

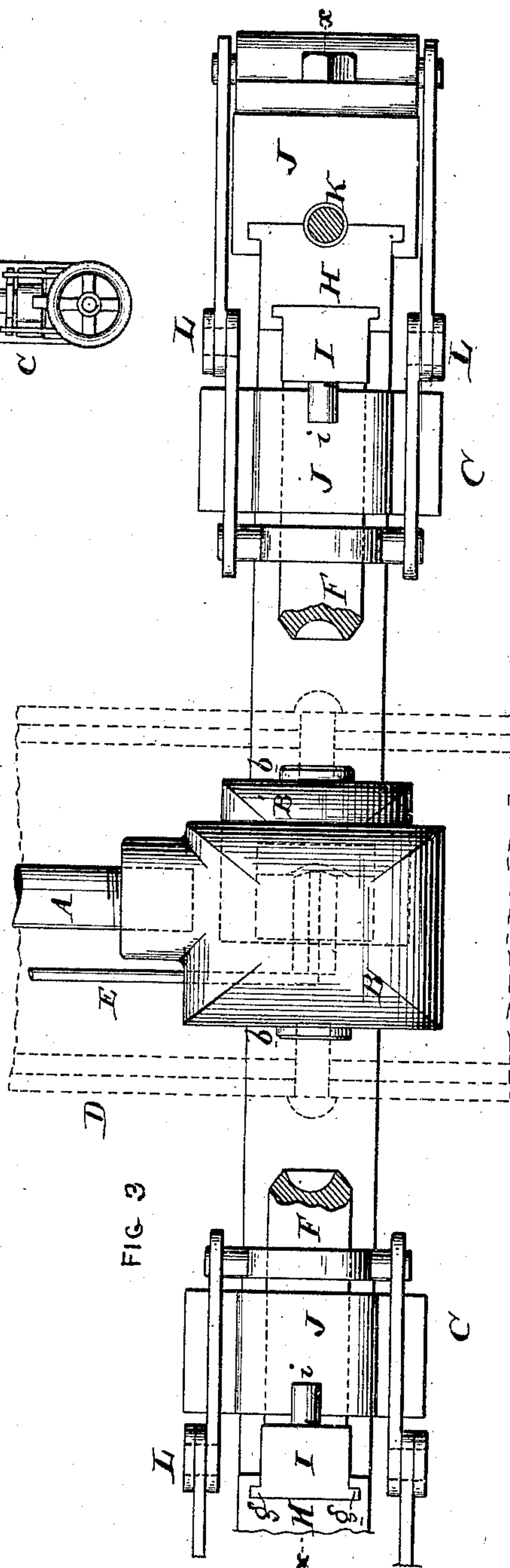
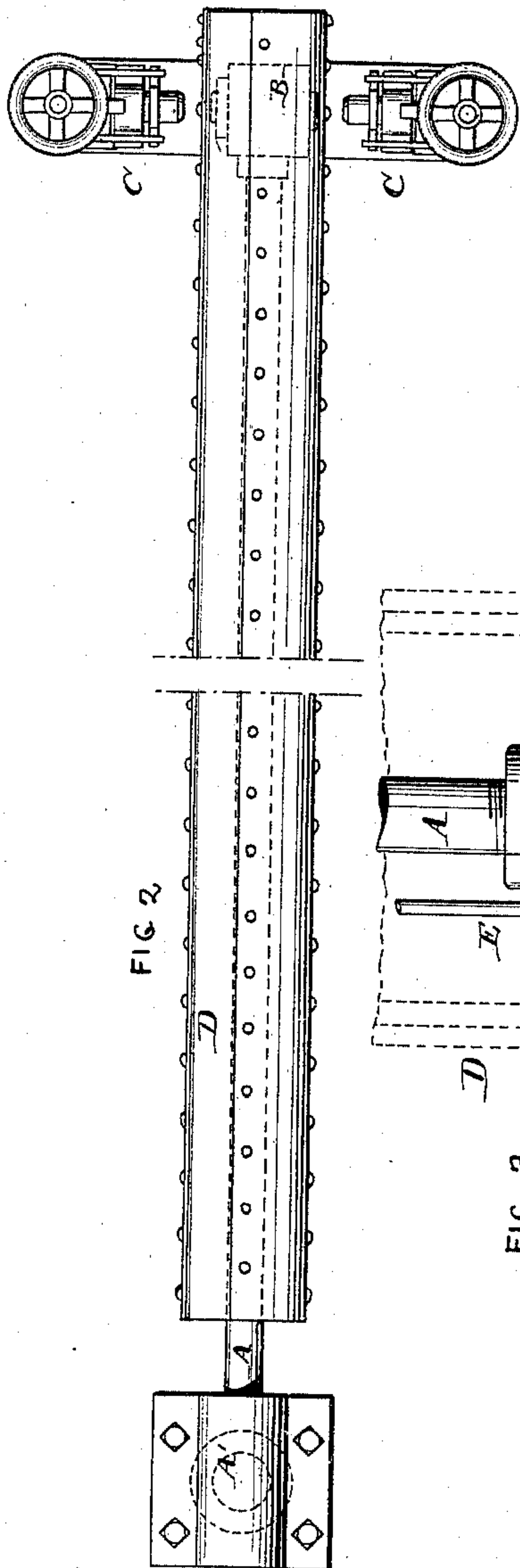
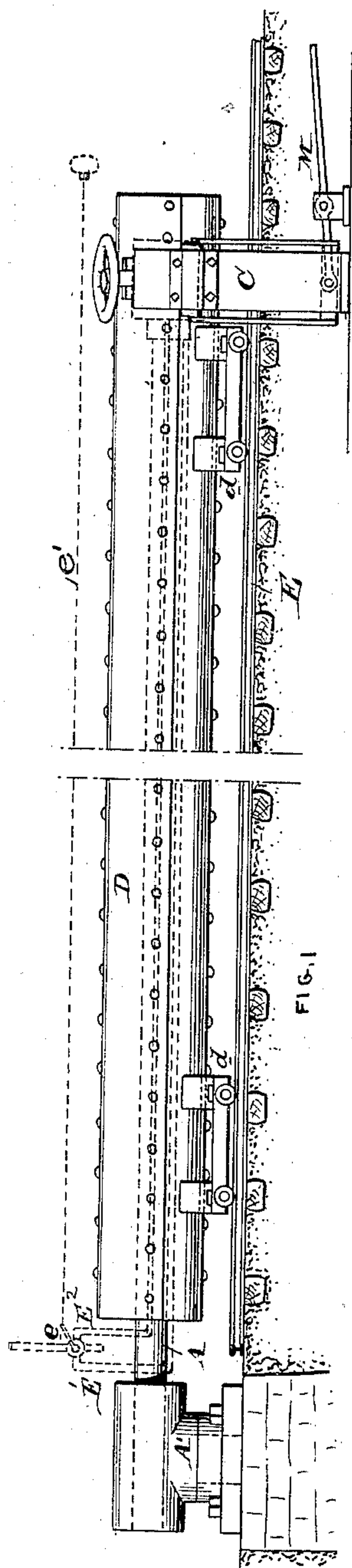
(No Model.)

2 Sheets—Sheet 1.

G. H. PEGRAM.
RIVETING MACHINE.

No. 445,935.

Patented Feb. 3, 1891.



Witnesses:

Henry D. May
S. F. Yerkes.

Inventor:

Geo. H. Pegram
By *W. A. Smith*

(No Model.)

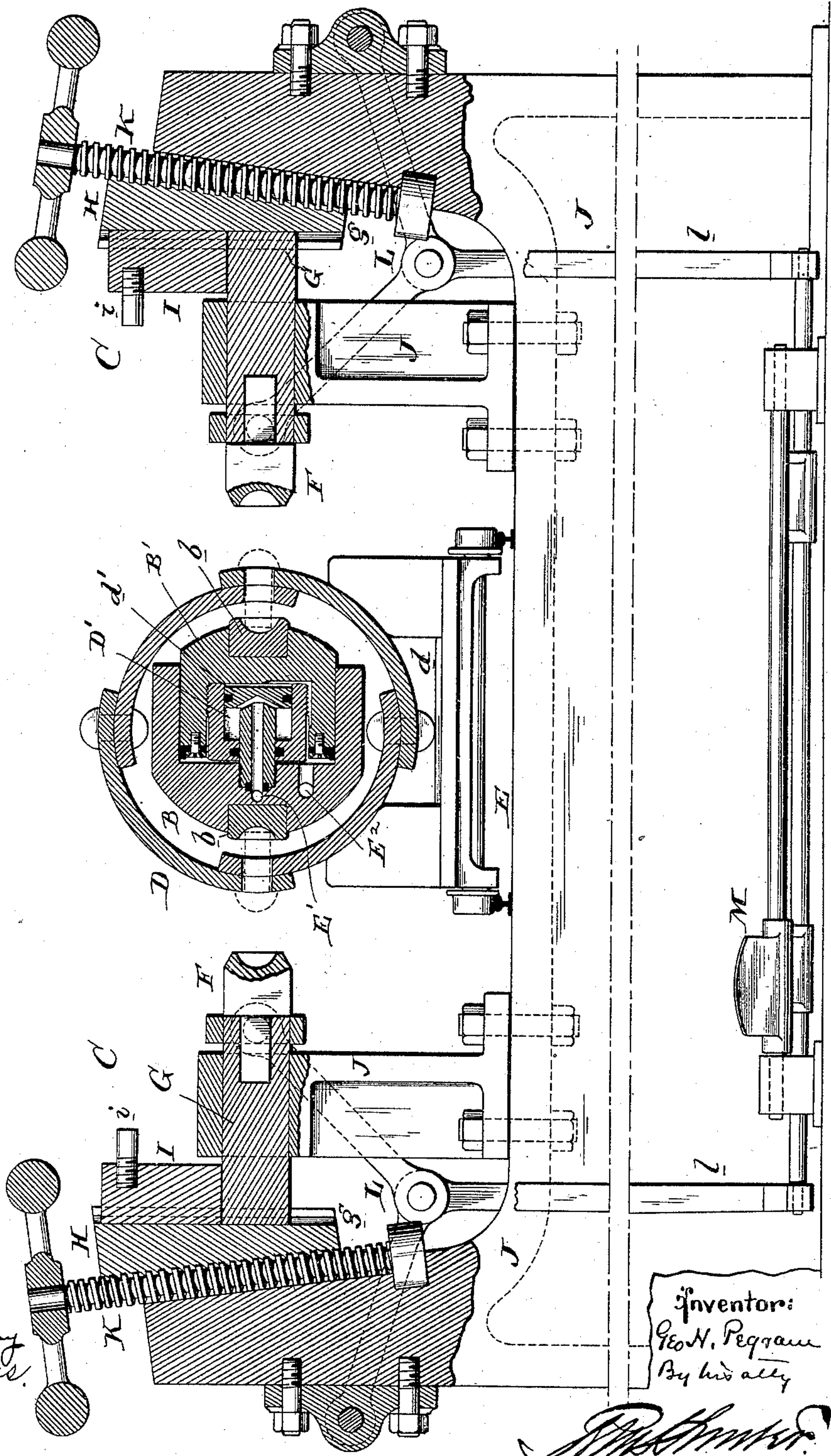
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FIG. 4



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Geo. H. Pegram

UNITED STATES PATENT OFFICE.

GEORGE H. PEGRAM, OF ST. LOUIS, MISSOURI.

RIVETING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 445,935, dated February 3, 1891.

Application filed October 20, 1890. Serial No. 368,701. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. PEGRAM, of St. Louis, in the State of Missouri, have invented an Improvement in Riveting-Machines for Riveting Together the Sections Constituting a Column, of which the following is a specification.

My invention has reference to riveting-machines for riveting together the sections constituting a tube or column; and it consists of certain improvements, which are fully set forth in the following specification, and shown in the accompanying drawings, which form a part thereof.

The object of my invention is to provide suitable mechanism for handling the various sections which are employed to make up a tube or column, whereby the same may be riveted in a speedy manner, and preferably so as to drive two rivets at the same time. Where tubes or columns are made of rolled sections it has been necessary to rivet the sections together to form a complete tube or column, either by rivets driven through externally-projecting flanges, where power may be used, or internally-projected rivets, which must be driven by hand.

The object of my invention is to enable the riveting of such sections by a properly-organized machine, whereby great rapidity in the manufacture of the tubes or columns may be obtained.

In carrying out my invention I provide suitable means, such as a railway, for supporting the sections which have been temporarily united into the relative positions for the completed tube or column, whereby the tube or column may be moved longitudinally with respect to a suitable riveting-machine. In this particular application the riveting-machine is operated by hydraulic power and operates upon the inside of the tube or column, the heads of the rivets being held in position from the outside of the tube or column by suitable mechanism, which is fully described hereinafter. The rivets are inserted from the outside through the holes in the column-sections, and are then held in place by suitable adjustable anvils, which receive the strain put upon the rivets when the hydraulic riveter upon the inside of the column is op-

erated to put an internal head upon the said rivets.

Referring to the drawings, Figure 1 is a side elevation of a riveting-machine embodying my invention. Fig. 2 is a plan view of same with railway omitted. Fig. 3 is an enlarged plan view of the right-hand end of Fig. 2, with the post or column shown in dotted lines; and Fig. 4 is a cross-sectional view on line *xx* of Fig. 3.

A is a horizontal rod secured at one end to a bearing A', preferably with provision for lateral movement, and supporting at the other end a hydraulic riveter-head B. The riveter-head B is arranged between the two rivet-holding anvils C C.

E is a railway arranged below the rod A, and upon which one or more small trucks *d* travel, said trucks being provided with suitable supports for the column or post D, which is formed of several sections of any suitable cross-section. These trucks *d* may have their supports modified or changed or made adjustable to suit the cross-section of the tube or column to be riveted. By this means the column D may be moved along parallel to the rod A, and so as to travel over the head B and maintain the series of holes in a proper line to be presented in succession to the riveting-dies *b* of the riveter, whereby the rivets which are passed through the holes may have their ends headed.

The riveter consists of the main head, in which a piston B' operates laterally. The main head carries one of the dies *b* and the piston B' carries the other dies *b*, said dies being arranged diametrically opposite. The dies *b b* are readily replaceable to suit different work. The piston B' is provided with an internal cylinder D', which moves with the piston B' and works upon a stationary piston *d*, secured to the head B. If water is forced into the port E², the piston B' is forced away from the head B and the dies *b b* are moved apart. If now the water is allowed to escape from the port E² and water is forced into the port E', then the piston B', with its die, is moved into the head B. By this means a reciprocation may be had between the two dies *b b*. In practice this reciprocation is controlled through the valve-rod *e'* by a valve *e*, (shown

in Fig. 1,) arranged adjacent to the support A', and connecting with the port-pipes E' E², which extend along the rod A to the head B. This valve *e* is of the ordinary type, which
 5 will allow water under pressure to flow into either port E' or E² and allow the escape of water from the other port.

Arranged upon either side of the head B, and supported upon a transverse frame J, are
 10 the two anvil mechanisms C for holding the rivets in place in the tube or column during the riveting operation. These devices are the same upon each side of the rivet-head, and therefore I will describe but one of them.

15 F is the anvil-die, and is fitted to a reciprocating head G, guided in the main frame J. This head G may be reciprocated by means of a toggle L, which is operated by a link *l* and a treadle motion M of any suitable description. When the toggle L is raised into
 20 a locking position, the anvil-die F will be pressing against the head of the rivet. For various sizes of columns the anvil-die F may be changed as to its length, and thereby com-
 25 pensate for the difference in space required.

H is a block having a vertical face adjacent to the head G and an oblique face to the rear, working in a suitable guideway on the main frame J. This block is moved vertically by
 30 means of a hand-screw K. The vertical edge of the block H is provided with vertical guide-grooves *g*, in which is guided a vertically-movable locking-block I, having a pin *i* to strike upon the frame J and sustain the said
 35 block after having fallen to a distance sufficient to act as a thrust or locking block for the head G. When the parts are in the position shown in Fig. 4, a movement of the treadle M will cause the head G to be pro-
 40 jected forward toward the column, and upon this operation taking place the locking-block I, which is sustained by the head G before the operation, is allowed to fall by gravity and comes between the rear end of the head G and
 45 the block H and receives the thrust put upon the anvil-die F. Slight adjustments can be made by means of the wedge-shaped plug H being moved up or down by means of the screw K. Before the anvil-die can be with-
 50 drawn the block I must be raised, and then upon withdrawing the anvil-die and its head G the block I will be sustained, as indicated in Fig. 4.

The operation of projecting the anvil-dies
 55 F toward the column on each side takes place simultaneously and is under the control of the same foot-treadle M. As soon as the rivets have been inserted the anvil-dies are thrust forward and locked in position. The
 60 hydraulic riveter is then operated and the rivets have their inner ends upset or headed, completing the riveting operation. As soon as this is done the dies *b* are drawn together and the dies F are moved apart. The column
 65 is then moved over the railway to the next rivet-hole and the operation repeated once more.

It is evident that one of the anvil devices C and the riveter might be employed for single riveting; but in this case the head B would
 70 have to be rigidly sustained against the thrust due to the riveting operation, but otherwise my mechanism is equally adapted to single riveting for flanges or flat work.

It is immaterial to my invention whether
 75 the apparatus is arranged horizontally or vertically, as it may be arranged at any angle, so that the work may be fed horizontally, vertically, or obliquely, the guides for the work being modified accordingly, as would be self-
 80 evident to any mechanic.

I do not limit myself to the details of construction herein set out, as they may be modified in various ways without departing from the principles of my invention.
 85

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

1. In a riveting-machine, the combination of two anvil-dies, means to reciprocate said
 90 anvil-dies to or from each other, a locking device to lock said anvil-dies when moved toward each other, and an intermediate riveting-machine having riveting-dies arranged in a line between the two anvil-dies and respect-
 95 ively adapted to be moved toward the respective anvil-dies.

2. In a riveting-machine, the combination of two anvil-dies, means to reciprocate said
 100 anvil-dies to or from each other, a locking device to lock said anvil-dies when moved toward each other, an intermediate riveting-machine having riveting-dies arranged in a line between the two anvil-dies and adapted to be
 105 respectively moved toward the respective anvil-dies, and a movable support for the work to be riveted for the purpose of guiding the work between the riveting-machine and the anvil-dies.

3. In a riveting-machine, the combination
 110 of two anvil-dies, means to reciprocate said anvil-dies to or from each other, a locking device to lock said anvil-dies when moved toward each other, an intermediate riveting-machine having riveting-dies arranged in a
 115 line between the two anvil-dies and adapted to be respectively moved toward the respective anvil-dies, and a movable support for the work to be riveted for the purpose of guiding the work between the riveting-machine and
 120 the anvil-dies, consisting of a railway and one or more trucks or carriages upon which the work is supported.

4. In a riveting-machine, the combination of two anvil-dies, means to reciprocate said
 125 anvil-dies to or from each other, a locking device to lock said anvil-dies when moved toward each other, an intermediate riveting-machine having riveting-dies arranged in a line between the two anvil-dies and adapted
 130 to be respectively moved toward the respective anvil-dies, and an arm or rod secured at one end to a support and at the other end to the riveting-machine.

5. In a riveting-machine, the combination of two anvil-dies, means to reciprocate said anvil-dies to or from each other, a locking device to lock said anvil-dies when moved toward each other, an intermediate riveting-machine having riveting-dies arranged in a line between the two anvil-dies and adapted to be respectively moved toward the respective anvil-dies, an arm or rod secured at one end to a support and at the other end to the riveting-machine, and a railway arranged parallel to the arm or rod for supporting the work which encircles the rod or arm and moving it longitudinally with respect thereto between the riveting-machine and the anvil-dies.

6. In a riveting-machine, the combination of two anvil-dies and an interposed riveting-machine provided with two oppositely-reciprocating riveting-dies arranged in a line between the anvil-dies, and power mechanism for reciprocating said riveting-dies.

7. In a riveting-machine, the combination of two anvil-dies, an interposed riveting-machine provided with two oppositely-reciprocating dies arranged in a line between the anvil-dies, and power devices for reciprocating said riveting-dies, and an arm or shaft supporting at one end the riveting-machine and the other end secured to a support.

8. In a riveting-machine, the combination of two anvil-dies, an interposed riveting-machine provided with two oppositely-reciprocating riveting-dies arranged in a line between the anvil-dies, and power devices for reciprocating said riveting-dies, an arm or shaft supporting at one end the riveting-machine and the other end secured to a support, and guide devices for supporting the work and moving it between the anvil-dies and riveting-machine.

9. In a riveting-machine, the combination of an anvil-die, a riveting-die, power mechanism to reciprocate said riveting-die, an arm or rod supporting the power mechanism for said riveting-die at one end and secured at the other end to a support, and a supporting-guide for the work to be riveted, adapted to move the work parallel to the arm or rod and between the riveting and anvil dies.

10. In a riveting-machine, the combination of an anvil-die, means to reciprocate said anvil-die to or from the work, a lock to lock said anvil-die in position when moved toward the work, a riveting-die, power mechanism to reciprocate said riveting-die, an arm or rod supporting the power mechanism for said riveting-die at one end and secured at the other end to a support, and a supporting-guide for the work to be riveted, adapted to move the work parallel to the arm or rod and between the riveting and anvil dies.

11. In a riveting-machine, the combination of an anvil-die, means to reciprocate said anvil-die to or from the work, a lock to lock said anvil-die in position when moved toward the work, adjusting mechanism for adjusting the locking device, whereby the position of the

anvil-die may be accurately adjusted independently of the locking mechanism, a riveting-die, power mechanism to reciprocate said riveting-die, an arm or rod supporting the power mechanism for said riveting-die at one end and secured at the other end to a support, and a supporting-guide for the work to be riveted, adapted to move the work parallel to the arm or rod and between the riveting and anvil dies.

12. In a riveting-machine, the combination of two anvil-dies, means to reciprocate said anvil-dies to or from each other, a locking device to lock said anvil-dies when moved toward each other, adjusting devices for adjusting the position of the anvil-dies with reference to the work, and an intermediate riveting-machine having riveting-dies arranged in a line between the two anvil-dies and adapted to be moved toward the respective anvil-dies.

13. In a riveting-machine, the combination of two anvil-dies, means to reciprocate said anvil-dies to or from each other, a locking device to lock said anvil-dies when moved toward each other, an intermediate hydraulic riveting-machine having riveting-dies arranged in a line between the two anvil-dies and adapted to be simultaneously moved toward the respective dies, and means to control the operation of the hydraulic mechanism of the riveting-machine, arranged at a distance from the riveting-dies.

14. In a riveting-machine, the combination of two anvil-dies with an interposed riveting-machine having two riveting-dies arranged in a line between the anvil-dies, a support for the riveting-machine permitting work to surround it, and means to support the work and permit its being fed between the anvil and riveting dies.

15. In a riveting-machine, the combination of two oppositely-reciprocating anvil-dies, means to relatively reciprocate said anvil-dies to or from each other, locking devices to hold said anvil-dies against reciprocation when moved toward each other, a riveting-machine interposed between the two anvil-dies and having riveting-dies arranged in line with the anvil-dies, and power mechanism to impart to said riveting-dies a relatively opposite reciprocation.

16. In a riveting-machine, the combination of a riveting-head having riveting-dies facing in opposite directions, two anvil-dies arranged in line with the riveting-dies and pointing in opposite directions, reciprocating heads for said anvil-dies, a thrust-block arranged back of each of the reciprocating heads, and reciprocating locking-blocks adapted to be projected between the thrust-block and the reciprocating heads when the latter are moved toward the riveting-dies.

17. In a riveting-machine, the combination of a riveting-head having riveting-dies facing in opposite directions, two anvil-dies arranged in line with the riveting-dies and pointing in

opposite directions, reciprocating heads for
said anvil-dies, a thrust-block arranged back
of each of the reciprocating heads, reciprocating locking-blocks adapted to be projected
5 between the thrust-block and the reciprocating heads when the latter are moved toward the riveting-dies, and means to adjust the thrust-block to move it to or from the riveting-dies.
10 18. In a riveting-machine, the combination of a riveting-head having riveting-dies facing in opposite directions, two anvil-dies arranged in line with the riveting-dies and pointing in opposite directions, reciprocating heads for
15 said anvil-dies, a thrust-block arranged back of each of the reciprocating heads, reciprocating locking-blocks adapted to be projected between the thrust-blocks and the reciprocating

heads when the latter are moved toward the riveting-dies, and power devices to
20 simultaneously reciprocate the heads and their anvil-dies in opposite directions.

19. In an apparatus for riveting tubes and columns, the combination of rivet-holding or anvil dies arranged external to the tube or
25 column and on opposite sides, with a riveter arranged between the anvil-dies and within the tube or column and adapted to act in conjunction with the anvil-dies.

In testimony of which invention I have
30 hereunto set my hand.

GEORGE H. PEGRAM.

Witnesses:

W. A. RILEY,
F. B. AYRES.