We next come to the pan conveyors and bucket carriers. These consist of pans attached to a double strand of roller chain running on tracks. The buckets or pans are made in standard sizes and have many uses such as:

Overlapping steel buckets to carry horizontally or up an incline for coal, earth, gravel, sand, etc.

Cast Iron Overlapping pans for hot material such as cement, clinkers, ashes, ore, etc.

Overlapping steel pans with wood lining for ore and other heavy or gritty materials.

Wooden base with iron frame for packages and bundles, and many other styles.

They are also made so as to automatically discharge their load at a given point by means of a trip or a drop in the track or some such method as the local conditions warrant.

Spiral Conveyors. These consist of a ribbon of metal wrapped around a central core similar to the threads on an ordinary wood screw. They are made right and left hand—in all diameters from 3 inches to about 18 inches and in standard lengths from 6 feet to 12 feet, according to the diameter. They run in a trough with a lining to conform to the diameter of the flights, the clearance being very slight.

Spiral conveyors are used to handle grain, flour, coal, etc. Their advantage lies in the fact that they take very little room and are easily driven. They run at speeds from 75 revolutions per minute up to 400 varying with the material being handled, running at a high speed for grain and slower for heavier materials such as coal. Spiral conveyors should not be used for handling ashes, sand or such gritty material as the abrasion and friction wears the lining out in a very short time. There is sometimes no other alternative, however, and spiral conveyors must be used for ashes, such as where the space is limited. When this is the case it is the practise to put in spiral conveyor with heavy cast iron flights and to use chilled lining in short sections to line the trough so that they can be easily replaced. Even under these conditions the wear is rapid and their use should be avoided as much as possible.

Under ordinary conditions spiral conveyor is manufactured in standard lengths—for instance 6 inch spiral conveyor 10 feet long—12 inches—12 feet long, etc., and these lengths are coupled end to end with a bearing in each length, thus giving any length required.

There are various styles of troughing for spiral conveyors, the usual practise being to supply a wood trough with a steel lining. This style is cheap and when worn out the lining is easily replaced. Another steel is an all steel trough about No. 12 gauge usually with an angle iron stiffener along the top edge. These are used principally for handling gritty