

No. 839,924.

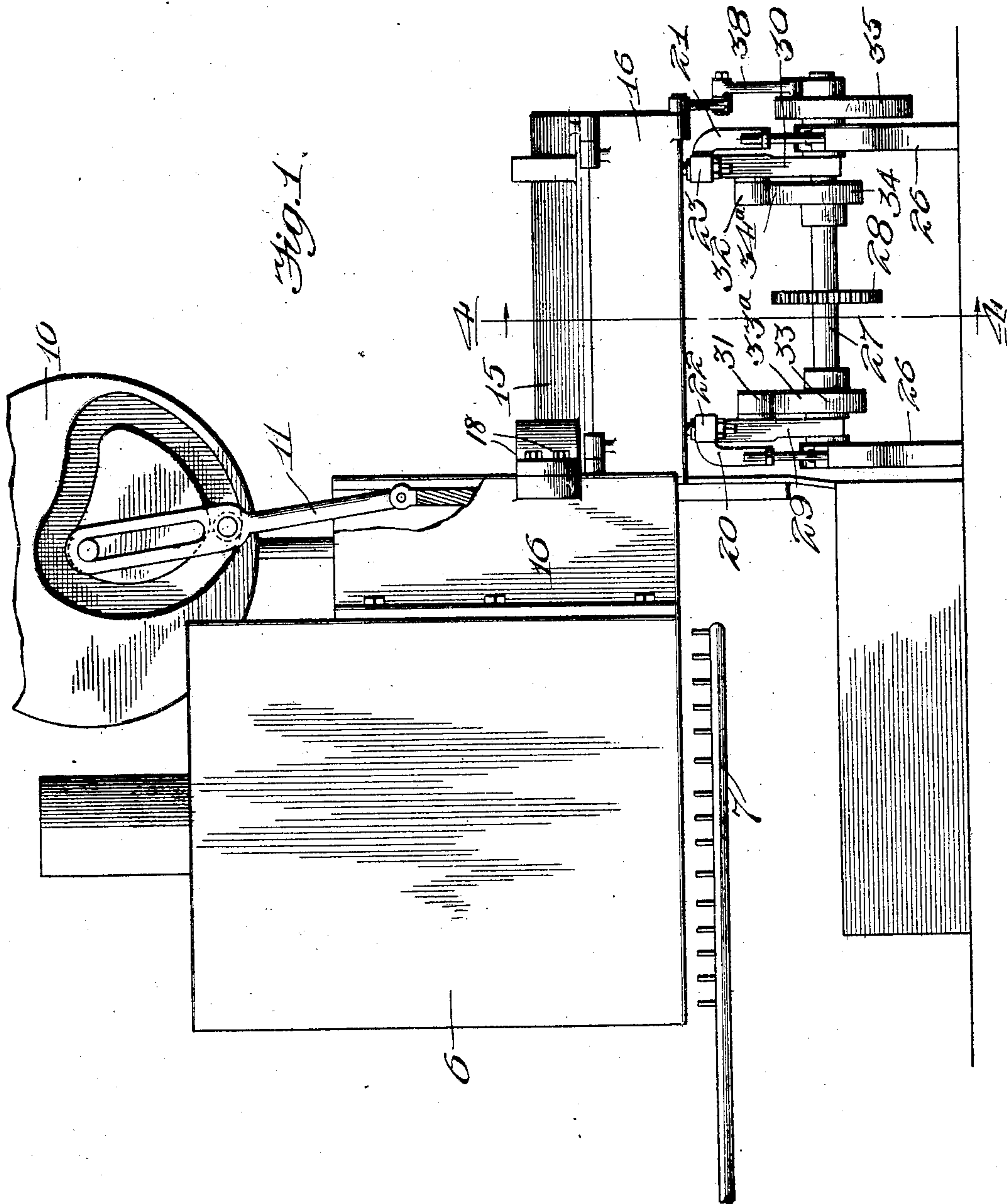
PATENTED JAN. 1, 1907.

J. L. FIRM.

CASTING BOX FOR STEREOTYPE APPARATUS.

APPLICATION FILED AUG. 10, 1905.

3 SHEETS—SHEET 1.



Witnesses:
Robert A. Weir
J. B. Weir

Inventor:
Joseph L. Firm
by *Benjamin Adams, Richard J. Adams*
Attys

No. 839,924.

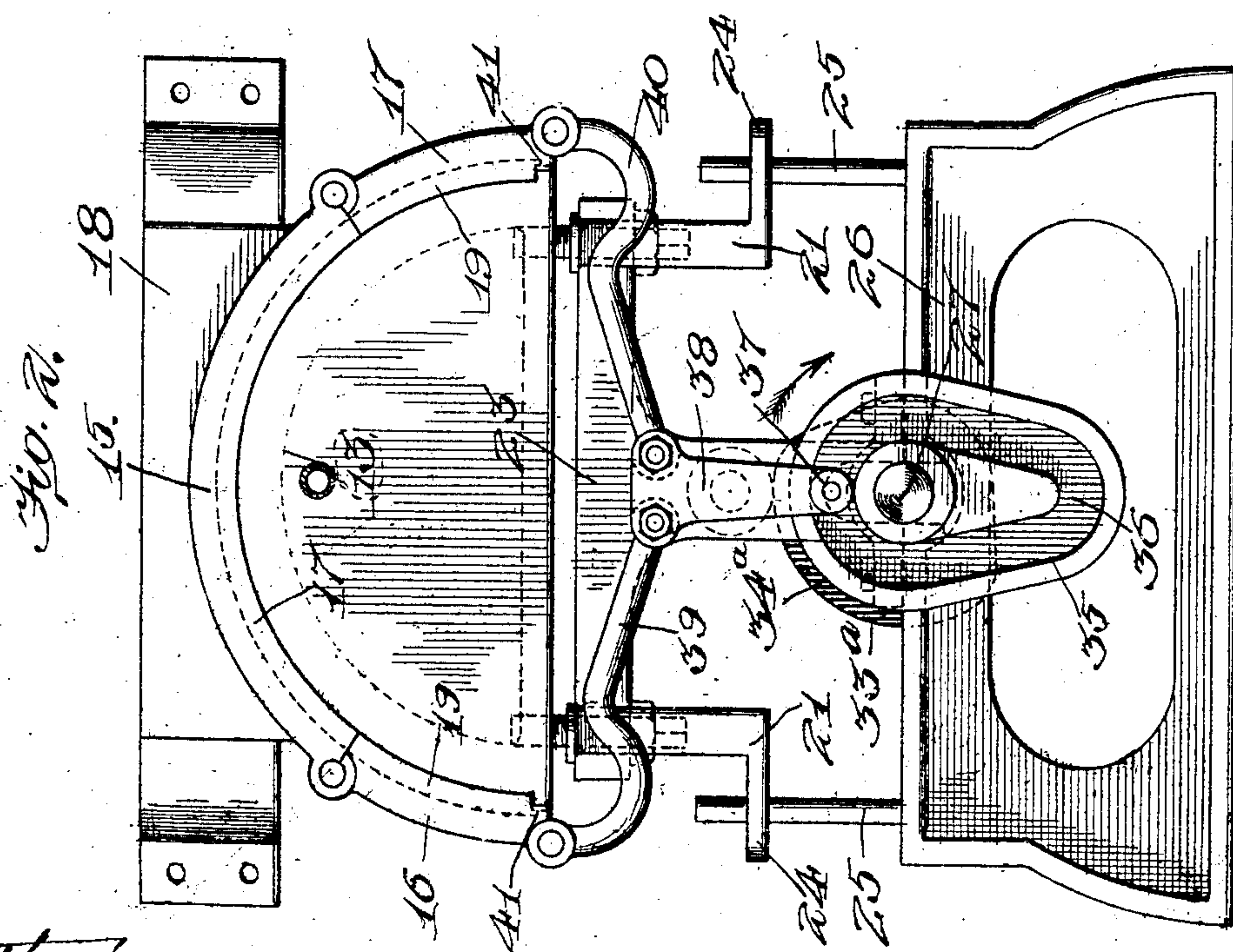
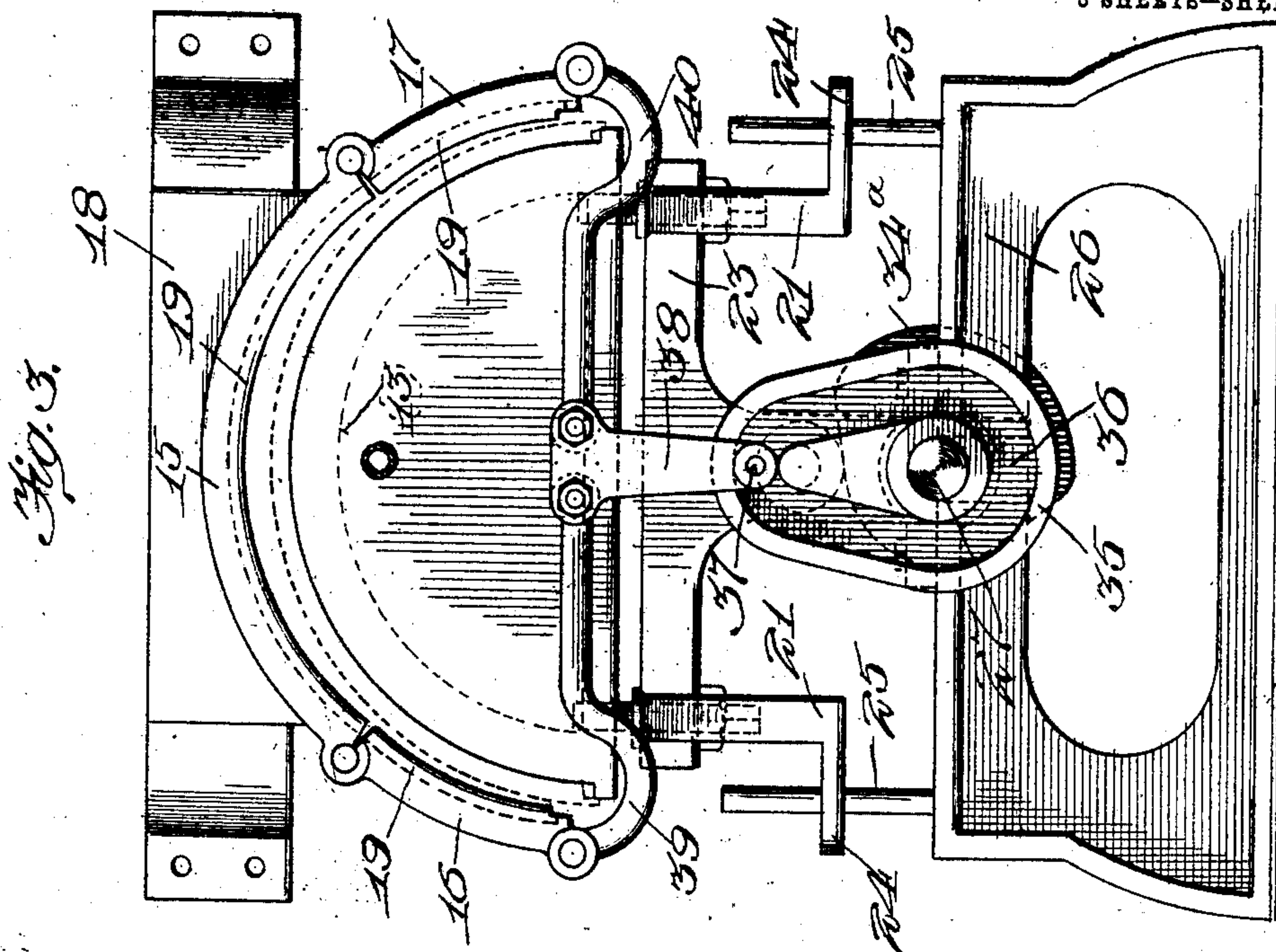
PATENTED JAN. 1, 1907.

J. L. FIRM.

CASTING BOX FOR STEREOTYPE APPARATUS.

APPLICATION FILED AUG. 10, 1905.

3 SHEETS—SHEET 2.



Witnesses:

Robert H. Weir
J. B. Weir

Inventor:

Joseph L. Firm
by
Benn Adams, Pickens & Jackson
Attys

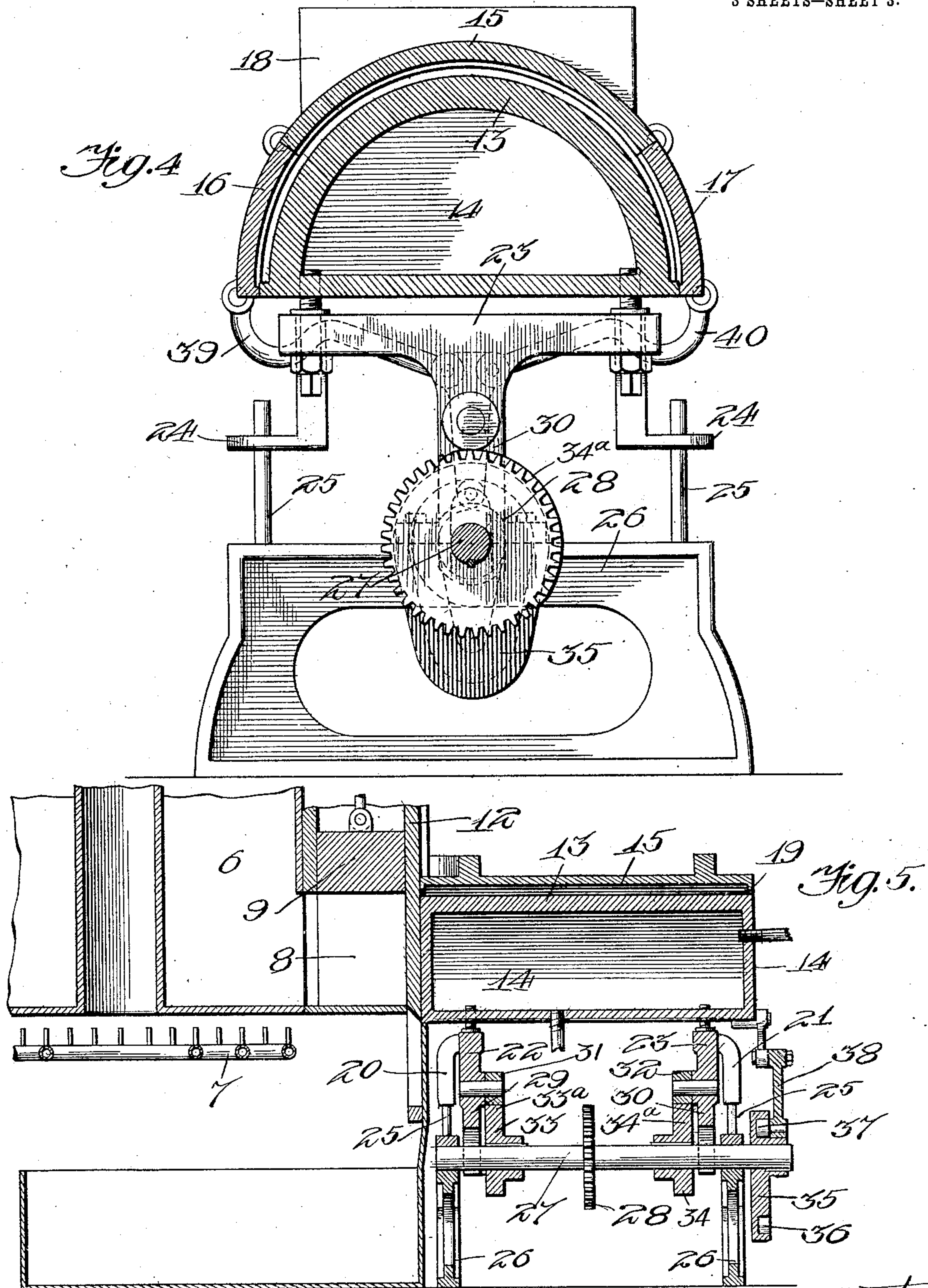
No. 839,924.

PATENTED JAN. 1, 1907.

J. L. FIRM.
CASTING BOX FOR STEREOTYPE APPARATUS.

APPLICATION FILED AUG. 10, 1905.

3 SHEETS—SHEET 3.



Witnesses:

Robert H. Weir
J. B. Weir

Inventor:

Joseph L. Finner
by Bernard Adams, Richard Jackson
Attys.

UNITED STATES PATENT OFFICE.

JOSEPH L. FIRM, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE GOSS
PRINTING PRESS COMPANY, OF CHICAGO, ILLINOIS.

CASTING-BOX FOR STEREOTYPE APPARATUS.

No. 839,924.

Specification of Letters Patent.

Patented Jan. 1, 1907.

Application filed August 10, 1905. Serial No. 273,634.

To all whom it may concern:

Be it known that I, JOSEPH L. FIRM, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have
5 invented certain new and useful Improvements in Casting-Boxes for Stereotype Apparatus, of which the following is a full and complete specification, reference being had to the accompanying drawings.

10 My invention relates to stereotyping apparatus, and particularly to apparatus for automatically casting the curved stereotype plates for printing machinery, and more particularly to improvements upon the mechanism shown and described in Letters Patent to
15 me, No. 792,574, granted June 13, 1905; and its object is to provide a new and improved casting-box for such apparatus in which the two parts of the box may be separated from
20 one another, so that, the matrix being still retained in the cope of the mold, the cast plate may be removed.

In the drawings, Figure 1 is a side elevation of my apparatus. Fig. 2 is an enlarged
25 end elevation of the casting-box with the two parts that form the box together in position for casting a plate. Fig. 3 is an enlarged end elevation showing the parts separated after the plate is cast. Fig. 4 is an enlarged section on line 4 4 of Fig. 1. Fig. 5 is a longitudinal section of the parts shown in Fig. 1.

Referring to the drawings, 6 is a melting-pot, which is heated by suitable heating apparatus to melt the metal therein, as by gas
35 from pipe 7. 8 indicates a chamber opening into the melting-pot 6 and provided with a piston 9, which is operated by cam 10 and link 11.

12 indicates a reciprocating knife which
40 operates to cut off the end of the plate after it is cast.

13 indicates the casting-box, which opens into chamber 8.

As melting-pot, piston, and knife operate
45 in the same manner and by the same mechanism as are fully described in Letters Patent to me above mentioned, and as they form no part of my present invention, it is believed that their operation will be fully understood and will require no further discussion here.

50 The casting-box 13 is formed of a hollow semicylindrical core or drag 14, through which a supply of water for cooling the same

is constantly running from any suitable
55 source and in any well-known manner, and of a cope which is composed of three portions 15, 16, and 17. When the parts are closed for casting, as hereinafter described, the inner surface of the cope forms a cylindrical
60 surface concentric with the upper surface of the drag 14. The middle portion 15 of the cope is bolted or otherwise secured to the front of the chamber 16 by means of a projecting portion 18, as best shown in Fig. 1, and
65 is supported thereby. The side portions 16 and 17 of the cope, which preferably occupy each about thirty degrees of its semicircumference, are hinged to the sides of the middle portion 15, so as to swing away therefrom.
70 Each of said portions is provided with an inwardly-projecting flange 19, which closes down upon the upper surface of the forward end of the drag 14, so as to close it at the forward end for the casting of the plate.

20 21 indicate supports which are secured at their upper ends, respectively, to cross-bars 22 23 and which are at their lower ends provided with projecting ears 24, which are provided with a suitable opening through
80 which pass pins 25, which are securely mounted in the bed 26. The ears 24 thus are movable up and down longitudinally on the pins 25. The cross-bars 22 23 are screwed or otherwise secured to the bottom of the drag
85 or core 14, and thus, with the supports 20 21, form a support for the drag.

27 indicates a shaft which is journaled in the bed 26 and is driven in any appropriate manner—say through gear 28, connected
90 with any other suitable driving-gearing. (Not shown.) The cross-bars 22 23 are provided, respectively, with downwardly-projecting portions 29 30, which are slotted at their lower ends to straddle the shaft 27.
95

31 32 indicate rollers which are mounted on the inner surfaces, respectively, of the downwardly-projecting portions 29 30.

33 34 indicate cams which are keyed upon the shaft 27 and engage the rollers 31 32.
100 The parts 33^a and 34^a of the surfaces of the cams 33 and 34 are arcs of a circle whose center is the axis of the shaft 27. The cams 33 34 rotate in the direction indicated by the arrow in Fig. 2, operating to raise the core or
105 drag 14 against the cope into position for casting and to retain it in that position while the rollers 31 32 are traversing the circular

portions of the cam and then to permit the drag to drop away from the cope, the ears 24 sliding on the pins 25 when the roller passes from the circular portion of the cam and to lift it again into position for a new operation.

35 indicates a closed cam keyed upon the outer end of the shaft 27 and provided with a cam-groove 36, which engages a roller 37, which is journaled upon the lower end of an arm 38. Upon the upper end of the arm 38 are pivoted two links 39 40, whose outer ends are pivotally connected with the lower ends of the side portions 16 17, respectively, of the cope. A portion of the cam-groove 36 is circular for about half a circle, as is best shown in Figs. 2 and 3, concentric with the axis of the shaft 27. By the rotation of the cam 35 the links 39 40 will be moved outward as the arm 38 is moved upward to spread the sections 16 17 of the cope and open them away from the cast plate after the casting operation, as hereinafter described. The cam 35 is so placed on the shaft and so shaped that as the cam 35 revolves the roller 37 will enter the circular portion of the cam-groove 36 shortly before the circular portions of the cams 33 34 reach the rollers 31 32 and will enter the cam portion of the groove 36 shortly before the cam portions of the cams 33 34 engage the rollers 31 32, operating as hereinafter described. The interior portion of the cope of the mold is provided with notches 41, in which the matrix is supported and held.

The operation of the mechanism above described is as follows: The cope being separated from the drag, the matrix is placed in position in the usual manner and the mechanism set into operation. The cope and the drag being closed, the metal is forced into the casting-box and cut in the manner described in my Letters Patent above mentioned, the rollers 31 32 moving upon the circular surfaces of the cams 33 34 during this operation and the side portions 16 17 being held in their closed positions against the drag by the roller 37 traveling in the circular portion of the cam-groove 36. Before the rollers 31 32 leave the circular surfaces of their respective cams the cam portion of the groove 36 begins to operate, and the plate 38 begins to move upward and to throw the side portions 16 17 outward, thus stripping the matrix from the lower portions of the cast plate. The plate, which immediately begins to cool, also shrinks, shrinking slightly away from the other portions of the matrix. As the side plates 16 17 open, stripping the matrix from the cast-plate, the rollers 31 32 reach the cam portion of the cams 33 34 and

the drag drops, freeing the plate entirely from the matrix and leaving it open at the end, as is best shown in Fig. 3, through which the plate, which is indicated by dotted lines in Fig. 3, may be slid off the drag in any appropriate manner. The cams, as above described, thereupon operate to close the parts together for another operation.

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

1. In a stereotype-casting apparatus, the combination with a matrix-holding cope composed of a fixed central portion and a plurality of side portions hinged thereto, of a drag movable toward and away from said cope, mechanism for moving said drag, and mechanism adapted to swing said side portions away from said drag before said drag begins to move from said cope and to close the same again upon said drag when it is lifted into casting position, substantially as described.

2. In a stereotype-casting apparatus, the combination with a matrix-holding cope composed of a fixed central portion and two side portions hinged thereto, of a drag movable toward and away from said cope into and out of casting position, mechanism for automatically holding said drag temporarily against said cope in casting position and then moving said drag away from said cope and then back into casting position, and mechanism adapted to swing said side portions away from said drag before it moves from said cope and to close the same again upon said drag when lifted into casting position, substantially as described.

3. In a stereotype-casting apparatus, the combination with a matrix-holding cope composed of a fixed central portion and two side portions hinged thereto, a base, guides on said base, supports longitudinally movable on said guides, and a drag carried by said supports, of cam mechanism adapted to reciprocate said supports on their guides to move said drag away from said cope and then into and temporarily retain the same in casting position with reference to said cope, and cam mechanism connected with said side portions of said cope and adapted to swing the same outward away from said drag before said drag is moved out of casting position and to close the same upon said drag when it is moved into position, substantially as described.

JOSEPH L. FIRM.

Witnesses:

W. H. DE BUSK,
ALBERT H. ADAMS.