

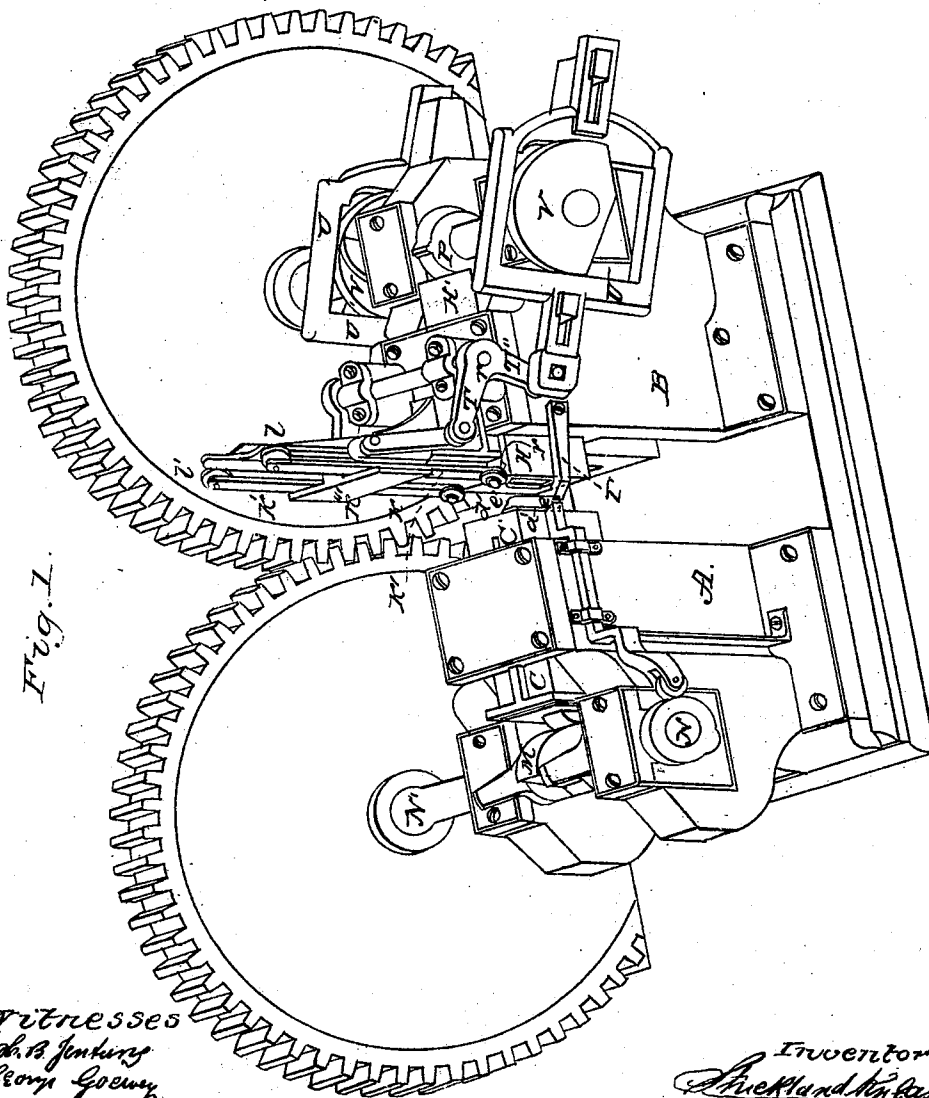
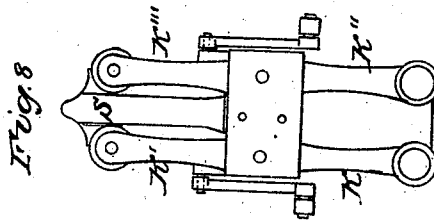
STILES & KNEASS.

2 Sheets—Sheet 1.

Horseshoe Machine.

No. 19,957.

Patented April 13, 1858



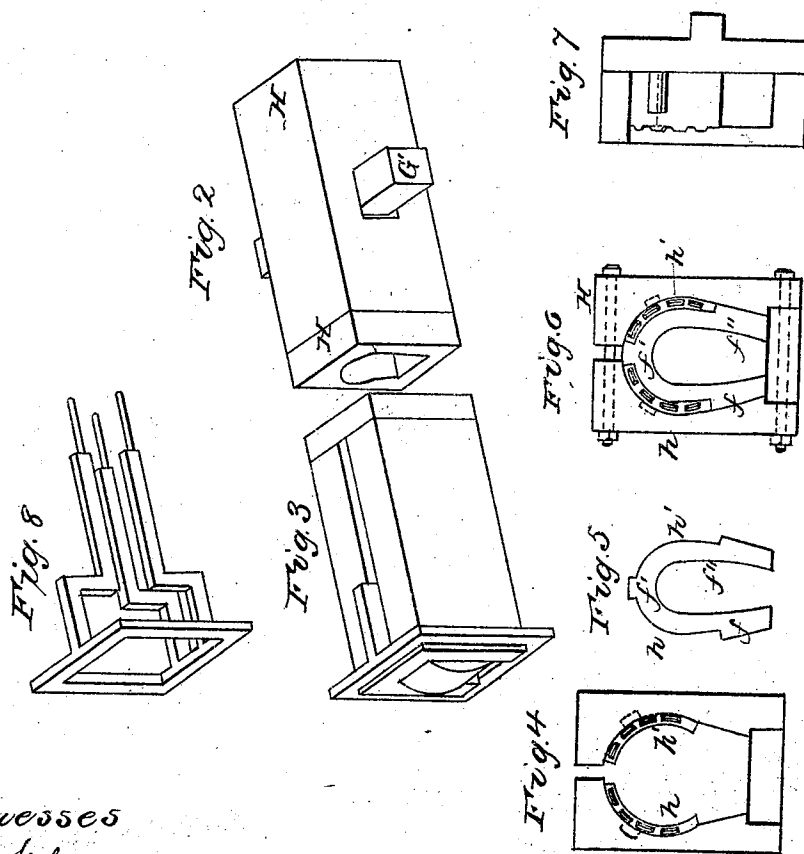
Witnesses
J. B. Jenkins
George Goewey,

Inventor
Stiles and Kneass
George Stiles

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Geo. H. Lacey

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Stiles & Kneass
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UNITED STATES PATENT OFFICE.

GEORGE STITES, JR., AND STRICKLAND KNEASS, OF PHILADELPHIA, PENNSYLVANIA.

HORSESHOE-MACHINE.

Specification of Letters Patent No. 19,957, dated April 13, 1858.

To all whom it may concern:

Be it known that we, GEORGE STITES, JR., and STRICKLAND KNEASS, both of the city of Philadelphia and State of Pennsylvania, have invented a new and Improved Machine for Making Horseshoes; and we do hereby declare the following to be a full and exact description of our improved machine, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 represents a perspective view of our improved machine and Fig. 2 a view of the hollow box plunger removed from our machine. Fig. 3 the plunger which carries the former and one swaging plate. Fig. 4 represents the interior of the end of the moving hollow die box. Fig. 5 represents the stationary swaging plate which swages the bottom of the shoe. Fig. 6 the moving hollow die box fitting around the bottom swaging plate.

Our machine consists of two heavy pieces of framework A and B solidly and securely attached to a heavy cast iron bed plate.

C C' is a heavy plunger made of cast iron sliding through the housing A. At its front end C' it has a steel face $d' d'' d'''$ raised on it precisely the shape of the horseshoe. This forms one swaging surface for forming the top of the shoe. This steel face $d' d'' d'''$ surrounds a projection or former $e' e'' e'''$ of wrought iron extending about two inches in front of the steel face piece $d' d'' d'''$ and of the same shape as the interior of the shoe. Immediately opposite to the front end of C' and of the swaging face $d' d'' d'''$ there is fixed another swaging face $f' f'' f'''$ which forms the bottom of the shoe. This swaging face is made of steel and is permanently fixed against a transverse abutment bar G G'.

H H' is a hollow box plunger sliding through the housing B. This hollow box plunger slides so as to clear the swaging face $f' f'' f'''$ and the abutment bar, by means of a slot in the hollow box plunger. The interior of the said box plunger presents the appearance shown in Fig. 3 and it fits to and slides over the fixed swaging face $f' f'' f'''$ in the manner shown in Fig. 6.

The fixed steel piece $f' f'' f'''$ corresponds precisely with the shape of the bottom of

the shoe except in the portion $h' h''$ where the crease and nail holes are to be made. The crease and nail holes are afterward made by the parts h and h' attached to the interior of the hollow sliding box H H'.

I I' are cutters similar to those heretofore used.

K K' and K'' K''' are bending levers which slide up and down on a pair of vertical guides. At the upper extremity of each lever is a small friction roller $l' l''$. At the lower extremity of each lever there is also a small friction roller $r' r''$. These lower friction rollers $r' r''$ press upon the piece of heated iron and as they descend force it to bend around the central former $e' e'' e'''$. The compressing motion of the lower rollers $r' r''$ being effected by a cam piece S Fig. 3 against which the upper rollers $l' l''$ press.

The plunger C C' is moved forward by a cam M on one of the main shafts N N'. The plunger C C' is returned by a spring or reverse cam. The hollow box plunger H H' is moved forward by a cam P on a main shaft and is returned by a spring or reverse cam. The upright levers K K' and K'' K''' are elevated and depressed by a pair of bell cranks T T' T'' working in connection with a yoke U and cam V. The cutter I is moved forward by a cam at N and returned by a spring.

The operation of the several parts is as follows: A bar of iron properly heated is slid over the top of the former $e' e'' e'''$ until it strikes a stop on the opposite side. The bending levers K K', K'' K''' descend and just as they press upon the iron bar the cutter I moves forward and cuts off the proper length. The levers K K' K'' K''' continue to descend and bend the iron around the former $e' e'' e'''$. The levers K K', K'' K''' then ascend and the plunger C C' moves forward carrying the bent iron into the hollow die box on the end H of the plunger H H' and the iron is swaged between the moving steel swage $d' d'' d'''$ and the fixed steel swager $f' f'' f'''$. This operation finishes the shoe on the top or side toward the swager $d' d'' d'''$ and also on all the lower side of the shoe except where the crease and holes are to be made. The hollow box plunger H H' then moves forward and punches and creases the shoe and finishes it

on the edge and the bottom side in that part where the creasing and punching was done. As the hollow box moves forward against the sides or outer edge of the shoe it gives it a complete and square finish. The hollow box H H' then recedes and leaves the shoe on the former *e e' e''*. The former and plunger C C' then recede and a small concealed rod shown in Fig. 7 being projected forward pushes the finished shoe from the former.

The advantages of this improved machine is that the moving die box traveling on the outside of the shoe finishes the edge of the shoe while held between the two swagers more perfectly than has been done heretofore. The perfecting the shape and form of the shoe by the operation of creasing and punching after it had been partially formed by swaging, instead of creasing and punching the shoe after it had been completely formed as heretofore done produces a more perfect shoe than any heretofore made.

We are also aware that an arrangement of a revolving former has been heretofore patented in combination with two stationary

bending levers; we do not, therefore, claim any such arrangement. But

What we do claim is—

1. The employment of the stationary former, *e, e', e''* in connection with the reciprocating levers K, K', K'', K''', and with the fixed cam S arranged and operating as set forth.

2. The employment of the moving swager, *d, d', d''*, and fixed swager, *f, f', f''*, for forming and swaging the shoe while on the former, *e, e', e''*, and inclosed at the side in a hollow moving die box, H, H', arranged and operating as set forth.

3. The employment of the hollow box plunger, H, H', in connection with the former C, C', for creasing and punching the shoe at the same time that the outer edge is finished by the hollow die-box; the whole arranged and operating substantially as above described.

GEORGE STITES, Jr.
STRICKLAND KNEASS.

Witnesses:

J. U. B. JENKINS,
GEORGE GUERNEY.