

No. 698,438.

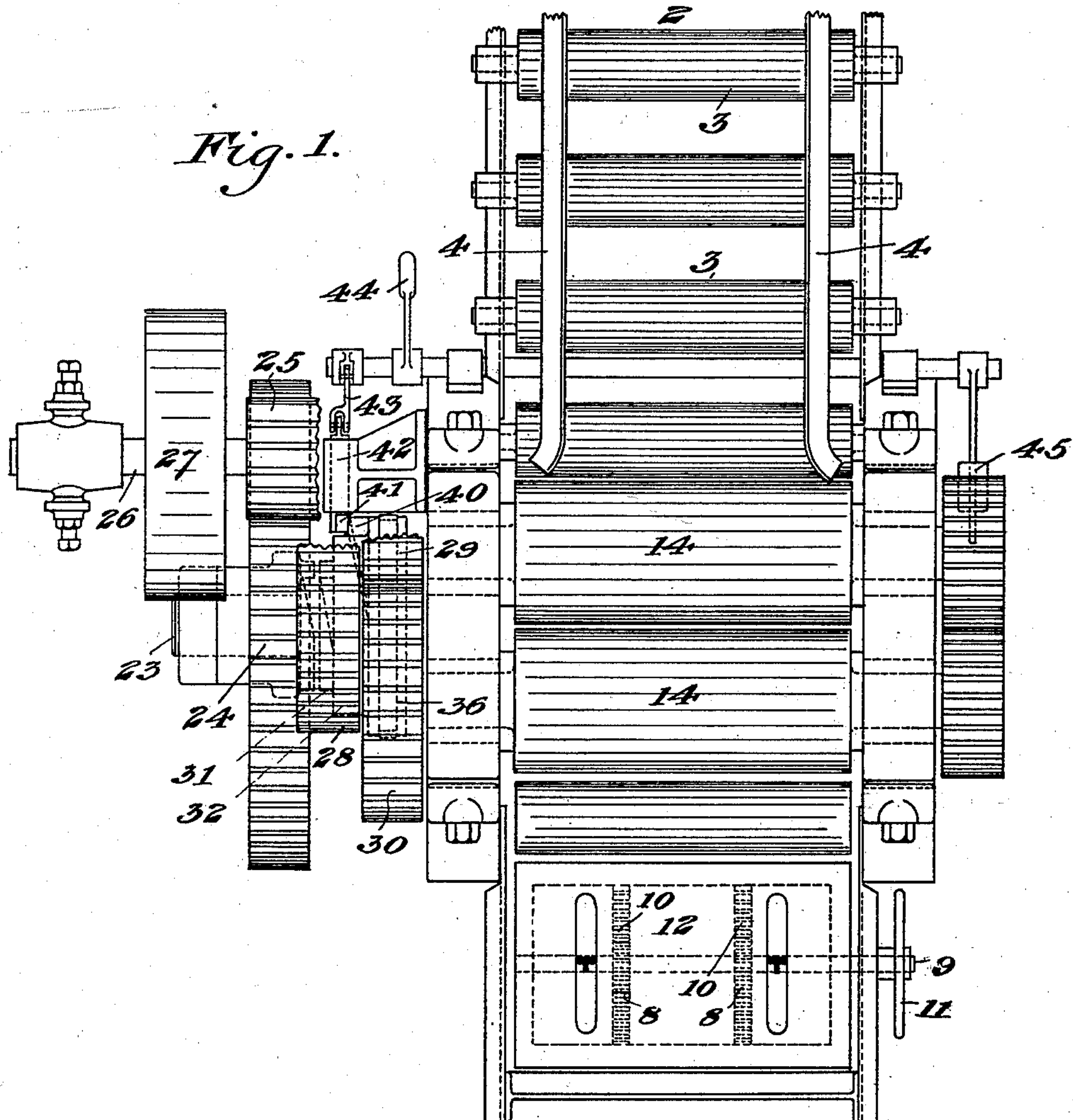
Patented Apr. 29, 1902.

C. W. BRAY.
DOUBLING APPARATUS.

(Application filed Jan. 8, 1902.)

(No Model.)

4 Sheets—Sheet 1.



WITNESSES

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A. M. Corwin

INVENTOR

C. W. Bray

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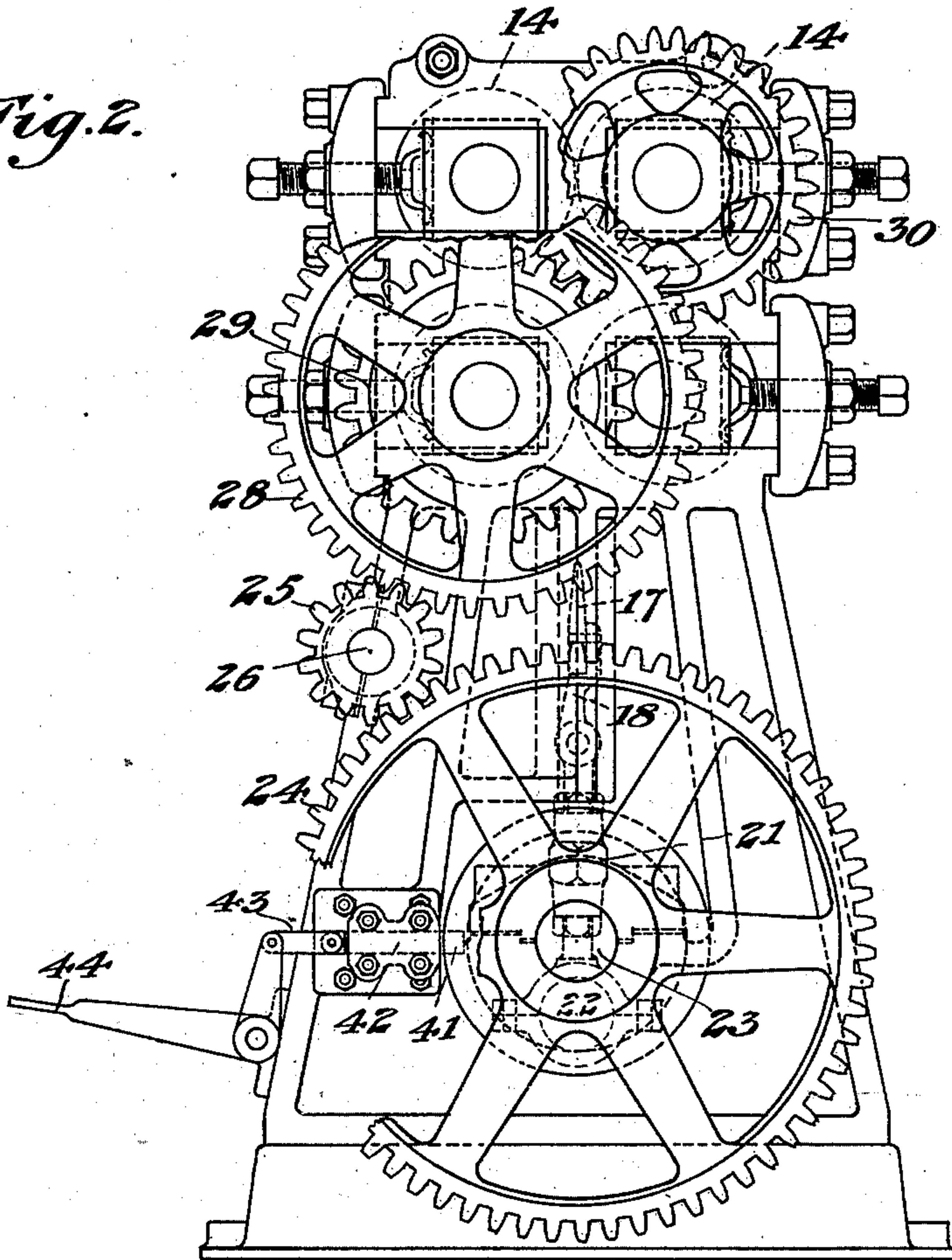
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4 Sheets—Sheet 2.

Fig. 2.



WITNESSES

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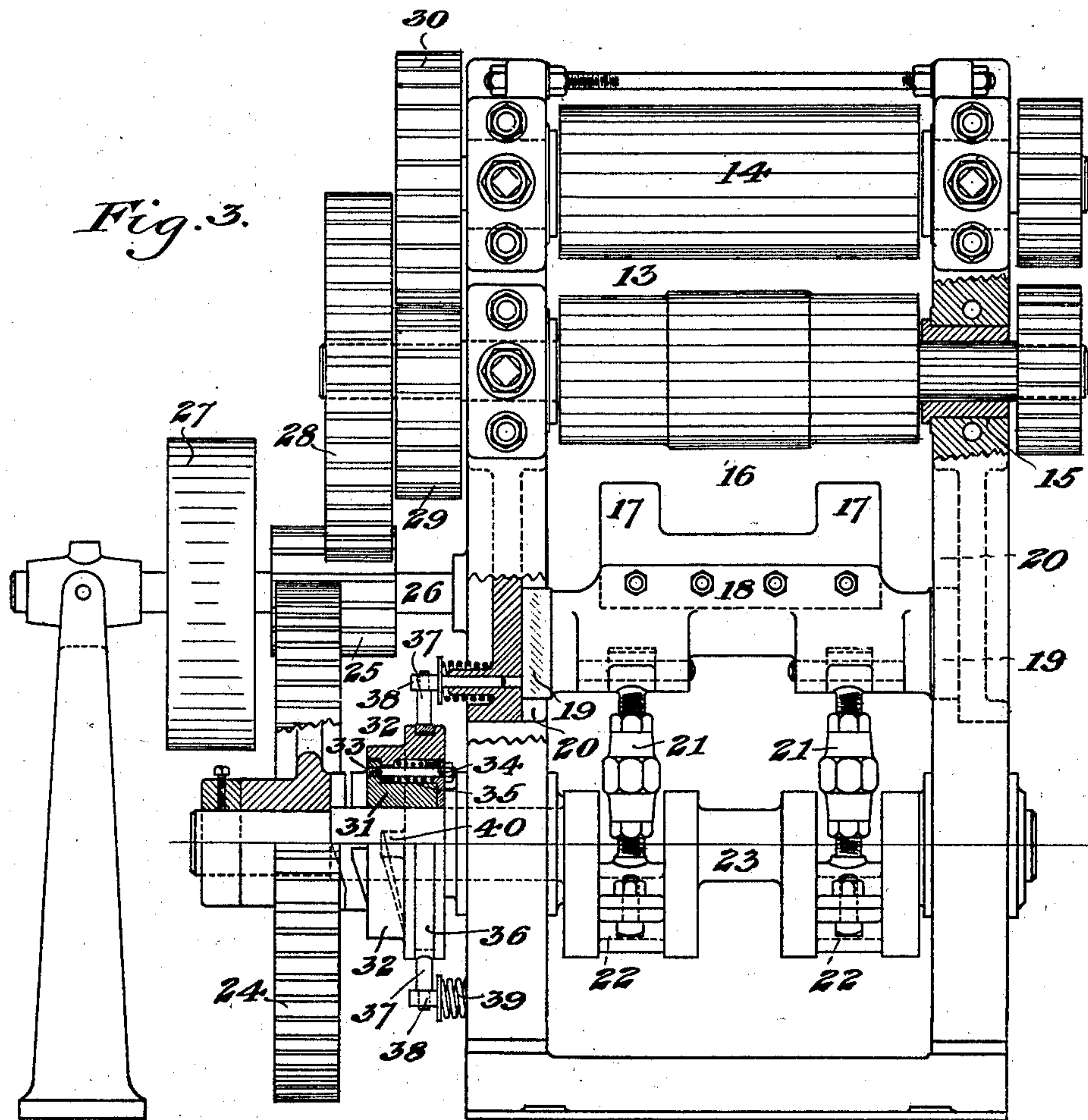
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4 Sheets—Sheet 3.



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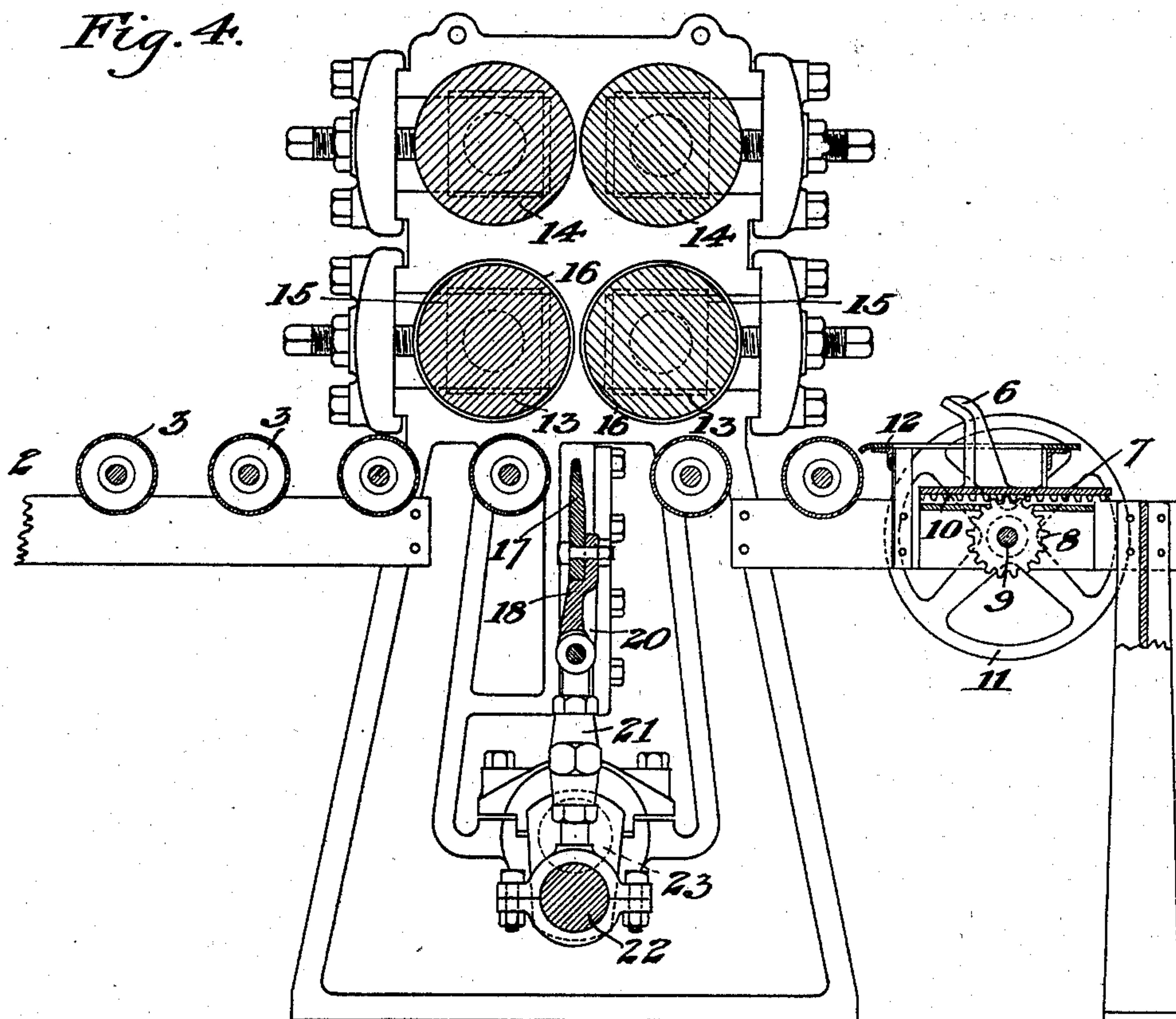
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(Application filed Jan. 8, 1902.)

(No Model.)

4 Sheets—Sheet 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

CHARLES W. BRAY, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO
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CORPORATION OF NEW JERSEY.

DOUBLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 698,438, dated April 29, 1902.

Application filed January 8, 1902. Serial No. 88,871. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. BRAY, of
Pittsburg, Allegheny county, Pennsylvania,
have invented a new and useful Doubling
Apparatus, of which the following is a full,
clear, and exact description, reference being
had to the accompanying drawings, forming
part of this specification, in which—

Figure 1 is a top plan view of doubling ap-
paratus constructed in accordance with my
invention. Fig. 2 is a side elevation of same,
partly broken away. Fig. 3 is a front eleva-
tion, partly in section; and Fig. 4 is a longitu-
dinal vertical section with the entering guides
removed.

My invention relates to that class of dou-
bling apparatus wherein the central portion
of the sheet or pack is forced between dou-
bling-rollers, and more especially to the dou-
bling apparatus shown and described in my
Patent No. 695,873, granted March 18, 1902,
for doubling and shearing apparatus; and its
object is to simplify and improve the construc-
tion and operation of the doubling mech-
anism.

In the drawings, 2 represents a feed-table
arranged to carry the sheets or packs to and
beneath the doubling-rolls, this feed-table
having driven rollers 3 and side guides 4 ar-
ranged to hold the sheets in proper position.
At the end of the feed-table I provide adjust-
able stop mechanism, which in the form shown
consists of fingers 5, having forwardly-bent
upper portions 6 and carried upon a sliding
plate 7, which may be moved toward or from
the last roller of the table by means of pin-
ions 8 upon a shaft 9, which engage racks 10
upon the lower face of the sliding plate. The
shaft 9 carries at its outer end a hand-wheel
11, by which the stop-fingers can be easily and
quickly adjusted, as desired. The fingers
project upwardly through slots in a cover-
plate 12, which protects the mechanism and
is at or near the level of the upper parts of
the feed-table rollers.

Above the feed-table and at the desired dis-
tance from the stop mechanism I provide two
pairs of doubling-rollers 13 13 and 14 14, whose
bearings are horizontally adjustable within

boxes 15, as shown in Fig. 4. The lower rolls
13 are provided with registering circumfer-
ential recesses at the end portions, leaving a
central collar 16 upon each roll, and these re-
cesses are arranged to receive projecting fin-
gers 17, formed integrally with or secured to
a doubling-blade 18, which is removably
bolted to a vertically-sliding cross-head 19,
moving in guideways 20. The cross-head is
reciprocated vertically by adjustable pitman-
rods 21, connected to cranks 22 upon the
shaft 23. This shaft projects through the
 housings at one side and carries a toothed
wheel 24, intermeshing with pinion 25 upon
the shaft 26, which may be driven by a pul-
ley 27, by an electric motor, or any other de-
sirable means. The pinion 25 is wider than
the toothed wheel 24 and also meshes with a
toothed wheel 28 on the projecting shaft of
one of the lower doubling-rolls. This shaft
also carries a toothed wheel 29, which inter-
meshes with a gear-wheel 30 upon a shaft of
the opposite upper roll, thus driving the dou-
bling-rolls and the doubling-blade mechanism
from the same shaft.

The toothed wheel 24 is mounted loosely
upon the crank-shaft and provided with hub
projections which coact with similar projec-
tions upon a sliding hub 31, having keyway
connection with the crank-shaft. A crab-
clutch connection is thus formed, and the slid-
ing hub 31 is provided with a surrounding
case 32, having an inwardly-projecting flange
portion 33, through which projects bolts 34,
surrounded by springs 35. The outer case is
provided with a circumferential groove con-
taining a band or rim 36, having projecting
arms 37, whose ends engage eyes upon pins
38, which are normally pressed outwardly by
springs 39, which are more powerful than the
springs 35. These springs 39 normally throw
the clutch members into engagement, and the
hub is moved inwardly to disengage them by
means of an inclined cam portion 40, bearing
upon the side of the sliding pin 41, moving in
a guide 42 and actuated by link connection
43 with a foot-lever 44. The pin 41 is nor-
mally held in engagement by a balance-weight
45. The springs between the outer case and

the hub of the clutch act to give clearance between the projections when they are moved apart by the action of the cam.

In the operation of the apparatus the sheets
5 or packs are fed forward upon the feed-table until they strike the adjustable stops. The operator then withdraws the clutch-operating pin, the springs 39 cause the clutch members to engage, and the doubling-blade is moved
10 upwardly, its projecting fingers carrying the middle portion of the sheet upwardly between the lower rolls and to the bite of their central collar portions. The sheet is thus fed upwardly through the upper doubling-rollers,
15 which completes the doubling operation, and as the doubling-blade moves downwardly to its normal position the clutch-cam acting upon the pin withdraws the clutch members and stops the blade in this position. When
20 the next sheet or pack is fed forwardly against the stops, the operator withdraws the clutch-pin and the operation is repeated, as before.

The advantages of the invention result especially from the use of the doubling-blade
25 with the projecting fingers secured to it in connection with the recessed lower rolls.

The machine is comparatively simple and can be built and operated at small expense.

Many changes may be made in the form and arrangement of the parts without departing 30 from my invention.

I claim—

1. In doubling apparatus, a pair of grooved rollers, a pusher-blade having projecting fingers rigidly secured thereto and arranged to 35 enter the grooves, and mechanism for reciprocating the blade; substantially as described.

2. In doubling apparatus, a pair of grooved rolls, a pair of plain-faced rolls arranged in tandem therewith, a pusher-blade having projecting fingers rigidly secured thereto and arranged to enter the recessed portions of the grooved roll, and mechanism for reciprocating the pusher-blade; substantially as described. 45

In testimony whereof I have hereunto set my hand.

CHARLES W. BRAY.

Witnesses:

H. M. CORWIN,
L. M. REDMAN.