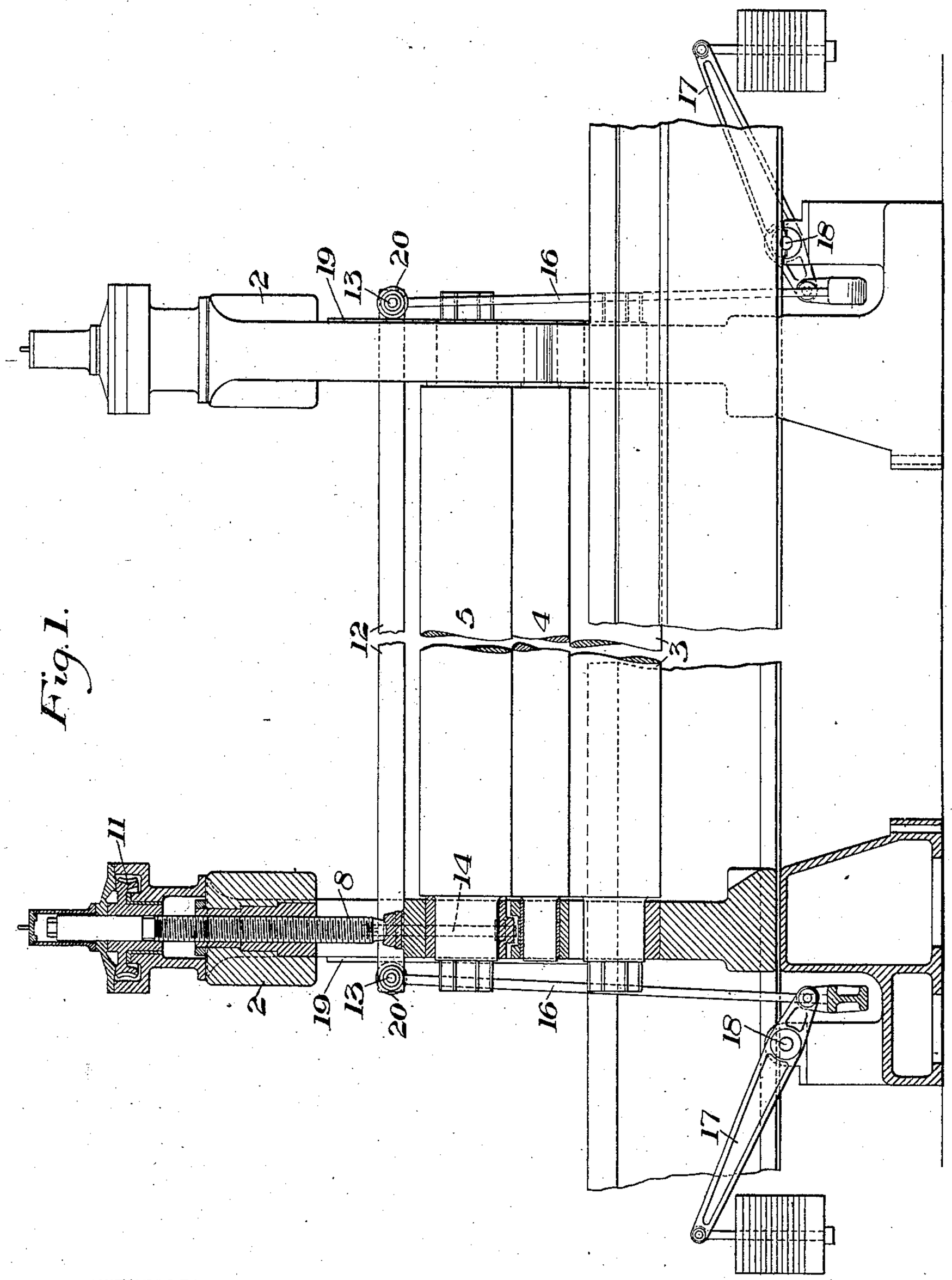
No. 884,278. PATENTED APR. 7, 1908.

A. T. KELLER.

ROLLING MILL.

APPLICATION FILED AUG. 22, 1907.

2 SHEETS—SHEET 1.



WITNESSES

W. W. Swartz

Walter Samaris

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A. T. Keller,

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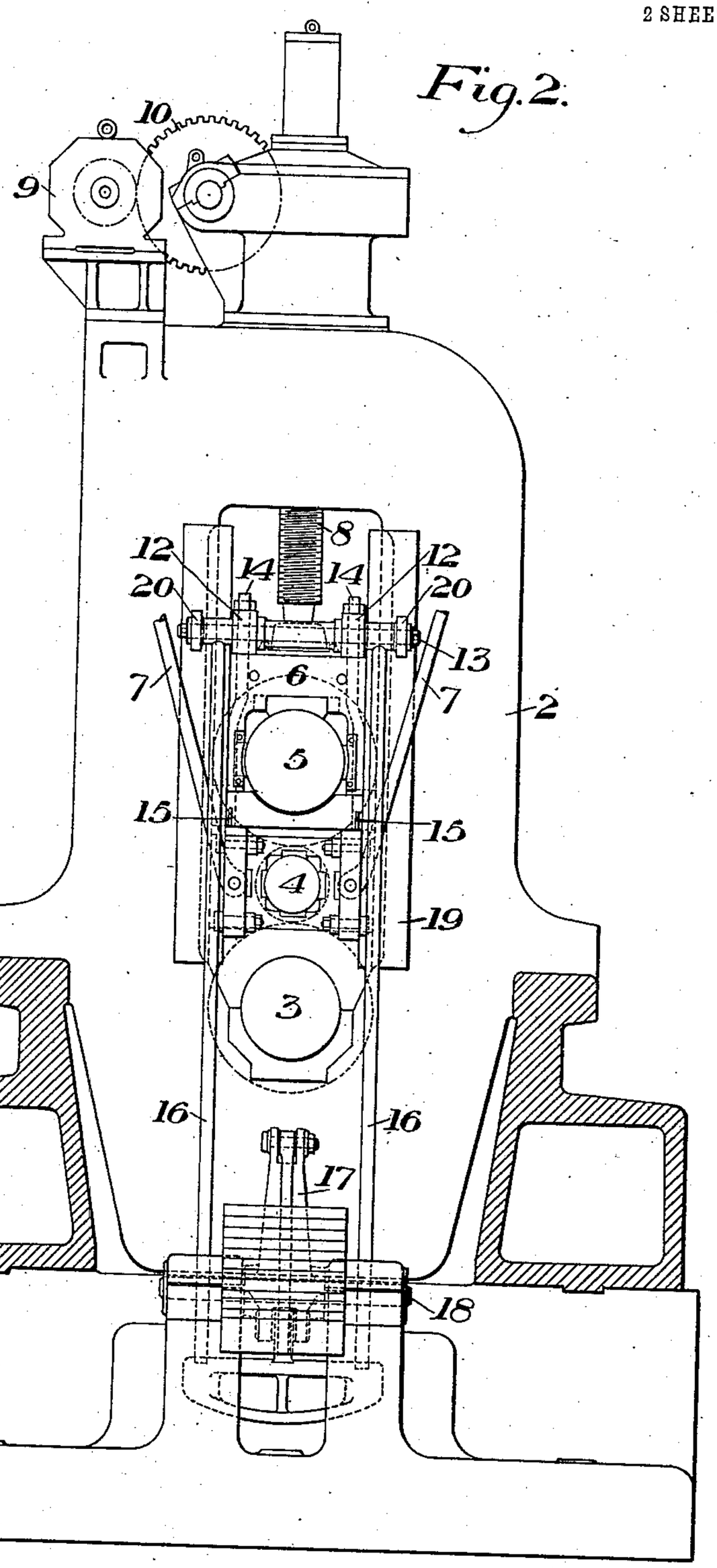
2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

ALBERT T. KELLER, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO MESTA MACHINE COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

ROLLING-MILL.

No. 884,278. Specification of Letters Patent. Patented April 7, 1908.

Application filed August 22, 1907. Serial No. 389,650.

To all whom it may concern:

Be it known that I, ALBERT T. KELLER, of Pittsburg, Allegheny county, Pennsylvania, have invented a new and useful Improvement in Rolling-Mills, 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 front elevation, partly broken away and partly in section of a portion of a rolling mill embodying my invention; and Fig. 2 is a side elevation of the same, with a portion of the frame in section.

My invention has relation to rolling mills and more particularly to new and useful means for counterbalancing the movable upper roll and for holding its boxes or bearings against the holding-down screws; and is designed to provide a simple and effective device of this character in which the counterbalance and its connections are arranged entirely outside of the roll housings, thereby facilitating the assemblage of the parts and access thereto.

The precise construction of my invention will be best understood by reference to the accompanying drawings, it being premised, however, that various changes may be made in the details of construction and arrangement of the parts by those skilled in the art without departing from my invention as defined by the appended claims.

While in these drawings I have shown my invention as applied to a three-high mill it is equally applicable to two-high mills in which the top roll is adjustable.

Referring to these drawings, the numeral 2 designates the roll housings, 3 the bottom roll, 4 the vertically movable middle roll and 5 the vertically adjustable top roll which is mounted in the boxes or bearings 6 which are arranged to slide vertically in guides in the housing windows.

7 designates actuating connections of any suitable character for raising and lowering the middle roll.

8 designates holding-down screws for the top roll which may be actuated in any usual suitable manner, as by the motor 9 through the spur gear 10 and worm gearing 11.

12 designates two parallel bars which extend across the mill above the top roll, said bars being spaced from each other, and having their ends extending through the windows of the roll housings. The extended end portions of these bars are connected outside the roll housing by rods or bolts 13 which hold the bars in square and which also serve as the means of attachment for the counterbalancing connections, as hereinafter described. The end portions of the bars are also each rigidly connected to the boxes by the lifting rods 14 whose upper ends are secured in the bars, and whose lower ends are beyond, or otherwise secured to the lower portions of the boxes 6, as shown at 15. Sleeved on each projecting end of each of the bolts 13 is a link 16 which is connected at its lower end to the short arm of a counterweighted lever 17 fulcrumed at 18.

19 designates vertical plates bolted to the housings at each side of the housing windows and extending inwardly over the ends of the roll boxes to retain the same in the roll housings. These plates are also extended to form bearing surfaces for rollers 20 which are loosely mounted on the end portions of the rods or bolts 13, which reduce the friction, and which also serve to prevent any swaying or endwise movement of the bars 12.

The operation will be readily understood. The counterweighted levers 17 maintain a constant upward pressure on the links 16 thereby raising the bolts or rods 13 and holding the boxes 6 of the top roll against the holding-down screws 8.

The advantages of my invention result from the construction and arrangement of the parts whereby the counterbalances and their connections are arranged entirely exteriorly of the roll housings, thereby obviating the difficulties of getting the connections up through or within the roll housings. Also from the fact that the parts are more readily accessible and from the simplicity and effectiveness of the construction and arrangement.

What I claim is:—

1. In a rolling mill, roll housings, a top roll, vertically movable boxes or bearings therefor, rigid connections between said boxes or bearings extending through the housing windows to the outer side of the housings, and counterbalancing devices connected to the extending ends of the connections; substantially as described.

2. In a rolling mill, a housing, a top roll, vertically adjustable boxes or bearings there-

for, a rigid connection between the same having its ends extending beyond the outer side of the roll housing, and counterbalances connected to the extended ends thereof; substantially as described.

3. In a rolling mill having a vertically adjustable top roll and holding-down screws therefor, bars extending parallel with the roll axes, said bars having their ends extended through the housing windows and exteriorly of the roll housings, rods or bolts connecting such extended ends at each side of the mill, lifting connections from the bars to the lower portions of the boxes or bearings for the top roll, and forming, with the bars, rigid connections between said boxes and bearings and counterweighted levers connected to said rods or bolts; substantially as described.

4. In a rolling mill having a vertically adjustable top roll and holding-down means therefor, rigid connections for the boxes of the top roll extending through the windows of the roll housings, rods or bolts connecting such extensions and having bearings against the roll housings, and lifting connections connected to said rods or bolts; substantially as described.

In testimony whereof, I have hereunto set my hand.

ALBERT T. KELLER.

Witnesses:

GEO. B. BLEMING,

GEO. H. PARMELEE.