O. C. BURTON. 4 Sheets--Sheet 1.

Improvement in Machines for Cutting Threads on Bolts.

No. 122,702. Patented Jan. 16, 1872.

Fig. 1

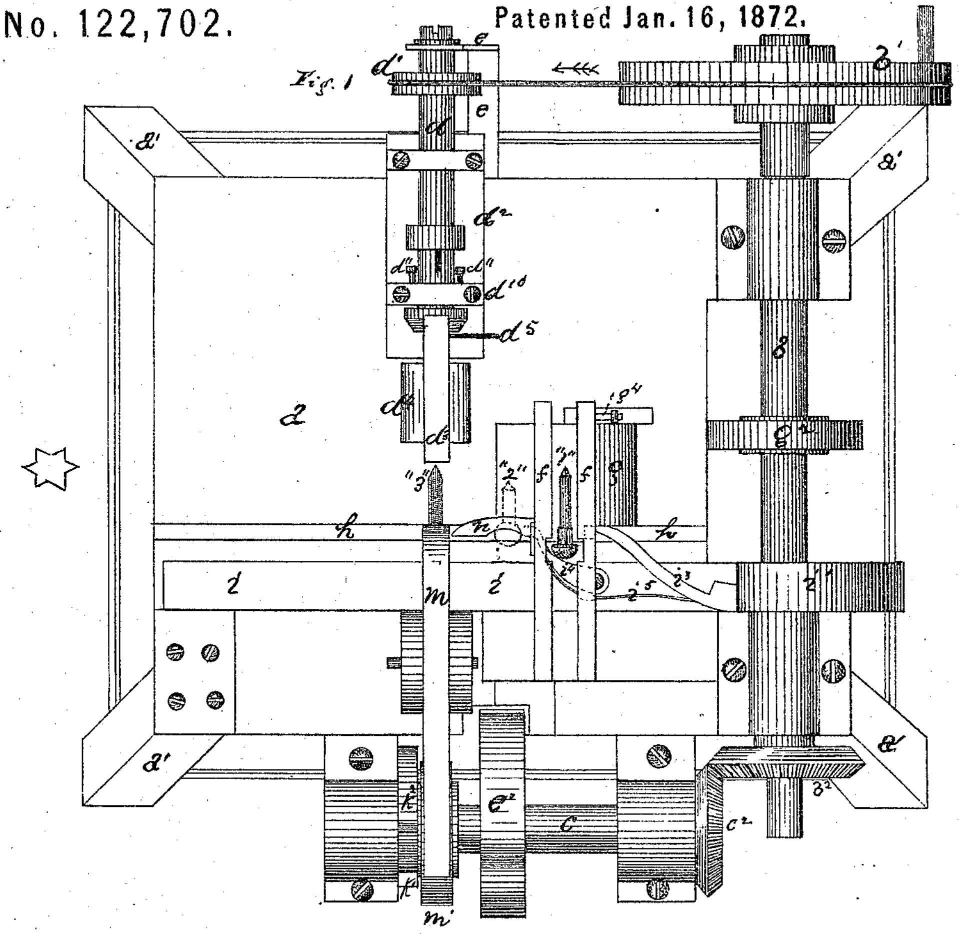
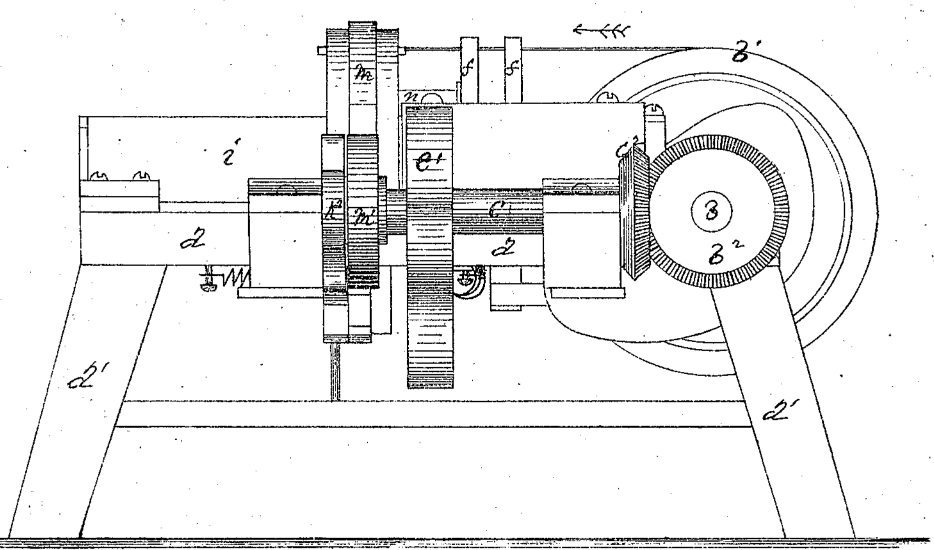


Fig. 2.



Witnesses:

Geo. Hoäfelin

George G. Ellis

Inventor.

Orville C. Burton

by W. E. Simonds

Scale

Inch

0 1 2 3

AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.)

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Improvement in Machines for Cutting Threads on Bolts.

No. 122,702. Patented Jan. 16, 1872.

Fig. 3

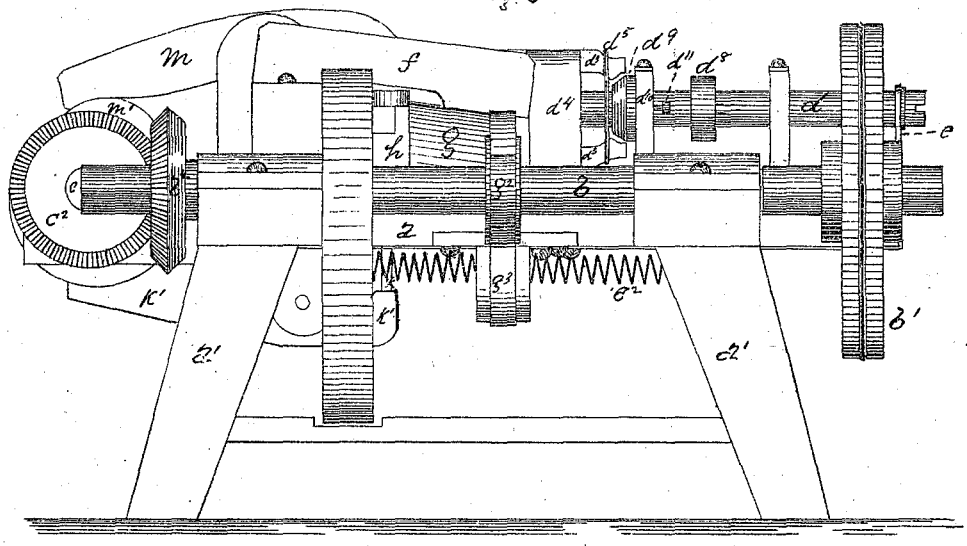
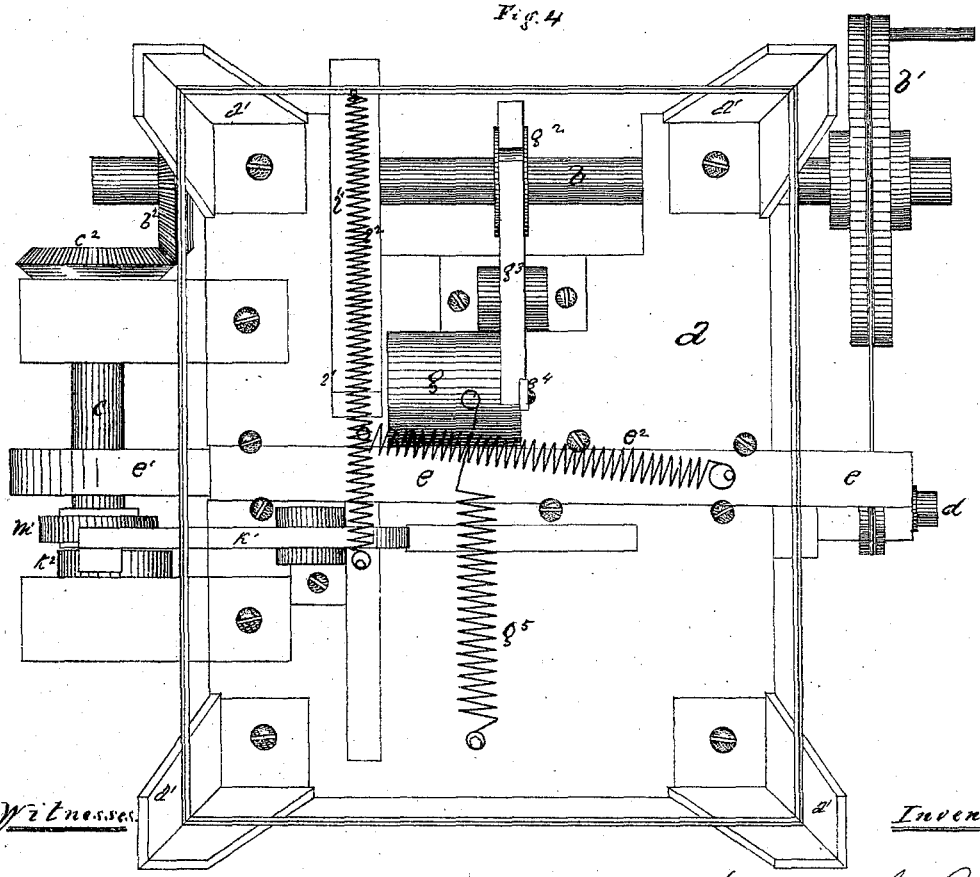


Fig. 4



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(14.) O. C. BURTON. 4 Sheets--Sheet 3.

Improvement in Machines for Cutting Threads on Bolts.

No. 122,702. Patented Jan. 16, 1872.

Fig. 5.

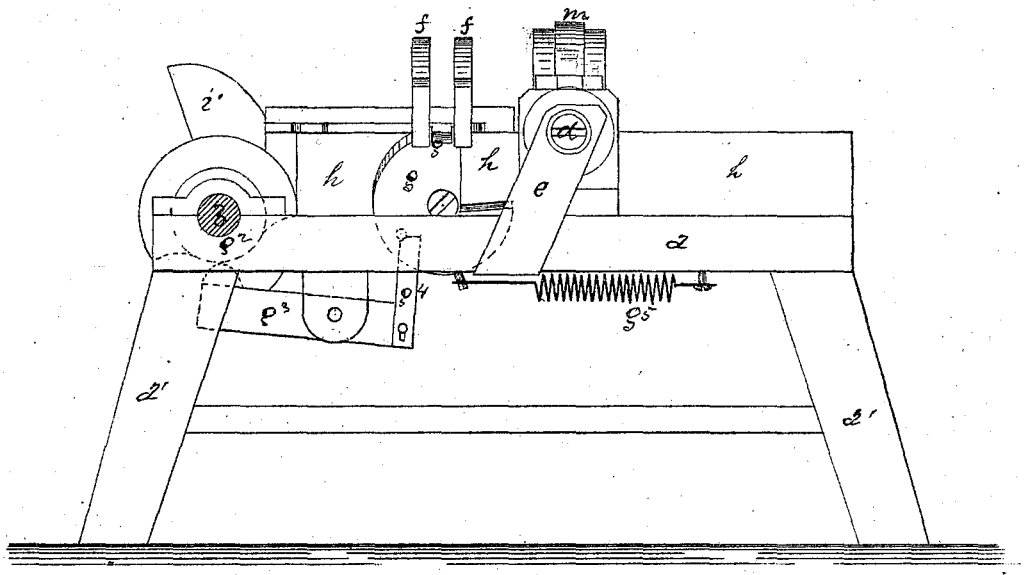
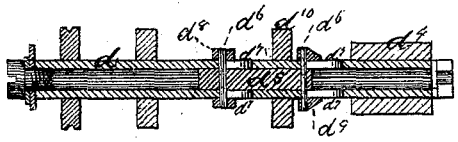


Fig. 6



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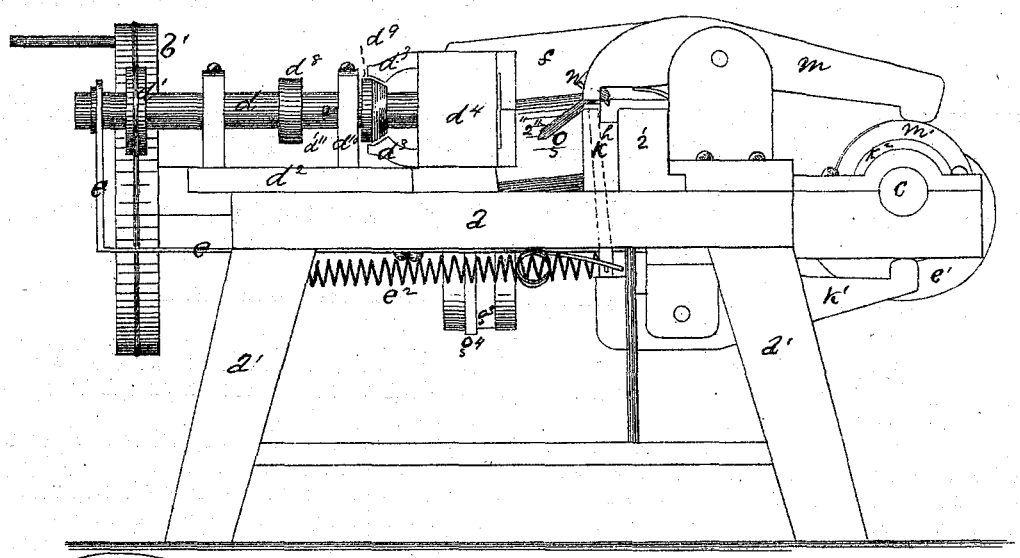
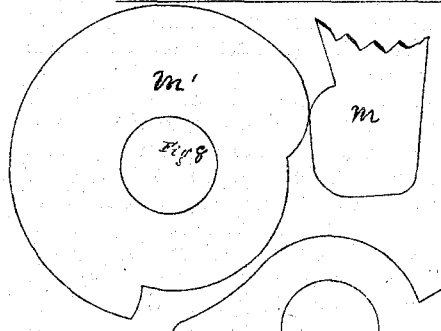
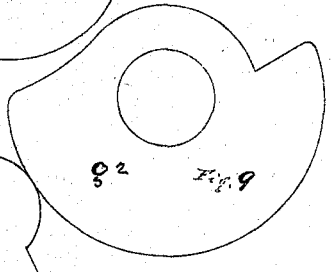
(14.) O. C. BURTON. 4 Sheets--Sheet 4.

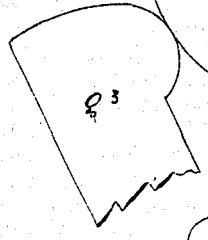
Improvement in Machines for Cutting Threads on Bolts.

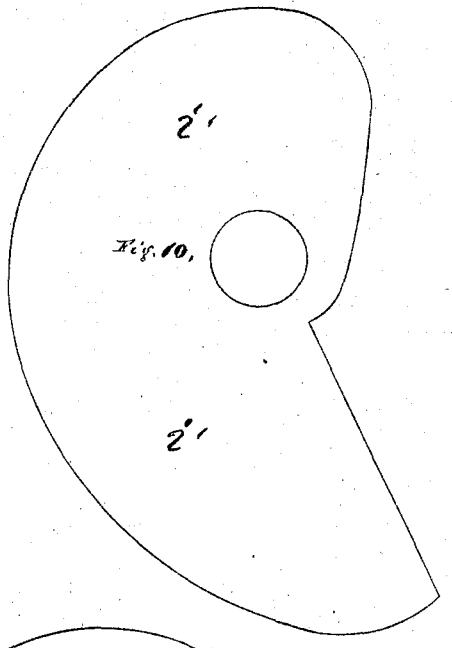
No. 122,702. Fig. 7 Patented Jan. 16, 1872.

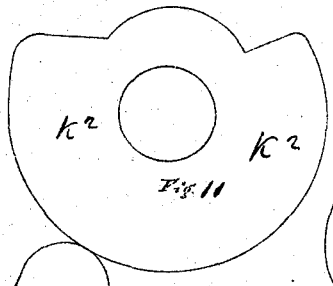


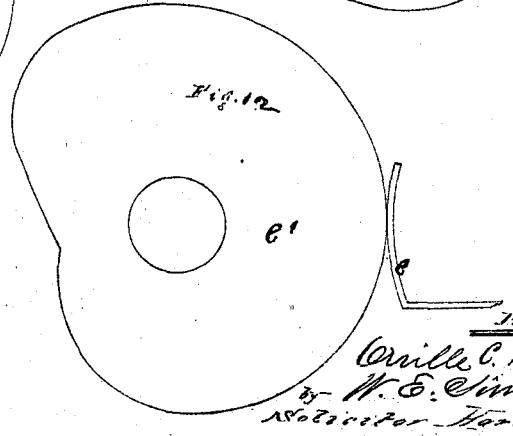












Witnesses.
S. Hopkins
George G. Sill

Inventor
Orville C. Burton
by W. E. Simonds
Solicitor for Himself.

UNITED STATES PATENT OFFICE.

ORVILLE C. BURTON, OF UNIONVILLE, CONNECTICUT, ASSIGNOR TO HIMSELF AND CHARLES H. GRAHAM, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR CUTTING THREADS ON BOLTS.

Specification forming part of Letters Patent No. 122,702, dated January 16, 1872.

SPECIFICATION.

I, ORVILLE C. BURTON, of Unionville, in the county of Hartford and the State of Connecticut, have invented a new and useful Improved Machine for Cutting Screw-Threads on Bolts, of which the following is a specification, reference being had to the accompanying drawing, in which—

Figure 1 is a plan view of the machine. Fig. 2 is a side elevation, the view being taken from the side at the right hand, considering the side next to the star in Fig. 1 to be the front. Fig. 3 is a rear elevation. Fig. 4 is a view from underneath. Fig. 5 is a side elevation from the left-hand side. Fig. 6 is a detached sectional view of the apparatus for locking and unlocking the chuck-jaws, to be hereinafter described. Fig. 7 is a front elevation. Figs. 8, 9, 10, 11, and 12 are outline views of the various cams used.

The object and purpose of the invention are the production of a machine which shall take unthreaded bolts from a trough into which they are fed from a hopper and cut screw-threads upon them automatically.

The letter *a* indicates the table to which the machinery is attached, supported upon four legs, *a' a' a' a'*. At the rear of the table, in proper bearings, is hung the main shaft *b*, which is driven by some motive power extrinsic from the machine, the belt-wheel thereupon, b^1, moving in the direction indicated by the arrow. By means of the bevel-gears b^2 c^2 it drives the shaft *c*, at the right side of the table. The belt-wheel b^1 is belted to the wheel d^1 on the lathe-shaft *d*, and thereby drives that shaft, which is hung in standards attached to the lathe-foot d^2, which, in a working machine, is hung in ways, that it may be moved back and forth to accommodate itself to the length of the bolt to be cut. The lathe-shaft *d* is free to move back and forth, within proper limits, lengthwise in its bearings, and this back-and-forth movement is given and controlled by means of the sliding rod *e*, which, taking hold upon the lathe-shaft, runs down with an elbow under the bottom of the table, across to the cam e^1, against which it is held by the spiral extension spring e^2. The shape of the cam e^1 is such as to make the lathe-shaft move back and forth at proper times. In a working machine this rod *e* is made extensible so as to accommodate it to the length of the bolt to be cut.

It will be observed that the motion of the lathe-shaft to the right is given wholly by the spring *e*, and as this is the movement that cuts the thread this provision is most important, for it will not force the dies upon the bolt so as to crush them when, by chance, a bolt of larger size than the machine is set for comes up to be threaded.

On the inner end of the lathe-shaft is a chuck composed of two or more jaws, d^3 d^3, pivoted in slots in the end of the cross-head d^4. The spring d^5 tends to throw the chuck-jaws open or apart when they are not otherwise held together. The dies for cutting the thread on the bolts are held in the teeth of the jaws d^3 so as to cut the thread on the bolt when it is held firmly in the position of the bolt 3. These jaws d^3 d^3 are held together in position for cutting the thread on the bolt when the lathe-shaft *d* commences to move from the left to the right, but they are suddenly unlocked from this position when the desired length of thread has been cut by an arrangement which I will now describe, shown more particularly in section in Fig. 6. The shaft *d* has a cylindrical hole drilled lengthwise in it for a good part of its length. In this hole slides the round bar d^5, to which are attached, by insertion through it, the pins d^6 d^6, which extend through the orifices d^7 made lengthwise in the lathe-shaft into the rings d^8 and d^9, which slide on the exterior of the shaft. One side of the ring d^9 is beveled off to the right, for a purpose which will shortly appear.

Suppose the lathe-shaft *d* to be moving back to the left after having just cut a thread; the front ends of the jaws d^3 d^3 will be wide apart, and the back ends will be resting against the shaft *d*, being made so to do by the spring d^5. At the proper point the ring d^9 brings up against the standard d^{10}, and the back ends of the jaws will slide up on the bevel, which will lock the jaws in the position for cutting another thread. Now the lathe-shaft moves forward to right again to cut another thread. At the proper point the ring d^8 brings up against the adjusting-screws d^{11}, (seen best in Fig. 1,) and thus unlocks the chuck-jaws again.

Thus much for the thread-cutting mechanism. Now to show how the bolts are fed: On the top of the trough f in a working machine is placed a hopper for the uncut bolts, which are fed therefrom by common devices into the trough in the position shown in Fig. 1. The main part of the bottom of this trough is formed by a groove, g', cut in the surface of the cylinder-tumbler g, which groove is just large enough to receive the body of a single bolt. The neck of the bolt rests on the guide-rail h, and the head of the bolt falls just back and to the right of the top of this guide-rail. On the right of the guide-rail, and next to it, is the carrier-block i, which reciprocates at proper times back and forth, its movement being given and controlled by the cam i^1 and the spring i^2. The cam gives the forward movement and the spring the backward. On the top of this carrier-block are pivoted two catch-fingers, i^3 and i^4, both pressed to the left by the the spring i^5, and both prevented from extending to the left of the guide-rail by proper stops. When the carrier-block is at the backward extreme of its motion the parts will be in the posion shown in Fig. 1. When the carrier-block moves forward the catch-finger i^3 will catch the neck of the uncut bolt 1 which lies at the bottom of the trough, and will carry it forward to the position of bolt 2, where it will leave it for a little time, for the purpose of allowing its point to drop down to be oiled, as will be explained further along; after which it will again carry it along to position 3, and then returns to its first position, slipping over the end or head of the next bolt which has fallen down to the bottom of the trough f. The bolt is allowed to escape from the trough by a forward movement of the cylinder-tumbler g, whose operation will soon be explained. At each forward movement of the carrier-block the catch-finger i^4 takes a bolt from position 3 and carries it forward somewhat, where the bolt drops off into some proper receptacle and the catch-finger returns to its first position, slipping over the head of the bolt, which has then arrived at position 3. Just before the bolt arrives at position 3 a stop, k, actuated from beneath the table by the lever k^1 worked by the cam k^2, starts up from the top of the guide-rail and forms an abutment, against which the bolt rests. Immediately after the bolt arrives at position 3 the pinching-lever m, actuated by the cam m', grasps the neck of the bolt and holds it firmly, while the lathe-shaft moves to the right and cuts the thread, which being done the pinching-lever releases the bolt, the stop k falls down again, and the catch-finger i^4 carries the bolt away. The bolts are left to stop for a little time in position 2, that their points may be oiled, and it is thus accomplished: A metal leaf, n, starts from the front of the trough and projects a short distance toward the front, against the right side of which the flat side of the bolt-heads rest after escaping from the trough. This leaf is set in a plane which is oblique to the surface of the table, forming with it an angle of about forty-five degrees. At the point indicated by position 2 there is a notch cut in the lower edge of this leaf which allows the point of the bolt to drop down into the position indicated in Fig. 5. The corner of the guide-rail is also taken off at the same point in order to permit of this dropping down, when the point of the bolt dips into a small vessel of oil placed at this point. The movement of the cylinder-tumbler g is given by the cam g^2 acting on the lever g^3, to the end of which is jointed the pawl g^4, whose upper end comes up against a spur upon the left side of the tumbler g. The spring g^5 tends to pull the tumbler in the opposite direction from that in which the lever g^3 moves it, thus making the tumbler to follow accurately the movements of the lever. The cylinder-tumbler is a solid metal cylinder with the groove g' cut in it. Its axis is in a plane parallel to the inclination of the trough f. In the model and the drawing about a quarter of its body is cut away to give room for an oiling-cup at that place. In a working machine this is not necessary.

I claim as my invention—

1. The combination of the rotary reciprocating tumbler g forming the bottom of the trough f and grooved to hold the body of a bolt, and the reciprocating carrier-block i provided with catch-fingers, with the guide-rail h, as and for the purpose set forth.

2. The apparatus described for opening the jaws of the chuck—to wit, the combination of the lathe-shaft d, the cylindrical plug d^5, the pins d^6 d^6, the rings d^8 d^9, and the standard d^{10}, operated substantially as described.

3. The combination of the parts specified in the immediately-preceding clause with one or more adjusting-screws, d^{11}, for the purpose set forth.

4. The leaf n set at about the angle described in the trough f, its inner or under edge cut away so as to allow the bolt when it arrives at position 2 to drop its point for oiling, substantially as described.

5. The combination of the carrier-block, operated substantially as described and provided with the catch-fingers, with the pinching-lever operated substantially as described, and the stop k operated substantially as described, through the guide-rail.

ORVILLE C. BURTON.

Witnesses:

J. R. JENKINS,

J. E. HAMILTON. (14)