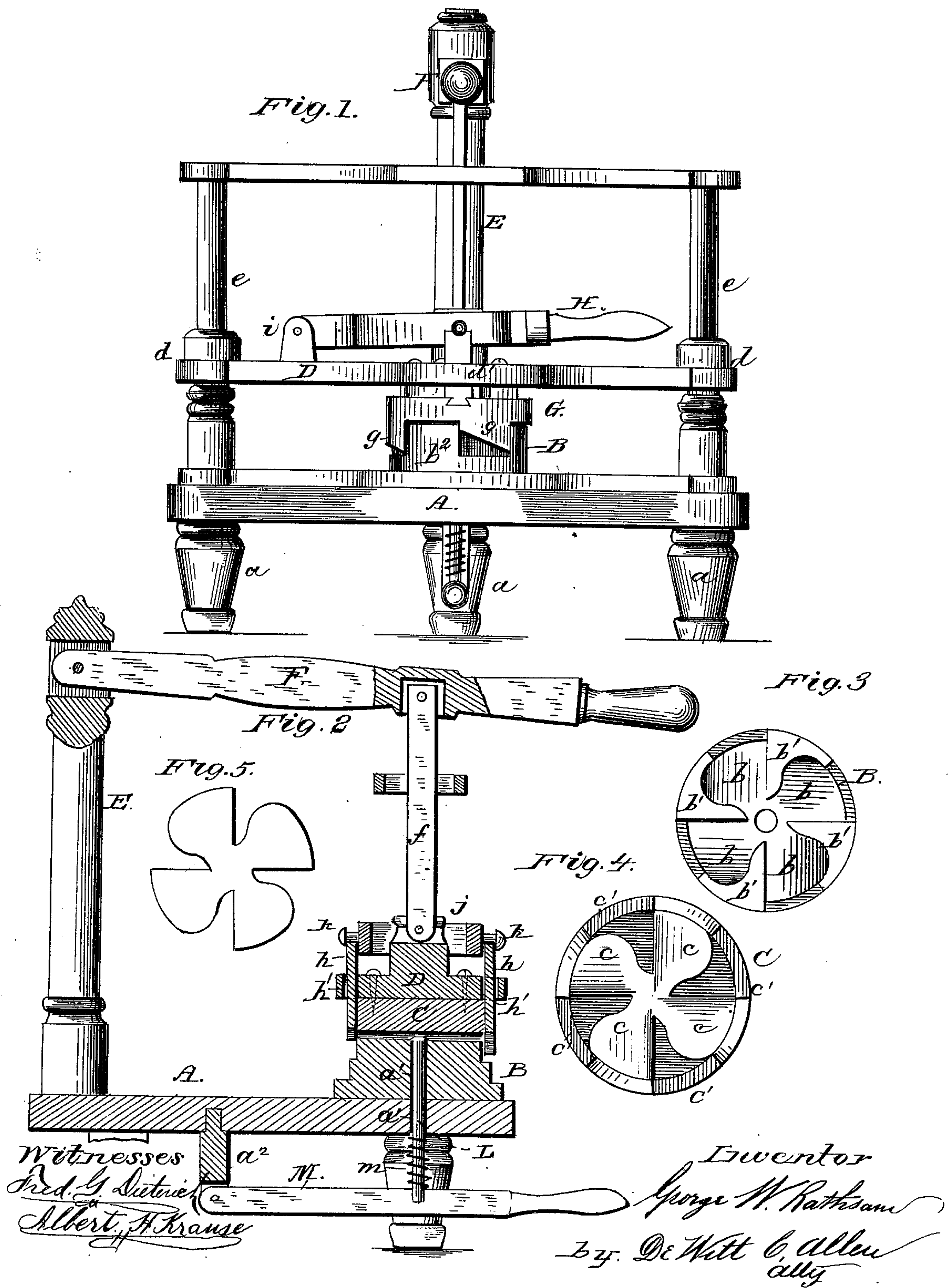


G. W. RATHSAM.
Machine for Making Flyers for Targets.
No. 220,172. Patented Sept. 30, 1879.



UNITED STATES PATENT OFFICE.

GEORGE W. RATHSAM, OF INDIANAPOLIS, INDIANA.

IMPROVEMENT IN MACHINES FOR MAKING FLIERS FOR TARGETS.

Specification forming part of Letters Patent No. **220,172**, dated September 30, 1879; application filed August 29, 1879.

To all whom it may concern:

Be it known that I, GEORGE WILLIAM RATHSAM, of Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Machines for Making Fliers for Targets; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being made to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a front view of my improved machine; Fig. 2, a vertical section of the same; Figs. 3 and 4, detail views of the dies; Fig. 5, a perspective view of one of the fliers as constructed by my improved machine.

My invention relates to certain new and useful improvements in machines for making fliers for targets, such as are used by sportsmen to be thrown into the air from a spring-trap, and which are formed from compressible substances, such as clay or plaster-paris, and also from sheet metal; and the invention consists, essentially, of a pair of dies, one of said dies having a series of cavities or depressions corresponding to the shape of the flier, and the other die having projections corresponding to the cavities or depressions in the first-named die, and between which the material for forming the flier is placed and pressed into the desired shape; also, in connection therewith, cutters surrounding the movable die, adapted to be depressed down over the dies for cutting off the surplus material; and also a spring-plunger for removing the flier after it is pressed into the desired shape by the dies, all as will be hereinafter fully described, and specifically pointed out in the claims.

To enable others skilled in the art to make and use my invention, I will now proceed to describe the exact manner in which it is carried out.

In the drawings, A represents a suitable table, supported on legs *a*, and upon which the operating parts of my improved machine are mounted. B represents a stationary die, centrally secured upon the front and top of said table A, and which is provided with a series of cavities or depressions, *b*, corresponding to the shape desired to give the fliers. C represents a movable die, having a series of projections, *c*, corresponding to the shape of the

cavities or depressions in the die B, and a series of recesses, *c'*, in which the portions *b*¹ of the die B enter when the die C is moved or pressed against the die B. The die C is secured to the under side of the cross-bar D, which is provided at its ends with holes *d d*, through which pass the vertical guides *e e* secured to the table A.

F represents a hand-lever, having one end fulcrumed in the top of the vertical support or post E, and which is centrally connected with the cross-bar D by a bar, *f*, pivoted to the lever and cross-bar, and through the medium of the lever and bar F *f* the cross-bar D, carrying the die C, is raised or depressed.

Surrounding the die C is an annular ring, G, having a series of downwardly-inclined cutters, *g*, which, as said ring is pressed downward, enter a series of recesses, *b*², formed in the outer circumference of the die B, for a purpose to be hereinafter described. The ring G is secured to the die C by inwardly-projecting studs fitting into recesses in the top and outer portion of said die, said recesses being of sufficient depth to permit of the necessary vertical movement of the ring G. The ring G is also provided on its upper surface with vertical studs or guides *h h*, passing up through the openings *h'* *h'* in the circular portion of the cross-bar D.

H represents a hand-lever, fulcrumed at *i* on the cross-bar D, and having an enlarged central eye, *j*, around the bar *f*, so as not to interfere with the vertical movement of said bar. The lever H is also provided with laterally-projecting studs *k k*, which rest on top of the vertical studs *h h* of the ring G, for the purpose of forcing down said ring when the hand-lever H is depressed.

The table A and die B have a central vertical opening, *a*¹, through them, and in which works a vertical plunger, L, operated by a hand or foot lever, M, to which the lower end of said plunger is secured, said lever being fulcrumed at one end in a downwardly-projecting stud, *a*², secured to the under side of the table A. The object of said plunger is to force the flier out of the die B, after it is pressed into the desired shape, by raising or pulling up the hand or foot lever M, a coiled spring, *m*, surrounding the plunger between

the under side of the table and lever, retracting said plunger after the lever M is released by the hand or foot.

The dies and cutters are made of metal, and when the fliers are to be made or formed from plastic substances, a sheet-metal facing, corresponding to the shape of the flier, should be placed in the die B, and upon which the plastic substance is placed, for the purpose of forcing the flier, when pressed into the desired shape, out of the die without breaking.

Having thus fully described the construction of my improved machine, I will now proceed to describe the manner in which the fliers are made. The cross-bar carrying the die C having been raised, the plastic substance or sheet metal of which the flier is formed is placed over the die B. The hand-lever F is then depressed, forcing the die C down onto the plastic substance or sheet metal, forcing it down into the cavities or depressions in the die B, thus pressing it into the desired shape to form the flier. The hand-lever H is then depressed, which forces down the annular ring G with its cutters *g*, which cut off any surplus material projecting from the wings of the flier. The cross-bar and die C are then raised by the hand-lever F, and the hand or foot lever M raised, which forces the plunger L upward, throwing out the flier formed in the die B.

The form of the flier is shown in Fig. 5, which consists of a series of wings projecting from a center piece, said wings being obliquely or inclined both in reference to the center piece and to its axis, each wing being also inclined laterally in the same direction, similar to the threads of a screw or the arms of a screw-propeller, so that when thrown or sprung from a trap into the air the resistance of the air will give it a rapid rotary motion, so that it will revolvingly fly for the marksman or sportsman to shoot and break, and which are intended to take the place of birds for sportsmen to shoot at.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for forming or making fliers, the combination of a die, B, having cavities or depressions *b* corresponding to the shape of the flier, and a movable die, C, provided with projections *c*, corresponding with the shape of the cavities or depressions in the die B, substantially as herein shown and described.

2. In a machine for making or forming fliers, the combination, with the dies B C, of an annular ring, G, provided with downwardly-projecting cutters *g*, substantially as and for the purpose herein shown and described.

3. The combination of the ring G, provided with the cutters *g* and vertical studs or guides *h*, and the hand-lever H, fulcrumed on the movable cross-bar D, and provided with the laterally-projecting studs *k k*, substantially as and for the purpose herein shown and described.

4. In a machine for forming or making fliers, the combination of the die B, having cavities or depressions *b*, portions *b'*, and central opening, *a'*, die C, having projections *c* and recesses *c'*, annular ring G, having cutters *g* and studs *h h*, hand-lever H, having studs *k k*, cross-bar D, pivoted hand-lever and bar F *f*, and the pivoted hand or foot lever M, with the spring-plunger L, and the table A, all arranged to operate substantially in the manner herein shown and described.

5. As a new article of manufacture, the herein-described flier for targets, formed from clay, plaster-paris, or other compressible substance, and composed of a series of laterally and oblique or inclined wings projecting from a center piece, as specified.

GEORGE WILLIAM RATHSAM.

Witnesses:

JOHN MEDERT,
JACOB B. YEAGLEY.