

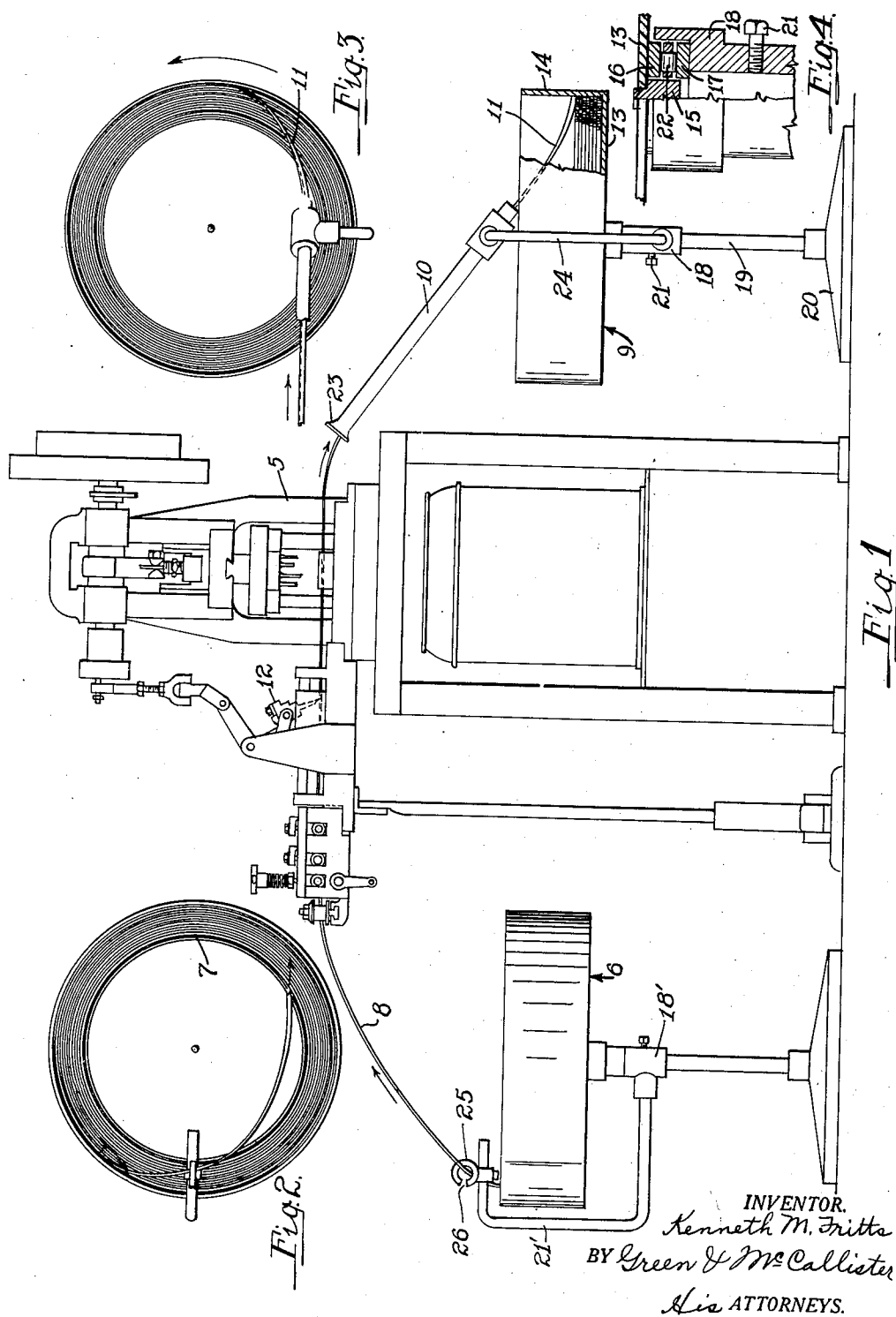
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COILING AND NESTING DEVICE FOR FLEXIBLE STRIP MATERIAL

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COILING AND NESTING DEVICE FOR FLEXIBLE STRIP MATERIAL

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This invention relates to the handling of flexible strip-like material and more particularly to devices for coiling and nesting flexible coillable strip-like material.

An object of this invention is to produce improved means for coiling and nesting intermittently moving flexible strip material.

Another object is to produce means for coiling and nesting within a rotating container a moving strip of flexible material and in utilizing the strip itself as the agent for rotating the container.

A still further object is to produce means for so coiling and nesting a strip of flexible material within a container that such strip when coiled may be readily uncoiled by means of a machine in which the strip is to be used or further processed.

A still further object is to produce a simple and improved device for automatically coiling and nesting a moving strip of flexible strip material.

These, as well as other objects, I attain by the means described in the specification and illustrated in the drawing accompanying and forming part of this application.

Since the coiler of this invention is designed to coil and nest flexible strip material delivered to it by some machine or apparatus, I have illustrated in Figure 1 of the drawings the coiler as forming part of what may be termed an organized apparatus for processing flexible strip material. In this view, the processing machine which is a well known type of punch or press, is shown in front elevation. Combined with this machine and also shown in front elevation, is a rotatably mounted container for holding nested coils of flexible strip-like material to be processed by said machine; such material is shown passing from the container to the machine. The coiler of this invention, as part of the apparatus, is receiving processed strip from the machine and is shown partially in front elevation and partially in section.

Figure 2 is a top plan view of the container for the supply of flexible material;

Figure 3 is a top plan view of the coiler of this invention with part of the strip guide thereof broken away; and

Figure 4 is an enlarged fragmentary view partially in elevation and partially in section of the support and bearing for the coiler container of this invention.

The coiler and nester of this invention is adapted to the coiling of any strip-like flexible

and collable material such as wire or other metallic strip.

The coiler broadly consists of a circular pan-like container or receptacle mounted for easy rotation about a vertical axis and is provided with a horizontal bottom and a vertically extending side or surrounding wall; a strip feeding mechanism and means for guiding the moving strip into the container and into contact with the inner surface of its side wall or previously coiled strip and at such an angle to said wall or strip coil that a tangential force is exerted, causing the container to rotate and the strip to coil and nest therein.

For the purposes of illustration, but without any thought of limiting this invention, I have depicted the same as forming part of the organized apparatus consisting of a standard type of punch or press 5, a container or holder 6 for a coiled supply 7 of strip material 8 to be acted upon by the punch or press and the container 9 and guide 10 of this invention for receiving, coiling and nesting strip 11 after it is processed by said punch or press. The punch or press as is usual is equipped with a strip feeding device 12 arranged to move the strip therethrough intermittently or in a step by step manner.

This coiler has been found highly successful in coiling and nesting metallic strip used in the manufacture of slide fastener elements and for that reason punch or press 5 is one such as may be utilized in the manufacture of stock strips of such elements.

The strip feeding device 12 which in this instance is part of the punch or press, is operated from the main shaft of such machine so that at each upstroke of its punches, strip 8 will be advanced a certain distance.

The pan-like receptacle or container of the coiler and nester 9 is preferably constructed from relatively light sheet metal (preferably aluminum) and is provided with a horizontally disposed bottom 13 and a vertical side or surrounding wall 14. The container therefore takes the form of a cylindrical pan. Its bottom at its center is provided with a depending cylindrically formed block 15 (Fig. 4) which serves as a hold down and as a centering member. This member is of such diameter as to fit loosely within annular races 16 and 17 of a roller or other anti-friction bearing carried by a support member 18. Support member 18 is carried on the upper end of a section of pipe 19 which with a base member 20 forms the stand of the coiler. A set screw 21 holds support member 18 in place.

While an antifriction bearing employing rollers 22 is illustrated in Figure 4, it will be understood that any other suitable type of antifriction bearing may be utilized instead of the type shown. By making the container of light weight and by mounting the same on an antifriction bearing so that it may be easily rotated about its vertical axis, I provide a receptacle or container which can be rotated by the strip itself even though the strip be extremely small in transverse section or of fragile construction. Guide 10 which is shown of tubular construction with a flaring inlet 23 is supported in position by a support arm 24 which is secured to and extends upwardly from support member 18.

As will be seen from Figures 1 and 3, tubular guide 10 directs the strip 11 as it moves from the punch or press downwardly into the open top of container 9 and into contact with the inner peripheral surface of vertically extending side wall 14. The tangential force exerted by the moving strip causes the container to rotate and the strip to coil and nest within the container as will be readily understood.

The peripheral speed of the container will about equal the speed of travel of the strip. It will be understood that when the strip moves in contact with the inner surface of vertical wall 14 these speeds will be the same and that as the coils build up within the container the peripheral speed of the container will increase slightly.

Since the moving strip constitutes the power for rotating the container, it will be seen that the strip will automatically coil and nest within the container as the same rotates.

While strip 8 may be fed to the strip feed device (in this instance the strip feeding device 12 of the punch or press 5) from any type of coil support or container, container 6 is preferably of the same construction as container 9 and is preferably mounted in the same manner upon a suitable anti-friction bearing. Arm 21' which extends upwardly from its support block 18' preferably carries a ring-like guide 25 having an opening 26 in its outer side by means of which strip 8 may be readily inserted or removed therefrom when desired.

It will be understood that the position of guide 10 may be varied from the position shown so long as the position chosen is one that will cause the strip to contact with the inner surface of the side wall of the container at a position such that the moving strip will be effective in rotating the container.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. The combination with means for intermittently feeding coillable metallic strip, of a sup-

porting member, a container mounted on an antifriction bearing carried by said supporting member and for rotation about a vertical axis, said container having a horizontally disposed bottom and a vertically disposed side wall, a guide for directing the material into contact with the inner peripheral surface of said side wall and at an angle such as to cause the container to be rotated by said strip whereby the material is coiled and nested within the container, and an arm connected to said supporting member and extending over said container for supporting said guide.

2. In combination with means for feeding coillable metallic strip, a supporting pedestal, a container mounted on said pedestal for rotation about a vertical axis and having an open top, a horizontally disposed bottom and a vertically disposed side wall, an arm secured to said pedestal and extending over the top of said container, and a tubular guide carried by said arm and arranged to direct the material downwardly into said container at an angle to the side wall thereof so that said strip will exert a tangential force on said wall whereby the container is caused to rotate and the strip to coil and nest therein.

3. The combination with means for feeding strip metal, of means for rotatably supporting a coil of such material, a supporting member, a container mounted for rotation about a vertical axis on said supporting member and having a horizontally disposed bottom and a vertically disposed side wall, a tubular guide for directing the strip into contact with the inner surface of the side wall and at such an angle to the path of travel thereof that the container is rotated by the strip and the strip during such rotation is coiled and nested therein, and an arm, connected to said supporting member and supporting said tubular guide.

4. In a device of the character described, the combination of a pedestal, a supporting member carried by said pedestal, and having a socket at its upper end, a substantially cylindrical pan-shaped container having a closed bottom and an open top, a cylindrical shaped block depending from the center of the bottom of said container and adapted to be received within the socket of said supporting member, means for feeding coillable strip material and a tubular guide member carried by said support for directing the strip material downwardly into the open top of said container, said guide member being positioned at such an angle to the wall of the container so that the strip being fed therethrough will impinge against the side wall of the container and exert a tangential force thereto whereby the container is rotated and the strip is coiled and nested therein.

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