(No Model.) 3 Sheets—Sheet 1.

C. T. PARRY

BOLT HEADING MACHINE

No. 343,843. Patented June 15, 1886.

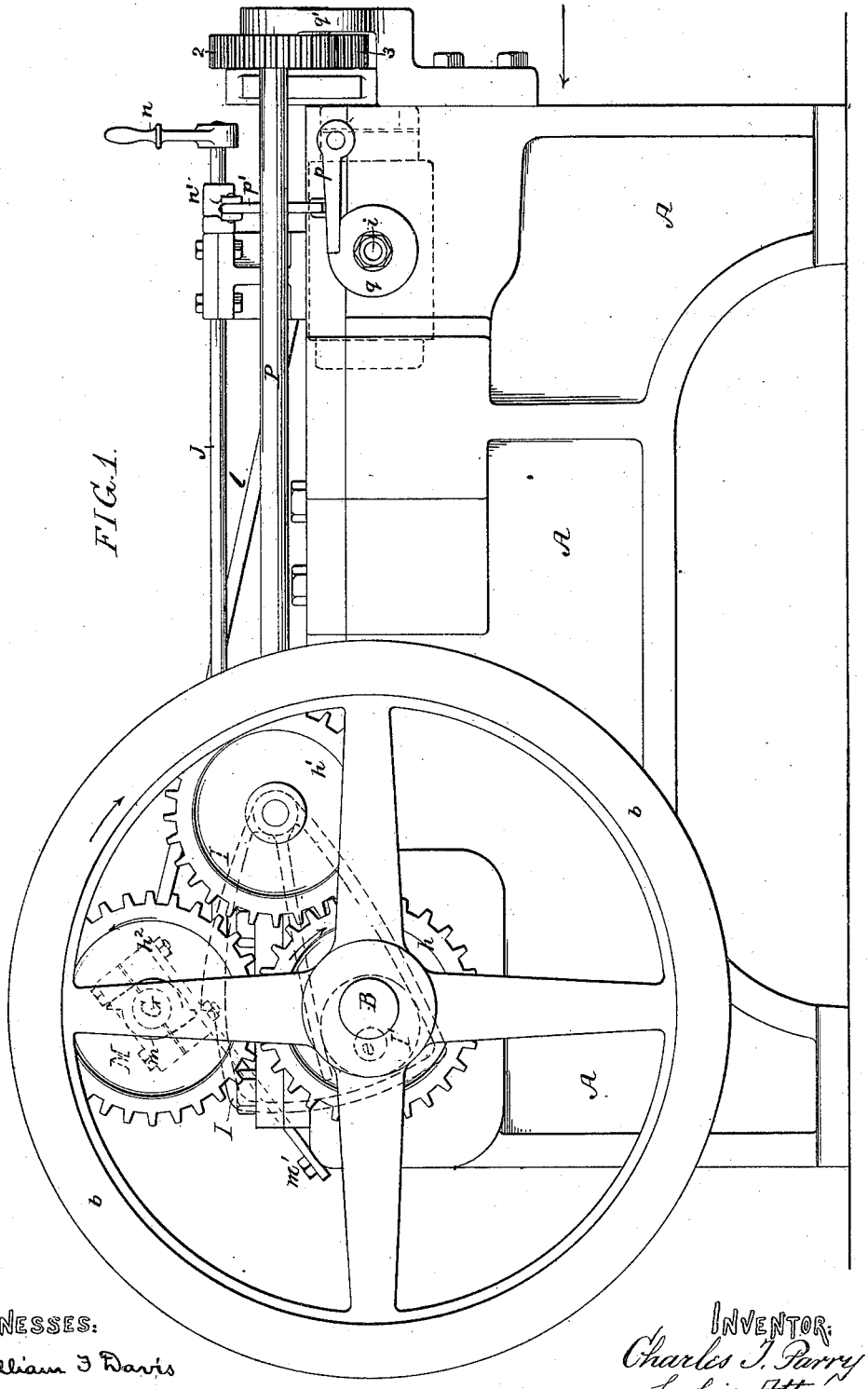

FIG. 1.

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(No Model.) 3 Sheets—Sheet 2.

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FIG. 2.

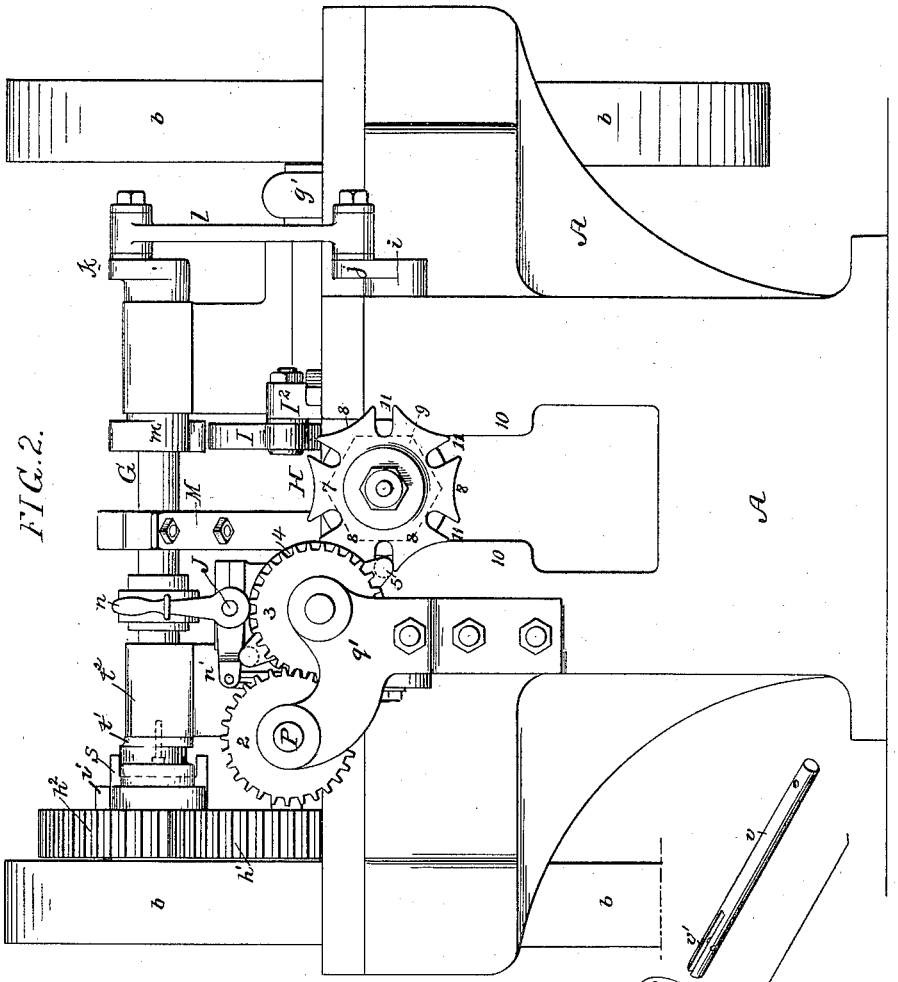
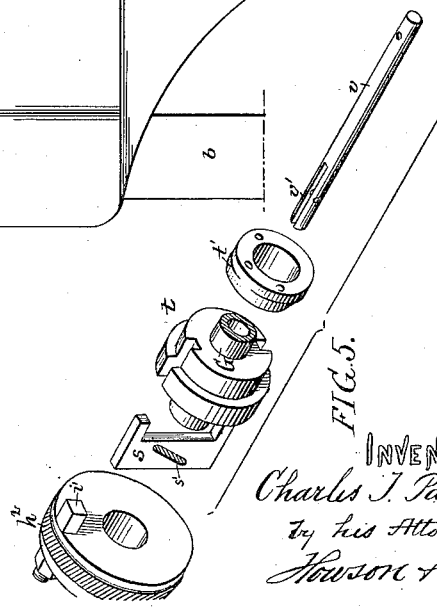


FIG. 5.



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(No Model.) 3 Sheets—Sheet 3.

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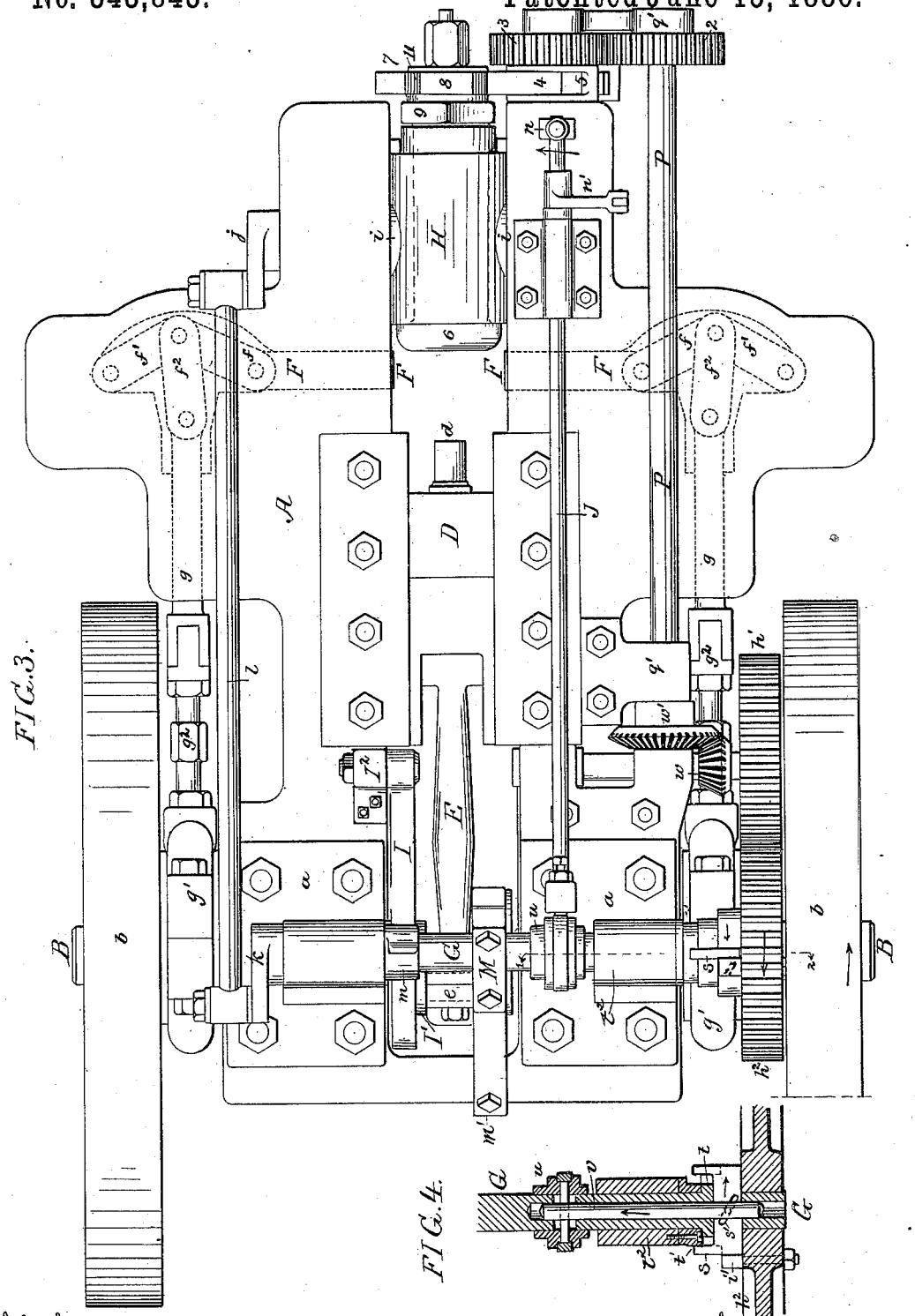

FIG. 3.

FIG. 4.

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UNITED STATES PATENT OFFICE.

CHARLES T. PARRY, OF PHILADELPHIA, PENNSYLVANIA.

BOLT-HEADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 343,843, dated June 15, 1886.

Application filed December 28, 1885. Serial No. 186,894. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. PARRY, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Bolt-Heading Machines, of which the following is a specification.

My invention relates to that class of bolt-heading machines in which the bolt-blank is carried by a spindle free to turn in a turret, which is hung to the frame of the machine, so as to be swung up to permit the insertion of a blank or the removal of a finished bolt, and then swung down into position for the heading of the blank by the dies.

The objects of my invention are to provide for the automatic swinging of the turret, for the automatic and intermittent operation of the bolt-carrying spindle, and for locking said spindle between its movements and when the turret is swung up.

In the accompanying drawings I have shown my improvements as applied to what is known as the "Allen" bolt-heading machine; but it will be understood that the improvements are applicable also to other bolt-heading machines operating in the same manner.

In the drawings, Figure 1 is a side view of a bolt-heading machine with my improvements. Fig. 2 is an end view looking in the direction of the arrow, Fig. 1. Fig. 3 is a plan view. Fig. 4 is a detached section on the line 1 2, Fig. 3; and Fig. 5, a perspective view of part of the machine.

A is the frame of the machine, in which are the bearings *a a* for the main shaft B, which, in the present instance, is provided at opposite ends with fly-wheels *b*, one of which may be used as a belt wheel or pulley. The heading-die *d* is carried by a slide, D, fitted to suitable guides in the frame, Fig. 3. A connecting-rod, E, is attached to the rear end of the slide D and to the crank *e* on the main shaft B. Two side dies, F F, are fitted in ways in the frame A opposite each other, and are acted on by toggle-joints, each consisting of two links, *f f'*, the latter pivoted to the frame, Fig. 3. A link, f^2, is attached to each toggle-joint, and also to a slide, *g*, having its ways in the frame, and deriving its movement from the main shaft B through the medium of an eccentric, *g'*, and connecting-rod g^2. These side dies, F, are to form the sides of the bolt-head.

In bearings above the shaft B is a shaft, G, which is geared to the shaft B by pinions *h* h^2. (See Fig. 1.) This shaft is arranged to be intermittently rotated, for reasons explained hereinafter.

H is the turret for holding the bolt-blank, and is mounted on its trunnions *i i*, having their bearings in the frame of the machine. One of these trunnions has a crank, *j*, Figs. 2 and 3, which is attached to a crank, *k*, on the shaft G by a connecting-rod, *l*, said shaft G being connected to the hub of the gear-wheel h^2 at intervals by means of a clutch, hereinafter described, so as to operate the crank *j* and vibrate the turret on its trunnions.

Hung to the frame of the machine at I^2 is a detent, I, Figs. 1 and 3, which is adapted to engage with projections *m* on the shaft G and stop the movement of the latter, and this detent is raised and lowered by a cam, I', on the main shaft B, adapted to an opening in the detent I.

Clamped to the shaft G is a box, M, secured to the frame of the machine at *m'*, this box being so clamped that it will serve to prevent the shaft G from recoiling when a projection, *m*, comes into contact with the detent I.

J is a rock-shaft mounted in bearings in the frame and provided with a handle, *n*, within reach of the attendant. The opposite end of the rock-shaft is provided with an arm acting on the sliding portion of the clutch on the shaft G. An arm, *n'*, on this rock-shaft is attached to a pawl, *p*, by a link, *p'*, the pawl being pivoted to the frame of the machine, and serving as a retainer for a single-notched disk, *q*, secured to one of the trunnions *i* on the turret H, as shown in Fig. 1.

I will now give a brief description of the clutch I prefer to use in throwing the shaft G in and out of gear with the main shaft; but it will be understood that other forms of clutch may be employed. The pinion h^2 revolves loosely on the shaft G, and secured to the hub of this pinion is a lug, *i'*. (See Figs. 4 and 5.) Secured to the shaft G and resting against the pinion h^2 is a collar, *t*. The collar and shaft are slotted for the reception of a plate, *s*, having two arms, as shown in Fig. 5. The shaft G is made tubular for a certain distance, and sliding in the shaft is a rod, *v*, through the end of which and through an inclined slot, *s'*,

in the plate *s* passes a pin, *v'*, on said rod. The latter is secured at its opposite end to a sleeve, *u*, which is under the control of the attendant through the medium of the rock-shaft J, as described hereinbefore. A cam, *t'*, secured to the part t^2 of the frame of the machine, throws the shaft G out of gear with the shaft B by moving the plate *s* out of engagement with the lug *i'*, as will be understood by the following description of the operation of the clutch: If the attendant wishes to throw the shaft G into gear with the shaft B, to turn the turret one-fourth of a revolution on its trunnions, the handle *n* of the shaft J is moved in the direction of its arrow, Fig. 3. This moves the rod *v* in the direction of its arrow, Fig. 4, thus forcing the plate *s* in the direction of its arrow by the action of the pin *v'* against the side of the inclined slot in said plate. The plate *s* will thereby be projected into the path of the lug *i'* on the pinion h^2, which revolves continuously, and which will thus turn the shaft G half a revolution, for as soon as the shaft has made this movement the plate *s* will be shifted by the cam *t'*, which forces the said plate laterally, and, owing to the inclined slot *s'*, draws it away from and out of gear with the lug *i'*. The shaft G at the conclusion of its half-revolution is stopped by the contact of one of the projections *m* with the detent I, the latter being raised at the proper time by its cam. Thus it will be seen that to turn the turret from the horizontal to the vertical position the handle *n* is operated, thus throwing the clutch on the shaft G into gear with the pinion h^2, and thereby turning the shaft to the extent of one-half of a revolution, thus through the medium of the cranks *k j* and connecting-rod *l* giving the desired movement to the turret, the shaft being then automatically thrown out of gear with the pinion h^2, and at the same time stopped by the detent I. A corresponding movement of the parts is required to turn the turret from the vertical to the horizontal position again, as the crank *k* at the end of the shaft G turns one-half of a revolution at each movement of the clutch; but the crank *j*, attached to the turret H, only vibrates the turret from the vertical to the horizontal position, and vice versa.

I will now describe the construction of the mechanism for turning and locking the bolt-blank carrier in the turret. To the shaft of the gear-wheel *h'* is secured a bevel-wheel, *w*, gearing into a bevel-wheel, *w'*, secured to a shaft, P, having its bearings in suitable blocks, *q' q'*, on the frame of the machine, Figs. 2 and 3. A gear-wheel, 2, is secured to this shaft, and gears into a wheel, 3, on a stud secured to the block *q'*. Attached to the wheel 3 is a disk, 4, having two projections, 5, which engage with the slots 11 of a star-wheel, 7, secured to the hollow spindle 6 of the turret H. This spindle holds the bolt-blank while the heading and side dies are forming the head on the bolt. The star-wheel 7 has as many segmental recesses 8 and radial slots 11 as there are sides to the head of the bolt to be formed. In the present instance there are six recesses 8 and six slots 11, for making a six-sided head on the bolt.

When the machine is in operation, the projections 5 of the disk 4 engage with the slots 11 between each of the recesses 8 and revolve the star-wheel and spindle 6 one-sixth of a turn. The periphery of the disk 4, owing to its bearing in the recess 8, locks the turret between its movements. During the time that the bolt-holder is locked in position the heading and side dies make one movement forward and back, one of the projections 5 then engaging with a slot 11 of the star-wheel, so as to again move the same and the spindle 6 one-sixth of a turn, and so on until the bolt is sufficiently headed. The operator then moves the handle *n*, as described above, and operates the clutching mechanism on the shaft G, and at the same time lifts the pawl *p*, Fig. 1, out of the path of the disk *q*, which allows the turret to assume a vertical position. The attendant then removes the headed bolt and places another blank in its place, and throws the clutching mechanism into gear again in order to turn down the turret.

To prevent the star-wheel and spindle 6 from turning when the attendant is extracting a finished bolt from the turret, I secure to the spindle 6, between the turret H and the star-wheel 7, in the present instance, a six-sided sleeve, 9, which, when the turret is turned to the vertical position, is locked between the cheeks 10 10, Fig. 2, of the frame A, thus preventing the accidental turning of the star-wheel and spindle. The accurate meshing of the slots of the star-wheel and the projections 5 on the disk 4 is thus assured, when the turret is again turned to a horizontal position.

I claim as my invention—

1. The combination of the turret of a bolt-heading machine, having a spindle free to rotate therein, with driving mechanism, substantially as described, whereby said spindle is intermittently moved and is locked between said movements, substantially as set forth.

2. The combination of the turret having a spindle free to rotate therein and the heading and side dies of a bolt-heading machine with a rotated disk, 4, having projections 5, and the star-wheel 7, secured to the spindle of the turret and gearing with said disk 4, as and for the purpose set forth.

3. The combination, in a bolt-heading machine, of the base A, having bearings for a turret, with a pivoted turret having a spindle, 6, a star-wheel, 7, and a sleeve, 9, adapted to lock the turret when in a vertical position, substantially as set forth.

4. The combination of the heading and side dies of a bolt-heading machine with the pivoted turret and its bolt-carrying spindle, the shaft P, gears 2 3, disk 4, having arms or projections 5, and star-wheel 7, having slots 11 and recesses 8, substantially as described.

5. The combination of the swinging turret

of a bolt-heading machine, the shaft G, and mechanism whereby the movement of said shaft is imparted to the turret, with a clutch for throwing the shaft G into and out of gear with the driving-shaft, all substantially as specified.

6. The combination of the swinging turret of a bolt-heading machine, the shaft G, mechanism whereby the movement of said shaft is imparted to the turret, a clutch whereby the shaft G is thrown into or out of gear with the driving-shaft, a lever for operating said clutch, and an automatic releasing device therefor, all substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHAS. T. PARRY.

Witnesses.
WILLIAM F. DAVIS,
HARRY SMITH.