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AERONAUTICAL CHART

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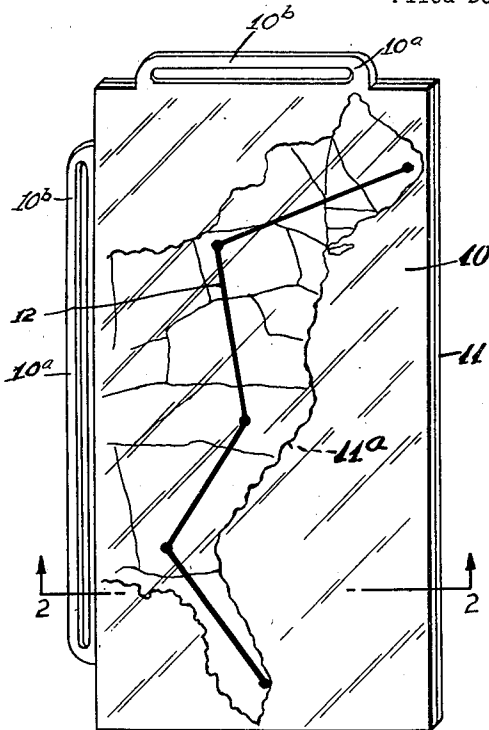


Fig. 1.

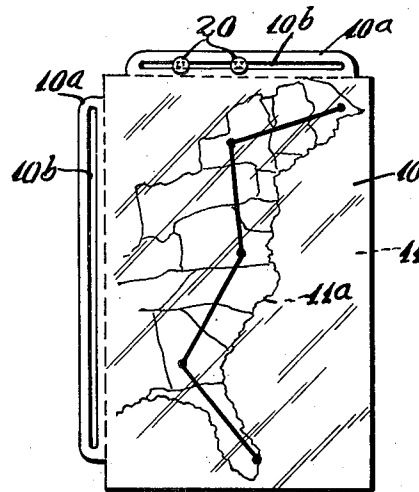


Fig. 3.



Fig. 4.

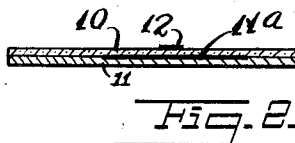


Fig. 2.



Fig. 3.

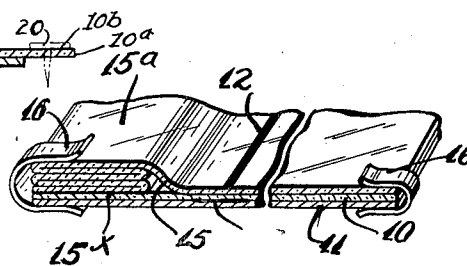


Fig. 5.

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## UNITED STATES PATENT OFFICE

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## AERONAUTICAL CHART

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2 Claims. (Cl. 35—40)

This invention relates to new and useful improvements in aeronautical charts, and it has more particular reference to a cellulose film processed aeronautical chart which may improve or replace the untreated paper aeronautical charts of the present time.

Aeronautical charts now in use in this country are made and distributed by private concerns, and the United States Government (U. S. Coast and Geodetic Survey, Washington, D. C.). Considering the duration of service these charts render to the aviator they are expensive, mainly because they are not sold in large enough quantities. By the same token enough are not sold because they are too expensive for the very limited use a pilot may derive from them.

Aeronautical charts are not only used for reference work by non-scheduled fliers and student pilots, but are also used to plot courses on them by pencil lines, lines for "track made good" and lines to figure the "drift angle". These lines cannot be erased without erasing some of the printed colors and markings of the chart itself. Two or three attempts to erase pencil lines on the same part of a chart will invariably leave a blank spot or spots representing miles of terrain. If it is flat land it is unimportant, but should it be mountainous country, country with high power transmission lines, high radio towers, or air space reservations (explosive areas, etc.), the danger cannot be over-emphasized.

Aeronautical charts are handled quite roughly due to the fact that the smallest sectional is approximately 24" x 48" in size, and the cockpit of an airplane is of very limited size. These charts must be folded, refolded and unfolded over and over again, and strapped on the thigh for continuous reference. Necessarily they must be very pliable and durable. The untreated charts in use today are pliable but very far from durable. Though the paper is of fine quality, untreated charts cannot but tear with the slightest provocation after being creased more than a few times.

Aeronautical charts at the present time have no protection from rubbing against damp or soiled clothing, from finger marks and dirt in general. In as much as altitudes are shown on said charts with different shades of pastel colors one can readily see that cleanliness and clearness of a chart is most essential. No matter how careful one is with untreated paper charts they soon soil to the extent that one cannot tell whether certain sections originally were printed

in brown, tan, light green, medium green or dark green.

It is because of the reasons outlined above that most American airmen, both amateur and professional alike, resort to automobile maps for their navigational problems. They use these because they are free. This practice is not proper and is absolutely unsafe for aerial navigation. Our Government has spent much time and money in order to make fine aeronautical charts. The pertinent information thereon is invaluable to airmen, and yet because of the expense involved they are seldom used.

This invention proposes to so process these Government maps and similar aeronautical charts that the added expense will be slight indeed considering the added features and the durability of the charts.

The invention proposes the use of cellulose film to process the aeronautical charts and make them economical to use because they will outlast untreated charts 100 to 1. Cellulose film processed aeronautical charts will add safety on the airways, as they can always be clean as new because all markings done on the cellulose film with a black "china marking" or "Cellophane" pencil may be very easily erased by rubbing with a soft cloth which does not abrade the surface but simply absorbs the markings without smearing.

Cellulose film processed aeronautical charts, in accordance with this invention, will be extra durable even under the roughest use because the cellulose film will act like an invisible armour plate, besides keeping it moisture proof, grease proof, dirt proof and at the same time, pliable.

Cellulose film processed aeronautical charts, in accordance with this invention, will be practical and are needed for the development of safer aerial navigation.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawing, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawing forming a material part of this disclosure:

Fig. 1 is a perspective view of a cellulose film aeronautical chart constructed in accordance with this invention.

Fig. 2 is a fragmentary enlarged vertical sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a plan view of the aeronautical chart

illustrating the manner in which the device is to be used.

The cellulose film aeronautical chart, in accordance with this invention, includes a sheet of cellulose film 10 and a flexible chart 11 mounted on the bottom face thereof. A substance 12 which may be readily erased is disposed on the top of the cellulose film 10 for laying out a course on the chart. The flexible chart 11 may comprise a separate sheet of paper with the chart material 11<sup>a</sup> printed on the top face thereof. Or the flexible chart may comprise printed matter on the bottom face of the cellulose sheet 10 so that this printed matter may be viewed from the top. The substance 12 may comprise black "china marking" or a "Cellophane" pencil marking or other similar material, which may be erased by rubbing with a soft cloth which does not abrade the surface but simply absorbs the markings without smearing. The chart 11 may be cemented throughout its entire area to the bottom face of the cellulose film 10, or may be cemented along edge portions thereof, or at certain points.

The cellulose film 10 is illustrated with a pair of side extensions 10<sup>a</sup> at adjacent edges of the cellulose film 10. Each of these side extensions is formed with a slot 10<sup>b</sup>, parallel to the edge of cellulose sheet 10. Thumb tacks or the like 20 may be engaged through these slots to guide the device to various parallel positions, for marking the cellulose film 10 by moving the same while the marker is held against the film in one position.

In Fig. 3 a pair of tacks 20 are shown engaged through the topmost slot 10<sup>b</sup> and into the surface upon the surface upon which the chart rests, merely for the purpose of illustration, as the tacks are to selectively engaged with either of the slots 10<sup>b</sup>. With the tacks 20 positioned as shown it is possible to move the chart laterally relative to its supporting surface and through a distance substantially equal to the length of the

top slot 10<sup>b</sup> or until the tacks 20 strike the ends of the slot. With a marking crayon held stationarily against the face of the cellulose film 10 it is possible to draw lines on the face of the film 10 parallel to the top slot 10<sup>b</sup> by merely moving the chart laterally of the crayon. Thus, with the tacks 20 engaging either of the slots 10<sup>b</sup> it is possible to draw lines on the face of the chart parallel to either of the slots 10<sup>b</sup>.

While I have illustrated and described the preferred embodiment of my invention, it is to be understood that I do not limit myself to the precise construction herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. An aeronautical chart, comprising a sheet of cellulose film, a flexible chart mounted on the bottom face of said film to be viewed through said film, side extensions on adjacent edges of said cellulose film, each of said side extensions being formed with an elongated slot, and means selectively engageable through one of said slots so that said chart may be moved either parallelly upwards or downwards relative to said slots to mark the cellulose film with a stationary marker.

2. An aeronautical chart, comprising a sheet of cellulose film, a flexible chart mounted on the bottom face of said film to be viewed through said film, side extensions on adjacent edges of said cellulose film, each of said side extensions being formed with an elongated slot, and means selectively engageable through one of said slots so that said chart may be moved either parallelly upwards or downwards relative to said slots to mark the cellulose film with a stationary marker, comprising a pair of thumb tacks selectively engageable through either of said slots.

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