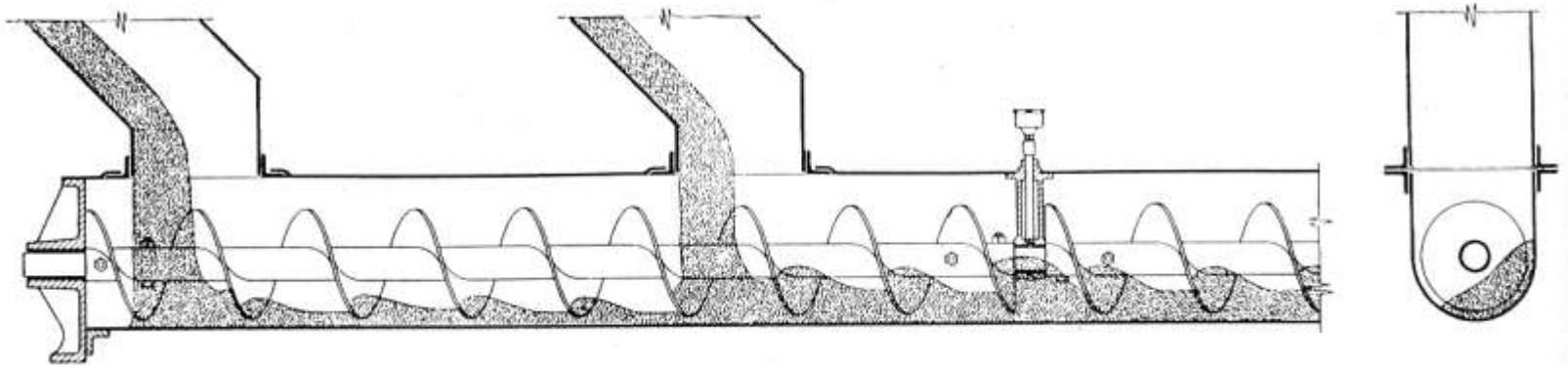
Cut-and-folded Flight Spiral — A very effective screw for use when mixing, cooling or drying operations are coupled with the conveying action. The flights act as fixed buckets, lifting and turning the material at each revolution of the shaft.



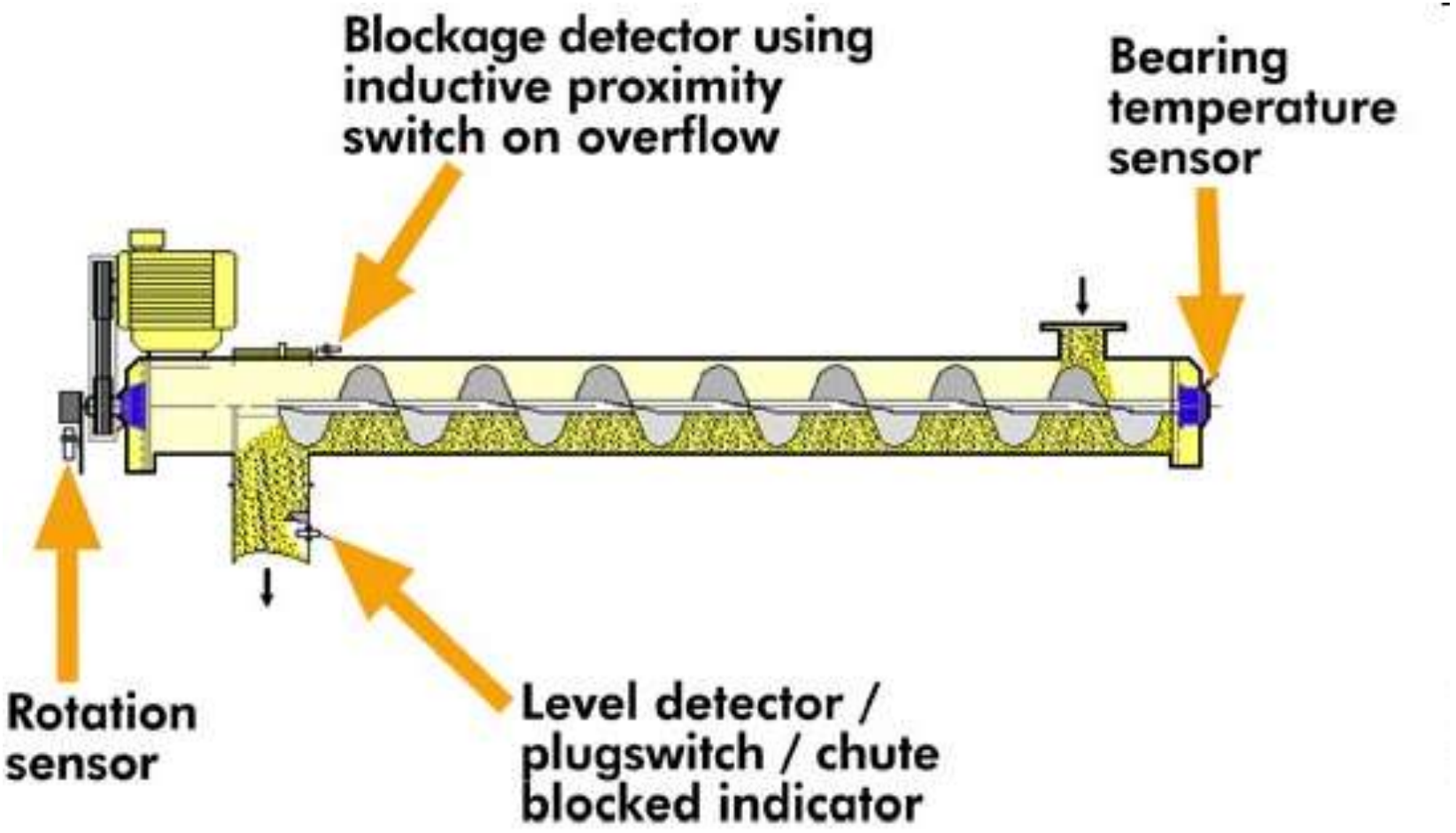
Flow direction types



Material in the trough



SCHEMATIC OF A SCREW



END OF PRESENTATION

ANY QUESTIONS