(No Model.) 2 Sheets—Sheet 1.

M. GINDORFF.

METHOD OF AND MACHINE FOR SERRATING SICKLE SECTIONS.

No. 524,965. Patented Aug. 21, 1894.

Fig. 1.

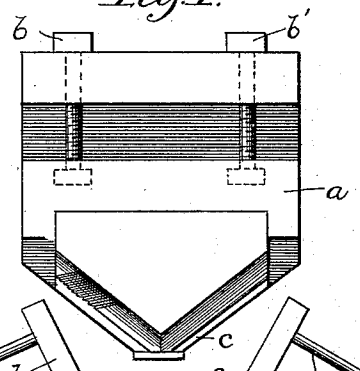


Fig. 2.

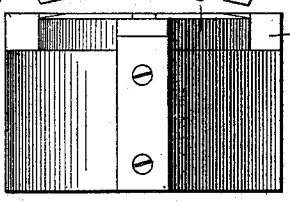


Fig. 3.

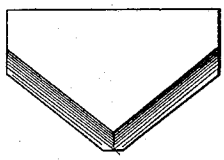


Fig. 4.

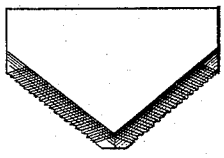


Fig. 5.

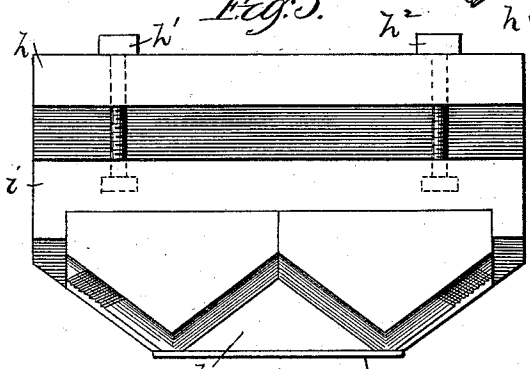


Fig. 7.

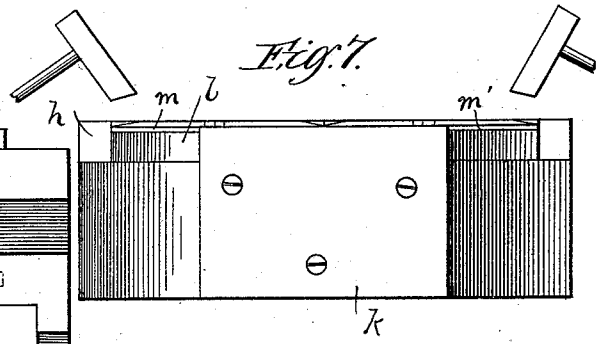
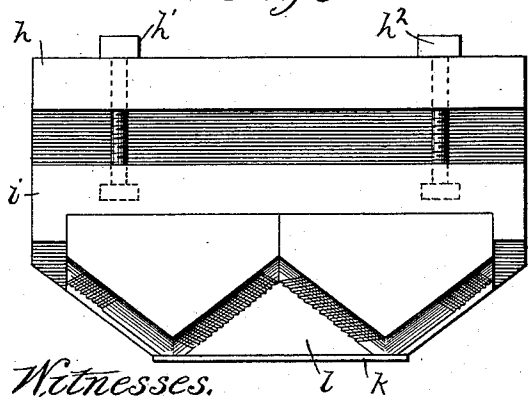
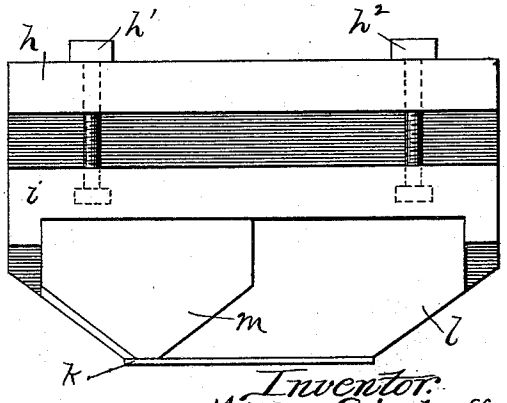


Fig. 8

Fig. 6.





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Atty's

(No Model.) 2 Sheets—Sheet 2.

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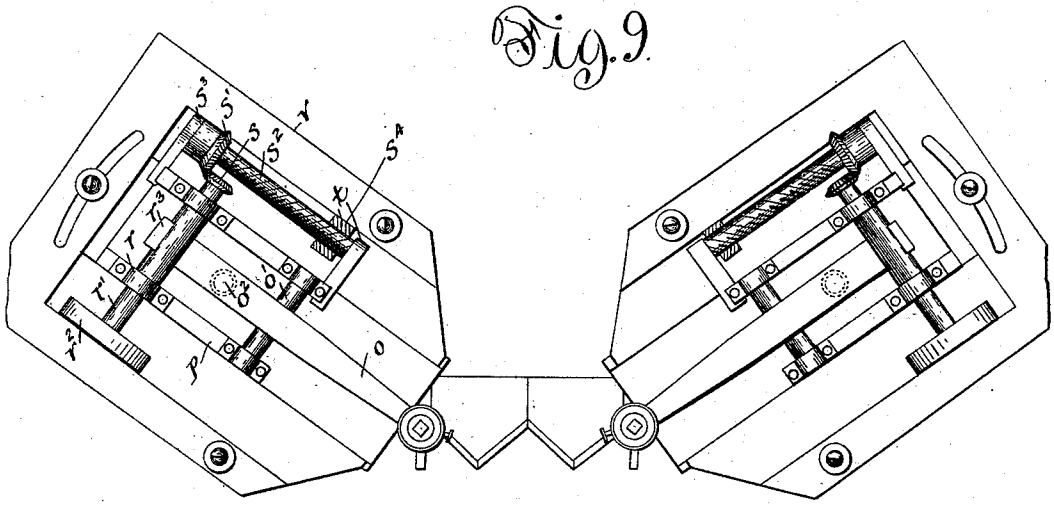
METHOD OF AND MACHINE FOR SERRATING SICKLE SECTIONS.

No. 524,965. Patented Aug. 21, 1894.

Fig. 9.



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By Barton & Brown.
Attorneys.

UNITED STATES PATENT OFFICE.

MATTHEW GINDORFF, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-THIRD TO PETER GINDORFF, OF SAME PLACE.

METHOD OF AND MACHINE FOR SERRATING SICKLE-SECTIONS.

SPECIFICATION forming part of Letters Patent No. 524,965, dated August 21, 1894.

Application filed November 28, 1893. Serial No. 492,226. (No model.)

To all whom it may concern:

Be it known that I, MATTHEW GINDORFF, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Methods of and Machines for Serrating Sickle-Sections, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to serrators for sickle sections, and its object is to reduce the cost of serrating sickle sections to a minimum; and, further, to improve machines heretofore in use, whereby the capacity of such machines may be doubled, and two sections simultaneously serrated in practically the same time heretofore required for completing one. Heretofore machines for this purpose have been constructed with a chuck adapted to hold in position a sickle section, a pair of machine actuated hammers with knife edges being located one upon either side of the section and adapted to repeatedly strike the beveled edges thereof while being moved step by step from one end of the edge to the other, whereby a series of parallel indentations are formed in the beveled edges of the sections, the ends of the raised portion of the edge between the indentations projecting beyond the ends of the indentations to form teeth which constitute the cutting edge of the sickle section. The hammer starts from the base end of the edge and travels toward the point of the section, and as the hammers would meet before the edges were completed if actuated simultaneously, it has been customary to actuate one hammer at a time, thus entirely completing one edge of the section, and then after the hammer has been returned to its original position, the second hammer is started and completes the other edge. Besides the inability to serrate both edges at once by this method, it is undesirable to do so, as the best results are obtained when but a single hammer is acting upon the section at a time, bending of the section being thereby avoided.

My invention consists in the provision of means whereby two sections are operated upon at once, one edge of each of the sections being simultaneously serrated, and the sections then transposed and the remaining edges of the sections thus transposed, serrated, the operation of serrating both sections being thereby completed.

By my invention two sections can be serrated in practically the same time required for serrating one section by the old method, since both hammers may be actuated simultaneously.

Furthermore, my invention may be readily applied to machines heretofore in use by the insertion of a chuck embodying my invention, the hammers being moved farther apart to accommodate the chuck.

I will describe my invention in connection with the accompanying drawings, in which—

Figure 1 is a plan view of a chuck illustrative of the prior art. Fig. 2 is an elevational view thereof showing the location of the serrating hammers. Fig. 3 is a view of a sickle section with beveled edges before serrating. Fig. 4 is a view of the completed serrated section. Fig. 5 is a plan view of a chuck embodying my invention, the edges of the sections being shown with serrations across only a portion of the external edges as they would appear when the hammers had only partially traversed the edges thereof. Fig. 6 is a similar plan view showing the sections after transposition, the hammers being supposed to have only partially completed their second travel. Fig. 7 is an elevational view of the chuck showing the location of the serrating hammers. Fig. 8 is a plan view of the chuck showing the finished sections and one of the section plates removed. Fig. 9 is a plan view illustrating the mechanism for actuating the hammers.

Like letters refer to like parts in the several figures.

I will first describe briefly the prior art, as illustrated in Figs. 1 and 2. A chuck is provided adapted to hold in position the section to be operated upon, and may comprise a movable jaw *a* adapted to be moved forward and backward by means of screws *b b'*. A steel plate *c* conforming in general outline to the shape of the sickle section is clamped in the chuck, and upon this the section is laid and held in position by a finger or clamp which comes down upon the section from the

rear. To secure clearness this clamp has not been shown in the figures. The section having been clamped in position, one of the hammers, as *d*, is actuated, and starting at the rear end of the edge, travels step by step forward, thus serrating the edge; it then returns to its original position, and the hammer *d'* acts in a similar manner to complete the other edge. The section is then unclamped and removed, a new section being placed in position and the operation repeated.

Referring now to the remaining figures, illustrating the present invention, the chuck is made large enough to accommodate two sections laid side by side, and the hammers are so located that they will act upon the outer edges of the sections. The sections having been placed in position and clamped in any proper manner, the hammers are simultaneously actuated and act upon the outer edges of the two sections, traveling preferably from the base toward the point of the section, though, of course, the direction of travel may be reversed. The external edges having been completed, the hammers return to their original positions, the sections are unclamped and transposed, the section formerly on the right now occupies the position on the left, and vice versa.

In the transposed position the internal edges of the sections will be the completed edges, while the external edges are the uncompleted ones. The sections having been clamped in the transposed positions, the hammers are again actuated, completing the remaining edges of the sections. The sections are then unclamped and removed, and the operation is repeated.

In Fig. 9 is illustrated a form of mechanism that may be employed for actuating the hammers. The hammer is mounted upon the end of a lever *o* journaled at *o'*, the rear end being resiliently pressed upward to depress the serrating edge by means of a coiled spring o^2. The lever is journaled upon a carriage *p* adapted to be moved back and forth to cause the serrating edge of the hammer to travel across the edge of the section to be serrated. Mounted in bearings *r r* carried upon the carriage, is a shaft *r'*, to which is keyed a pulley r^2 adapted to be driven by a belt. The shaft *r'* carries upon one side a cam r^3 which, as the shaft rotates, engages the end of the lever *o* to raise the serrating edge against the resiliency of spring o^2. As the cam moves out of contact with the lever the spring reacts to cause the serrating edge of the hammer to strike the edge of the section. The shaft *r'* carries upon its end a bevel pinion *s*, engaging with a bevel gear *s'*. The bevel gear *s'* and the screw s^2, secured thereto, are mounted to rotate in bearings s^3 s^4 carried upon the carriage *p*. The screw s^2 engages a stationary threaded part *t* secured to the frame *v* upon which the carriage *p* is mounted. As the shaft *r'* is rotated the carriage *p* is advanced and the serrating hammer caused to successively strike the edge of the sickle section to serrate the same. The carriage is then returned to its original position, the sections being meanwhile transposed, and the operation is repeated.

It is evident that any preferred form of chuck, and hammers of any construction and arrangement, so long as they act simultaneously upon the edges of two sections, may be used without departing from the spirit of my invention.

By the above method of serrating sections, it will be observed that during the time that a hammer is making two complete excursions, two sections are completed, while in the prior art, but a single section was completed by two hammer excursions.

I have not illustrated the complete hammer connections as these, in their individual capacities form no part of the present invention.

I will now describe more in detail the form of chuck which I preferably employ.

The main casting *h* is provided with bolts *h' h²* which engage with and move back and forth the chuck jaw *i*. Upon the front end of the casting *h* is screwed a plate *k*. A steel base plate *l*, of an outline conforming to the general outline of the two sections, is adapted to be clamped between the jaw *i* and the plate *k*. Upon the plate *l* are placed two plates *m m'*, conforming in shape to the sections to be serrated; two sections before beveling may be used for this purpose. These plates *m m'* are also clamped between the jaw *i* and the plate *k*, the plate *k* extending to such a height that it is flush with the tops of said plates *m m'*. The sections to be serrated are placed one upon each of these plates, the jaw *i* being recessed to receive the butts of the two sections. The object of the individual plates *m m'* is to provide an independent base for each section which may be readily replaced when worn, and which may prevent the bending of the section. When it is desired to adjust the chuck to different sized sections, the base plate *l* and the individual plates *m m'* may be replaced by proper sized plates to suit the size of section to be operated upon.

It is evident that my invention is susceptible of many modifications, and I do not, therefore, wish to limit myself to the constructional features shown and described.

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

1. In a serrator, the combination with a chuck adapted to maintain two sections in position side by side, of a serrating tool adapted to be moved along the outer edge of one of said sections, a second serrating tool adapted to be moved along the outer edge of the other section, and means for simultaneously moving said serrating tools from the bases to the tips of the respective sections, or vice versa, substantially as described.

2. In a serrator, the combination with the

adjustable jaw *i*, of the plate *k*, the individual plates *m m'* adapted to lie between said jaw *i* and said plate *k*, the upper edge of said plate *k* being flush with the upper surfaces of said individual plates; whereby the sickle sections may have independent supports and may be withdrawn over the top of said plate *k*, substantially as described.

3. In a serrator, the combination with the adjustable jaw *i*, of the plate *k*, the base plate *l* adapted to be clamped between said adjustable jaw *i* and the plate *k*, the individual plates *m m'* resting upon said base plate *l* and between said jaw *i* and said plate *k*, and flush with the upper edge of said plate *k*; whereby the sickle sections have independent supports, and may be withdrawn over the top of said plate *k*, substantially as described.

4. The method of serrating sickle sections, which consists in maintaining the sections in position side by side, serrating the outer edges by machine actuated serrating tools, transposing the sections and then serrating in a similar manner the outer edges of the transposed sections, substantially as described.

5. The method of serrating sickle sections, which consists in maintaining the sections in position side by side, simultaneously serrating one edge of each of the sections by machine actuated serrating tools, transposing the sections, and then simultaneously serrating in a similar manner the unserrated edges of the transposed sections.

In witness whereof I hereunto subscribe my name this 25th day of November, A. D. 1893.

MATTHEW GINDORFF.

Witnesses:
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W. CLYDE JONES.