

(No Model.)

2 Sheets—Sheet 1.

W. TAYLOR.

GRIPPING DIE FOR WIRE NAIL MACHINES.

No. 511,174.

Patented Dec. 19, 1893.

Fig. 1.

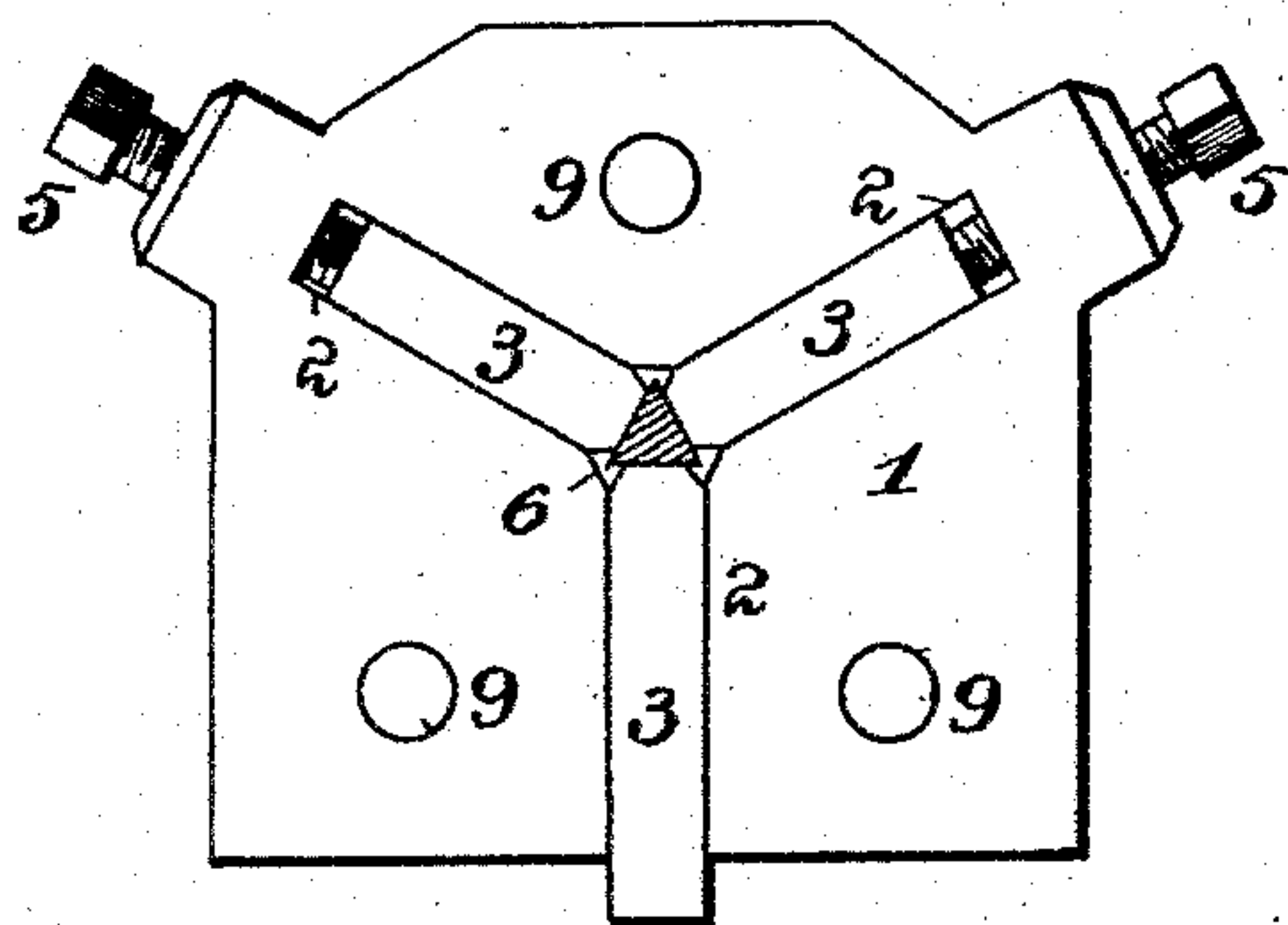


Fig. 2.

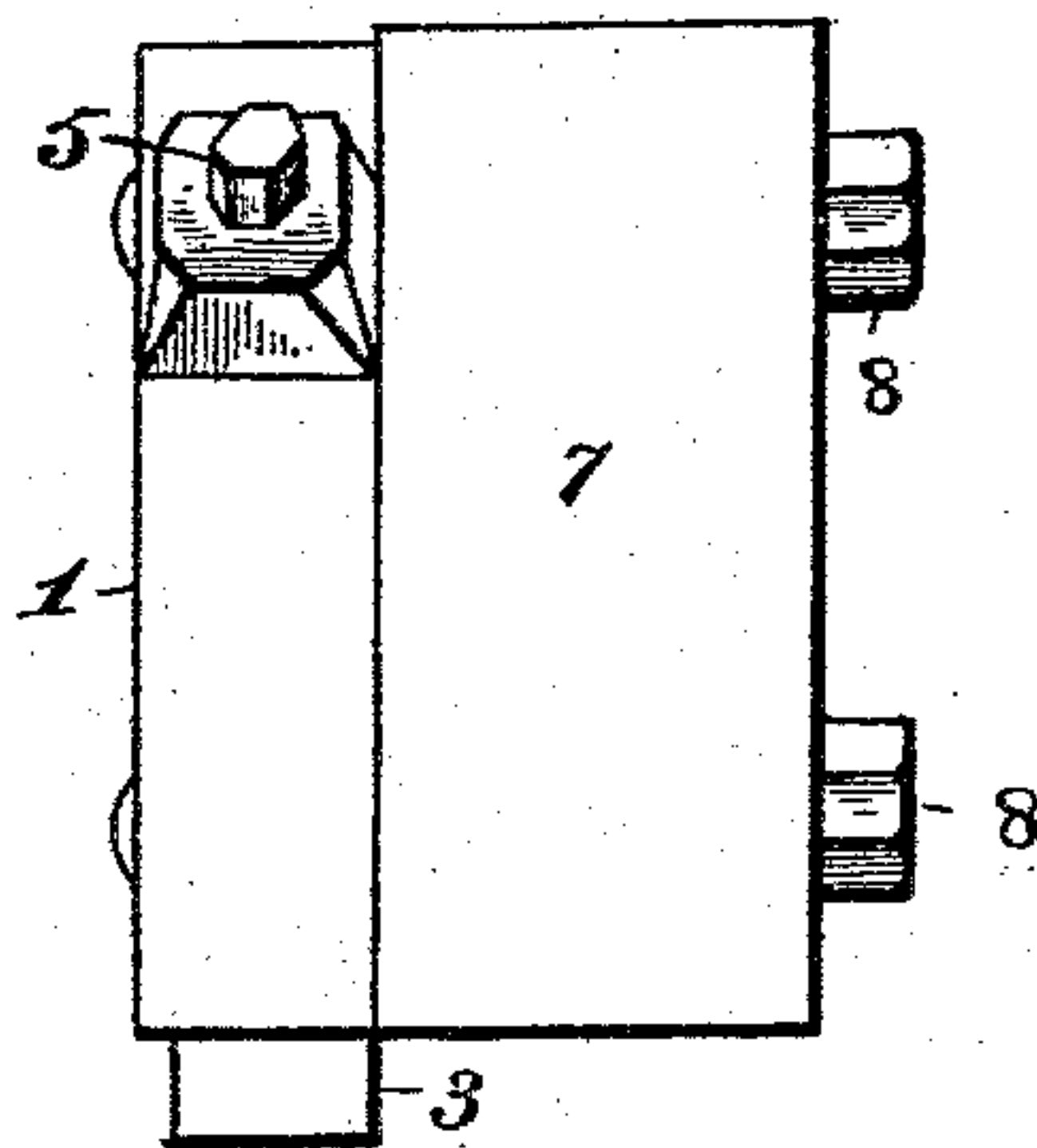


Fig. 4.

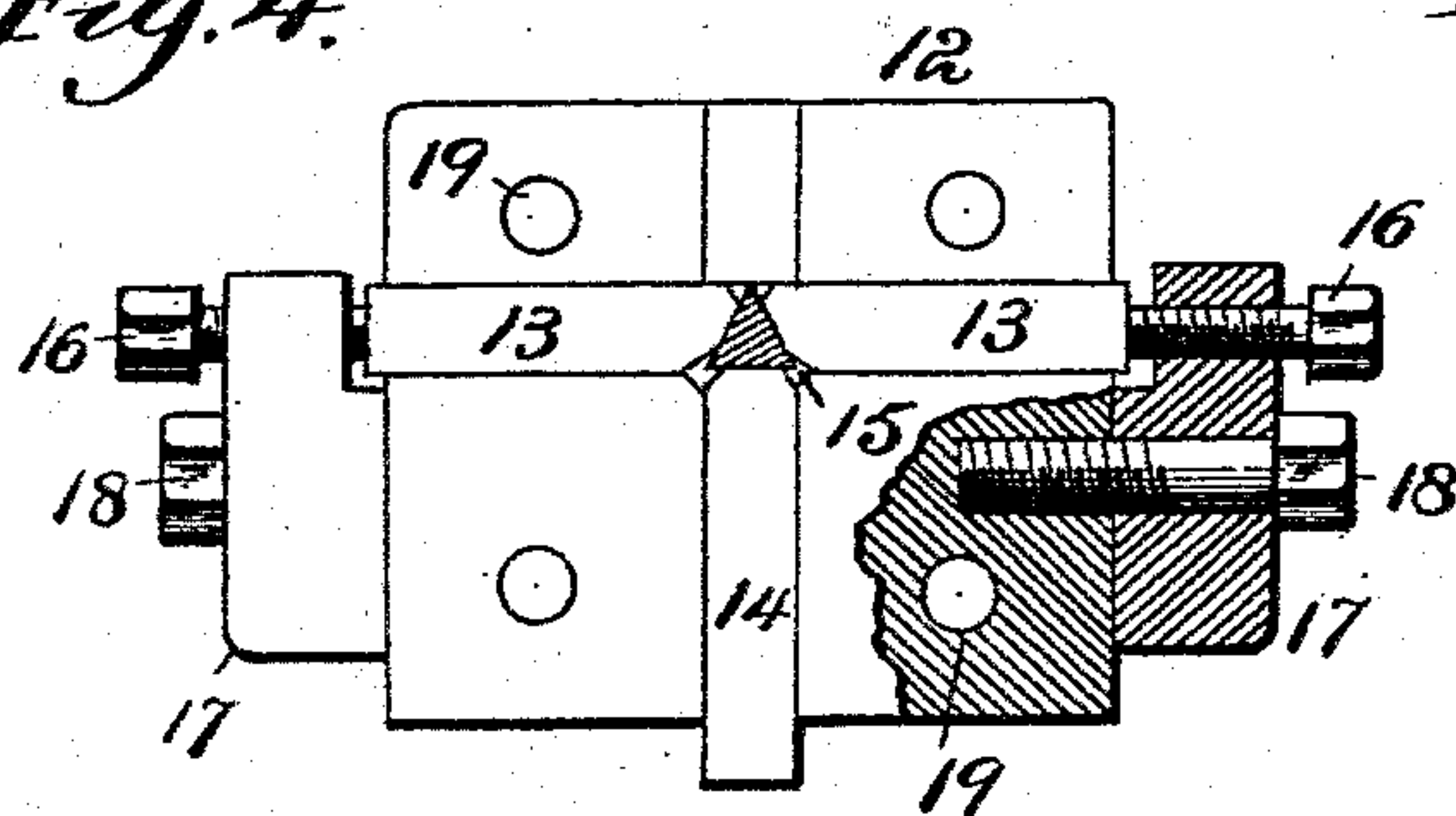


Fig. 3.

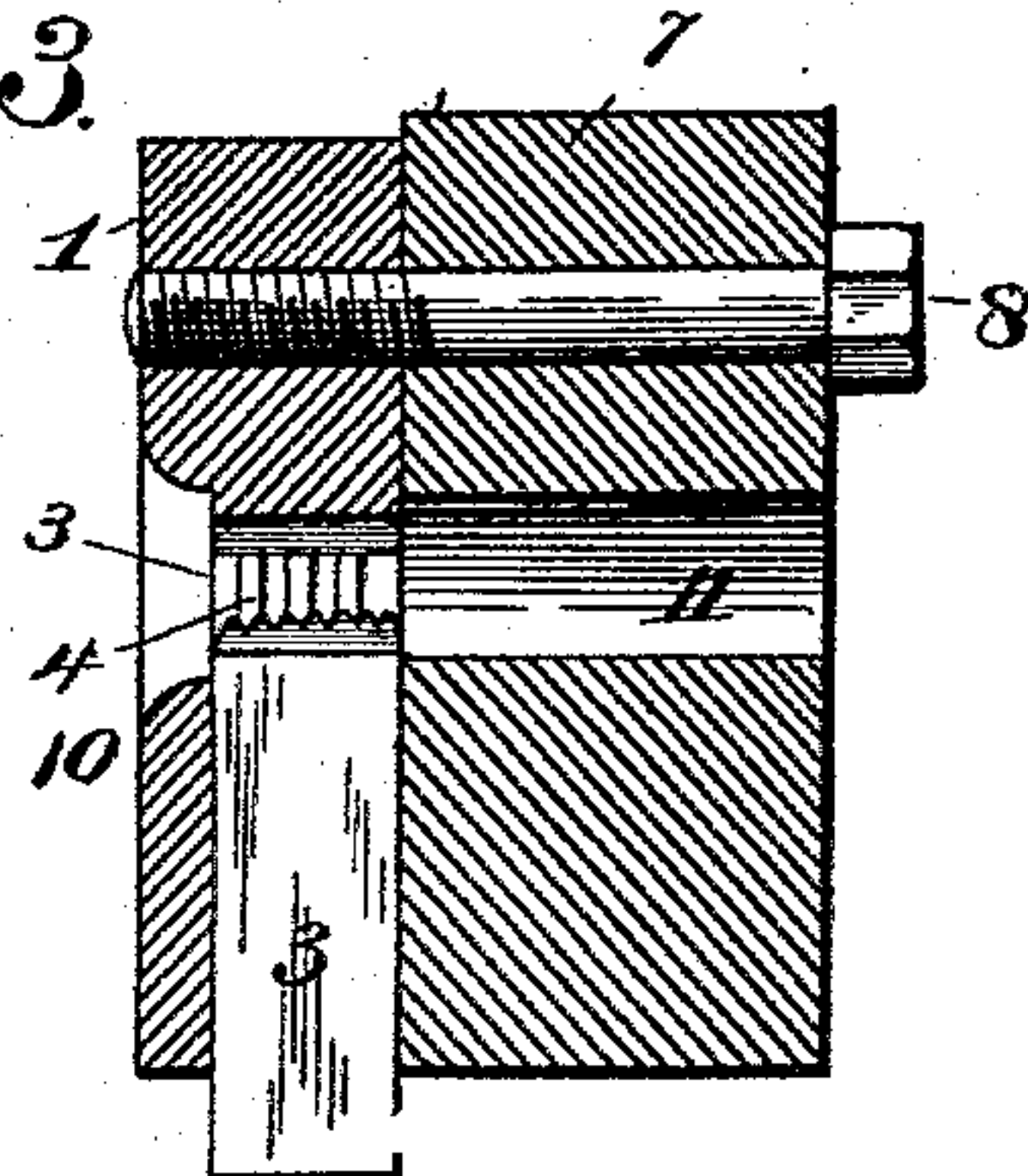


Fig. 5.

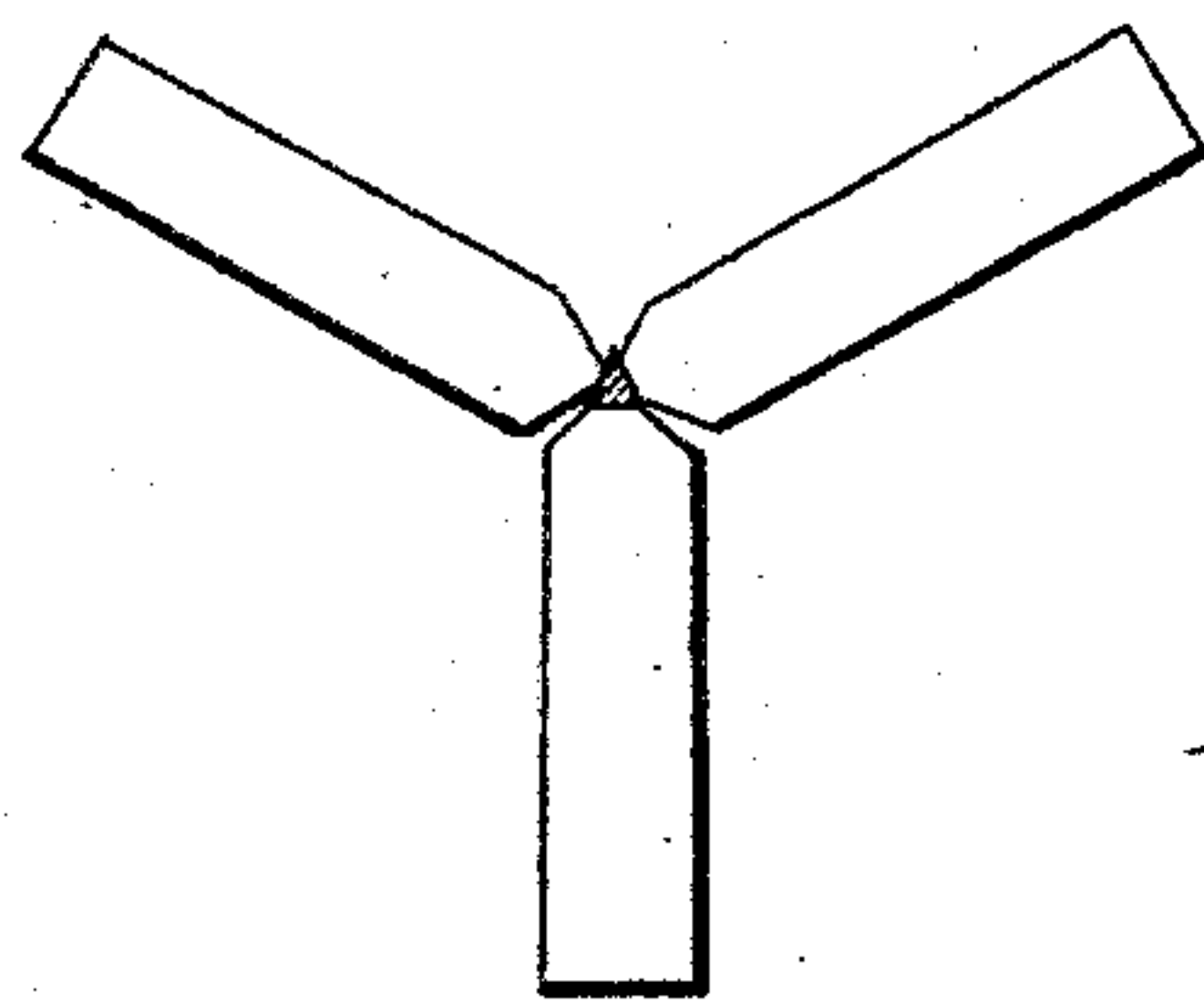


Fig. 7.

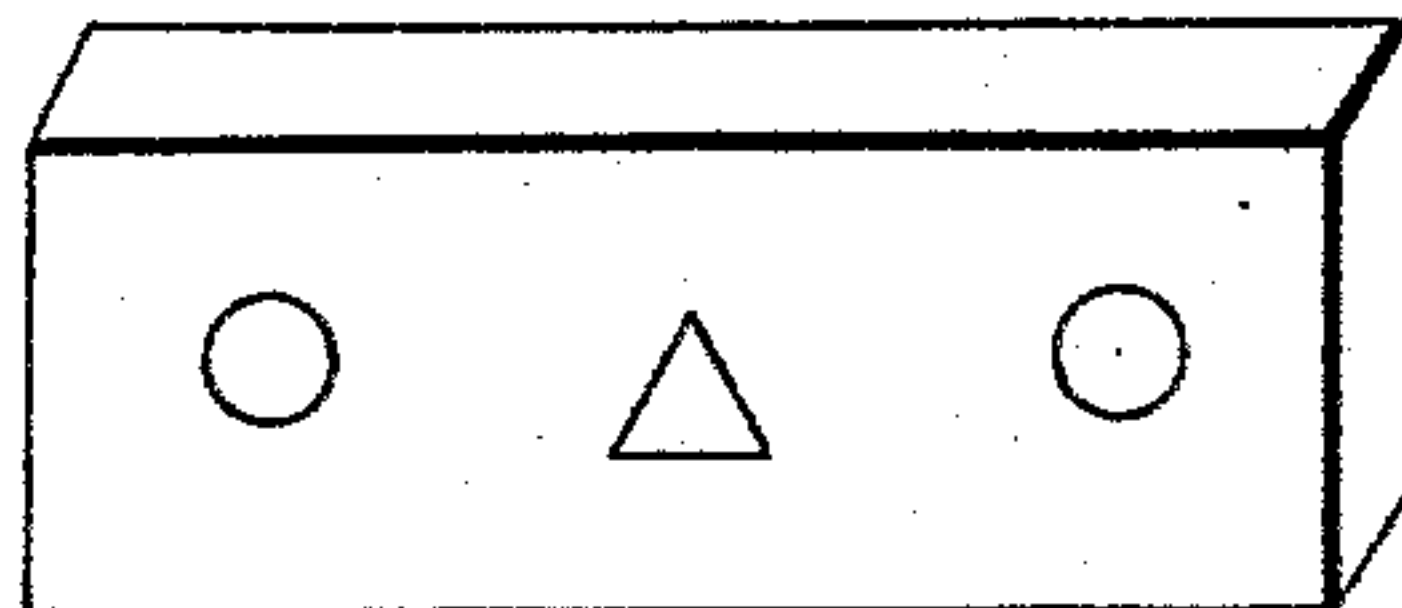
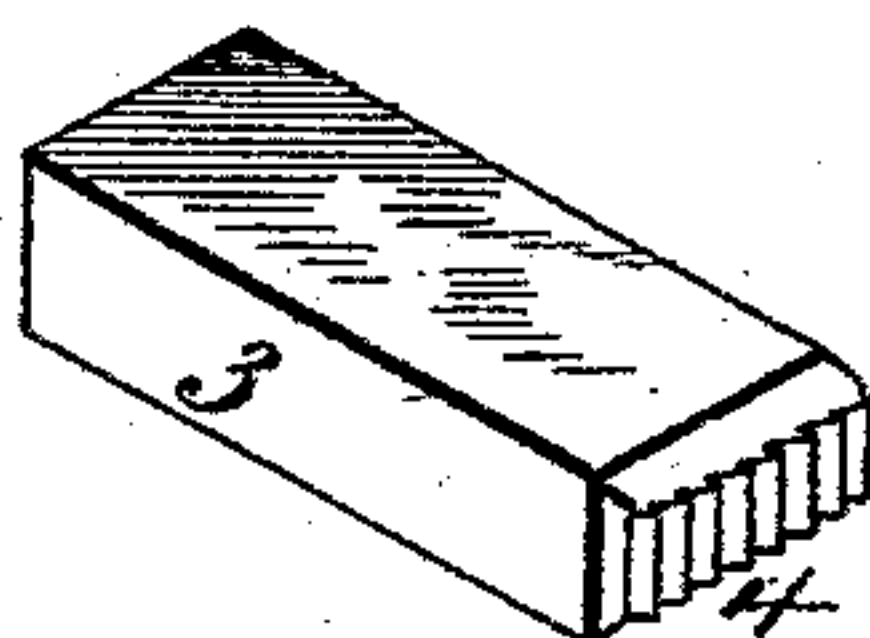


Fig. 6.



Witnesses:

J. B. McGinnis

M. B. May

Inventor.

William Taylor  
by  
Doubleday & Phillips  
attys.

(No Model.)

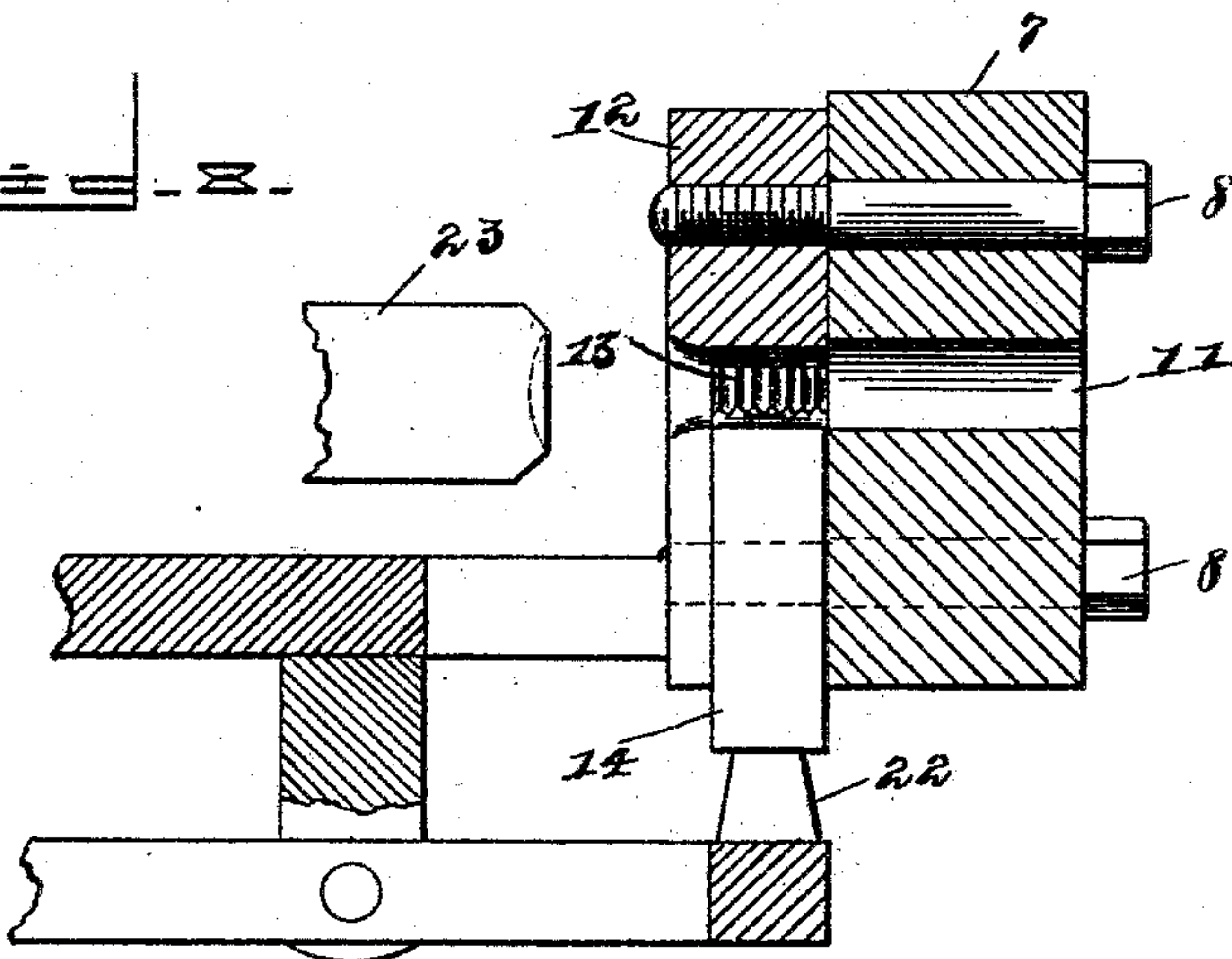
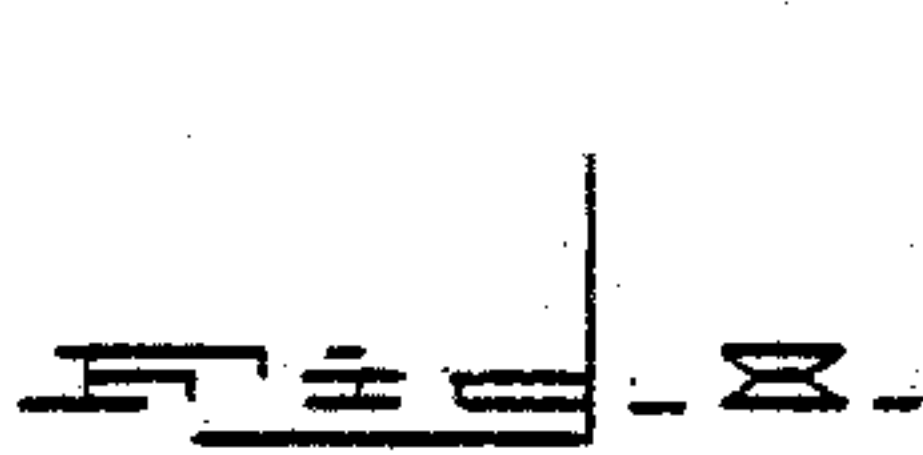
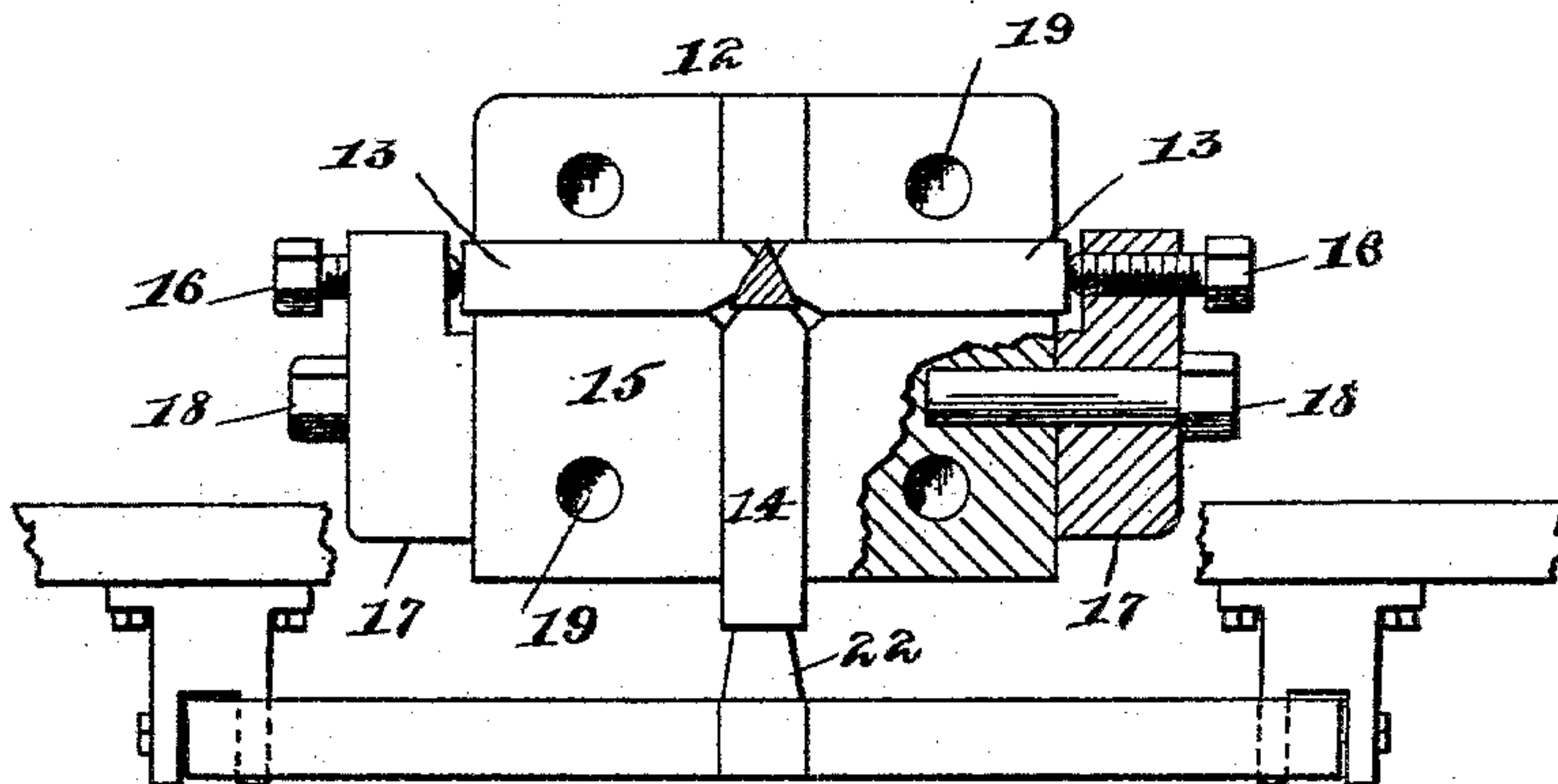
2 Sheets—Sheet 2.

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WITNESSES  
C. W. La Porte.

M. B. May

INVENTOR  
William Taylor  
By Doubleday & Bliss  
Attorneys



# UNITED STATES PATENT OFFICE.

WILLIAM TAYLOR, OF ALLEGHENY, PENNSYLVANIA.

## GRIPPING-DIE FOR WIRE-NAIL MACHINES.

SPECIFICATION forming part of Letters Patent No. 511,174, dated December 19, 1893.

Application filed June 24, 1892. Serial No. 437,909. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM TAYLOR, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Gripping-Dies for Wire-Nail Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 represents a rear or back view of a die box containing three adjustable and detachable gripping dies arranged at an angle of sixty degrees to each other; Fig. 2, an edge view of said die box properly secured to an immovable and substantial portion of a nail machine; Fig. 3, a transverse vertical and central section of the same; Fig. 4, a rear or back view of a die box containing these adjustable dies arranged at right angles to each other, together with their means of adjustment. Fig. 5 represents an edge view of these gripping dies detached from their supporting box; Fig. 6, an enlarged perspective view of one of said dies; Fig. 7, an enlarged view of a solid die provided with a triangular hole through the central part thereof, and with round holes, whereby said solid die may be bolted to a nail machine. Fig. 8 is a section showing the relation of the gripping lever to the dies; and Fig. 9 is a section at right angles to that in Fig. 8.

In wire machines heretofore in use, the gripping dies consisted of two parts arranged on the same plane and operating in the same direction, and one or both of such dies were grooved conformably to the size and shape of the wire, requiring a complete change of dies for each wire of different size and shape. That construction necessitated not only a stoppage of the nail machine, but a detachment of the die box, a removal of the old dies, a substitution of different dies, and a replacement of the die box, all of which consumed much valuable time and labor.

Another objection to grooved dies is that the grooves gradually become larger and misshapen by constant rubbing of the wire and soon fail to properly grip and hold it during the nail heading process. There is also a disadvantage in the use of dies constructed with angular grooves, for the corners of such dies soon become filled and rounded with accumu-

lated scale or other hard remaining matter that mars the wire. Consequently the nails have not that nice sharp angularity of edge and finished appearance as is at present required by the trade.

The object of my invention is to provide wire nail machines with gripping dies that admit of being easily adjusted to serve and firmly hold several different sizes of wire with equal force, which dies are especially constructed and adapted to grip and hold triangular wires without mutilation of or interference with the corners or edges thereof, thus enabling the nail to retain all the smoothness and sharpness of outline possessed by its initial wire. To that end I prepare a suitable die box 1 having cut therein the deep parallel sided grooves 2 arranged at an angle of sixty degrees to each other, all meeting and terminating in a hole extending transversely through the center of the die box. Within each groove 2 is placed and nicely fitted a separate die 3 consisting of an oblong rectangular block of hardened steel having its approximate ends provided with a series of small serrations or nicks 4. The two upper dies are severally adjusted toward and from each other and the nearest end of the third die by means of suitable screws properly applied for the purpose of regulating the position of such dies with respect to a triangular wire 6 they are intended to hold. The vertical die is larger than its companion its lower end being below and outside the die box, so that it may be connected and operated within short range by means of a lever on a nail machine. The adjacent ends of the several dies have their corners beveled or taken off, making the faces comparatively narrow, so that when the dies grip a triangular wire they only operate against its three plain sides, permitting its corners or acute edges to project outward in the spaces between the beveled portions of the dies, whereby the sharp corners of the wire avoid compression and are thus preserved in their original condition. The die box 1 with its complement of dies is firmly secured to the thrust block 7 of a nail machine by means of suitable screws 8 that pass through the same and requisite holes 9 in said die box. A recess 10 formed in the face of the latter exposes the inner ends of the dies and per-



mits a properly constructed heading ram to stave a head on the projecting end of a wire caught between them. The small serrations or teeth 4 in the contiguous ends of the dies very materially assist in holding the wire and prevent its being driven back by the force or impact of the heading ram. As the wire is intermittently fed through the hole 11 in the thrust block 7 and onward between the dies, it is seized at the proper moment by the upward closing movement of the lower die, and retained by a powerful grip until a head has been formed on the wire by any ordinary heading punch, as is indicated at 23, Fig. 8. The lower die will then recede permitting another advance of the wire to be headed, pointed, and severed from its initial stock after the manner peculiar to all wire nail machines.

Dies arranged at an angle of sixty degrees, to successfully grip small wire should have their operative ends beveled as shown in the drawing Fig. 5.

Although I have described a die box with dies therein, that work well, I prefer the arrangement illustrated by the drawing Fig. 4 which represents a die box 12 containing two dies 13 that occupy the same horizontal plane, and another or third die 14 which is arranged at right angles or perpendicular thereto. The two horizontal dies 13 are provided with oblique inner ends, and the vertical die 14 has a right angled face, the three together conforming to the shape of a triangular wire 15 inserted between them and on which they are intended to operate substantially in the same manner as those first hereinbefore described. The vertical die 14 is moved up and down to grasp and release the wire 15 at proper times by means of an ordinary gripping lever 22, such, for instance, as is shown in Patent No. 355,631, dated January 4, 1887, and while operating, the horizontal dies 13 remain stationary, but are severally adjustable, each by means of a screw 16 supported in a substantial bracket 17 detachably secured to the die box 12 by a strong bolt 18 in such manner as will permit the bracket and adjusting screws 16 to be turned aside exposing and releasing that particular horizontal die, which may then be readily withdrawn without interference or disturbance of the die box or either of the other dies. A portion of the die box 12 is represented as broken away, and one of the brackets 17 attached thereto is shown in vertical section to fully exhibit its supporting bolt and screw for adjusting the die. The die box 12 with its several dies is intended to be fastened and used in a wire nail machine, and for that purpose it is provided with a requisite number of bolt holes 19 which are arranged at different convenient points.

It will be understood that the movable parts herein referred to are actuated by any of the devices in the wire nail machines of this class, which at this time are well known. In such machines, the movable gripping die is always

so actuated, as that after being moved to the innermost gripping position it is held there stationarily under pressure for an appreciable interval of time while the heading punch or ram is applying its pressure longitudinally of the wire.

I am aware that for many years it has been very common to use lathe chucks each having a continuously rotating head with jaws mounted therein and rotating therewith for holding a tool or other purposes, and I do not claim such devices as of my invention; but the differences between such chucks and a wire nail machine having the devices herein shown will be readily understood, as will also the fact that the rotation of the parts which in a chuck is entirely essential would be disastrous in a nail machine, particularly one which receives triangular wires.

Having thus described my invention, I claim—

1. In a machine for making wire nails, the combination of a stationary die box or holder, three non-rotatable separate dies mounted in said box at an angle to each other, and of which all are held stationary during the heading operation, and one is movable toward and from the others, whereby all are adapted to intermittently engage with the side faces respectively of a triangular wire, substantially as set forth.

2. In a machine for making triangular wire nails, the combination of the thrust block, the wire passage, the non-rotating die holder, and the three non-rotating dies in said holder arranged on different radii relative to the axis of the wire guide and adapted to respectively engage intermittently with the side faces of a triangular wire, and having wire engaging faces narrower than the faces or sides of the wire, substantially as set forth.

3. In a wire nail machine, the combination of a stationary die box, three non-rotating dies therein at an angle to each other, a thrust block behind the said die box and secured thereto, said die box having a wire passage through which the wire can pass from the side on which the thrust block is situated to the dies, and a header movable toward and from the thrust block and bearing against the wire longitudinally thereof when gripped by the dies, substantially as set forth.

4. The combination in a wire nail machine of the die box or holder, and the three non-rotating dies arranged on different radii relative to the wire passage, all held stationary relative to said passage during the gripping operation, and means for intermittently moving one of said dies during said operation toward and from the others, substantially as set forth.

5. In a wire nail machine, the combination of a non-rotary die box or holder, two gripping dies separately mounted in said box having oppositely inclined wire engaging faces and independently adjustable on substantially the same diametric lines and a third movable



die situated transversely to said lines which are stationary during the heading operation and having its operative end adjacent to the ends of the two aforesaid dies, whereby all 5 are adapted to intermittingly engage with the side faces respectively of a triangular wire, substantially as set forth.

6. In a wire nail machine, the combination of a non-rotating die box or holder, two gripping dies separably mounted therein and adjustable on substantially the same lines and having their operative ends or faces inclined to the said lines, and a third movable die

which is stationary during the heading operation and is arranged transversely to the said 15 lines and having its operative end or face substantially parallel thereto, whereby all are adapted to intermittingly engage with the side faces respectively of a triangular wire, as set forth. 20

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

WILLIAM TAYLOR.

Witnesses:

NORMAN DIEHL,  
CLIFFORD M. DIEHL.