

No. 636,017.

Patented Oct. 31, 1899.

R. F. WENTZ.
SEPARATOR.

(Application filed Aug. 2, 1898.)

(No Model.)

2 Sheets—Sheet 1.

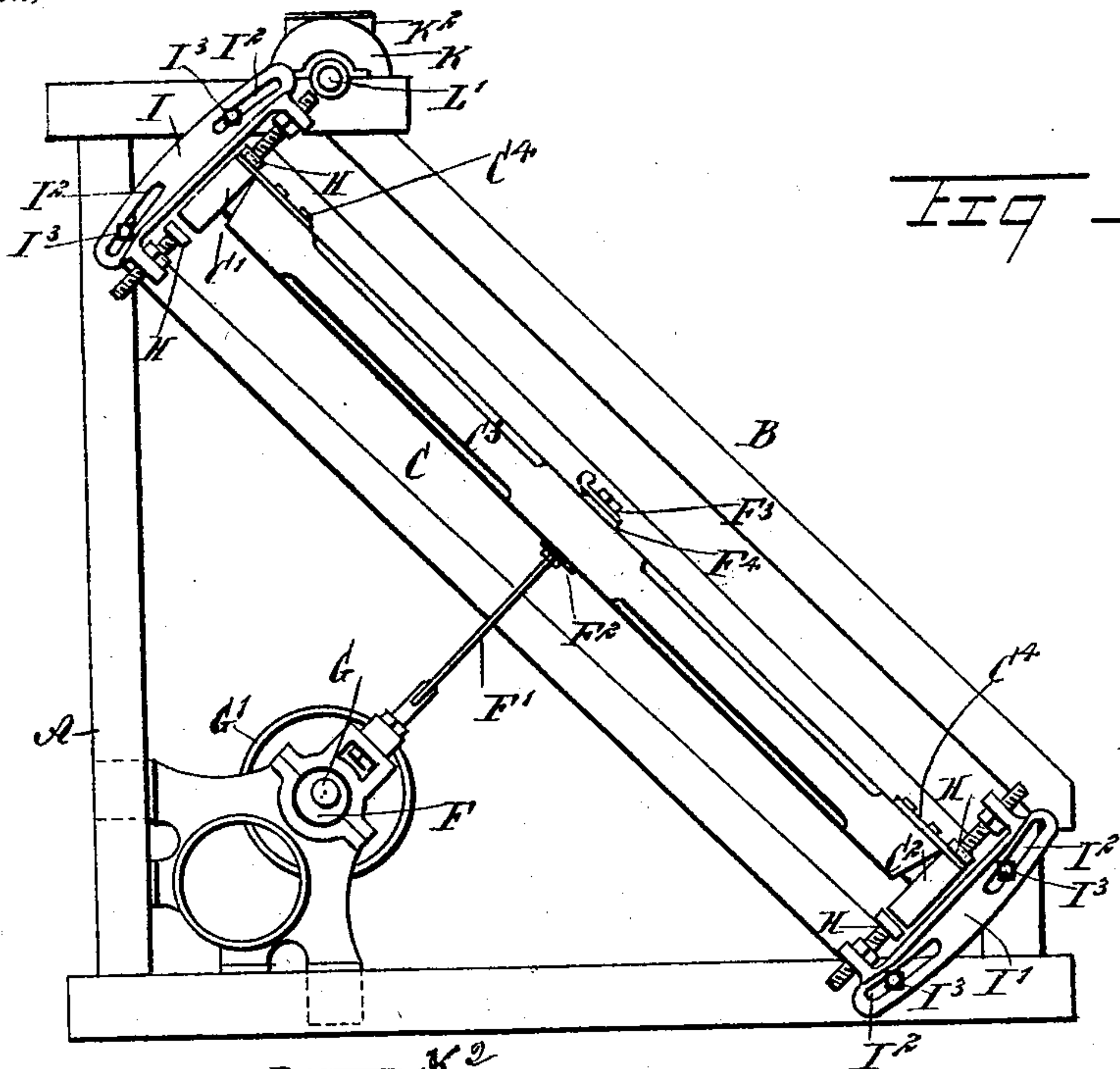


Fig 1

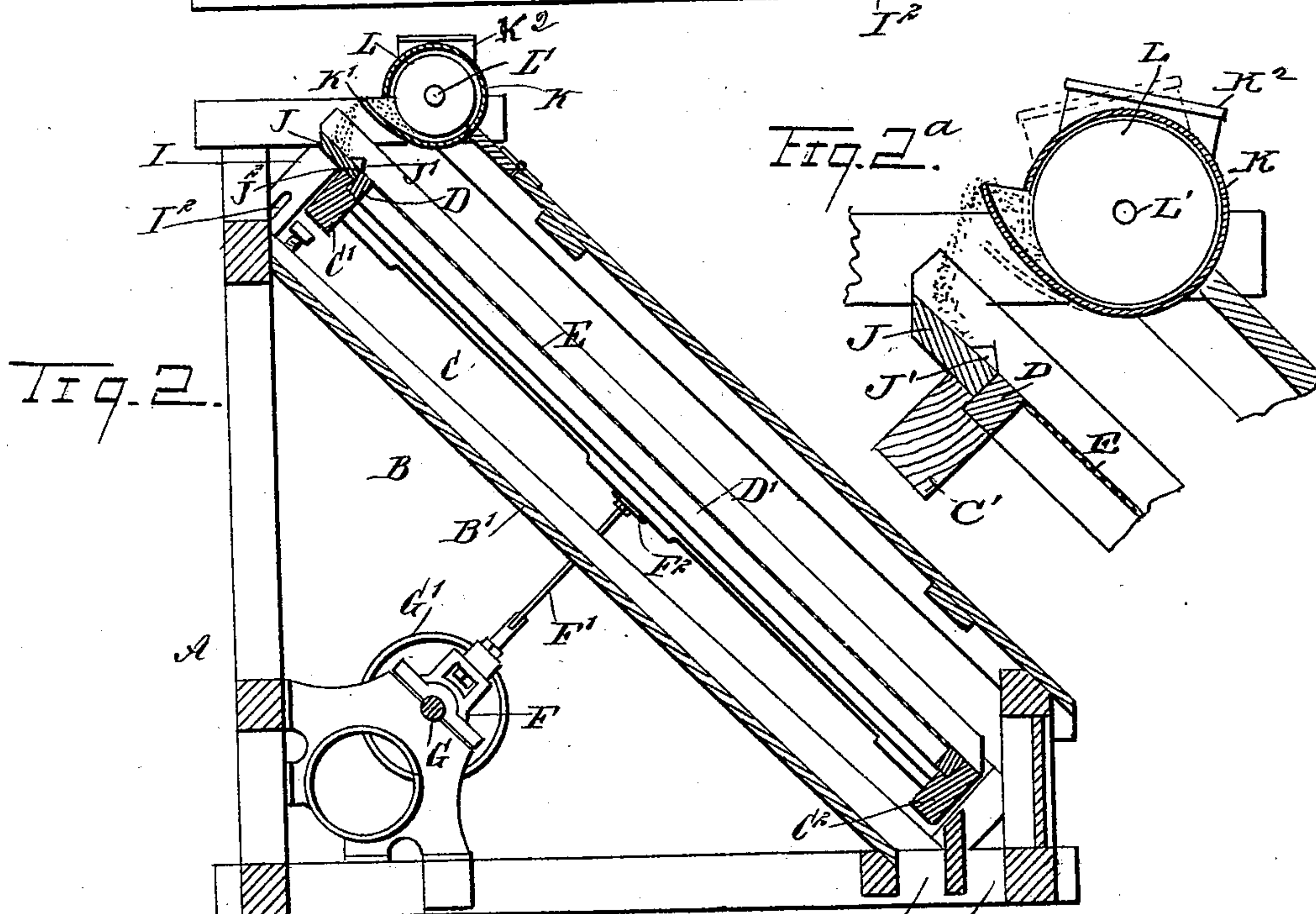


Fig. 2a

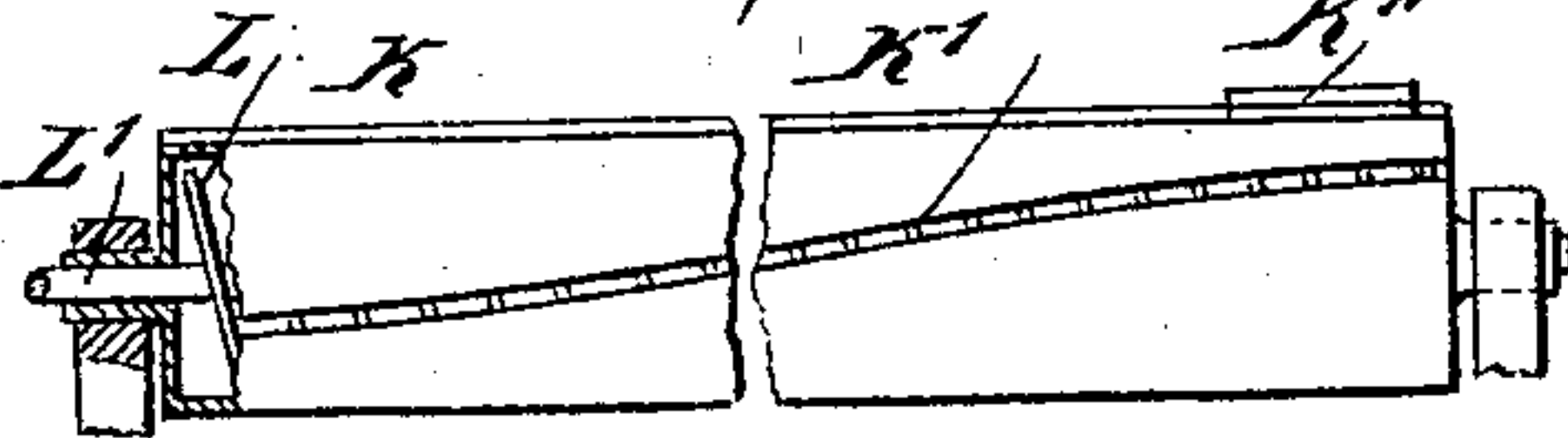
Fig. 2.

WITNESSES:

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Fig 5



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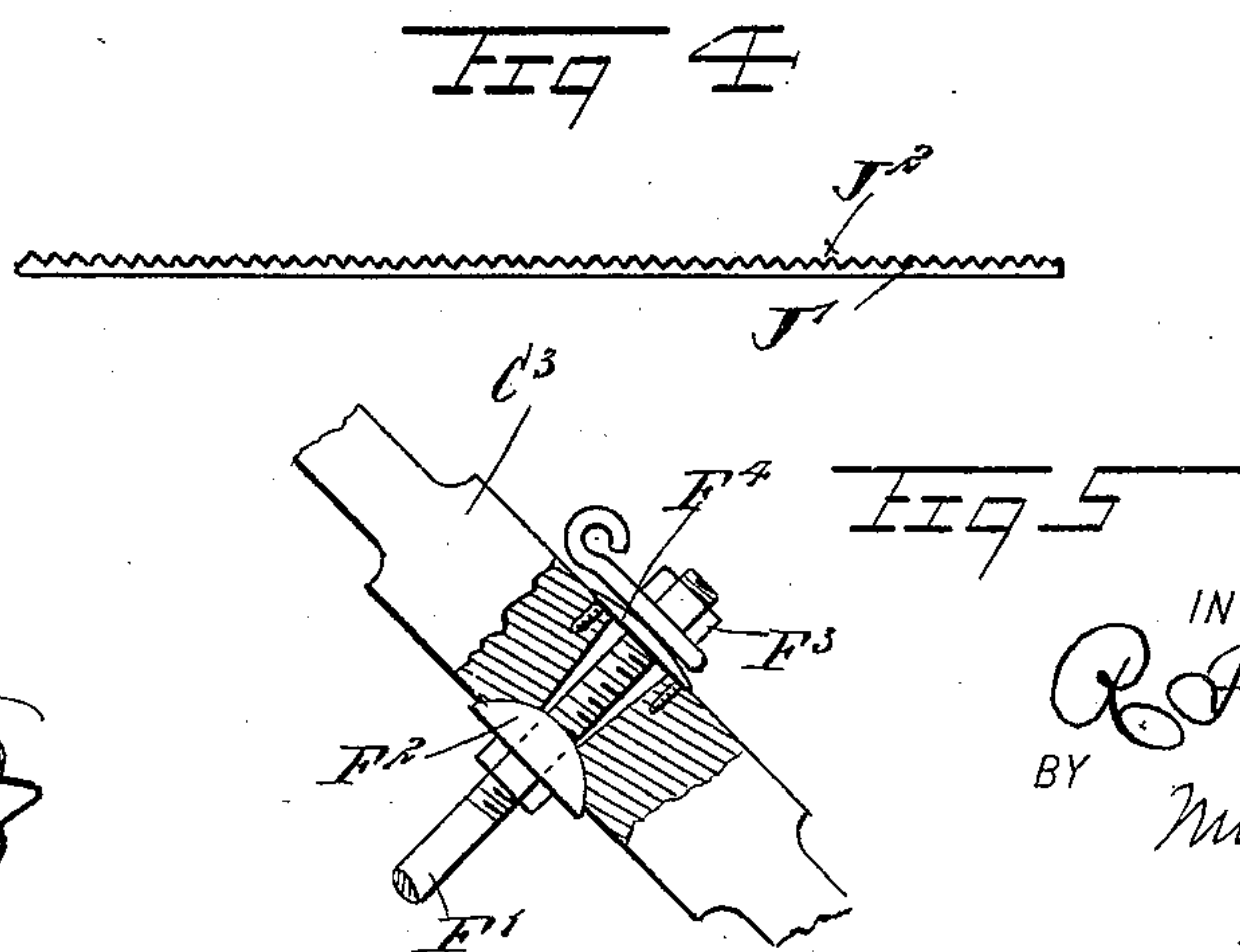
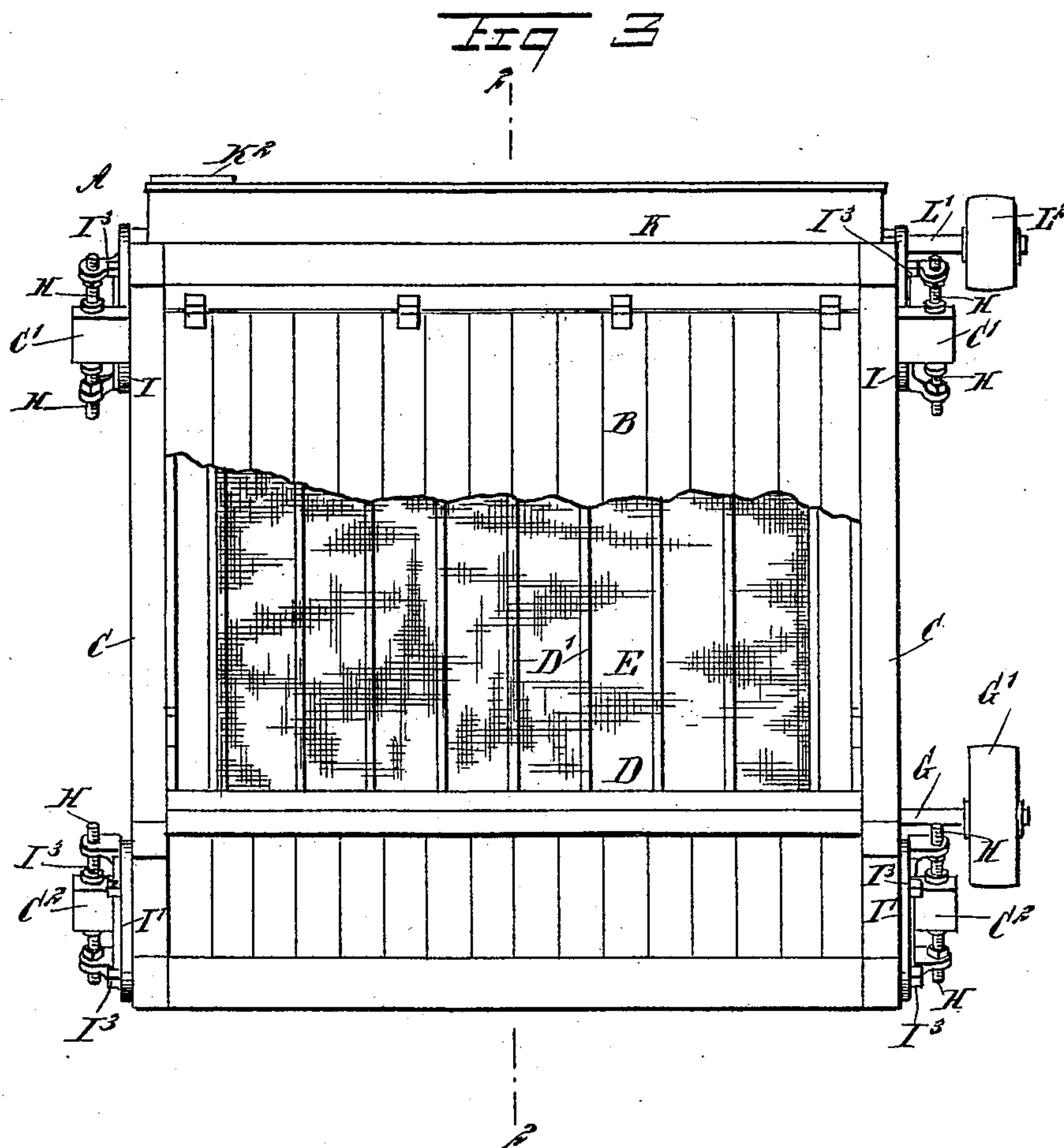
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SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 636,017, dated October 31, 1899.

Application filed August 2, 1898. Serial No. 687,564. (No model.)

To all whom it may concern:

Be it known that I, ROBERT FILLMORE WENTZ, of Siegfried, in the county of Northampton and State of Pennsylvania, have invented a new and Improved Separator, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved separator which is simple and durable in construction, very effective in operation, and more especially designed for thoroughly separating, bolting, or screening cement, ores, sand, clay, or other materials.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement. Fig. 2 is a sectional side elevation of the same on the line 2 2 in Fig. 3. Fig. 2^a is an enlarged detail sectional view illustrating the feed-casing. Fig. 3 is an end elevation of the improvement with part of the casing broken out. Fig. 4 is a face view of the feed-bar. Fig. 5 is a partial side elevation of one of the side bars of the screen-frame partly broken away, and Fig. 6 is an end elevation of the feeding device.

The improved separator is mounted on a suitably-constructed frame A, supporting an inclined casing B, having a portion of its sides open for the reception of a rectangular screen-frame C, comprising transverse end bars C¹ C² and spring side bars C³, secured by plates C⁴ to the end cross-bars C¹ C². The side bars C³ are preferably made of hickory wood, so as to yield when a shaking motion is given to the bars, as hereinafter more fully described. The screen-frame C extends in an inclined position, screens D being held removably in the top of the frame C, as is plainly indicated in Fig. 2, and said screen has the usual screen-cloth E, of any desired mesh, according to the material under treatment. The screen D is removable from the screen-frame C to permit of conveniently providing the separator with different-meshed screen-cloths, according to

the material to be treated, each screen having spaced longitudinal bars D' extending under the cloth, so as to properly support the same.

The side bars C³ of the screen-frame C are connected at their middle with the eccentric-rods F' of eccentrics F, secured on a transversely-extending shaft G, journaled in suitable bearings held on the frame A. One outer end of the shaft G is provided with a pulley G' for imparting a rotary motion to the shaft G, so that the eccentrics F by the rods F' impart a shaking motion to the screen-frame C. The ends of the cross-bars C¹ C² of the screen-frame extend beyond the sides of the casing B, and the said ends work between bolts H, held adjustably in keepers I I', secured to the frame A, each keeper being formed with segmental slots I², engaged by bolts I³, held on the frame A, so that when the bolts are loosened the keepers can be adjusted to give a desired inclination to the screen-frame C and the screen carried thereby. The bolts H serve to limit the motion of the end bars of the screen-frame C according to the throw of the eccentrics F, it being understood that the play or movement of the cross-bars C¹ C² between the stop-bolts H is somewhat less than the stroke of the eccentrics F and the movement given to the screen-frame at the middle thereof, it being also understood that the spring side bars C³ yield sufficiently to compensate for the difference in the movement at the middle and ends of the screen-frame. The bolts have to be adjusted when the keepers I I' are moved into different positions to give a different angle or inclination to the screen-frame C.

In order to readily adjust the screen-frame at different angles, I make the connection between the eccentric-rods and side bars C³, as shown in detail in Fig. 5. Near the outer end of each eccentric-rod F' is held a rounded collar F², fitting into a correspondingly-shaped recess in the spring-bar C³, and the end of the rod F' beyond the collar passes loosely through an enlarged opening in the bar C³ to permit of turning the latter, and consequently the entire screen-frame, on the collars F² as the fulcrum. A handled nut F³ screws on the extreme outer threaded end of the rod F' against an eye-washer F⁴, held on the top of

the bar C^3 , it being understood that the nuts F^3 are loosened when the screen-frame is to be adjusted at a different angle, and when the adjustment is made the nuts are screwed up to fasten the bars C^3 securely to the eccentric-rods F' .

On the upper end of the screen-frame C , within the casing B , is arranged a feed-board J , provided near its lower end with a transversely-extending feed-bar J' , formed with notches or serrations J^2 , (see Fig. 4,) for evenly feeding the material onto the upper end of the cloth E of the screen. The feed-board J receives the material from the upwardly-extending discharge-spout K' of a conveyer-casing K , containing a conveyer L in the form of a spiral blade secured on a transverse shaft L' , journaled in suitable bearings on the frame A , the shaft also supporting the casing K . On the top of the casing and near one end thereof is held a receiving-hopper K^2 , into which the material is delivered from a suitable place of supply. The spout K' is inclined, as plainly indicated in Fig. 6, from the hopper K^2 in a downward direction, and the casing K is preferably held adjustably or turnably on the shaft L' to bring the feed-spout higher or lower relative to the feed-board J . Fig. 2^a shows the feed-casing K with the feed-spout K' in different positions. (Indicated by full and dotted lines.) By the construction described a more even or uniform feed is obtained, according to the nature of the material under treatment.

One outer end of the shaft L' is provided with a pulley L^2 , connected with other machinery for imparting a rotary motion to the conveyer L , so that the material passed into the casing K is distributed throughout the casing and is readily discharged in even quantities over the edge of the outlet K' and falls upon the feed-board J and from the latter passes through the notches J^2 of the feed-bar J' upon the upper end of the cloth E .

As the screen-frame C receives a shaking motion from the eccentrics, as previously explained, it is evident that the material in its downward motion over the screen-cloth E is properly screened or bolted, the finer material passing to the inclined bottom B' of the box B and sliding down the same through a chute O to a suitable place of discharge, the tailings passing down over the screen-cloth E in the upper portion of the casing B and finally discharging into a chute P for delivering the tailings in a separate heap.

The bolts H , held adjustably in the keepers I and I' , serve to adjust with the greatest accuracy the stroke and vibration of the sieve-frame and sieve, according to the nature and condition of the material under treatment, to insure a proper separation and to keep the meshes of the screen-cloth or wire-netting free from clogging. Thus for dry material less vibration is necessary than for wet or damp material, and by the operator being enabled to adjust the stroke of the sieve-frame and

screening-cloth superior results are the consequence. It is understood that the side bars C^3 of the screen-frame give the desired elasticity to the stroke or vibration of the sieve-frame, so that there is no dead-stroke against the adjustable stop-bolts H .

The machine is very simple and durable in construction, is not liable to get out of order, and by the adjustability of the screen-frame C a different angle can be given to the screen-cloth, so that material of different grades of fineness can be bolted without changing the cloth. The adjustment of the keepers and the bolts is very simple, requiring no skilled labor for this work.

By the arrangement of the conveyer feed-board and feed-bar the material is distributed in a thin sheet over the whole width of the cloth at the time the cloth is worked with the proper motion, so that a proper bolting is insured and the meshes of the cloth always remain open without danger of clogging.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A separator provided with a main frame, a screen, means acting on the screen at about the center for imparting a shaking motion to the screen, stops for engaging the ends of the screen at the top and bottom, and keepers adjustably held on the main frame and in which the said stops are adjustably held, substantially as shown and described.

2. A separator provided with a screen-frame, having projecting end beams, a feed-board at the upper end of the screen-frame, means for discharging the material on said feed-board, bolts for engaging said end beams at the top and bottom, adjustable keepers in which the said bolts are adjustably held, and eccentrics provided with eccentric-rods adjustably connected with the said screen-frame, substantially as shown and described.

3. A separator provided with a screen-frame having spring side bars, means for feeding material to the upper end of said screen, eccentrics connected by their eccentric-rods with the said spring-bars, an adjustable connection between the eccentric-rods and the side bars to permit of moving the screen-frame into a different angular position, and stops for limiting the motion of the screen at the ends, substantially as shown and described.

4. A separator provided with a screen-frame having spring side bars and projecting end beams, bolts for engaging said end beams at the top and bottom, adjustable keepers in which the said bolts are adjustably held, and eccentrics provided with eccentric-rods adjustably connected with the middle of said spring side bars, substantially as shown and described.

5. A separator provided with a screen-frame having projecting end beams, bolts for engaging said end beams at the top and bottom, keepers in which the said bolts are adjustably held, said keepers being adjustably held on

the main frame to permit of giving the desired inclination to the screen-frame and means connected with the middle of the frame for imparting a shaking motion thereto, substantially as shown and described.

6. A separator provided with a screen-frame having projecting end beams, bolts for engaging said end beams at the top and the bottom, adjustable keepers in which the said bolts are adjustably held, the said keepers being formed with segmental slots, bolts engaging said slots, and means connected with the middle of the screen-frame for imparting a shaking motion thereto, substantially as shown and described.

7. In a separator, a screen-frame, an eccentric provided with an eccentric-rod, the said eccentric-rod extending loosely through an opening in the screen-frame and provided with a rounded collar engaging a recess in the under side of the frame, the said collar serving as a fulcrum to permit of moving the screen-frame into a different angular position, means for securing the frame in position on the eccentric-rod and means for limiting the motion of the screen at the ends, substantially as shown and described.

8. A separator provided with a screen-frame having spring side bars and projecting end beams, eccentrics connected by their eccen-

tric-rods with the middle of the said spring-bars, an adjustable connection between the said eccentric-rods and the said side bars to permit of moving the screen-frame into a different angular position with the connection as the fulcrum, and adjustable stops for engaging the projecting end beams, substantially as shown and described.

9. A separator provided with a feed-casing, having a longitudinal discharge-spout, a conveyer within the casing and having its shaft journaled in bearings in the frame, the said feed-casing being mounted to turn on the said shaft, substantially as described.

10. A separator provided with a screen having a feed-board at its upper end, means for imparting a shaking motion to said screen, a feed-casing provided with an inclined discharge-spout adapted to discharge onto the said feed-board, and a conveyer contained in said casing and having its shaft journaled in bearings on the frame of the machine, the said feed-casing being mounted to turn on the conveyer-shaft as and for the purpose set forth.

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Witnesses:

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JAMES E. KOCHER.