Jan. 13, 1959 J. P. H. HALLMANN 2,868,544

APPARATUS FOR MAGNETIC RECORDING AND REPRODUCTION

Filed Dec. 1, 1955 2 Sheets-Sheet 1

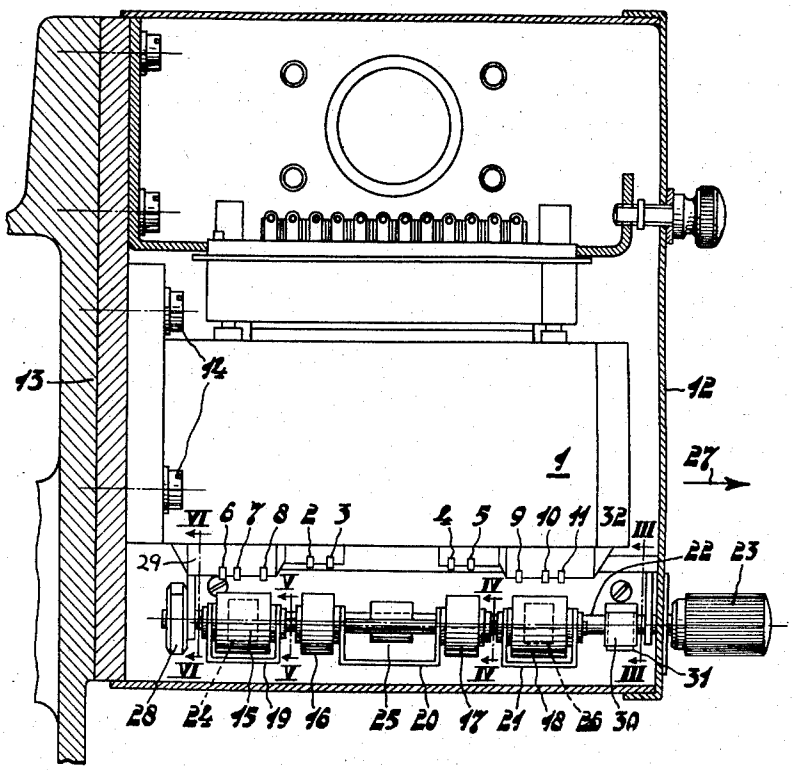


Fig. 1.

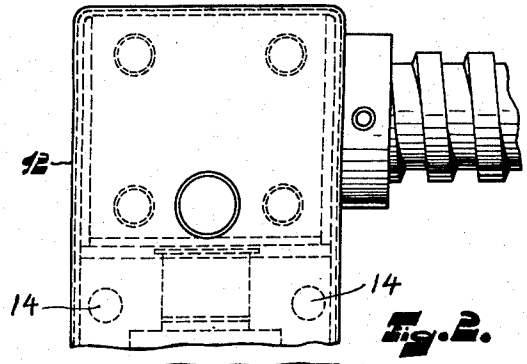
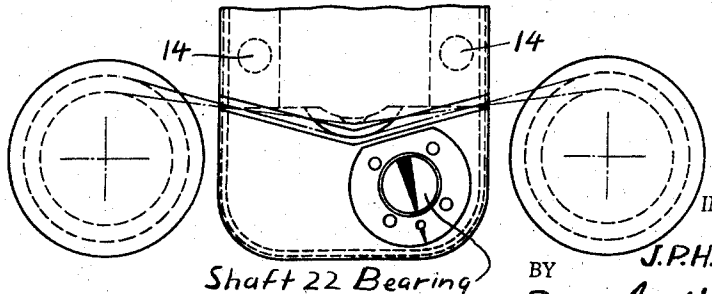


Fig. 2.



INVENTOR.
J.P.H. Hallmann
BY
Fred W. Vogel
AGENT

Jan. 13, 1959 J. P. H. HALLMANN 2,868,544

APPARATUS FOR MAGNETIC RECORDING AND REPRODUCTION

Filed Dec. 1. 1955 2 Sheets-Sheet 2

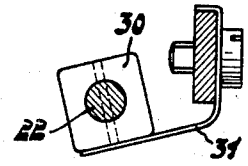


Fig. 3.

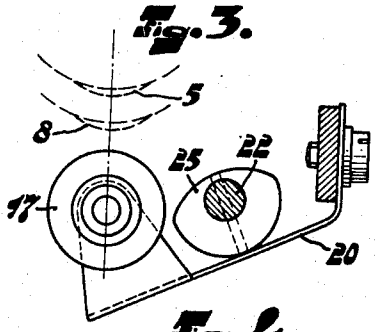


Fig. 4.

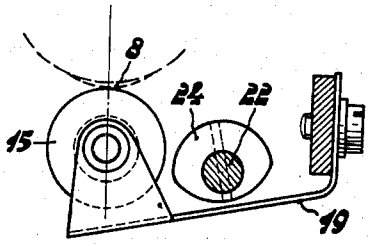


Fig. 5.

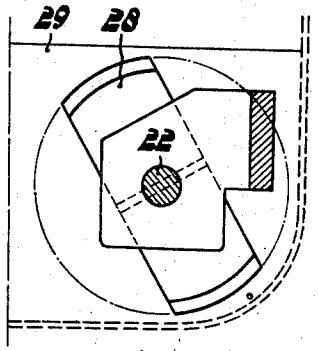


Fig. 6.

INVENTOR
JOHAN PAUL HEINRICH HALLMANN
BY
AGENT

United States Patent Office 2,868,544
Patented Jan. 13, 1959

2,868,544

APPARATUS FOR MAGNETIC RECORDING AND REPRODUCTION

Johan Paul Heinrich Hallmann, Eindhoven, Netherlands, assignor, by mesne assignments, to North American Philips Company, Inc., New York, N. Y., a corporation of Delaware

Application December 1, 1955, Serial No. 550,441

Claims priority, application Netherlands October 1, 1955

4 Claims. (Cl. 274—4)

The present invention relates to apparatus for magnetic recording and reproduction. More particularly, the invention relates to a magnet head for magnetic recording or reproduction, having a screening cap with pressing means to establish a satisfactory contact between a magnetic recording medium and the magnet head, the screening cap being detachable in a direction at right angles to the direction in which it is pressed home.

It is necessary that a screening cap be removable to enable cleaning, inspection and repair of the magnet head. When the screening cap is removed and replaced, the pressing means should not slide along the magnet head during the moving of the cap, since this may damage the magnet head. This applies particularly to a complex magnet head, in which the screening cap can be arranged and removed in the direction in which the magnetic circuits of the magnet head are arranged. If, in such a case the pressing means slide, one after the other, along the magnet head, damage, particularly to the magnet circuit of the head along which all pressing means are moved, would be unavoidable.

An object of the present invention is the mitigation of the aforesaid disadvantages.

In accordance with the present invention, provision is made of means to lift the pressing means, which cooperate with a locking device for the screening cap in a manner such that the screening cap can be removed only when the pressing means are lifted.

It is thus not possible to remove the screening cap from the magnet head, when the pressing means engage the magnet head.

According to a further aspect of the invention, the pressing means are arranged on resilient elements, with which lugs seated on a shaft journalled in the screening cap cooperate; the locking device also being supported on the shaft.

In order that the invention may be readily carried into effect, it will now be described more fully with reference to the accompanying drawings, wherein:

Fig. 1 is a view, partly in section, of an embodiment of the apparatus of the present invention;

Fig. 2 is a side view of the apparatus of Fig. 1;

Fig. 3 is a sectional view of the apparatus of Fig. 1, taken along lines III—III;

Fig. 4 is a sectional view of the apparatus of Fig. 1, taken along lines IV—IV;

Fig. 5 is a sectional view of the apparatus of Fig. 1, taken along lines V—V; and

Fig. 6 is a sectional view of the apparatus of Fig. 1, taken along lines VI—VI.

In order to permit cooperation with films of different widths, a magnet head **1** is provided, at the top, with a grooved area, so that, for example 35 mm. films with a plurality of magnetic tracks on either side of the picture cooperate with the separate magnet heads **2**, **3**, **4** and **5**. A film of for example 70 mms. in width cooperates with the magnet heads **6**, **7**, **8**, **9**, **10** and **11** and is not affected by the magnet heads **2** to **5**. The magnet head **1** is surrounded by a screening cap **12**, which engages the frame **13** of the machine, to which the magnet head **1** is secured by means of bolts **14**. Inside the screening cap **12** are provided pressing rollers **15**, **16**, **17** and **18**, which cooperate with the opposite magnet heads. The pressing rollers **15**, **16**, **17** and **18** are secured to blade springs **19**, **20** and **21**, respectively, arranged separately in the screening cap. The pressing rollers **16** and **17** are supported in common by the blade spring **20**, the pressing roller **15** is supported by the spring **19** and the pressing roller **18** is supported by the spring **21**. Between the pressing rollers and the area where the blade springs are secured to the screening cap, provision is made of a shaft **22**, which can be actuated from the outside by a knob **23**. At the area of the blade springs the shaft **22** is provided with lugs **24**, **25** and **26**, by means of which the pressing rollers can be lifted from the magnet head **1** to an extent such that the screening cap **12** can be slipped off the magnet head **1** without any trouble in the direction of the arrow **27**. The end of the shaft **22** is provided with a blocking disc **28**, which is held behind the elevation **29** (Fig. 6), comprising the heads **6**, **7** and **8**, when the screening cap **12** is in its fastened position. The shaft **22** is also provided with a square element **30**, which is engaged by a blade spring **31** and due to which the shaft **22** has four stable positions in the direction of rotation. The shape of the lugs **24**, **25** and **26** and their relative positions are chosen to be such that in the engaged position of the pressing rollers **15** and **18** the rollers **16** and **17** are lifted to their disengaged position. By turning the shaft **22** through 90°, the pressing rollers **15** and **18** are also lifted to their disengaged position, while the position of the rollers **16** and **17** is maintained. The blocking disc **28** is then free from the elevation **29**, so that the screening cap **12** can be withdrawn from the magnet head in the direction of the arrow **27** without the need for further means. If, when the screening cap **12** is removed, the knob **23** is turned, by mistake, the screening cap cannot be mounted, if the rollers are not lifted to their disengaged positions. The position of the blocking disc **28** prevents the screening cap from being slipped on, since it engages an elevation **32**, which prevents the cap from being moved on.

While the invention has been by means of a specific example and in a specific embodiment, I do not wish to be limited thereto, for obvious modifications will occur to those skilled in the art without departing from the spirit and scope of the invention.

What is claimed is:

1. Apparatus for magnetic recording and reproduction comprising a frame, a screening cap removably affixed to said frame, a plurality of magnetic transducer heads positioned in said cap, a magnetic recording medium positioned in said cap, pressing means, means for moving said pressing means into an engaged position thereby urging said medium into operative contact with at least one of said magnetic transducer heads and into a disengaged position thereby releasing said medium from operative contact with any of said magnetic transducer heads, means for locking said cap to said frame, and means mechanically coupling said moving means with said locking means in a manner whereby the said locking means is inoperative only when said pressing means is in said disengaged position thereby permitting the removal of said cap only when said medium is released from operative contact with any of said magnetic transducer heads.

2. Apparatus for magnetic recording and reproduction comprising a frame, a screening cap removably affixed to said frame, a plurality of magnetic transducer heads positioned in said cap, a magnetic recording medium positioned in said cap, a plurality of resilient members, pressing means mounted on said resilient members, means for moving said pressing means into an engaged position

thereby urging said medium into operative contact with at least one of said magnetic transducer heads and into a disengaged position thereby releasing said medium from operative contact with any of said magnetic transducer heads, said moving means comprising a shaft journalled in said cap and a plurality of lugs on said shaft, said lugs being adapted to cooperate with said resilient members in different radial positions of said shaft, means supported by said shaft for locking said cap to said frame, and means mechanically coupling said moving means with said locking means in a manner whereby the said locking means is inoperative only when said pressing means is in said disengaged postion thereby permitting the removal of said cap only when said medium is released from operative contact with any of said magnetic transducer heads.

3. Apparatus for magnetic recording and reproduction comprising a frame, a screening cap removably affixed to said frame, a magnetic recording medium positioned in said cap, a plurality of magnetic transducer heads positioned in said cap in a manner whereby magnetic recording mediums of different widths are accommodated by the said magnetic transducer heads, pressing means, means for moving said pressing means into an engaged position thereby urging said medium into operative contact with at least one of said magnetic transducer heads and into a disengaged position thereby releasing said medium from operative contact with any of said magnetic transducer heads, said engaged position for a medium of relatively large width corresponding to said disengaged position for a medium of relatively small width, means for locking said cap to said frame, and means mechanically coupling said moving means with said locking means in a manner whereby the said locking means is inoperative only when said pressing means is in said disengaged position thereby permitting the removal of said cap only when said medium is released from operative contact with any of said magnetic transducer heads.

4. Apparatus for magnetic recording and reproduction comprising a frame, a screening cap removably affixed to said frame, a plurality of magnetic transducer heads positioned in said cap, a magnetic recording medium positioned in said cap, a plurality of resilient members, pressing means mounted on said resilient members, means for moving said pressing means into an engaged position thereby urging said medium into operative contact with at least one of said magnetic transducer heads and into a disengaged position thereby releasing said medium from operative contact with any of said magnetic transducer heads, said moving means comprising a shaft journalled in said cap and a plurality of lugs on said shaft, said lugs being adapted to cooperate with said resilient members in different radial positions of said shaft, a locking member affixed to said frame, and means for locking said cap to said frame, said locking means comprising a blocking disc seated on said shaft adjacent said locking member in a manner whereby said disc is held by said locking member in an axially immovable position in one radial position of said shaft and said disc is free from said locking member in an axially movable position in another radial position of the said shaft.

References Cited in the file of this patent

UNITED STATES PATENTS

2,551,845 Lindsay ..... May 8, 1951

FOREIGN PATENTS

717,030 Great Britain ..... Oct. 20, 1954