(No Model.) 2 Sheets—Sheet 1.

S. FOX.

FLANGING MACHINE.

No. 260,186. Patented June 27, 1882.

Fig. II.

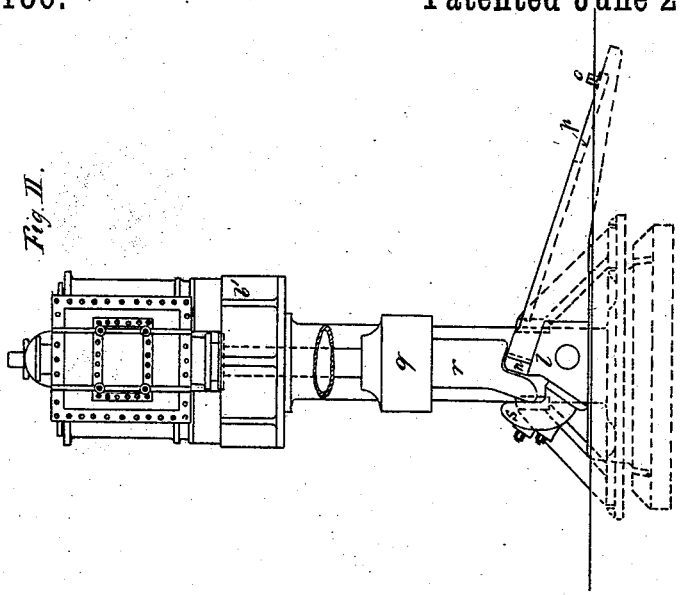
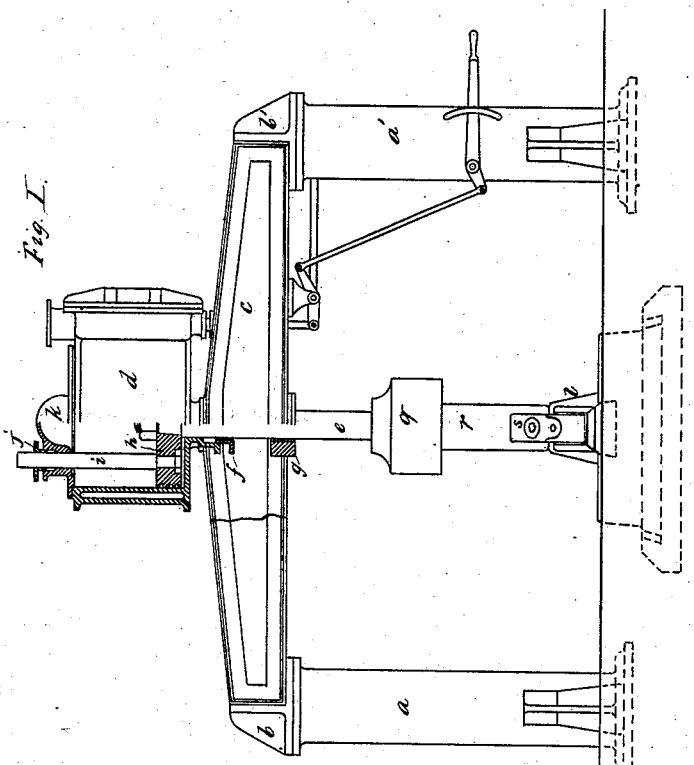


Fig. I.



Witnesses
Kinton Coombs
Robert Everett.

Inventor.
Samson Fox.
By J. J. Coombs,
Atty

(No Model.) 2 Sheets—Sheet 2.

S. FOX.

FLANGING MACHINE.

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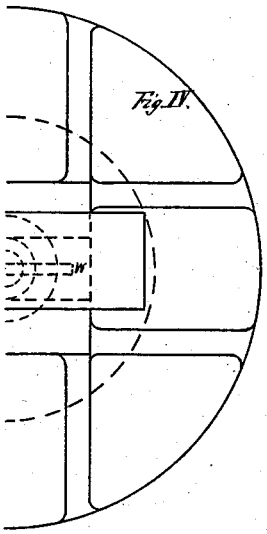
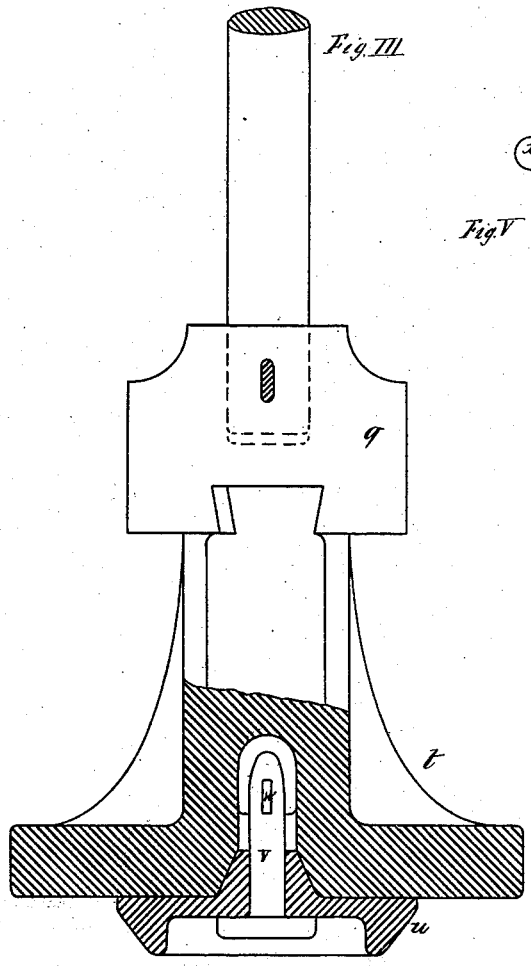




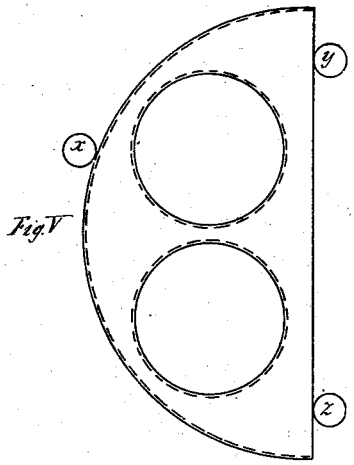
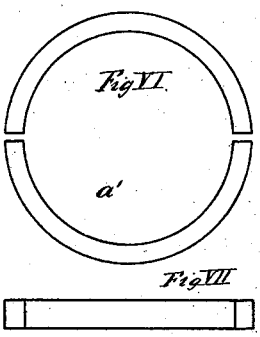
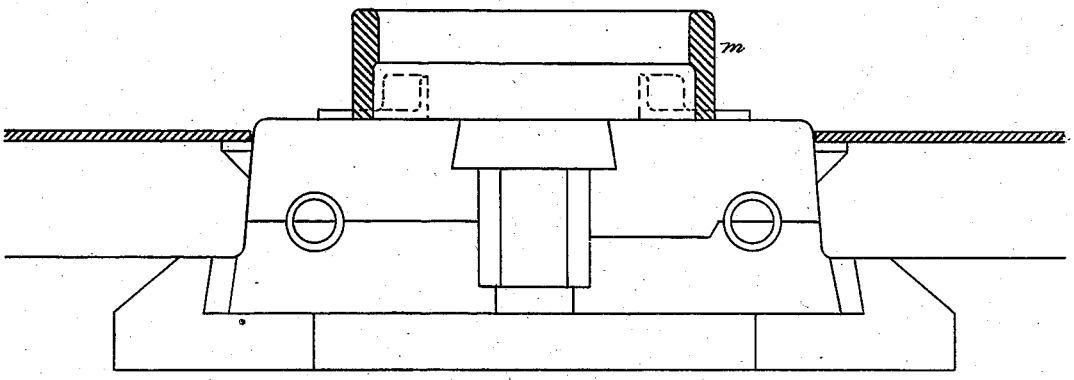


Fig. V.





Witnesses.
Kinton Coombs
Robert Everett.

Inventor:
Samson Fox.
By J. J. Coombs,
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UNITED STATES PATENT OFFICE.

SAMSON FOX, OF LEEDS, COUNTY OF YORK, ENGLAND.

FLANGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 260,186, dated June 27, 1882.

Application filed April 5, 1882. (No model.)

To all whom it may concern:

Be it known that I, SAMSON FOX, a citizen of England, residing at Leeds, in the county of York, England, have invented certain new and useful Improvements in Flanging-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

In the improved arrangement of machinery for flanging the front or end plates of steam-boilers I use a type of steam-hammer having the supporting-columns *a* and *a'* (or uprights) a good distance apart. On the top of them are cast-iron caps *b* and *b'*, formed to receive a strong wrought-iron double girder, *c*, on which the steam-cylinder *d* is bolted.

The piston-rod passes through the gland *f* and guide *g* on the inside of the strong wrought-iron girder *c*.

On one side of the piston *h* is placed another piston-rod or guide-rod, *i*, working through a gland, *j*, in the top cylinder cover, *k*. This piston-rod *i* secures a good guide for the main piston-rod *e* below, and relieves it of requiring any guide other than that of the upper rod just described, and this gives a very free access to the attendants for manipulating their work between the columns and the girders on which the cylinder rests.

The foundation of this hammer is very massive, and arranged to take on an anvil, *l*, for flanging the outside flanges of boiler-front plates, and also to take on suitable rings or circular dies, *m*, for forming the flanges of the holes in boiler-fronts, through which the flues of such boilers have to pass or be fitted into.

In using the machine for flanging the boiler-front plate the anvil is arranged to receive a short piece, *n*, made to the radius or curvature of the required plate. A center stud, *o*, is fixed into a slot, *p*, forming part of the anvil *l*, at the proper radius distance for the intended plate. The plate is then heated all round the edge in a suitable furnace and brought onto the stud *o*. The hammer-head *q* is fitted with a suitable tup or tool, *r*, for turning down the flange by acting on the one side on or against the plate, while on the other it is supported by a girder to hold it up to its work, the horn *s* forming part of the anvil-block. The plate is rotated by the attendants a short distance between the strokes of the hammer.

The operation of flanging the flue-holes in boiler-fronts is as follows: In place of the before-mentioned anvil *l*, a turned ring, *m*, suitable in size to receive twice the thickness of the plate and the full diameter of the flue-hole to be formed, is placed under the tup *t* of the hammer. This tup is formed with a large circular face. On the under side of this tup *t* is attached a punch, *u*, (of suitable diameter to form the hole,) by a single bolt, *v*. This bolt *v* has a cotter, *w*, passing through it on its upper end, so that a blow relieves the cotter *w*, and allows the bolt *v* to drop, and so frees the punch *u*. In flanging a flue-hole the plate is heated on a suitable furnace all round the edge of the hole. The plate is then lifted onto the before-mentioned ring *m* and placed in correct position by means of suitable stops, *x y z*. The tup *t* of the hammer is brought down and the punch *u* pressed into the plate. The cotter *w* is driven out and allows the before-mentioned bolt *v* to drop. The tup *t* is lifted up and a stout wrought-iron ring, *a'*, in halves, is placed on the punch *u*. While it remains embedded in the partially-flanged hole of the plate the tup *t* is once more brought down and drives the punch through the plate by striking the half rings *a'*, which rest on the face of the punch *u*. This produces a perfect flange, at once striking through the plate.

The speed of flanging boiler-fronts by this machine is twenty times that of doing them by hand, and the cost of attendants in wages per day is rather less, so that the cost of the work is less than one-twentieth of what it was before the introduction of this machinery.

In referring to drawings, Figure I is a side elevation, showing the cylinder in half-section, showing the piston-rod *e* and guide *i*. Fig. II is an end elevation, showing tup *r*, radius-block *n*, and horn *s* for flanging the outside flange of boiler fronts or ends. Fig. III is a detail in section, showing the die *m*, punch *u*, bolt *v*, cotter *w*, and tup *t*. Fig. IV shows plan of same. Fig. V shows guides *x y z* for centering the holes true with the die before

being flanged. Figs. VI and VII show the wrought-iron ring, in halves, used for driving the punch in through the flanged plate.

What I claim as my invention is—

In combination with the hammer-head q, the tup t, punch u, divided ring a', and ring-die m, all constructed, combined, and arranged to operate in flanging flue-holes in boiler-plates, substantially as described.

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

SAMSON FOX.

Witnesses:

JOSEPH HODGSON VEVERS,

HENRY SKIRROW LEUTY,

Clerks to Messrs. Teale & Appleton, Solicitors, Leeds, England.