

No. 661,138.

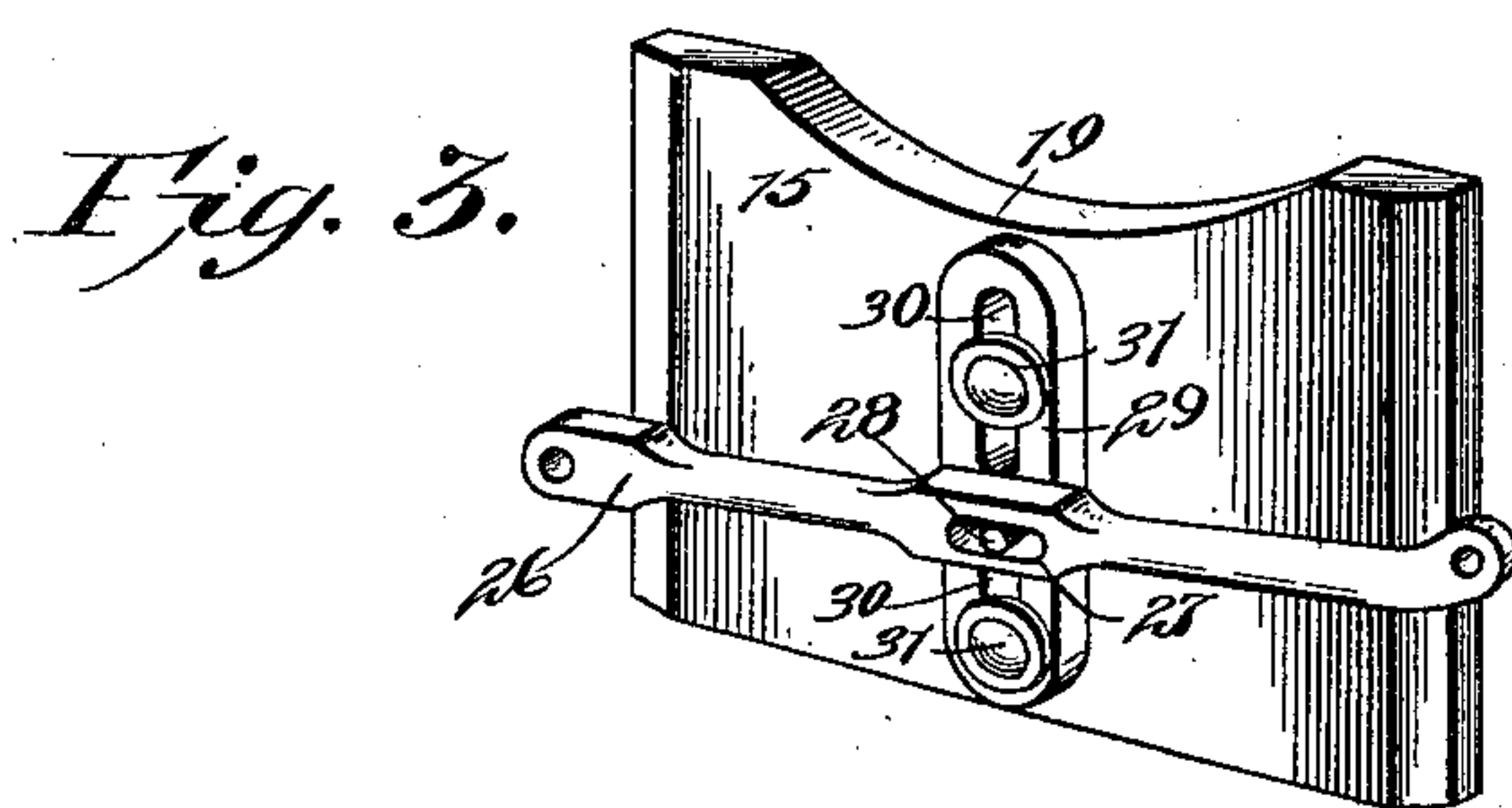
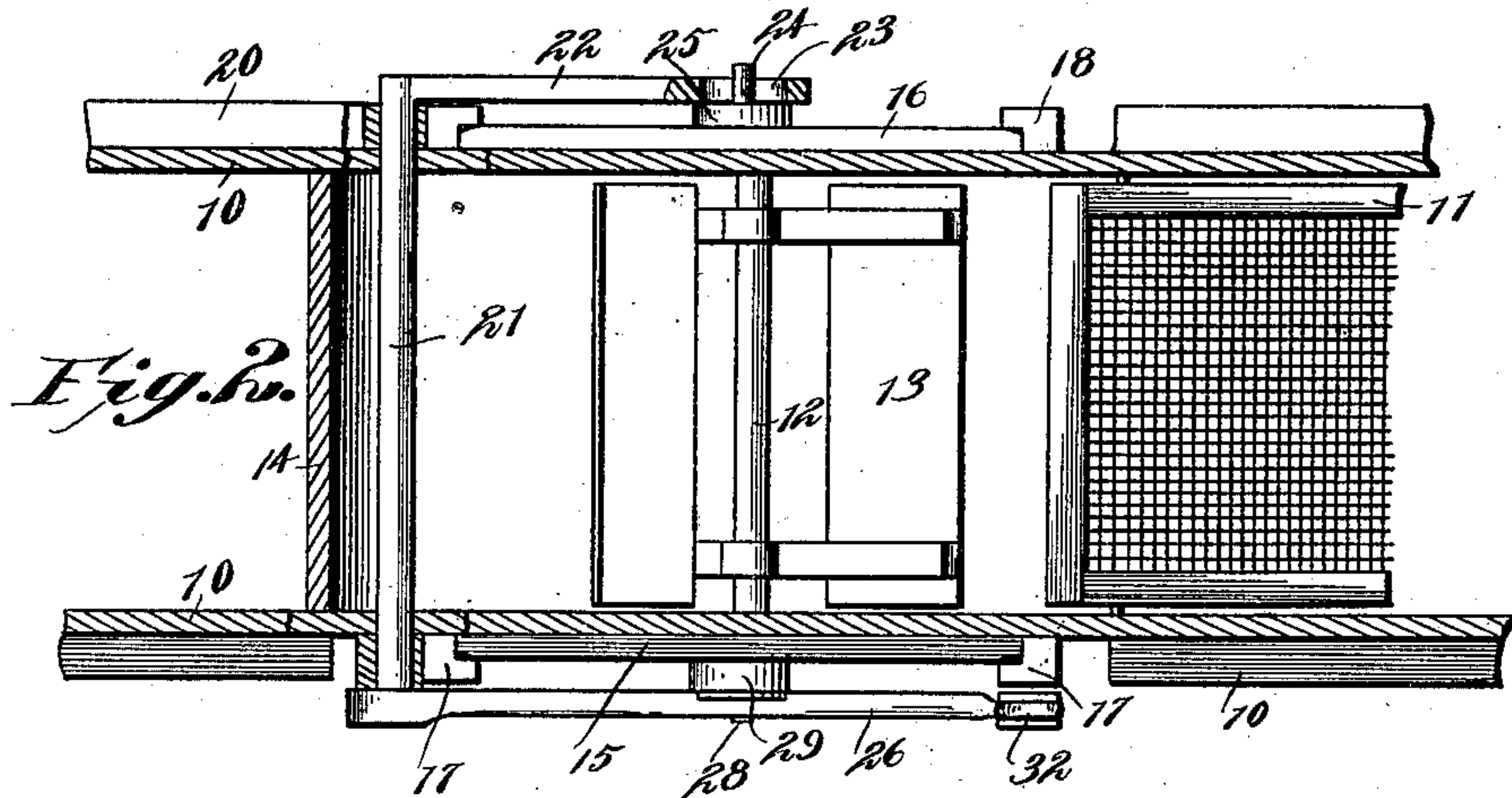
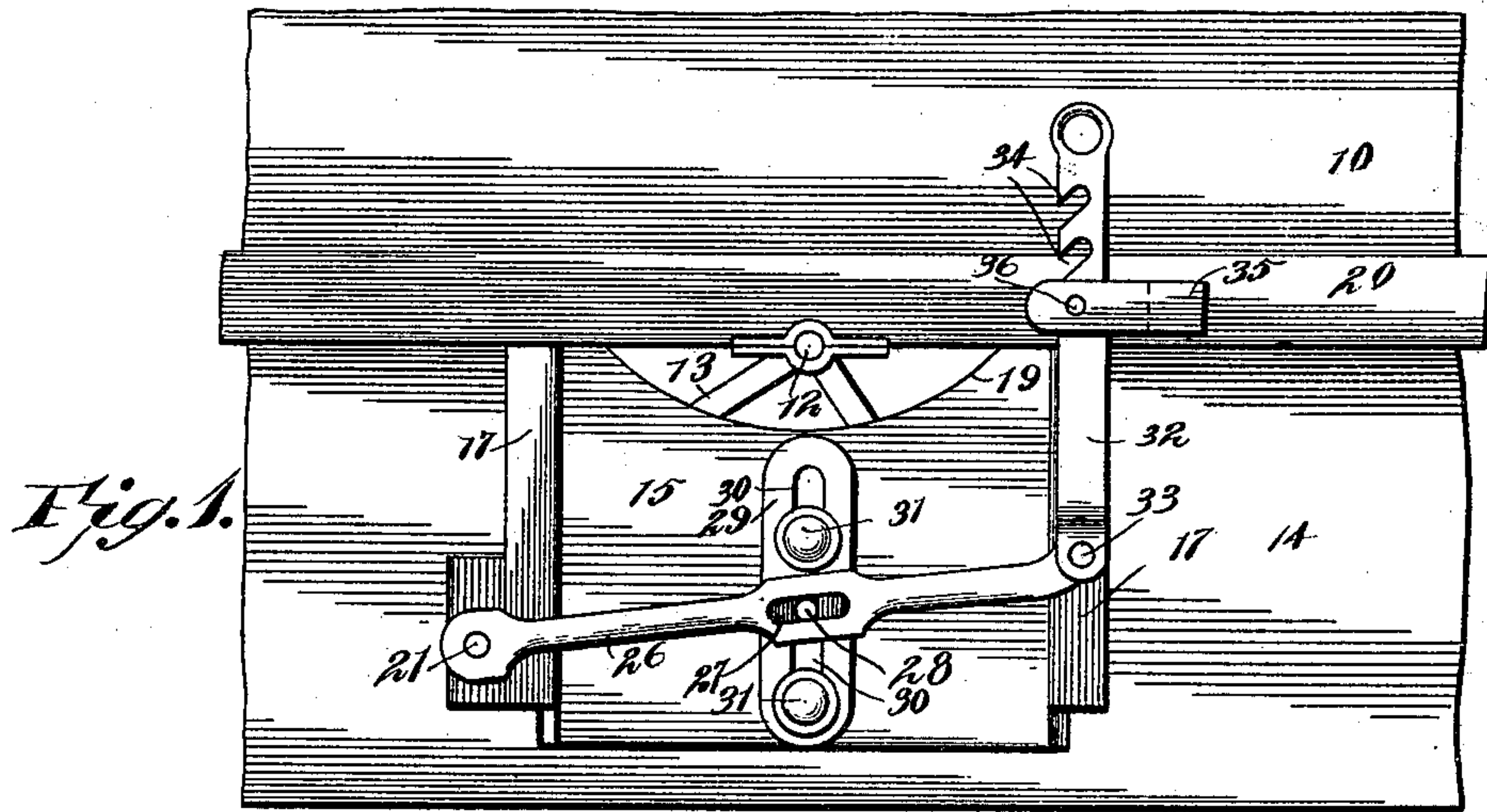
Patented Nov. 6, 1900.

J. ERNST.

BLAST REGULATOR FOR THRESHING MACHINES.

(Application filed Dec. 30, 1899.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

JOSEPH ERNST, OF URBANA, IOWA.

BLAST-REGULATOR FOR THRESHING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 661,138, dated November 6, 1900.

Application filed December 30, 1899. Serial No. 742,141. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH ERNST, a citizen of the United States, residing at Urbana, in the county of Benton and State of Iowa, have
5 invented a new and useful Blast-Regulator for Threshing-Machines, of which the following is a specification.

My invention relates to improvements in blast-regulators for threshing-machines; and
10 one object is to provide means for regulating the position of the wind boards or shutters in a manner to control the volume of air which may normally be supplied to the blast-fan and also to simultaneously adjust the pair of
15 shutters or boards for the purpose of increasing the volume of air beyond the limit permitted by the permanent adjustment of the boards or shutters relative to the inlet-ports.

A further object is to provide a simple and
20 durable construction which may be easily and cheaply applied to ordinary grain-separators, threshing-machines, clover-hullers, and kindred machinery.

With these ends in view the invention consists in the novel construction and combination of parts which will be hereinafter fully described and claimed.

In the drawings, Figure 1 is a side elevation of a portion of a machine-casing with my
30 improvements applied thereto. Fig. 2 is a sectional plan view of the mechanism shown by Fig. 1, the plane of the section being above the wind boards or shutters. Fig. 3 is a detail perspective view of one of the wind boards
35 or shutters with the adjusting devices applied thereto.

The same numerals of reference are used to indicate like and corresponding parts in each of the several figures of the drawings.

40 A part of the machine-casing is indicated by the numeral 10, and a part of the cleaning shoe or riddle is designated at 11. The usual fan-shaft 12 extends across the casing for supporting the fan 13 in operative relation to the shoe, said fan being housed partly
45 within the usual casing 14, having the air-inlets at its ends.

15 16 designate the shutters, which are applied against opposite sides of the machine-casing 10, and these shutters are confined
50 slidably in the guides 17 18, which are respectively secured against opposite sides of

the casing 10. The shutters or boards have their edges fitted in the guides, so as to be slidable across the blast-inlets, and these
55 shutters are directed by the guides to move in vertical paths. Each shutter or board is provided in its upper edge with a recess 19, and the shutter is adapted to slide vertically in its guides toward and from a rail 20. 60

21 designates a rock-shaft which extends across the machine in a horizontal plane above the shoe or riddle, said shaft extending through the casing and journaled in suitable
65 fixed bearings thereon. To one end of this rock-shaft is firmly secured a short crank-arm 22, which is provided near its free end with a longitudinal slot 23, in which is loosely fitted a pivotal stud or pin 24 on a vertically-adjustable bracket-plate 25, that is secured
70 firmly to the shutter 16. The other end of the rock-shaft 21 is equipped with an elongated crank-arm 26, the latter extending entirely across the shutter 16. Said crank-arm is provided at a point intermediate of its
75 length with a longitudinal slot 27, in which is loosely fitted the pivotal stud or pin 28 on the vertically-adjustable plate 29. This plate is provided with a longitudinal slot or slots 30, and the plate is fitted laterally against
80 the wind-board 15. The plate is fastened firmly to the board or shutter by means of bolts 31; but said plate may be adjusted on the board to vary the relation of the arm thereto. The plate 25 for the shutter 16 is
85 similar in construction and mode of adjustment to the plate 29, which connects the shutter 15 to its crank-arm, and in view of this similarity of the two plates I have not considered it essential to illustrate the plate 25
90 in detail. If desired, however, the plate 25 between the shutter 16 and the crank-arm 22 may be a non-slotted plate fastened securely to the shutter without making provision for its adjustment thereon. The arms 22 26 serve
95 to operatively connect the two shutters with the rock-shaft, so that a rocking movement of the shaft in its bearings will raise or lower the shutters simultaneously, the slots in the crank-arms providing the necessary compensating joints for the arms to move in an arc while the shutters are directed by their guides to travel in rectilinear paths. 100

A locking and adjusting arm 32 is disposed

in a vertical position adjacent to the free end of the long crank-arm 26, and the two arms are pivotally connected together, as at 33. The arm 32 is provided in one edge with a series of notches 34, and said arm is confined in a fixed keeper 35, secured firmly to the rail 20. This keeper supports a locking stud or pin 36, and the arm 32 may be adjusted for the pin to enter either of the notches therein.

In the service of my blast-regulator the bracket-plates of the wind-shutters may be adjusted thereon for the recessed upper edges of the shutters to bear against the rails 20 when the crank-arm 26 is in the position shown by Fig. 1, thus permitting a limited volume of air to pass through the recessed edges of the shutters to the blast-fan. The bracket-plates, however, may be adjusted vertically on the shutters, so as to make the crank-arms support the shutters in raised positions, such adjustment of the shutters being effected individually for the purpose of increasing the volume of air which may be admitted at one or both sides to the fan. It frequently happens, however, that it becomes necessary to admit a larger volume of air to both ends of the fan-casing than is possible with the shutters at the upper limits of adjustment afforded by the brackets which connect the arms to the shutters. This elevation of the shutters is effected simultaneously through the rock-shaft and the crank-arms, and when such adjustment is desired the notched bar 32 is released from engagement with the stud 36, the bar is raised to turn the arms and shaft, and the bar is again engaged by a different notch with the locking pin or stud. My attachment thus provides for a number of adjustments to regulate within certain limits the volume of air supplied to the fan, and this attachment may be readily and cheaply supplied to ordinary threshing-machines.

In the drawings I have shown the rock-shaft 21 as having the crank-arms secured to its ends; but the preferable construction is to make one of the crank-arms integral with the rock-shaft, while the other crank-arm is made separate therefrom, so that the rock-shaft can be inserted in place and a separate crank-arm secured fast thereto.

The position of the rock-shaft and the crank-arms with relation to the riddle or shoe and the fan will be determined by the position of the wind-boards relative to the riddle and the sills of the machine. In some types of grain-separators the wind-boards are above the sills, so as to admit the air properly to the fan-casing, so as to be blown through or upon the riddle, while in other types of separators the fan and shoe are so located as to require the wind-boards being placed below the sills of the machine. In Fig. 1 of the drawings I have shown a blast-regulator mechanism adapted to grain-separators of the last-named type, in that the wind-boards are arranged below the sills, and this arrange-

ment requires that the rock-shaft shall be placed across the machine below the riddle. It is perfectly obvious, however, that the relation of parts may be changed without the exercise of invention—that is to say, the wind-boards may be arranged in guides above the sills of the machine, thus practically inverting the blast-regulator attachment and requiring the rock-shaft to be placed across the machine and over the riddle.

My blast-regulator is adapted to effect the simultaneous adjustment of the shutters on both sides of the machine; but there is an important consideration which must be observed in the practical service of a device of this character which is subserved in the present case by the individual adjustment of the shutters on the crank-arms. It frequently happens that the separator is used in windy weather and that more air is admitted on the side of the machine against which the wind blows than is supplied to the off or lee side of the machine, thus effecting an irregularity in the volume of air supplied at the ends of the fan-casing. My improvement obviates this difficulty, because the shutter on the wind side of the machine may be adjusted so as to admit a smaller volume of air to the casing than the volume supplied by the shutter on the opposite or lee side of the machine. At the same time the shutters are capable of simultaneous adjustment by the rock-shaft, but one shutter will be raised a less distance than the other shutter. Hence the shutter on the wind side of the machine serves to regulate the admission of air proportionately to the volume admitted by the shutter on the lee side of the machine.

Having thus described the invention, what I claim is—

In a blast-regulator for threshing-machines, the combination of the vertically-movable wind boards or shutters in guides on the sides of the fan-casing, the rod-shaft extending through the fan-casing and having its bearings in the sides thereof, said rod-shaft having the crank-arms at its ends, provided with the slots 27 and one of said crank-arms being extended in length beyond said slots, the locking and adjusting arm connected to the free end of said extended crank-arm, the vertically-adjustable plates on the said wind boards or shutters and having the vertical slots, and the pins 28, the latter playing in the slots 27 of the crank-arms, and adjusting-bolts 31, securing said plates to said wind boards or shutters, and engaging the vertical slots in said plates, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOSEPH ERNST.

Witnesses:

CHAS. H. NIETERT,
F. M. CALDWELL.