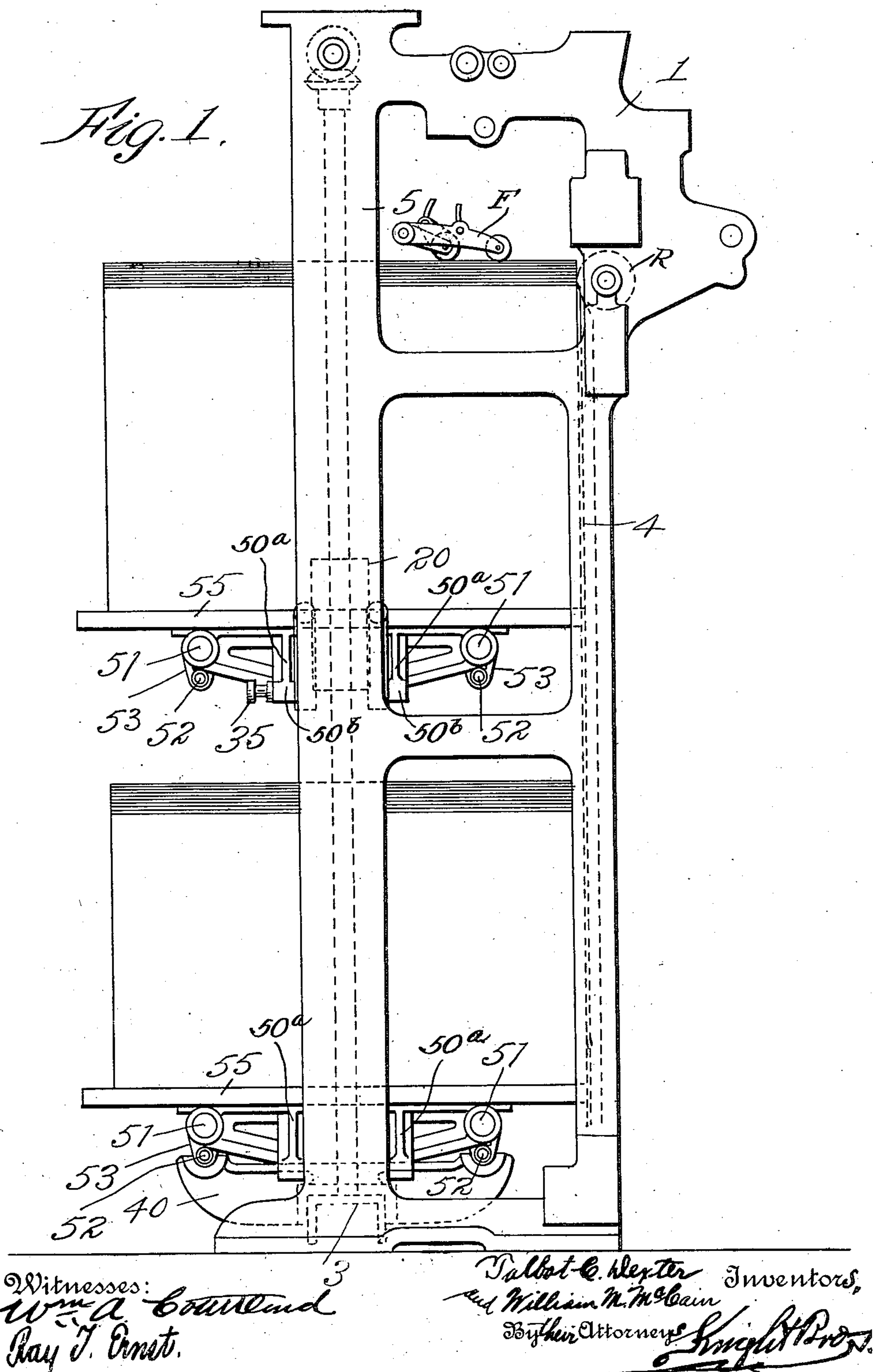


PAPER FEEDING MACHINE.

Patented July 25, 1911

5 SHEETS—SHEET 1.

998,960.



T. C. DEXTER & W. M. McCAIN.

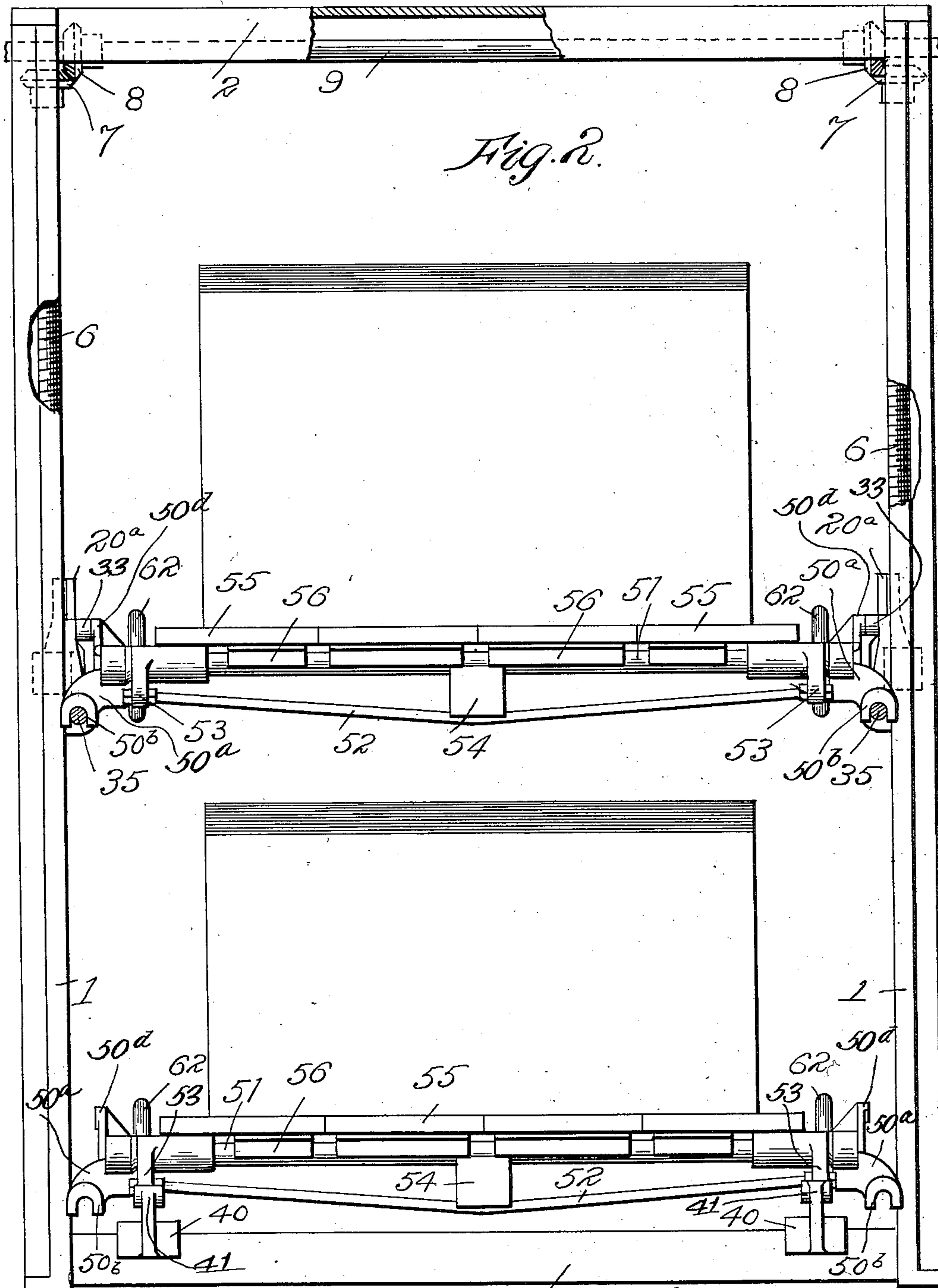
PAPER FEEDING MACHINE.

APPLICATION FILED APR. 30, 1909.

998,960.

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5 SHEETS—SHEET 2.



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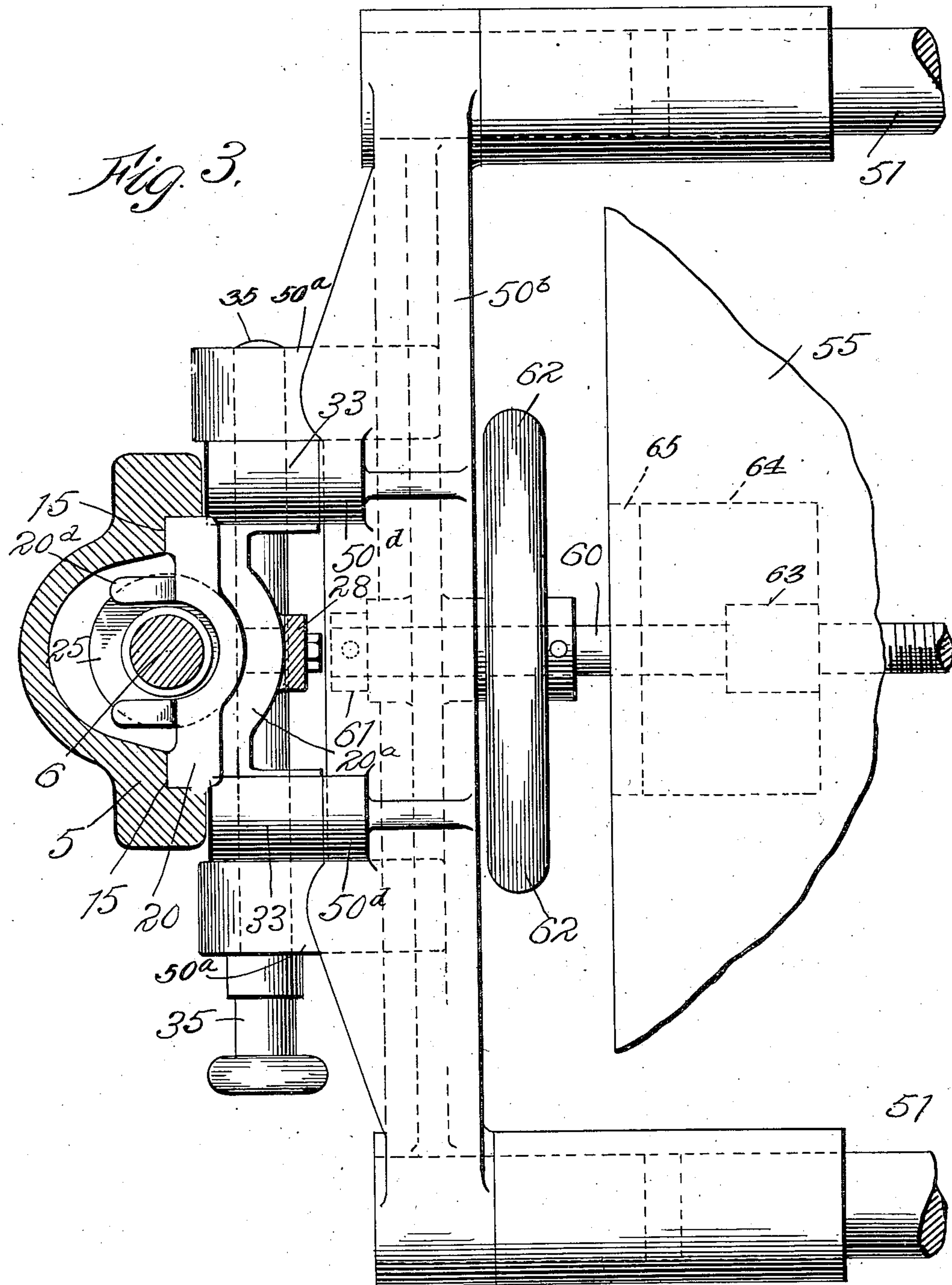
PAPER FEEDING MACHINE.

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5 SHEETS—SHEET 3.

998,960.



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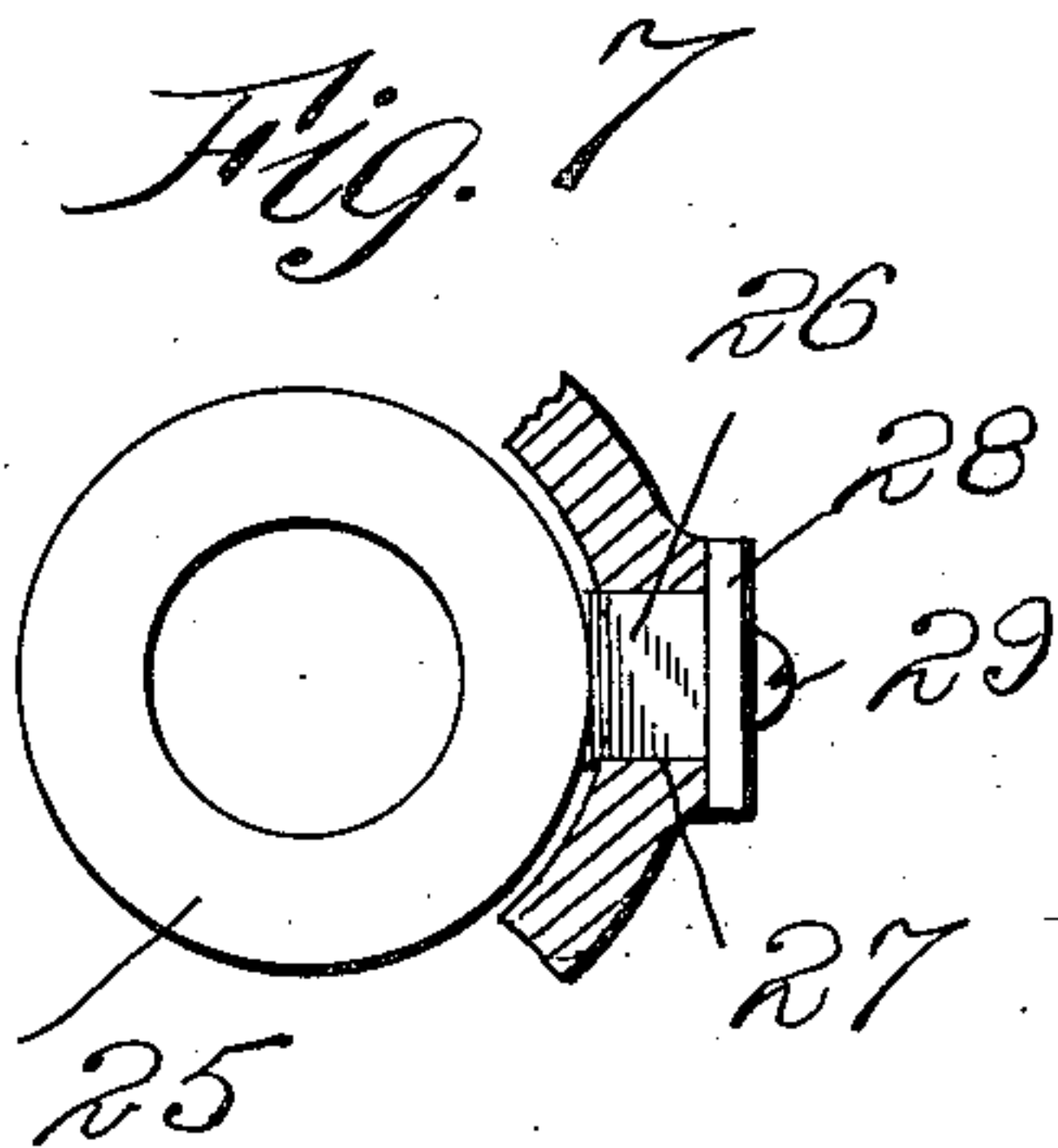
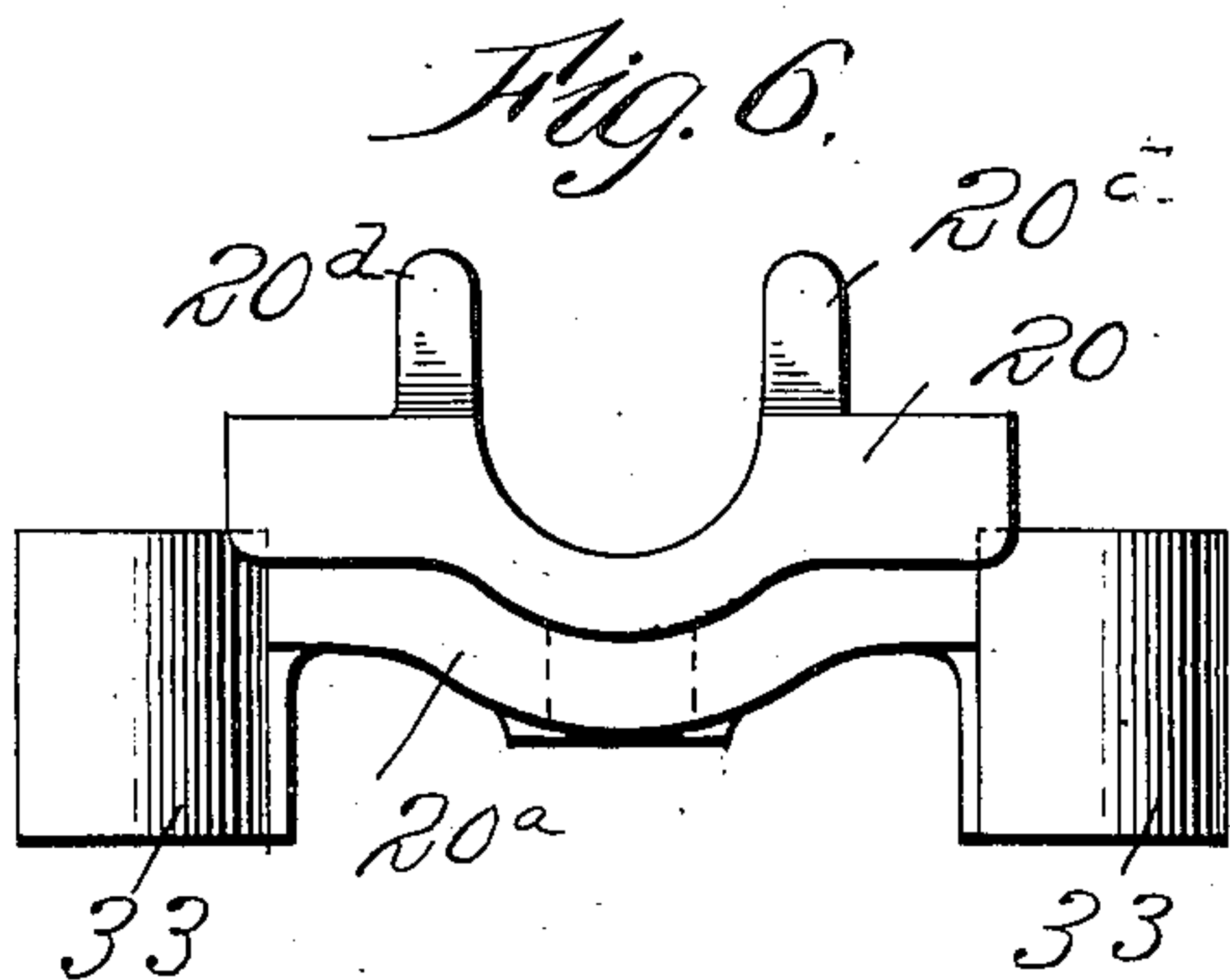
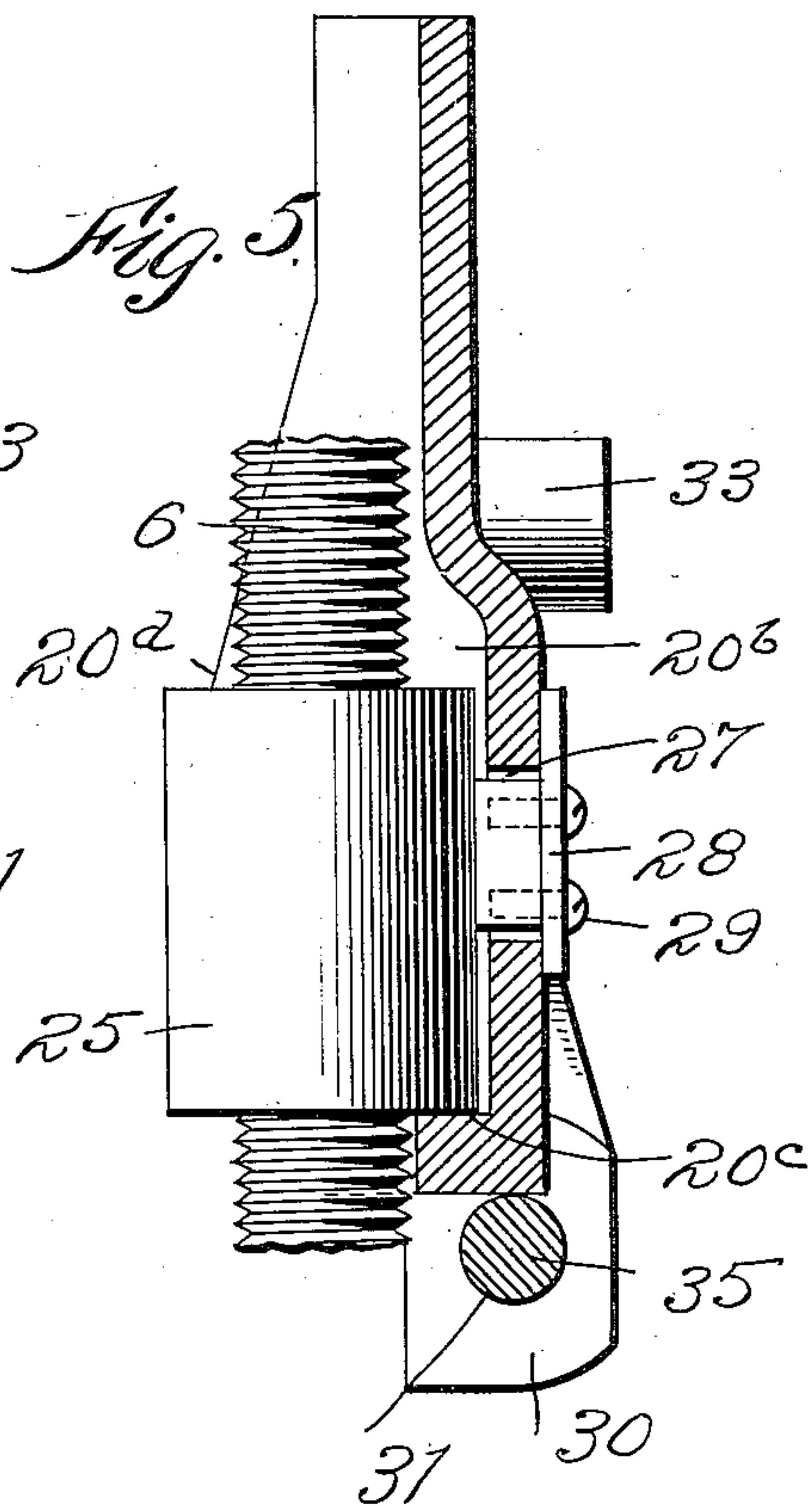
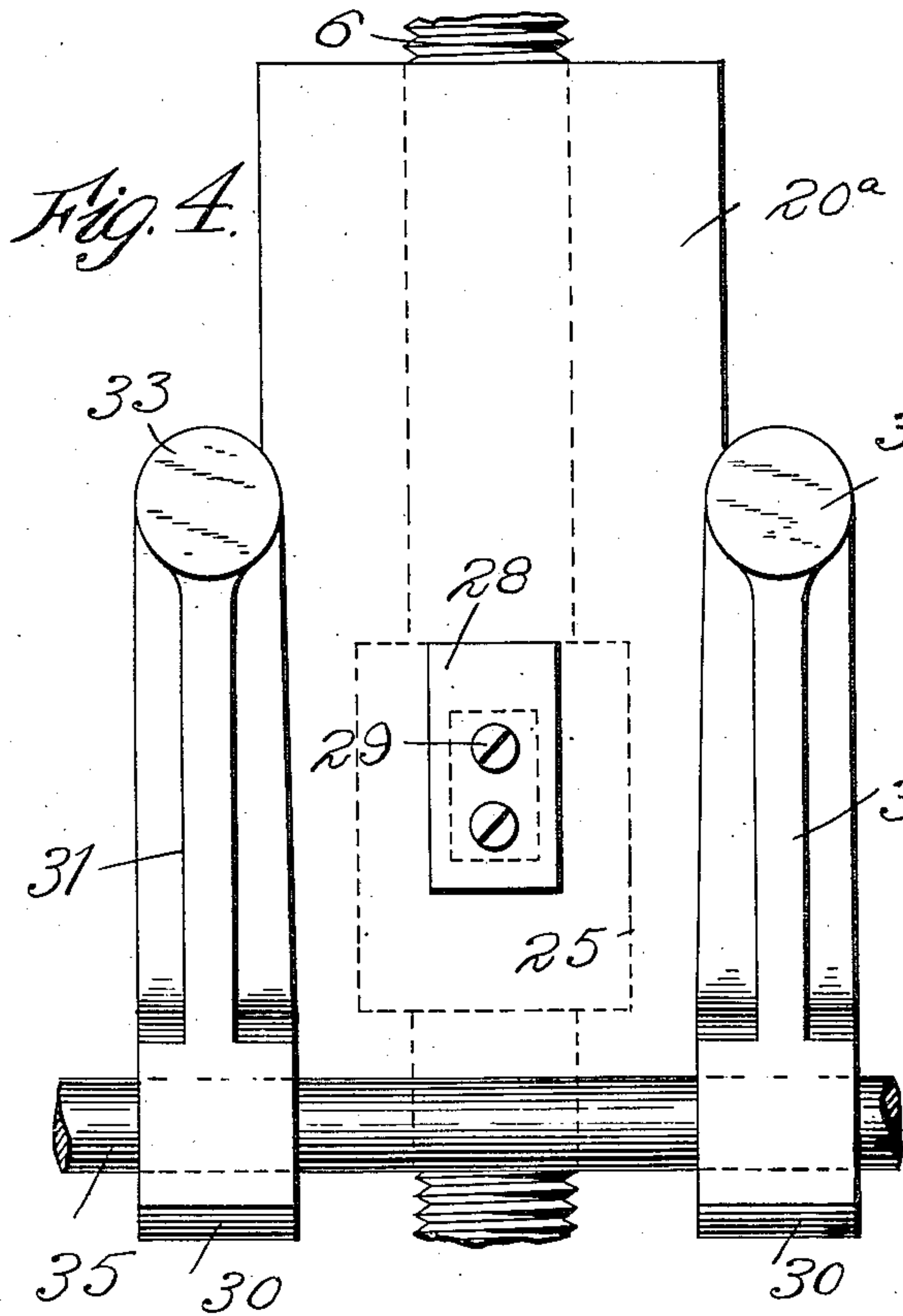
PAPER FEEDING MACHINE.

APPLICATION FILED APR. 30, 1909.

998,960.

Patented July 25, 1911.

5 SHEETS—SHEET 4.



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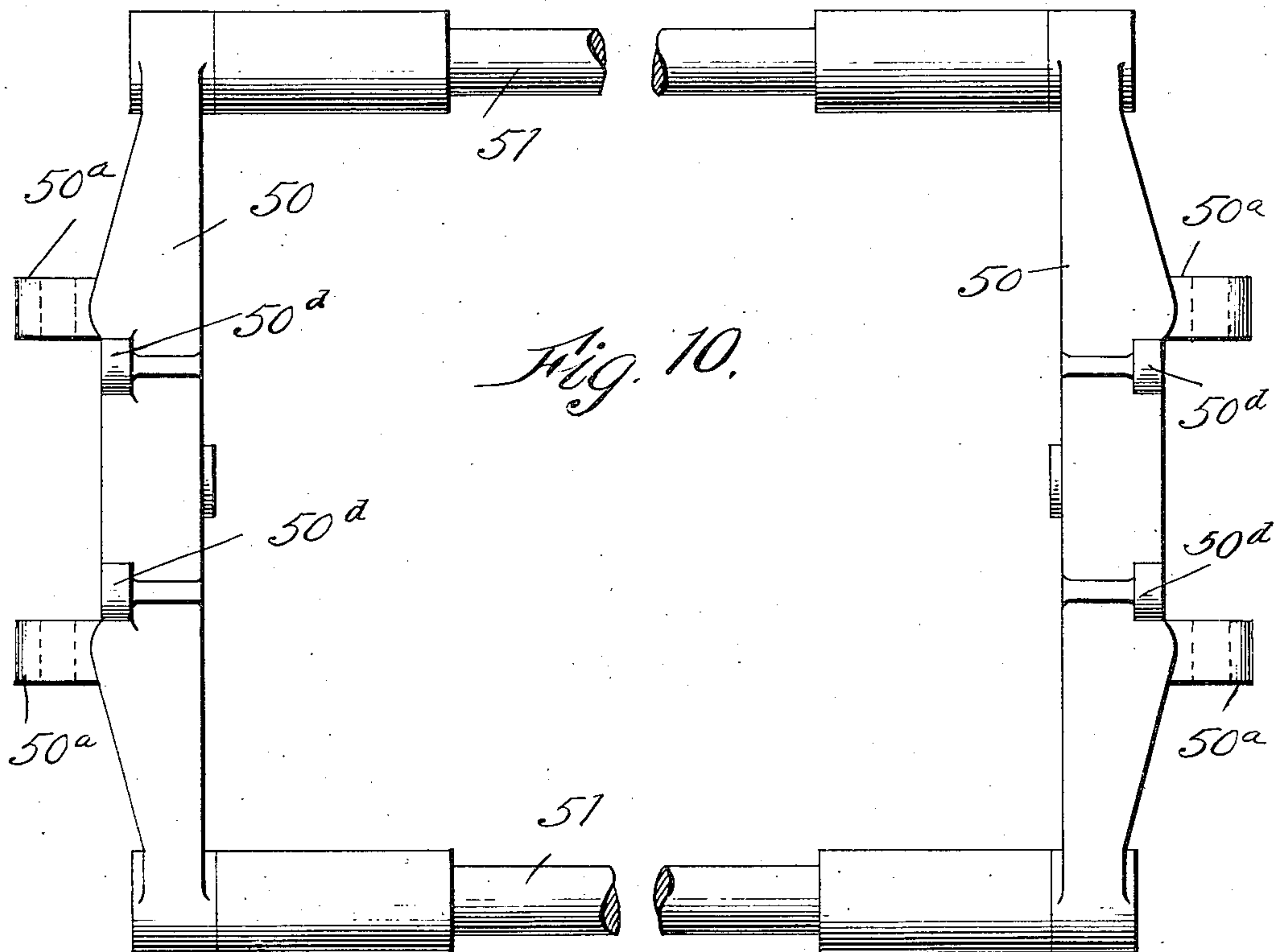
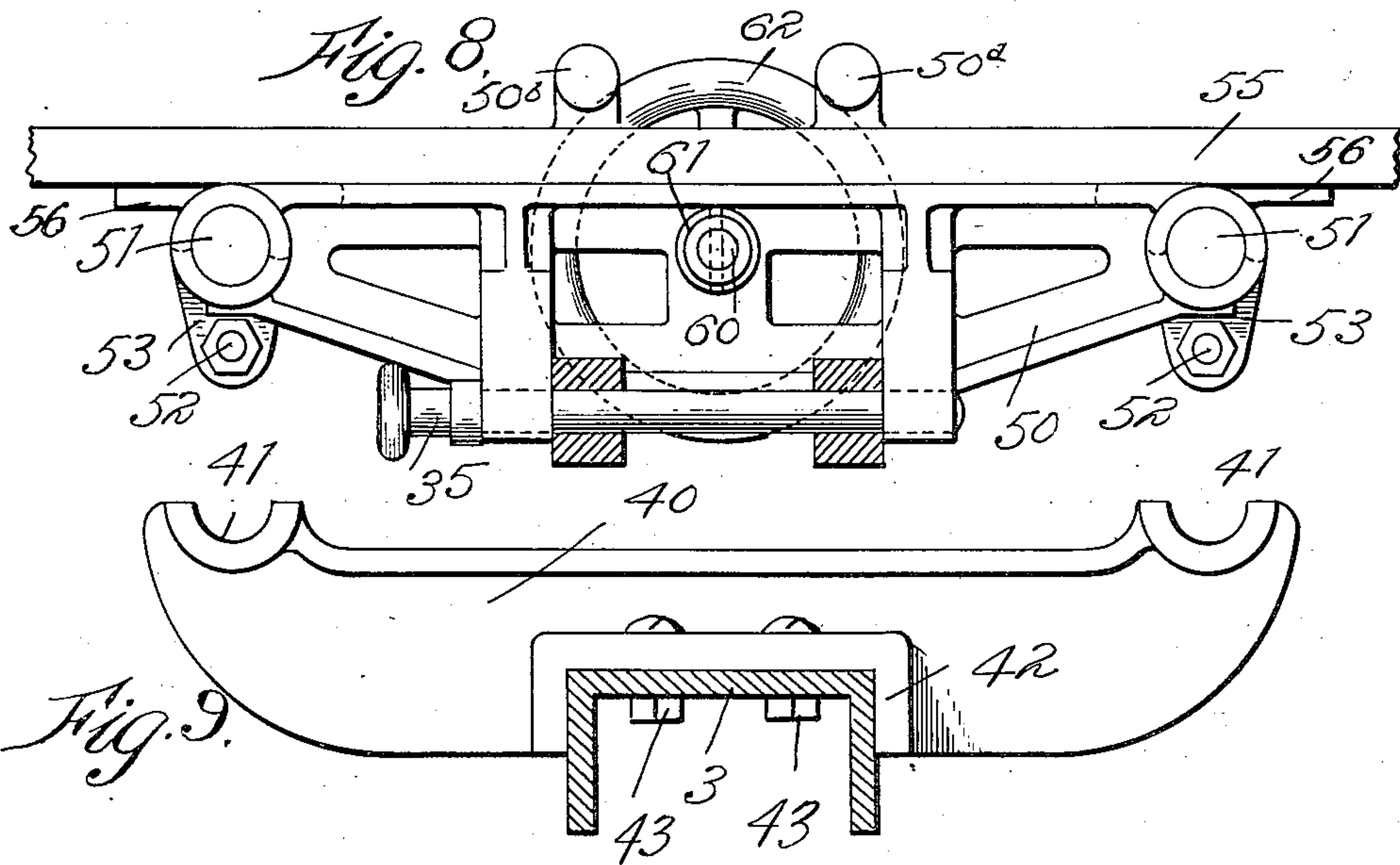
PAPER FEEDING MACHINE.

APPLICATION FILED APR. 30, 1909.

998,960.

Patented July 25, 1911.

5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

TALBOT C. DEXTER AND WILLIAM M. McCAIN, OF PEARL RIVER, NEW YORK, ASSIGN-
ORS, BY DIRECT AND MESNE ASSIGNMENTS, TO DEXTER FOLDER COMPANY, OF
PEARL RIVER, NEW YORK, A CORPORATION OF NEW YORK.

PAPER-FEEDING MACHINE.

998,960.

Specification of Letters Patent. Patented July 25, 1911.

Application filed April 30, 1909. Serial No. 493,164.

To all whom it may concern:

Be it known that we, TALBOT C. DEXTER and WILLIAM M. McCAIN, both citizens of the United States, residing at Pearl River, in the county of Rockland and State of New York, have invented certain new and useful Improvements in Paper-Feeding Machines, of which the following is a specification.

The present invention relates to improvements in the type of paper feeding machines in which sheets are fed successively from an adjustably supported pile and conveyed to a printing press, folding machine or other machine designed to operate upon the separate sheets.

The present invention consists in certain improvements in the pile supporting and elevating mechanism for this type of paper feeding machines, the object of the present invention being to avoid as much as possible the loss of time now consumed in loading a pile of sheets upon the paper supporting and elevating platform.

To this end the present invention comprises a paper feeding machine having suitable pile elevating mechanism, including brackets which are movable vertically in the machine frame, and two pile supporting platforms formed with means for engaging the elevating brackets. At the base of the feeding machine frame, we provide a suitable frame or cradle for supporting one of the platforms, while the other platform carrying a pile of sheets is supported by the elevating mechanism in proper relation to the separating and feeding devices of the machine. While the separating and feeding devices are operating upon the pile of sheets upon the upper platform which is carried by the elevating mechanism, the operator can prepare a second pile of sheets upon the lower platform which is supported in the cradle or frame at the base of the machine, thereby utilizing the time when the machine is in operation for preparing a second pile of sheets. When the pile upon the upper platform is exhausted, the pile upon the lower platform will be ready so that the operator arrests the machine long enough to lower the brackets of the elevating mechanism into position to engage the lower platform, the upper exhausted platform being permitted to rest temporarily upon the top of the pile carried by the lower platform

while the elevating brackets are disengaged from it, when it is lifted off from the top of the pile by the operator and laid one side until the lower platform is elevated sufficiently to permit the exhausted platform to be placed in position at the base of the machine upon the frame or cradle.

To facilitate the operation of the improved mechanism, the means of engagement between the elevating brackets and pile supporting platforms are so constructed that they engage only in an upward direction, that is, the brackets of the elevating mechanism will engage the platforms when the brackets are moving upwardly, but will automatically free themselves from the platforms when the brackets are moving downwardly. The specific embodiment of this feature of the invention disclosed in the present application comprises elevating brackets having inwardly presented ears or lugs with horizontal openings formed through them to receive coupling pins or bolts, and outwardly presented arms upon the ends of the pile supporting platform formed with downwardly presented open sockets or recesses which fit over and engage the pins or bolts upon opposite sides of the ears or lugs of the elevating brackets so that when the said brackets move upwardly, they will carry the pile supporting platform with them, and when said brackets move downwardly, the platform will descend until it rests upon the top of the pile of paper upon the lower platform, when the elevating brackets will move the coupling pins or bolts out of engagement with the arms of the upper platform and free said platform so that it can be removed from the top of the second pile of sheets. In the specific arrangement, it will of course be understood that the coupling pins or bolts are withdrawn from the ears or lugs of the elevating brackets before said brackets are lowered to the plane of the lower platform, so as to permit said ears or lugs to pass beneath the arms of the lower platform, when said coupling pins or bolts are again inserted preparatory to the reversal of the elevating mechanism for carrying upwardly the second pile of sheets.

In order that our invention may be fully understood, we will first describe the same with reference to the accompanying draw-

ings, and afterward point out the novelty more particularly in the annexed claims.

In said drawings: Figure 1 is a side elevation of a paper feeding machine embodying our improvements, the sheet feeding devices being omitted. Fig. 2 is a rear elevation of the same. Fig. 3 is an enlarged horizontal sectional view of a part of the same. Figs. 4, 5, 6 and 7 are enlarged detail views of the platform engaging brackets of the pile elevating mechanism. Fig. 8 is a detail end elevation of one of the pile supporting platforms. Fig. 9 is a vertical transverse sectional view of the lower part of the machine frame showing a part of the platform supporting cradle. Fig. 10 is a plan view of the main frame of the pile supporting platform.

Paper feeding machines of the type to which our improvements apply are usually constructed with heavy frames such as illustrated in the accompanying drawings, in which the main frame consists of the upright side frames 1, transverse top frame 2, and the transverse bottom frame 3. These main frame parts are properly secured together and braced by the usual tie bolts in the manner well understood. At the front of the machine frame a series of vertical bars or slats 4 is provided to guide the front edge of the pile of sheets.

R indicates one of a series of under feed rollers suitably journaled in the machine frame in the path of sheets and adapted to cooperate with the usual drop rollers (not shown) for delivering the successive sheets from the pile.

The reference character F indicates some suitable form of feeding off device designed to move forwardly the successive top sheets from the pile into position to be taken by the drop roller delivery mechanism above referred to. The specific form of the feeding off device indicated is that covered by Patent No. 768,979 granted August 30, 1904. Illustrations of the feeding off device and drop roller delivery mechanism are intended only as conventional representations of any suitable forms of these devices for accomplishing the stated purpose.

Each of the vertical side frames 1 has a main channeled upright standard 5 in which are located the vertical elevating screws 6 suitably journaled in bearing brackets (not shown) at their upper and lower ends and carrying at their upper ends bevel gears 7 meshing with similar bevel gears 8 keyed to the opposite ends of a horizontal coupling shaft 9 which is suitably journaled within the top cross bar 2 of the machine. This cross shaft 9 which couples the two elevating screws 6 is usually provided with both hand and power mechanism for operating the elevating screws. This operating mechanism is very common and well known in the art

and for this reason we have not thought it necessary to illustrate it, it being sufficient for the understanding of the present invention to bear in mind that the elevating screws are reversible so as to elevate or lower the pile supporting platform. In the application of an electric motor or other power for operating the elevating screws, it is common practice to provide automatic devices for arresting the operation of the screws at the limits of the upper and lower positions of the pile supporting platform so as to avoid injuring the mechanism, it being very desirable to employ power for operating said screws in the interest of saving time.

Each of the standards 5 of the machine frame is formed upon its inner face with a guideway or track indicated at 15 and mounted to slide vertically in said guideways, or tracks are the brackets 20 of the elevating mechanism. Each bracket 20 is formed with a vertically arranged oblong guiding portion 20^a which has a sliding fit with the track or guideway of the frame, and a curved recess or pocket 20^b for the reception of a cylindrical nut 25 which is threaded upon an elevating screw 6 and is confined against relative vertical movement upon the bracket 20 by its engagement with the lower shoulder 20^c and the upper lugs or fingers 20^d of the bracket. This cylindrical nut 25 has formed on its inner face an oblong block 26 which extends through an oblong slot or opening 27 formed through the vertical wall of the bracket 20, and a locking plate 28 engages the wall of said bracket 20 and is secured to the block 26 by screws 29. By this means, it will be observed that the bracket and nut are securely fastened together so that the brackets will be carried up and down upon the elevating screws by the action of the screws upon the nuts. Each bracket has two inwardly presented ears or lugs 30 formed with transverse horizontal openings 31 through them, for the reception of coupling pins or bolts 35 hereinafter more particularly explained. The brackets are also formed with inwardly presented bearing lugs 33 for the purpose which will be hereinafter explained.

Mounted at the base of the machine frame upon the transverse channeled bar 3 are two stationary brackets 40 extending forward and back and formed with upwardly presented recesses or sockets 41 at their opposite ends. The brackets 40 are formed with yokes 42 fitting over the channeled bar 3 of the frame and are preferably secured thereto by bolts 43. The brackets 40 constitute a cradle or yoke for supporting a pile platform in convenient horizontal position for the operator to build up a pile of sheets thereon. The pile supporting platform comprises preferably the end frames 50 connected by the side bars 51 and braced lon-

5 longitudinally by the truss rods 52 secured to
 the lugs 53 of the end frames and centrally
 sustaining the bars 51 through the blocks 54.
 The table or floor of the pile supporting
 10 platform is preferably formed of a plu-
 rality of boards 55 of proper length to ex-
 tend transversely of the platform frame
 50—51 (that is, forward and back with ref-
 erence to the feeding machine), each board
 15 having secured to its under surface adjacent
 to its opposite end, the U-shaped socket
 plates 56 which fit over the horizontal bars
 51 of the platform frame, as indicated in
 Figs. 2 and 8 of the drawings. The boards
 20 55 are capable of adjustment longitudinally
 of the frame 50—51 for the purpose of accu-
 rately adjusting a pile of sheets upon the
 platform in the feeding machine. The ad-
 justment is accomplished in any suitable
 25 manner, but preferably by the means shown,
 consisting of a large screw 60 at each end of
 the platform frame. Each of these screws
 60 is freely journaled in the end frame 50
 and confined against longitudinal displace-
 30 ment by a nut 61. A hand wheel 62 is fixed
 upon the screw to facilitate operating it.
 The screw 60 is threaded through a down-
 wardly presented lug 63 formed upon a
 plate 64 which has an upwardly extended
 35 flange 65 seated in a recess cut in the edge of
 one of the platform boards 55. The con-
 struction is the same at both ends of the
 platform, so that it will be understood that
 to adjust a pile of sheets longitudinally of
 40 the platform (that is, transversely of the
 paper feeding machine) the screw 60 at one
 end of the platform is rotated to release the
 platform boards at that end and the screw
 60 at the opposite end is rotated to force the
 45 platform boards toward the screw which
 was first operated. When the pile is placed
 in the proper position, the boards are se-
 curely held against displacement by tighten-
 ing up on both screws. The elements 62, 64
 and 65 are shown only in dotted lines in Fig.
 3 of the drawings, since such structure is
 old and well known in the art and forms no
 part of the invention claimed herein.

50 The platform end frames 50 are formed
 with outwardly presented arms 50^a formed
 with downwardly presented open sockets or
 recesses 50^b. The arms 50^a at each end of
 the platform frame are spaced to receive
 55 between them the ears or lugs 30 of one of
 the elevating brackets so as to permit the
 brackets to move freely vertically through
 said platform arms when the coupling be-
 tween these parts is removed.

60 The platform frame is provided at each
 end with the braced bearing lugs 50^a which
 are arranged in proper position to engage
 the bearing lugs 33 of the brackets when the
 platform is in operative position and cou-
 65 pled to the brackets.

35 are the headed coupling pins or bolts

which are adapted to be inserted in the
 openings 31 of the ears or lugs 30 so as to
 project upon opposite sides of said ears or
 lugs and engage in the sockets or recesses
 50^b of the platform arms 50^a so as to lock 70
 the platform upon the elevating brackets.

The main purpose of the above described
 invention is to enable the operator to place a
 supplemental pile receiving table or plat-
 form in position upon the cradle at the base 75
 of the machine beneath the pile supporting
 platform which is in operation, in order
 that the time in which the feeding machine
 is working upon the upper pile of sheets may
 be utilized for piling a succeeding pile of 80
 sheets upon the supplemental table. When a
 pile supporting platform is mounted upon the
 cradle at the base of the machine, the four
 lugs 53 of the platform frame rest in the
 four recesses or sockets 41 of the cradle 85
 bracket arms 40. It will of course be under-
 stood that the first table to be placed in
 operation must be operated for a sufficient
 length of time to elevate it far enough above
 the cradle to permit the insertion of the 90
 second table upon the cradle. When this
 has been done, the second pile is gradually
 built up upon the lower table as rapidly as
 space is provided by the feeding up of the
 top table which is in action. When the pile 95
 of sheets upon the upper table is exhausted,
 and the pile upon the lower table, supported
 by the cradle, is piled up as far as possible,
 the machine is stopped and the table ele-
 vating screws are reversed to move the ele- 100
 vating brackets downwardly. This lower-
 ing of the exhausted table is preferably accom-
 plished by power, although it may be done
 by hand. The exhausted table or platform 105
 will move downwardly with the brackets
 until it comes in contact with and rests upon
 the top of the second pile of sheets, the
 brackets continuing downwardly, causing
 the coupling pins 35 to move out of engage- 110
 ment with the platform arms 50^a. After the
 coupling pins have moved away from the
 platform arms, they can be readily with-
 drawn from the ears or lugs 30 and placed
 to one side. The elevating screws are main- 115
 tained in operation in their reverse or lower-
 ing direction, until the brackets reach their
 lowermost position, the ears or lugs 30 pass-
 ing downwardly between the platform sup-
 porting arms 50^a of the second table, which 120
 is supported in proper position for this pur-
 pose upon the cradle. When the elevating
 brackets reach their lowermost position, the
 elevating screws are arrested, either auto-
 matically or by hand, and the coupling pins 125
 or bolts are again inserted in the openings
 of the ears or lugs 30 and the elevating
 screws again thrown into operation in a di-
 rection for elevating the brackets, with the
 result that the coupling pins will be moved up
 into engagement with the sockets or recesses 130

50^b of the arms 50^a of the platform upon the cradle which is supporting the second pile of sheets. While the elevating brackets are being lowered, as just explained, the operator lifts from the top of the second pile of sheets the boards 55 and frame 50, 51, 52 constituting the exhausted table or platform above referred to and places that to one side. When the second platform and pile are properly locked upon the elevating brackets, the elevating mechanism is operated until the top of said second pile is brought into the plane of feed, when the feeding machine is again placed in operation. As soon as this second platform has been elevated sufficiently, the first platform is then placed upon the cradle and another pile built up as rapidly as space is provided in the same manner as above explained. This plan for economizing in time in supplying piles of sheets to automatic paper feeding machines is of great importance in view of the rapidity of operation of such machines on all classes of work, but it is of particular advantage when operating upon thick paper or cardboard, in which cases the pile of sheets is much more rapidly exhausted than with thinner sheets of paper.

The purpose of the braced bearing lugs 33 on the brackets 20 and the braced bearing lugs 50^a on the pile supporting platform is to equalize the lateral strain upon the brackets; it being observed that the coupling pins 35 engage the brackets and platform below the point of connection between the brackets and screw nuts, while the bearing lugs 33 and 50^a are arranged above the point of connection between the brackets and nuts. If it were not for the provision of these bearing lugs, there would be a tendency to distort the upper ends of the elevating brackets inwardly toward the platform. With the described arrangement, however, the bearing lugs upon the platform register with the bearing lugs upon the brackets, and by reason of the weight of the pile of sheets carried by the platform, said parts are pressed tightly together with the result that the platform supporting the pile is rigidly attached to the elevating brackets.

What we claim is:

1. In a paper feeding machine, the combination of an upright frame, elevating mechanism mounted in said frame and including traveling brackets formed with inwardly presented ears or lugs, a pile carrying platform provided with outwardly presented arms, a cradle or support mounted at the base of said frame and adapted to receive said platform and support it in pile receiving position, and coupling pins or bolts adapted to pass through openings in said ears or lugs and engage said arms for coupling said platform to said brackets.

2. In a paper feeding machine, the com-

bination of a frame, reversible pile elevating mechanism including inwardly presented brackets, a pile supporting platform having outwardly presented arms, said inwardly presented brackets and said outwardly presented arms being mounted in parallel planes to permit free relative motion past each other, and detachable means for coupling the brackets of the elevating mechanism with the arms of said platforms.

3. In a paper feeding machine, the combination of a frame, reversible pile elevating mechanism, including inwardly presented brackets, a plurality of pile supporting platforms having outwardly presented arms, said inwardly presented brackets and said outwardly presented arms being mounted in parallel planes to permit free relative motion past each other, and detachable means for coupling the brackets of the elevating mechanism with the arms of said platforms.

4. In a paper feeding machine, the combination of a frame, the reversible pile elevating mechanism including traveling brackets having inwardly presented ears or lugs, a pile supporting platform having outwardly projecting arms adapted to be presented alongside of the ears or lugs of said brackets, and detachable coupling devices for locking said arms to said ears or lugs.

5. In a paper feeding machine, the combination of a frame, reversible pile elevating mechanism including inwardly presented brackets, a pile supporting platform having outwardly presented arms, and removable pins or bolts adapted to engage said brackets of the elevating mechanism and the arms of the platform.

6. In a paper feeding machine, the combination of a frame, reversible pile elevating mechanism including inwardly presented brackets, a plurality of pile supporting platforms each having outwardly presented arms, and removable pins or bolts adapted to engage said brackets of the elevating mechanism and the arms of the platforms.

7. In a paper feeding machine, the combination of a frame, the pile elevating screws, inwardly presented traveling brackets threaded upon said screws, a pile supporting platform having arms projecting outwardly upon opposite sides of said brackets, and removable pins or bolts engaging said brackets and arms for locking said platform to the brackets.

8. In a paper feeding machine, the combination of a frame, the pile elevating screws, inwardly presented traveling brackets threaded upon said screws, a pile supporting platform having arms projecting outwardly upon opposite sides of said brackets, and removable pins or bolts passing through openings formed in said brackets and engaging said arms for locking said platform upon the brackets.

9. In a paper feeding machine, the combination of a frame, reversible pile elevating mechanism including inwardly presented brackets, removable coupling pins or bolts
5 passing transversely through said brackets and projecting upon opposite sides thereof, and a pile supporting platform having outwardly projecting arms formed with downwardly presented recesses or sockets adapted
10 to engage said bolts or pins upon opposite sides of said brackets.

10. In a paper feeding machine, the combination of a frame, the pile elevating screws, traveling brackets threaded upon
15 said screws and formed with inwardly presented ears or lugs, a pile supporting platform having pairs of arms projecting outwardly from its opposite ends, each pair of
20 said arms being spaced to receive between them the ears or lugs upon one of said traveling brackets, and removable pins or bolts
engaging said ears or lugs, and arms for locking said platform to the brackets.

11. In a paper feeding machine, the combination of a frame, the pile elevating
25 mechanism including traveling brackets, the pile supporting platform, means connecting said platform with said brackets, and cooperating laterally presented thrust bearing
30 faces formed upon said traveling brackets and platform above said connecting means.

12. In a paper feeding machine, the combination of a frame, the pile elevating
35 mechanism including traveling brackets, the pile supporting platform, means coupling

the platform to the brackets, bearing arms projecting from the brackets, and bearing arms projecting from the ends of the platform and adapted to engage the bracket bearing arms.

13. In a paper feeding machine, the combination of a frame, the pile elevating mechanism including traveling brackets, the pile supporting platform having bracket
45 engaging arms, means coupling said bracket engaging arms with said brackets, braced bearing arms projecting from the ends of the platform above said bracket engaging arms,
and bearing arms projecting from the brackets and adapted to engage the bearing arms
50 of the platform.

14. In a paper feeding machine, the combination of a frame, the pile elevating screws, the brackets threaded upon said
55 screws and formed with inwardly presented ears or lugs having horizontal openings formed through them, pile supporting platforms adapted to rest within said frame and
formed with downwardly presented sockets or recesses, and detachable pins or bolts
60 adapted to pass through the openings of said ears or lugs upon said brackets and engage said downwardly presented sockets or recesses of the platform.

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