

No. 622,924.

Patented Apr. 11, 1899.

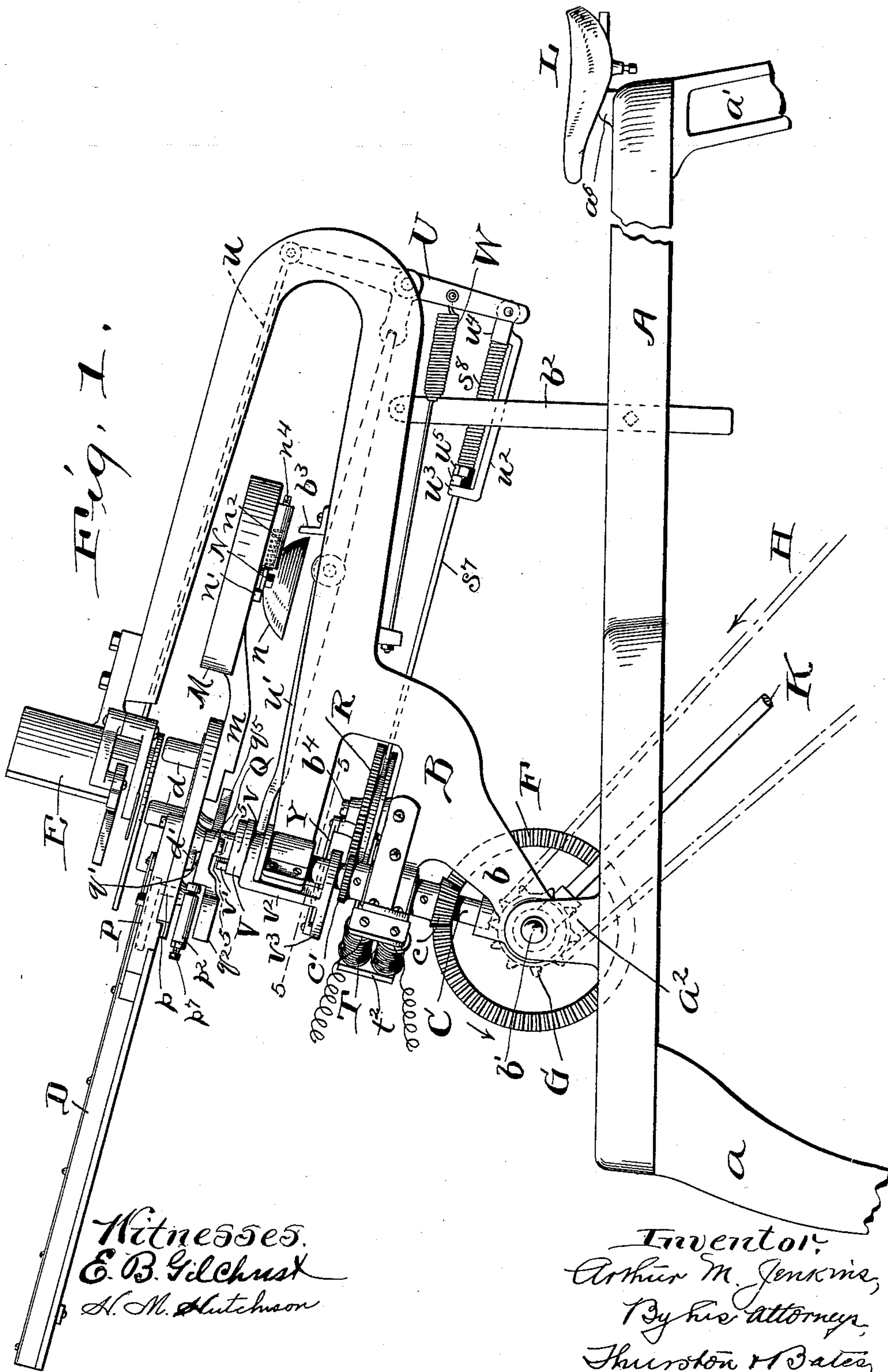
A. M. JENKINS.

TARGET TRAP.

(Application filed June 28, 1897.)

(No Model.)

3 Sheets—Sheet 1.



No. 622,924.

Patented Apr. 11, 1899.

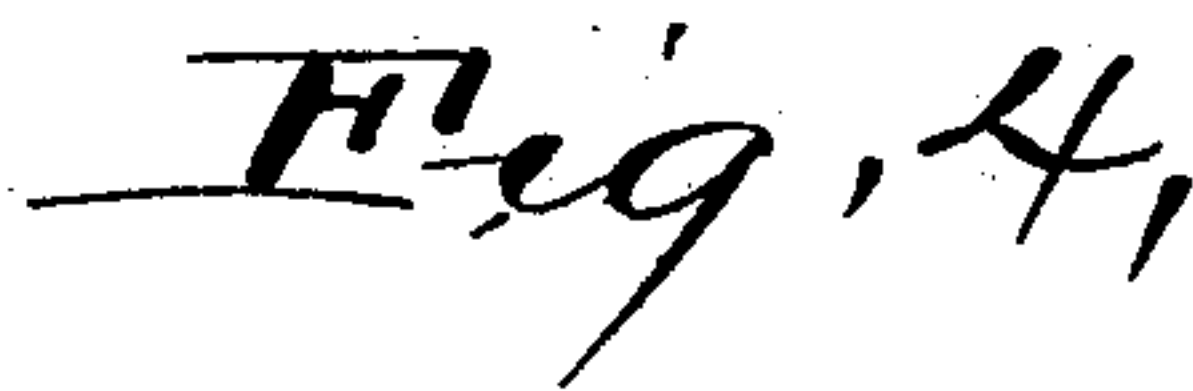
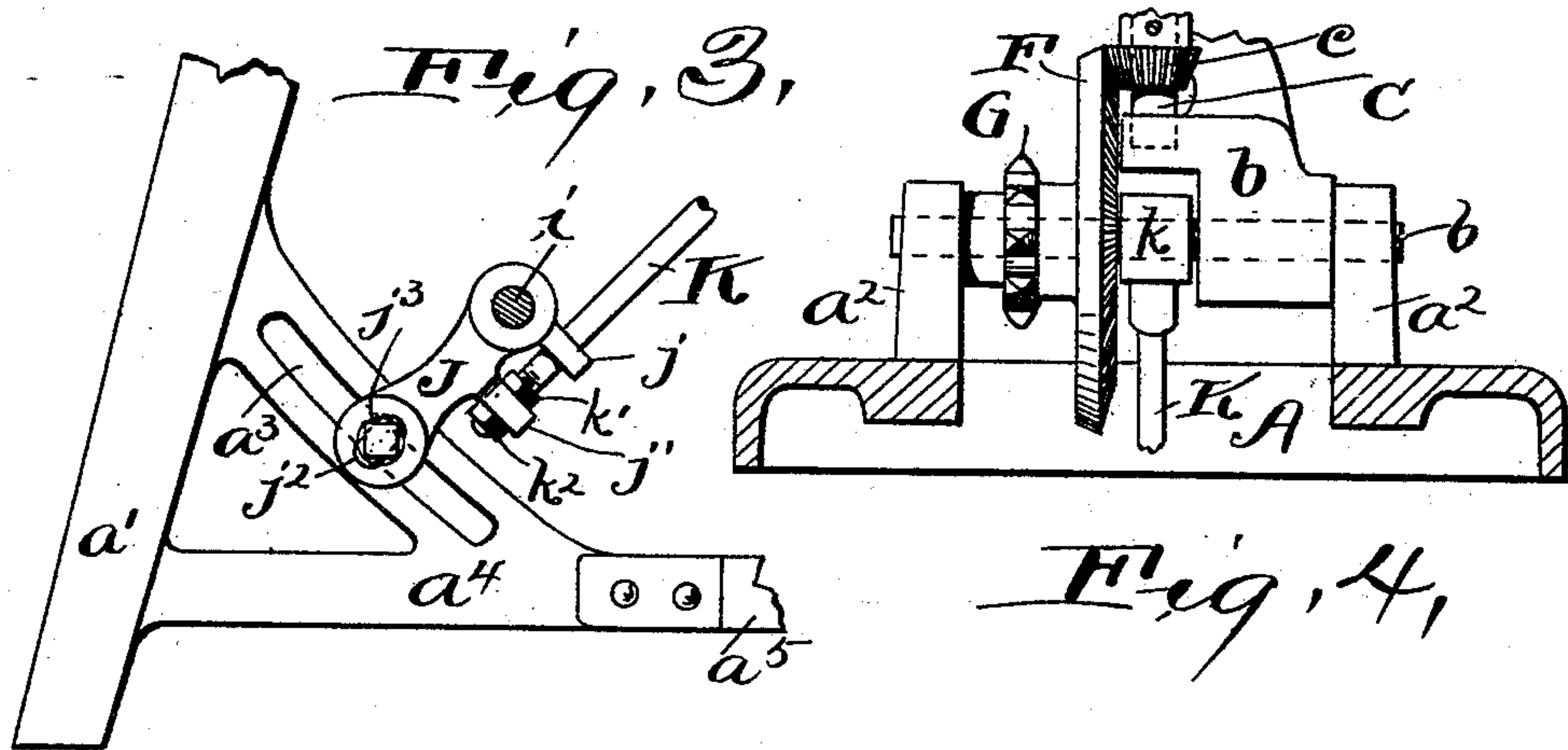
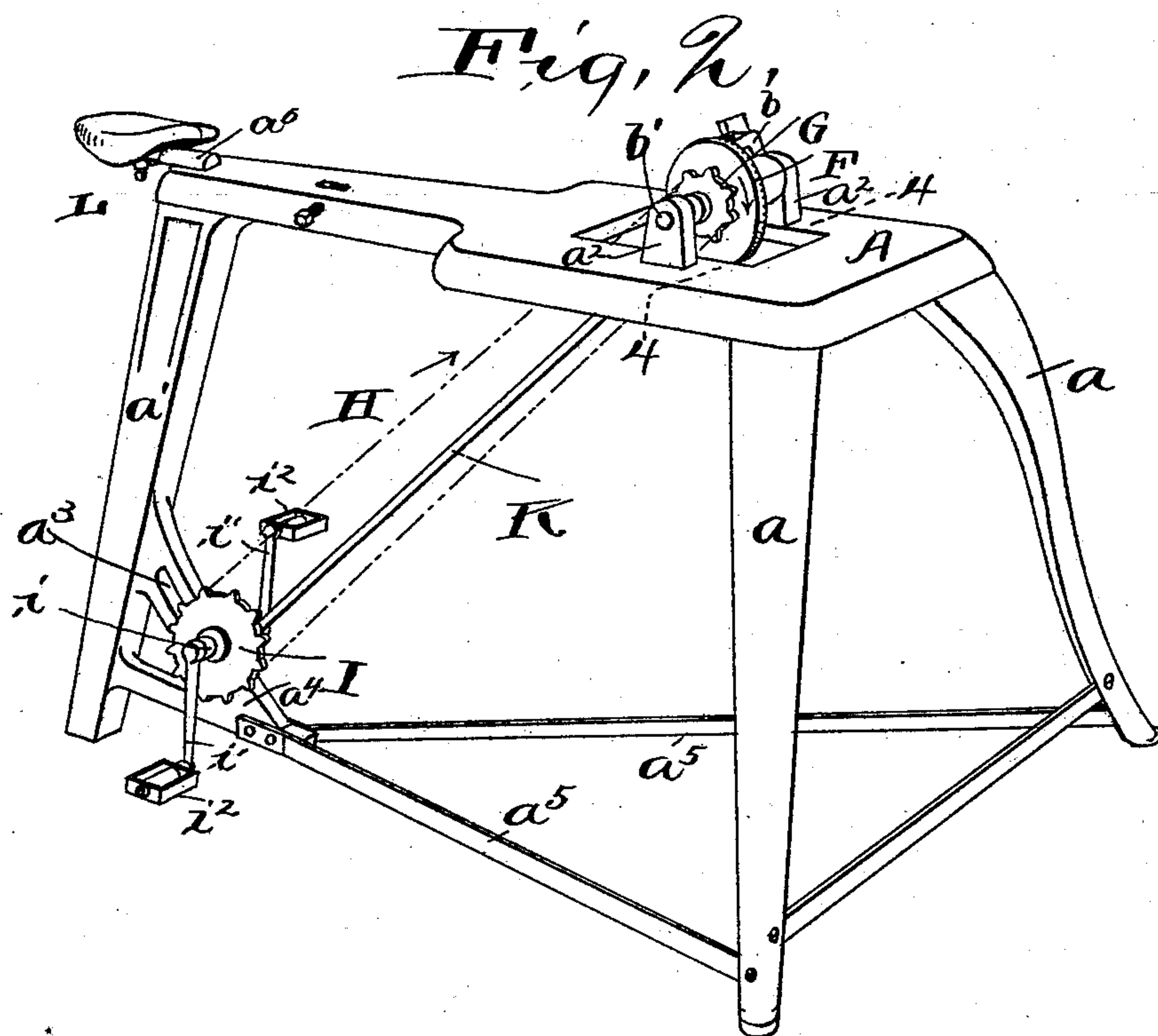
A. M. JENKINS.

TARGET TRAP.

(Application filed June 28, 1897.)

(No Model.)

3 Sheets—Sheet 2.



Witnesses,
E. B. Gilchrist
A. M. Hutchison.

Inventor.
Arthur M. Jensen,
By his attorney,
Thurston & Bates.

No. 622,924.

Patented Apr. 11, 1899.

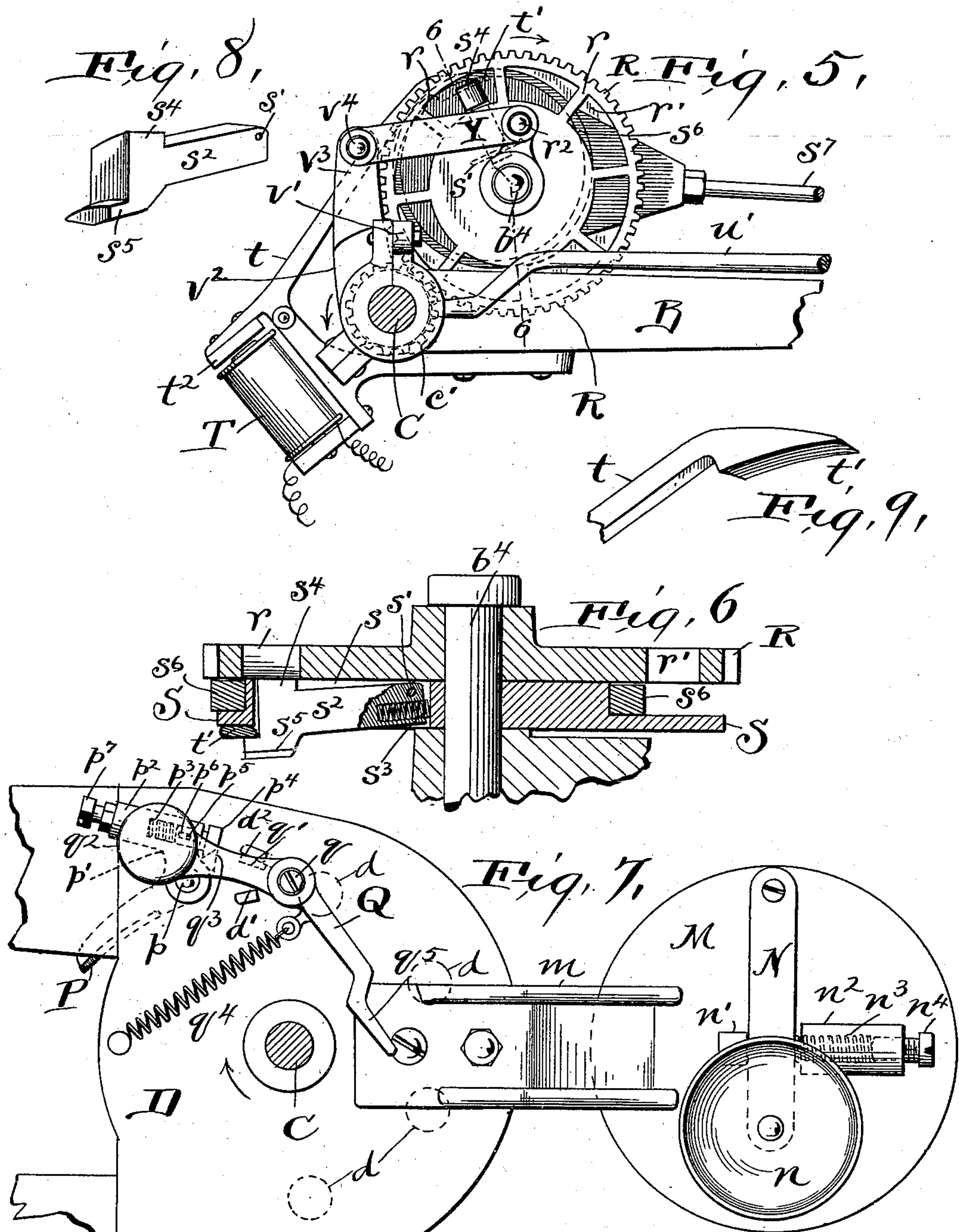
A. M. JENKINS.

TARGET TRAP.

(Application filed June 28, 1897.)

(No Model.)

3 Sheets—Sheet 3.



Witnesses:

E. B. Gilchrist
H. M. Hutchison.

Inventor:
Arthur M. Jenkins,
By his Attorneys,
Thurston & Bates.

UNITED STATES PATENT OFFICE.

ARTHUR M. JENKINS, OF CLEVELAND, OHIO, ASSIGNOR TO THE CLEVELAND
TARGET COMPANY, OF SAME PLACE.

TARGET-TRAP.

SPECIFICATION forming part of Letters Patent No. 622,924, dated April 11, 1899.

Application filed June 28, 1897. Serial No. 642,588. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR M. JENKINS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Target-Traps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make use the same.

My invention relates to target-traps for throwing artificial "birds" or disks and is an improvement on the magazine-trap shown and described in my prior patent, No. 540,318, of June 4, 1895, to which patent reference is made for the features not described herein.

The object of my invention is to provide simple and efficient means for rotating the throwing-arm of the trap, for notifying the operator if the speed of rotation is correct, and for releasing the target whenever desired and in such manner that its flight shall be indeterminate.

The invention consists in the novel combinations of parts by which these objects are attained, as hereinafter fully described, and definitely enumerated in the claims.

The drawings clearly illustrate my invention.

Figure 1 is a side elevation of a target-trap, the upper part of the target-magazine and the lower portion of the operating mechanism being omitted. Fig. 2 is a perspective view of the base and the driving mechanism. Fig. 3 is an enlarged detail view of the crank-hanger at the lower rear corner of said base. Fig. 4 is a similar view of the gears carried on the top of said base, being a vertical section on the line 4 4 of Fig. 2. Fig. 5 is a plan of a portion of the releasing mechanism, being a substantially horizontal section on the line 5 5 of Fig. 1. Fig. 6 is a substantially vertical section on the line 6 6 of Fig. 5 and shows the releasing-eccentric and its pawl. Fig. 7 is a bottom plan of the inner end of the target-arm, showing the target-releasing dog and the speed-signal. Figs. 8 and 9 are perspective views of the pawl for connecting the releasing-eccentric and of the end of the armature-lever which engages with that pawl, respectively.

Similar letters of reference designate similar parts in the several figures.

Referring to the parts by letters, A represents a horizontal base suitably supported by legs a a and a' . A clevis-shaped frame B for supporting the throwing-arm and releasing mechanism is pivotally supported at its lower forward end b by a journal-pin b' , extending into lugs a^2 , projecting upward from the base, and at its rear end by the bar b^2 , adjustably bolted to said base.

Journaled in the forward end of the frame B is the approximately vertical shaft C. This shaft carries at its upper end the target-throwing arm D. A target-magazine E is carried by the upper forward end of the frame B in such position that it drops the targets into the throwing-arm substantially in line with the axis of said arm, as described in said prior patent, and a suitable latch mechanism is provided at the lower end of the magazine for governing the passage of targets to the target-arm. The construction of the magazine, latch mechanism, and throwing-arm is the same as that described in my said prior patent, and the description thereof will not be here repeated.

The mechanism by which the target-arm is rotated is as follows: On the shaft C, near its lower end, is secured the bevel-pinion c , which meshes with the vertical bevel-gear F, journaled on the said journal-pin b' . A sprocket-wheel G is also journaled on this pin and is rigidly connected with the bevel-gear. A sprocket-chain H connects the wheel G with a sprocket-wheel I, secured to the crank-shaft i , which is journaled in a hanger J. Cranks i' and pedals i^2 furnish means for driving the sprocket by a bicycle movement.

The hanger J has the sleeves j and j' , which surround a brace-rod K, the other end of which terminates in a sleeve k , surrounding the journal-pin b' . Nuts k' and k^2 , on opposite sides of the sleeve j' , provide means for adjusting the tension on the sprocket-chain by moving the hanger, and with it the crank-shaft, toward or from the pin b' . Near the lower end of the hanger is formed a slot j^2 , which lies across a slot a^3 , formed in a bracket a^4 , extending, preferably, integrally from the leg a' and having attached to it the braces a^5 . The

slot a^3 is made in the arc of a circle about the journal-pin b' as a center. A bolt j^3 clamps the hanger to the bracket a^4 . By this means the hanger and crank-shaft may be adjusted toward or from the saddle L, on which the operator sits, without altering the tension on the chain. This saddle is secured upon a horizontal bracket a^6 , which is secured to or formed as a part of the base A.

I will now describe the speed-signal and its method of operation. Secured by an arm m to the inner end of the target-arm and extending in the opposite direction to the arm is the plate M, which is preferably of such weight as to balance the arm in its rotation. An arm N is pivoted at one end to the under side of this plate and carries at the other end the gong n . The arm N is capable of oscillating a short distance about its pivot between the faces of the blocks n' and n^2 , rigid with the plate M. A hole extends through the block n^2 , in which lies the compression-spring n^3 , which bears against the arm N and is adjusted by the screw n^4 . A stationary hammer in the form of a bracket-lug b^3 is secured to the frame B in such position that as the target-arm rotates and the plate M comes around the gong n , if in one of its extreme positions, would strike the bracket-lug, but if in the other extreme position would clear it. The gong tends under the action of centrifugal force to move away from the shaft C and into position to strike the said bracket-lug, and this tendency is counteracted by the spring n^3 . It is thus apparent that by adjusting the spring n^3 the gong may be made to strike against the bracket-lug when a given speed of rotation of the shaft C is attained. In practice the gong will just barely touch at the desired speed of rotation and will produce a low singing noise, which will increase or diminish if the speed varies. The operator is thus enabled to keep the target-arm rotating at just the desired speed.

I will now pass to the description of the mechanism for releasing the target. This mechanism is set in operation electrically from any desired point and operates to cause the release of the target from an intermediate position of the arm. The target, when fed to the target-arm D, is held in place against rubber posts d by the shoe P. This shoe is rigidly attached to the rock-shaft p , extending through the bottom of the target-arm, and on the lower end of which is the arm p' . This arm terminates in the barrel p^2 , which incloses the spring p^3 and has projecting from one end the buffer-head p^4 , pressed outward by the spring p^3 , and limited in its movement by the pin p^5 , projecting from it into the slot p^6 in the barrel. A set-screw p^7 at the other end of the barrel adjusts the spring. On the under side of the target-arm, pivoted at q , is the trigger Q. This trigger has a lug q' , projecting upward from it, which stands between the lugs d' and d^2 , depending from the bottom of the target-arm. These lugs cooperate

to limit the oscillation of the trigger. This trigger has a balance-weight q^2 at one end and a shoulder q^3 upon its under side, adapted to engage the buffer-head p^4 . A spring q^4 tends to draw the trigger into the position shown in the drawings, where the shoulder q^3 engages with the buffer-head and holds the shoe P against the target on the arm. In the operation of the trap when mechanism, hereinafter described, causes the end q^5 of the trigger Q to be forced away from the shaft C the shoulder q^3 releases the buffer-head, and the shoe P is free to be swung aside by centrifugal force.

Secured to the shaft C is the gear-pinion c' , which meshes with the gear-wheel R, journaled on the stud b^4 , which projects from the frame B. This gear-wheel is continuously revolved in the direction of the arrow. Surrounding the stud b^4 beneath the gear-wheel is the eccentric S, which is normally stationary, but which may be caused to revolve with the gear-wheel R by the following mechanism: In a radial slot s in the eccentric is pivoted at s' the pawl s^2 . A spring s^3 , contained in a recess in the end of the pawl and bearing against the end of the slot, tends to force the nose s^4 of the pawl into one of the spaces r' between the spokes r of the gear-wheel R, and thereby compel the eccentric to rotate with the gear-wheel. Such tendency is normally prevented by the nose t' of the armature-lever t engaging with the lip s^5 on the end of the pawl. When, however, the electromagnet T is energized, it attracts the armature t^2 , and this swings the lever t slightly and withdraws the nose from the lip s^5 , whereupon the spring s^3 causes the pawl-nose to project into one of the spaces r' , and, a spoke of the gear-wheel impinging against the side of the pawl-nose, the eccentric is caused to rotate with the gear.

In operation the electric current through the magnet ceases shortly after the lip s^5 has cleared the nose t' of the armature-lever, and therefore the eccentric makes a complete revolution with the gear-wheel. At the end of the revolution the beveled lip s^5 comes under the nose t of the armature-lever and withdraws the pawl from the wheel and releases the eccentric, which comes to rest.

The face of the pawl-nose s^4 is beveled, as shown, on its under side, while the under side of the spokes r are beveled on their rear sides—i. e., the side from which they normally rotate. These bevels cooperate to allow the gear-wheel to rotate in the reverse direction without operating the eccentric, whereby no releasing can take place if the operator should happen to drive the machine in the wrong direction.

Surrounding the eccentric S is the strap s^6 , from which leads a rod s^7 , which is connected with a T-lever U. This T-lever is pivoted to the frame B and is connected at its upper end with the latch to the target-magazine by means of the rod u , whereby a revolution of

the eccentric S allows a target to descend from the magazine, the operation of the latch being explained in my said prior patent.

The T end of the lever U engages with one end of a lever u' , pivoted to the frame B, the other end of which extends into a segmental groove v , contained in a vertically-slidable sleeve V, which surrounds the shaft C. This sleeve and its attached parts constitute the tripping mechanism for operating the releasing trigger hereinbefore described. An outward movement of the lower end of the lever U, under the action of the eccentric, causes the lever u' to raise the sleeve V. This sleeve carries at its upper end a boss or lug v' , which when the sleeve is raised comes into the path of the end q^5 of the trigger Q and in the rotation of the arm D forces the said end away from the shaft C and releases the shoe P, as hereinbefore explained. A spring W, connected to the lever U and to the frame, as shown, steadies the operation of said lever.

To prevent damage, in case the lug v' should be directly beneath the trigger Q when it rose and should strike the bottom face of that trigger, I make the connection between the rod s^7 and the T-lever yielding. This is accomplished by the following arrangement: A yoke u^2 is pivoted to said T-lever at its lower end, and through the arms u^3 and u^4 of this yoke the rod s^7 passes. A helical spring s^8 surrounds the rod between the arms of the yoke and bears at one end against the arm u^4 and at the other against the nuts u^5 , which are adjustably secured to the rod s^7 and the other side of which normally bears against the arm u^3 .

In order that it may be impossible to calculate the position of the arm D at the time of release of the target and so estimate the course the target will take, I give an oscillation of the sleeve V, which causes the releasing-lug v' to occupy varying positions as it rises and impinges against the side of the trigger Q. This oscillation is imparted by means of the pitman Y, which connects a crank-pin r^2 on the wheel R with an arm v^3 , which is journaled on the shaft C and is rigidly connected with the lug v^2 , depending from the sleeve V. The distance from the axis of the sleeve to the point v^4 , where the pitman is pivoted to the arm, being greater than the distance from the center of the wheel R to the crank-pin r^2 , as shown, the wheel end of the pitman will travel in a circular path with the wheel R, and the other end and the arm v^3 will oscillate back and forth. The amount of oscillation will depend upon the relative proportion of the two distances mentioned. There is sufficient play at the two pivots of the pitman Y to allow the sleeve V to rise the required distance without binding.

In practice the target-trap is placed in a pit and a shield erected to protect the operator. The operator sits on the saddle and revolves the target-arm at the desired speed. In this position he can easily reach the target-mag-

zine with his hands, and thus keep it supplied with targets, which are conveniently disposed about him. An electric button, which may be located near the marksman, is pressed when desired, and when the target-arm comes around to the front the target is thrown, the position of the arm, and hence the course of the target's flight, being undetermined, depending upon the position which the lug v' happens to occupy when it acts upon the trigger Q.

Having described my invention, I claim—

1. In a target-trap, in combination, a suitable base, a journal-pin carried thereby, a frame, a sprocket-wheel and a bevel-gear, all on said journal-pin, said sprocket-wheel and bevel-gear being connected to revolve together, and said frame being independently adjustable about said pin, a substantially vertical shaft journaled in said frame and having at its lower end a bevel-gear meshing with the bevel-gear on the journal-pin, a target-arm connected with said shaft, a second suitably-journaled sprocket-wheel, means for driving same, and a sprocket-chain connecting said two sprocket-wheels, substantially as described.

2. In a target-trap, in combination, a suitable base, a journal-pin b' carried thereby, a frame, a sprocket-wheel, a bevel-gear and a sleeve, all on said pin, said sleeve, frame and sprocket-wheel being each adapted to be turned on said journal-pin independently of the other, and said bevel-gear and sprocket-wheel being connected to revolve together, a rod extending from said sleeve and connected at its other end with a hanger, a second or driving sprocket-wheel carried by said hanger, means for driving said second sprocket-wheel, a sprocket-chain connecting said two sprocket-wheels, a substantially vertical shaft carried by said frame and having at its lower end a bevel-gear meshing with the bevel-gear on the journal-pin, and a target-arm secured to said shaft, whereby the position of the target-arm or the position of the driving-sprocket or both may be changed while preserving the driving connection between said sprocket and the target-arm, substantially as described.

3. In a target-trap, in combination, a plate A, lugs a^2 extending therefrom, a journal-pin b' carried by said lugs, a frame B journaled on said pin between the lugs a^2 , a shaft C journaled in said frame on an axis which intersects the journal-pin b' , a gear-pinion c on said shaft near its lower end, a rigidly-connected sprocket-wheel G and a gear-wheel F on said journal-pin between the lugs a^2 , said gear F meshing with the pinion c , a sleeve k surrounding the journal-pin between the frame and the gear, a rod K projecting from said sleeve, a hanger carried at the end of said rod, a sprocket-wheel I carried by said hanger, and a sprocket-chain H connecting the sprocket-wheels I and G, substantially as specified.

4. In a target-trap, in combination, a sup-

porting-base consisting of a plate and legs therefor, a sprocket-wheel G rotatably supported by said plate, a brace-rod K pivoted concentrically with said sprocket-wheel, a hanger J secured to said brace-rod at its free end and being adjustable to and from its pivot, a bracket carried by one of the legs of said frame, a bolt adapted to clamp the hanger to the bracket in adjustable position, a sprocket-wheel I carried by said hanger, and a sprocket-chain H connecting the sprocket-wheels I and G, substantially as specified.

5. In a target-trap, the combination of a supporting-base, the sprocket-wheel G rotatably supported by the same, the brace-rod K pivoted concentrically with said sprocket-wheel, the hanger J secured to said brace-rod and being adjustable to and from the pivot of the latter, said hanger having a slot j^2 , the bracket a^4 carried by said supporting-base and having a slot a^3 therein concentric with said sprocket-wheel, the bolt j^3 extending through said slots in the hanger and bracket and locking the same together, a sprocket-wheel I carried by said hanger and a sprocket-chain H connecting said sprocket-wheels I and G, substantially as described.

6. In a target-trap, a base consisting of the plate A, the legs $a a'$, the bracket a^4 carried by said leg a' , and the braces $a^5 a^5$ leading from said bracket to the legs $a a'$, in combination with a journal-pin supported by said plate A, a sprocket-wheel and bevel-gear on said journal-pin connected to revolve together, a sleeve on said journal-pin having a brace-rod extending from it, a hanger secured to said brace-rod and to said bracket a^4 , the crank-shaft journaled in said hanger, the sprocket-wheel and cranks secured to said shaft, a sprocket-chain connecting said two sprocket-wheels, an approximately vertical shaft suitably supported and having a bevel-gear at its lower end meshing with the bevel-gear on the journal-pin, and a target-arm secured to said shaft, substantially as described.

7. In a target-trap, the combination of the supporting-base consisting of a plate A and the legs $a a'$, the journal-pin b' carried by said plate, the sprocket-wheel G and the sleeve k surrounding said pin, the rod K projecting from said sleeve, the bracket a^4 carried by said leg a' , the hanger J adjustably secured to said rod K at its lower end, means for securing said hanger to said bracket a^4 in different positions, a sprocket-wheel I carried by said hanger, and a sprocket-chain H connecting said sprocket-wheels I and G, substantially as described.

8. In a target-trap, the combination of a supporting-base, the sprocket-wheel G rotatably supported by the same, the brace-rod K pivoted concentrically with said sprocket-wheel, the hanger J having a lug j' through which said brace-rod passes, nuts k' and k^2 screwing on said brace-rod on each side of said lug, said hanger having a slot j^2 therein by which it may be secured to the frame in

different positions of adjustment toward or from the sprocket-wheel G, the sprocket-wheel I carried by said hanger, and the sprocket-chain H connecting said wheels I and G, substantially as described.

9. In a target-trap, in combination, a frame, a revoluble target-arm carried thereby, a pivoted arm carried by said target-arm, a stop limiting the movement of said pivoted arm toward the axis of the target-arm and a spring opposing the movement of said pivoted arm away from the axis, and a stud and gong, one carried by the frame and the other by the said pivoted arm, and the two adapted to impinge under the action of centrifugal force when the speed of revolution of the target-arm is a predetermined amount, substantially as described.

10. In a target-trap, in combination, a frame, a revoluble target-arm carried thereby, a pivoted arm N carried by said target-arm, said arm N carrying the gong n , a stop limiting the movement of said arm N toward the axis of the target-arm and a spring opposing the movement of said arm N away from said axis, and a stud b^3 carried by said frame, said gong being adapted to impinge against said stud when the centrifugal force is a predetermined amount, substantially as described.

11. In a target-trap, in combination, a revoluble target-arm, a plate M rigidly connected by said target-arm, an arm N pivoted at one end of the plate M, the gong n carried by said arm N at its other end, the blocks n' and n^2 , said block n^2 carrying the spring n^3 and the adjusting-nut n^4 , and a stud against which said gong is adapted to impinge when centrifugal force overcomes the spring n^3 a predetermined amount, substantially as described.

12. In a target-trap, in combination, a target-arm, a revoluble shaft to which said target-arm is connected, mechanism normally idle for releasing a target on said arm, locking means for establishing connection between said mechanism and said revoluble shaft, whereby said shaft operates said mechanism to release a target, a spring and an electromagnetic device, one tending to throw said locking means into action, and the other to hold them out of action, substantially as described.

13. In a target-trap, in combination, a target-arm, a revoluble shaft to which said target-arm is connected, a wheel R compelled to rotate when said shaft rotates, a loose eccentric adapted to operate mechanism to release a target on said arm, means for locking said wheel and eccentric, a spring and a lever, one tending to throw said locking means into action and the other to hold it out of action, and means for operating said lever, substantially as described.

14. In a target-trap, in combination, a target-arm, a revoluble shaft to which said target-arm is connected, a gear c' on said shaft meshing with a gear R, a loose eccentric jour-

naled concentrically with said gear R and adapted to operate mechanism for locking said eccentric to said gear R whereby the revolution of the latter causes the release of a target, substantially as described.

15. In a target-trap, in combination, a target-arm, a revoluble shaft to which said target-arm is connected, a wheel R compelled to rotate when said shaft rotates, said wheel having spokes r which leave spaces r' between them, a loose eccentric journaled eccentrically with said wheel, a pawl carried by said eccentric and adapted to lock said eccentric to said wheel, a spring tending to cause such locking and means for preventing the same until desired, substantially as described.

16. In a target-trap, in combination, the wheel R and means for rotating the same, said wheel having spaces r' , the loose eccentric S, the eccentric-strap s^6 and eccentric-rod s^7 connected to mechanism adapted to release a target, the pawl s^2 carried by said eccentric and having the nose s^4 adapted to stand in one of the spaces r' , the spring s^3 tending to cause such operation, and the lever t engaging with said pawl and preventing such operation, the electromagnet T adapted to cause said lever t to release said pawl whereby said eccentric and wheel become locked together, substantially as described.

17. In a target-trap, in combination, a revoluble shaft C and a target-arm revolved thereby, releasing mechanism on said arm and tripping mechanism slidable upon said shaft and oscillatable about the same and adapted to trip said releasing mechanism, a gear on said shaft meshing with a gear R on another shaft, a pitman connecting said gear R with said tripping mechanism, the distance from the connection of the wheel R to the center of said wheel being less than the distance from the connection of the pitman and releasing mechanism to the center of said shaft C, whereby rotation of said gear oscillates said tripping mechanism, substantially as described.

18. In a target-trap, in combination, a revoluble shaft, a target-arm revolved thereby, a sleeve V slidable upon said shaft, a lug v' on said sleeve adapted to engage with releasing mechanism and release a target on said arm, a gear c' on said shaft, a gear R in mesh therewith, an arm v^3 oscillatable about said shaft and rigidly connected with said sleeve V, a pitman connecting said arm v^3 and said gear R, the distance from the axis of the gear R to the point of connection of the pitman being less than the distance from the axis of the said shaft to the point of connection of the pitman and the arm v^3 , substantially as described.

19. In a target-trap, in combination, a revoluble shaft C and a target-arm revolved thereby, releasing mechanism on said arm and tripping mechanism slidable upon said shaft and oscillatable about the same and adapted to trip said releasing mechanism, a gear on said shaft meshing with a gear R on another shaft, a pitman connecting said gear R with said tripping mechanism, mechanism adapted to be operated by the rotation of said wheel R for sliding said tripping mechanism into position for engagement with said releasing mechanism and means for connecting at will said last-mentioned mechanism with said wheel, substantially as described.

20. In a target-trap, in combination, a throwing-arm D, a shoe P adapted to hold a flying target in said throwing-arm, a rock-shaft p to which said shoe is secured, an arm p' secured to said rock-shaft, a spring-pressed buffer-head p^4 carried by said arm, and a trigger Q having a shoulder q^3 adapted to engage with said buffer-head, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHUR M. JENKINS.

Witnesses:

E. L. THURSTON,
ALBERT H. BATES.