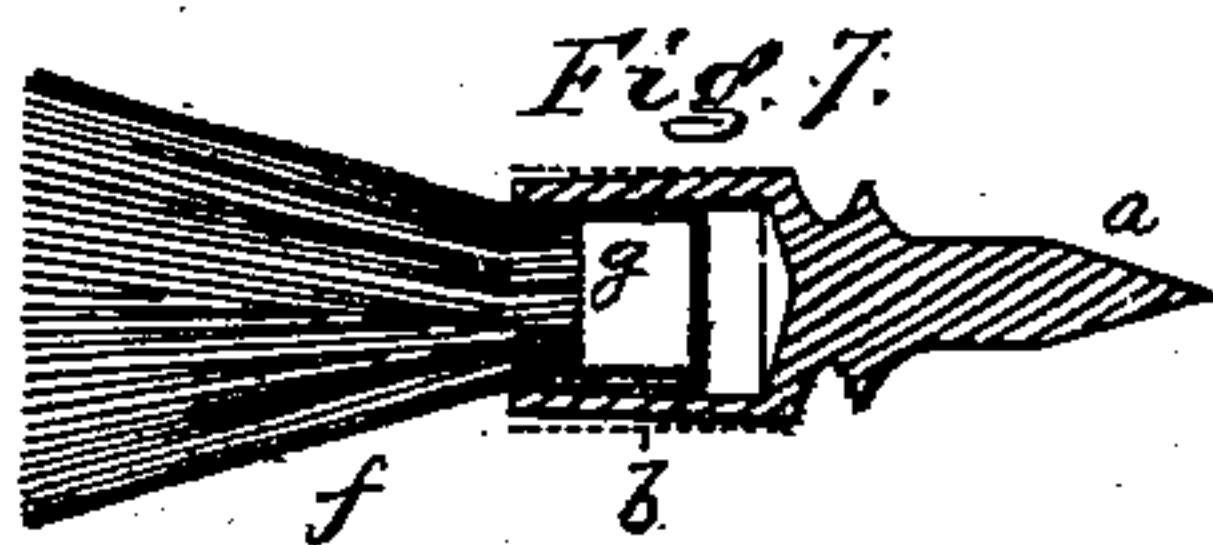
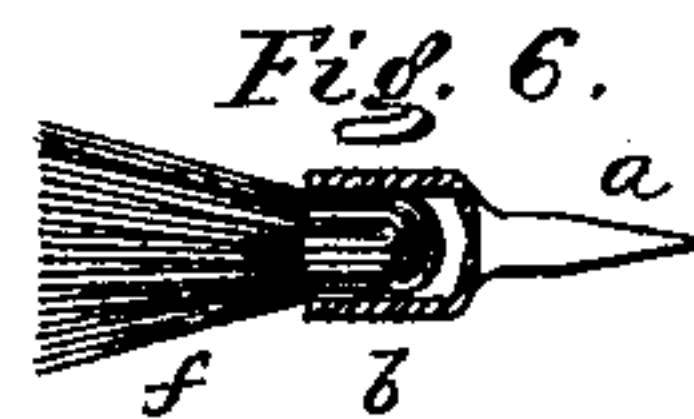
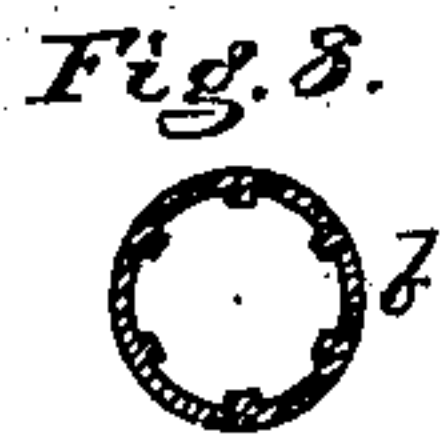
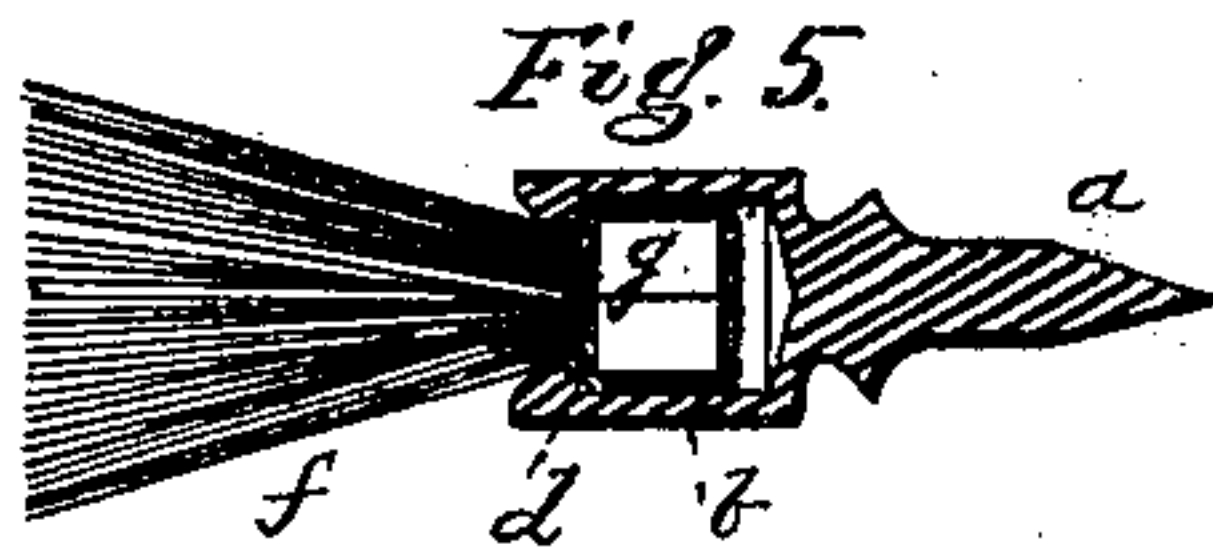
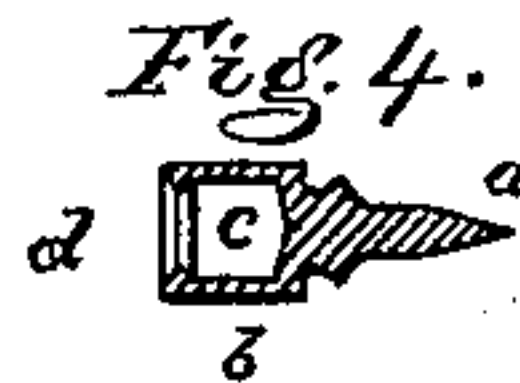
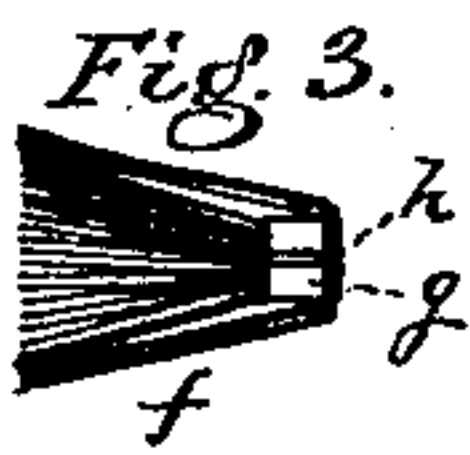
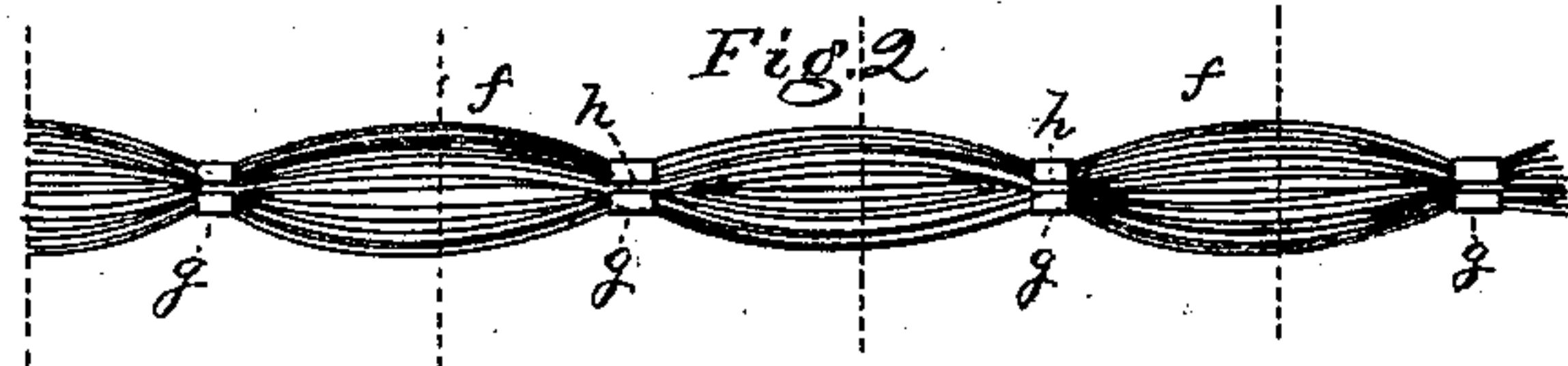


C. SPRING & J. T. ROBINSON.

DARTS FOR AIR-GUNS.

No. 189,070.

Patented April 3. 1877.



Witnesses.
L. H. Latimer.
E. B. Perkins.

Inventor.
Charles Spring and
John T. Robinson
per George H. Longory, Atty

UNITED STATES PATENT OFFICE

CHARLES SPRING, OF HYDE PARK, AND JOHN T. ROBINSON, OF BOSTON,
MASSACHUSETTS.

IMPROVEMENT IN DARTS FOR AIR-GUNS.

Specification forming part of Letters Patent No. **189,070**, dated April 3, 1877; application filed
March 7, 1877.

To all whom it may concern:

Be it known that we, CHARLES SPRING, of Hyde Park, in the county of Norfolk and State of Massachusetts, and JOHN T. ROBINSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented Improved Darts for Air-Guns, of which the following is a specification:

This invention relates to an improved dart for air guns and pistols, and has reference to the construction of the dart, whereby the fibrous material forming the brush of the dart may be securely held.

In the manufacture of darts for air-guns it has been customary to use a steel point and a cylindrical head, and the fibrous material placed in the head has been secured by means of pins, or by punching the cylindrical portion of the head to form spurs or points to extend within the cylindrical opening in the head to engage the fibrous material.

The object of our invention is to hold the fibrous material in the head of the dart more firmly than in the darts as now commonly constructed.

The invention consists in a dart provided with an internal shoulder or prongs, combined with a brush having a metallic band adapted to hold the fibrous brush in place when inserted within the head, beyond the shoulder or prongs; also, in a dart-brush composed of a metallic band embracing a portion of the fibrous material, and embraced by another portion of the fibrous material, substantially as herein set forth; also, in a dart-brush provided with a band covering the strand of, and covered by, the fibrous material, as described, in combination with the head of a dart, having a cylindrical chamber contracted at its outer end to present a diameter less than the diameter of the band and its covering fibrous material, to retain the dart-brush in position.

Figure 1 represents one of our improved darts, side view; Fig. 2, a piece of fibrous material provided with bands for the formation of dart-brushes; Fig. 3, a separated dart-brush with the fibrous material bent or turned back over the band, ready to be inserted in the chamber of the head; Fig. 4, a section of the head; Fig. 5, a section of a brush and

head united; and Figs. 6, 7, and 8, modified forms of heads.

The head *b* of the dart, and the point *a*, will preferably be made of steel, in any usual way. The interior of the head is provided with a chamber, *c*, and near the outer end of the head the bore of the chamber is reduced in size by means of an annular projection, *d*, as at Fig. 4, or by prongs or studs *e*, as at Fig. 8. The fibrous material for the brush—commonly camel's hair—is arranged as a strand, *f*, as in Fig. 2, and is provided at suitable intervals with bands *g*, preferably split, as at *h h*. The strand, after the bands are applied, is severed between the bands into brush-forming portions. When severed, one portion of the fibrous material, at one side the band, is folded or turned back uniformly about the band, bringing the ends of the material together. In this condition the band surrounds one portion of the fibrous material, and is itself surrounded by another portion of the fibrous material, the band being thereby enveloped in the center of the fibrous material forming the brush. This brush, made as shown in Fig. 3, is then inserted in the head, Fig. 4. As the brush enters the opening in the head the band contracts; but, on passing beyond the shoulder or projection, it expands, and thereafter effectually retains the brush in the head. If the brush portion is pulled the band acts to hold the fibrous material outside of and between it and the interior of the collar more firmly. The brush cannot be pulled out because of the shoulder. The shoulder may be made as an annulus, or separate projections may be used, as in Fig. 8. In Fig. 6 I have shown a pin, *a*, with a metal head, *b*, cast on the pin, it being suitably tinned or prepared for that purpose. Fig. 7 shows a metallic head and pin, with an opening to receive the band and brush, of a depth greater than the width of the band. The brush, prepared as above described, may be inserted in the heads shown in Figs. 6 or 7, until the outer edge of the band passes beyond the outer end of the head, and then the head may be compressed so that its outer end will be contracted, so as to have a diameter less than portions of the opening in the head nearer the pin. This contraction of the diameter of the

outer end of the head upon the fibrous material turned about the band, and beyond the outer edge of the band, effectually prevents the brush from being withdrawn from the head, and strain on the brush, as in the former case, causes the band to pinch the fiber between itself and the head more closely.

I claim—

1. The dart-head, provided with an internal shoulder, in combination with a brush formed of a band and fibrous material placed within and without the band, to operate substantially as described.

2. A dart-brush, composed of a strand of fibrous material, surrounded by a yielding collar, and turned back outside of the band to envelop the periphery of the band, all substantially as described.

3. A dart-brush, composed of an annular band, filled and covered peripherically with fibrous material bent about the band, as described, in combination with a dart-head having its open end contracted to a diameter less than the diameter of the band and fibrous material within the opening in the head, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHARLES SPRING.
JOHN T. ROBINSON.

Witnesses:

G. W. GREGORY,
W. J. PRATT.