

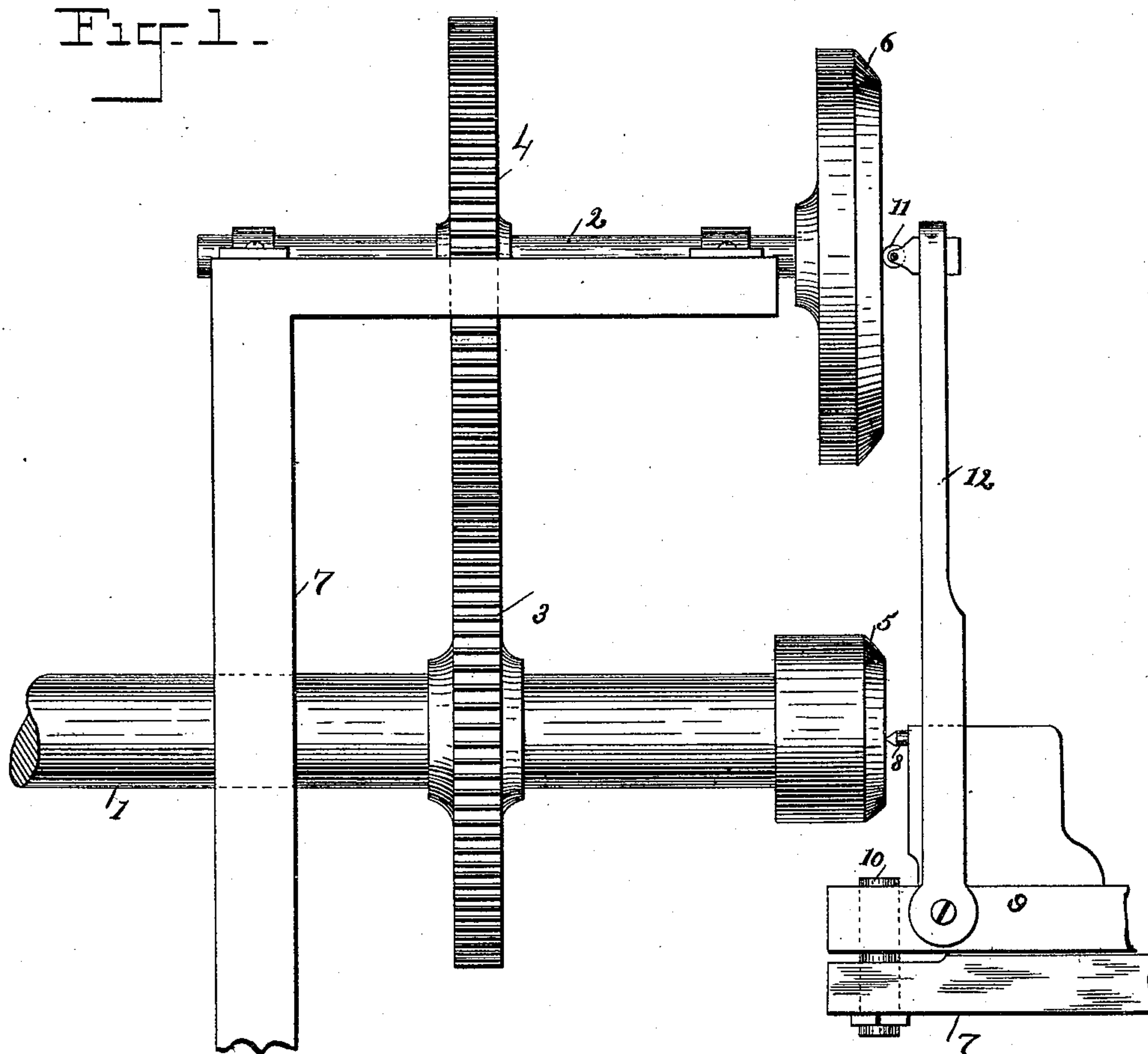
(No Model.)

3 Sheets—Sheet 1.

A. C. BATES.
AUTOMATIC ROSE ENGINE.

No. 433,846.

Patented Aug. 5, 1890.



Witnesses.

Lillie Hanna
Geo. H. Knight, Jr.

Inventor

Alfred C. Bates

By *Knight & Co.*
Attorneys

(No Model.)

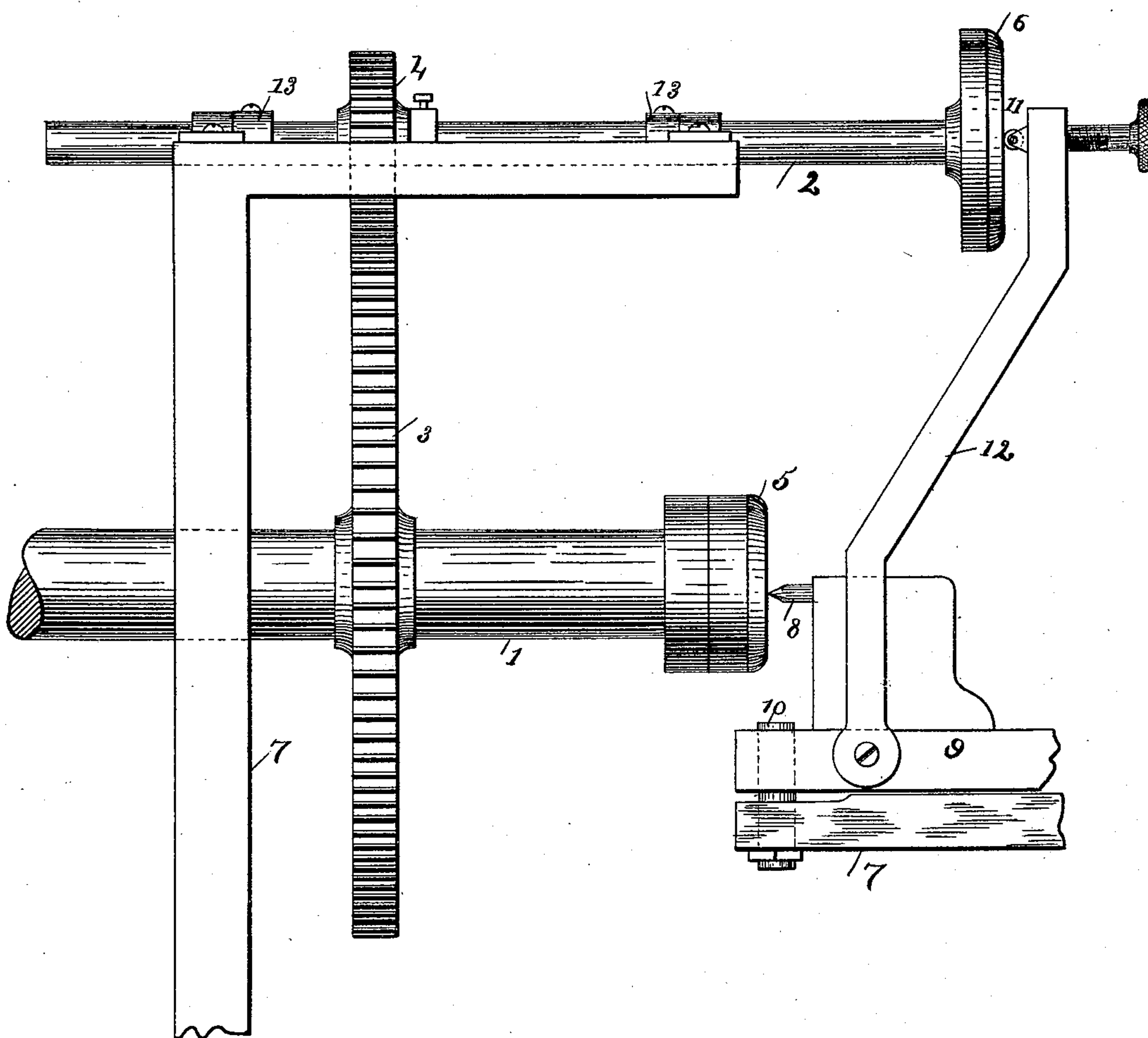
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Fig. 2.



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(No Model.)

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Fig. 3.

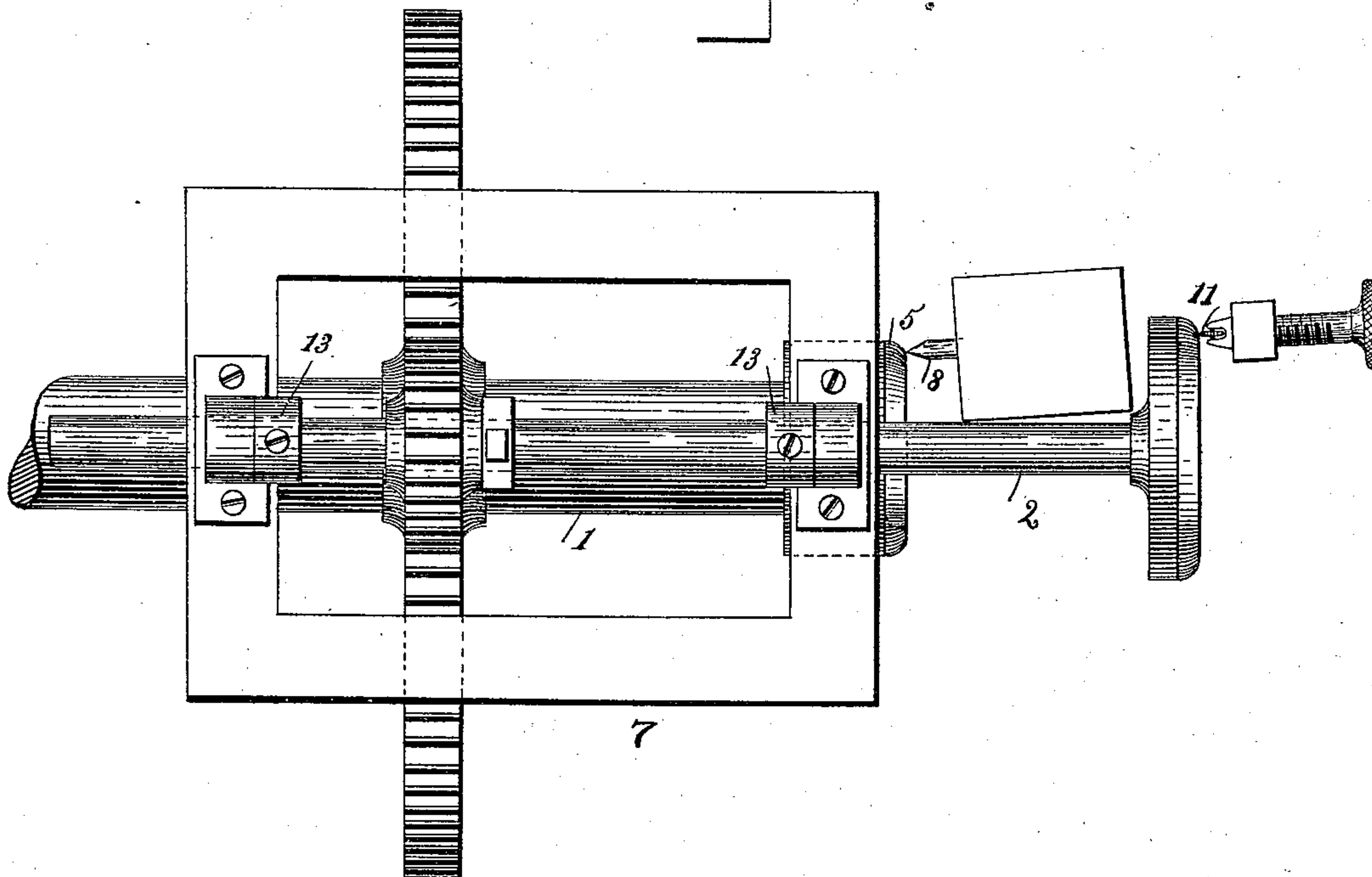


Fig. 4.

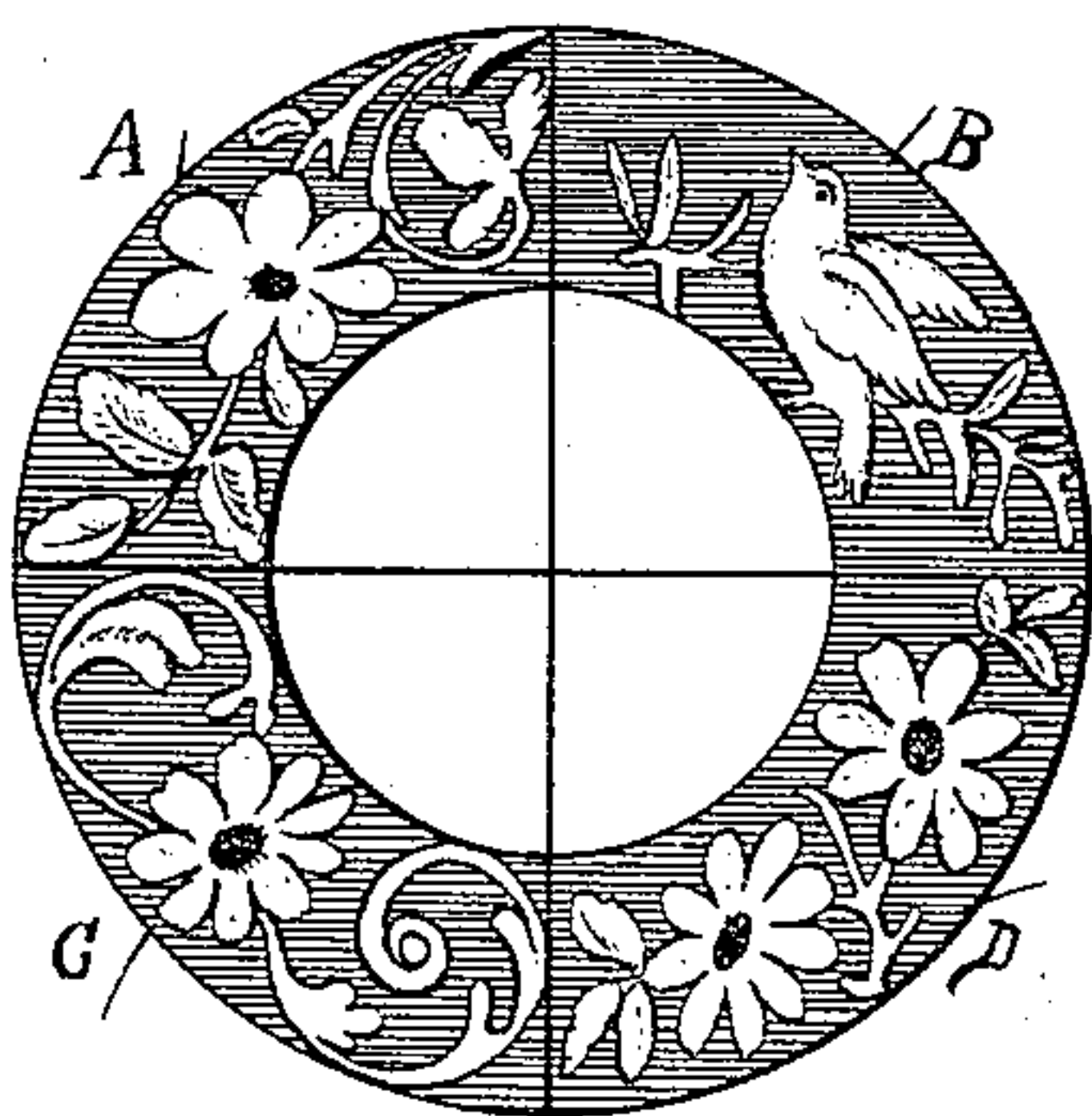
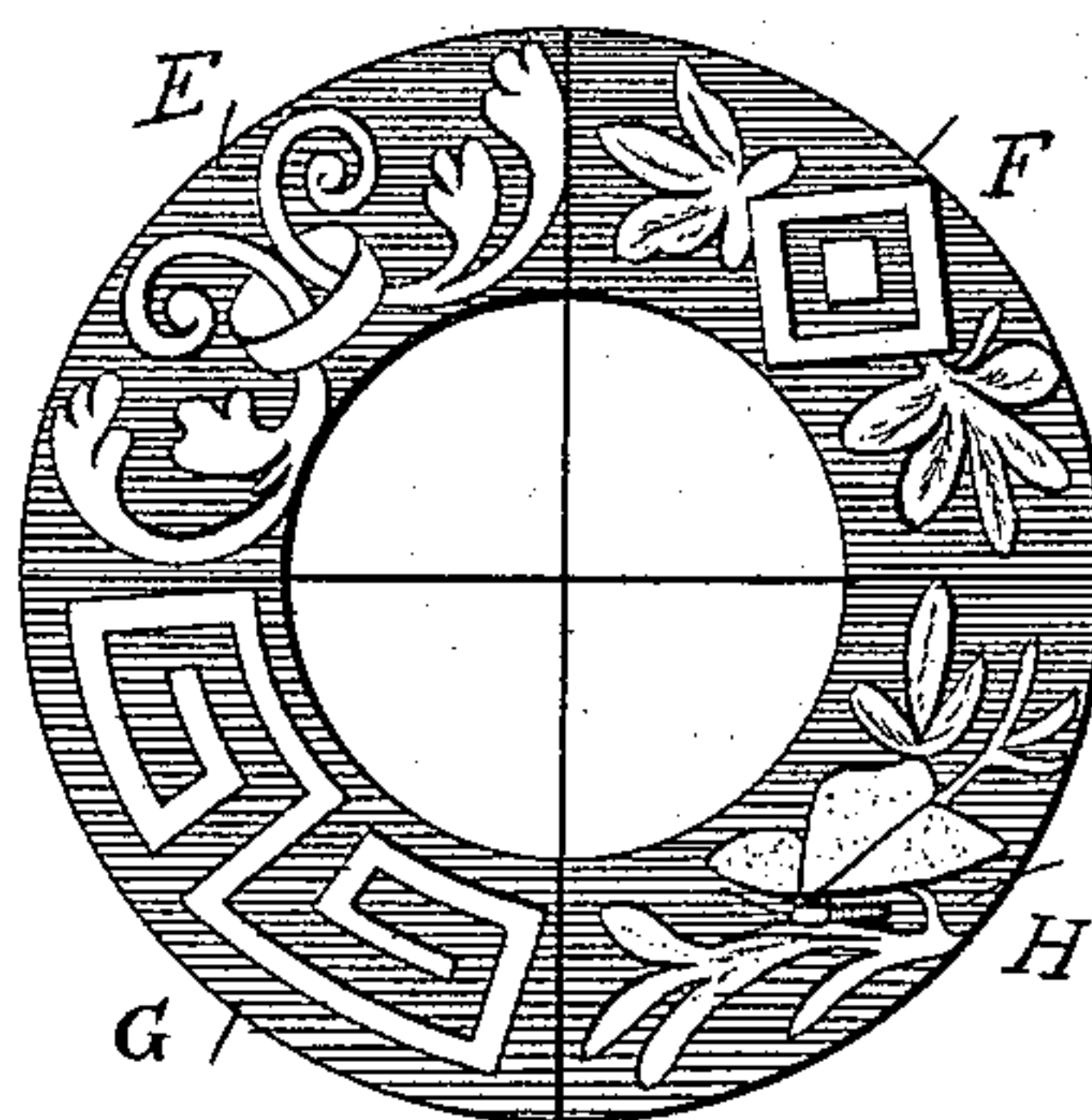


Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

ALFRED C. BATES, OF SAG HARBOR, NEW YORK, ASSIGNOR TO THE FAHYS
WATCH CASE COMPANY, OF SAME PLACE.

AUTOMATIC ROSE-ENGINE.

SPECIFICATION forming part of Letters Patent No. 433,846, dated August 5, 1890.

Application filed April 25, 1889. Serial No. 308,535. (No model.)

To all whom it may concern:

Be it known that I, ALFRED C. BATES, a
subject of the Queen of the United Kingdom
of Great Britain and Ireland, residing at Sag
Harbor, county of Suffolk, State of New York,
have invented certain new and useful Im-
provements in Automatic Rose-Engines, of
which the following is a specification.

This improvement relates to that class of
rose-engine machines of which the "Field
lathe," so called, is an example, and which
are ordinarily employed more especially for
engraving watch-case backs. In these ma-
chines heretofore the form or pattern-block
was made many times larger than the watch-
case back to be engine-turned. This en-
largement of the pattern-block or form, how-
ever, was of advantage only in so far as the
circumference of the pattern was concerned.
No means were provided to allow the roller
to traverse the pattern-block a distance pro-
portionate to the travel circumferentially;
hence the pattern or the form of pattern-
block was not in true proportion. For ex-
ample, if it was designed to produce a square
or block-shaped figure on the edge of the case
the pattern-block figure would appear as an
oblong. The same difficulty of course was to
be contended with in the reproduction of
leaves, flowers, &c. Thus it will be seen that
the rose, for instance, on the pattern-block
would be precisely the same width as the one
reproduced on the watch-case back, but many
times longer. My invention is intended to
overcome this difficulty, and it will be fully
described with reference to the accompanying
drawings, the novel features being pointed out
in the claims.

In said drawings, Figure 1 represents a side
elevation of the ordinary Field lathe. Fig. 2
is a similar view of my improved machine.
Fig. 3 is a plan view of the latter. Figs. 4 and
5 are face views of the pattern-block of form
preferably employed by me and showing di-
versified patterns.

In all the figures 1 is a lathe shaft or spin-
dle; 2, a pattern shaft or spindle; 3 4, gear-
ing connecting the two; 5, a watch-case lid or
back in position to be turned—that is to say,
secured crownwise in the end of the spindle;

6, the pattern-block formed or secured crown-
wise upon the disk or end of said shaft 2; 7,
any suitable lathe-frame; 8, the engraving-
tool and stock; 9, segment on which it is
mounted; 10, pivot or axis of vibration for
said segment carried by the frame, said axis
being parallel and radial to the plane of ro-
tation of said watch-case; 11, the tracing-
roller, and 12 its supporting-arm rigid as to
lateral motion on segment 9, but capable of
being vibrated about an axis 12' on said seg-
ment 9, said axis being parallel and tangen-
tial to the plane of rotation of said watch-
case.

It will be seen that the segment 9, carry-
ing the tool 8 and the roller 11, is swung on
the pivot 10. As the point of the tool 8 and
the bearing-surface of the roller 11 on pat-
tern 6 are in the same vertical line in the
form of lathe shown in Fig. 1, it must follow
that the arc of the circle described about pivot
10 by the roller 11 must be precisely the same
as that described by the point or cutter 8.
They therefore traverse the same distance
during the operation of the engine turning a
watch-case back. Thus, although the pat-
tern 6 may, as shown in Fig. 1, be made many
times the size of the watch-case back to be
turned, and thus the circumferential lines of
the pattern may be made much larger than a
reproduced design on the watch-case back, the
radial or horizontal lines on the pattern-
block and watch-case back are necessarily of
equal length however large the pattern 6 may
be made. This arises, as will be seen, from
the fact that the pattern and watch-case lid
revolve in parallel planes vertical to said shaft
and spindle. To overcome the difficulty and
secure to the pattern-roller a greater length of
travel radially over the pattern-block, I length-
en the spindle 2, as shown in Fig. 2, thus allow-
ing the form or pattern-block to be thrown for-
ward or in advance of the cutter 8. The arm
12 is bent, as shown in Fig. 2, to accommo-
date itself to this change. It will be evident
that the roller 11 will in this construction
while the machine is in operation traverse a
greater radial distance over the pattern-block
than the cutter 8 does over the back, because
the cutter describes a small and the roller a

large arc of concentric circles about the pivot 10. Collars 13 keep the spindle 2 and the pattern-block carried thereby in place when the proper adjustment is secured. If it is
 5 desired to have the roller 11 travel a less distance than that shown, the said collars are loosened and the form and spindle slid in toward the watch-case back. By this means any degree of travel of the roller in relation
 10 to the form may be obtained.

I preferably make the diameter of the gear 3 a multiple of that of the gear 4—say, in proportion of 4 to 1. By this means the pattern is rotated with greater rapidity than the
 15 watch-case back, so that a larger pattern may be made to pass under the roller 11 than is reproduced by the cutter on the watch-case back. I thus obtain with a small pattern-block rotated at great speed the same result
 20 that is obtained by the form of machine shown in Fig. 1 by the large pattern-block rotated at the same speed as the watch-case back, the roller 11 being in either case made to travel over more space—that is, a larger
 25 pattern—than the cutter.

I preferably make the form of pattern-block in two or more sections, as shown in Figs. 4 and 5, each section having on its face a different design. In each figure I have shown
 30 four sections. By this means an unlimited number of designs may be produced from a few pattern-blocks, as the pattern-blocks are all made uniform in size, and therefore the parts on one readily interchange with the
 35 other. Each part of the pattern-block is therefore a design in itself, and the combination of three or more pattern-blocks makes a great variety of work and a result heretofore never obtained.

40 Figs. 4 and 5 show two forms, each composed of four separate pieces A B C D E F G H. These forms are made uniform in size and shape; but each part may have any design upon its face. It will be seen that each form
 45 is in itself capable of being changed a number of times by transposing the various parts and bringing each into a different relation

with the other. After these changes have been made, one piece of Fig. 4 may be introduced into Fig. 5 and the piece of Fig. 5 introduced into Fig. 4. They are then capable
 50 of many more changes. Then two parts of Fig. 5 may be introduced into Fig. 4 and the corresponding parts of Fig. 4 may be placed in Fig. 5, and so on *ad infinitum*. The larger
 55 the number of forms the greater the variety of changes.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent: 60

1. In a rose-engine, in combination with the revolving watch-case holder or lathe-shaft 1 and revolving pattern 6 at a different plane to said watch-case, and with a graving-tool 8, a tracer 11, which vibrates in an arc concentric with and of greater radius than that described by the graver, substantially as and for the purpose set forth. 65

2. In a rose-engine, a combination of pivoted segment 9, engraving-tool 8, carried thereby, arm 12, mounted on said segment, pattern-roller or equivalent guide 11 in a different vertical plane from cutter 8, and the elongated spindle 2, carrying the pattern-block, substantially as set forth. 70

3. The combination of the lathe-shaft 1, elongated spindle 2, the collars 13, and multiplying-wheel connection between the lathe-shaft and the spindle, substantially as described. 75

4. In a rose-engine having its pattern-face transverse of its pattern-shaft, the combination of said shaft, a spindle adapted to carry a case-back, a tracer and a graver connected together and pressed against the pattern-face and case-back, respectively, and multiplying-gear between said spindle and shaft, whereby a pattern of large size, but similar in shape to the design to be produced on the case-back, may be employed. 80

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Witnesses:

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 THOS. F. BISGOOD.