Aug. 3, 1943. A. E. BORTON 2,326,092

REEL

Filed Nov. 29, 1941

Fig. 1

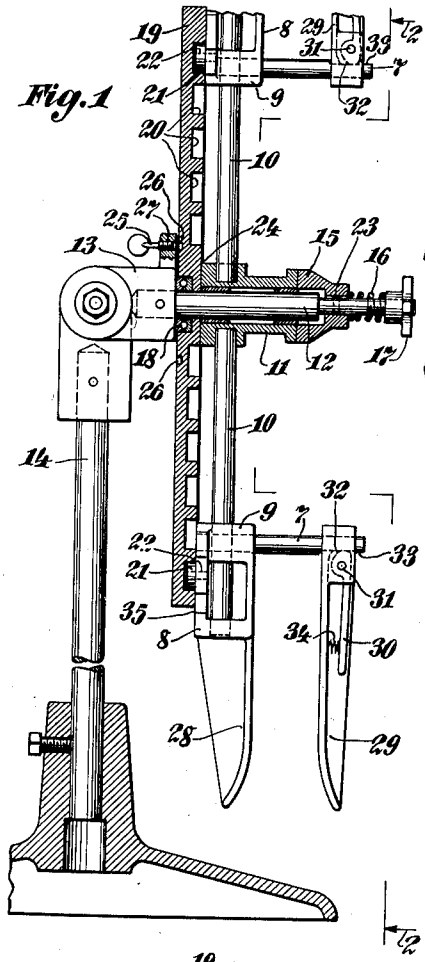


Fig. 2

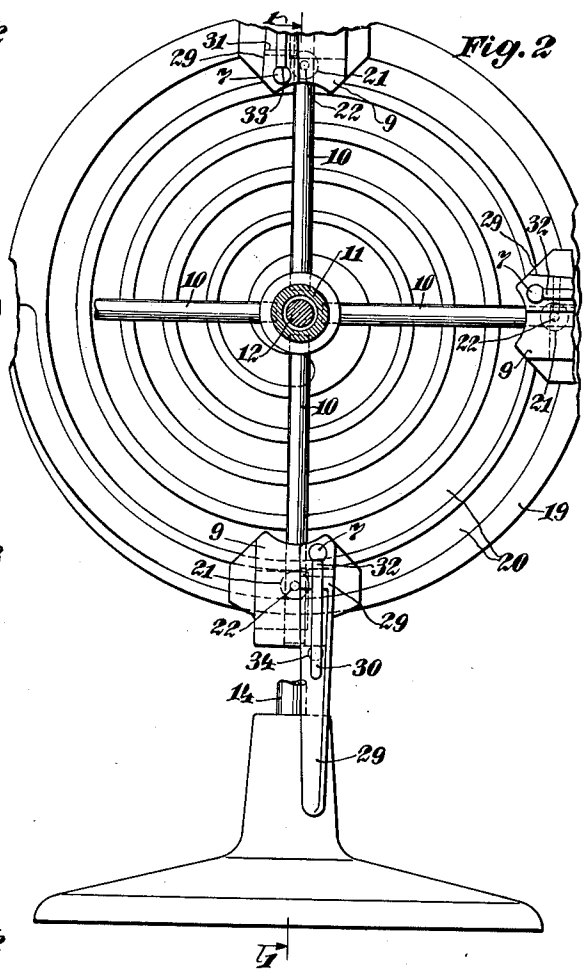
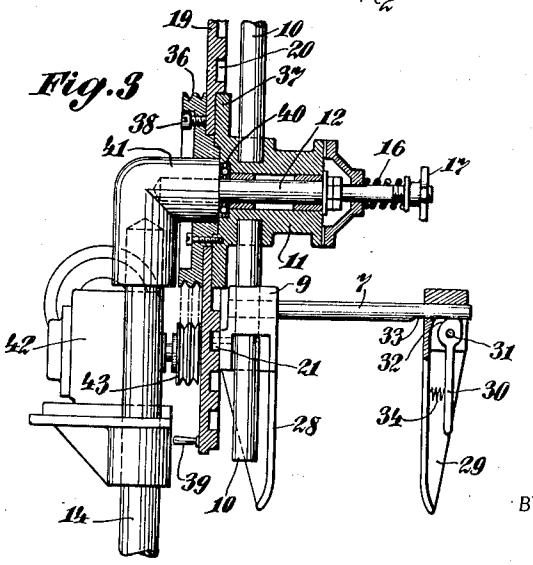


Fig. 3



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2,326,092

REEL

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5 Claims. (Cl. 242—114)

The invention herein disclosed relates to stock reels and the objects of the invention primarily are to provide a reel construction on which the roll of stock may be readily engaged and quickly and easily centered and to accomplish this in a simple, compact, sturdy design of relatively few parts and low cost.

Other desirable objects and the manner of attainment will appear as the specification proceeds.

The drawing accompanying and forming part of the specification illustrates certain practical commercial embodiments of the invention. The structure however may be modified and changed in various ways all within the true intent and broad scope of the invention as hereinafter defined and claimed.

Fig. 1 is a broken part sectional view of a stock reel embodying features of the invention.

Fig. 2 is a broken and part sectional front view of the reel.

Fig. 3 is a fragmentary and part sectional detail view of a power driven embodiment of the invention.

As shown in Fig. 1, the reel consists in the main of a series of stock supporting arms 7, projecting from plates or brackets 8, slidably guided at 9, over the radially projecting spoke elements 10, of the hub 11.

Hub 11 is shown journaled on a stud or spindle 12, carried by the support 13, on the upper end of the stand 14, and controlled as to freedom of rotation by the brake bushing 15, slidingly keyed on the spindle and yieldingly engaged with the outer end of the hub by spring 16, tensioned by hand nut 17. A bearing is indicated at 18, for taking up the end thrust occasioned by the brake.

Radial adjustment of the coil supporting arms is effected in the illustration by a cam disc or plate 19, rotatably supported at the back of the hub and having a single continuous spiral scroll cam groove 20, in the face of the same of constant pitch and receiving the rolls 21, on the backs of the arm carrying plates 8. As indicated in Fig. 2, the coil supports may be all alike basically but as also appears in this view, the cam engaging rolls 21, on the back of the same are pinned or otherwise secured thereon at 22, at such points as will locate the coil supports all at the same radial distance from the center, even though the rolls necessarily are engaged with cam surfaces of unequal distances from the center. At present it is preferred to pin the rolls on the backs of the plates in the different relatively radial positions necessary to locate the plates at equal distances from the center, but it is contemplated that the rolls may have adjustable mountings, as in radially slotted portions on the backs of the plates, thus to enable complete interchange of the coil supports with the adjustments necessary to properly locate the individual cam rolls.

Fig. 1 shows how the scroll cam can be a relatively thin disc of a necessary thickness only sufficient to carry the cam groove, thus to take up but small space at the inner end of the hub. This view also shows how the thrust bearing 18 may be sunk in the outer face of the scroll disc.

If desired, facings of brake lining material or the like, may be provided between the opposite ends of the hub and the brake element at the front and the scroll cam at the back.

The brake element 15 is keyed at 23, or otherwise non-rotatably confined on the stud, so as to brake the rotation of the reel to a desired extent and the cam plate, frictionally engaged as it is by the end of the reel hub and backed up by the thrust bearing 18, is in effect frictionally coupled to the reel hub. The pitch of the scroll cam may be so low that the coil supporting arms will hold of themselves in the positions to which they have been adjusted. In any event however, the reel may be faced in the direction, whether for unwinding or winding on purposes, such that with any slippage at the friction clutch or coupling at 24, resulting from the "drag" of the cam disc on the reel, such movement will be in the right direction to expand and tighten the arms in the coil of supported stock.

A holding pin is indicated at 25, Fig. 1, mounted in the spindle supporting bracket, adapted to be advanced into one of the seats 26, in the back of the scroll cam for holding the latter, when desired, for arm adjusting or other purposes. This pin may have a screw mounting as indicated at 27, or otherwise be set in the support, so that while normally retracted, it may be readily advanced into holding engagement with the cam plate. This holding pin is desirable for securing the scroll plate and the reel frictionally coupled thereto over extended periods as when placing or removing a heavy coil of stock in respect to the supporting arms and for holding the cam while the reel body is turned one way or the other for expanding or contracting the arms. For ordinary quick adjustments however, the scroll cam may be held by hand while the reel body is turned, as through the medium

of the radially projecting coil confining flanges 28, of the arm carriers 8.

To facilitate the placing of the coils on and the removal of coils from the supporting arms, the outer coil confining and retaining members 29, are preferably removably mounted as by equipping them with spring pressed hand levers 30, pivoted at 31, and having the eccentric or cam-shaped end faces 32, engageable with the flattened outer sides 33, of the arms both to releasably lock the retainers in place and to hold them against rotation on the arms. The locking eccentric portions are faced to bind and secure the retainers in place under action of the springs 34, and to release hold on the arms when the levers are forced inward against the pressure of the springs.

The backs of the arm carrying brackets 9, are shown as faced off flat at 35, so as to slide smoothly over the grooved face of the cam plate. These arm carriers are thus held against turning on the radial spokes or guides 10.

The reel is of especially simple and compact design and is readily assembled by simply slipping the scroll plate and the hub over the spindle, then engaging the arm carriers over the spokes and backing the hub up against the scroll plate to enter the rolls in their proper positions in the cam groove, after which it is only necessary to mount and tension the brake element, which thereupon becomes a retainer for the whole structure, in addition to its functions as a brake and as a means for maintaining the frictional coupling between the reel hub and cam plate.

The invention is applicable to either free or motor driven reels. An example of the latter type is illustrated in Fig. 3 and which differs from the form previously described, particularly in that a drive pulley or equivalent drive means 36, is fixed to and carried by the inner end of the hub 11, and the scroll cam 19, is rotatably mounted on the hub instead of directly on the spindle, between the inner face of the drive element 36, and a flange 37, on the hub. This mounting enables relative rotation of hub and scroll cam, such as necessary to effect expansion and contractive movements of the reel arms. A clamp screw is indicated at 38, for securing the cam plate in fixed relation on the reel when that may be desired, as after an adjustment of the cam plate to expand the arms in firm holding engagement with a heavy coil of stock.

The cam plate may be provided with one or more handles such as indicated at 39, in Fig. 3, by which it may be held or turned.

In the Fig. 3 form of construction, where the scroll cam is carried by the hub, the thrust bearing indicated at 40, may be located in the inner end of the hub, against the opposing face of the stud supporting bracket 41.

The motor for operating the power driven form of reel may be mounted directly on the reel stand as indicated at 42, and be connected with the reel operating element 36, as by belt drive indicated at 43, as in the A. E. Borton Patent 2,097,142, October 26, 1937. Also, the motor may be automatically controlled for winding or unwinding purposes as disclosed and covered in that patent.

In addition to its function as a scroll, the cam provides a backing and closure at the back of the radial spokes and coil carrying arms and serves as a guard to prevent objects from becoming entangled with these parts.

As shown in Figs. 1 and 3, the holding cams on the hand levers 30, are faced so as to slide freely inwardly over the coil supporting arms but to interlock and resist outward movement, the springs assisting in this holding action but yielding easily to spring pressure applied for releasing the holding engagement.

What is claimed is:

1. A reel of the character disclosed, comprising in combination, a supporting spindle, a reel hub and a scroll cam rotatably mounted on said spindle in relatively rotatable relation and coil carrying arms connected with and radially adjustable in respect to said hub, said coil carrying arms being connected with said scroll cam, whereby said arms will be shifted radially inwardly or outwardly in respect to said hub upon relative rotary adjustment of said hub and scroll cam, said scroll cam being rotatably supported at the inner end of said reel hub, a thrust bearing at the back of said scroll cam in position to take endwise thrust on said reel hub against said scroll cam and adjustable brake means for applying endwise pressure against the outer end of said reel hub and for thereby effecting frictional coupling between said hub and scroll cam.

2. A reel of the character disclosed, comprising in combination, a supporting spindle, a stationary support for said spindle, a reel hub and scroll cam rotatably mounted on said spindle in relatively rotatable relation and coil carrying arms connected with and radially adjustable in respect to said hub, said coil carrying arms being connected with said scroll cam, whereby said arms will be shifted radially inwardly or outwardly in respect to said hub upon relative rotary adjustment of said hub and scroll cam, said scroll cam being located at the inner end of said hub adjacent said stationary support and a holding member on said stationary support projectible therefrom into engagement with said scroll cam for securing the same in non-rotatable relation.

3. A reel of the character disclosed, comprising a stationary supporting spindle, a hub journalled on said spindle, fixed spokes radiating from said hub, a disc rotatably supported at one end of said hub and closing the spaces between said fixed radiating spokes, brackets slidably engaged on said radial spokes and having flat portions slidable over the adjoining face of said disc for preventing rotative movements of said brackets on said spokes, coil supporting arms projecting from said brackets, said disc having a continuous spiral cam groove or constant pitch in the face of the same and said brackets having projecting elements entered in said cam groove and disposed to locate the brackets with the projecting coil supporting arms carried thereby at the same radial distances from the axis of the hub, said disc being journalled upon and carried by said hub, a shoulder on the hub engaging said disc at one side and a driving pulley secured to the hub and engaging said cam disc at the opposite side and serving to retain said cam disc in position on the hub.

4. A reel of the character disclosed, comprising a stationary supporting spindle, a hub journalled on said spindle, fixed spokes radiating from said hub, a disc rotatably supported at one end of said hub and closing the spaces between said fixed radiating spokes, brackets slidably engaged on said radial spokes and having flat portions slidable over the adjoining face of said disc for preventing rotative movements of said brackets on said spokes, coil supporting arms projecting from said brackets, said disc having a continuous spiral

cam groove of constant pitch in the face of the same and said brackets having projecting elements entered in said cam groove and disposed to locate the brackets with the projecting coil supporting arms carried thereby at the same radial distances from the axis of the hub, a stationary support for the spindle and a holding member movably mounted on said stationary support and shiftable into and out of holding engagement with said cam disc.

5. A reel of the character disclosed, comprising a stationary supporting spindle, a hub journalled on said spindle, fixed spokes radiating from said hub, a disc rotatably supported at one end of said hub and closing the spaces between said fixed radiating spokes, brackets slidably engaged on said radial spokes and having flat portions slidable over the adjoining face of said disc for preventing rotative movements of said brackets on said spokes, coil supporting arms projecting from said brackets, said disc having a continuous spiral cam groove of constant pitch in the face of the same and said brackets having projecting elements entered in said cam groove and disposed to locate the brackets with the projecting coil supporting arms carried thereby at the same radial distances from the axis of the hub, removable coil retainers slidably engaged on said coil supporting arms and freely shiftable over said arms toward said cam disc and spring actuated eccentrics on said coil retainers engageable with said coil supporting arms and freely yieldable to movement of the retainers over the arms toward said cam disc but interlocking eccentrically with said arms to movement of the retainers in the opposite direction and said spring actuated eccentrics having handles by which the same may be rocked in a direction to free them from holding engagement with said coil supporting arms.

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