April 1, 1947. E. C. DEITRICH 2,418,165

AUTOMATIC STAMPING HAMMER

Filed March 31, 1944 3 Sheets-Sheet 1

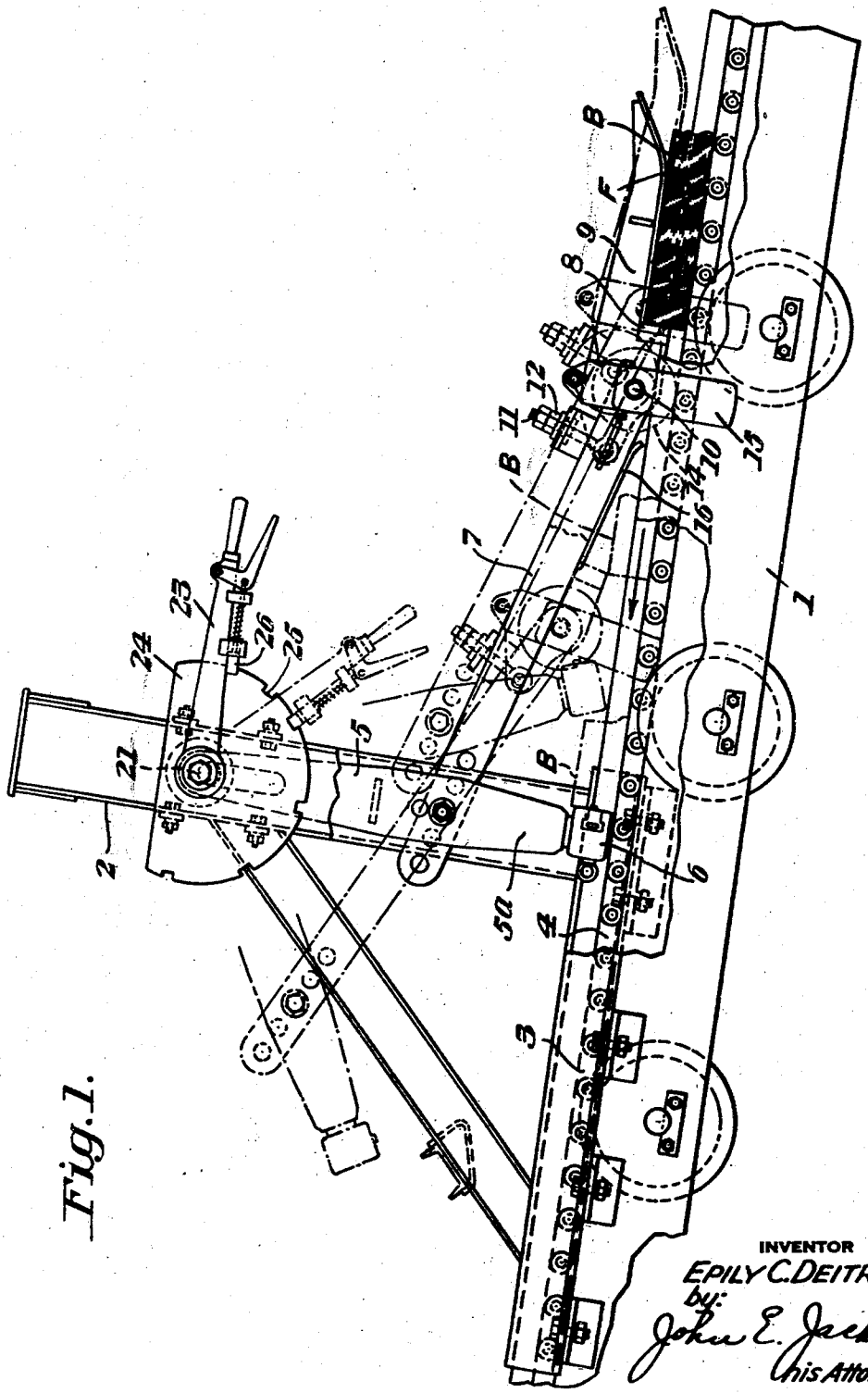


Fig. 1.

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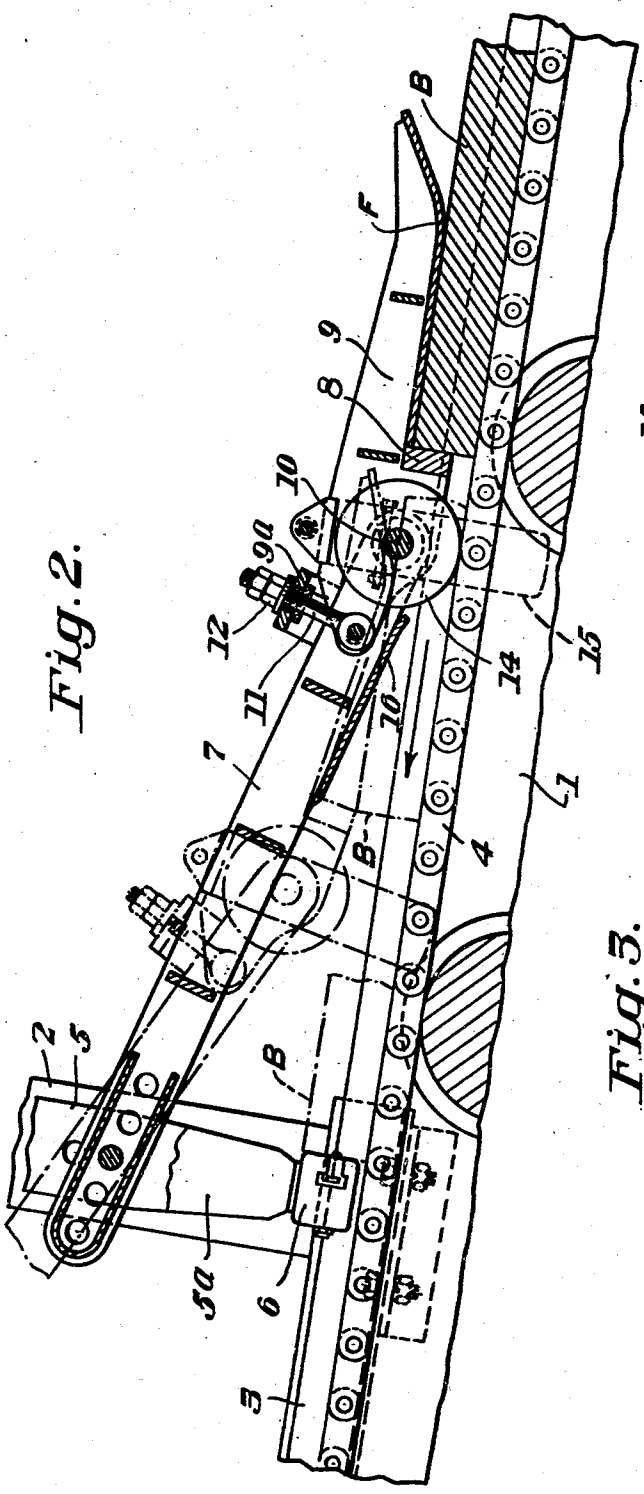


Fig. 2.

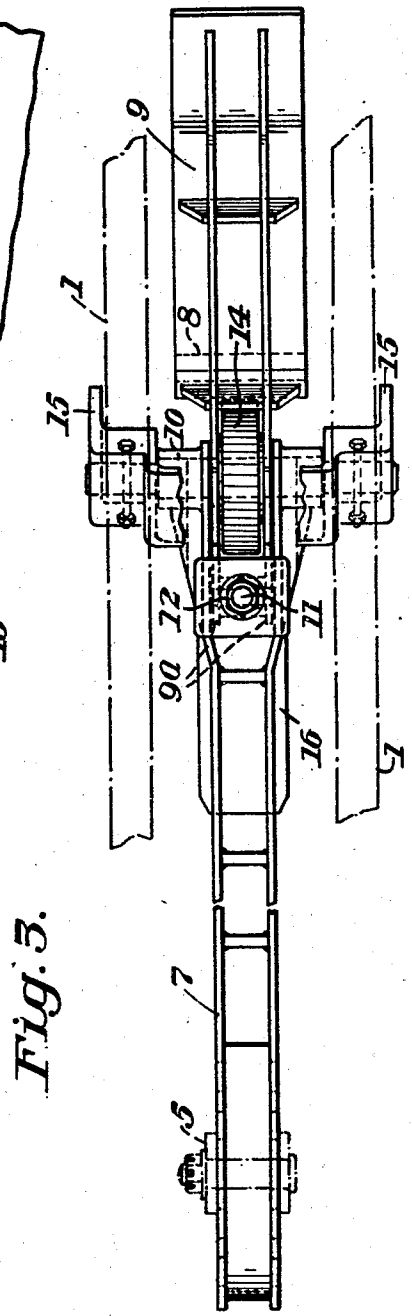


Fig. 3.

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Fig. 4.

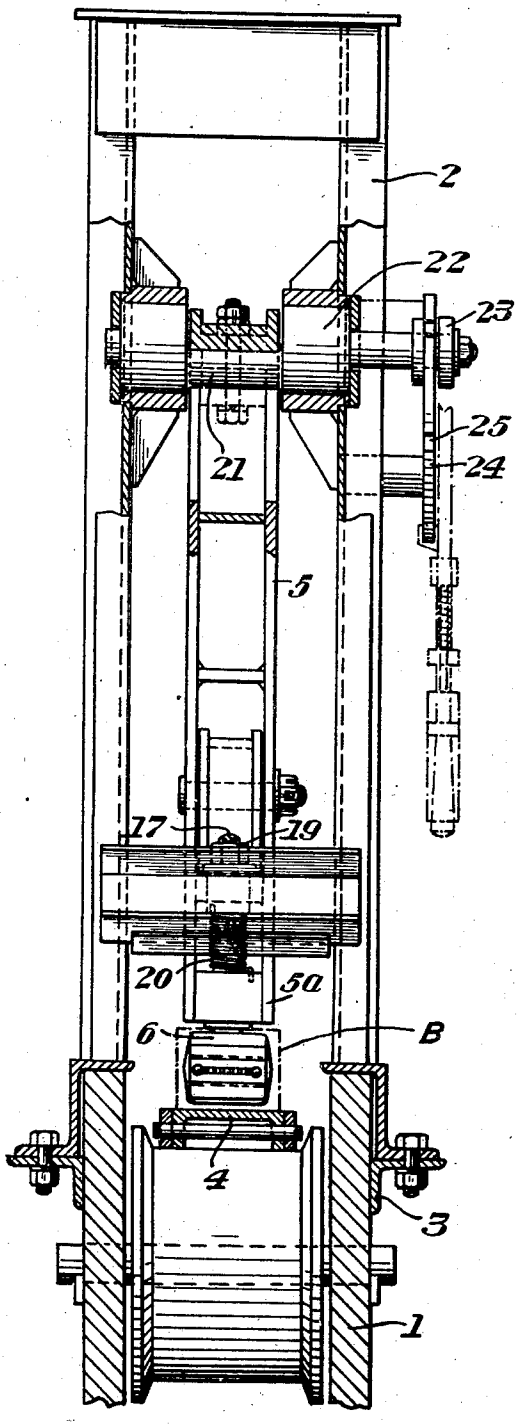
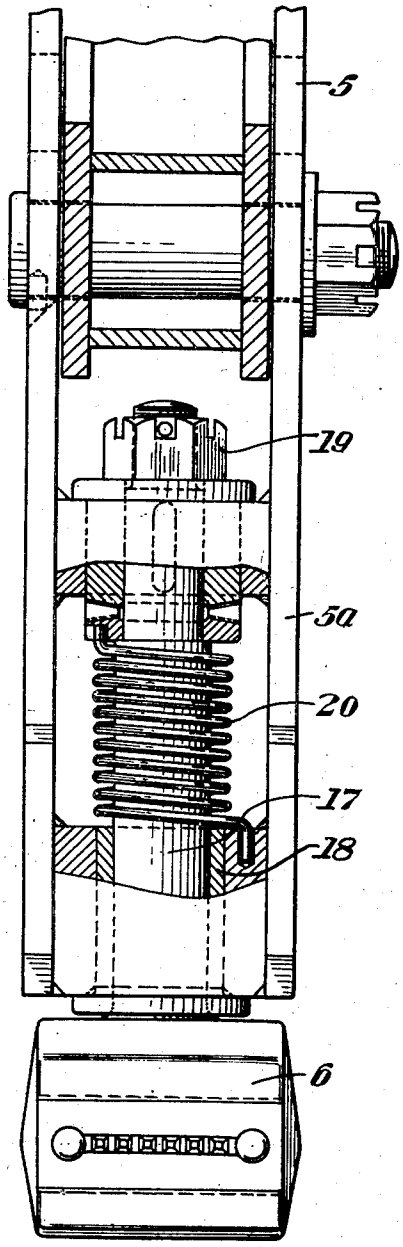


Fig. 5.



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UNITED STATES PATENT OFFICE

2,418,165

AUTOMATIC STAMPING HAMMER

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Application March 31, 1944, Serial No. 529,043

7 Claims. (Cl. 101—4)

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This invention is an automatic stamping hammer for stamping the advancing end of work traveling over a conveyor table. It is particularly intended for hammer-stamping heat or order numbers in the ends of steel billets traveling longitudinally over a billet conveying table, although its principles may be incorporated in apparatus intended for other uses.

A specific example of the invention is illustrated by the accompanying drawings in which:

Figure 1 is a side view;

Figure 2 is a sectioned enlargement of details shown in Figure 1;

Figure 3 is a top view of the details shown in Figure 2;

Figure 4 is a partially sectioned end view enlargement of Figure 1; and

Figure 5 is a partially sectioned enlargement of details shown in Figure 4.

More specifically, these drawings show a slightly inclined billet conveyor 1 of the powered chain type which conveys billets longitudinally, the advancing end portion of a conveyed billet B being shown. An upstanding frame 2 is bolted to the conveyor table frame 3 so as to straddle above the conveyor table chain 4, which carries the billet B, whereby to provide a supporting structure spaced above the conveyor table. A rocker arm 5 is pivotally suspended from this structure with a free end 5a swinging above the table in line with the traveling direction of the billet, and a stamping hammer 6 is carried by this free arm end 5a so it registers with the advancing end of the billet B, a push rod 7 being pivotally connected with a swinging portion of the arm 5 for vertical swinging of this push rod 7, the latter extending transversely from the arm 5 in a direction opposing the advancing billet end and being provided with work-abutting-means 8 spaced from the arm 5 and registering with the advancing billet end so they interengage, the billet end thus engaged resulting in the billet B forcing the push rod 7 to raise the arm 5 in a direction away from the advancing billet end. A lever 9 longitudinally extends beyond the work-abutting-means 8 from the push rod 7 and has its free end spaced above the table 1 to pass over the top of the billet, this lever 9 having its vertical angularity fixed respecting that of the push rod 7 so the free end of the lever fulcrums, as at F, on the top of the billet, when the latter's advancing end is in the act of working the push rod 7, as the angularity of the push rod increases respecting the billet top as the push rod raises the rocker arm 5. In this

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fashion the lever 9 forces the work-abutting means 8 upwardly free from the billet end and permits falling of the rocker arm 5 so the stamping hammer 6 strikes the billet end.

The lever 9 connects with the push rod 7 by being pivotally connected therewith by a pivot shaft 10, and has a short opposite lever arm 9a extending beyond the opposite side of this pivot shaft 10 and connecting with the push rod 7 by way of a link 11 screwed through a nut 12 which is rotatively mounted in longitudinally fixed connection with the push rod 7. This arrangement provides a means for connecting the lever with the push rod which permits their relative vertical angularity to be adjustably fixed at different values, whereby to adjust the height to which the rocker arm 5 is raised before it is permitted to fall by fulcruming action of the lever 9, at F on the billet top, raising the work-abutting-means 8 clear from the billet end.

The pivot shaft 10 also functions as a journal for a wheel 14 for the lower and swinging end of the push rod 7, this positioning the wheel behind the work-abutting-means 8 respecting the billet traveling direction and with its periphery depending to a level below this means. This wheel 14 functions to reduce the friction as the lower push rod end rides back over the billet top upon the means 8 being freed from the billet end by action of the lever 9. Also, this wheel 14 holds the lever 9 clear from the billet top during falling action of the rocker arm 5. Incidentally, it is to be understood that the rocker arm 5 operates gravitationally and not through the medium of springs, the use of this wheel 14, therefore, being of particular advantage in promoting a free-falling action.

The swinging end of the push rod 7 and the lever 9 have means for guiding them in line with the billet traveling direction and the swinging direction of the rocker arm 5 while permitting longitudinal and vertical movement of the push rod and lever. This means is in the form of vertically depending arms 15 rigidly carried by the swinging end of the push rod 7 in line with the pivot shaft 10 which journals the wheel 14, these depending arms 15 slidingly embracing the sides of the conveying table and preventing any movement transversely of the table while freely permitting the necessary movements on the part of the push rod 7 and lever 9.

As previously mentioned, the rocker arm 5 operates gravitationally and is not spring operated. With this in mind, the rocker arm is pivotally mounted so that it is free to swing

opposite the normal billet traveling direction so that the billet traveling direction may be reversed on the conveyor table, if desired, and the billets will not be interfered with by the rocker arm 5 since it can rock backwardly as well as forwardly. The push rod 7 and lever 9 are also free to move oppositely with opposite swinging of the rocker arm 5 and are adapted to be cammed upwardly by the reversely traveling billets so as to ride freely over their tops as they reversely travel. As an aid in this action, the underside of the push rod 7 is provided with a cam surface 16 leading to the wheel 14 and serving to cam upwardly the push rod and lever assembly to a degree getting the wheel 14 high enough so it engages the end of a reversely traveling billet below its rotative axis, whereby the wheel can operate as a wheel, and not an abutment, and roll upwardly over the billet end.

It sometimes happens that billet ends are not sheared squarely, and this might lead to poor stamping by the stamping hammer 6 but for the fact that this stamping hammer 6 is carried by the free end 5a of the rocker arm 5 by means permitting it to pivot axially of the rocker arm and is provided with means for yieldingly holding its stamping face toward the advancing billet end. With this arrangement, the stamping hammer can twist as required to forge the indicia it carries on its face, squarely into the billet end. As shown best by Figure 5, this just described means is provided by the stamping hammer 6 being carried by a shaft 17 working in bearings 18 mounted in the rocker arm end 5a, the shaft being vertically retained against falling by a nut 19. A torsion spring 20 serves to yieldingly hold the stamping face of the stamping hammer 6 toward the advancing billet end.

Pivotal suspension of the rocker arm 5 is effected by suspending it from the arm 21 of a crank having its shaft 22 journaled by the upper end of the frame 2 and turned by a hand lever 23 working about a quadrant 24 having notches 25 releasably engaged by a finger 26 fixed to the lever 23. By working this hand lever to different positions the pivotal connection provided by the crank arm 21 is vertically adjustable, this permitting vertical adjustment of the stamping hammer relative the advancing billet end.

I claim:

1. An automatic stamping hammer for stamping the advancing end of work traveling over a conveyor table, including a supporting structure spaced above said table, a rocker arm pivotally suspended from said structure with a free end swinging above said table in line with the traveling direction of said work, a stamping hammer carried by said free arm and registering with said work end, a push rod pivotally connected with a swinging portion of said arm for vertical swinging and extending transversely from said arm in a direction opposing said work end and provided with work-abutting-means spaced from said arm and registering with said work end so they interengage so said traveling work forces said push rod to raise said arm, and a lever longitudinally extending beyond said means from said push rod with a free end spaced above said table for passing over and engaging the top of said work with its vertical angularity fixed respecting that of said push rod so said free end fulcrums on said work top as the angularity of said push rod increases respecting said work top as it raises said rocker arm, whereby said lever forces said work-abutting-means upwardly free from said work end and permits falling of said rocker arm so said stamping hammer strikes said work end.

2. An automatic stamping hammer for stamping the advancing end of work traveling over a conveyor table, including a supporting structure spaced above said table, a rocker arm pivotally suspended from said structure with a free end swinging above said table in line with the traveling direction of said work, a stamping hammer carried by said free arm and registering with said work end, a push rod pivotally connected with a swinging portion of said arm for vertical swinging and extending transversely from said arm in a direction opposing said work end and provided with work-abutting-means spaced from said arm and registering with said work end so they interengage so said traveling work forces said push rod to raise said arm, and a lever longitudinally extending beyond said means from said push rod with a free end spaced above said table for passing over and engaging the top of said work with its vertical angularity fixed respecting that of said push rod so said free end fulcrums on said work top as the angularity of said push rod increases respecting said work top as it raises said rocker arm, whereby said lever forces said work-abutting-means upwardly free from said work end and permits falling of said rocker arm so said stamping hammer strikes said work end, said lever connecting with said push rod through means permitting their relative vertical angularity to be adjustably fixed at different values, whereby to adjust the height to which said rocker arm is raised before it is permitted to fall.

3. An automatic stamping hammer for stamping the advancing end of work traveling over a conveyor table, including a supporting structure spaced above said table, a rocker arm pivotally suspended from said structure with a free end swinging above said table in line with the traveling direction of said work, a stamping hammer carried by said free arm and registering with said work end, a push rod pivotally connected with a swinging portion of said arm for vertical swinging and extending transversely from said arm in a direction opposing said work end and provided with work-abutting-means spaced from said arm and registering with said work end so they interengage so said traveling work forces said push rod to raise said arm, and a lever longitudinally extending beyond said means from said push rod with a free end spaced above said table for passing over and engaging the top of said work with its vertical angularity fixed respecting that of said push rod so said free end fulcrums on said work top as the angularity of said push rod increases respecting said work top as it raises said rocker arm, whereby said lever forces said work-abutting-means upwardly free from said work end and permits falling of said rocker arm so said stamping hammer strikes said work end, said push rod being provided with a roller behind said means and depending to a level therebelow, whereby to reduce the friction as said push rod rides back over said top upon said means being freed from said work end by action of said lever.

4. An automatic stamping hammer for stamping the advancing end of work traveling over a conveyor table, including a supporting structure spaced above said table, a rocker arm pivotally suspended from said structure with a free end swinging above said table in line with the traveling direction of said work, a stamping hammer

carried by said free arm and registering with said work end, a push rod pivotally connected with a swinging portion of said arm for vertical swinging and extending transversely from said arm in a direction opposing said work end and provided with work-abutting-means spaced from said arm and registering with said work end so they interengage so said traveling work forces said push rod to raise said arm, and a lever longitudinally extending beyond said means from said push rod with a free end spaced above said table for passing over and engaging the top of said work with its vertical angularity fixed respecting that of said push rod so said free end fulcrums on said work top as the angularity of said push rod increases respecting said work top as it raises said rocker arm, whereby said lever forces said work-abutting-means upwardly free from said work end and permits falling of said rocker arm so said stamping hammer strikes said work end, the swinging end of said rod and said lever having means for guiding them in line with said work traveling direction and the swinging direction of said rocker arm while permitting longitudinal and vertical movement thereof.

5. An automatic stamping hammer for stamping the advancing end of work traveling over a conveyor table, including a supporting structure spaced above said table, a rocker arm pivotally suspended from said structure with a free end swinging above said table in line with the traveling direction of said work, a stamping hammer carried by said free arm and registering with said work end, a push rod pivotally connected with a swinging portion of said arm for vertical swinging and extending transversely from said arm in a direction opposing said work end and provided with work-abutting-means spaced from said arm and registering with said work end so they interengage so said traveling work forces said push rod to raise said arm, and a lever longitudinally extending beyond said means from said push rod with a free end spaced above said table for passing over and engaging the top of said work with its vertical angularity fixed respecting that of said push rod so said free end fulcrums on said work top as the angularity of said push rod increases respecting said work top as it raises said rocker arm, whereby said lever forces said work-abutting-means upwardly free from said work end and permits falling of said rocker arm so said stamping hammer strikes said work end, said rocker arm being free to swing oppositely respecting the normal work traveling direction so said work may travel reversely on said table without interference by said rocker arm, and said push rod and lever being also free to move oppositely with opposite swinging of said arm and adapted to be cammed upwardly by the reversely traveling work so as to ride freely over said work top of the reversely traveling work.

6. An automatic stamping hammer for stamping the advancing end of work traveling over a conveyor table, including a supporting structure spaced above said table, a rocker arm pivotally suspended from said structure with a free end swinging above said table in line with the traveling direction of said work, a stamping hammer

carried by said free arm and registering with said work end, a push rod pivotally connected with a swinging portion of said arm for vertical swinging and extending transversely from said arm in a direction opposing said work end and provided with work-abutting-means spaced from said arm and registering with said work end so they interengage so said traveling work forces said push rod to raise said arm, and a lever longitudinally extending beyond said means from said push rod with a free end spaced above said table for passing over and engaging the top of said work with its vertical angularity fixed respecting that of said push rod so said free end fulcrums on said work top as the angularity of said push rod increases respecting said work top as it raises said rocker arm, whereby said lever forces said work-abutting-means upwardly free from said work end and permits falling of said rocker arm so said stamping hammer strikes said work end, said stamping hammer being carried by said rocker arm free end by means permitting it to pivot axially of said rocker arm and having means for yieldingly holding its stamping face toward said advancing work end.

7. An automatic stamping hammer for stamping the advancing end of work traveling over a conveyor table, including a supporting structure spaced above said table, a rocker arm pivotally suspended from said structure with a free end swinging above said table in line with the traveling direction of said work, a stamping hammer carried by said free arm and registering with said work end, a push rod pivotally connected with a swinging portion of said arm for vertical swinging and extending transversely from said arm in a direction opposing said work end and provided with work-abutting-means spaced from said arm and registering with said work end so they interengage so said traveling work forces said push rod to raise said arm, and a lever longitudinally extending beyond said means from said push rod with a free end spaced above said table for passing over and engaging the top of said work with its vertical angularity fixed respecting that of said push rod so said free end fulcrums on said work top as the angularity of said push rod increases respecting said work top as it raises said rocker arm, whereby said lever forces said work-abutting-means upwardly free from said work end and permits falling of said rocker arm so said stamping hammer strikes said work end, said rocker arm being pivotally suspended from said support on a vertically adjustable pivot permitting adjustment of said stamping hammer relative said work end.

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