No. 667,630.

Patented Feb. 5, 1901.

H. O. KRATZ-BOUSSAC.

PNEUMATIC ARROW.

(No Model.)

(Application filed May 19, 1900.)

FIG. 2.

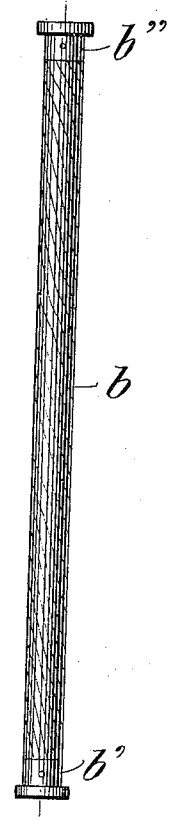


FIG. 3.

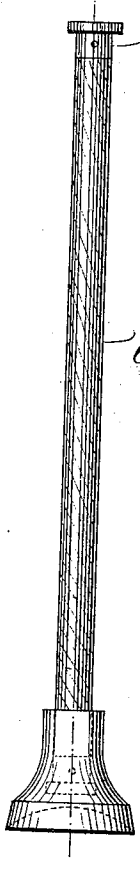
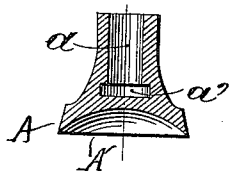


FIG. 1.



WITNESSES

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UNITED STATES PATENT OFFICE.

HENRI OTHON KRATZ-BOUSSAC, OF PARIS, FRANCE.

PNEUMATIC ARROW.

SPECIFICATION forming part of Letters Patent No. 667,630, dated February 5, 1901.

Application filed May 19, 1900. Serial No. 17,293. (No model.)

To all whom it may concern:

Be it known that I, HENRI OTHON KRATZ-BOUSSAC, engineer, a citizen of the Republic of France, and a resident of 3 Rue St. Laurent, Paris, France, have invented a new and useful Improvement in the Construction of Pneumatic Arrows, which is fully set forth in the following specification.

In pneumatic arrows as heretofore constructed it has been usual to form the stem integral with the elastic-arrow-head either by molding the latter around a ferrule provided at the end of the wooden stem and securing all together by the aid of a rivet or by placing a ring around the upper portion of the arrow-head and securing such ring, rubber, and wooden stem together by a rivet. These mountings have the following inconvenience: Whenever the arrow encountered an obstacle, and especially when the shot was made from a short distance, the wooden stem of the arrow rebounded, taking with it and detaching from the target or other surface the rubber head, with which it was firmly connected. Thus the arrow did not remain attached to the surface to which the shot was directed, and consequently the result desired was not obtained.

Now this invention has for its object to obviate these defects by rendering the wooden stem independent of the head, and in carrying my invention into effect I form while molding the head a recessed part or passage therein which terminates in a cavity adapted to receive an enlarged end of the stem of the arrow.

Referring to the accompanying drawings, Figure 1 is a section of a pneumatic arrow-head constructed in accordance with this invention; Fig. 2, an elevation of the stem of an arrow, and Fig. 3 an elevation of the complete arrow.

A indicates the head of the arrow, which is provided at its front end with a cavity or sucker formation A'. At the rear end of the arrow-head the same is provided with a longitudinal bore or hole *a*, formed at its inner end with an enlarged recess *a'*.

The wooden stem *b* is provided at each end with a metal ferrule *b'' b'*, provided with a flanged or enlarged end, and one end of said stem is entered into the head in such a manner as to cause a portion of the wood and the ferrule *b'* thereof to be embedded in the rear part of the head. This result is obtained by simply forcing the stem into the head of the arrow, so that said ferrule *b'* engages in the recess *a'* therein. Thus the stem and the head of the arrow are absolutely independent of each other, being only temporarily connected by means of the ferrule *b'*, engaged in the recess *a'*. When the arrow strikes the object at which it is aimed and the stem *b* has any tendency to recoil, it can do so without harm, as the rubber of which the head is made is sufficiently elastic to yield to such an extent as to enable the ferrule *b'* to disengage from the recess *a'*, thus permitting the detachment of the stem from the head or at least its withdrawal into the recessed part or passage *a*. The result is that in all cases the head of the arrow adheres to the spot on the target or other object struck, there being no tendency for it to follow the retrograde movement of its stem. If the stem completely leaves the head, it is only necessary to detach the latter from the object to which it is adhering and reinsert the stem, when the arrow is again ready for use. If the stem has not become completely detached from the head, but has recoiled only sufficient for a portion to remain in the recessed part or passage before described, the stem *b* will by itself reoccupy its proper position, owing to the pressure exerted upon the head in charging the gun.

With this improved arrow a single stem may be used concurrently with a large number of heads, each head being left in the position where it struck the target or other object.

Instead of forming the ferrule *b'* with a flange I may find it desirable to dispense with the flange in order to render the insertion and extraction of the stem from the head easier.

In order to prevent accidents in the case of children shooting with the stem only without the head being attached thereto, I may provide around the ferrule *b'* a small protecting-cap, of rubber or the like, the diameter of the recessed part or passage being arranged to enable the insertion of the stem into its rubber cap.

What I claim is—

1. A pneumatic arrow consisting of an elastic head formed at its rear portion with a hole

a terminated in a recess a' of larger diameter, and of a stem furnished with a ferrule b' formed with a flange adapted to engage in the said recess a' for the temporary connection of the head and stem there being no other means of connection between the two parts so that at the impact of the arrow with the object struck the stem, when recoiling, withdraws from the head either entirely, or simply into the hole a, without the head falling off the target or other object struck substantially as hereinbefore described and illustrated by the accompanying drawings.

2. A pneumatic arrow, consisting of a shaft, provided with an enlarged end and an elastic sucker-head having an elongated socket at the rear, the enlarged end of said shaft being inserted into said socket, so that when the arrow strikes an object the shaft may automatically disengage itself from the head, or move relatively to the same without injuring the arrow, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

HENRI OTHON KRATZ-BOUSSAC.

Witnesses:
EMILE LEDRET,
EDWARD P. MACLEAN.