

(No Model.)

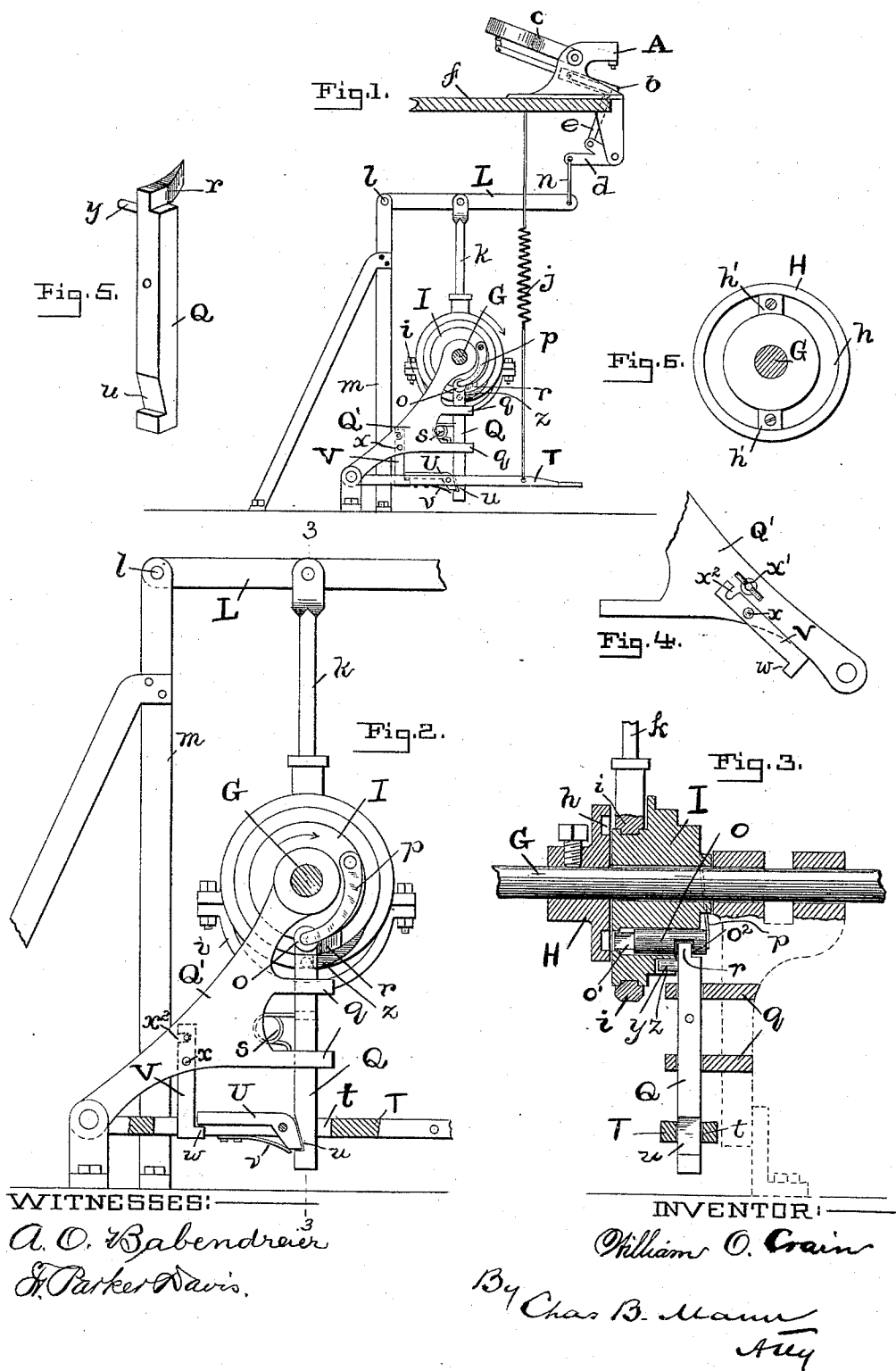
2 Sheets—Sheet 1.

W. O. CRAIN.

STOP MOTION FOR ROTARY MACHINE PARTS.

No. 489,849.

Patented Jan. 10, 1893.



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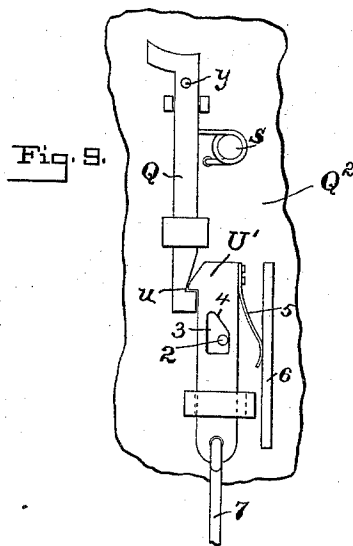
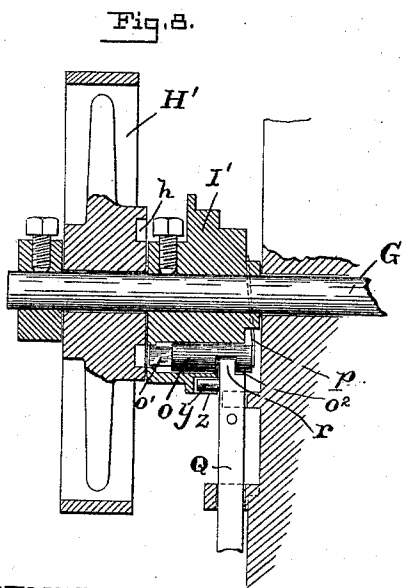
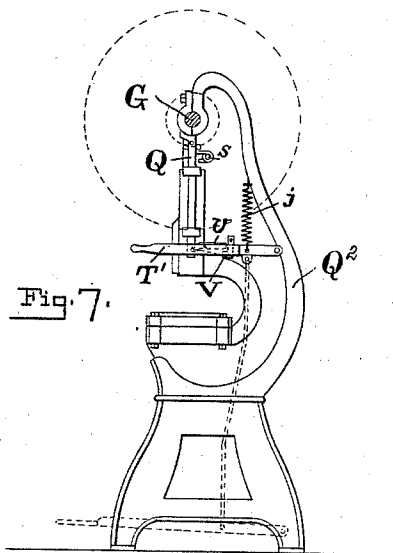
2 Sheets—Sheet 2.

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WITNESSES: _____

A. C. Babendreier
J. Parker Davis.

INVENTOR: _____

William O. Crain,
By Chas B. Mann
Att'y

UNITED STATES PATENT OFFICE.

WILLIAM O. CRAIN, OF BALTIMORE, MARYLAND, ASSIGNOR OF TWO-THIRDS
TO WISE BROS., OF SAME PLACE.

STOP-MOTION FOR ROTARY MACHINE PARTS.

SPECIFICATION forming part of Letters Patent No. 489,849, dated January 10, 1893.

Application filed July 27, 1892. Serial No. 441,390. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM O. CRAIN, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Stop-Motions for Rotary Machine Parts, of which the following is a specification.

This invention relates to a stop-motion for rotary machine-parts, and the object is to improve upon the arrangement shown in my prior patent No. 353,623, dated November 30, 1886,—in so far as it relates to a stop-motion,—by providing for the disconnection of the parts after one rotation although the treadle remains depressed, and also providing means to prevent further rotation owing to the momentum acquired.

My invention is applicable to a large variety of machines where a stamping or intermittent motion is used.

The invention is illustrated in the accompanying drawings, in which,—

Figure 1 shows a side view of a button or eyelet attaching machine to which my invention is applied; the illustration of this particular machine simply serves to demonstrate the application of the invention; Fig. 2 shows a side view of the machine parts where my invention is applied; Fig. 3 shows a vertical section on line 3 3 of Fig. 2; Fig. 4 is a detail view from the opposite side of the machine illustrating the construction and operation of a stop-piece; Fig. 5 shows a detail perspective view of the retractor-bar; Fig. 6 shows a detail face view of a rotary head on the drive-shaft; Fig. 7 shows a side view of a stamping machine to which my invention is applied, the rotary part in which the sliding bolt is located and the driving pulley both being removed, and only indicated by broken lines; Fig. 8 shows an enlarged section view of parts as they are arranged in this stamping machine; Fig. 9 shows a modified construction embodying my invention.

In Fig. 1 where the invention is shown applied to a button-attaching or eyelet machine, the letter, A, designates the fixed jaw of the machine; *b*, the movable jaw, and, *c*, the receptacle which contains the buttons or eyelets. The movable jaw, *b*, is set in motion

through a lever, *d*, and a rod, *e*, which connects the lever with the jaw. These parts represent an ordinary button-attaching machine, and are well-known; they are supported on a table, *f*. My invention is applied to the driving mechanism which is connected with the said jaw-moving lever, *d*, whereby power may be used in the manner desired for intermittently operating the machine.

A shaft, *G*, below the table, *f*, is to be driven by steam or other power, and thereon is a circular head, *H*, fixed in any suitable manner so as to rotate always when the shaft turns. One side of the head has a plain surface provided with a concentric groove, *h*, and stop-blocks, *h'*, fastened therein at diametrically opposite places.

An eccentric, *I*, is on the shaft, *G*, alongside of the rotary head, *H*, and is loose, so that the shaft may turn without moving the eccentric. The ring, *i*, surrounds the eccentric and has a suitable rod, *k*, which projects upward. A trip-lever, *L*, has one end pivoted at, *l*, to an upright, *m*, or to any other stationary device, and the movable end of said trip-lever is connected by a link, *n*, with the aforesaid jaw-moving lever, *d*, of the machine. The rod, *k*, of the eccentric is connected with the trip-lever, *L*. It will thus be seen that when the eccentric, *I*, turns it will impart an up-and-down movement to the trip-lever, *L*, and this latter by means of the link, *n*, will move the jaw, *b*, of the machine.

The eccentric, *I*, is provided with a spring-bolt, *o*, which when projected enters the groove, *h*, in the rotary head, *H*, and forms a connection therewith by coming against one of the stop-blocks, *h'*, which will cause the eccentric to rotate with the head. When the eccentric, *I*, thus rotates it at once imparts motion to the movable jaw, *b*, of the machine through the connections shown and described. A flat spring *p* bears against the end of the bolt to project it and is fastened to one face of the eccentric; said bolt has a square end, *o'*, to prevent it from turning. The bolt has a slot, *o''*, in the lower side, and a retractor-bar, *Q*, fits through guide-pieces, *q*, on a bracket, *Q'*, and has a shoe, *r*, at the upper end with an inclined outer side, the said shoe

fitting against a face of the eccentric and adapted to engage the slot in the bolt and hold the latter withdrawn or retracted and out of engagement with the rotary-head. A

5 spring, *s*, holds the retractor-bar up.

An operating lever, in the present instance in the form of a treadle, *T*, is pivoted at one end and held up by a spring *j*; this treadle has a longitudinal slot, *t*, and the lower end 10 of the retractor-bar passes down through this slot and at this part said bar has a beveled notch, *u*, in one side. An angle-shaped latch, *U*, has position longitudinally in the slot and is pivoted to the treadle; one end of this angle-latch engages the notch, *u*, and is held in 15 engagement therewith by a spring, *v*, secured to the treadle. The opposite end of the angle-latch bears against a stop-shoulder, *w*, on a stationary depending arm, *V*, secured to the 20 bracket, *Q'*; this arm may be arranged so as to be thrown out of engagement with the latch by pivoting it on a pin, *x*, and providing a locking-nut, *x'*, to fit another pin or screw which engages a notch, *x''*, in one side of the 25 said arm, said locking nut to bind against the arm, *V*, and hold it rigid. A pin, *y*, projects from the inner side of the retractor-bar toward one face of the eccentric, and a lug, *z*, is formed on that face of the eccentric, and 30 projects to stop against the said pin as hereinafter explained.

From the foregoing description the operation of the device will be understood and is as follows;—The spring-bolt is normally with- 35 held from the rotary head by the shoe on the upper end of the retractor-bar, *Q*, engaging it, as shown in Fig. 3. When it is desired to close the movable jaw, *b*, of the machine against the fixed jaw, *A*, the operator's foot 40 will depress the treadle, *T*, which will lower the retractor-bar *Q*, and withdraw its shoe from the slot in the spring-bolt. The latter will then be projected until its square point-end enters to groove *a*, of the rotary head, 45 whereupon the eccentric will turn and the trip-lever, *L*, will move the jaw, *b*, of the machine. It will be seen the retractor-bar is drawn and disengaged from the spring-bolt by moving the operating lever or treadle, *T*, 50 by reason of the engagement with said bar of the end of the latch, *U*. But the opposite end of said latch bears on the stop-shoulder, *w*, and hence as the lever or treadle is moved farther the latch is disengaged from the retractor-bar, and the spring, *s*, throws said bar 55 again where its shoe, *r* will be in the path of the bolt, *o*, and will engage and retract the same as the eccentric completes one revolution. Of course the latch must not release 60 the retractor-bar until the latter has released the bolt. It will now be seen that with this improved construction the eccentric will be disconnected from the rotary head after one revolution although the lever or treadle may remain depressed. With the return of the retractor-bar, the pin, *y*, takes position in the 65 path of the lug, *z*, and serves to prevent fur-

ther rotation of the eccentric owing to the momentum acquired in its one revolution, by constituting a stop for said shoulder or lug to 70 come against. It will be seen the objects primarily set out are accomplished by the construction described.

Figs. 7 and 8 illustrate the invention applied to a stamping machine. The arrange- 75 ment of parts is substantially the same as in the other figures heretofore described, and the same letters of reference are on them. In this case, the spring-bolt, *o*, is in a circular head, *I'*, which is keyed on the shaft, *G*, and a continuously rotating driving pulley, *H'*, is loose 80 on said shaft. A hand-lever, *T'*, carries the latch *U* which engages the retractor-bar, *Q*. Broken lines show treadle connections. It is obvious the result in the intermittent opera- 85 tion is the same.

Fig. 9 illustrates a modification embodying my invention, in which the notch, *u*, in the retractor-bar, *Q*, is engaged by a sliding latch, 90 *U'*, hung on a pin, *2*, which engages a slot, *3*, in said latch, having an inclined upper side 4. A spring, *5*, is fastened to the latch and bears against a stationary shoulder, *6*, on the machine-standard, *Q''*, thereby holding the 95 latch against the retractor-bar.

Fig. 7 designates a rod connecting the latch with the operating lever. Upon drawing 100 down the latch it will first pull down the retractor-bar and then as the inclined side, *4*, of its slot, *3*, rides over the pin, *2*, said latch will slide laterally and release the retractor-bar, allowing it to return. Upon the release 105 of the latch it will return into engagement with the retractor-bar, its beveled edge, *8*, riding over the lower end of said bar and the spring, *5*, throwing it into the notch. It will be obvious this construction will also effect the objects primarily set out.

It is obvious my invention is applicable to any machine where such a stop-motion is re- 110 quired.

It will be understood the button-attaching machine and stamping machine are shown simply for purposes of illustration.

My invention is applicable to a large vari- 115 ety of machines where a stamping or intermittent motion is used, and two rotary parts are employed and constructed for connection by means of a bolt attached to one of them.

It is evident my invention may be embod- 120 ied in other forms than those here shown.

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

1. In a machine of the character described, 125 the combination of a continuously rotating part; a loose rotary part; a spring bolt carried by one of said rotary parts and adapted to make connection with the other; a sliding spring-held retractor-bar holding said bolt 130 withdrawn and having a shoulder extending cross-wise of said bar; an operating lever; a latch carried by said operating lever and engaging the shoulder of the said retractor-bar;

and a stop to throw said latch out of such engagement with the said shoulder, for the purpose described.

2. In a machine of the character described,
5 the combination of a continuously rotating part; a loose rotary part; a spring bolt carried by one of said rotary parts and adapted to make connection with the other; a sliding spring-held retractor-bar holding said bolt
10 withdrawn; an operating lever; a latch carried by said operating lever and engaging

the said retractor-bar; and a stop to throw said latch out of such engagement and movable out of the path of the latch for the purpose described.

In testimony whereof I affix my signature in the presence of two witnesses.

WM. O. CRAIN.

Witnesses:

ROBERT W. HAYS,
JNO. T. MADDIX.