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DAMAGE TO LENGTHS OF PRIMACORD PRODUCED BY DETONATION OF NEAR-BY LENGTHS

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1. Tests have been carried out to determine the extent of damage to lengths
of primacord produced by the detonation of a near-by length. The primacords were arranged to be (a) parallel to and (b) perpendicular to the detonated length at distances ranging from 5/16" to 3" approximately in $\frac{1}{2}$" steps.

2. Procedure

The primacords on test were supported in holes in wooden frames, the
sides of the frames being 4" apart and 3" apart for tests (a) and (b) respectively.
In test (a) (see Fig.1) the detonating primacord was supported parallel to and at a
clear distance of $\frac{1}{2}$" from the center primacord in the frame. The other primacords
were at clear distances of approximately 1", $1\frac{1}{2}$", 2", $2\frac{1}{2}$", and 3". In test (b) (see
Fig.2) the detonating primacord was suspended over the center of the frame in the
form of a curve so that it was 2-3/4" from the primacord towards the ends of the frame
and only 5/16" clear distance away from the primacord at the center. The clear distances of the primacords progressively farther from the center of the frame were approximately $\frac{1}{2}$", 1", $1\frac{1}{2}$", 2", and 2-3/4".

A 1/16" metal plate was used to protect the primacords from the blast
and fragments from the detonator. After firing, the various pieces of primacord were
examined for mechanical damage and the most heavily damaged lengths were tested to see
whether they would detonate satisfactorily.

3. Results

Photographs of the setups after firing are shown in Figs. 3 and 4 and
some details of the damage to individual primacords are given below:

Test (a). The primacord parallel to the detonated length at a clear
distance of $\frac{1}{2}$" had nearly all the braid and most of the cellophane

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liner removed and was sheared somewhat near the holes in the wooden frame. The damage was progressively less at the greater distances until at $2\frac{1}{8}''$ the damage became negligible. The ability of the primacords to sustain detonation was checked for the most severely damaged lengths, but in no instance did a failure occur.

Test (b). The damage to the primacords in this test appeared to be much less than when they were parallel to the detonated length, but at the nearer distances there was still considerable damage to the braiding. As in test (a), the damage became negligible at distances of about $2\frac{1}{8}''$ and even at the nearest distance, $5/16''$, the primacord was not so damaged that it failed to sustain detonation.

4. Conclusion

It appears that there will be no damage to a length of primacord that is more than $2\frac{1}{2}''$ from a length which detonates earlier and, in fact, failure to detonate is unlikely unless the primacords are as close as a clear distance of $\frac{1}{2}''$ whether parallel or skew.
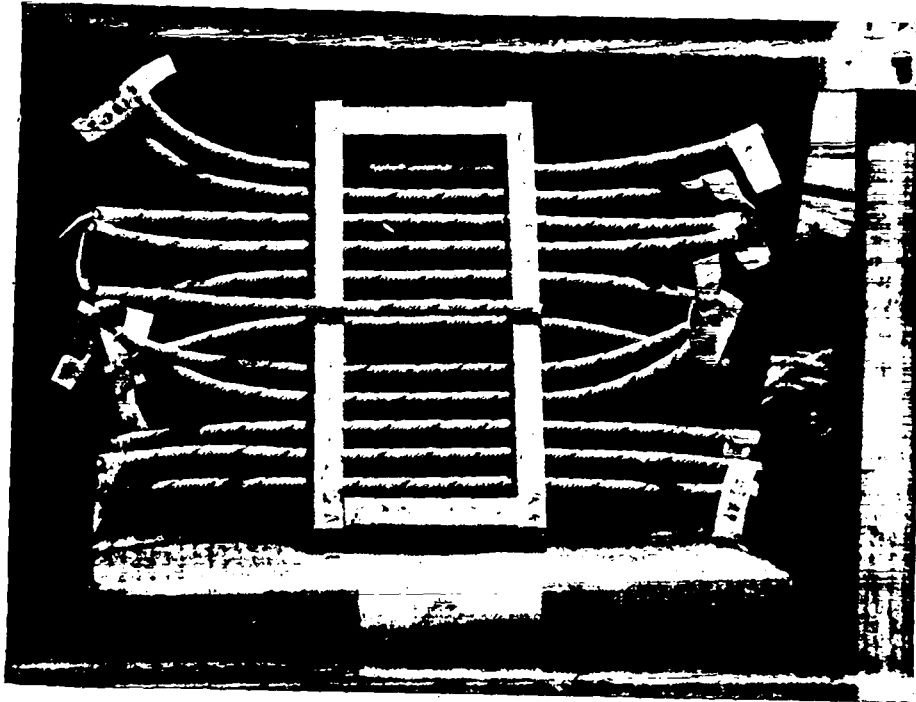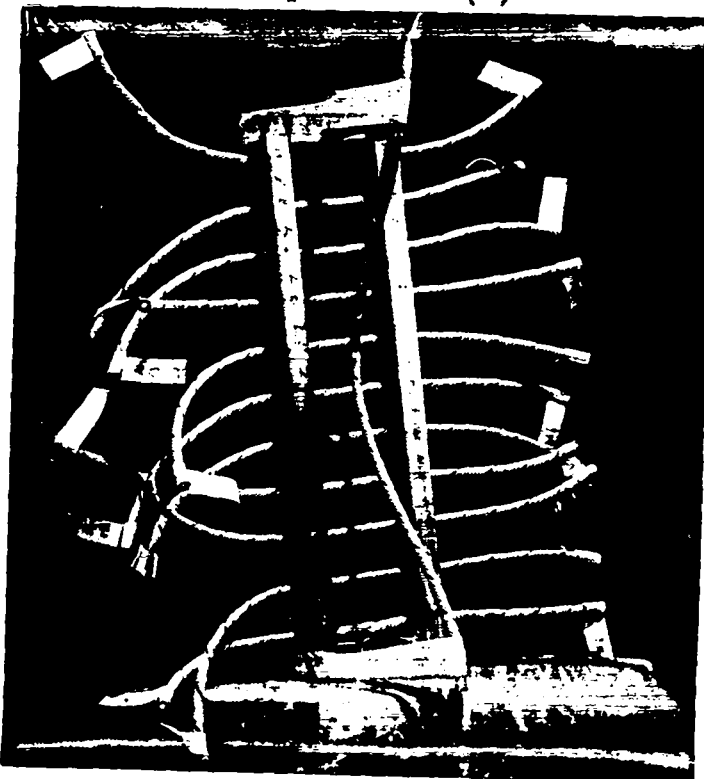
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Fig. 1
Setup for Test (a)

Fig. 2
Setup for Test (b)
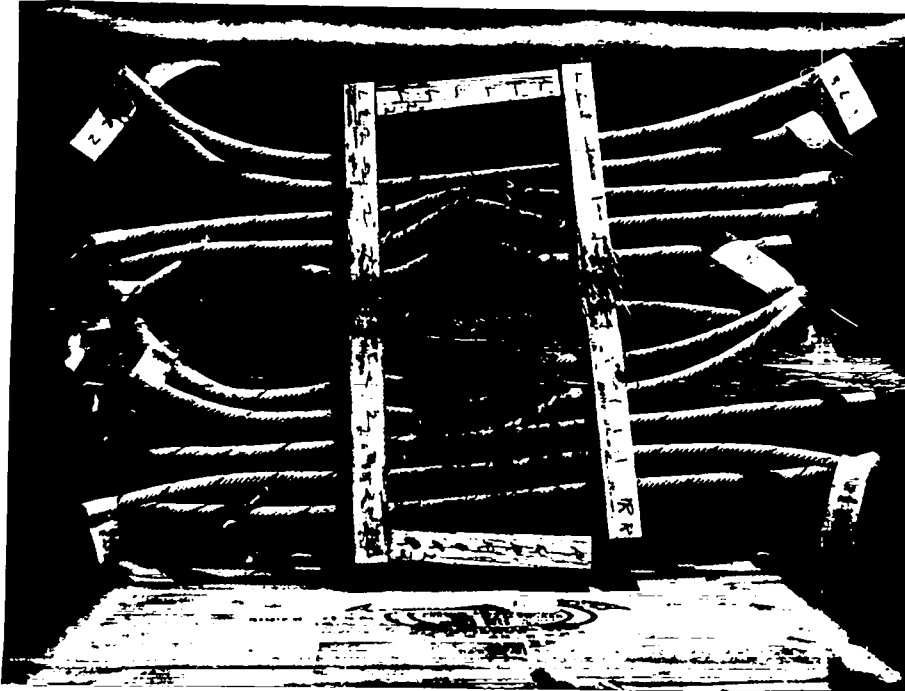
Fig. 3
Setup (a) after firing
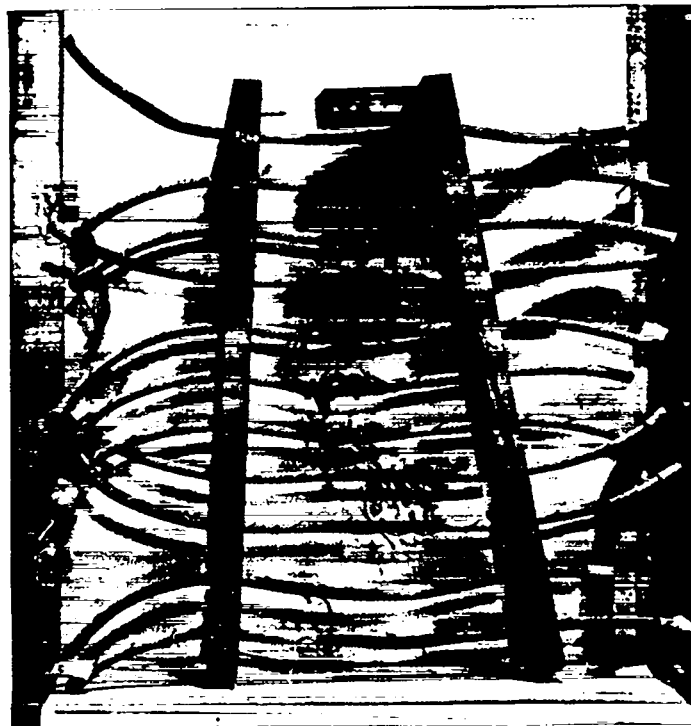
Fig. 4
Setup (b) after firing

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