

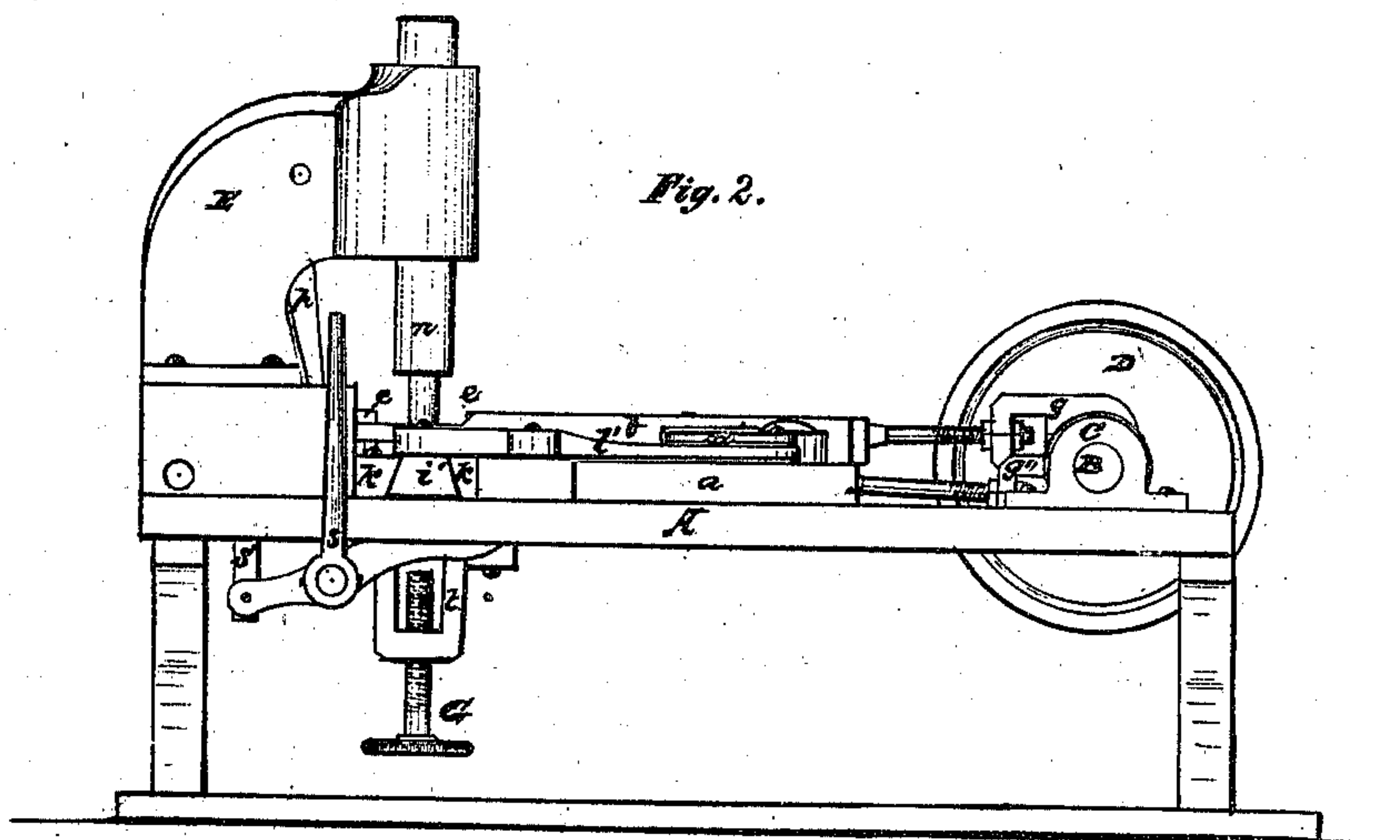
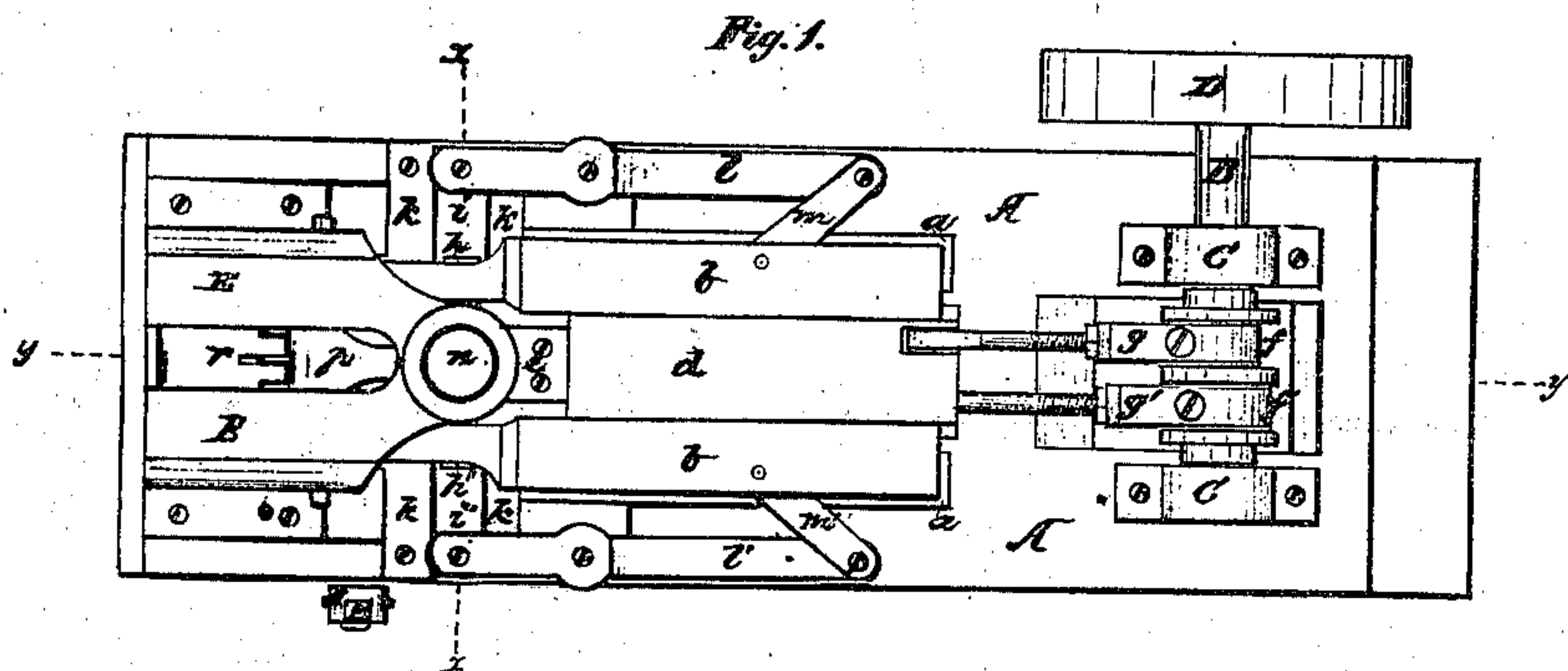
*J. R. Abbe,*

*2. Sheets. Sheet. 1.*

*Bolt Machine.*

*No. 100,581.*

*Patented Mar. 8. 1870.*



*Witnesses.*

*Inventor.*

*W. Morris Smith*  
*H. J. Abbot*

*John R. Abbe*  
*by Attorneys*  
*Brown, Coombs & Co*

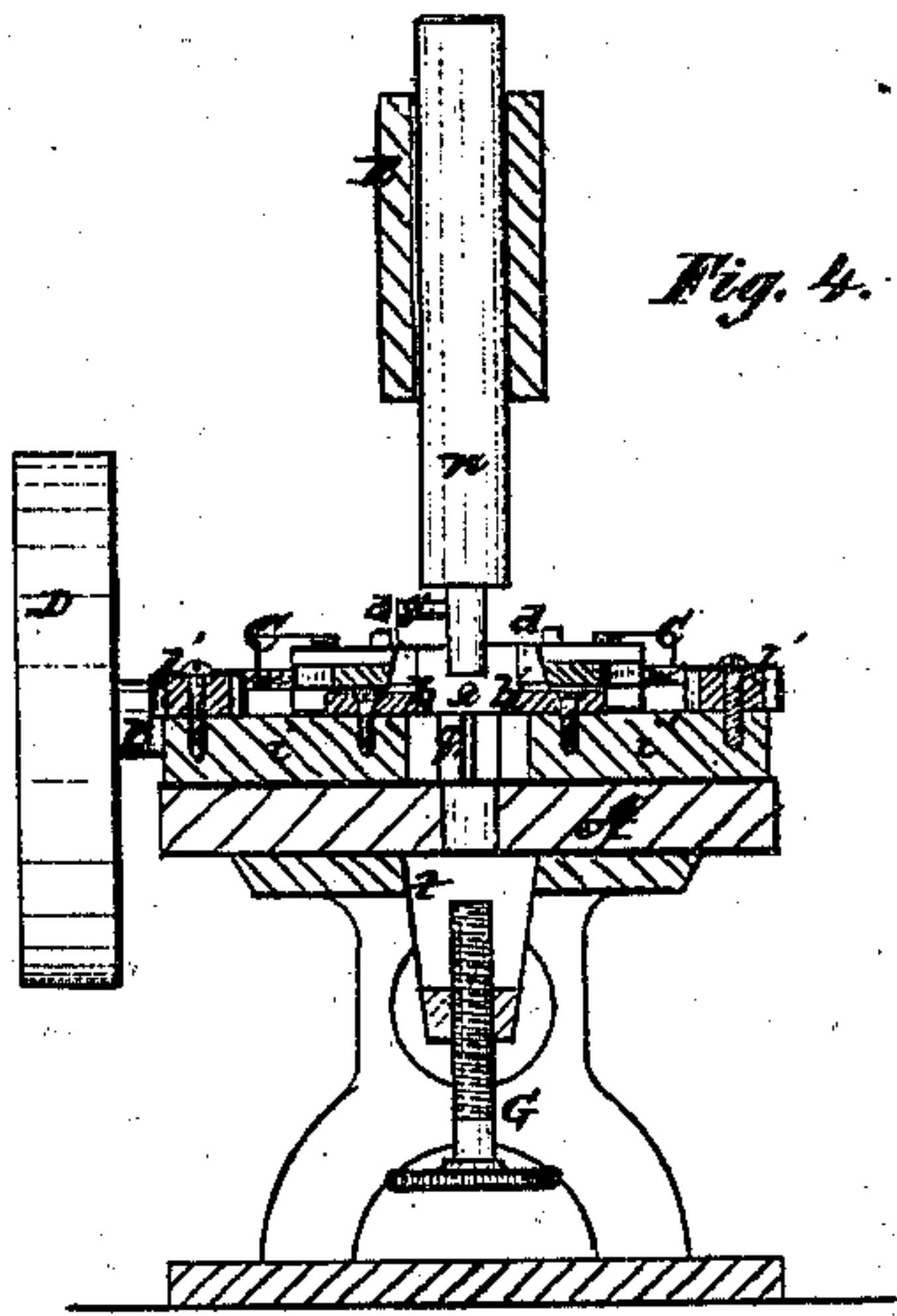
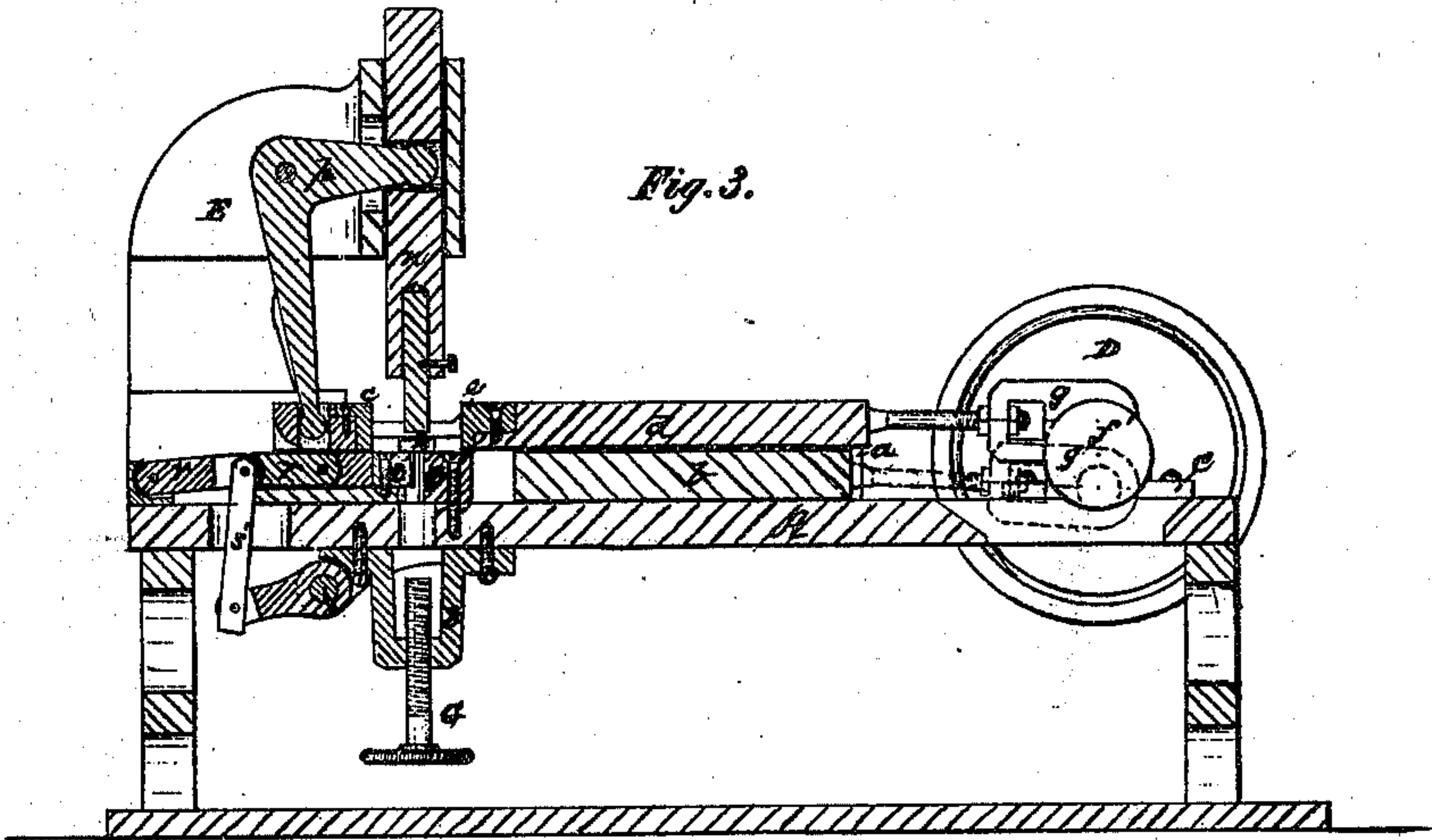
J. R. Abbe,

2. Sheets, Sheet 2.

## *Bolt Machine.*

No. 100,581.

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*Witnesses.*

M. Morris Smith  
H. J. Alron

*Inventör.*

John R. Abbe  
by Attorney  
Brown, Coombs



# UNITED STATES PATENT OFFICE.

JOHN R. ABBE, OF PROVIDENCE, RHODE ISLAND.

## IMPROVED BOLT-MACHINE.

Specification forming part of Letters Patent No. **100,581**, dated March 8, 1870; antedated March 1, 1870.

*To all whom it may concern:*

Be it known that I, JOHN R. ABBE, of the city and county of Providence, in the State of Rhode Island, have invented an Improved Bolt-Machine, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure 1 represents a plan or top view of a machine constructed according to my invention; Fig. 2, a side elevation of the same; Fig. 3, a vertical longitudinal section taken as indicated by the line *y y* on Fig. 1. Fig. 4 is a vertical transverse section on the line *x x* on Fig. 1.

The same letters appearing on the several figures indicate corresponding parts.

The object of my invention is to produce a machine for heading bolts, that shall embody simplicity and cheapness of construction and positive action in all its parts; and it consists in a combination of sliding anvils or squeezers, operating simultaneously, in pairs, to form the edges of the head, and are upset to form its upper side; also, in a novel arrangement of mechanism for operating said anvils.

Referring to the drawings, A represents the frame or bed of the machine, carrying at its one end a double-crank shaft, B, mounted in suitable pillow-blocks, C; and arranged transversely of the bed. On the outer end of this shaft is a band-wheel or other gear, D, through which the machine is operated by steam or other power. This band-wheel may, if desired, be connected with the shaft by a clutch, to facilitate the stopping and starting of the machine.

On the central portion of the bed, longitudinally arranged, are guides *a*, forming a dovetail groove, in which is fitted the carrier *b* of the anvil *c*, so as to be capable of sliding therein. This carrier extends upward about double the height of the guides *a*, and has formed longitudinally in its upper side a dovetail groove, in which the carrier *d* of the anvil *e* is fitted to slide. These two carriers *b* and *d* are connected with and operated by the double crank *f f'* by adjustable pitmen *g g'*.

The cranks, being on opposite sides of the axis of the shaft B, will, when rotated, cause the carriers to move in opposite directions, and consequently their respective anvils or

dies *c* and *e* will alternately approach and recede from each other, and thus form the two opposite edges of the head, the other two edges being formed by dies *h h'*, attached to carriers *i i'*, which have a sliding motion in guides *k* toward and from each other, transversely of the bed, which motion is communicated by levers *l*, connected by links *m* with the two opposite sides of the carrier *b*, so that the four dies forming the four sides or edges of the bolt-head are made to approach and recede from each other simultaneously, and as they recede the upset *n* is caused to descend, by the action of the carrier *b*, through the elbow-lever *p*, which, together with the upset, are supported in a suitable frame, E, erected on the bed A at the opposite end from the crank-shaft B.

*q* is a fixed but adjustable die, forming, with the die *q'*, attached to the toggle-lever *r*, a gripper for holding the rod while the head is being formed. This toggle may be operated to hold or release the bolt, either by the hand-lever *s* or a foot-lever, through its link-connection *s'*.

A screw, G, is supported in a bracket, *v*, on the under side of the bed, vertically under the upset die *n*, which may be adjusted up or down to regulate the length of the bolt to be headed.

It will be obvious that the dies or anvils *c e h h'* may be detachably connected with their respective carriers, so as to admit of their being changed for others of different forms. For instance, if it were desired to make a head of hexagonal form, the flat-faced dies *h h'* must be removed, to give place to others of a V shape, which, together with the straight dies *c e*, would give the form required.

What I claim, and desire to secure by Letters Patent, is—

1. The combination of the longitudinal and transverse anvil or die carriers *b d i i'*, arranged and operating substantially as shown and described.

2. The upset *n*, in combination with the anvils *c e h h'*, when arranged and operated in the manner set forth.

3. The arrangement of the levers *l l'*, links *m m*, die-carrier *b*, and transverse carriers *i i'*, substantially as described.

Witnesses: JOHN R. ABBE.

FRANCIS B. PERRY,  
GEORGE H. BURNHAM.