

No. 627,360.

Patented June 20, 1899.

C. L. STURGES.  
TALLYING APPARATUS.  
(Application filed Sept. 27, 1898.)

(No Model.)

Fig. 1.

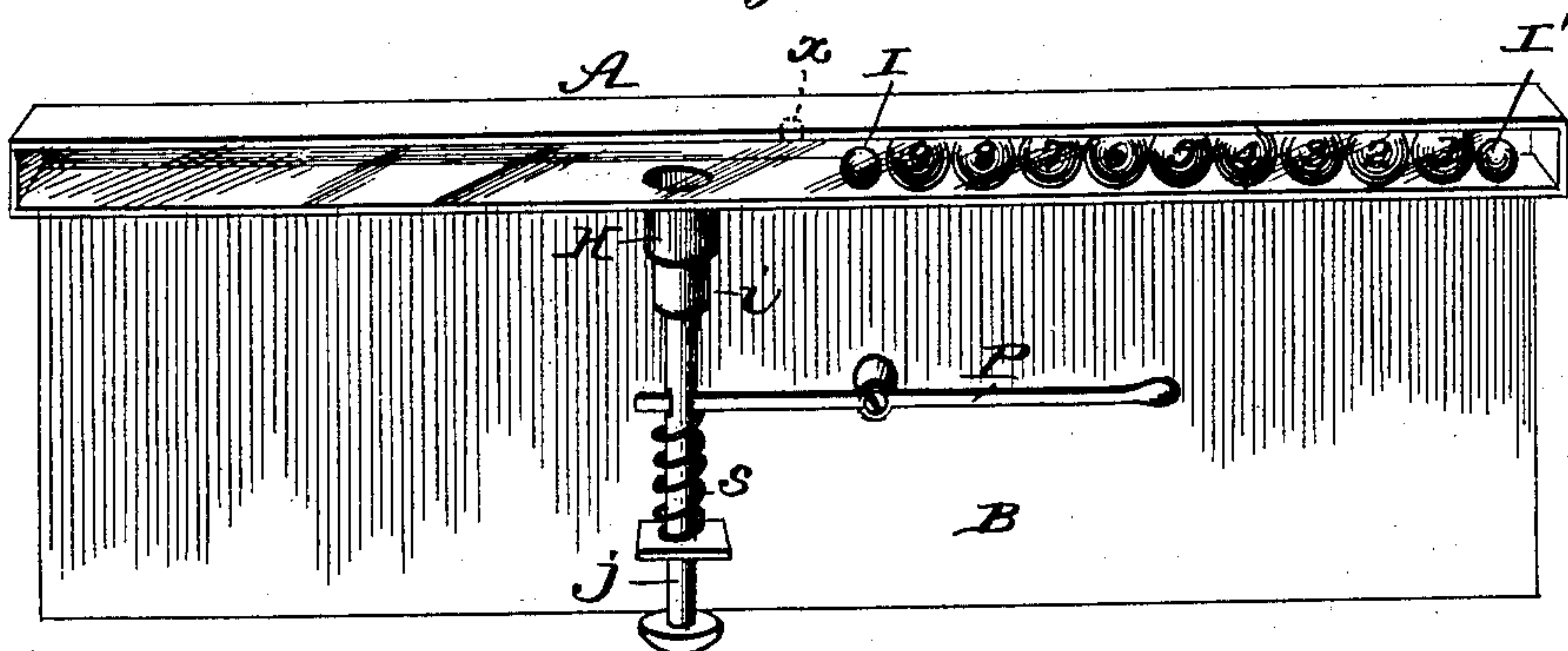


Fig. 2.

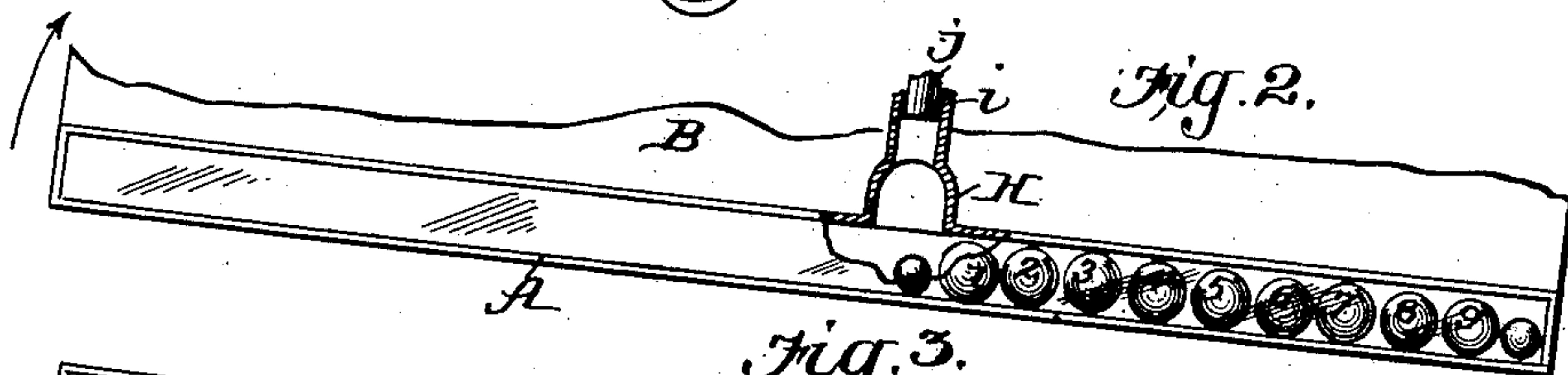


Fig. 3.

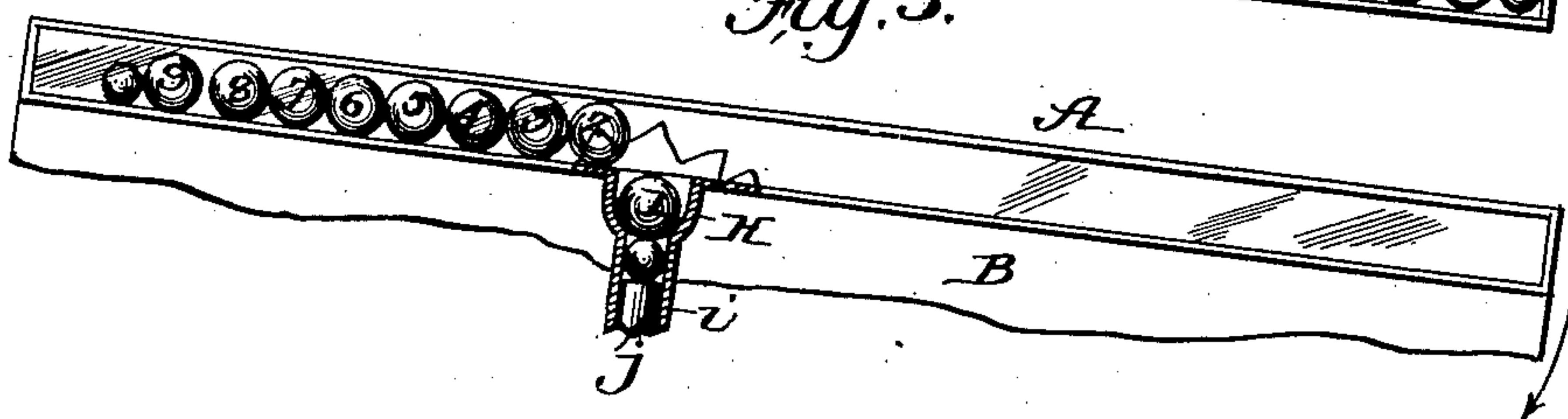


Fig. 4.

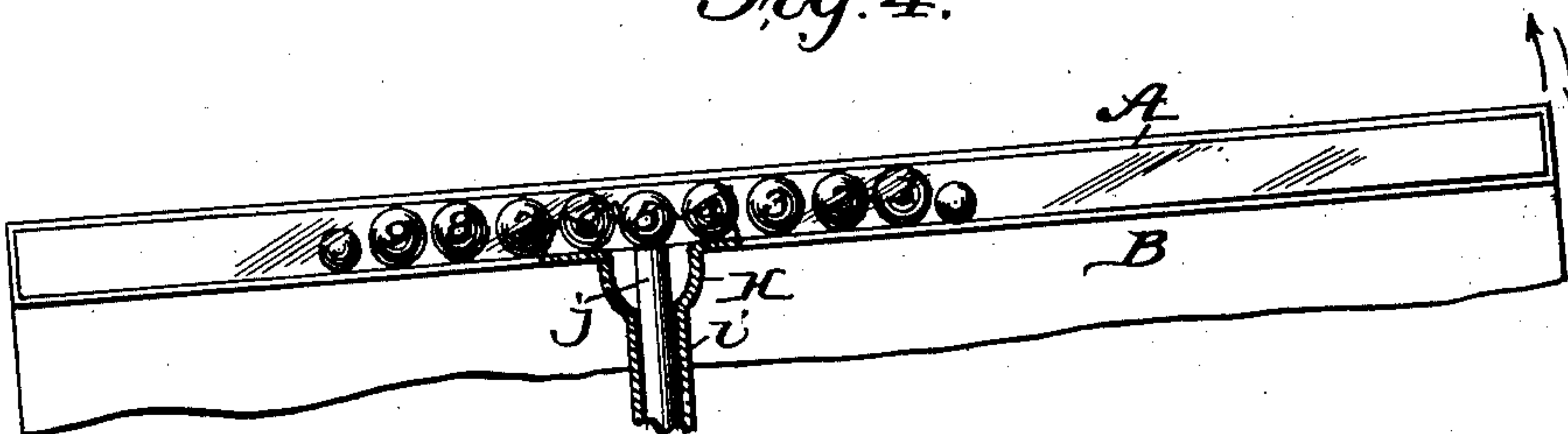
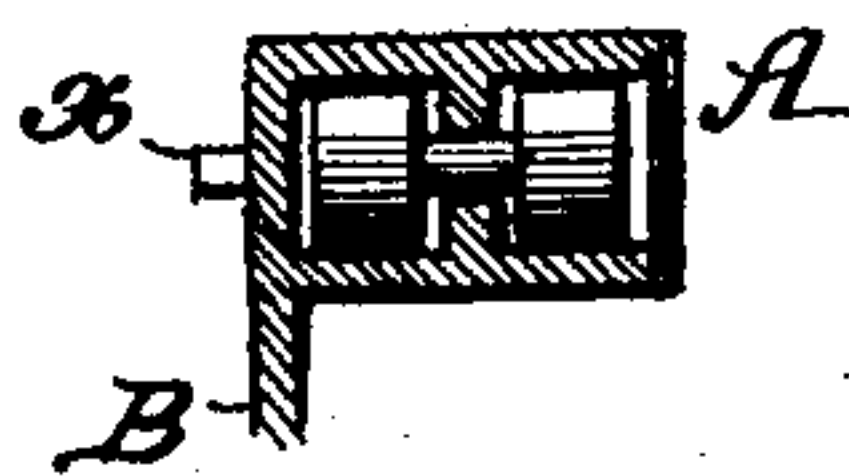


Fig. 5.



Fig. 6.



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## TALLYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 627,360, dated June 20, 1899.

Application filed September 27, 1898. Serial No. 692,002. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES LEWIS STURGES, a citizen of the United States, residing at Escondido, in the county of San Diego and State of California, have invented a new and useful Improvement in Tallying Apparatus, of which the following is a specification.

My invention relates to a tallying device in which tallies (for any purpose) are kept by means of a set of tallying-bodies thrown into a series of combinations.

The object of my invention is to carry on the system of tallying by transpositions hereinafter set forth. I attain this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the entire apparatus in a preferable form. Figs. 2, 3, and 4 are views illustrating the operation of the apparatus. Fig. 5 is a view illustrating different forms of tallying-bodies which may be used in my apparatus. Fig. 6 is a cross-section of a form of chamber adapted for use of a tallying-body of a particular shape.

Nine digits represent counters, and the letters I and I' represent, respectively, indexes that constitute the set of tallying-bodies. The chamber A, in which such bodies are held, is oblong and rectangular; but I propose to adopt any form that will suit the purpose. The chamber A is separated, practically, into two longitudinal divisions of unequal length by the location of the part H i, which is a receptacle or pocket fitted for the purpose of receiving one or more of the tallying-bodies from one end of the row for holding them while the others pass by. H is that part of the pocket fitted for holding one, and but one, of the counters, and i is that part fitted for holding one index I or I'.

Tallying-bodies as to their use are separated into two classes—larger and smaller—the former class being represented by nine digits, the nine larger balls corresponding and being numbered accordingly. The smaller bodies or balls are indicated by letters I I'.

As shown in Fig. 5, the tallying-bodies may be spheres, circular disks, elongated cylinders, or cylinders having a central circumferential groove. The latter form is intended to be used with a chamber having central lengthwise ribs, as shown in Fig. 6.

By the use of two or more indexes with one set of tallying-bodies two or more series of tallies may be carried on simultaneously, the one set of counters serving with different indexes. Index I may denote index of prime series of tallies to which the other series are subsidiary, and the latter indexes may be distinguished from I and from each other by I' I'', &c. Prime index I is preferably that index at the extreme head of the row in the formation of an initial arrangement. I' and other indexes may have any other places in the row, providing no two are given a place between the same two counters serving in association with I.

A single tally consists in the transposition of one counter from the foot to the head of the row. In practice a single tally is definitely marked by the reception of a counter into and its delivery from the pocket H i. The use which the tallying apparatus is to subserve will determine the preferable method of marking the serial order of the tallying-bodies, whether by color or characters in each case.

The size of the chamber throughout its length, except along the cavity i, should be sufficiently large to allow the free passage of any counter of the set of tallying-bodies to operate within the chamber, but not enough larger to allow the passing of any tallying-body beyond another. The shorter division should be but the length of the row of balls contiguously arranged in a line, so that the foot end of the row will drop into the pocket H before any considerable movement of the row longitudinally occurs in the chamber to avoid an impetus of a row in a long division that would drive the foot of the row over an empty pocket. That part H of the pocket should be a portion of the chamber adapted for holding one and but one counter beyond a line separating it from all other tallying-bodies of the set, and that part i of the pocket beyond H must be of a size to exclude all counters, but such as to admit any index to be found in the set of tallying-bodies.

Separating at the divisional point H i, each division of the chamber may extend in any desired direction that will not bring about an intersection of the inclosing walls of the divisions. The right-hand side of the chamber



A, Fig. 1, is longer than the other—that is to say, the division in which the balls lie is longer than the other. The chamber may be pivoted at *x*. A frame or backing B may be attached to the chamber A.

By observation it may be seen that in one revolution of the chamber A, as indicated by arrow and dotted lines, by gravitation one counter at regular intervals and one index and an associate counter will be transposed from foot to head of the row. The chamber A may be rotated completely or simply oscillated sufficiently to illustrate the operation in this respect. How the inclination of the plane is brought about, whether by entire or parts of revolutions, is not essential; but a complete revolution best effects the result. The apparatus is designed as a part of a machine that may be made to effect the desired inclinations at the proper time. The tallying-bodies and the form of the chamber are such that the automatic transpositions are provided for within the chamber if the chamber be rotated or oscillated. It is desirable that a part of the side of the chamber shall be of glass, so that all or a part only, if desired, of the operation of the tallying is visible when in progress. A pin or push-rod *j* slides in guides and is held in normal position by a spring *s*. A lever *p* is pivoted to the backing B and serves to operate the push-bar *j*. The office of the push-bar *j* is threefold—that of ejecting the balls that may lodge in cavity H *i* and that of preventing a movement of the tallying-bodies from end to end of the chamber A during a revolution or part of revolution whenever it may be desired to have the tallying prevented, in which case the push-bar projects into the chamber. A third use of the push-bar *j* is illustrated in Fig. 4, where the upper end of the bar constitutes a bridge for making a continuous track for the tallying-bodies going from end to end of the chamber.

When used as in a voting-machine, the the several counters must not bear in sight marks as of numerals or letters, but the ordinal relation must be indicated by color-marks on the tallying-bodies.

By this method of marking counters and indexes when a tallying-body is exposed to view in the pocket H it may be shown to the observer that a tally is being effected without revealing to him the serial number of that particular tally, all the row except the pocketed body or bodies being concealed. In other words, a voter may be shown his vote in the act of being tallied and yet secrecy as to how others have had their votes counted is preserved.

In Fig. 1 the apparatus is shown ready to begin a revolution for tallying.

In Fig. 2 a half-revolution has been completed, and in Fig. 3 the revolution is nearly completed, one index and a counter having been deposited in pocket H *i* and the others being about to pass from the short division of chamber A into the longer one.

In Fig. 4 the row of counters and indexes is in transit from the long to the short division, the push-bar *j* being shown pushed up, (by a finger applied to its enlarged lower end or head,) and thus bridging the cavity H *i* till foot of row passes into the short division, so that when the chamber A is made to incline down the bodies roll into the opposite division and in the course of the revolution the foot of the row falls into H *i*. The index I' taken into the pocket first will be delivered last, thus bringing it one order nearer the foot of the series of counters, which effects the marking of tallies. It will be understood that the number of revolutions made by the tallying device A is indicated by the number of balls or rollers that have been transferred from one side to the other—*i. e.*, from the right of the row to the left end of the row. Thus when but one revolution has been made the tally or ball marked "1" will have been transferred to and appear at the left end of the row, and if two revolutions have occurred then the two balls—namely, those marked "1" and "2"—will appear on the left. Thus any number of revolutions may be instantly ascertained by visual inspection of the order of the numerals on the left of the row, the tallies about to be marked in the present instance being (a) tally No. 1 of the counters considered in association with I and (b) tally No. 10 of the counters considered in association with I'.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A tallying apparatus comprising an elongated chamber having a pocket substantially as specified and adapted to revolve or oscillate vertically, and a series of tallying-bodies contained in said chamber and adapted to travel therein, as set forth.

2. In a tallying apparatus, the combination of the chamber or track A adapted to revolve and set of tallying-bodies as described, for the purpose specified.

3. An improved tallying apparatus, composed of an elongated body having a lengthwise chamber, and a pocket opening therefrom, the said body being pivoted to adapt it to revolve or oscillate vertically, and a series of rotatable tallying-bodies or counters adapted to roll on the floor or bottom of said chamber, and to enter said pocket, when the body revolves or oscillates, as specified.

4. The improved tallying apparatus, comprising the elongated chambered and pivoted body having a central downwardly-projecting pocket, which is open at the bottom, and a set of spheres or equivalent tallying-bodies which are adapted to rotate in said chamber and enter its pocket, one or more of such spheres differing in size or appearance, as and for the purpose specified.

5. A tallying apparatus comprising an elongated revoluble chamber, having a depression or pocket near the middle of its length, a series of counters, and two smaller bodies serv-



ing as indexes, and located at the ends of said series, both counters and indexes being adapted to enter the pocket, as shown and described.

5 6. A tallying apparatus comprising an elongated chamber adapted to revolve or oscillate, and provided with a depression or pocket, located nearer one end than the other, and a series of counters or tallying-bodies which are adapted to travel in said chamber, substantially as shown and described.

10 7. A tallying apparatus comprising an elongated chamber pivoted as specified and provided with a depression or pocket, and a push-bar adapted to work in said pocket and enter the chamber, as specified.

8. A tallying apparatus comprising an elongated chamber having a depression or pocket, a push-bar adapted to work in said pocket, a spring acting on said push-bar, and a pivoted lever which serves to operate the push-bar, substantially as shown and described. 20

9. The elongated tallying-chamber having a central longitudinal rib and a roller-counter having a central circumferential groove adapted to receive said rib as shown and described. 25

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Witnesses:

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