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Horel

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[54] **SLINGSHOT WITH ARM BRACE AND RANGE INDICATING INDICIA**

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[52] **U.S. Cl.** ..... **124/20 R**; 124/30 R

[51] **Int. Cl.** **F41b 7/00**

[58] **Field of Search** .... 124/20 R, 20 A, 20 B, 30 R, 124/41, 21, 22, 25

[56] **References Cited**

UNITED STATES PATENTS

2,501,568	3/1950	Jarnagin	124/20 R
2,807,254	9/1957	Stribling	124/20 R
3,018,770	1/1962	Saunders	124/20 B
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Assistant Examiner—William R. Browne

[57] **ABSTRACT**

A slingshot having elastic members for projecting an article and said slingshot having an arm brace or support. The slingshot has a yoke member with a connection thereto extending rearwardly to the upper portion of a grip. The arm support extends rearwardly from the grip, around the wrist of a user and rests on the wrist. The elastic members and the yoke have indicia thereon so that a user may observe the distance between the respective indicia so that the distance that the article being projected may be determined by a user.

6 Claims, 3 Drawing Figures

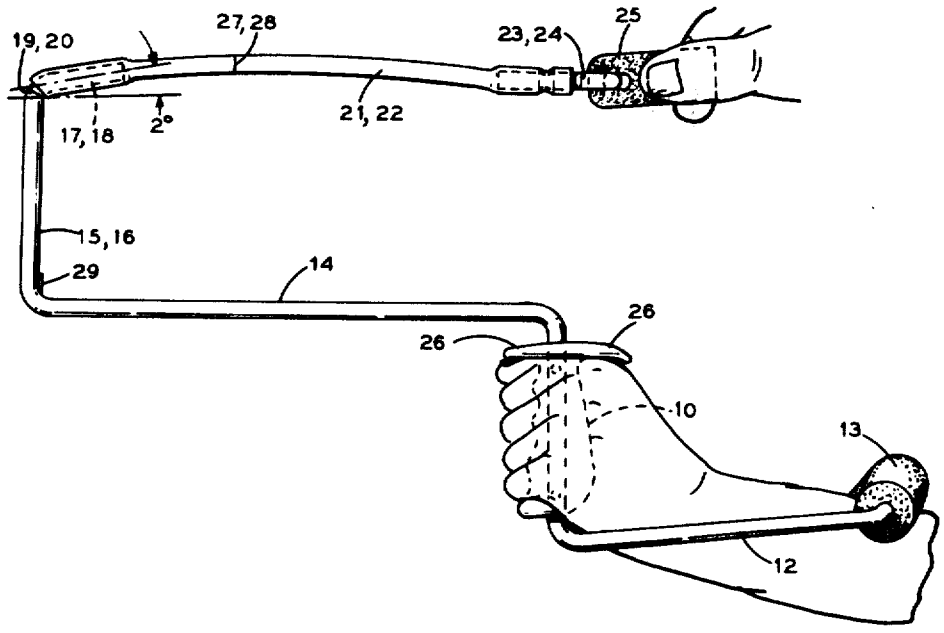


FIG.1

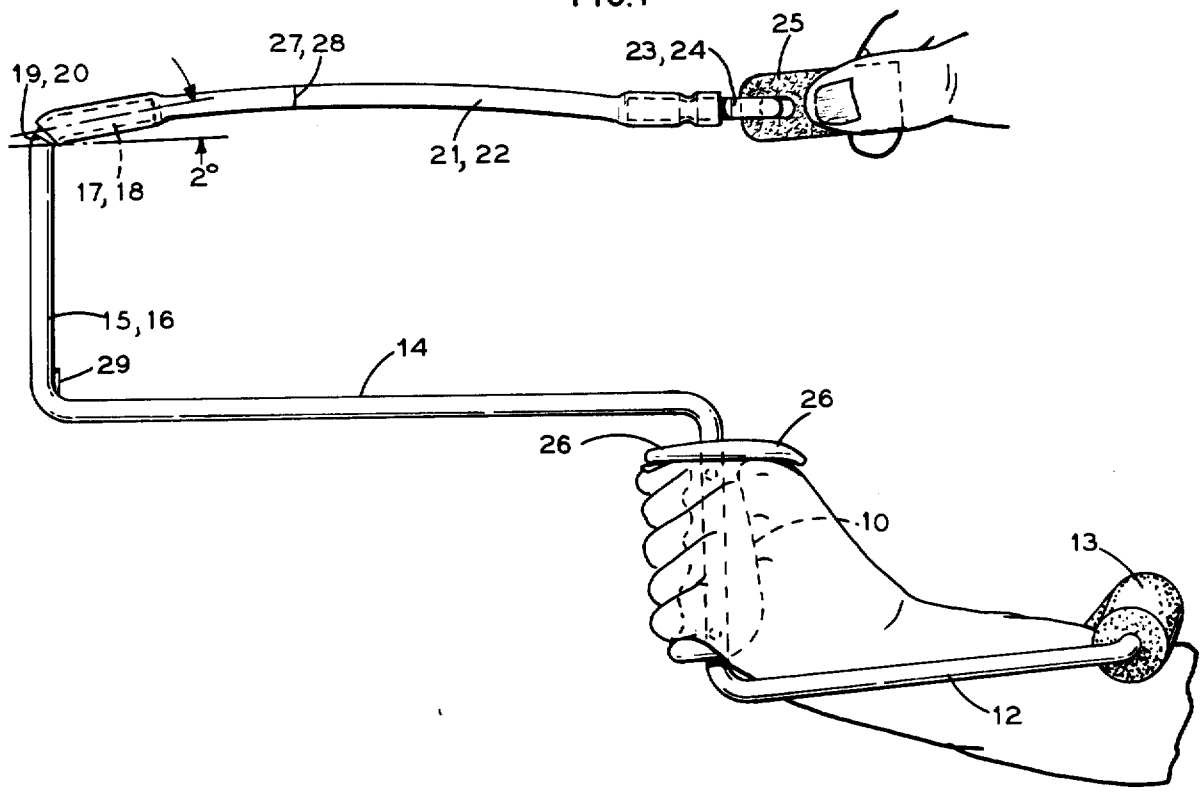
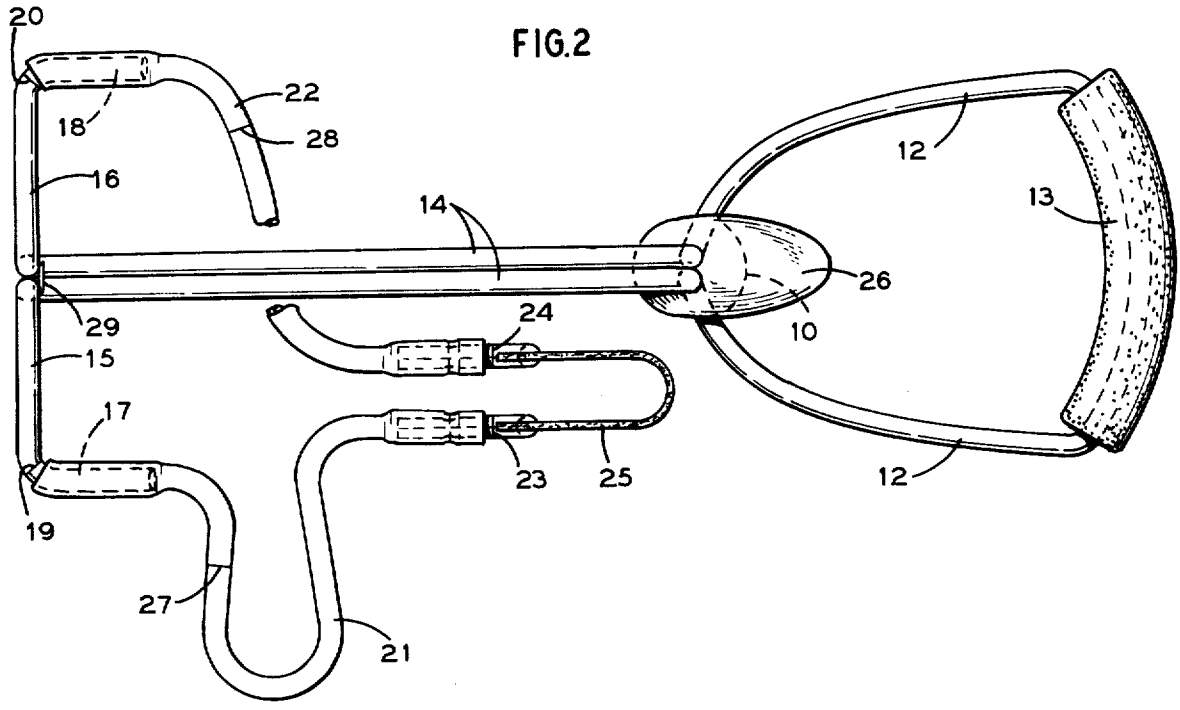

19, 20
27, 28
23, 24
25
17, 18
2°
21, 22
15, 16
29
14
26
26
10
13
12

FIG.2


20
18
22
28
16
14
12
13
26
29
24
10
15
17
23
25
12
19
27
21

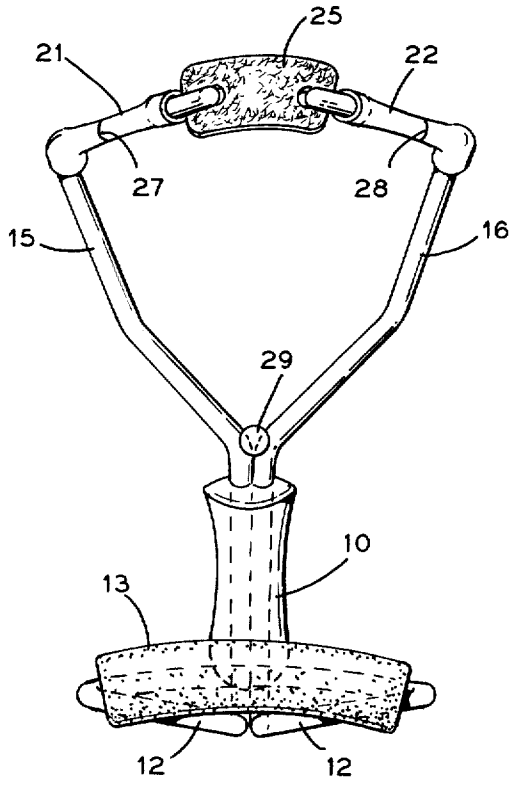


FIG. 3

SLINGSHOT WITH ARM BRACE AND RANGE INDICATING INDICIA

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention deals with a slingshot and improvements therein. The improvement lies in the positioning of the yoke of the slingshot to which the elastic means are secured and in the manner by which the tension and position of the elastic means can be controlled so as to obtain accuracy and power heretofore never achieved by the prior art devices of this nature. This invention also avoids discomfort and injuries to the user.

2. Description of the Prior Art

The use of sling shots and their manufacture is an ancient art. The ordinary design of a slingshot is almost a matter of judicial notice and comprises a handle portion to which there is connected two arms so that the entire structure has the appearance of a large "Y". To the upper tips of the Y there is attached an elastic material which has, at substantially its center, means for holding an object. In the operation of the slingshot the user grips the handle, pulls back on the elastic by holding the object in the holding means. After aiming, the holding means are released and the object is propelled toward the target as the elastic means contract from its stretched position.

Such devices have been refined in the art by forming the "Y" portion out of very sturdy materials so that powerful elastic means could be utilized. Such sturdy materials encompass the use of cast aluminum stock and the elastic materials have normally been gum rubber slings to which holding means, normally a chamois cloth, were fixed.

Attempts were made by the prior art to give greater steadiness to the grip when holding the slingshot, particularly as powerful elastic materials were used as slings. This has been accomplished in the art by having a forearm support extend rearwardly from the bottom portion of the Y-shaped slingshot to rest on the upper portion of the forearm and behind the wrist of the hand gripping the bottom portion of the Y-shaped slingshot.

Notwithstanding the extremely long history of the use of slingshots and the above described modifications, slingshots now being used and heretofore employed suffer several basic defects. Furthermore, the prior art slingshots have never been refined so as to provide a precision instrument which can be aimed with scientific accuracy approaching bore sighting on guns and similar weapons which can be fully calibrated on a bore sight range. In addition, the use of the prior art slingshots have been deleterious in some aspects to the user in that when the elastic material is released from its stretched position it frequently hits the fingers which grip the slingshot upon rebound. It becomes immediately apparent that the user of the prior art slingshots must, even if only unconsciously, take into account this hitting effect when using the slingshot and this obviously causes many users to flinch or otherwise be presented with an aim disturbing psychological phenomenon in the use of presently known slingshot devices. This forward thrust of the rubber or elastic sling assembly through the Y after release is followed by a violent downward snap which frequently hurts and bruises the fingers of the shooter so that, apart from a flinching factor to each user of the ordinary slingshot of the art, there is a safety hazard involved.

There are some devices available in the prior art which very remotely are relevant to the problems solved by the present invention in that these prior art devices show means whereby the fingers holding a device which hurls an object by elastic means are at such a position that they cannot be harmed or hit by the elastic members after they are released from tension.

In U.S. Pat. No. 3,415,239 there is shown a slingshot in the form of a gun comprising a body, a pistol grip handle on the underside rearwardly of the body, a pair of spaced arms at the forward upper end of the body and a groove or channel on the upper surface of the body as a missile guide. Such a design when used with a pellet is extremely hazardous to the user. As can be gathered from the description of this device (at column 3, lines 19 to 39) the missile is propelled down the channel and the elastic means are not pulled rearwardly beyond the rear body portion. In this device, increased tension of the elastic means are secured by shortening the elastic bands (column 3, lines 35 to 39).

In U.S. Pat. No. 2,501,568 there is described a slingshot pistol wherein the yoke bearing the elastic means is at the front top of the barrel of a simulated pistol-like body and a means is provided at the pistol grip portion for releasing the elastic from its tensioned position by permitting the retaining means holding the elastic in tension position to come apart on pulling the trigger.

SUMMARY OF THE INVENTION

This invention is an improvement in the slingshot art. The instant advanced modern design slingshot comprises an upright grip and an arm support extending rearwardly from said grip to rest on the arm of the user, usually the forearm with the individual's fingers surrounding the grip. Connected to the grip of prior art devices, more usually connected to the upper portion of the grip, are yoke means having two arms. Connected to the tip of said arms are elastic means; these are usually gum rubber or surgical rubber strips or tubing. The elastic means usually contain, in the central portion, means to hold a projectile, normally a pellet. In a preferred embodiment of the prior art devices, the elastic means are connected at their mid-portion through a chamois or other similar material adapted to hold therein a pellet or suitable missile. The elastic means are stretched back from the yoke and then released and the elastic contracts and hurls the pellet forward to a chosen target.

In the improvement of this invention, the yoke means are positioned forward from the grip and away from the individual utilizing the slingshot by means of an extension connecting from the grip forward to the yoke. Of course, the yoke - at least the tip, but preferably the entire yoke - must still be positioned above the grip so that precision aiming of the device of this invention, as more fully explained subsequently, can be made.

It is not critical as to how the yoke is connected to the grip through the extension so long as the yoke is forward some substantial distance of the grip and has its top portion through which the pellet is hurled, unobstructed by the grip for the hurling and for the aiming, as described below.

It is within the scope of the invention to provide for several possible extension distances and this can be accomplished by having several different extension lengths detachably fixable between the grip means and the yoke means.

The elastic means I prefer to use is gum rubber surgical tubing. This tubing has great elasticity and by using tubing rather than rubber strips much greater tensile strength upon stretching can be achieved. This is particularly important with the device of my invention as greater distances are possible since the increased distance of yoke to grip, by placing the yoke in a forward position, permits the user to increase the tension on the elastic material by an increased distance of stretching.

Because of the increased tension which can be placed on the elastic material an increased firing power results. This increased firing power does not result in any harm to the fingers on the grip of the shooter when the elastic material is released through the yoke and then snaps down.

In a preferred embodiment, my slingshot is designed so as to provide precision sighting, precision tensioning of the elastic means and precision calibration of the slingshot, so as to achieve bore sighting, which has never heretofore been achieved for this instrument. In this preferred embodiment there are extension means extending from the top portion of the grip forward and at substantially right angles to the longitudinal dimension of the grip. At the forward terminal end of the extension and with its plane projecting upwardly at right angles to the extension are the yoke means. The tips of the yoke means are arced or curved rearwardly. The upper ends of the yoke means are fashioned to point rearwardly and are adapted to receive the elastic means. In my preferred embodiment these yoke means tips are angled slightly upward from the horizontal and are tubular and of a dimension to receive, in a pressure fit, suitable gum rubber or surgical tubing. After the surgical tubing has been slipped over the rearwardly and slightly upwardly directed yoke tips, and the lubricant used permitted to dry - this is usually water and the drying takes about 12 hours - the elastic tubing becomes firmly attached to the yoke tips and the slingshot can be used.

By combining the slight rearward arcing of the yoke or yoke tip of about 2° to 3° and preferably not more than about 5° for somewhat more than a perfect 90° angle at which it rises from the extension with the placement of the elastic at the very tip of the slingshot yoke, it can be seen that the elastic means are perfectly adjusted to hurl the object they hold centrally through a line parallel to the extension and perpendicular to an imaginary line passing through the tips of the yoke and perpendicular to an imaginary line passing through the juncture of the arms of the Y and the point at one half the distance of the line segment between the tips of the yokes.

To ensure that the object being hurled by the elastic means is hurled throuth the very center (dead center) of the top of the yoke at a precise point which is equidistant between the two yokes, it is important that the tension on both sides of the elastic means, as they come around to meet at the projectile holding portion, be perfectly matched. This accomplished by ensuring that identical lengths of surgical tubing, as employed in my preferred embodiment, are utilized. It is, therefore, preferred to have the rearwardly projecting tips of the yoke carefully marked so that precisely equal amounts of tubing are inserted over the tips in order that the elastic members are precisely even.

It is also preferred to provide means by which the pouch used for gripping the pellet or missile be provided with precisely matched and marked insertion tips by which the pouch is connected to the rubber tubing. By these means, in my preferred embodiment, provision is made for means whereby the missile or pellet to be hurled on release of the elastic tension can be projected through dead center between the two tips of the yoke and precisely at the tip of the two yokes at a point precisely parallel to the extension connecting the yoke and the grip.

There still remains two additional parameters to be elucidated for the precisional usage of the slingshot of my invention.

As to the first parameter, it can be readily understood that the missile will be hurled in an upward direction if the elastic means are held below a line segment connecting the yoke tips and, conversely, the missile will be hurled in a downward direction if the elastic means are held above a line segment connecting the tips of the yoke. While slingshots are sometimes used in such a way, such usage does not permit precision aiming. It is much preferred to be able to fire the slingshot with precision aiming where the target is sighted along a line which represents a perpendicular to a plane formed by the yoke and which is the dead center between the tips of the yoke. This is accomplished in my invention by the construction of the slingshot in such a manner that a missile which is hurled must be projected at this dead center and at the tip of the yoke. In order to make certain that the missile projected will hit the target so precisely sighted, it is necessary that the elastic means are always under tension at the proper angle (which is a perfect right angle) with respect to the plane of the tips and center of the yoke. This is readily accomplished in my invention by lining up, by eye, the extended elastic means throughout its extended length perfectly parallel to the extension means between the grip and the yoke. Thus, the user of the preferred embodiment of my invention can make a precision sighting and a precision tensioning of the elastic to arrive at a precision shooting. This is obviously easier and more accurate because of the extension.

As to the second parameter, it is well known that a projectile hurled at an object reaches the object best by an upwardly arced path and the vector forces for the rate of forward motion and downward motion must be coordinated so that the vector sum of these forces place the projectile during its flight at the precise target point. The major forces operative on the missile or projectile include the force of propulsion, the angle of this force, and the force of gravity. In my invention, all of these forces can be balanced to achieve a precision instrument. The precise angle of the propellant force of the projectile is provided by the means previously described above. The only factor to be accounted for is the force by which the projectile is made to traverse the chosen path. This force is directly proportional to the extent to which the elastic means are tensioned. For precision operation this tensioning must be precise. This is readily accomplished in one preferred embodiment of my invention by having a slight upwardly directed ridge in the forward portion of the grip cooperating with an indicia on the rubber tubing.

In another preferred embodiment there is provided a system to help the user to precisely judge the elongation produced in the elastic means to propel the projectile at a precisely desired predetermined force. In the normal sighting of a slingshot, when the elastic means

is elongated and the user is aiming the device prior to firing, the user's eye is above the projectile being held. The user at this moment, in using my device, looks in two directions; he looks straight above the projectile, that is above the tips and dead center of the yoke to the target, and, without any movement of his head and by sole movement of his eyes also looks at a slight downward angle through the two elastic means to the base of the yoke.

In this preferred embodiment of my device a suitable mark is placed at the base of the yoke and suitable markings are also placed at points equidistant from the held projectile and at calibrated positions along the elastic means. The marks are coordinated so that when the elastic means is elongated to a previously calibrated position, the device is "bore-sighted" for a specific distance. At this time there is an imaginary straight line extending from the eye through the midpoint of an imaginary line connecting the two specific marks on the elastic means and terminating at the mark on the base of the yoke. Thus, the user of my preferred embodiment will bore-sight by this downward look to check the predetermined calibrated distance of elastic elongation needed to hit a target at a specific range prior to shooting. In this manner, the user knows that his precision calibrated instrument is in perfect tensile strength for hurling a missile on a target, for example, positioned 225 yards away, if it is sighted with the eye in a line parallel to the extended means going through the point one-half way between the tips of the yoke. In short, the user has bore-sighted a slingshot.

It is obvious that different indicia could be used with different lengths of rubber tubing or with different sizes of extensions between grip and yoke or with combinations of such tubing and extension lengths. The point is that every instrument can be calibrated to hit a target if it is bore-sighted.

Because of the extension portion of my invention, it follows that a longer stretch or tensioning of the elastic members is accomplished and, therefore, a much more powerful instrument is achieved. Because of this increased power I have found that much greater precision firing of missiles is achieved. Accordingly, in my preferred embodiment I prefer to impart a slight arc or rise to the projectile in its flight path so that, upon calibration, the missile will meet a target sighted at the dead center of the top of the yoke which is at a distance beyond the distances achieved by the prior art slingshots. I have found that the rearward angle of the yoke or yoke tip of about 2° or 3° in an upward direction from the horizontal is preferred, and I prefer a rearward upward angle of no more than about 5°

BRIEF DESCRIPTION OF THE DRAWING

In the drawings:

FIG. **1** is a side elevation of the present embodiment.

FIG. **2** is a top plan of the present embodiment, and

FIG. **3** is a rear view of the present embodiment.

DESCRIPTION OF PREFERRED EMBODIMENT

Referring to the drawing there is described a preferred embodiment of my invention. The slingshot comprises a grip portion **10** having at its lower portion, extending rearwardly, an arm support **12** for resting on the forearm of the hand gripping the grip portion **10.** A cushion **13** on the arm support **12** helps in the steadying of the slingshot. Connected to the top and projecting forward at right angles to the longitudinal dimension of the grip is an extension **14** which terminates in a Y-shaped yoke having two arms **15** and **16.**

The extension **14** is suitably made of a very rigid and sturdy material and is preferably carefully pitched forward in a direction with its plane at right angles to the longitudinal direction of the grip.

The Y-shaped yoke, with arms **15** and **16** are preferably directed upwards at the terminal portions of the extension in a precise right or 90° angle to extension **14.** I prefer to have the upper rearwardly directed portions **17** and **18** of arms **15** and **16** arced upwardly about 2° or 3°. Alternatively the arms of the yoke, and the tilt of the yoke and arms all together are fashioned to provide a 92° or 93° angle presented to the rubber tubing or other elastic means to be affixed.

The rearwardly directed portions **17** and **18** of yoke **15** and **16** terminate in tubular tips with marked portions **19** and **20** for precise insertion of fixed distances into the rubber tubing **21** and **22.** The ends of each piece of rubber tubing are similarly inserted over marked insert portions **23** and **24** attached to the pouch **25** which carries the projectile. The grip **10** carries front and rear extensions **26,** serves to steady the grip against rocking and rebound motion when the slingshot is discharged and the elastic means snap back into their relaxed position after the missile has been catapulted. Extensions **26** firmly engage the top of the fingers (the thumb and the index finger) as the hand encircles the grip.

Markings **27** and **28** on the rubber tubing and marking **29** on the base of the yoke provide the means for calibrating the range achieved by the elongation of the elastic material used.

I claim:

1. A slingshot comprising an upright grip, an arm support extending rearwardly from the bottom portion of said grip and extending around and resting on a wrist of a user, yoke means for providing an opening through which an object is hurled, said yoke means being connected to said grip, the plane of said yoke means being substantially perpendicular and above the upper portion of said grip, elastic means for projecting an object connected to said yoke means, means connected to said elastic means for holding an object while an object is substantially rearwardly of said grip and the elastic means are stretched and then permitted to return to an unstretched position for hurling an object forward through said yoke means upon release of said elastic means, said yoke means are connected to said grip, and extension means extending from the yoke means rewardly and connecting with the upper most portion of the grip for supporting said yoke means is at a position substantially forward of said grip.

2. A slingshot according to claim **1** wherein said yoke means is Y-shaped and is connected to said extension means at the forked portion of said Y.

3. A slingshot according to claim **1** wherein the upper tips of said yoke means engaging said elastic means are inclined rearward by an upward angle from the perpendicular plane of said yoke means of not more than about 5° toward an individual holding said slingshot.

4. A slingshot according to claim **1** further including indicia on the elastic means and the yoke means, whereby when said elastic means are stretched the relative position of said indicia with respect to cooperating indicia on the base of said yoke means will indicate the

range for which the slingshot will be at its maximum effectiveness.

5. A slingshot according to claim 4 wherein said elastic means includes two elastic members, each elastic member bears more than one indicia to cooperate with indicia on the yoke means.

6. A slingshot according to claim 1, wherein said grip has an upper part for firmly fitting over the top areas of a hand and fingers which surrounds the grip whereby a hand is steadied against the rocking caused by the recoil of said slingshot when said elastic means are released from a state of tension.

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