

June 30, 1931.

H. STELZNER

1,812,380

GAS PROTECTIVE MASK FOR ANIMALS, PARTICULARLY FOR HORSES

Filed Nov. 5, 1928

2 Sheets-Sheet 1

Fig. 1.

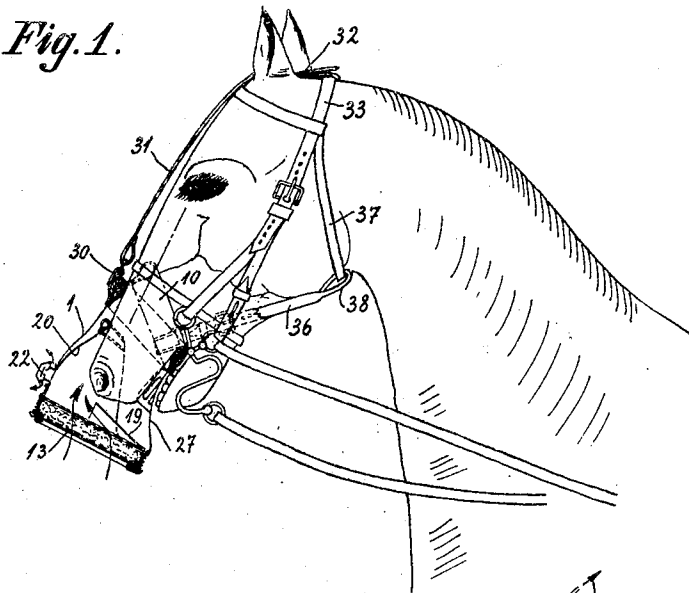


Fig. 3.

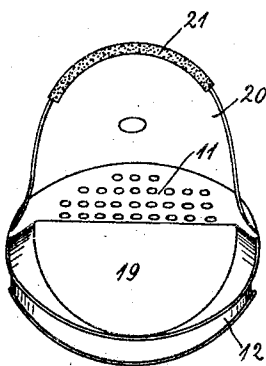


Fig. 2.

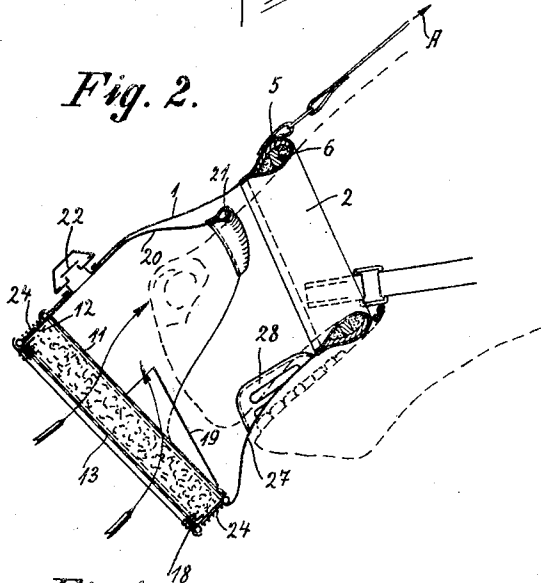
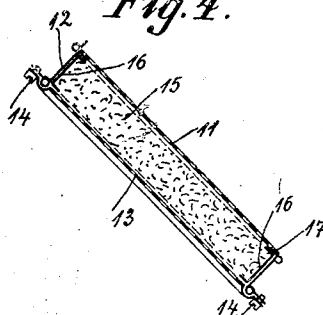


Fig. 4.



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2 Sheets-Sheet 2

Fig. 3.

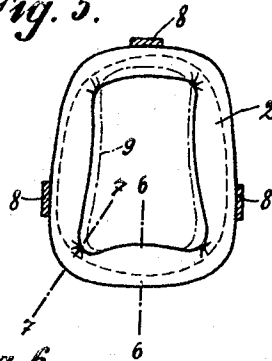


Fig. 6.

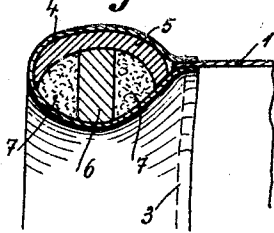


Fig. 7.

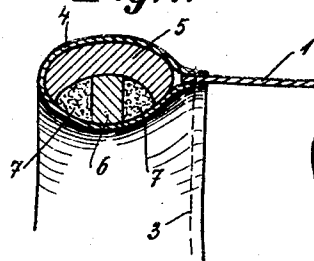


Fig. 8.

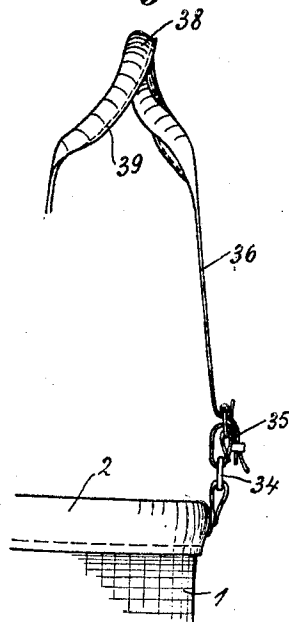
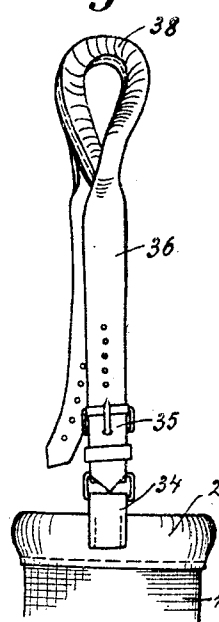


Fig. 9.



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UNITED STATES PATENT OFFICE

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GAS PROTECTIVE MASK FOR ANIMALS, PARTICULARLY FOR HORSES

Application filed November 5, 1928, Serial No. 317,259, and in Germany November 10, 1927.

The invention relates to a gas protective mask for animals, particularly for horses, which is constructed to embrace solely the upper jaw and the nose. Over known masks of this kind, the present mask differs according to the invention, in the first instance by the provision of an elastic or yielding tightening roll or pad which is passed through the mouth and is shaped to correspond to the contour of the upper jaw embracing the same all around and finding its bearing in the corner of the mouth. This pad or roll may comprise a generally tube shaped mantle or cover filled with an elastic material, however, in such manner that its inner periphery or surface when formed to correspond to the upper jaw and nasal bone of the animal is smaller and more yielding than the outer surface. Preferably the roll is made of a yielding ring of felt or the like of a mushroom- or T-shaped cross-section, preferably comprising a broad table or head-strip and an upright stay or web-strip enclosed within a mantle or covering of leather or the like.

The mask is preferably constructed of a bag or pouch made of a material impermeable to gas and provided at its front end with a filter cartridge. To avoid the snug fit or good seat of the pad being destroyed by the weight of the filter cartridge, the latter is provided with a yoke-like projection or the like, which finds a support against the nasal bone, the lower edge of the filter cartridge being constructed to carry a wall arranged at an angle to the inner surface of the cartridge to prevent the lips from touching the cartridge.

Moreover the invention enables the application of the gas mask to the horse in such manner, that the bridle need not be loosened or changed at any place, and that there is no necessity of using a bridle different from the normal. This is of importance in the case of gas danger for enabling full-bridled horses to be quickly brought away from the endangered place. With this object in view the attachment of the mask is carried out by a band or the like placed over the nose and the forehead and attached with one end to the upper part of the tightening roll or pad

and with the other end to the main band of the bridle at the highest point, and moreover the attachment provides a loop-like band or the like, the ends of which engage the sides of said roll, and the centre of which is slung round the throat band between the cheekbones. The looped part of the band is preferably strengthened by a filler of metal or the like, which is bent in a plane essentially parallel to the surface of the band. The band may be rolled about the said filler and the edges sewed together, the seam being so twisted that the ends of the band remain in a position in which their faces are lying approximately parallel to one another and to the plane of the loop.

Fig. 1 of the drawing shows the mask applied to the head of the horse in elevation partly in section.

Fig. 2 is an enlarged sectional view of the lower part of the mask.

Fig. 3 is the rear view of the filter cartridge shown in Fig. 2.

Fig. 4 is a cross section of a modified filter cartridge.

Fig. 5 is an elevation of a roll or pad used in connection with the invention.

Fig. 6 is a sectional enlarged perspective view of part of the roll the section being drawn to the line 6—6 of Fig. 5.

Fig. 7 is a similar view the section being drawn to the line 7—7 of Fig. 5.

Figs. 8 and 9 are two different views of the band placed round the throat band of the bridle and attached at one end to part of the mask shown in Fig. 1 to a larger scale.

In the construction shown in Figs. 1 and 2 the mask 1 embraces the upper jaw of the horse. The tightening roll or pad 2 which is shaped to agree with the contour of the upper jaw passes through the mouth in such manner that it embraces the upper jaw all round and bears in the corner of the mouth. As may be gathered from Fig. 5 the pad has approximately the shape of a rectangle with rounded-off corners. To secure sufficient yieldingness of the pad at those places, where it is subjected to pressures to the greatest extent and to also secure a good snug fit to diverse shapes of the upper jaw of animals,

the pad is made of a plurality of parts, namely of a mantle or cover 4 of rubber, leather or the like, connected by a seam 3 to the mask 1, and of a filler within said mantle or cover 4 having a mushroom- or T-shaped cross-section. This filler is preferably made of felt, the T comprising a table or head strip 5 and a stay or web-strip 6. The intermediate spaces 7 are filled up with rubber sponge, or with a similar yielding material, which eventually may be granular. When the covering 4 is drawn together the two felt strips 5 and 6 will assume a cross section of the shape of a mushroom such as is shown in Figs. 6 and 7, the table or head strip 5 will become curved on the edges and the complete cross-section of the pad corresponds somewhat to a triangle having curved sides and rounded-off edges. On the corners of the essentially rectangular pad, that is to say, where the sectional line 7—7 is shown, it varies in section from the centre part to the sides of the rectangle, where the sectional line 6—6 is shown in Fig. 5. Namely in the cross-section shown in Fig. 6 the table or head strip 5 is thinner and the stay or web strip 6 is thicker, than is the case in the cross-section shown in Fig. 7. The latter thus is more yielding. The changes of the cross-section from that shown in Fig. 6 to that shown in Fig. 7 are preferably gradual. The consequence of this construction is moreover that the inner contour of the pad may be comparatively easily distorted to the line 9 shown dotted in Fig. 5. In other words the inner rectangle will become narrower but longer. With horses the upper jaw of which has a smaller cross section in the plane of the pad, than the largest dimension that might occur in masks, for which the pad is constructed, the pad 2 will be distorted, when it is drawn in a direction of the arrow A, Fig. 2, by a belt 8 shown in Fig. 5 in cross section, into the oblique position 10 shown in dotted lines in Fig. 1, because the corners of the pad corresponding to the section line 6—6 of the pad has the least resistibility against bending. Moreover there is the advantage that owing to the sectional shape of the pad the creation of folds, particularly on the corners, is reliably prevented. The pad 2 thus is narrower and more yielding on its inner contour than on the outer face.

The mask carries at its front end a filter cartridge, which in the construction shown in Fig. 4 comprises a cup- or dish-like bottom part 12 provided with a sieve-plate 11 and a flat sieve-lid 13. Both consist of light metal and are held together by set screws 14. The inner space which is filled with chemical grains 15 or other absorption material is surrounded by a ring 16 of U-shaped cross-section, against which the sieve plate 11 and 13 bear, the first by an intermediate rubber

packing ring 17 or the like. When drawing the set screws 15 home the packing ring 17 is compressed. The construction of the cartridge shown in Figs. 1 and 2 differs from that shown in Fig. 4 only slightly. In the latter the U-shaped ring 16 is replaced by a narrow angular ring 18, which eventually may also consist of a packing material.

An oblique wall 19 is attached to the lower inner edge of the cartridge for preventing the contact of the lips of the horse with the inner face of the cartridge, thus providing an intermediate wedge-shaped space of air. To the upper edge of the cartridge a cap or bowl 20 is mounted, which may be integral with the portion 12 of the cartridge, and which runs round similar to a yoke and protects the nostrils of the animal and is supported with its upper rounded edge 21 by the nasal bone. This edge 21 may be bordered by a soft fabric fastened by sewing to prevent chafing or rubbing. The bowl 20 carries an exhaling valve 22 constructed to work with ease.

The mask body proper 1 consists of a hose-like covering of a pliable material impermeable to gas. The lower opening of this hose is spanned around the cartridge and fastened thereto, for instance by a wire 24. The filter cartridge being comparatively large the mask body 1 is bent or given an angle 27, where it enters the muzzle. To prevent injuries by the teeth of the animal that portion of mask material lying within the mouth is covered by a plate 28 of steel or the like, which may be perforated as shown. The wall 19 reaches about up to the middle of the filter cartridge. The inhaled air takes its way, as is shown by arrows in Figs. 1 and 2, into the nostrils. The wedge shaped space between the oblique wall 19 and the lower part of the mask material serves as saliva collector.

The head-stall is connected with the mask by being fastened to the pad 2, the band 31, which by a buckle-loop 32 engages the main band of the bridle, running between the ears down over the forehead and the nose, and being attached at the centre of the mask at 30. Preferably by buckles 35, the ends of a band 36 are fastened on the sides of the pad 2 at 34, which band at its centre passes round the throat band 37 of the bridle intermediate of the cheek bones. The loop 38 is preferably strengthened by a soft iron filler. This iron filler is so bent that its main plane runs essentially parallel to the faces of the band 36. The centre part of this band may be rolled or placed round the soft iron filler and its edges connected with one another by sewing. The seam 39 is so twisted that the ends of the band 36 uphold their position so that the inner faces are parallel to one another and to the main plane of the bent iron filler. Hereby the inconvenient pressure and chafing is prevented, and a snugly flat bearing of the belt 36 on the head is secured.

The throat band is supported against the cheek bones at its lower part and the round cross section of the loop 38 prevents any pressure against the bronchial artery or pipe of the lungs.

I claim:

1. A gas protective mask for animals, particularly for horses, which is adapted to encompass the upper jaw and nose of the animal, said mask comprising a bag of material impermeable to gas and having an opening at each end, the opening at one end having a filter cartridge disposed therein and the edges of the bag at the free opening at the other end having a roll or strip of padding attached thereto and extending around the same, said strip of padding having a generally rectangular outline in side elevation and being shaped to conform to the contour of the upper jaw and nose of the animal and being made of a mantle filled with elastic material, the inner periphery of the padding being more yielding and more narrow than its outer periphery.

2. A gas protective mask for animals, particularly for horses, which is adapted to encompass the upper jaw and nose of the animal, said mask comprising a bag of material impermeable to gas and having an opening at each end, the opening at one end having a filter cartridge disposed therein and the edges of the bag at the free opening at the other end having a roll or strip of padding attached thereto and extending around the same, said strip of padding being shaped to conform to the contour of the upper jaw and nasal bone of the animal, the padding being made of a generally tube shaped mantle of flexible material having a filler which is mushroom or T-shaped in cross-section.

3. A gas mask construction as claimed in claim 2 wherein the filling for the padding comprises a flat head strip and an upright web-strip made of felt, and sponge rubber or the like for filling the intermediate spaces between the mantle and the aforesaid strips.

4. A gas mask construction as claimed in claim 2 wherein the padding has a substantially rectangular outline in side elevation and wherein the filling for the padding comprises a flat head strip and an upright web-strip, the head strip being thicker at the corners than along the sides and the web-strip being more narrow at the corners than along the sides.

5. A gas protective mask for animals, particularly horses, which is adapted to encompass the upper jaw and nose of the animal, said mask comprising a bag of material impermeable to gas and having an opening at each end, the opening at one end having a filter cartridge disposed therein and the edge of the bag at the free opening at the other end having a roll or strip of padding attached thereto and extending around the

same, said strip of padding being shaped to conform to the contour of the upper jaw and nasal bone of the animal, and a projecting yoke attached to said filter cartridge and extending inwardly therefrom within the bag to bear upon the nasal bone of the animal and cooperating with the bag to support the cartridge.

6. A structure as claimed in claim 5 wherein the cartridge is provided with an oblique wall attached to its lower inner edge, said wall being adapted to prevent the lips of the animal from contacting with the cartridge.

7. A structure as claimed in claim 5 wherein the yoke surrounds the nostrils of the animal and supports an exhaling valve extending through the bag.

In testimony whereof I have signed my name to this specification.

HERMANN STELZNER.

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