Sept. 27, 1955 W. P. BABCOCK 2,719,013

CLUTCH-HUB REEL

Filed April 8, 1953

FIG. 1.

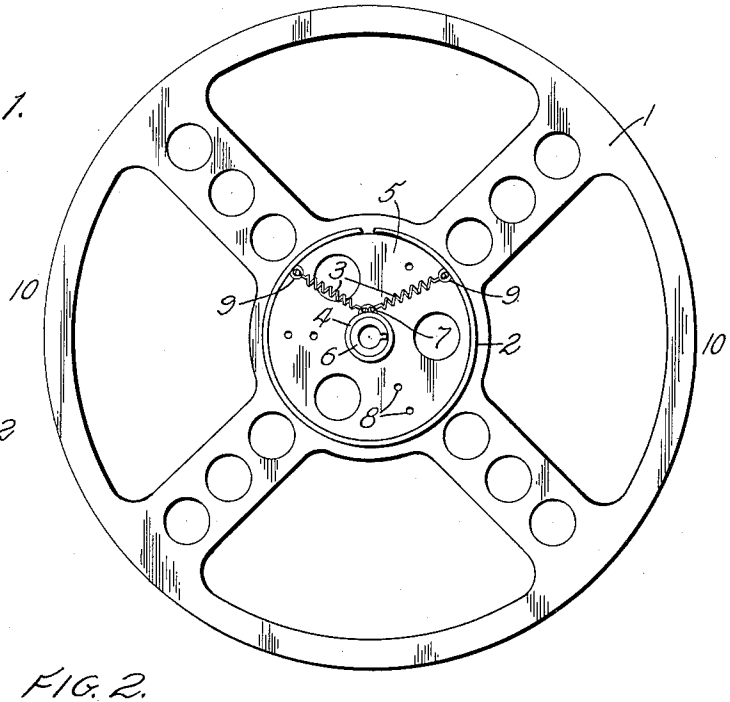


FIG. 4.

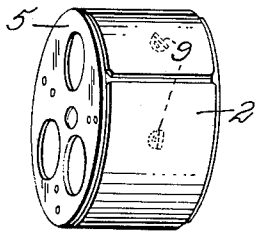


FIG. 2.

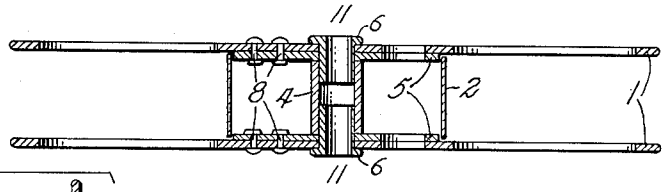
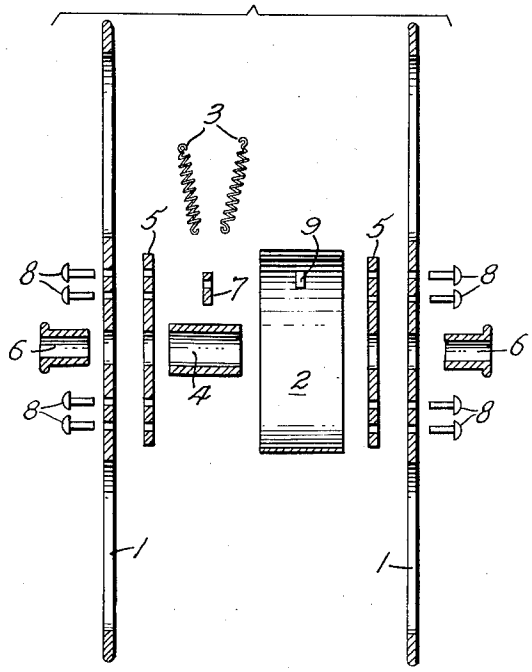


FIG. 3.



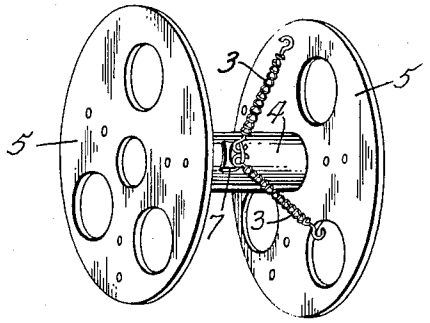


FIG. 5.

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CLUTCH-HUB REEL

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7 Claims. (Cl. 242—72)

The invention relates to improvement in reels on which motion picture film, sound tape, wire, or other materials is wound; and the objects of the improvements are, first, to prevent the breakage of the film, sound tape, wire, or other materials while the reel is winding or unwinding; second, to provide a smooth brake-action at all times while the reel is in operation; third, to provide an inertia-relief starting action; and fourth, to provide a clutch-action hub upon which film or other materials can wind more smoothly.

One form of the invention is illustrated in the accompanying drawing, in which Figure 1 is a vertical section of the entire reel; Figure 2, a plan view of the reel and hub as it appears through section **10**, **10** in Figure 1; Figure 3, an exploded vertical section of the entire reel and hub through **11**, **11**, Figure 2; Figure 4, a detailed view in perspective of the clutch-action hub with both sides removed; and Figure 5, the same as Figure 4, but with the clutch-band face **2**, removed.

Each circular side **1** is individually riveted at **8**, or otherwise attached to one of the smaller circular plates **5**, **5**, one for each side, and a tube **4** is placed between the said two assembled sides **1**, **1** and **5**, **5**. Two end caps **6**, **6** are pressed through the sides **1**, **1** and plates **5**, **5** into the tube **4**, thereby holding the basic assembly together, as the said caps **6**, **6** are a pressfit into the hole in the tube **4**. The end caps **6**, **6** are both drilled and slotted to allow the hub so formed to be driven normally in motion picture cameras and projectors.

A small spring retainer **7** is soldered to the tube **4**, upon which is installed one end of each of the springs **3**, **3**. The band face **2** of the hub so formed of all the component parts is now slipped between the sides **1**, **1** and allowed to rest on the outer edges of the plates **5**, **5**, and the loose ends of the two springs **3**, **3** are now attached to spring retainers **9**, **9** inside the hub band face **2**.

As can be readily seen in Figure 4, the hub face **2** is only held as tightly in contact with the two plates **5**, **5**, as the springs **3**, **3** hold from the inside. As the tube **4** is driven when in use turning the two plates **5**, **5** and sides **1**, **1**, the clutch-action of the hub face **2** will readily slip as required to prevent film breakage due to inertia and other causes.

This feature of the invention is perfectly carried out whether the said springs **3**, **3** are used or not, as the same clutch-action between the driven hub and the said hub face **2** can readily be obtained by other means; and this particular method of manufacture is only shown as an example of the invention as claimed.

It will be seen that the circular disks **5** are centrally apertured and are in secured concentric relations to the circular side pieces **1** the inner faces of which they abut, and that the annular hub member **2** slidably engages the peripheral portions of said disks in a radially spaced relation to the tube **4**.

It is also to be noted that the spring means comprises the two spiral tension springs **3** with adjacent inner ends

secured to the tube **4** and widely spaced apart outer ends secured internally to the annular hub **2**, so that said springs increase the grip of said hub upon the disks **5** and thus yieldingly oppose relative rotational movement between said tube and hub.

I am aware that prior to my invention many reels have been made with a hub and two sides to hold film or other materials for winding and unwinding. I therefore do not claim such a combination broadly; but I claim:

1. The combination, in a reel used for film, tape, wire or other material, of two parallel side disks, a central tube having end portions secured to said side disks, an annular hub member, concentrically surrounding said tube and outwardly spaced therefrom, said hub member being slidably mounted upon said disks and being allowed with brake action to slip when under excessive operating strain set up by the film, tape, wire, or other material while the reel is in operation, and spring means within said hub member increasing the grip of said hub member upon said disks.

2. In a reel of the kind described, in combination, two outer spaced apart parallel circular side members, a disk of less diameter than said side members concentrically secured to the inner face of each of them, a central tube having end portions in a secured relation to said disks, and an annular hub member concentrically surrounding said tube and outwardly spaced therefrom, said hub member having end portions slidably surrounding the peripheral portions of said disks in a frictional manner.

3. In a reel of the kind described, in combination, two outer spaced apart parallel circular side members, a disk of less diameter than said side members concentrically secured to the inner face of each of them, a central tube having end portions in a secured relation to said disks, an annular hub member concentrically surrounding said tube and outwardly spaced therefrom, said hub member having end portions slidably surrounding the peripheral portions of said disks in a frictional manner, and spring means connecting said hub member with said tube, yieldingly to limit rotational movement of said hub member in relation to said tube.

4. The subject matter of claim 3, and said spring means comprising two spiral tension springs each having an inner end attached exteriorly to said tube and an outer end attached interiorly to said hub member, the inner ends of said springs being adjacent to each other and their outer end widely spaced apart.

5. In a reel of the kind described, in combination, two outer spaced apart parallel circular side members each having a circular central aperture, a cap occupying each of said apertures and having a tubular part provided with a head abutting the outer face of the apertured side member, a centrally apertured circular disk concentrically secured to each of said circular side members in an abutting relation to its inner face, a tube concentrically spanning the space between said disks, the tubular parts of said caps occupying the end portions of said tube with press fits, and an annular hub member concentrically surrounding said tube and outwardly spaced therefrom, said hub member having end portions slidably surrounding and frictionally engaging said disks.

6. The structure recited in claim 5, and spring means attached internally to different circumferential portions of said hub member to increase the grip thereof upon said disks.

7. In a reel of the kind described, in combination, two outer spaced apart circular side members, a disk of less diameter than said side members concentrically secured to the inner face of each of them, means securing said disks to each other and bridging the space between them,

and an annular hub member concentrically surrounding said means and outwardly spaced therefrom, said hub member having end portions slidably surrounding the peripheral portions of said disks in a frictional manner.

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