

**No. 684,081.**

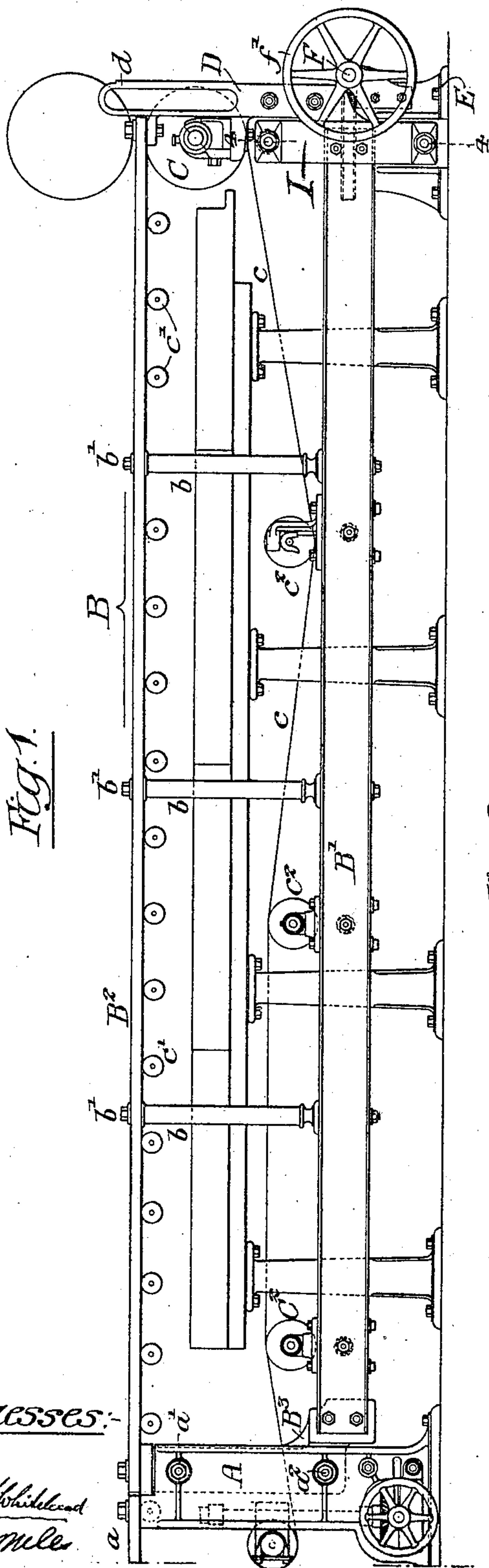
Patented Oct. 8, 1901.

**J. W. MOORE & J. A. WHITE.**  
**PAPER MAKING MACHINE.**

(Application filed Dec. 8, 1899.)

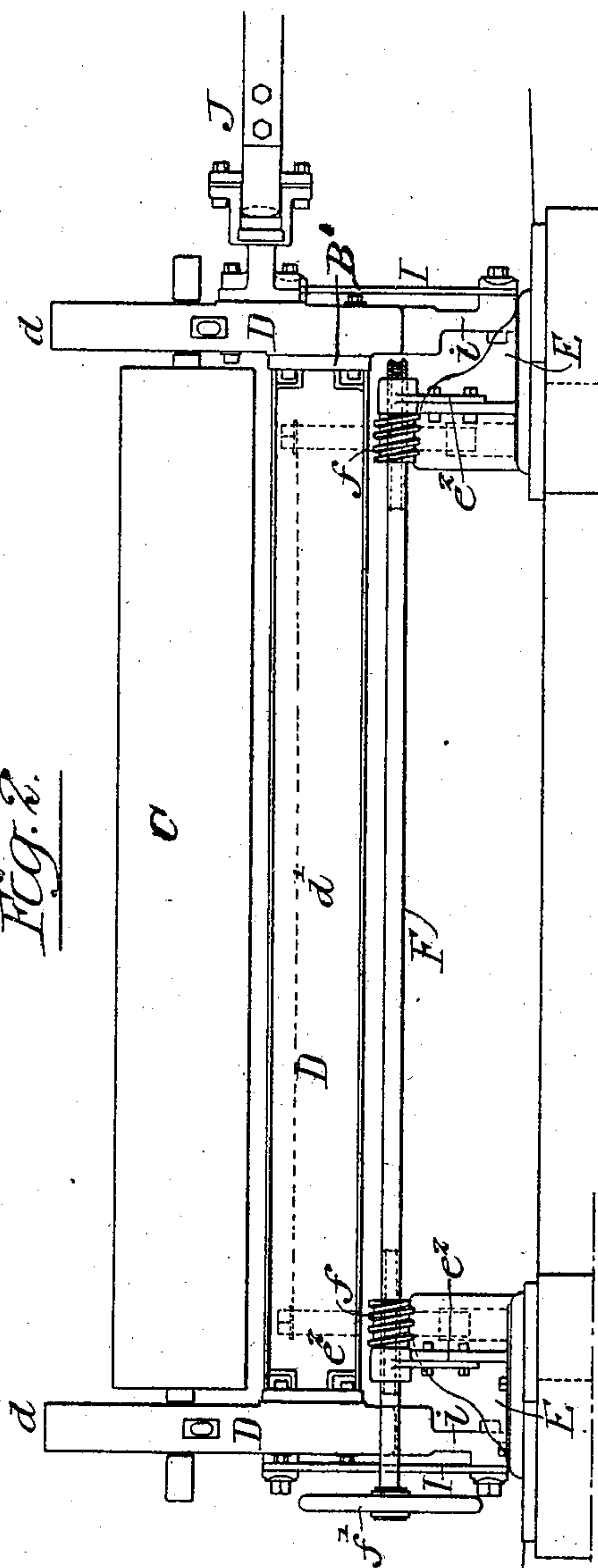
(No Model.)

**2 Sheets—Sheet 1.**



Witnesses:-

Rev. H. F. Whitelock  
Wm. Miller.



Inventors:-

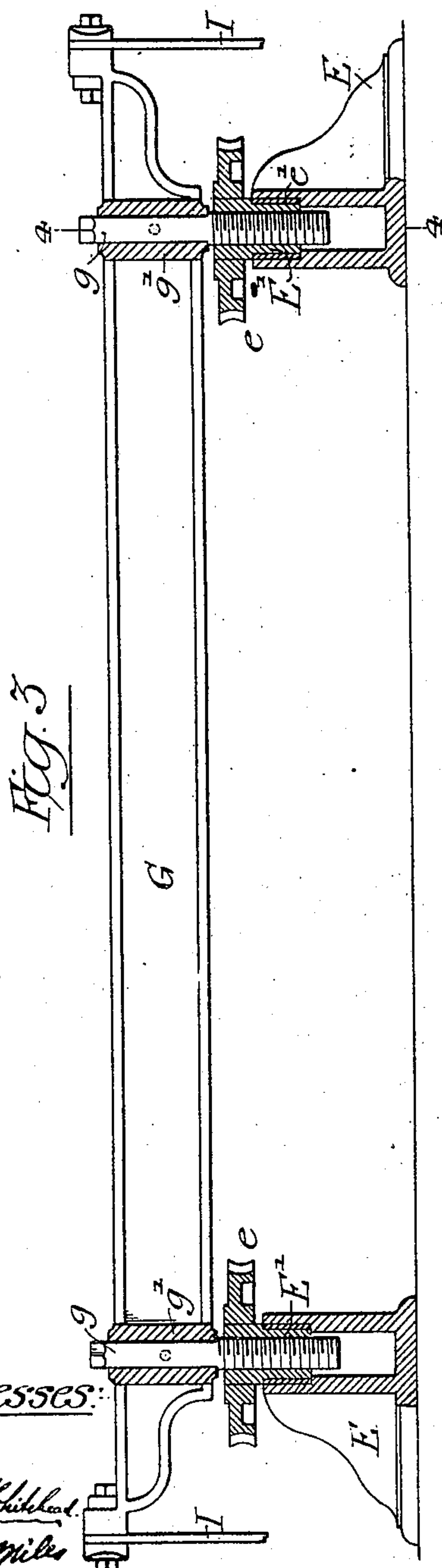
John W Moore.  
Joseph A. White.  
by their Attorneys  
Howan & Howan

J. W. MOORE & J. A. WHITE.  
PAPER MAKING MACHINE.

(Application filed Dec. 8, 1899.)

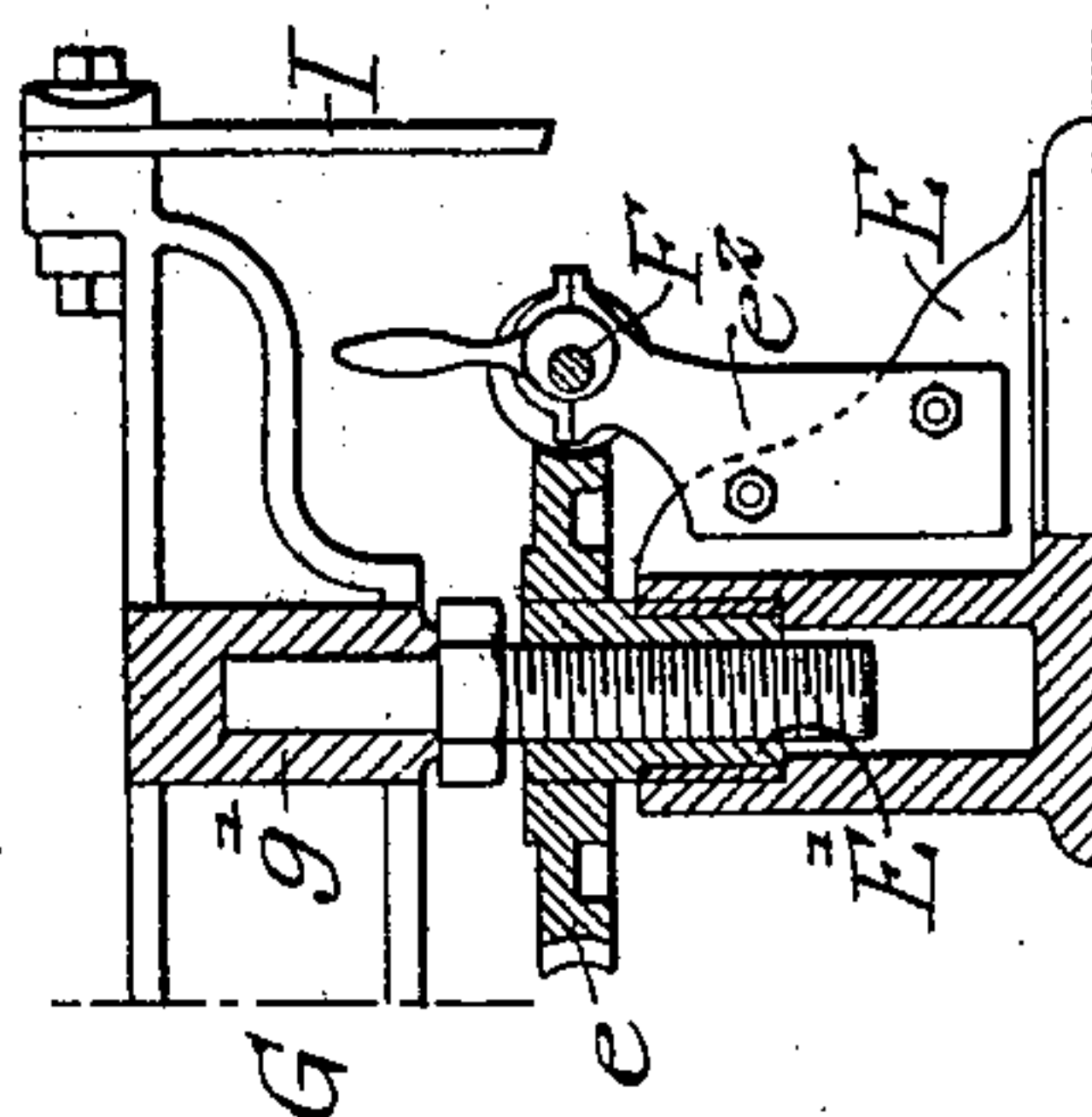
(No Model.)

2 Sheets—Sheet 2.

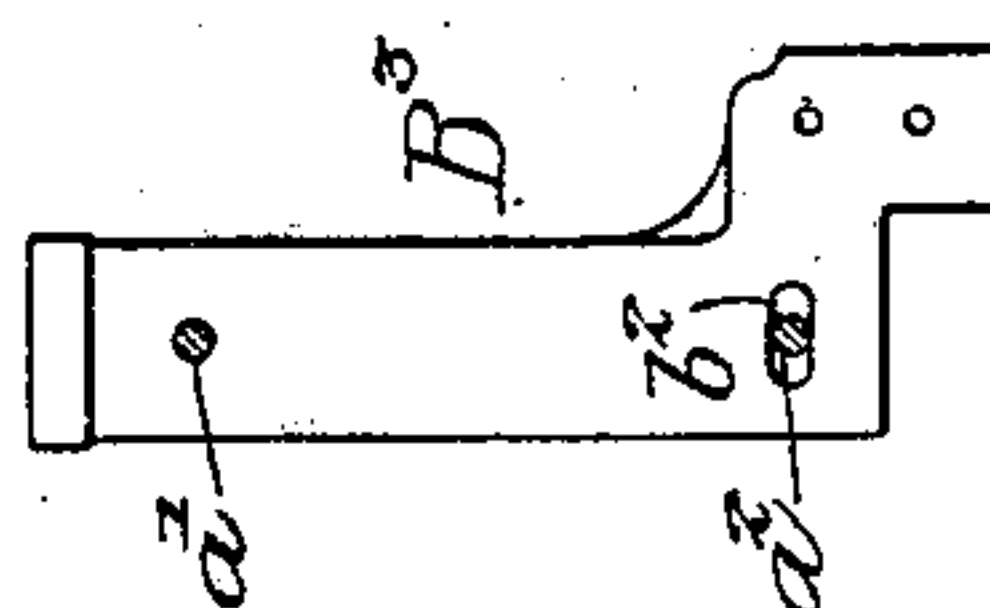


*Fig. 3*

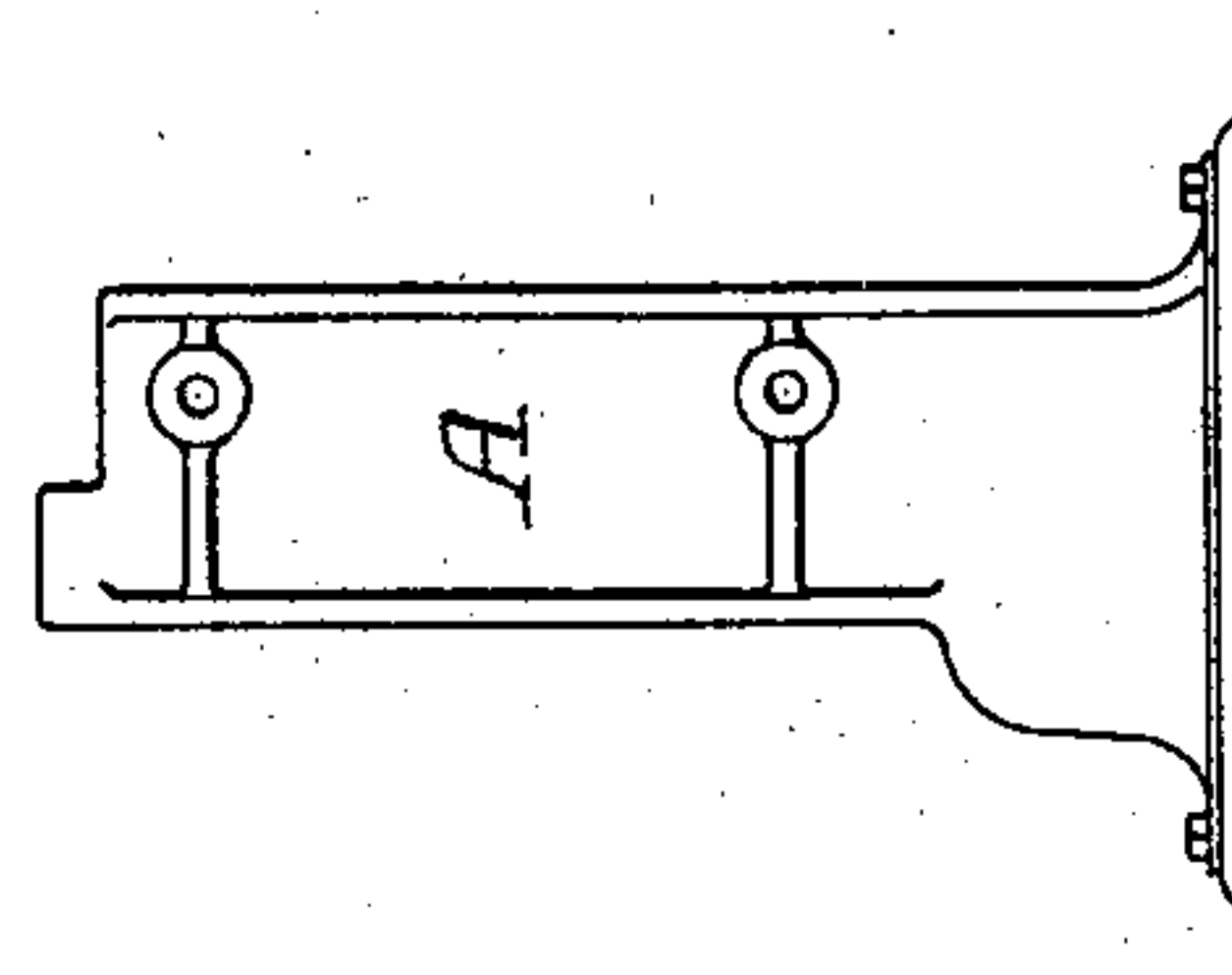
*Fig. 7*



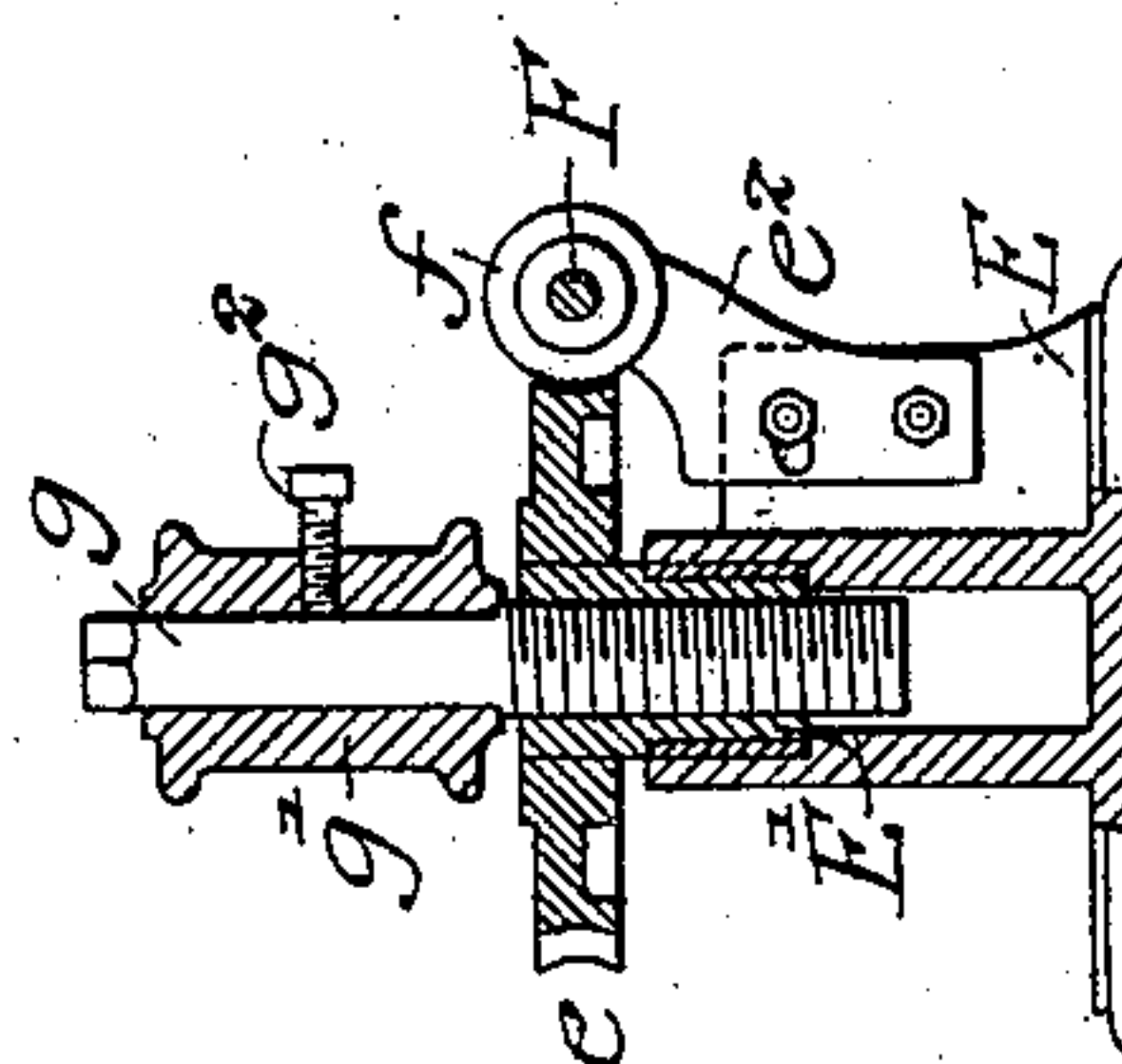
*Fig. 6*



*Fig. 5*



*Fig. 4*



Witnesses:

*Wm. H. Whitehead*  
*Wm. H. Miles*

Inventors:

*John W. Moore.*  
*Joseph A. White.*  
by their Attorneys:-  
*Howan & Howan*



# UNITED STATES PATENT OFFICE.

JOHN W. MOORE AND JOSEPH ATWOOD WHITE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS TO CHARLES L. HAMILTON, OF SAME PLACE.

## PAPER-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 684,081, dated October 8, 1901.

Application filed December 8, 1899. Serial No. 739,675. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN W. MOORE and JOSEPH ATWOOD WHITE, citizens of the United States, and residents of Philadelphia, Pennsylvania, have invented certain Improvements in Paper-Making Machines, of which the following is a specification.

Our invention relates to certain improvements in Fourdrinier paper-making machines in which the pulp is fed upon a movable apron, which is agitated, allowing the water to pass away from the pulp and the pulp to form in a thin layer on the apron.

The object of our invention is to provide means whereby the shake-frame is readily and accurately adjusted and locked in the adjusted position.

In the accompanying drawings, Figure 1 is a side view of sufficient of a Fourdrinier paper-making machine to illustrate our invention. Fig. 2 is an end view. Fig. 3 is an enlarged transverse sectional view of the forward end of the machine. Fig. 4 is a section on the line 4 4, Fig. 3. Figs. 5 and 6 are views of details of the invention, and Fig. 7 is a view of a modification.

A is a standard which may form part of the fixed frame of the machine. Attached to this standard is the fixed rail  $a$ .

B is the shake-frame, consisting of lower supporting-beams  $B'$  and the upper rails  $B^2$ . These rails are attached to a frame  $B^3$ , Fig. 6, which is secured to the standard A and are also connected to an end frame D, consisting of two upright members  $d$  and a transverse member  $d'$ . The supporting-beam and rails are connected at intervals by posts  $b$  and tie-bolts  $b'$ . The end frame  $B^3$  is rigidly connected to the supporting-beams  $B'$  and is hung to the standard A by a pivot-bolt  $a'$ . The clamp-bolt  $a^2$  passes through a slot  $b^2$  in the end frame  $B^3$  and secures the lower portion of the frame to the standard. This bolt may be adjusted sufficiently to give it a neat fit, so as to allow for the vertical adjustment of the forward end of the shake-frame. In some cases, however, it may be tightened and the nut backed off when it is required to adjust the frame.

$c$  is the endless making wire or apron, which passes around a breast-roll C over rolls  $c'$  to

the couch-rolls and returning passes the guide-rolls  $c^2$ . The supporting-rolls  $c'$  are adapted to bearings carried by the rails  $B^2$ , and the lower rolls  $c^2$  are mounted in bearings on the supporting-beams  $B'$ .

E E are two pedestals mounted on a suitable foundation, and adapted to each pedestal is a nut  $E'$ , on which is a worm-wheel  $e$ . This nut is mounted within the pedestal, and the pedestal is provided with a bushing  $e'$ , preferably of graphite or other suitable material. On the bracket  $e^2$  of each pedestal is a bearing for the transverse shaft F, having worms  $f$ , which mesh with the worm-wheels  $e$ . The shaft F is provided with a suitable hand-wheel  $f'$  on one side of the machine, so that on turning this shaft the nuts  $E'$  will be turned in unison. We preferably mount one of the brackets  $e^2$  adjustably on its pedestal, so that the worm  $f$  on the shaft F at that bracket can be thrown out of gear with its wheel when it is desired to adjust one side of the frame only, and the far side of the frame can be raised and lowered by turning the shaft, while the near side can be raised and lowered by turning the disengaged wheel. In some instances the shaft F may be adapted to an eccentric bearing on one of the brackets  $e^2$ , as shown in Fig. 7, to accomplish the purpose set forth above.

G is a normally stationary end or cross-frame structure having screw-studs  $g$ , adapted to bearings  $g'$  in the frame. The lower portion of each stud is screw-threaded and adapted to its nut  $E'$ . Each stud is held in the fixed position in its bearing  $g'$  by a set-screw  $g^2$  and is preferably provided with a head  $g^3$ , projecting above the cross-frame G, so that if it is desired to turn one or other of the studs the set-screw  $g^2$  is backed off, and by placing a wrench on the head of the stud and turning it it will turn in the nut and raise or lower one side of the frame, if found more convenient than disengaging the worm-wheel, so that it will be seen that the entire frame can be adjusted in unison or either side of the frame adjusted, as desired.

The screw-studs  $g$  need not necessarily extend through the frame G, as they may simply be seated in sockets in the frame, as shown in Fig. 7, and each stud may be pro-



vided with a many-sided enlargement, by which it can be turned.

Connecting each end of the frame G with brackets *i* on the shake-frame are spring suspension-plates I, so that the forward end of the shake-frame is suspended by the spring-plates. J is a rod attached to the shake-frame. This rod is connected to any suitable mechanism for giving the shake-frame a lateral motion.

We claim as our invention—

1. The combination of a fixed frame, a shake-frame connected at one end to the fixed frame, a cross-frame and a flexible connecting-piece between said cross-frame and the forward end of the shake-frame, pedestals, a nut revolubly supported on each pedestal and a screw passing through said nut and extending into the cross-frame whereby the shake-frame can be raised and lowered, substantially as described.

2. The combination of a fixed frame, a shake-frame connected to the fixed frame, a cross-frame to which the shake-frame is connected, screw-studs on the cross-frame, pedestals, nuts carried by said pedestals and adapted to the screw-studs, means operative upon the nuts for raising or lowering the screw-studs and other means for turning the said studs, substantially as described.

3. The combination of a fixed frame, a shake-frame connected thereto, a cross-frame at the forward end of the shake-frame and connected thereto, studs on the cross-frame, pedestals, nuts on the pedestals adapted to the studs, worm-wheels on the nuts, a cross-shaft, worms thereon engaging with the worm-wheels so that on turning the cross-shaft the nuts will be turned in unison and will raise or lower the end of the shake-frame, with means for moving one of the worms out of engagement with the corresponding worm-wheel, substantially as described.

4. The combination of a fixed frame, a shake-frame attached thereto, a cross-frame connected to the forward end of the shake-frame, screw-studs adapted to bearings in the cross-frame, means for securing the studs to the bearings, pedestals, nuts carrying worm-wheels, mounted on the pedestals and adapted to the screw-threads, and means for turning the said worm-wheels in unison, the screw-studs being constructed to be turned in the nuts independently of the worm-wheels, substantially as described.

5. The combination of a fixed standard, a shake-frame pivoted thereto at one end, said frame consisting of upper and lower rails connected by an end frame, a cross-frame structure at the other end of the shake-frame ex-

tending across said end having flexible pieces connecting it with said shake-frame and means on the cross-frame for raising and lowering the end of the shake-frame, substantially as described.

6. The combination of a standard, a shake-frame secured thereto, a cross-frame from which the opposite end of the shake-frame is suspended, pedestals, nut-and-screw connection between the pedestals and cross-frame, worm-wheels on the screws, a cross-shaft, worms thereon, bearings for said shaft, one of said bearings being adjustable so that one of said worms can be thrown out of gear with its worm-wheel, substantially as described.

7. The combination of a fixed standard, a fixed frame and a shake-frame, the latter consisting of lower supporting-beams, upper rails, and frames at each end of the machine connecting the beams to the rails, the said shake-frame being pivoted at one end to the standard and suspended from said fixed frame at the opposite end, substantially as described.

8. The combination in a paper-making machine, of a fixed frame A, a shake-frame B connected at one end to the fixed frame, pedestals E E, a stationary cross-frame G extending across the end of the machine, said frame being mounted on said pedestals, and connections between the cross-frame and the free end of the shake-frame, whereby the shake-frame may be agitated, substantially as described.

9. The combination in a paper-making machine, of a fixed frame, a shake-frame connected thereto at one end, pedestals having a stationary cross-frame mounted on them, connections between the cross-frame and the free end of the shake-frame, and means between the pedestals and the cross-frame for varying the height of the said free end of the shake-frame, substantially as described.

10. In a paper-making machine the combination of a fixed frame, a shake-frame connected thereto at one end, a normally stationary end frame carried on pedestals and independent of all other parts of the machine, means for suspending the free end of the shake-frame from said end frame and means for adjusting the vertical height of said end frame and hence that of the shake-frame, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN W. MOORE.

JOSEPH ATWOOD WHITE.

Witnesses:

FRANK B. JAQUETT,  
SHELTON N. HIBBS.