

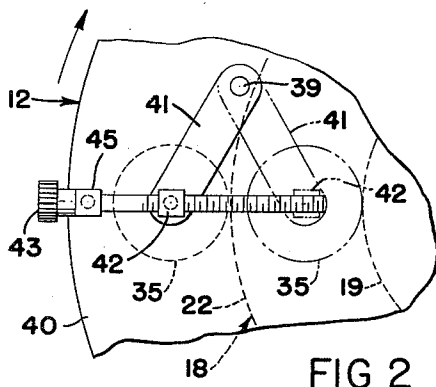
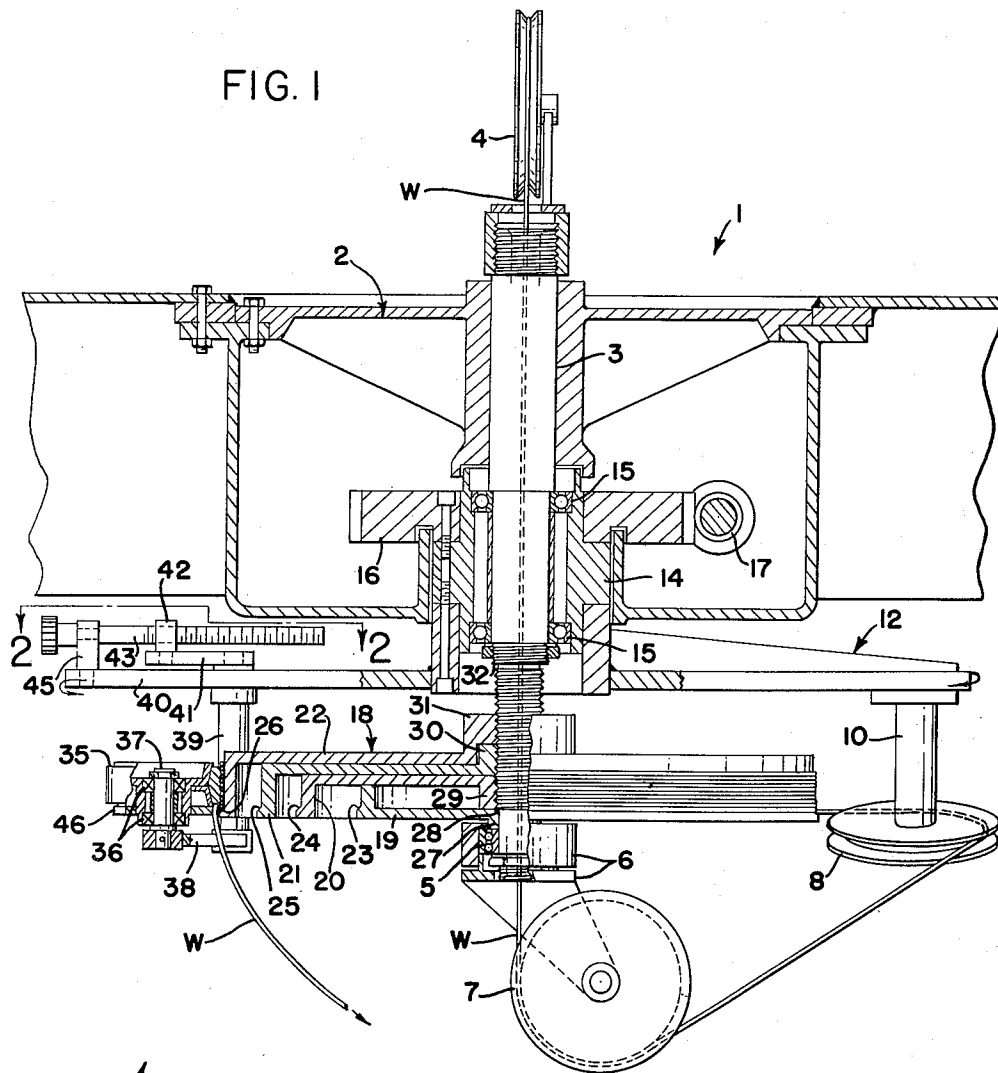
Dec. 19, 1961

J. C. BITTMAN

3,013,741

DRAW BLOCK FOR WIRE DRAWING AND PACKAGING MACHINES

Filed July 27, 1959



INVENTOR.
JESS C. BITTMAN

BY
Oberlin, Mahy & Donnelly
ATTORNEYS

1

3,013,741

DRAW BLOCK FOR WIRE DRAWING AND PACKAGING MACHINES

Jess C. Bittman, Cuyahoga Falls, Ohio, assignor to The
Vaughn Machinery Company, Cuyahoga Falls, Ohio,
a corporation of Ohio

Filed July 27, 1959, Ser. No. 829,605

5 Claims. (Cl. 242—82)

The present invention relates generally as indicated to a draw block for wire drawing and packaging machines and more particularly to a draw block assembly which may be readily adjusted to effect a wide range of variation in the wire convolution diameters in accordance with the size of the wire.

In equipment of this nature, it is one common practice to provide a power-driven draw block coaxially above a rotating wire-receiving drum into which the convolutions of wire from the block descend by gravity to form a coil or package of wire in the drum. Another expedient known in the art is the so-called dead block-dead coil packaging technique in which a flyer is rotated about a stationary draw block to wrap the wire around the block and to permit unwrapping of the convolutions of the wire into a stationary wire-receiving drum or the like disposed beneath the stationary block.

In the interest of maximum productivity of such machines, it is desired to perform the drawing and packaging operations while the wire is travelling at high speed. Such wire speeds are different for different sizes and materials of the wire, and therefore it has been proposed heretofore in the live block-live coil machines to provide variable speed drives for the block and drum support and to substitute blocks of different diameters. For instance, for 17 and finer gauges of wire, it is customary to use a block of about 16" diameter, for 16 to 12 gauge a block of 22 to 26" diameter, for 14 to 8 gauge a block of about 26" diameter, for 8 to 4 gauge a block of about 30" diameter, etc. Similarly, in the case of dead block-dead coil machines, it has been proposed to provide variable speed drives for the flyers and again to substitute blocks of different diameters according to the wire size. Changing of blocks is a time-consuming operation and results in loss of production of the machine.

Accordingly, it is one principal object of this invention to provide a machine of the character indicated which has a draw block assembly so constructed and arranged that the active block diameter may be easily and quickly changed without the time-consuming operation of removing one block from the machine and substituting another one therefor.

It is another object of this invention to provide a draw block assembly which comprises a nested series of draw blocks of different diameters each having threaded engagement with a supporting shaft therefor, whereby the blocks of diameter larger than the one which it is desired to use may be easily and quickly turned on the supporting shaft to out-of-the-way positions exposing the periphery of the desired block.

Other objects and advantages of the present invention will become apparent as the following description proceeds.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features herein-after fully described and particularly pointed out in the claims, the following description and annexed drawing setting forth in detail a certain illustrative embodiment of the invention, this being indicative, however, of but one of the various ways in which the principle of the invention may be employed.

In said annexed drawing:

FIG. 1 is a fragmentary cross-section view, partly in

2

elevation taken in a vertical plane through the axis of the draw block assembly constituting the present invention; and

FIG. 2 is a fragmentary top plan view as viewed along the line 2—2, FIG. 1.

By way of illustrative example, the wire drawing and packaging machine 1 herein illustrated is of the dead block-dead coil type in the head 2 of which a vertical tubular shaft 3 is fixedly mounted, there being provided at the upper end of the shaft 3, a sheave 4 over which wire W passes from a drawing machine or the like (not shown), down through the center of the tubular shaft 3.

Swivelly mounted to the lower end of the shaft 3, as on the double row antifriction bearing 5, is a carrier 6 for the sheave 7 over which the wire W passes to the sheave 8 that is journaled on the depending shaft 10 of the flyer assembly 12.

The flyer assembly 12 has its upwardly extending hub portion 14 supported for rotation about the axis of the tubular shaft 3 by the antifriction bearings 15, and secured to the hub portion 14 is a worm wheel 16 adapted to be driven by the worm 17, the worm 17, in turn, being driven as by an electric drive motor or the like, not shown.

The draw block assembly 18 herein shown, comprises a series of four draw blocks 19, 20, 21, and 22 of, for example, 16", 22", 26" and 30" diameter, nested within one another with their respective beveled shoulders 23, 24, 25, 26 lying in a plane common to a plane passing through the median trans-axial plane of the sheave 8. The smallest draw block 19 has a hub 27 which is engaged between the bearing 5 for the swivel sheave 7 and a shoulder 28 formed adjacent the lower end of the tubular shaft 3. The other three draw blocks 20, 21 and 22 have hubs 29, 30 and 31 in threaded engagement with the tubular shaft 3.

As shown in FIG. 1, the largest draw block 22 is in operating position, and should it be desired to use the second largest draw block 21, all that the operator of the machine would have to do is to turn the largest draw block 22 on the shaft 3 until its hub 31 engages the shoulder 32 of the tubular shaft 3. Thus, the skirt of the draw block 22 will be axially offset above the skirt of the second largest draw block 21. Similarly, if it is desired to use the third largest draw block 20, the draw block 21 is screwed upwardly until it firmly engages the largest draw block 22 thereby exposing the peripheral skirt of said third largest draw block 20. Finally, if it is desired to use the smallest draw block 19, the third largest draw block 20 is screwed upwardly tight against the bottom of the second largest draw block 21.

Thus, the diameter of the wire convolutions according to wire size may be easily and quickly changed through four steps, viz. 16", 22", 26", or 30" as required.

Preferably, the flyer 12 will be driven in a clockwise direction, as viewed in FIG. 2, when the tubular shaft 3 has right-hand threads and thus, the tension in the wire W, when it is being wrapped around any one of the draw blocks 20, 21, or 22, does not tend to screw the same upwardly, but instead tends to maintain the draw block in use in its lowered and tightened position with the beveled shoulder thereof in the same plane as the median plane of the sheave 9.

The flyer assembly 12 may be provided with a wire drawing die and/or with a casting device (wire setting rolls) as disclosed, for example, in the copending application of M. A. Nye et al., Serial No. 701,000, filed December 6, 1957, now Patent No. 2,927,744.

The flyer assembly 12 also has adjustably mounted thereon a freely running roll 35 supported as by the antifriction bearings 36 on a vertical shaft 37 which is mounted at the end of an arm 38 extending radially from

3

another vertical shaft 39, the latter, in turn, being rotatable on the flyer base 40 and having a crank arm 41 provided with a swivel nut 42 in threaded engagement with the adjusting screw 43 which is axially fixed but rotatable on the swivel post 45. It can be seen that by turning the adjusting screw 43, the periphery of the roll 35 may be positioned adjacent the periphery of any one of the four draw blocks 19, 20, 21, or 22 so as to hold the convolutions of the wire W against the selected draw block during the rotation of the flyer assembly 12. Of course, as the convolutions are forced upwardly due to the upward force component at the beveled shoulder 23, 24, 25, or 26, the top convolution will be free to descend from the draw block into a suitable wire receiving drum or the like beneath the draw block assembly 18. The leading end of the top convolution may be threaded between the periphery of the draw block in use and the periphery of the guide roll 46 so that the wire W will engage in the peripheral groove of the guide roll 46 and thus be fed down continuously as the flyer assembly 12 rotates.

It is to be understood that the present invention not only has utility with a vertical draw block assembly, as herein shown, but can be used also with a horizontal draw block machine. Although the present machine is of the dead block-dead coil type, the nesting draw blocks 19, 20, 21, and 22 may be used in a live block-live coil type of machine. In either event, it is possible with the present invention to quickly and easily change the wire convolution diameter according to wire size without the time-consuming task of removing one block from the machine and of installing another block of different diameter.

Other modes of applying the principle of the invention may be employed, change being made as regards the details described, provided the features stated in any of the following claims, or the equivalent of such, be employed.

I therefore particularly point out and distinctly claim as my invention:

1. A takeup block for wire packaging machines comprising a supporting shaft; a first block mounted on said shaft and having a peripheral portion around which wire is adapted to be wrapped to form convolutions; and a second block having a peripheral skirt portion which is

4

concentric with, and of larger diameter than, the peripheral portion of said first block; said second block being axially movably mounted on said shaft from a position whereat said portions are axially offset for wrapping of wire around said first block to a position whereat the peripheral skirt portion of said second block surrounds the peripheral portion of said first block for wrapping of wire around said second block, said first block engaging said second block to locate the peripheral portion of said second block in the same plane as the peripheral portion of said first block.

2. The takeup block of claim 1 wherein said second block and shaft have screw threaded engagement with each other whereby said second block may be moved axially as aforesaid by rotating said second block relative to said shaft.

3. A takeup block for wire packaging machines comprising a supporting shaft; and a series of blocks mounted on said shaft in nested, concentric relation with the peripheral portions thereof, around which wire is adapted to be wrapped, lying in substantially a common plane; said blocks, except the one of smallest diameter, being axially movably mounted on said shaft to axially offset relation with respect to such plane whereby wire may be thus wrapped on the peripheral portion of any selected one of said series of blocks, said smallest diameter block and successively larger blocks engaging one another to locate the peripheral portion of the selected block in such common plane.

4. The takeup block of claim 3 wherein said axially movable blocks have screw threaded engagement with said shaft to facilitate such axial movement thereof to offset position.

5. The takeup block of claim 4 wherein power drive means are provided to effect such wrapping of wire around a selected block, said wrapping being done by said power means in a direction tending to rotate the selected block into tighter engagement with the block therewithin.

References Cited in the file of this patent

UNITED STATES PATENTS

2,216,225	Bruestle	Oct. 1, 1940
2,849,195	Richardson et al.	Aug. 26, 1958