Nov. 4, 1952 T. J. H. BOULTON 2,616,104

MEANS FOR CUTTING OR MARKING SIMILAR ARTICLES

Filed Jan. 17, 1949 3 Sheets-Sheet 1

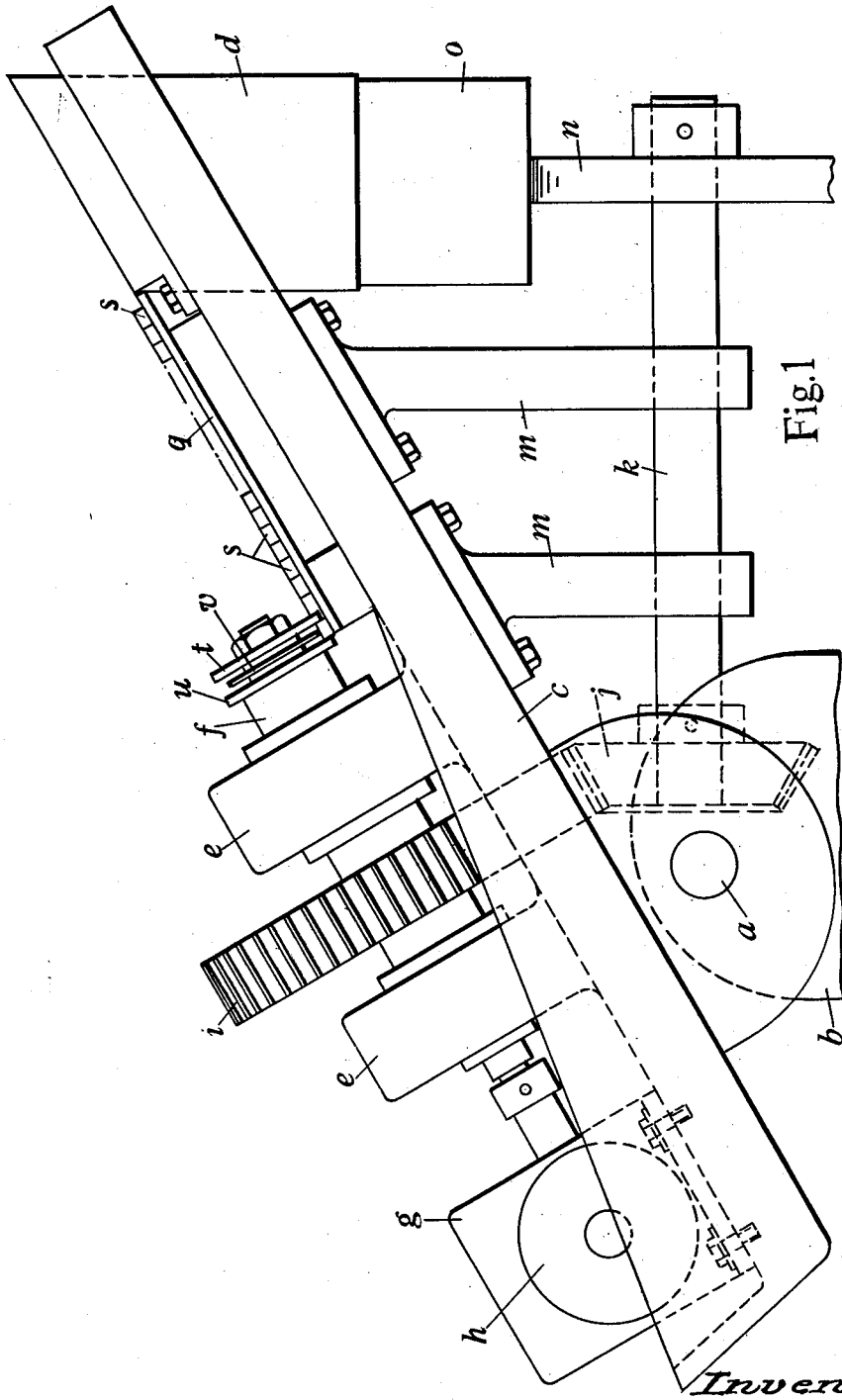


Fig.1

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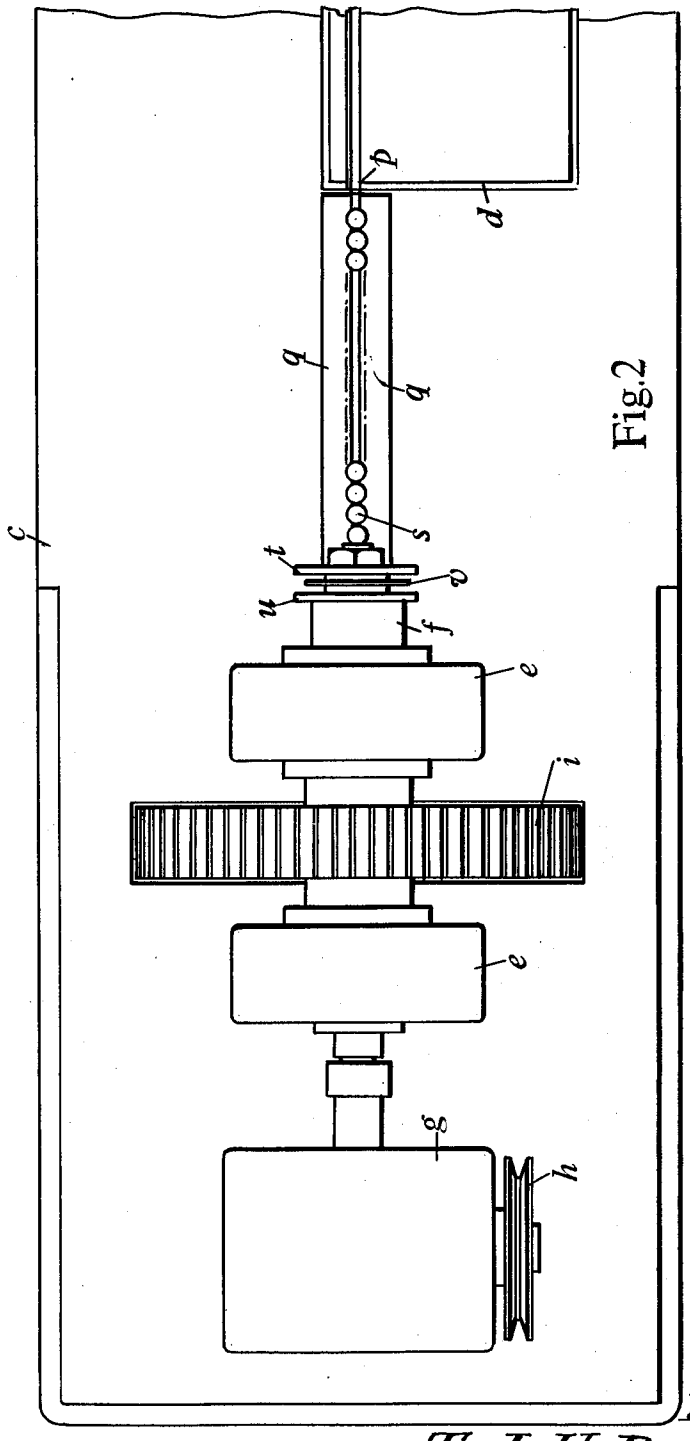


Fig.2

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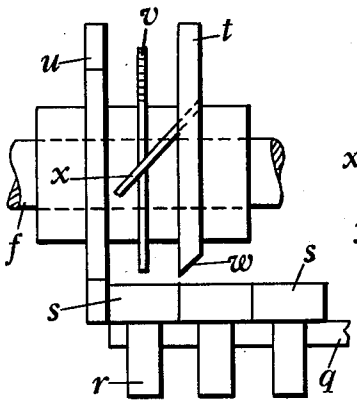


Fig.3

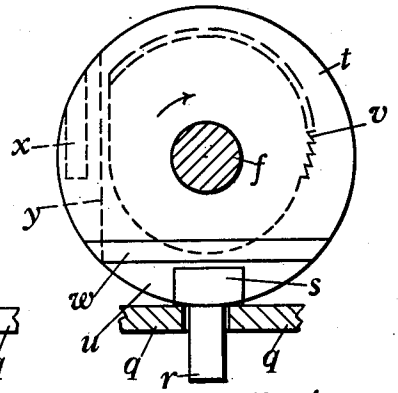


Fig.4

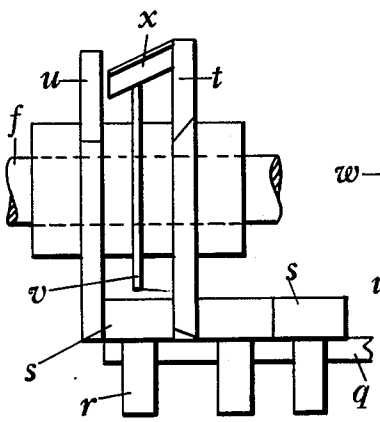


Fig.5

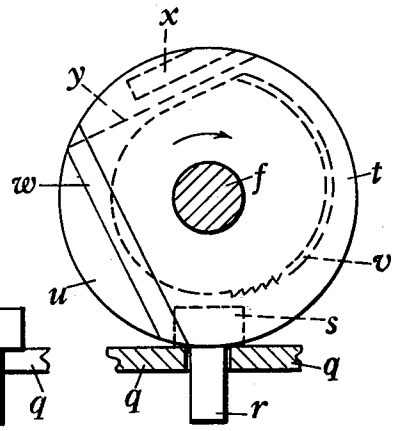


Fig.6

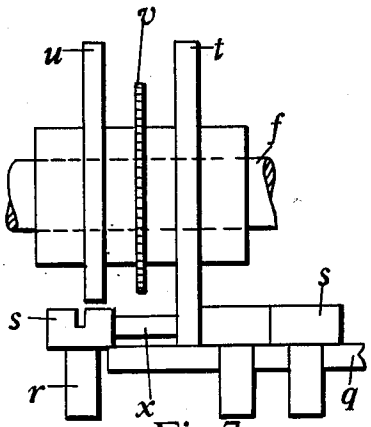


Fig.7

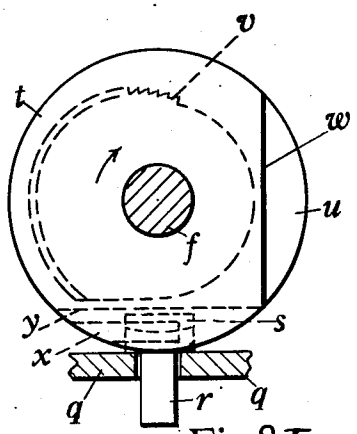


Fig.8

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Patented Nov. 4, 1952

2,616,104

UNITED STATES PATENT OFFICE

2,616,104

MEANS FOR CUTTING OR MARKING SIMILAR ARTICLES

Thomas James Harrison Boulton, Shirley, near Birmingham, England

Application January 17, 1949, Serial No. 71,237
In Great Britain January 30, 1948

3 Claims. (Cl. 10—5)

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The object of this invention is to provide improved means whereby a cutting, marking, or like operation may be performed automatically upon a series of similar articles such for example as bolts or screws and the like, and particularly to provide improved means for forming slots in the ends or heads of small articles such as bolts or screws.

The invention comprises a guide channel along which the articles may be moved in succession and in which they are held against lateral displacement, discs rotatable in planes transverse to the guide channel and spaced to receive a single article between them, said discs being adapted to allow the workpieces to be admitted between them, held against longitudinal displacement during part of the rotation of the discs, and discharged, and rotatable cutting or marking means located between the members for performing a cutting, marking or similar operation upon the articles while they are held between the discs.

According to a further feature of the invention, means is provided for discharging the articles after the performance of the desired operation, and such means preferably comprises an oblique member or tongue secured to one of th discs and extending across the recess through which the article is to be discharged.

In the accompanying drawings:

Figure 1 is a side elevation and Figure 2 a plan of a machine embodying the invention for cutting transverse slots in the heads of screws, bolts or the like.

Figures 3, 4, 5, 6 and 7, 8 are respectively side and end elevations (to a larger scale than Figures 1 and 2) illustrating three successive stages in the slotting operation.

Referring to the drawings, I pivotally mount and secure at *a* on a support *b* a bed *c*, the inclination of which can be varied by movement of the bed about the pivot. At the upper end of the bed is provided a hopper *d* for containing a store of workpieces, and on the lower part of the bed, there is supported by bearings *e* a spindle *f* which is driven through reduction gearing (contained in a housing *g*) from a belt-driven pulley *h* or other source of motion. On the spindle *f* is provided a toothed wheel *i* engaging a smaller wheel *j* on a spindle *k*, supported by bearings *m* beneath the bed *c*. The spindle *k* carries a cam *n* which actuates a movable part *o* in the hopper for feeding the workpieces to a discharge position *p*.

Between one side of the hopper and the spindle *f*, there is mounted on the bed *c* a pair of strips

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q arranged parallel with each other and the spindle *f* and forming between them a longitudinal slot serving as the guide channel. The guide channel is such that the stems *r* of the workpieces can slide along the channel with their heads *s* supported on the upper faces of the strips *q*.

On the end of the spindle *f* adjacent to the lower end of the guide channel are mounted a pair of discs *t*, *u*, and centrally between the discs there is mounted on the spindle a saw *v*. The distance between the adjacent faces of the discs *t*, *u* is equal to the diameter of the heads *s* on the workpieces.

The disc *t* has a segment removed from it, leaving a straight edge *w* which is preferably bevelled in the manner shown in Figure 3, and the depth of the removed portion is such as will allow the head of a workpiece to pass beneath the disc as shown in Figures 3 and 4. Also on the inner side of the disc *t* is formed or secured an obliquely disposed tongue piece *x* for the purpose hereinafter described.

Similarly a segment is removed from the disc *u* leaving a straight edge *y*, this edge being disposed at a right or other suitable angle to the corresponding edge *w* on the disc *t*.

The saw *v* may be of any convenient form. Thus (and as shown) it may consist of a disc having a toothed periphery of arcuate form, the centre of curvature of which coincides with the axis of the spindle. Or it may consist of a circular disc which is eccentrically mounted and has teeth around the whole of its periphery.

The mode of action of the machine is as follows:

The workpieces are fed by gravity in single file along the guide channel. In the position of the discs shown in Figures 3 and 4, the workpiece at the lower end of the channel can pass beneath the disc *t* and be arrested by the disc *u*. When by the rotation of the disc, they arrive at the position shown in Figures 5 and 6, the head of the workpiece between the disc is held thereby, and is isolated (by the disc *t*) from the other workpieces. While the isolated workpiece is so held the saw comes into action and forms the required slot across the head of the workpiece. Later (and as shown in Figures 7 and 8), the straight edge *y* of the disc *u* comes into position adjacent to the head, for enabling the obliquely disposed tongue piece *x* on the disc *t* to sweep the workpiece out of the guide channel to a discharge position. Later the edge *w* of the disc *t* comes into position for allowing the next workpiece to

pass beneath it, and the operation above described is then repeated.

The invention may be applied in like manner to the performance of operations other than slotting as described above. Thus for example one or more saws may be arranged to form a flat or flats on the side or sides of the article. Also instead of a saw a milling or like cutter having a desired profile may be employed. Also a marking or other die may be mounted between the disc members or stop plates and arranged to perform a marking operation on the article while it is held between the rotating disc members.

By this invention there is provided a simple and effective machine for performing cutting, marking, or like operations upon similar and regularly shaped articles which is capable of a high rate of production and does not require highly skilled attention. The invention is not restricted, however, to the example described, since modifications in detail may be made to suit particular requirements.

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

1. A machine for performing a cutting or marking operation on similar workpieces, such as bolts, screws or the like, comprising in combination a guide chanel along which the workpieces are movable in single file, a bed on the upper side of which the guide channel is provided, a spindle rotatably mounted on the upper side of the bed in parallel relationship with the guide channel, first and second discs secured in coaxial and spaced relationship on the spindle with parts of their peripheries adjacent to parts of the guide channel so that rotation of the discs with the spindle causes the peripheral portions of the discs to move across the path of the workpieces, and at least one tool secured on the spindle and located between the discs, the space between the discs being sufficient to accommodate between them a workpiece occupying the adjacent part of the guide channel, the peripheral portions of the tool being cut away at positions spaced apart angularly in relation to the axis of the spindle so that during one part of each revolution of the spindle a workpiece in the guide channel is movable past the cut-away portion of the first disc into the space between the discs where it is arrested by contact with the second disc for an interval determined by the angular distance between the cut-away portions of the discs, and during a subsequent part of the revolution of the spindle the workpiece between the discs is movable past the cut-away portion of the second disc, and the tool having a part which during each revolution of the spindle is moved into and out of a position in which it can act on the workpiece between the discs whilst the workpiece is arrested by the second disc.

2. A machine as claimed in claim 1 and having on one of the discs means for moving a workpiece from between the discs past the cut-away portion of the second disc.

3. A machine as claimed in claim 1 and having on the first disc an obliquely disposed part for sweeping the workpiece from between the discs past the cut-away portion of the second disc.

THOMAS JAMES HARRISON BOULTON.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,584,263	Wilcox	May 11, 1926
1,603,743	Burke	Oct. 19, 1926
1,615,137	Ruby	Jan. 18, 1927
2,303,225	Olson	Nov. 24, 1942
2,432,753	Griffin	Dec. 16, 1947