

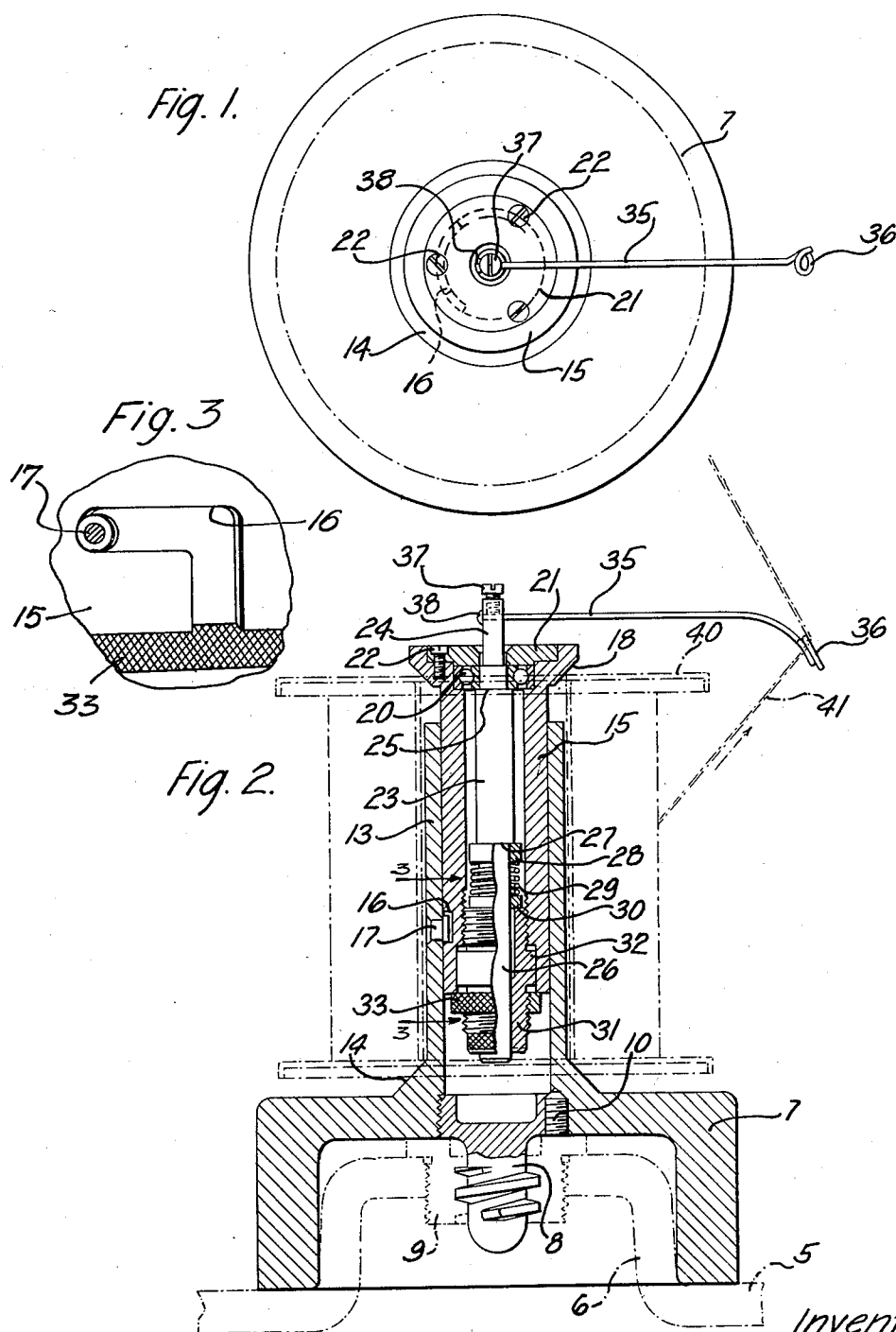
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STRAND UNWINDING APPARATUS

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STRAND UNWINDING APPARATUS

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5 Claims. (Cl. 242—128)

This invention relates to strand unwinding apparatus, and more particularly to apparatus for unwinding fine wire from a stationary reel supplying a wire drawing machine.

5 In supplying fine gauge wire to a wire drawing machine from the end of a stationary supply reel in a direction axial of the reel, the wire may be withdrawn at a high rate of speed and there is a tendency for the wire to break at
10 the reel due to its binding, sticking or becoming entangled with adjacent turns of the wire upon the reel.

An object of this invention is to provide an efficient, and economical apparatus for unwinding a stationary supply of strand material.

15 In accordance with this object one embodiment of the invention consists of a base which is attached to the frame of the wire drawing machine and which supports a sleeve for centering and maintaining a reel of supply wire in a stationary vertical position. A plug inserted and
20 locked within the sleeve by a bayonet slot construction clamps the reel to the sleeve and journals a spindle which mounts a flier-arm for directing the withdrawn wire away from the reel.
25 An adjustable bushing and a resilient member regulate the resistance with which the spindle rotates in the plug to control the tension of the wire drawn through the flier-arm, and the flier-arm is adjustable laterally of the spindle.

A clear understanding of the invention will be had from the following description when taken in connection with the accompanying drawing, wherein

35 Fig. 1 is a plan view of the unwinding apparatus;

Fig. 2 is an elevational section thereof, taken substantially through the center, and

40 Fig. 3 is a sectional view taken on line 3—3 of Fig. 2 showing the detail of the bayonet slot.

Referring now to the drawing in which like numerals designate similar parts in the several views, there is disclosed a portion 5 of the frame of a wire drawing machine having a boss 6 which
45 may be used in other cases for directly centering an upright reel of wire for supplying the wire drawing machine. A cylindrical base or stand 7 is provided surrounding the boss 6 for supporting the structure of this invention and this base
50 is secured to the boss by means of a plug 8 threaded in the base and engaging a bushing 9 threaded in the boss. A screw 10 locks the plug 8 in the base, and it is apparent that the cylindrical base
55 7 is secured to the boss by rotating the base to

engage the plug 8 thereof with the bushing 9 of the boss.

A cylindrical sleeve 13 is provided extending upwards from the base 7 and integral therewith, which furnishes a conical surface 14 joining with
60 the base. Inside of the sleeve 13 a cylindrical plug 15 is inserted and locked by engaging a bayonet slot 16 with a projecting pin 17 fixed to the sleeve. The plug 15 is furnished with a conical surface 18 corresponding to the conical surface
65 14 at the lower end of the sleeve, but disposed in the inverse direction.

A ball bearing 20 is seated within a groove in the upper end of the plug 15 and is retained therein by an annular plate 21 secured by screws
70 22 to the plug. A spindle 23 with an upper diminished end portion 24 projecting through a central aperture in the plate 21 is journaled within the bearing 20 and has a shoulder 25 for
75 abutting against the lower side of the ball bearing. The lower end 26 of the spindle 23 is also diminished in diameter and is provided with a shoulder 27. A ring 28 is driven over the lower
80 end 26 of the spindle up to the shoulder 27, or is keyed thereagainst, and a spring 29 and a washer 30 are inserted over the end 26 up to the ring 28. A bushing 31 provided with a sliding
85 shoulder 32 is then inserted over the end 26 of the spindle for journalling it and is threaded into the plug 15 up against the washer 30 to compress
90 the spring 29 against the collar 28 secured to the spindle. A lock nut 33 abutting against the lower end of the plug 15 locks the bushing 31 in position. By rotating the bushing 31 within the
95 plug 15 it is apparent that the spring 29 may be compressed various amounts against the ring 28 to regulate the ease with which the spindle 23 will rotate.

A flier-arm 35 of any suitable material such as a spring metal, provided with a spirally formed
95 eyelet 36 at the outer end thereof is secured by an adjusting screw 37 within a transverse aperture in the upper projecting end 24 of the spindle, and the inner end 38 of the flier-arm is
100 upset to prevent it being slid entirely out of the spindle.

In the operation of the above described apparatus, a reel 40 of supply wire is inserted over the sleeve 13 and the plug 15 is inserted therein and locked by engaging the bayonet slot 16 with
105 the pin 17 of the sleeve, thus securing the reel in a fixed stationary position. The conical surfaces 18 of the plug and 14 of the base provide a wedging fit with the reel. The bushing 31 has been previously adjusted to produce the proper
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amount of compression in the spring 29 and thus resist the rotation of the spindle 23 sufficiently, and the flier-arm 35 is extended laterally the proper distance. The wire 41 is then threaded 5 through the eyelet 36 of the flier-arm and is connected to the wire drawing machine which draws the wire away in the direction axially of the reel. As the wire unwinds from the reel the flier-arm 35 follows it around and directs the wire away 10 from the supply in somewhat of a radial direction so that the wire will not bind or stick to adjoining turns on the reel, and it also serves to regulate the tension in the withdrawn wire. In this way small gauge wire may be drawn from 15 the reel at a rapid rate without breaking or becoming entangled. It will also be noted that this structure maintains both the reel and plug housing the spindle in a fixed position so that neither can be accidentally moved out of position to stop 20 the wire drawing operation.

Thus it is believed to be apparent from the foregoing description that this unwinding apparatus is both efficient in operation and economical in construction. It is, of course, to be 25 understood that this structure may be used for unwinding other strand material than fine wire, and is not to be limited by the specific embodiment here disclosed, but only by the scope of the appended claims.

30 What is claimed is:

1. In a strand unwinding apparatus, a base, a sleeve supported by the base and having a tapered surface for centering a supply reel of the strand, and a plug with a tapered surface insertible in 35 the sleeve for securing the supply reel thereto, the plug having a bayonet slot making engagement with a projecting pin of the sleeve to lock the plug therein.

2. In a strand unwinding apparatus, means for 40 supporting a supply reel of the strand, a housing insertible within the center of the reel, a spindle mounted within the housing, a flier-arm supported by the spindle for directing the strand

away from the reel, a ball bearing for journalling one end of the spindle within the housing, an adjustable bushing for journalling the opposite end of the spindle threaded to the housing, and a concentric spring interposed between a portion 80 of the spindle and the adjustable bushing for resisting rotation of the spindle.

3. In a strand unwinding apparatus attachable to a boss of the frame of a machine, a cylindrical base for fitting around the boss, and a threaded 85 plug secured to the center of the bottom of the base for securing the base to the boss.

4. In a strand unwinding apparatus, a stationary base having a sleeve, means engaging the sleeve for clamping a supply reel thereon including a hollow plug slidable into the sleeve and provided with a threaded portion, a spindle 90 mounted in the hollow plug, means affixed to one end of the plug to provide a bearing for one end of the spindle, adjustable means engaging the threaded portion of the plug to provide a bearing for the opposite end of the spindle and to cooperate therewith for retarding the rotation of the spindle, and a flier arm of adjustable 95 effective length mounted on the spindle for directing the strand away from the supply reel.

5. In a strand unwinding apparatus, a stationary base having a sleeve, means engaging the sleeve for clamping a supply reel on the sleeve including a hollow plug, a spindle rotatably 105 mounted in the plug and provided with shoulders on the opposite ends thereof, means affixed to one end of the plug to engage the shoulder at one end of the spindle, means including an adjustable bushing and cooperating spring mounted 110 in an opposite end of the plug to engage the shoulder on the opposite end of the spindle, the rotation of the spindle being retarded by varying the frictional effect of the shoulders by adjustment of the bushing and the spring, and an adjustable flier arm affixed to the spindle for 115 directing the strand away from the reel.

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