

J. CUMMING.

SIZING AND SMOOTHING SHOT AND SHELL.

No. 41,059.

Patented Jan. 5, 1864.

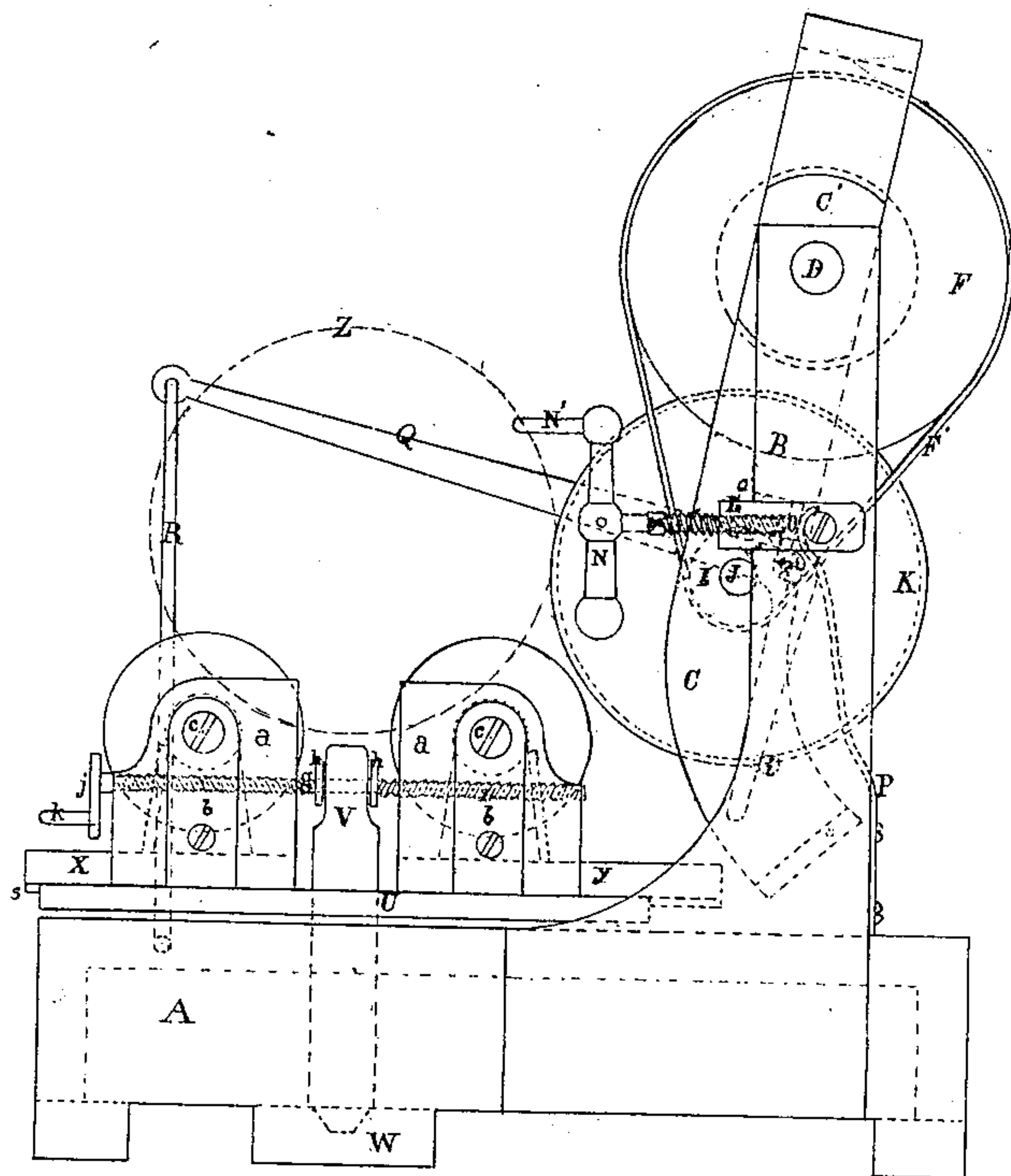


Fig. 2

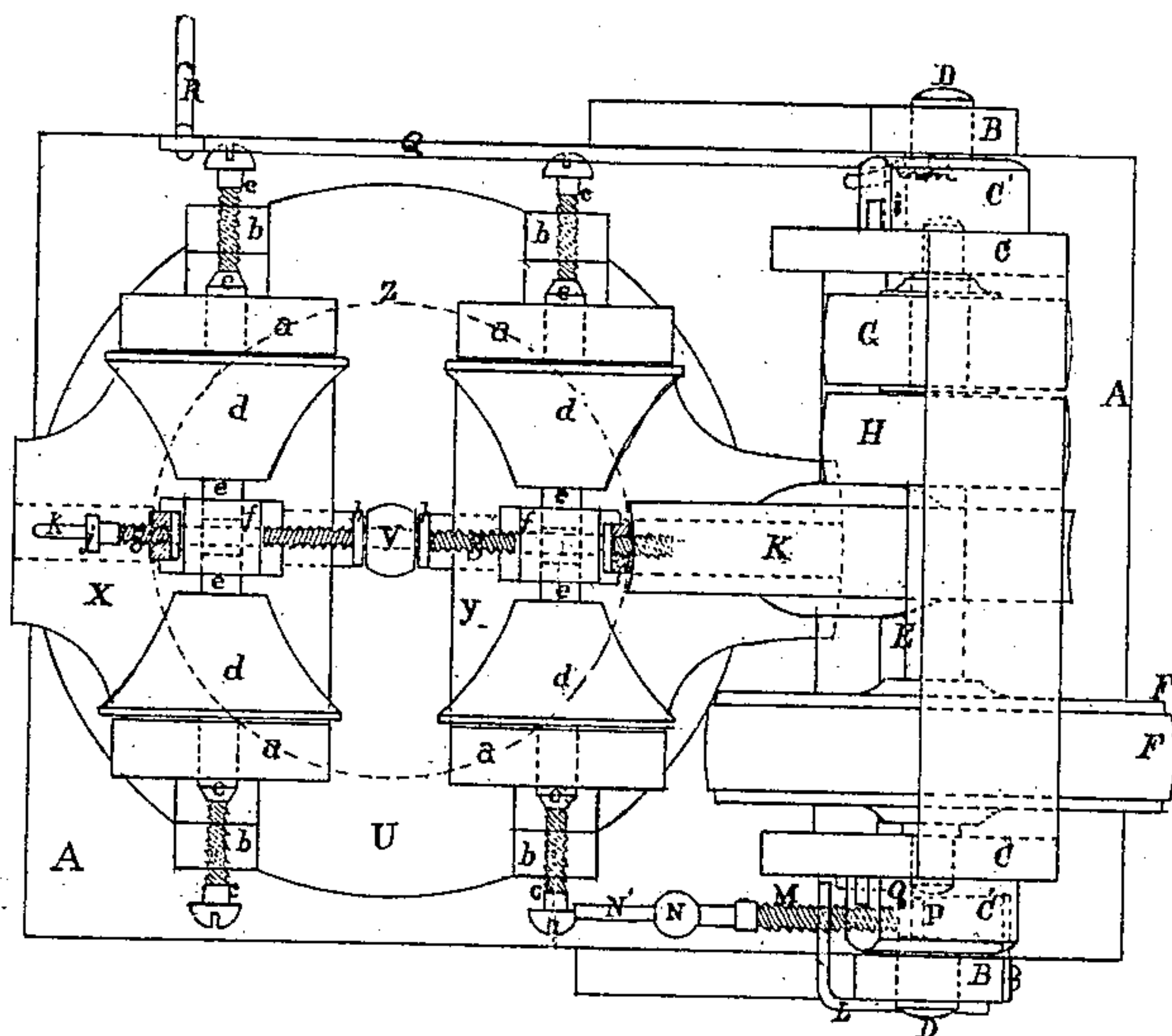


Fig. 1.

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN SIZING AND SMOOTHING SHOT AND SHELL.

Specification forming part of Letters Patent No. 41,059, dated January 5, 1864.

*To all whom it may concern:*

Be it known that I, JAMES CUMMING, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Sizing and Smoothing Shot and Shell; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings forming a part of this specification, in which—

Figure 1 is a top view, and Fig. 2 a side elevation.

Like parts are indicated by the same letters in both drawings.

The nature of my invention consists, first, in the employment of a horizontally-rotating turn-table provided with two pairs of conical rollers arranged on axes parallel to each other and forming a seat for the spherical body to be sized and smoothed, in combination with an adjustable grinding or polishing wheel whereby said spherical body may be readily turned either in a vertical or horizontal plane and sized and smoothed with great dispatch; second, in moving simultaneously the two pairs of conical rollers to or from each other by means of a rod provided with a right and left hand screw, as hereinafter described, for the purpose of adjusting said rollers to shot or shell of different sizes, and also to keep the same over the center of the turn-table; third, in providing, as hereinafter described, each of the conical rollers with a fixed axis and causing its outer end to turn on the point of a set-screw, whereby each of the two rollers of a pair may be moved toward or from each other in a line parallel with their axes, for the purpose of adjusting said rollers to shot and shell of different sizes, bringing their centers over the center of the turn-table spindle, and also preventing the friction that would otherwise result from the lateral pressure of the rollers against the sides of their frame; fourth, in forcing the adjustable grinding or polishing wheel at a graduated distance against the spherical body to be sized and smoothed by means of a spring or its equivalent, and pressing it back or easing it forward by means of a foot-lever or treadle, so that the operator may have both hands at liberty at the same time, to turn the spherical body or apply the gage to it during the operation.

To enable others skilled in the art to make and use my improvement, I will now describe its construction and operation.

A is a bench or table of wood or iron, and B B are two uprights attached to the sides of the same, as shown in the drawings.

C C are the two sides of a pendent four-sided frame resting on its axles D D, which turn in suitable bearings in the upper ends of the uprights B B, C' C' being bosses attached to the sides of said frame, as shown in Fig. 1, so that the axles D D may rest therein and be independent of the axle E of the driving-pulley F.

H is a smaller pulley fast to the axle E, and G a loose pulley on the same.

K is the grinding or polishing wheel, of any suitable material, the periphery of which is made concave, as shown in the drawings, and for the purpose described above. This wheel K is hung on the axle J, the extremities of which turn in the sides of the frame C, being driven by the pulley I and belt F', as shown in Fig. 2.

Attached to one of the uprights B is a bracket, L, through which passes the adjusting-screw M, provided with a crank and handle, N N', the point of said screw bearing against a bracket, O, attached to one side of the swinging frame C.

P is a spring, the lower end of which is fast to the upright B, while the upper end presses against the bracket O opposite to the point of the adjusting-screw M. Thus it is obvious that the bracket O will be always kept against the point of the screw M, and that by turning the latter the wheel K can be readily adjusted to a spherical body (represented by the dotted line Z) of any size required.

Q is a long bent lever turning on the fulcrum m in the upright B, as shown by the dotted lines in Fig. 2, the longer end of said lever being furnished with a pendent treadle, R, terminating with a stirrup, into which the operator can put his foot. The short end of the lever strikes against the pin i, projecting from the side of the frame C. By means of this treadle-lever the wheel K can be moved at pleasure, for the purposes described above.

U is a circular table, of iron or other suitable material, fixed on a stiff central spindle, V, which, passing through a suitable bearing in the top of the table A, rests upon and turns in the step W. Thus the table U



will turn with freedom in a horizontal plane parallel with the top of the table A.

X is a frame resting on the top of the table U, its underside being provided with a cleat, s, which slides in a corresponding groove in the top of U, as represented by the dotted lines in Fig. 1.

d d are two slightly-concave conical rollers provided with fixed axles e e, which turn in the sides a a of the frame X and in the central stud, f, as shown in Fig. 1. These rollers d d are shorter than the distance between the central stud, f, and the sides a a, so that they are capable of a lateral movement to or from each other for the purpose specified above. The outer ends of the axles e e of these rollers rest against the ends of the adjusting-screws c c, which pass through the ears b b for the object described above.

Y is another frame similar to X, and provided with precisely the same appendages for supporting a set of concave conical rollers like those already described.

g is a rod, one-half of which is provided with a right-hand screw-thread, and the other half with a left-hand screw-thread, the outer end being furnished with a crank and handle, j k. One end of this rod turns in a female screw in the stud f of frame X, and the other in the stud f of frame Y, h h being washers fast on the rod each side of the upper end of the spindle V, whereby the rod is prevented from moving in the direction of its axis. Thus constructed and arranged it is obvious that by turning the rod g the two sets of conical rollers may be made to approach or recede from each other, for the purpose specified above. The conical rollers, being independent of each other and capable of turning in opposite directions to each other, enable the

operator to turn horizontally the heaviest shot and shell with ease.

The turn-table U is capable of making a full revolution, but it is intended to be moved but a short distance at a time for the purpose of bringing the shot or shell to bear at the required points against the wheel K in a horizontal plane, the motion in a vertical plane being effected by the conical rollers. The latter are also employed for turning the spherical body when it is necessary to move it through a larger arc than would be convenient with the turn-table alone.

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

1. The employment of a horizontally-rotating turn-table provided with two pairs of conical rollers arranged on axes parallel with each other, forming a seat for the spherical body to be sized and smoothed, in combination with an adjustable grinding or polishing wheel, substantially as and for the purpose described.

2. Moving simultaneously the two pairs of conical rollers to or from each other, substantially as set forth, and for the purpose described.

3. Making the conical rollers adjustable in the line of their axes, substantially as and for the purpose described.

4. The combination of the treadle-lever A, pin i, spring P, and adjusting-screw M, substantially as set forth, and for the purpose described.

JAMES CUMMING.

Witnesses:

N. AMES,  
J. AMES.