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2,583,667

REEL FOR SUPPORTING WIRE COILS

Filed May 29, 1947

2 SHEETS—SHEET 1

Fig. 1

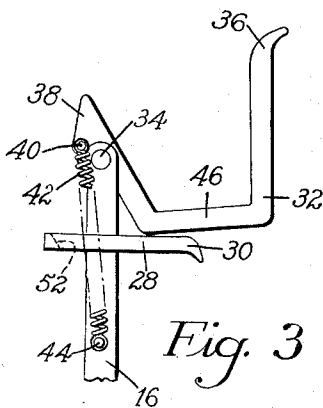
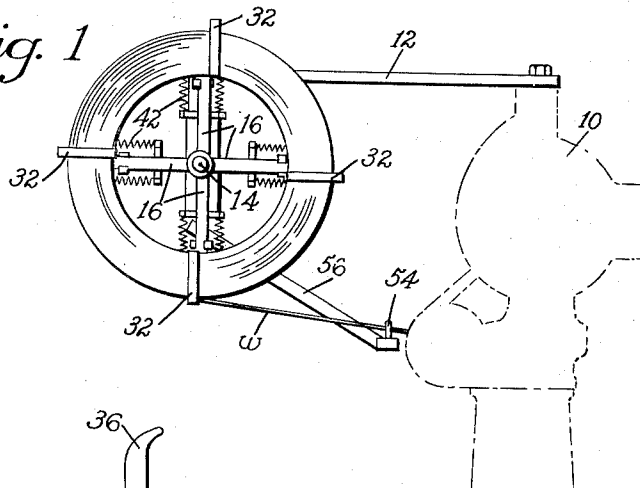


Fig. 3

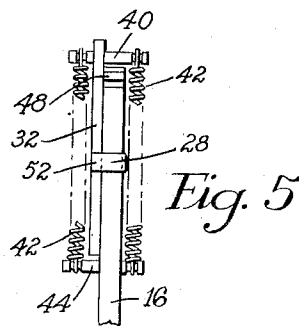


Fig. 5

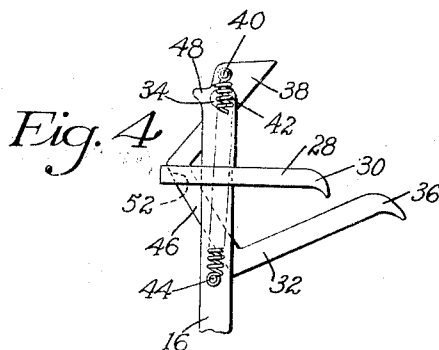


Fig. 4

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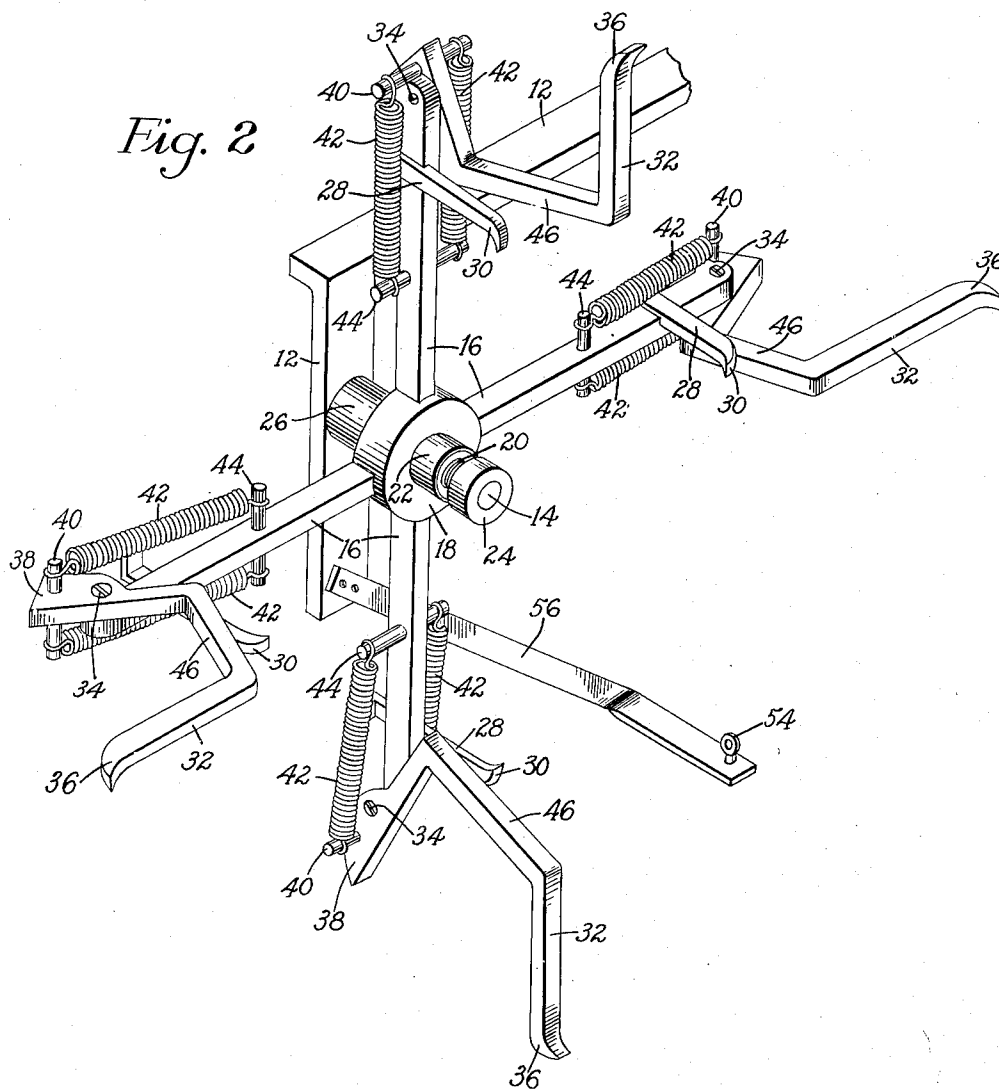
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2 SHEETS—SHEET 2

Fig. 2



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REEL FOR SUPPORTING WIRE COILS

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4 Claims. (Cl. 242—84)

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This invention is concerned with reels for supporting coils of wire such as are commonly used in fastening inserting machines in which the fastenings are formed from a wire strand. A machine of that type is, for example, a slug-
ging machine such as is illustrated and described in United States Letters Patent 2,161,858 granted June 13, 1939, on an application of Harold E. Elliott.

A fastening inserting machine of the slugging machine type includes a wire-supplying device which comprises a holder for a coil of wire, the internal diameter of which is normally of the order of six inches. Frequently when such a machine is in use throughout the whole of a day, the operator needs to reload the machine with wire perhaps four times a day since the coils become exhausted relatively quickly. The reloading operation at present often takes as much as ten to fifteen minutes since the coil-supporting device usually fitted to such machines is sometimes difficult of access and is often of a form which necessitates the use of a tool such as a screw driver or wrench partially to dismantle the wire-holding device in order that a new coil of wire may be inserted therein. The device then has to be reassembled.

It will be appreciated that during a day's work as much as three-quarters of an hour to one hour may be taken up with reloading the slugging machine with wire. This is clearly undesirable and it is, therefore, an object of the invention to provide an improved coil-supporting reel which shall be so constructed as to facilitate the operation of reloading the machine with wire, and shall be of capacity to hold a large enough wire coil to reduce the necessary number of reloadings per day under average use to a minimum (preferably to a single loading per day).

To this end and in accordance with a feature of the invention the illustrated reel which is designed to hold a much larger coil of wire than it was possible to use heretofore in connection with machines of the above-mentioned type, has a plurality of arms which are each provided with a coil-receiving member for facilitating the loading of the wire coil thereon and a spring biased coil-sustaining or clamping member which is pivotally mounted on the arm and manually movable between a coil-clamping position and a coil-receiving position. In the latter position the sustaining or clamping member is clear of the receiving member and allows a new coil to be rapidly placed thereon without the

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necessity of partially dismantling the device or using tools to adjust the position of any parts thereof. The construction of the coil-sustaining member is such that its spring acts to hold it in either of the two positions above referred to against appropriate stops, for, as the member is moved from one position to the other, the line of action of the spring is caused to pass from one side of the pivot of the supporting member to the other side thereof.

The features of the invention will now be described in detail in connection with the accompanying drawings and will be pointed out in the appended claims.

In the drawings:

Fig. 1 is a front elevational view of a novel reel showing the outline of a slugging machine to which the reel is applied;

Fig. 2 is an angular view on an enlarged scale of the reel illustrated in Fig. 1, without a wire coil thereon;

Fig. 3 is a side elevational view of a portion of the reel showing a coil-receiving member and a coil-sustaining member in its coil-supporting position;

Fig. 4 is a view similar to Fig. 3 showing the coil-sustaining member in coil-receiving position; and

Fig. 5 is a rear elevational view of the parts shown in Fig. 4.

The illustrated reel which is shown in Fig. 1 as being applied to a slugging machine as above referred to (the machine being indicated by the chain line 10) is arranged to support a relatively large coil of wire from which wire W is progressively drawn off by the wire feeding devices of that machine.

The reel is rotatably supported on a bracket 12 (Figs. 1 and 2) secured at a convenient position to the frame of the machine. The bracket 12 carries a pivot pin 14 on which the reel is rotatably mounted. The reel comprises a spider having four arms 16 radially disposed relative to the axis of the pin 14 and secured to a hub 18 which is rotatable upon the pivot pin 14. To prevent unduly free rotation of the reel on the pin 14 with consequent slackening of the wire a friction device is provided consisting of a coiled compression spring 20 which surrounds an end portion of the pin 14. The spring 20 bears at one end against a washer 22 abutting the hub 18 and at the other end against a collar 24 secured on the free end of the pin 14. The hub 18 is spaced from the bracket 12 by a spacing sleeve 26 which surrounds the pin 14.

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Each of the arms 16 has secured thereto a coil-receiving member 28 extending substantially at right angles to the longitudinal direction of the arm. The distance between two diametrically opposite members 28 is slightly less than the internal diameter of a coil of wire to be supported by the device and this arrangement facilitates loading of a coil of wire thereon. The internal diameter of the coil of wire may conveniently be some fourteen to sixteen inches. Such loading is further facilitated by the shape of the members 28. These members, as shown in Figs. 2, 3 and 4, have end portions 39 which curve slightly inward toward the axis of rotation of the reel and these portions 39 serve to guide the wire coil on to the members 28.

For retaining the coil on the device after the coil has been slipped over the members 28 each arm 16 is provided with a U-shaped coil-sustaining member 32. Each member 32 is pivotally mounted near the end portion of one of its limbs on a stud 34 secured in the arm 16 with which the member 32 is associated. Each member 32 has a curved free end portion 36 shaped to provide a finger grip so as to facilitate movement of the member by the operator, and a tail portion 38 which projects beyond the pivot stud 34 and has a pin 40 extending through it. Each pin 40 has end portions of two springs 42 attached thereto. The other end portions of the springs 42 are attached to a pin 44 secured in the arm 16 on which the member 32 is pivoted. The construction and arrangement is such that the member 32 is readily movable by the operator from an operative position (shown in Fig. 3) in which the member acts to clamp a coil of wire on the device to an inoperative position (shown in Fig. 4) in which the member is clear of the adjacent coil receiving member 28 and allows a new coil of wire readily to be loaded thereon without obstruction. It will be observed that when the member 32 is in its operative coil-clamping position the cross piece 46 of that member is positioned in front of the arms 16 and engages yieldingly but firmly the inside convolutions of the coil of wire and holds the wire coil securely in the device by partly embracing the coil. It will also be observed from Figs. 3 and 4 that the relation of the pivot stud 34 for each member 32 and the associated springs 42 is such that the springs serve to retain the member 32 in either its operative position, determined by engagement of the pin 40 with a stop 48 formed on the arm 16, or its inoperative position, determined by engagement of the member 32 with a stop 52 formed on the coil receiving member 28. The line of action of the springs 42 is so arranged for this purpose that it moves across the axis of the pivot stud 34 as the coil sustaining member 32 is moved from one position to the other.

For guiding the wire W to the wire-feeding devices of the machine 10 an eye 54 is mounted on a bracket 56 secured to the bracket 12. The eye 54 is centrally disposed with respect to the lengthwise extent of the cross pieces 46 of the members 32 and the wire is thus led off the coil in such a direction that an outer convolution of wire does not tend to slip down between one side of the coil and the adjacent portion of the member 32, in which case the wire would become trapped therebetween and consequently would throw undue strain on the wire-feeding devices of the machine.

When loading the reel with a coil of wire the operator has merely to snap over the four coil-

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sustaining members 32 from their operative positions to their inoperative positions, lift the new coil of wire on to the coil-receiving members 28 and snap the members 32 back into their operative positions. The wire has then to be threaded into the machine after being passed through the eye 54 in the normal manner.

It will be appreciated that the operation of loading a new coil of wire into the wire-holding device may be carried out readily and without dismantling any part of the device and without the use of a tool such as a screw driver or a wrench as is often required in reloading wire-holding devices as at present employed in machines of the above-mentioned type.

This fact, together with the fact that the illustrative device has sufficient capacity to hold a wire coil of large diameter, minimizes the amount of time spent in reloading the machine with wire.

Having described the invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a reel adapted to support an annular coil of wire, a rotatable spider comprising a plurality of radial arms, axially extending coil-receiving members affixed on said arms, each member being arranged with respect to one another as to be positioned concentrically slightly within the internal diameter of the coil thereby facilitating the loading of the coil upon these members, concentrically arranged coil-sustaining members independently and pivotally mounted on said arms for movements between an out-of-the-way position in which they do not obstruct the placing of a coil upon the coil-receiving members and a position in which they firmly engage with the inner periphery of the coil, and biasing springs connected to said coil-sustaining members at points adjacent the pivots in such a manner that the lines of action of the springs cross said pivots as the members are moved from one of said positions to the other, whereby said springs tend to retain the members in whichever of said two positions they happen to be occupying at any time.

2. In a reel adapted to support an annular coil of wire, a rotatable spider comprising a plurality of radial arms, axially extending coil-receiving members affixed on said arms, each of said members being arranged with respect to one another as to be positioned slightly within the internal diameter of the coil thereby facilitating the loading of the coil upon these members, coil-sustaining members pivotally mounted on said arms for movements between an out-of-the-way position in which they do not obstruct the placing of a coil upon the coil-receiving members and a position in which they firmly engage with the inner periphery of the coil, a series of fixed stops against which the pivotal coil-sustaining members abut to confine their movements between said positions, tail portions on the coil-sustaining members extending beyond the pivotal mounting of said members, and springs secured at one end to said arms and at the other end to said tail portions adjacent the pivot, the springs being adapted to hold the coil-sustaining members in either of said two positions against the respective stops.

3. In a reel adapted to support an annular coil of wire, an axially rotatable spider comprising a series of radial arms each having a circumferentially-spaced and axially extending coil-receiving member affixed thereto, each of said

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members being arranged with respect to one another as to be positioned concentrically and slightly within the internal diameter of the coil thereby facilitating the loading of the coil upon these members, a series of substantially U-shaped clamping members each having a medial coil-sustaining portion, said clamping members each respectively being pivotally mounted, adjacent one of its free ends, upon one of said arms as to be movable between an out-of-the-way position in which it does not obstruct the placing of a coil upon the coil-receiving members and a position in which the coil-sustaining portion firmly engages with the inner periphery of the coil to clamp the coil in place upon the reel.

4. In a reel adapted to support an annular coil of wire, an axially rotatable spider comprising a series of radial arms each having a circumferentially-spaced and axially extending coil-receiving member affixed thereto, each of said members being arranged with respect to one another as to be contained in a circumference the diameter of which is slightly less than the internal diameter of the coil thereby facilitating the loading of the coil upon these members, a series of coil-sustaining members pivotally mounted upon said arms as to be concentrically

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movable with respect to said coil-receiving members between an out-of-the-way or collapsed position in which they do not obstruct the placing of a coil upon the coil-receiving members and a position in which they firmly engage with the inner periphery of the coil to sustain the coil in place upon the reel, and biasing springs tending to retain the coil-sustaining members in whichever of said two positions they happen to be occupying at any time.

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