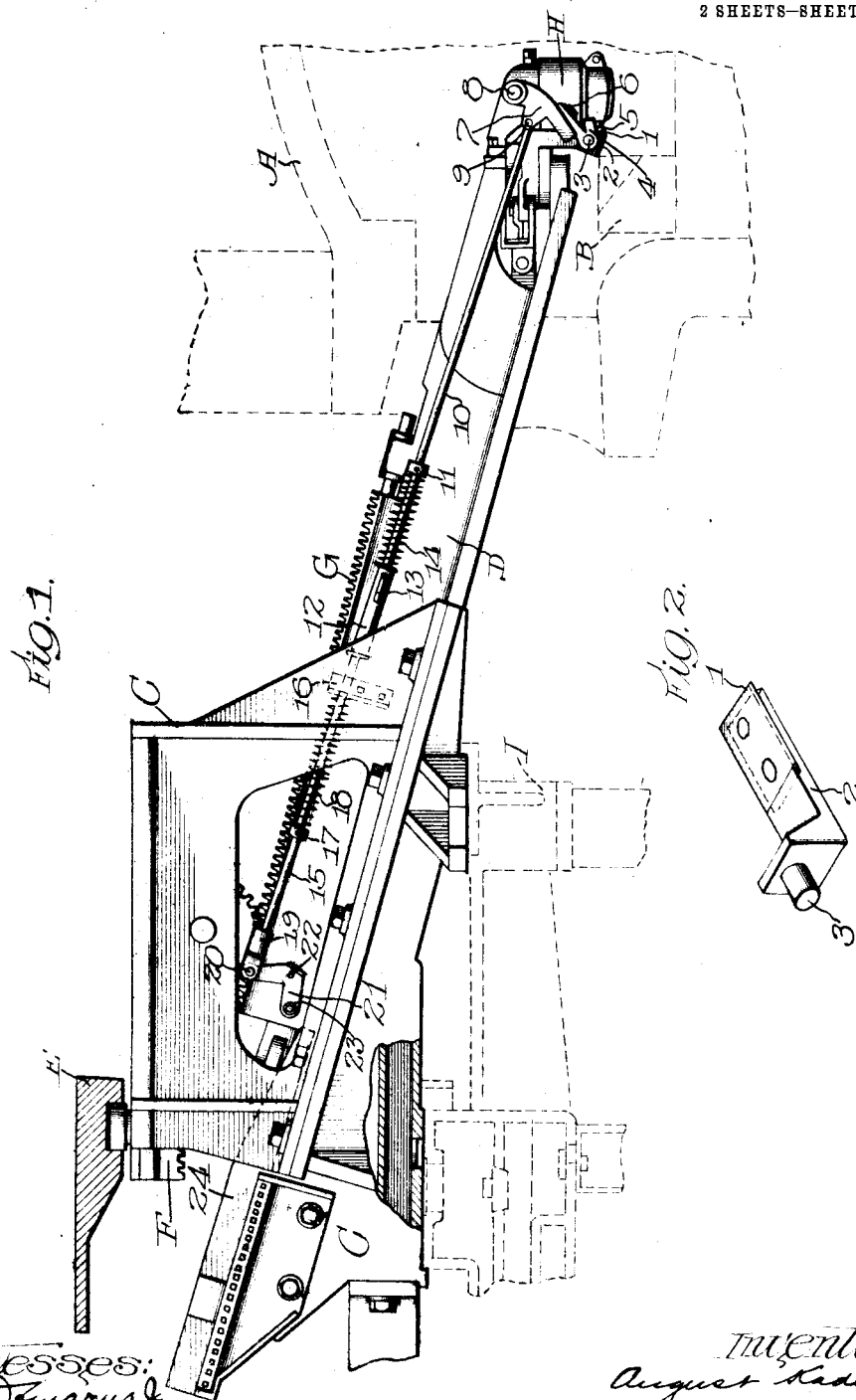


A. KADOW.
CUT-OFF DEVICE.
APPLICATION FILED APR. 12, 1911.

1,040,346

Patented Oct. 8, 1912

2 SHEETS-SHEET 1.



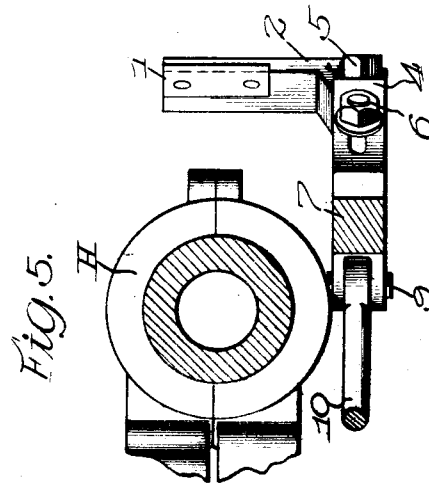
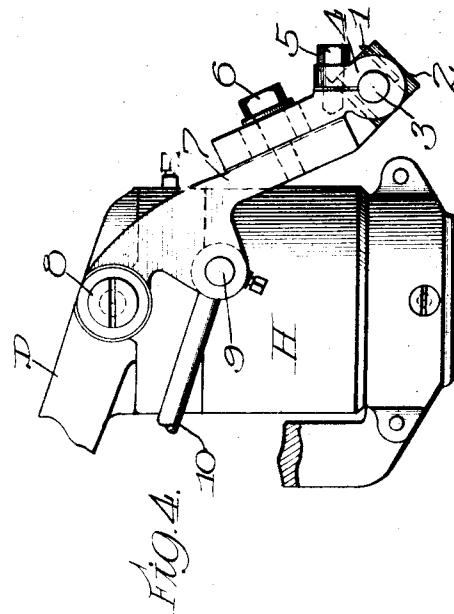
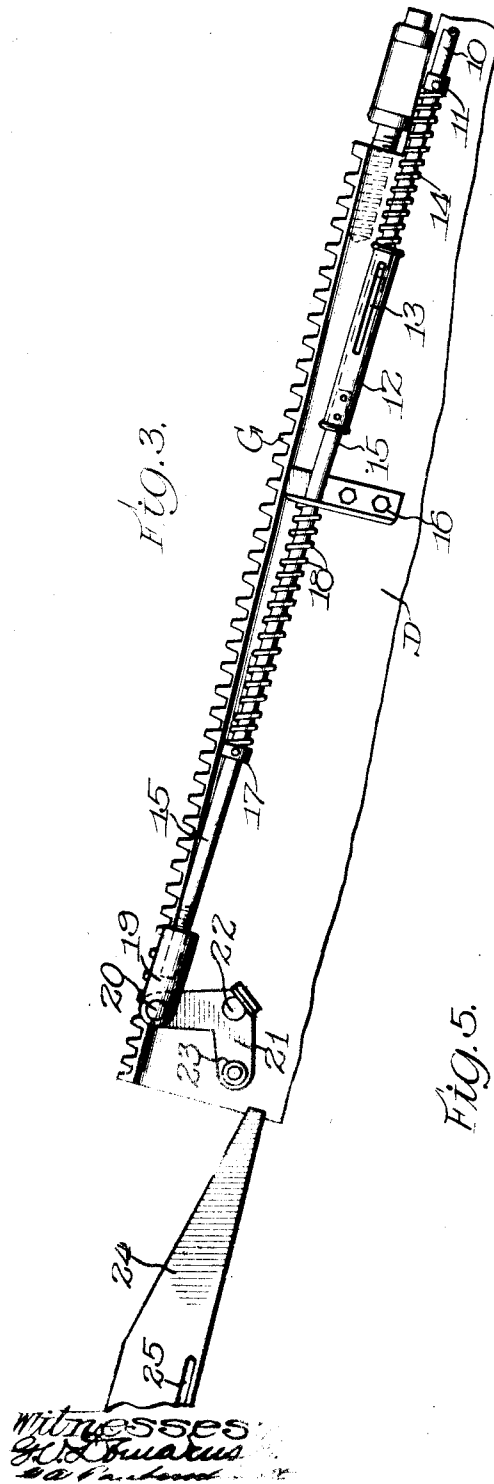
Witnesses:
G. D. Farnusky.
D. A. Pamborschniott

Inventor:
August Kadow
by Otto R. Barnett
his atty.

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UNITED STATES PATENT OFFICE.

AUGUST KADOW, OF TOLEDO, OHIO, ASSIGNOR TO THE WESTLAKE MACHINE COMPANY,
OF TOLEDO, OHIO, A CORPORATION OF OHIO.

CUT-OFF DEVICE.

1,040,346.

Specification of Letters Patent.

Patented Oct. 8, 1912.

Original application filed July 6, 1910, Serial No. 570,621. Divided and this application filed April 12, 1911. Serial No. 620,555.

To all whom it may concern:

Be it known that I, AUGUST KADOW, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Cut-Off Devices, of which the following is a specification.

My invention relates to improvements in cut-off devices for glass gathering machines.

The present application is a division of my co-pending application Serial No. 570,621, filed July 6, 1910.

Among the objects of my invention are the following: to provide mechanism for cutting off the surplus metal from the gathering mechanism which shall be simple in construction, certain in operation and so constructed that, if obstructed, it will not interfere with the operation of the gathering mechanism and will not be itself injured. Also to provide such a mechanism which may be timed to operate so as to drop the cut-off either inside or outside of the gathering ring, as may be desired, but preferably within the furnace but outside of the gathering ring. These and such other objects as may appear are attained by my invention, a convenient embodiment of which is found in the accompanying drawings, in which—

Figure 1 is a side elevation showing my improved cut-off mechanism applied to the gathering mechanism of my said pending application Serial No. 570,621. Fig. 2 is a perspective view of the cut-off knife, et cetera. Fig. 3 is an enlarged, fragmentary detail of the parts in the position shown in Fig. 1. Fig. 4 is an enlarged detail of the gathering head with the cut-off knife in position after the surplus metal has been cut off. Fig. 5 is a view partly in plan and partly in section of Fig. 4.

Like characters of reference indicate the same parts in the several figures of the drawings.

As showing a convenient application of my invention, the figures throughout show it as applied to the apparatus of my said co-pending application.

A indicates a glass-reducing furnace or pot, within which the usual gathering ring B floats on the metal; C is a ram carriage within which is mounted the ram D, which is periodically reciprocated by any con-

venient means, as, for example, through the ram dog slide E, the rack F, connecting gears and wheels and rack G. The ram D carries the gathering head H and the reciprocation of the ram carries the gathering head H into the furnace until the lower end of the gathering head is dipped into the metal, and then out of the furnace, where the further working of the glass takes place. The ram carriage C is carried on a support, spider or frame-work I.

The cut-off knife 1 is secured to a plate 2 provided with a stud 3. This stud is adjusted to the required position with relation to its axis in a clamp 4 and then is tightly gripped in this clamp by means of a screw 5. This clamp is secured by a screw or bolt 6 to the end of a lever 7, which is swingingly mounted upon a pivot or screw 8 on the end of the ram D. These parts are all so adjusted and proportioned that, when the lever 7 is swung back and forth, the cutting edge of the knife 1 will just nicely clear the lower end or gathering port of the gathering head or neck molds H. The lever 7 is connected by a pivot 9 with a rod 10 connecting it with the mechanism which ac-

tuates the cut-off. The rod 10 is provided with a collar 11 and extends into a sleeve 12. A pin extends transversely through the end of the rod 10, which is within the sleeve 12, and through slots 13 in each side of the sleeve 12. A spring 14 surrounds the end of the rod 10 between the collar 11 and one end of the sleeve 12, so as to normally hold the pin in the rod seated in the lower ends of the slots 13. The upper end of the sleeve 12 is secured to a rod 15, which passes through a flange or lug 16 on the side of the ram D. This rod 15 is provided with a collar 17 and passes through a spring 18 which is seated at one end against the collar 17 and at the other end against the flange 16. The spring 18 normally holds the parts in the position shown in Figs. 1 and 3.

The upper end of the rod 15 is screwed into a sleeve 19. The other end of the sleeve 19 is pivoted at 20 to one arm of a bell crank lever 21. The bell crank lever 21 is pivotally mounted at 22 upon the side of the ram. The other arm of the bell crank lever 21 is provided with a roller 23.

24 is an inclined plane mounted on a relatively rigid part of the structure, as, for example, on the ram carriage.

In Figs. 1 and 3 the ram is shown in its forward position when it is dipping into the pot or furnace. As the ram retreats from the pot after gathering the metal, the roller 23 on the bell crank lever 21 soon contacts with and rides upwardly upon the inclined plane 24. The result of this is that the bell crank 21 is rocked, the rods 15 and 10 are moved forwardly, the lever 7 is swung forwardly and the knife is carried across the under face of the gathering head, cutting off the surplus metal. It should be observed that the spring 14 is of sufficient strength not to compress under the pressure ordinarily applied to it in this operation. By adjustment of the parts, this surplus metal may be cut off at any desired point in the longitudinal travel of the ram.

The height of the inclined plane 24 is preferably such that the incline ends when the rocking of the lever 21 has carried the knife a sufficient distance to cut off the surplus gather, in which position it may be held until the ram again moves forwardly and, as the roller 23 descends the inclined plane 24, the spring 18, expanding, draws the lever 7 back to the position shown in Figs. 1 and 3, which position it reaches before the ram dips in the metal.

The inclined plane 24 is longitudinally adjustable, as, for example, by being bolted to its supporting structure through the slot 25. As the lever 7 is not actuated until the roller 23 engages the inclined plane 24, it is obvious that the point in the travel of the ram at which the cut-off will be actuated can be determined by varying the longitudinal adjustment of the inclined plane 24, so that the cut-off can either be actuated immediately as the ram withdraws, so as to drop the surplus metal immediately back of the gathering point, or, and this is the preferred practice, it can be actuated so as to drop the surplus metal between the gathering ring and the working opening of the pot or furnace, so that the surplus metal, which is slightly chilled, will not affect the fluidity of the metal within the working ring and yet will be dropped at a point where it will be quickly raised to a temperature where it will flow back into the pot. Or, if desired for any reason, the adjustment above noted may provide for dropping the surplus metal entirely outside of the furnace.

The sleeve 12 and spring 14 constitute a safety device. While the spring will not be compressed by the resistance made by the knife in cutting off the surplus metal when in working condition, or at least will not be compressed to any extent which will interfere with the efficiency of the cut-off, yet if the knife meets with any resistance, as, for

example, if the metal be unduly cooled or if any obstacle drops into the mechanism, instead of the continued operation of the device serving to buckle the connecting rods or otherwise injure the mechanism, the spring 14 will be compressed so that the bell crank 21 and rod 15 may be actuated even though the knife remains stationary and the rod 14 will simply telescope within the sleeve 12. It will also be observed that, with this construction, whenever the knife has work to do the operation of the mechanism is positive, that is, the bell crank lever 21 and connected parts are positively driven, while, when the work has been accomplished, the knife is returned to position for the next stroke by the expansion of the spring 18, thus avoiding reliance upon spring action to actuate the knife to perform its work, while utilizing the spring action solely to carry the knife back to its starting position, in which operation there is no load upon the spring other than the slight friction incident to returning the parts to said position. This insures a certainty of a prompt and efficient cut-off at the exact minute and exact point required, which is a matter of great importance in handling such material as glass, in which the cooling is so rapid that the operation of the cut-off must be prompt, accurate and reliable at all times.

While I have shown this mechanism as applied to the gathering mechanism of my said co-pending application, it will be understood that its utility is not at all confined to use with said mechanism, and, while I have illustrated my invention as embodied in what I at present consider to be its preferred form, it will be understood that my invention is not limited to this particular embodiment of it nor to any of the various details which may be changed as a matter of shop expediency, but it is my purpose and intention to here cover both broadly and specifically whatever in the mechanism I have above shown and described is patentably new.

I claim:

1. The combination with gathering mechanism, comprising a ram and means for projecting the ram into a furnace, of a gathering device carried by said ram, a cut-off knife pivotally supported on said ram and arranged to swing in the arc of a circle across the inlet port of said gathering device, and means positively actuated by backward travel of the ram to swing the cut-off knife across the face of the gathering device to cut off the surplus metal.

2. The combination with gathering mechanism, comprising a ram and means for projecting the ram into a furnace, of a gathering device carried by said ram, a cut-off knife pivotally supported on said ram and arranged to swing in the arc of a circle across

the inlet port of said gathering device, and means positively actuated by backward travel of the ram to swing the cut-off knife across the face of the gathering device to cut off the surplus metal, and spring actuated means for returning the cut-off knife to its original position during the forward travel of the ram.

3. The combination with gathering mechanism, comprising a ram and means for moving the ram into and out of a furnace, of gathering means carried by said ram, a cut-off knife pivotally mounted upon said ram and arranged to swing across the face of said gathering means, and operating mechanism for said cut-off knife comprising rods and levers, a spring for normally holding the cut-off knife in one position, and an inclined plane arranged in the path of said operating means as the ram moves back to the furnace whereby said rods and levers will be operated to positively swing said cut-off knife against the action of said springs so as to cut off the surplus metal gathered by the gathering device.

4. The combination with a furnace, of gathering means, means for reciprocating said gathering means into and from said furnace, a cut-off knife carried by said gathering means, and means for actuating said cut-off knife to cut off the surplus gather, said means being adjustable so as to automatically operate the cut-off knife at any desired point between the gathering point and the exterior of the furnace.

5. The combination with glass gathering apparatus, of a cut-off knife, means for operating said cut-off knife, said means comprising a yielding link in the connection between said cut-off knife and the positively

actuated means of said operating mechanism.

6. The combination with a gathering head, of a cut-off knife mounted to be swung back and forth across the face of said gathering head, means for actuating said cut-off knife, said means comprising a lever, means for rocking said lever, connections between said lever and the cut-off knife, a longitudinally yielding link in said connections, and means for operating said lever in a reverse direction.

7. The combination with a gathering head, of a cut-off knife mounted to be swung across the gathering port of said gathering head, and means for actuating said cut-off knife, said means comprising a lever, means for positively operating said lever in one direction, a rod constituting a link between said lever and the cut-off knife, a sleeve upon said rod, a second rod telescoped at one end within said sleeve and constituting a link between said lever and the cut-off knife, a collar on said second rod, a spring seated between said collar and one end of said sleeve, all so arranged that when the travel of the cut-off knife in one direction is resisted said spring will be compressed and said second-named rod will be telescoped within said sleeve, a second spring, and an abutment for said second spring so arranged that the action of said second spring will tend to operate said lever in a direction opposite to the direction in which said lever is positively operated.

AUGUST KADOW.

Witnesses:

S. O. RICHARDSON, Jr.,
R. A. BOZHWELL.