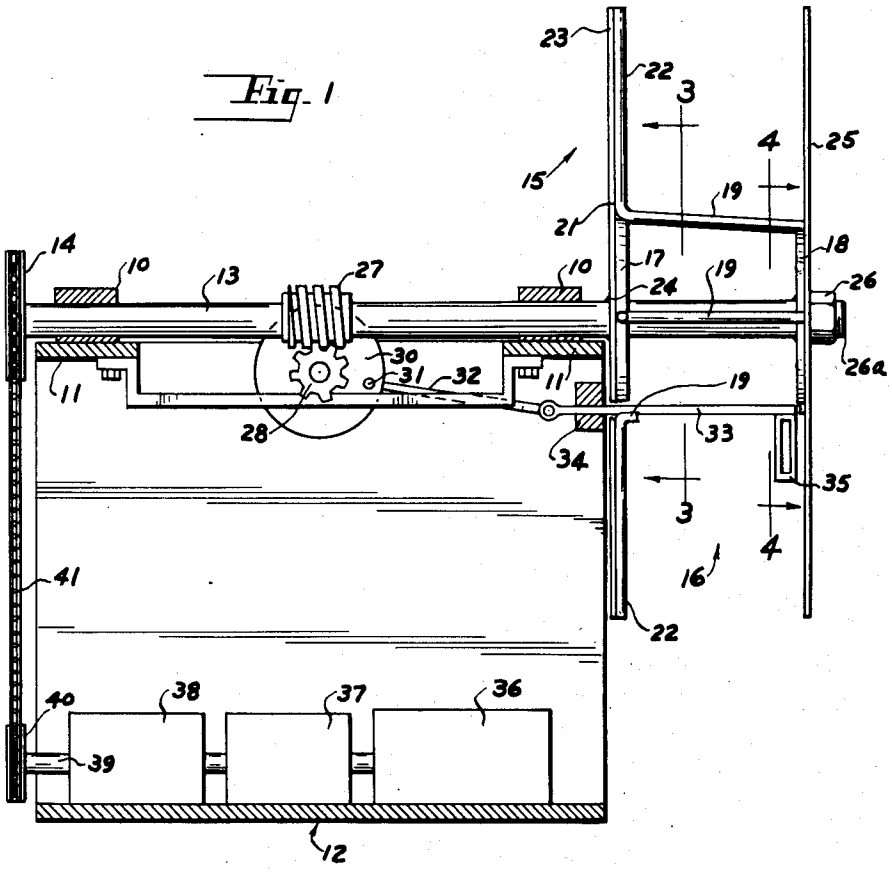
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REEL FOR COILING SHEET METAL STRIPS

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Fig. 1



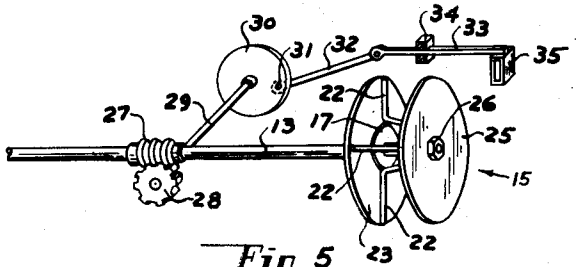


Fig. 5

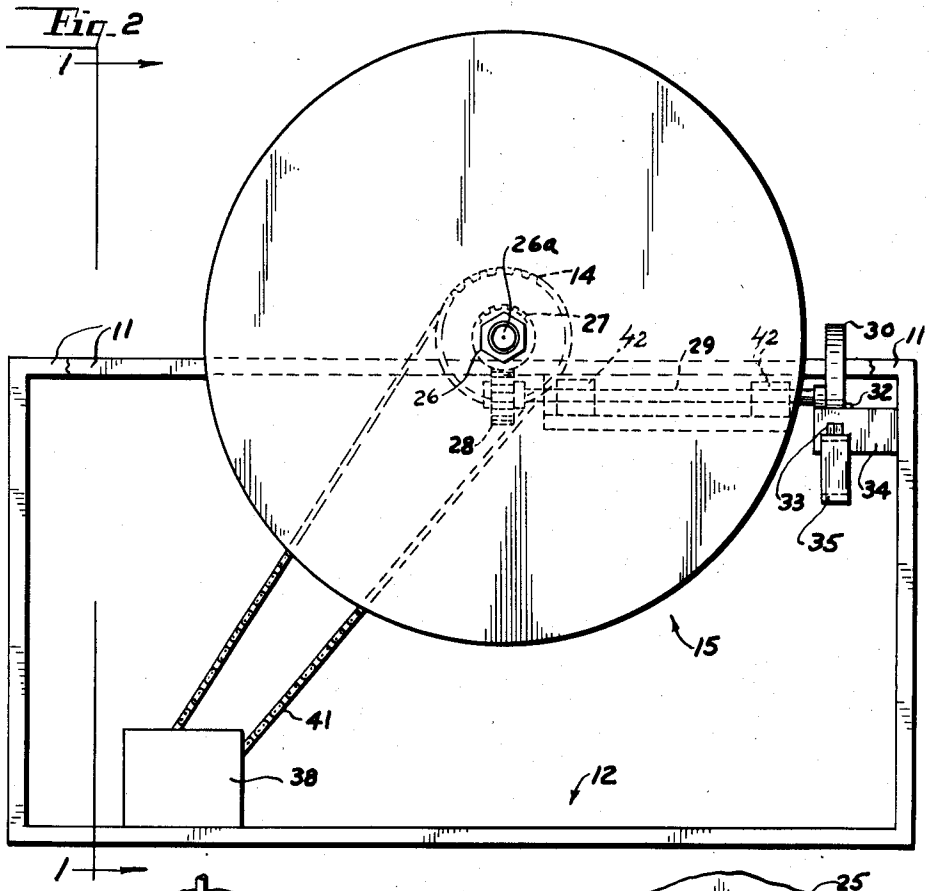
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REEL FOR COILING SHEET METAL STRIPS

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Fig. 2



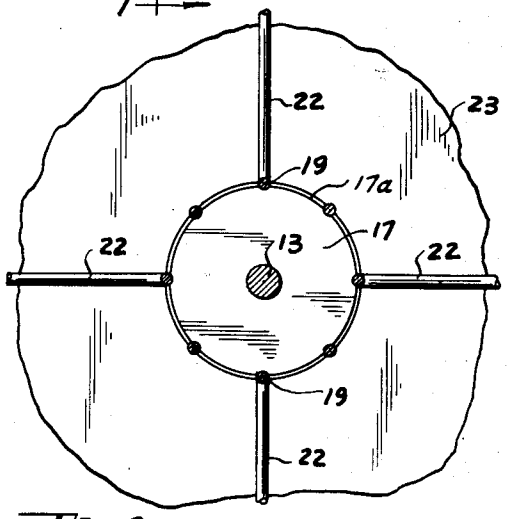


Fig. 3

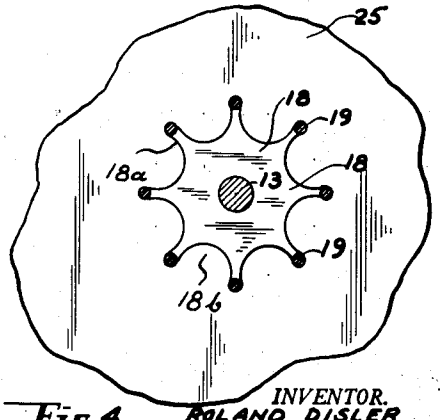


Fig. 4

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REEL FOR COILING SHEET METAL STRIPS

Roland Disler, Detroit, Mich.

Application August 27, 1951, Serial No. 243,890

3 Claims. (Cl. 242—78)

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My machine is especially designed for coiling marginal strips of sheet metal, the strips being of the kind which are cut off on each side of a sheet as it is produced in a rolling mill. When done by hand the coiling requires considerable effort, owing to the resiliency of the metal, such as steel, out of which the sheets are made. It is to eliminate the need of manual coiling of such strips that I have devised a machine to be operated by power means, such as an electric motor.

I shall now describe my machine with reference to the accompanying drawings in which:

Fig. 1 is a vertical sectional view of the machine shown in combination with elements which are indicated only diagrammatically;

Fig. 2 is a side elevational view of the machine;

Fig. 3 is a sectional view on line 3—3 of Fig. 1;

Fig. 4 is a sectional view on line 4—4 of Fig. 1;

Fig. 5 is a diagrammatic illustration in perspective of the reciprocating mechanism for the purpose of fitting a strip of sheet metal to the reel for even distribution of the strip on said reel lengthwise thereon.

Similar numerals refer to similar parts throughout the several views.

Supported on bearings 10, which are mounted on horizontal bars 11 forming a part of the machine's framework 12, is a horizontally-disposed shaft 13. Axially keyed to the shaft at one end thereof is a sprocket wheel 14. At the opposite end the shaft supports a reel, generally indicated by numeral 15. The reel comprises a hub, generally indicated by numeral 16. The hub includes a circular end plate 17, having a tapered rim 17a, and a spider, generally indicated by numeral 18, said spider being mounted on the same shaft in a spaced relation to said plate 17. The spider, being of a smaller diameter than said plate 17, is substantially star-shaped and includes a plurality of radially-disposed prongs or spokes 18a. A plurality of transversely-disposed rods 19 extend from the rim 17a to the tips of prongs 18a, each rod being affixed to a separate prong, as best shown in Fig. 4. The result is the formation of a cage-like hub tapering in diameter from plate 17 towards said spider 18, there being a free space 18b between each two prongs. Each individual rod has an integrally connected extension 22 disposed radially from rim 21 of plate 17, all extensions being in the same plane at right angle to said shaft 13. The extensions are affixed to a circular backing plate 23 which forms a flange or a side of the reel and is either keyed or preferably welded to the shaft, as shown at 24. An opposed flange or plate 25

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of the reel is circular in shape and adjoins the outer face of the spider 18, but is not attached thereto. The plate has an axial opening to fit removably over the end of shaft 13 and is secured against displacement by means of a nut 26, the shaft being threaded for that purpose at its end, as shown at 26a.

Axially mounted on shaft 13, midway its ends, is a worm 27 meshed with a pinion 28. The latter is axially keyed to one end of shaft 29, the other end supporting a wheel 30. Pivotally affixed to a pin 31 on the surface of the wheel, in an eccentric position thereon, is a rod 32 which at its outer end is pivotally connected to a sliding bar 33. The bar is supported in a bearing 34 and is connected to a guide 35 comprising a narrow frame through which a strip to be wound upon the reel is fed thereto. The guide, as will be seen from the drawings, is adapted to be actuated in a reciprocating movement laterally with respect to the reel or parallel to the shaft 13.

The power for the operation of the reel is supplied by a conventional electric motor, indicated by numeral 36. The rotary speed of the motor is adapted to be modified by a variable speed reducer, identified by numeral 37. In order that the pulling power of the motor upon the reel may be kept below the limit where the strip to be reeled would break, I also employ a device, indicated generally by numeral 38, which permits slippage of the driving element in case the resistance of the driven element has reached a predetermined limit. A shaft 39 in said last device 38 supports a sprocket wheel 40. A chain 41 is employed to convey power from the said wheel 40 to the sprocket wheel 14 on said shaft 13 which supports the reel itself. Numeral 42 indicates bearings for shaft 29.

The operation of the machine is quite obvious. The slippage device, indicated by numeral 38, is adjusted for the tensile strength of the metal strip which is to be wound on said reel. As this strip is fed to the reel it is evenly distributed thereon by means of the reciprocally moving frame 35 through which the strip is threaded. When a sufficient quantity of the strip has been wound on the reel the machine is stopped, nut 26 is unscrewed, and flange 25 is removed from shaft 13. This will leave the strip rolled upon the reel exposed from one side. Next a wire is slipped into the center of the coiled roll through one of the open spaces 18b in the spider 18 in the direction of plate 17, where the wire will be deflected by the bevelled edge of plate 17 upwardly and radially outwardly along the inner surface of

plate 23. The wire will serve as a means of binding the strands of the rolled strip together before said roll is removed from the reel.

It is obvious that some changes may be made in the structure of the reel without departing from the inventive principle disclosed herein.

What I, therefore, wish to claim is as follows:

1. A power-driven reel as described, the reel comprising a shaft threaded at one end, a plate axially mounted thereon, said plate having a tapered rim, a spider similarly mounted on the shaft in a spaced relation to the plate, the diameter of the spider being smaller than that of the plate, said spider including a plurality of radially-disposed prongs with open spaces therebetween, a backing flange for said plate, said flange being secured to the shaft for rotation therewith, a plurality of rods extending from the tapered rim of the plate to the outer ends of the prongs of said spider to form a cage-like hub tapering in the direction of said spider, a circular flange abutting the outer surface of the spider, said flange being removably mounted on said shaft, and a nut threaded upon the end of the shaft to retain said last-named flange in place.

2. A reel as described, the reel comprising a shaft threaded at one end, a disk-like plate axially mounted thereon in a spaced relation to said end of the shaft and having a rim tapered in the direction of said end, a spider similarly mounted on said shaft in a spaced relation to said plate but being of a diameter smaller than that of the plate, said spider being substantially star-shaped and including a plurality of radial spokes defining open spaces therebetween, a circular backing flange for the plate, said flange being welded to the shaft, a plurality of rods each disposed cross-

wise from the rim of the plate to the outer tip of the respective spoke, the rods with the plate and the spider forming a cage-like hub of the reel tapering in the direction of the spider, said rods having integrally-formed extensions disposed radially and affixed to the inner face of the backing flange, a circular flange abutting the outer surface of the spider, said flange being removably mounted on the shaft, and a nut threaded upon the end of the shaft to retain the last-named flange in its place.

3. A reel of the kind described and comprising a shaft adapted for rotation, a disk-like plate axially mounted thereon, a substantially circular spider similarly mounted on the shaft and spaced from the plate but being of a smaller diameter than that of the plate and including a plurality of radial prongs with free spaces therebetween, the plate having a rim tapered in the direction of said spider, a plurality of rods spaced from each other and connecting the outer rim of the plate with the tips of the prongs to form a cage-like hub, a flange welded to the shaft and backing the plate, a removable flange abutting the outer surface of the spider, and a nut to secure the flange in its place on the shaft.

ROLAND DISLER.

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