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1,458,531

E. HODGKINSON
RECORDING INSTRUMENT

Filed June 2, 1921

Fig. 1

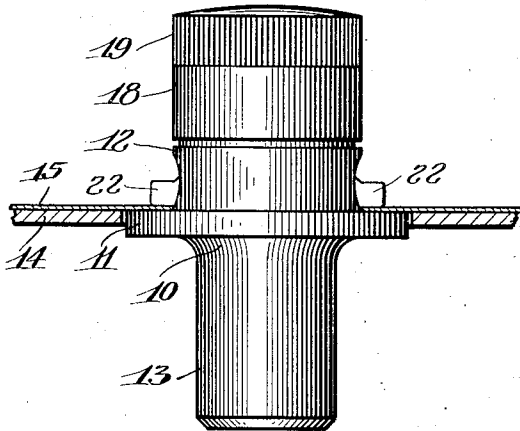


Fig. 4

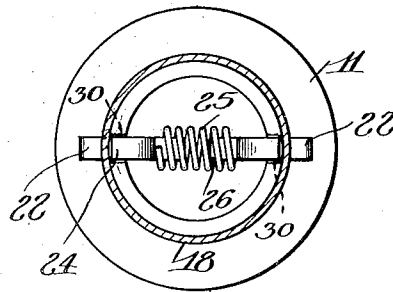


Fig. 2

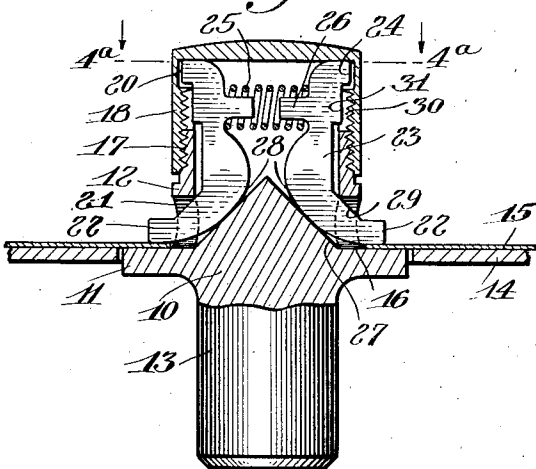
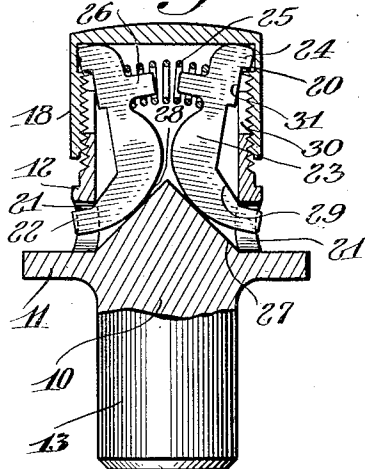


Fig. 3



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RECORDING INSTRUMENT.

Application filed June 2, 1921. Serial No. 474,378.

To all whom it may concern:

Be it known that I, EDWIN HODGKINSON, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Recording Instruments; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference numerals marked thereon.

This invention has to do with recording instruments, such as are commonly employed to record temperature or pressure conditions, relating more particularly to devices for detachably holding record sheets or charts in operating position on the instruments, the chief object of the invention being to provide a practical and convenient device of the above character for effectively holding the chart without obstructing its record surface and so that it may be quickly detached by a simple manual adjustment without requiring the removal of any part subjecting it to the possibility of becoming displaced and lost. To these and other ends the invention consists in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings:

Figure 1 is a side elevation of a device embodying the present invention showing the same in operating position relative to a recording instrument.

Figures 2 and 3 are central sectional views of the same showing the parts in different positions.

Figure 4 is a section plan view on the line 4^a—4^a of Figure 2.

Similar reference numerals throughout the several views indicate the same parts.

The present invention is of general utility for detachably holding record sheets or charts in operating position on recording instruments, such, for example, as disclosed in my prior Letters Patent No. 1,063,349 granted June 3, 1913, for indicators and recorders. Instruments of this class have been made with various means for holding the record sheet in position on its supporting means or table, such, for example, as an extension or post on the table fitting in an opening in the sheet with a nut or other element on the post

for clamping the sheet which is removed during application or detachment of the sheet and therefore subject to becoming displaced and lost. In other cases sheet holding devices have been open to objection because interfering too much with the record surface of the chart or being otherwise cumbersome. It is the purpose of the present invention to overcome these difficulties by the provision of an advantageous construction, a preferred embodiment of which is disclosed herein by way of illustration, comprising a support 10, Figure 2, having a flange portion 11 and an outwardly projecting support or post 12 for insertion through the usual opening in the record chart, with the latter resting on flange portion 11. Support 10 is in the present instance provided with a shank 13 for connection with the supporting means or table for the chart, indicated in the present instance at 14, having its upper surface on which the chart rests level with the flange 11. The present device may, however, be associated with the chart table in any suitable manner and the flange 11 may if desired be constructed integral with the table 14. The chart is indicated at 15 having a central opening 16 within which the post 12 is readily inserted.

Post 12 is preferably reduced in external diameter at its outer end and provided with screw threading 17 with which engages the corresponding threaded interior of a member or cap 18 of substantially the same external diameter as post 12, so as to be easily passed through the chart opening. The cap is preferably closed at its outer end with the side wall adjacent the latter knurled as at 19 so that the cap may be conveniently turned by hand to screw the same inwardly or outwardly of post 12. The interior of the side walls of the cap adjacent its outer end is formed with an annular recess 20 beyond the threaded portion for a purpose which will presently appear. Post 12 adjacent its inner end or base has formed therein opposite openings 21 through which may be extended chart holding fingers 22 at the inner ends of a plurality of holding parts 23 which in the present instance are irregularly shaped plate members having adjacent their outer ends projecting portions or lugs 24 adapted to engage in the annular recess 20. The outer ends of the holding part 23 are held in engagement with the cap recess by

means of a compression spring 25 engaging at its end over projections 26 on the holding parts. Two such parts are employed in the present instance but it is obvious that this number may be varied.

It is apparent from the above description that as the cap is screwed outwardly of the post, the holding parts by reason of the operative connection with the cap, are carried outwardly to move the fingers 22 out of engagement with the record sheet to release the latter. In order that the sheet may be detached from the post, however, it is desirable at the same time to retract the holding fingers within the post, and to this end the support 10 is formed centrally within the post with a cone shaped cam surface 27 with which cooperates a curved cam surface 28 adjacent the inner end of each of the holding parts. Each of the holding parts, moreover, is provided on its opposite side also with a cam surface 29 cooperating with the edge of the opening 21 in which it moves, these parts being so constructed and arranged that as the cap is screwed toward the end of the post to raise the holding fingers, the latter by reason of the cam surfaces 29, are retracted or drawn within the outlines of the post at the same time that they release the sheet, as shown in Figure 3, so that the sheet may be then easily lifted off the post. Similarly when the cap is screwed toward the base of the post and the holding fingers thereby move toward the chart, the cooperating cam surfaces 27 and 28 serve to extend the fingers outwardly of the post so that they are projected over the edges of the sheet to clamp the latter against flange 11. This construction provides for the clamping of the sheet with a very considerable force so that it is securely held in operating position.

The upper end of the post is preferably formed with inwardly extending slots 30 opposite the holding part 23 in which projecting portions 31 on the holding parts are slidably guided during a part of the movement of the latter. These slots also afford access to the holding parts when the cap is first applied to the end of the post during initial assembly so that the upper end of the holding parts may be moved inwardly to clear the threaded portion of the cap. In this manner the upper ends of the holding parts are located in the recess 20 in the cap and when the latter is thus positioned the upper ends of the holding parts thereafter prevent the cap from being entirely unscrewed and detached from the post in operation. The holding parts thus have the additional function of serving as stops for limiting the movement of the cap, the permitted movement of which is ample for operating the holding fingers in the manner described so that the cap does not require

to be removed from the device and therefore cannot become displaced and lost.

The compact, self-contained construction and arrangement of the parts permits of a relatively small external diameter for the post and cap so that but a relatively small opening is required in the chart to receive the latter which therefore do not obstruct the chart surface to any material extent. The construction is furthermore, simple, practical and inexpensive, and convenient to operate, holding the chart effectively clamped on the chart table without requiring the detachment of any part in use.

I claim as my invention:

1. In a recording instrument, a device for holding a record sheet on the instrument comprising a support having a hollow post portion for insertion through an opening in the sheet and a laterally extending clamping flange at the base of said post portion, said post portion being formed with lateral openings in its walls adjacent said flange, holding means in said post portion having a sliding movement longitudinally thereof and through said openings therein for cooperation with said flange to clamp and release a sheet, a member adjustable on said post portion, and co-operating means on said member and support for effecting said movements of said holding means upon adjustment of said member.

2. In a recording instrument, a device for holding a record sheet on the instrument comprising a support, a plurality of holding parts movably carried by the support for extension and retraction relative thereto to engage and release said sheet, a member threadedly connected with the support for manual adjustment to different positions thereon, and operative connections between said member and parts for effecting said movements of the latter.

3. In a recording instrument, a device for holding a record sheet on the instrument comprising a hollow support for insertion through an opening in the sheet and provided with openings in its walls, holding means movably carried by the support for extension through said support openings to engage and hold the sheet and for retraction into said support to release the sheet for detachment from the support, a member adjustable to different positions on the support and operative connections between said member and holding means for effecting said movements of the latter.

4. In a recording instrument, a device for holding a record sheet on the instrument comprising a hollow support for insertion through an opening in the sheet, holding means movably carried in the support for extension therefrom to engage and hold the sheet and for retraction thereinto to release the sheet for detachment from the support,

a member movable to different positions on the support, and operative means on said support and member for effecting said movements of the holding means by movement of said member.

5 5. In a recording instrument, a device for holding a record sheet on the instrument comprising a hollow support for insertion through an opening in the sheet, a plurality
10 of holding parts movably carried in the support for extension therefrom to engage and hold the sheet and for retraction thereinto to release the sheet for detachment from the support, a member movable to different po-
15 sitions on the support, operative means on said support and member for effecting said movements of the holding parts by movement of said member, and spring means for retaining said holding parts in operative
20 relation with said support and member.

6. In a recording instrument, a device for holding a record sheet on the instrument comprising a hollow support for insertion through an opening in the sheet, a plurality
25 of holding parts movably carried in the support for extension therefrom to engage and hold the sheet and for retraction thereinto to release the sheet for detachment from the support, a member movable to different posi-
30 tions on the support and operatively connected with said holding parts to effect said movements thereof, and cooperating cam means on said support and holding parts for controlling the movements of the latter.

35 7. In a recording instrument, a device for

holding a record sheet on the instrument comprising a hollow support for insertion through an opening in the sheet, a cap threadedly engaging the end of said sup-
40 port and provided with an annular recess, a plurality of holding parts movably carried in said support each having at one end a finger for engaging the sheet and at the other a portion engaging in said cap recess, and guide means for said holding parts for
45 extending the fingers thereof from said support to engage the sheet when the cap is turned in one direction and for retracting said fingers within said support when said cap is turned in the other direction. 50

8. The combination with a recording instrument provided with means for supporting a record sheet, of a hollow post of relatively small diameter projecting from said supporting means for insertion through an
55 opening in the sheet, a cap threadedly engaging the end of said post and formed with an internal annular recess, a plurality of holding parts in said post each having a finger movable in an opening in the post for en-
60 gagement with the sheet and also a portion engaging in said cap recess, spring means maintaining said parts in engagement with said cap recess, and guide means for extend-
65 ing said fingers from the post into engagement with the sheet when the cap is turned in one direction and for retracting the fingers within the post to release the sheet when the cap is turned in the other direction.

EDWIN HODGKINSON.