

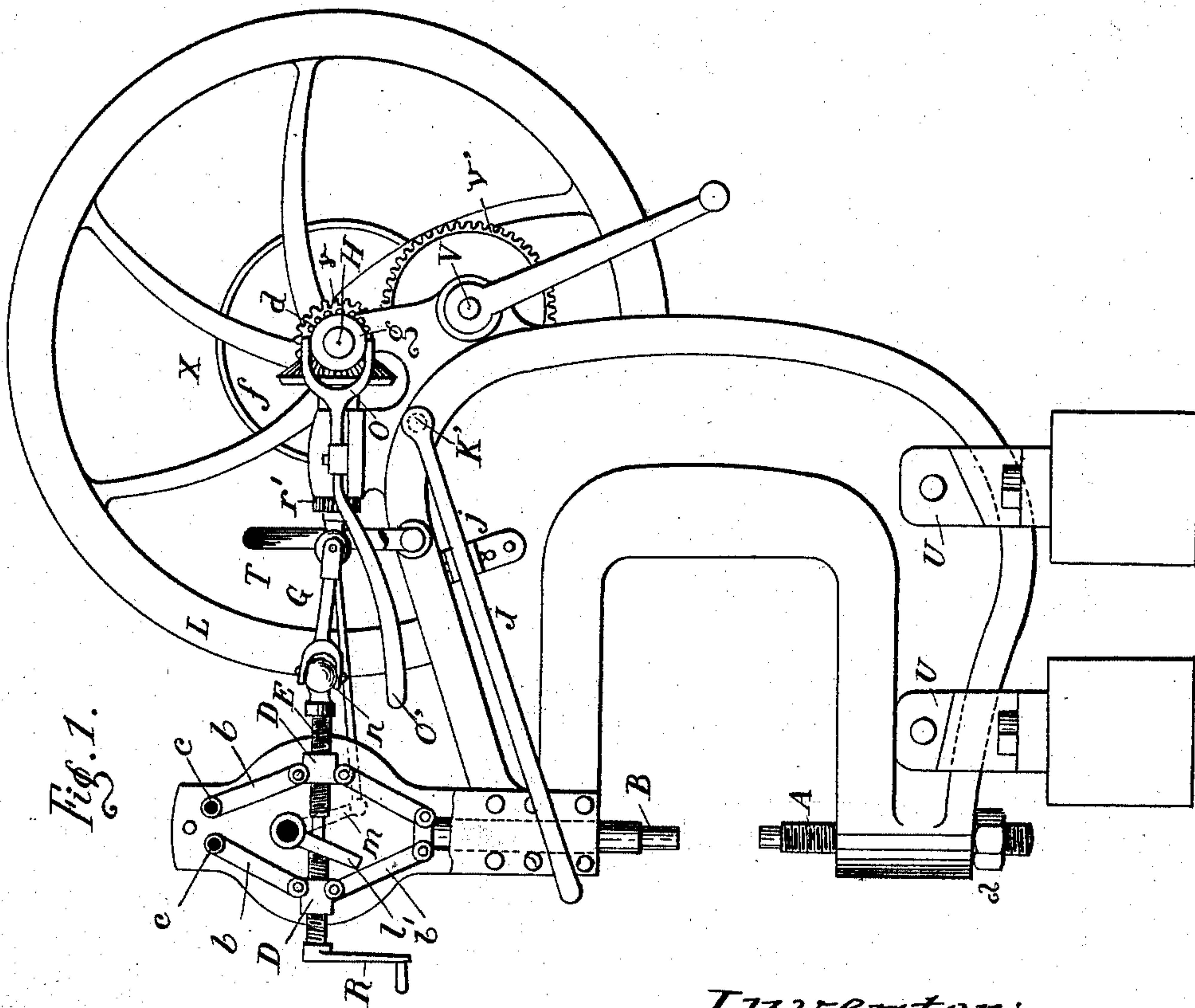
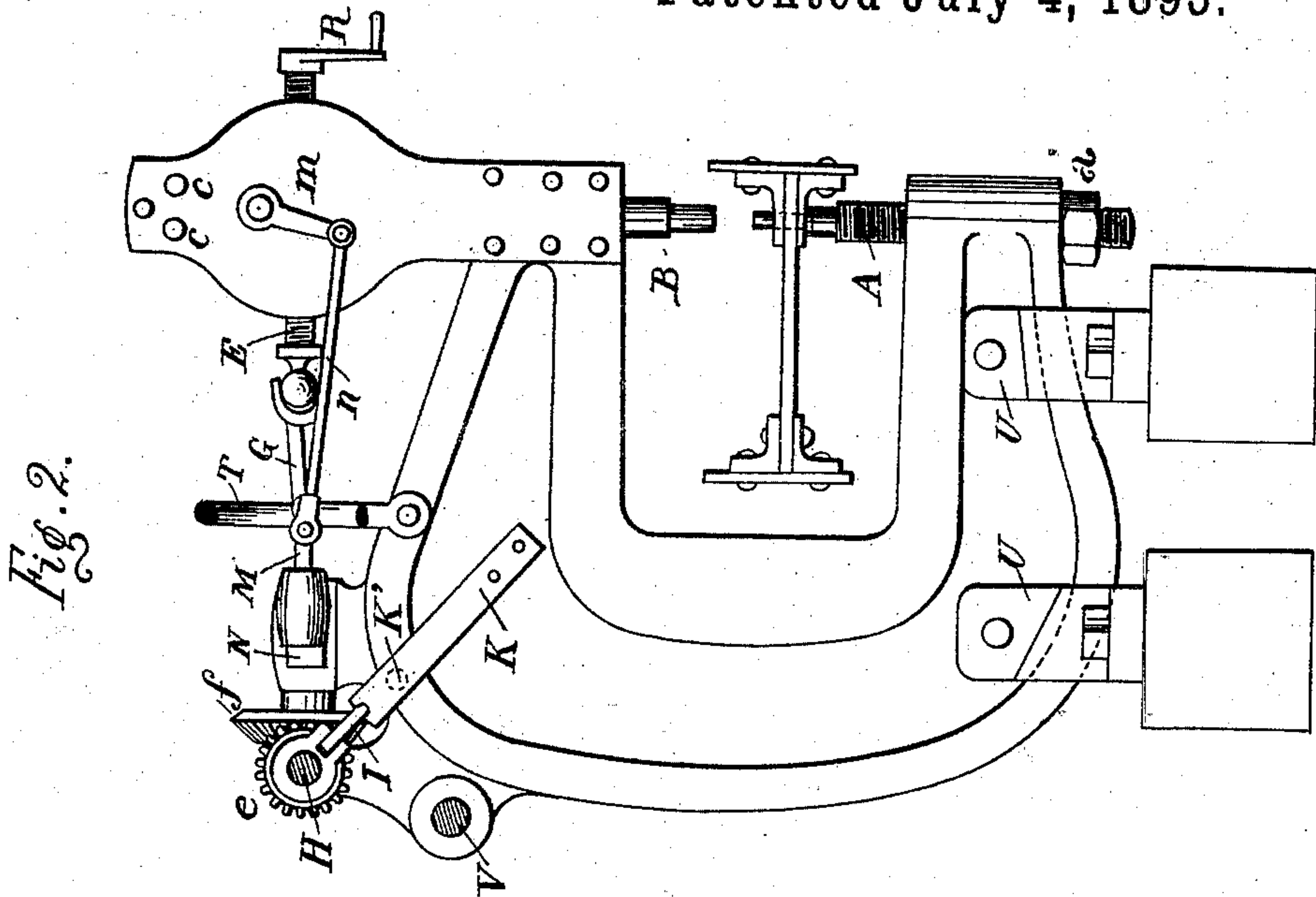
(No Model.)

2 Sheets—Sheet 1.

J. B. COURTET.
RIVETING MACHINE.

No. 500,755.

Patented July 4, 1893.



Witnesses:
C. B. Botton
E. H. Sturtevant

Inventor:
Jean Baptiste Courtet
By Richardson
his Attorneys.

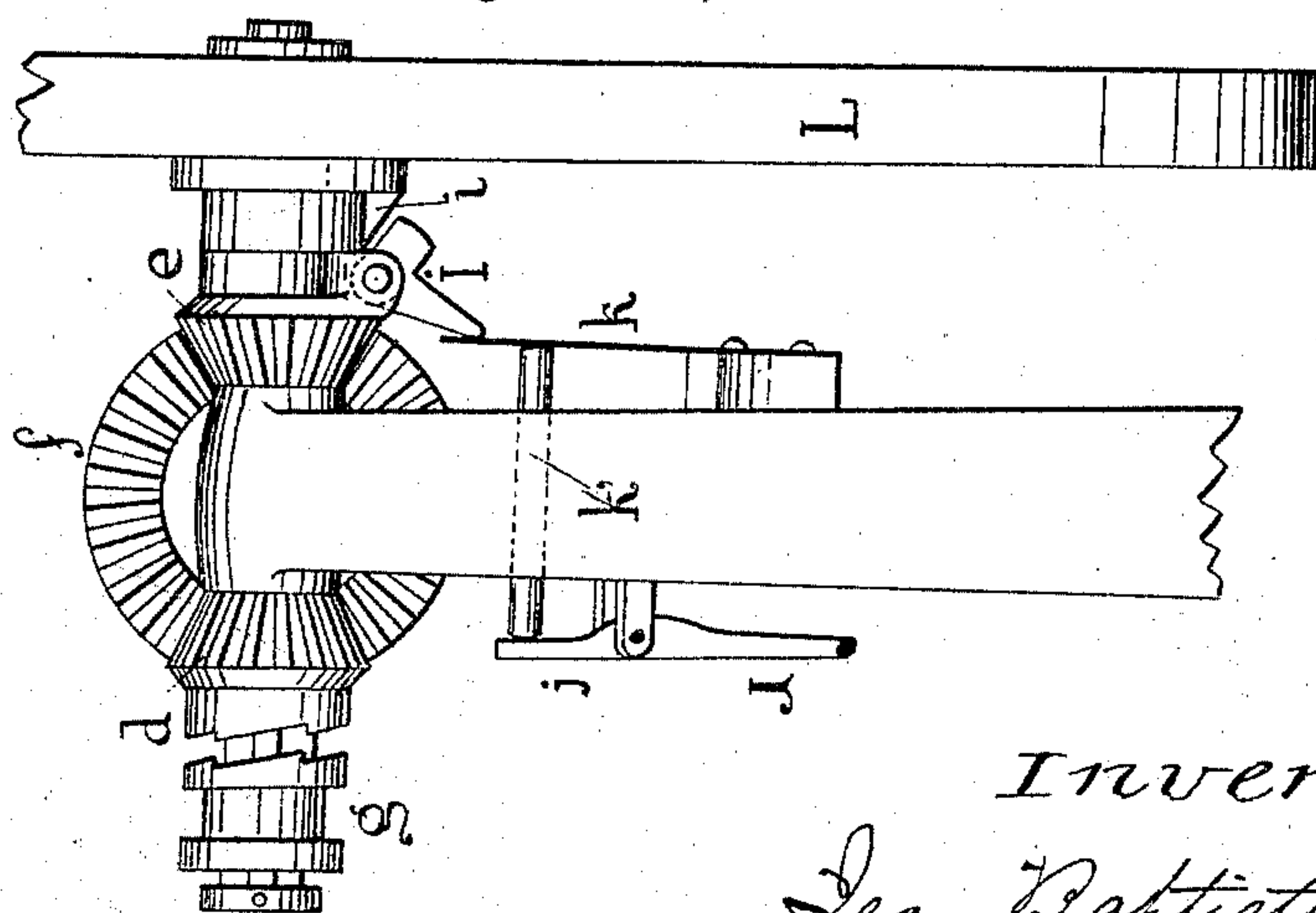
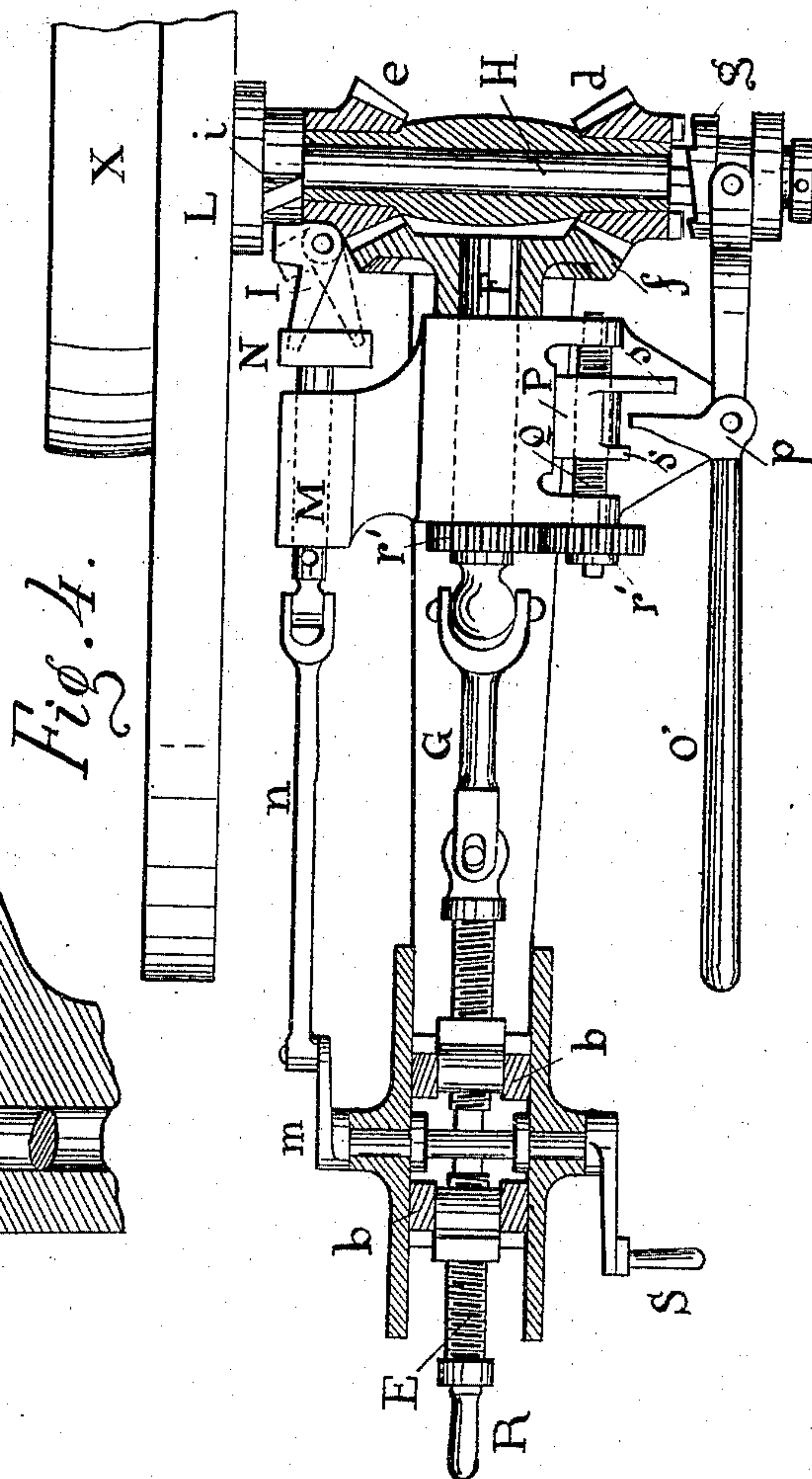
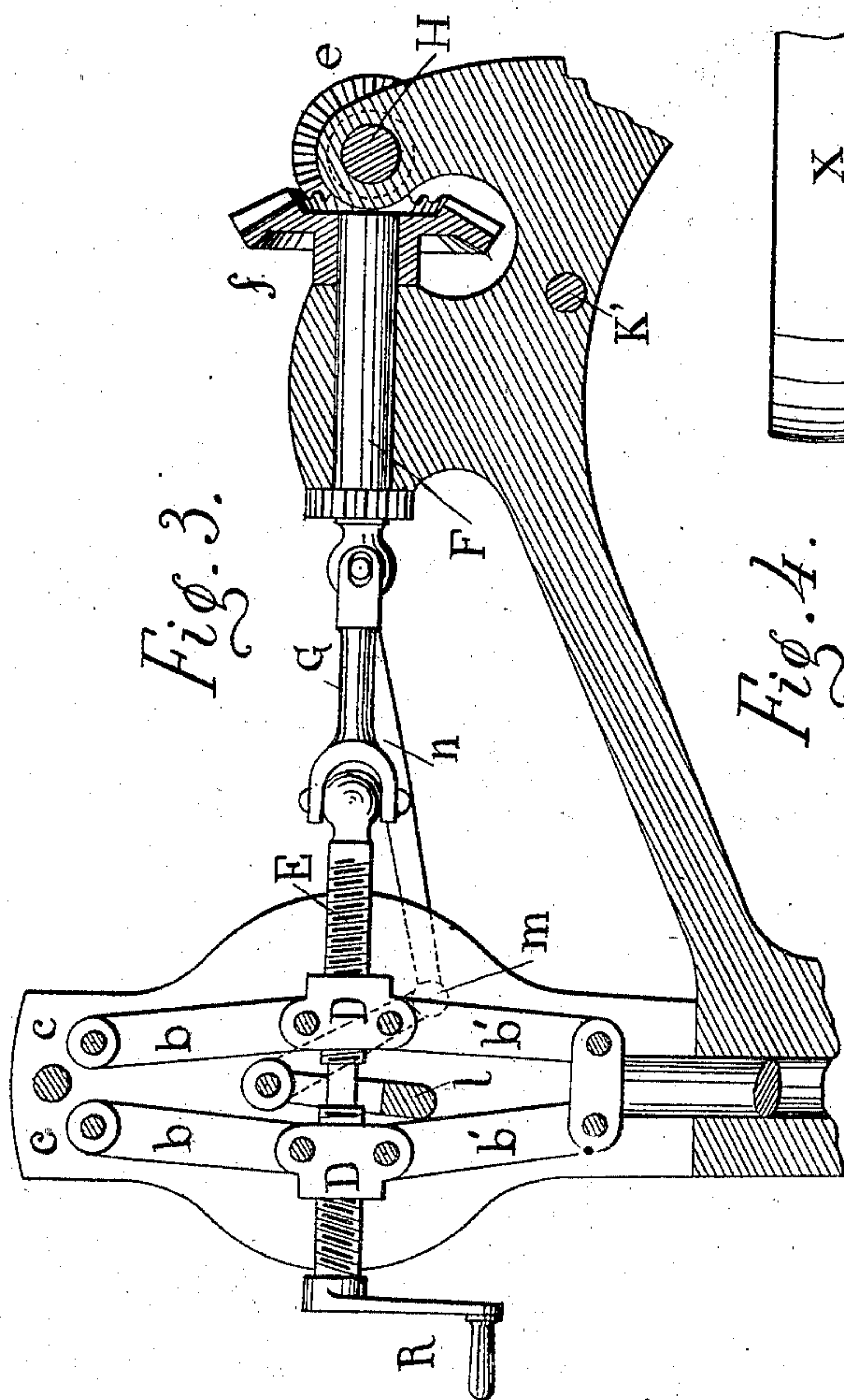
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2 Sheets—Sheet 2.

J. B. COURTET.
RIVETING MACHINE.

No. 500,755.

Patented July 4, 1893.



Witnesses:
E. B. Cotton
E. H. Sturtevant.

Inventor:
Jean Baptiste Courtet
By *Richardson & R*
his Attorneys.

UNITED STATES PATENT OFFICE.

JEAN BAPTISTE COURTET, OF ROMANS, FRANCE.

RIVETING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 500,755, dated July 4, 1893.

Application filed November 16, 1892. Serial No. 452,113. (No model.) Patented in France February 24, 1890, No. 203,970; in Belgium October 7, 1890, No. 92,230; in England October 8, 1890, No. 15,992; in Switzerland June 3, 1891, No. 3,625, and in Germany June 8, 1891, No. 61,252.

To all whom it may concern:

Be it known that I, JEAN BAPTISTE COURTET, a citizen of the French Republic, residing at Romans, France, have invented a new and useful Improvement in Riveting-Machines, of which the following is a specification.

The invention has been patented in France February 24, 1890, No. 203,970; in Belgium October 7, 1890, No. 92,230; in Great Britain October 8, 1890, No. 15,992; in Germany June 8, 1891, No. 61,252, and in Switzerland June 3, 1891, No. 3,625.

In the automatic riveting machine, the subject matter of my present application, the setter is pushed by toggle levers, the effect of which is that a rapid movement is obtained at the beginning of the riveting when the rivet is long and hot, and that the power increases gradually while the rivet is crushed and becomes cold; it is provided with automatic devices which raise the setter after the riveting is done and cause it to remain up until the operation is to be repeated. The annexed drawings show the whole of this machine, of which—

Figure 1, is a side view from the right side, and Fig. 2, a side view from the left side. Fig. 3, is a sectional view of part of the mechanism; Fig. 4, a plan view partly in section, and Fig. 5, a view taken from the rear of the same.

The apparatus consists of a frame in the shape of a C in the lower branch of which the fixed setter A, is supported, the height of which may be adjusted according to the requirements of the work by a nut *a*; the movable setter B, slides in the upper branch, guided by a toggle joint formed by four rods *b, b'* pivoted to the head of the setter and upon two upper gudgeons carried by a prolongation of the frame which has the shape of a cage. The joints of the rods, in the center, are formed by two nuts D, D, screw threaded reversely to each other and carried by a horizontal right and left screw E, which receives its motion from a broken joint G, of a horizontal shaft F, which revolves in the frame. Consequently it is only necessary to make the shaft F revolve in one direction or

in the other to bring the nuts D, D, together or to cause them to separate and so doing to lower or to raise the setter. In certain cases it will be enough to put upon the shaft F, a fly wheel with a handle and to turn it round either to the right or to the left, to crush the rivet or to raise the setter but for a regular and constant work I prefer to use automatic retracting means as will now be described.

In this device, which is shown in detail in Figs. 3, 4 and 5 the motion of the shaft F, is furnished by a second perpendicular shaft H, revolving in a socket transverse to the frame. Two bevel pinions *d* and *e*, turn freely upon the extremities of that socket both of which mesh with the wheel *f*, fixed upon the shaft F. The pinion at the left *e*, can be connected rigidly with the shaft H, by a latch pivoted upon the pinion, one branch of which meets a lug *i*, fixed upon the hub of the fly wheel L, which is fixed upon the shaft H. The right hand pinion *d*, can also be rigidly connected with the shaft H, by a toothed coupling box *g*, which slides upon the latter. The coupling box *g*, is guided by a fork *o*, which carries one arm *p*, which is encountered at the required time by the projections S, S' of a nut P, traveling, without revolving, over a screw Q, operated by the shaft F, and the cog wheels *r, r'*. The result of this arrangement is that the fly wheel L, which turns always in the same direction, drives the shaft F, now in one direction then in the other, according to which pinion *d* or *e*, is fixed to the shaft H. While at rest, when the latch I, is turned upward in the position marked by dotted lines in Fig. 4, and when the toothed coupling box *g*, is disengaged, the fly wheel turns without causing any motion; in order to operate the machine after the rivet has been put in its place, the workman presses upon the lever J, pivoted at the point *j*, on the right side of the frame, (Figs. 1 and 5.) This lever acts upon a spring K, (Figs. 2 and 5) by means of a rod K'. The spring presses upon the latch I, and causes it to catch in the lug *i*, of the fly wheel. The pinion *e*, then revolves with the fly wheel and operates the wheel *f*, in the direction required to bring the nuts D, together and to lower the setter.

Between the rods b, b' , a pallet l , is pivoted to the frame and is connected with an exterior arm m , which is connected in turn by a rod, to a horizontal rod M , finishing in an incline plane N , which can advance so as to meet the end of the latch I , in its rotary motion. When the rivet is sufficiently crushed the rods by coming together turn the pallet l , and through the described connections push back the inclined plane N , toward the latch. The end of the latter engaging with the inclined plane is turned into the dotted position and the pinion e , becoming free, the downward motion of the setter ceases. At the same time the screw Q , operated from the shaft F , has made the nut P , advance until the projections S , having met the arm p , of the fork o , has pushed the latter back and has caused the coupling box g , to engage in pinion d . Thus at the moment when pinion e , becomes free the pinion d , is clutched to and turns with the shaft H , and gives to the shaft F , a motion in the opposite direction to the former which causes the rods b , to separate and to raise the setter; the screw Q , which is also carried along in this motion pushes back the nut P , the projection S' of which acts upon the arm p , and disengages the pinion d , at the moment when the setter has reached the highest point of its course. The two pinions d, e , having thus been made free, the setter remains immovable in order to allow the placing of another rivet; then the workman sets the machine in motion again and the described operations are repeated.

In order that the latch I be actuated by the spring K , when the motion commences, it is necessary that it be always in the same position in front of that spring; for this purpose the shaft F , carries at the fore part of the machine, a handle R , the position of which is in a certain relation with that of the pinion e , and with that of the latch I ; it will thus be sufficient to put that handle in a certain known position, down, for instance, before pressing upon the lever J , to locate the latch I , in front of the spring which must push it back. The handle R , is also used for working the setter by hand, for the regulating of the thickness which must be riveted. Another handle S , upon the axis of the pallet l , serves for the stopping of the machine in case of an accident before the setter finishes its course. This handle operates the inclined plane N , through the pallet shaft and the connection m, n , which stops the motion by disengaging the pinion e . If it is desired at this time to make the setter go upward it will be only necessary to couple the pinion d , with the shaft by operating the fork o , by hand, which has been prolonged by a handle o' .

The machine is provided with a strap T , which serves to hang it at the place where the riveting must be done; it can also be used as a fixed machine by bolting it upon beams, by means of the bottom pieces U, U , Figs. 1 and 2.

When the riveting is done by hand, a shaft V , will have to be added, which carries a handle and actuates the fly wheel by means of cog wheels v, v' . When it is worked by a driving belt the latter will run over a pulley, fixed to the fly wheel.

I claim—

1. In combination, the setter B , the toggle levers connected therewith and having nuts D , between their adjacent ends adapted to rise and fall with the movements of said levers, the screw shaft E , journaled in said nuts to rise and fall therewith and the driving shaft for the screw shaft having a universal coupling connection therewith, substantially as described.

2. In combination, the movable setter, the toggle levers for operating the same, the pallet arranged between the toggle levers to be operated by the closing movement thereof, the driving mechanism for operating the toggle levers including a clutch and the connections from the pallet to the clutch, substantially as described.

3. In combination, the movable setter, the means for operating the same including the clutch, a pallet arranged to be operated by the forward movement of the parts and connections between said pallet and clutch, substantially as described.

4. In combination, the movable setter, the means for operating the same including a pinion e , and a latch I , to engage the revolving part, the incline N , to engage the latch, for disengaging the same, the pallet arranged to be operated by the forward movement of the driving mechanism and the connections from the said pallet to the incline, substantially as described.

5. In combination, the movable setter the means for operating the same including a detachable clutch, a pallet to be operated by the forward movement of the parts and connections between said pallet and clutch, a second clutch for reversing the movement of the driving mechanism, and means for operating the same consisting of the lever p , the nut P , having studs to engage the opposite sides of the lever, the screw Q , and the gearing for operating the same, substantially as described.

6. In combination, the movable setter, the means for operating the same including a clutch and mechanism for disengaging said clutch automatically when the setter completes its downward movement a second clutch g , the lever for operating the same, the nut P , for operating the lever in both directions, the screw for operating the clutch lever and the gearing for operating the screw, substantially as described.

7. In combination, the movable setter, the toggle levers for moving the same, the screw engaging said toggle levers, the flexible shaft for the screw, the means for stopping the machine as the setter completes its stroke downward and the reversing clutch with operating

means therefor comprising the clutch lever *p*, the nut *P*, the screw for operating the same and the gearing between said screw and the flexible shafting, substantially as described.

5 8. In combination, the movable setter, the toggle levers for the same, the screw and flexible shafting for operating the toggle levers the shaft *H*, extending at right angle to the flexible shafting, the pinions *e*, *d*, loose on
10 said shaft, the gear on the end of the flexible shafting engaging said pinions, the clutch device for the pinion *e*, the pallet arranged to be operated by the toggle levers, the connections from said pallet to the clutch device, the
15 clutch for the pinion *d*, the operating lever therefor, the nut and screw *Q*, for operating the said lever and the gearing for operating

the screw extending to the flexible shaft, substantially as described.

9. In combination, the movable setter, the 20 toggle levers connected therewith, the flexible screw shafting for operating the said toggles, the clutch for operating the flexible shafting, the rod *k'* and lever for operating the said clutch and the crank for turning the flexible 25 shafting to bring the clutch opposite the operating rod, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

JEAN BAPTISTE COURTET.

Witnesses:

YRIN RABILLOUX,
GASTON JEANNIAUX.