June 3, 1930. J. H. SHUNK, JR 1,761,094

FIREWORKS CONSTRUCTION

Filed March 19, 1926

Fig. 1.

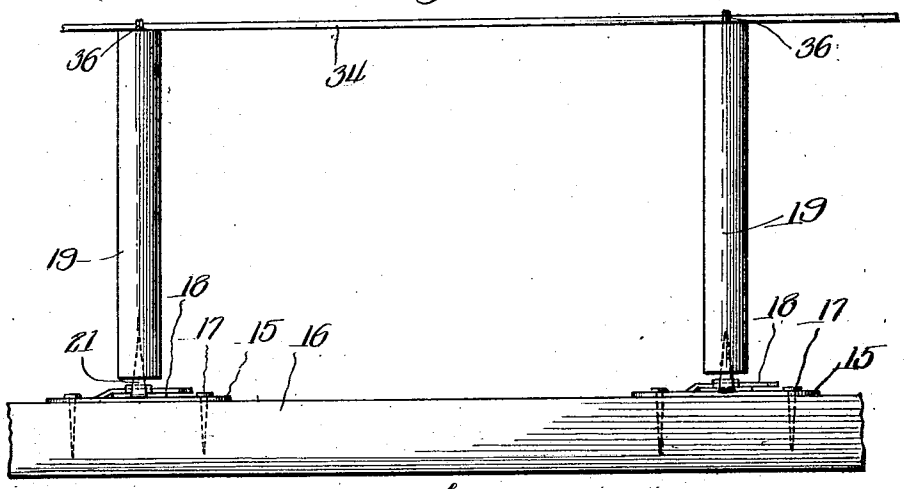


Fig. 2.

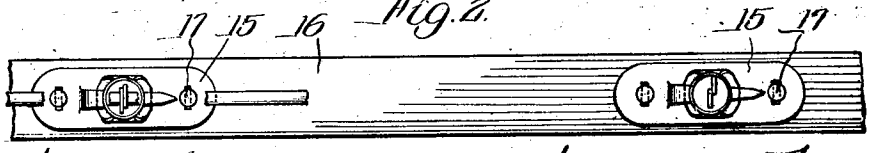


Fig. 3.

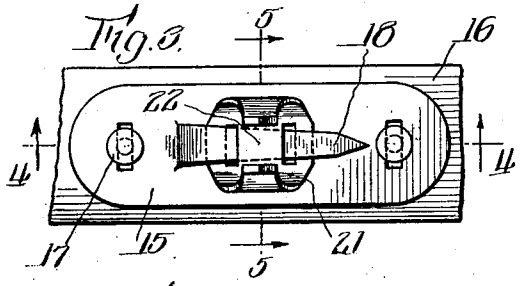


Fig. 9.

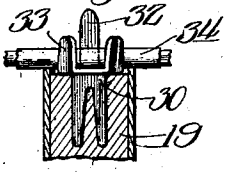


Fig. 10.

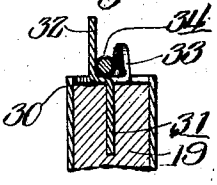


Fig. 4.

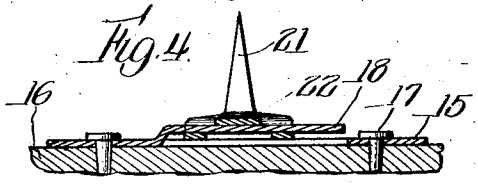


Fig. 11.

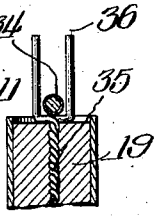


Fig. 8.

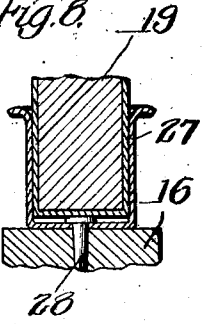


Fig. 5.

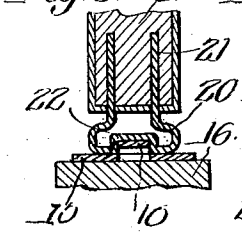


Fig. 6.

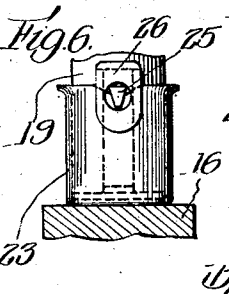
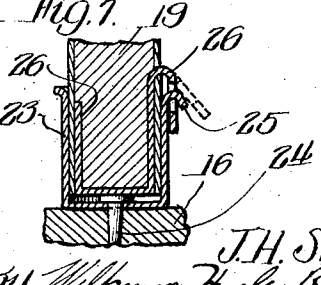


Fig. 7.



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UNITED STATES PATENT OFFICE

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FIREWORKS CONSTRUCTION

Application filed March 19, 1926. Serial No. 95,850.

This invention relates to a new and improved fireworks construction, and more particularly to a construction relating to the method of securing in place the lances and fuse or match of a lance work or set piece construction.

Set pieces, which are known as lance work in the pyrotechnic trade, are constructed by forming the desired design by means of cane or other flexible strips secured to frames. The frames are formed of thin strips of material crossed to form squares about a foot on each side, the frames customarily being five by ten feet. A number of frames are assembled to form the larger pictures. The design formed by the cane or other flexible strips is illuminated by a large number of lances secured to the strips at closely spaced intervals, these being usually about four inches apart. These lances are paper covered rolls of illuminating material about the thickness of a pencil and varying in length depending upon the time of burning desired.

The lances are commonly secured to the cane strips by driving in wire nails and clipping off the heads to leave the projecting portion of the nails pointed. The lances are then forced down upon the nails which penetrate the bottoms of the lances. This method of assembling is somewhat difficult as the material of the lances hardens and the paper covering is not very heavy, so that they are frequently broken when forced on the nails. Further, the nails do not hold the lances very securely and they sometimes become detached when the frames are hoisted into place. It is particularly difficult to place the lances upon nails in frames previously used, as the burning of the previous lances has corroded and roughened the nails.

When the lances are assembled the fuse or match is laid around the tops of the lances and according to present practice, is held in place by pins forced through the fuse and into the tops of the lances. This method of assembling is difficult in that the ends of the lances are treated with material tending to harden them, and it is difficult to push the pins in without their bending or without using such pressure as may break the lance. The fuse consists of an impregnated cord or wick enclosed in a tube of paper. After it is secured to the lance, holes are made in it opposite the ends of the lances so that the flame from the wick will ignite the lances.

It is an object of the present invention to provide a new and improved means for attaching lances to frames for lance work production.

It is a further object of the invention to provide a new and improved means for securing fuses to lance work.

It is an additional object of this invention to provide means of this character adapted for rapid assembling of lance work elements, with a minimum labor cost and a minimum of spoilt material.

It is a further object to provide retaining means by which the lances may be positively secured to the framework.

Other and further objects will appear as the description proceeds.

I have illustrated certain preferred embodiments of my invention in the accompanying drawings, in which—

Figure 1 is a fragmentary side elevation, showing lances secured to the supporting cane member;

Figure 2 is a plan view of Figure 1;

Figure 3 is a plan view of the lance securing means upon an enlarged scale;

Figure 4 is a section taken on line 4—4 of Figure 3;

Figure 5 is a section on line 5—5 of Figure 3;

Figure 6 is a fragmentary elevation of a modified form of lance securing means;

Figure 7 is a transverse section of the form of construction of Figure 6;

Figure 8 is a transverse section of a modified form of lance securing means;

Figure 9 is an elevation of means for securing the fuse to the ends of lances;

Figure 10 is a transverse section of Figure 9; and

Figure 11 is a view of a modified form of fuse securing means.

In the form of construction shown in Figures 1 to 5 the lance securing plates 15 are secured to the cane or other strips 16 by means

of tacks 17. The plates 15 are provided with struck-up tongues 18 extending parallel to the body of the plate. The lances 19 are each provided upon their lower ends with securing members 20, having the prongs 21 extending into the lances as best shown in Figure 5. The lower transverse portions of the members 20 are provided with stuck-up portions 22, and the tongues 18 of the plates 15 pass between the portions 22 and the base of member 20. The lances are thus positively secured in place and are maintained at right angles to the supporting plates. While plates 15 have been shown as secured to the cane by means of tacks, they obviously may be secured in place by means of down-turned prongs formed integrally with the plates, or by other suitable securing means.

In the form of construction shown in Figures 6 and 7 the lance receiving cups 23 are secured to the cane 16 by means of tacks 24. The cups 24 are provided with down-turned lugs 25 adapted to engage openings in securing members 26 which are formed into the ends of the lances 19. As indicated in broken lines in Figure 7, the end of the member 26 is turned down to engage the lug 25 after the lance is forced into the cup.

The form of construction in Figure 8 consists in an open cup 27 secured to the cane 16 by the tack 28. The lance 19 is forced into the cup which is formed of light metal. After the lance is in place the cup may be laterally deformed by lateral pressure to cause it to grip the lance.

Figures 9 and 10 show a flat metal construction for securing the fuse to the upper end of the lances. The member 30 is provided with prongs 31 extending into the lance, this being preferably put in place when the lance is formed and the material is plastic. The members 30 are provided with upwardly extending prongs 32 and the shorter upwardly extending prongs 33. The fuse 34 is placed between the prongs as clearly shown in Figure 10, and the longer prong 32 is bent down over the fuse to retain it in place.

The form of construction shown in Figure 11 comprises a pair of wires or a single wire, having the twisted portion 35 extending into the upper end of the lance 19. The wire member has spaced upwardly extending portions 36 between which the fuse 34 is placed. The wire portions 36 may then be bent over or twisted together to retain the fuse in place. As in the other forms of construction the metallic securing member is preferably inserted in the lance when the latter is formed and the material is plastic.

By using any one of the forms of construction shown the lances may be very quickly assembled upon the cane framework without the use of force such as might break the lance. The lances are positively retained in place and will not become detached as the frame is elevated into position for use. The match or fuse may be quickly attached to the tops of the lances and no pressure need be applied to the lances for this purpose. These constructions result not only in a decrease in the labor time required, but permit a set piece to be rapidly assembled by persons unskilled in the art.

While I have illustrated certain preferred embodiments of my invention by way of example, I contemplate such further changes and modifications as come within the spirit and scope of the appended claims.

I claim:

1. Fireworks construction comprising a fixed member adapted to be secured to a frame, a lance, securing means fastened to said lance, and interengaging means on the fixed member and securing means whereby the lance is retained at right angles to the frame.

2. Fireworks construction comprising a lance, a fuse, and means carried by the upper end of the lance and extending from the upper face thereof for securing the fuse in engagement with the lance.

3. Fireworks construction comprising a lance, a fuse, a metallic member having a portion extending axially into the upper end of the lance, and a portion extending from the end of the lance and adapted to be bent over the fuse to retain it in engagement with the end of the lance.

4. Fireworks construction comprising a frame, lances adapted to be secured to the frame, metal securing members fastened to the frame and metal securing means fastened to the lower ends of the lances, said securing members and means having interengaging tongues and slots to hold the lances at right angles.

5. Fireworks construction comprising a frame, lances adapted to be secured to the frame, metal securing members fastened to the frame and metal securing means having portions extending into the bottom of the lances and having slots adapted to receive elements of the frame securing members to hold the lances at right angles.

6. Fireworks construction comprising a lance, a fuse, and means carried by the top of the lance for securing the fuse thereto, said metal means having prongs adapted to extend downwardly into the body of the lance, and having spaced upwardly extending prongs adapted to be bent around the fuse to retain the fuse against the end of the lance.

7. Fireworks construction comprising a frame, lances adapted to be secured to the frame, metal securing members fastened to the frame, said members having struck-up tongues extending parallel to the frame, and metal securing means having spaced prongs extending up into the bottom of the lances,

said members having an intermediate struck-up portion with slots adjacent the sides of said portion, the tongues on the frame securing members passing through the slots and below the struck-up portion.

Signed at Roscoe, Illinois, this 1st day of March, 1926.

JAMES H. SHUNK, JR.