

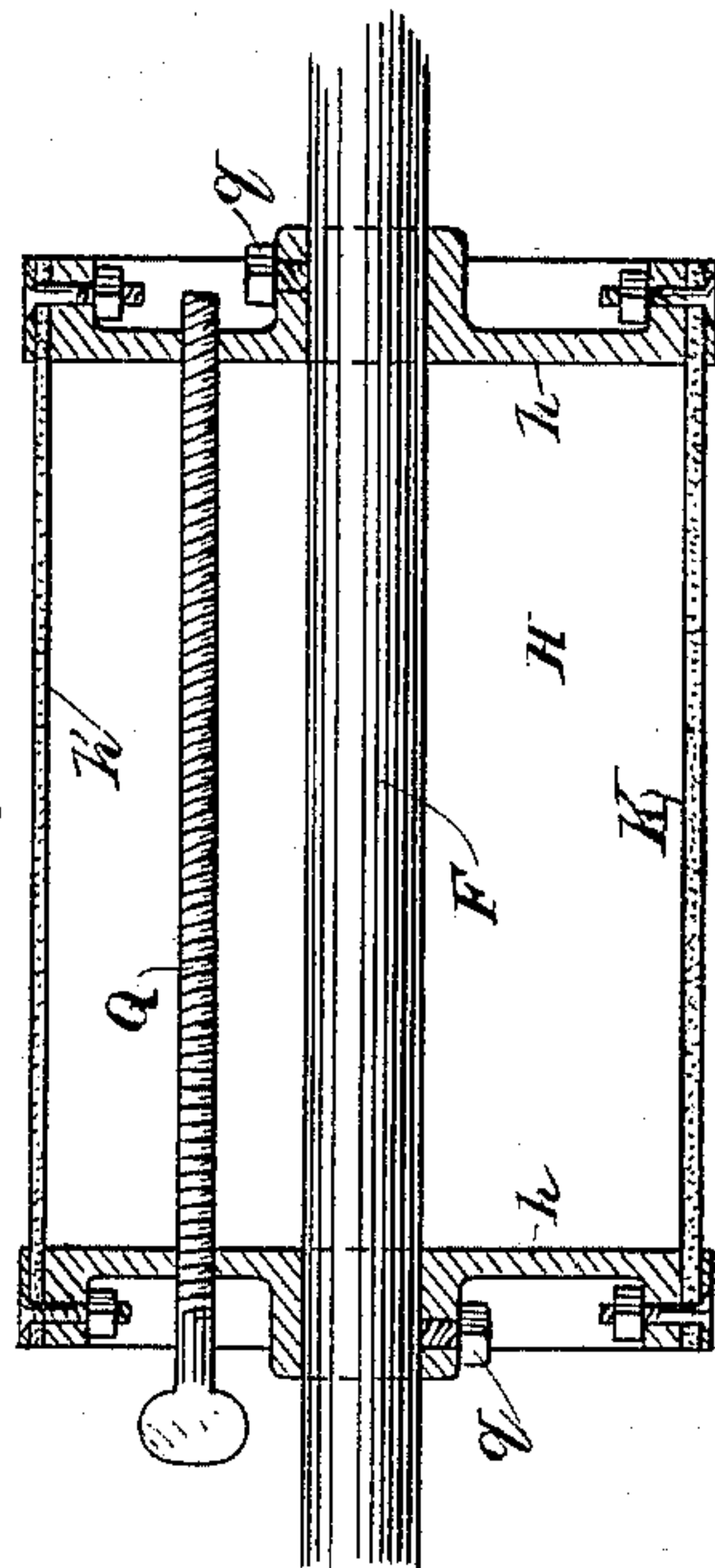
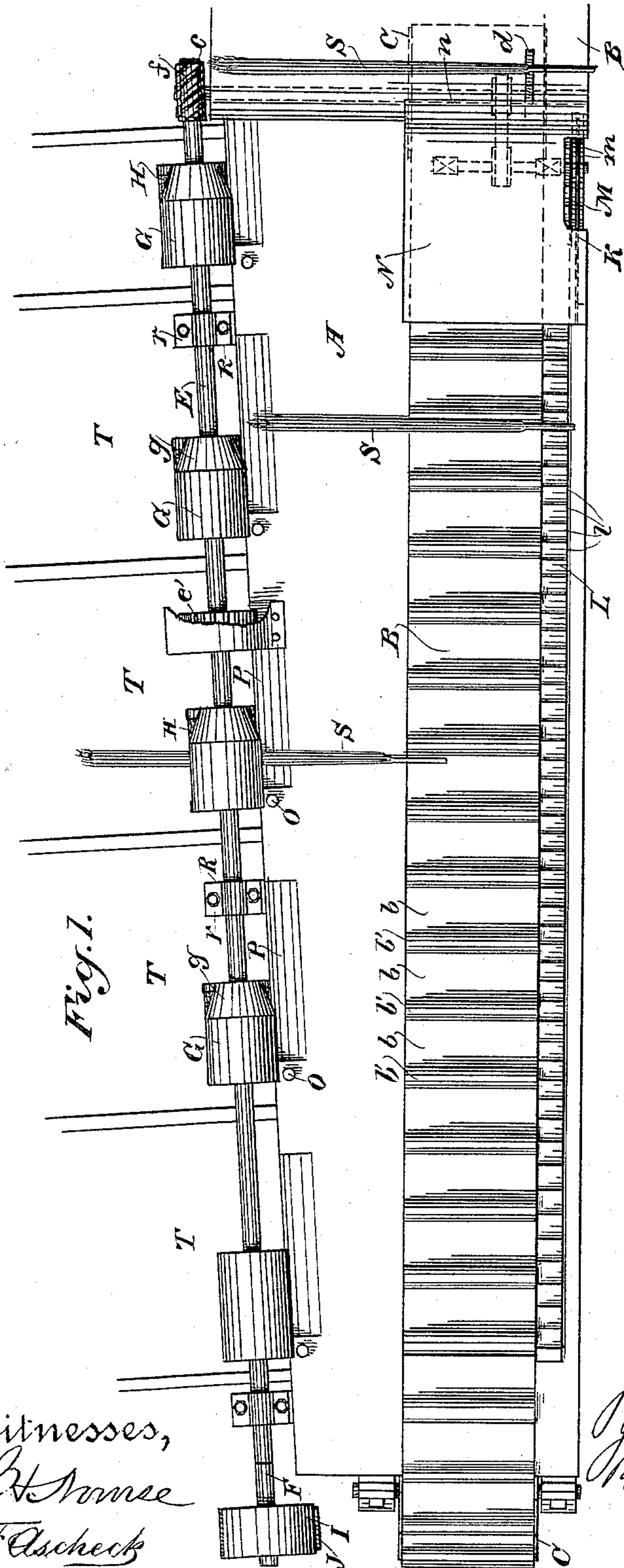
(No Model.)

2 Sheets—Sheet 1.

J. M. GAFFNEY & J. J. FISCHER.
BROOM CORN SIZING MACHINE.

No. 584,499.

Patented June 15, 1897.



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Fig. 3.

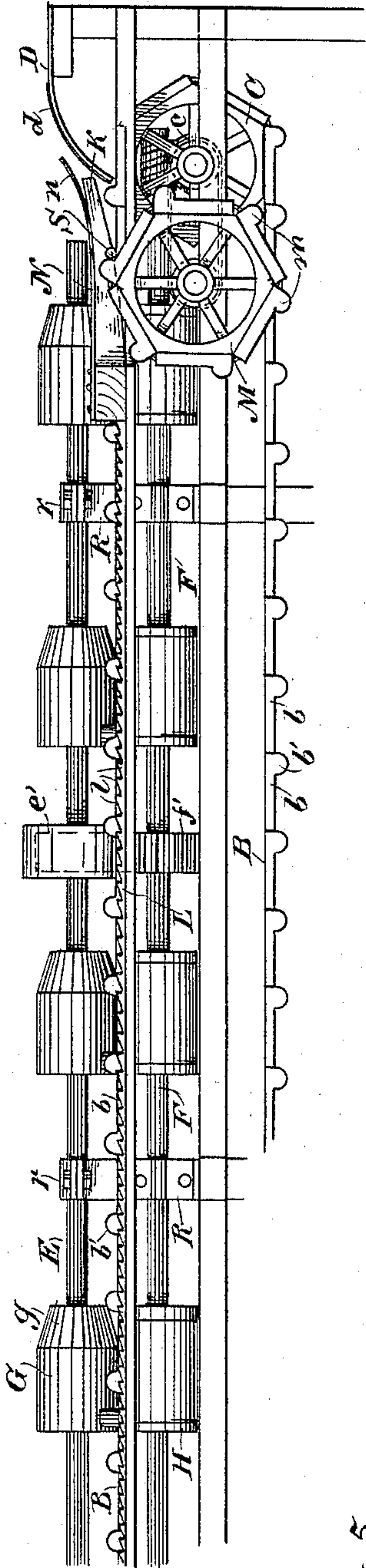


Fig. 4.

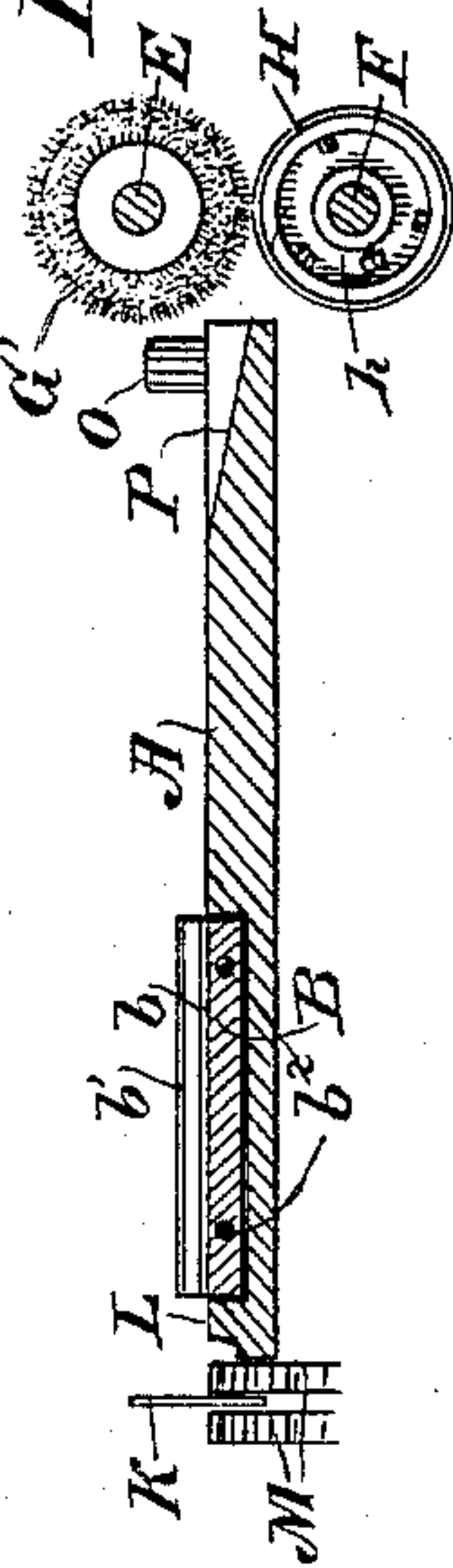


Fig. 6.

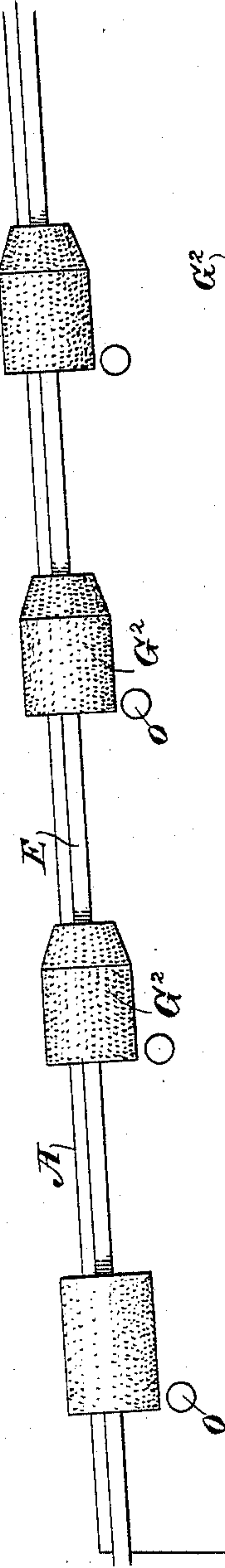


Fig. 7.

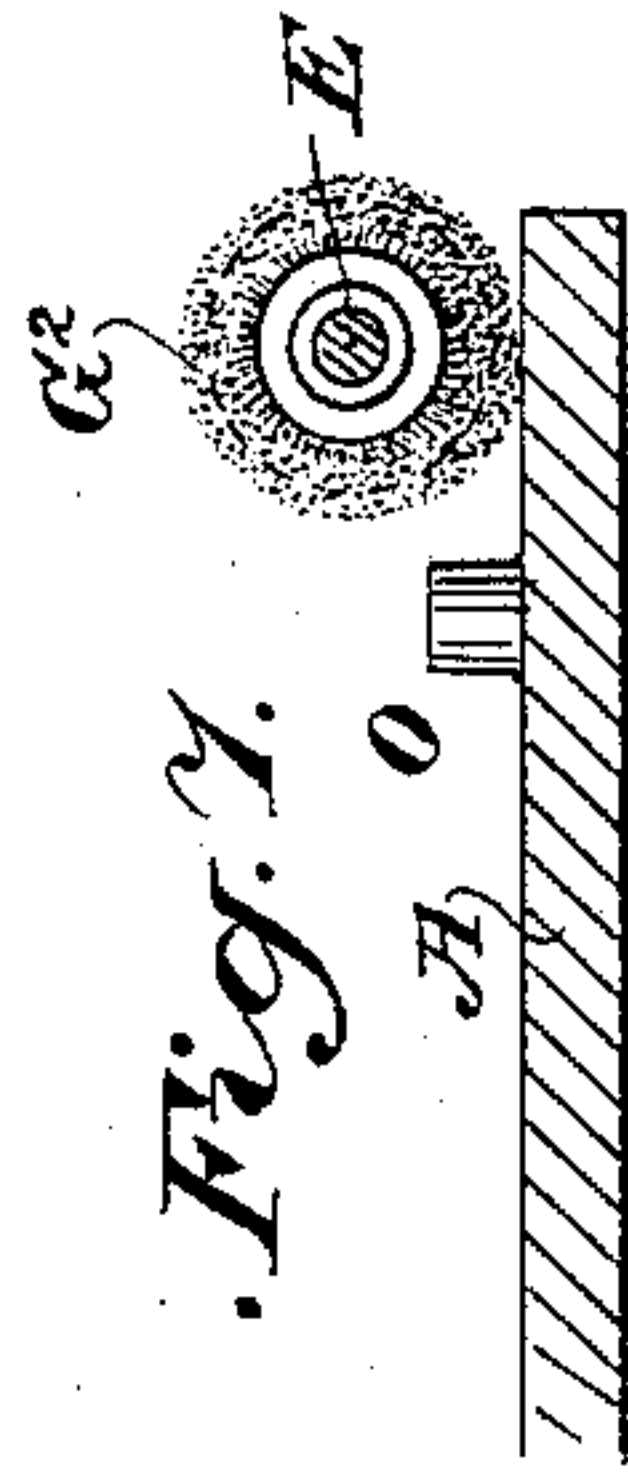
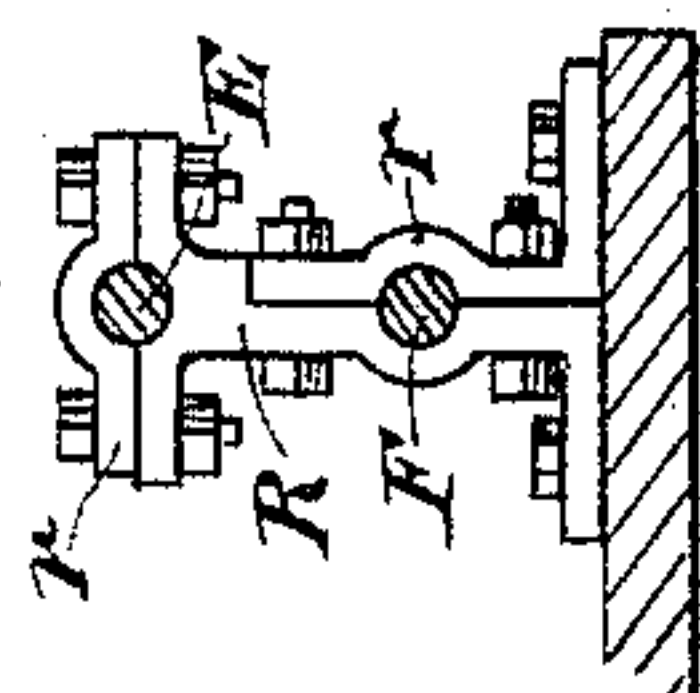


Fig. 5.



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UNITED STATES PATENT OFFICE.

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BROOM-CORN-SIZING MACHINE.

SPECIFICATION forming part of Letters Patent No. 584,499, dated June 15, 1897.

Application filed July 27, 1896. Serial No. 600,610. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH M. GAFFNEY and JACOB J. FISCHER, citizens of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Broom-Corn-Sizing Machines; and we hereby declare the following to be a full, clear, and exact description of the same.

Our invention relates to the class of machines for sizing or sorting broom-corn into lengths; and it consists in the novel constructions, arrangements, and combinations of the parts of the machine, which we shall hereinafter fully describe and claim.

The object of our invention is to provide for an accurate sizing or sorting of the broom-corn. This object is attained by a positive engagement with the different lengths of the corn while said corn is supported upon a firm bed, thereby avoiding the inaccuracies and disadvantages flowing from such constructions as provide for the sizing or sorting by a drop into differently-sized spaces, which construction involves but a partial support of the broom-corn and a doubtful descent thereof when the proper space is reached.

Referring to the accompanying drawings, Figure 1 is a plan of our machine. Fig. 2 is a longitudinal section of the lower withdrawing-roller. Fig. 3 is a side view of our machine. Fig. 4 is a cross-section showing the upper roller as a brush G' . Fig. 5 is a view showing the removable bearings for the shafts E and F. Fig. 6 is an outline plan showing an arrangement of withdrawing-brushes G^2 over the table. Fig. 7 is a cross-section of same.

A is a suitable frame or table. One side of this table is inclined toward the other, so that the table at its head end is wider than at its foot. Over this table and near and parallel with its straight side travels a carrier B, which is mounted upon terminal drums C, said carrier being adapted to receive the broom-corn from a suitable feed-bench D at its head end. Along the inclined side of the table and parallel therewith is a shaft E, below and parallel with which is another shaft F. Upon the shaft E is mounted the series of upper rolls G. These are set at stated intervals, and by reason of the inclination of said shaft

to the line of travel of the carrier the roller which is near the head of the table is farther away from the path of travel of the carrier than the succeeding roller, and so on throughout the series of rollers, the last one near the foot being nearest to the path of travel of the carrier. The intervals between these rollers and the inclination of the shaft are such that each succeeding roller shall be nearer the carrier by such a distance as may be determined upon to carry out the sizing of the broom-corn into the proper lengths.

It is found that the length of the brush of the broom-corn, by which is meant that portion from the shoulder to the tip of the brush, varies nearly uniformly in inches, or nearly so, so that we find it practicable to arrange our rollers so that each succeeding one shall be about one inch nearer to the path of travel of the carrier than the preceding one.

Upon the shaft F below are the lower rollers H, corresponding in position to the upper rollers G, so that there are pairs of rollers throughout the length of the table, located as we have just described.

Now it will be seen that the broom-corn fed from the bench to and upon the carrier, with its stalks resting upon and extending over one edge of the carrier and its brushes partially resting upon said carrier and thence extending over the table, will pass down in such a manner that the longest brushes will enter between the first pair of rollers, which by their revolution will withdraw said longest brushes from the mass, while the remaining corn will pass on down, and its next longest brushes will be engaged and withdrawn by the next pair of rollers, and so on throughout the whole series until the next to the shortest brushes are engaged by the last pair of rollers, while the very shortest will pass on over the foot of the table. Thus the sizing or sorting by lengths is positively and accurately effected by the engagement of the different lengths successively by the several pairs of rollers, which are located at varying distances from the general path of travel, and during this operation the broom-corn is positively supported upon and over a firm bed.

The details of construction of the machine are as follows:

The carrier is composed of successive inde-

pendent sections *b*, of any suitable material, such as wood, each section having a raised transverse rib *b'* the better to engage and carry the corn and all flexibly connected by wires *b²*, passing throughout the series.

The drums *C*, over which the carrier travels, are made polygonal the better to engage and advance the carrier, and the head-drum is driven by means of a worm-pinion *c* upon its shaft, with which engages a worm *f* on the end of the lower shaft *F*, which said shaft is driven by means of a pulley *I* from a main belt *J*, and said shaft, by means of a gear *f'* and a gear *e'* on the shaft *E*, drives said shaft *E*, whereby the rollers are driven.

Upon the table and extending throughout its length is a strip *L*, provided with transverse teeth or shoulders *l*, which serve to catch and straighten out such stalks as may lie at an angle or improperly on the carrier.

In order to cut the stalks of the broom-corn into even butts, we have a stationary knife *K* on one side of the table near its head. Under the knife is a wheel *M*, driven by suitable mechanism from the main drum, said wheel having teeth *m* and being in its best form a two-part or split wheel turning on each side of the knife, and its teeth being adapted to engage with the stalks of the broom-corn and force them up against the knife as they pass under it, and they are thereby cut off in even butts.

Over the head end of the carrier is supported a shield *N*, which may be correctly called a "knockdown" plate. The entrance end *n* of this shield is flared upwardly, so that the broom-corn in passing down off the feed-bench readily enters its stalks under this shield or plate, and the latter holds them down well upon the carrier, preventing them from riding up on the ribs thereof until they are well settled in place and get past the plate.

Upon the feed-bench is located a strip *d*, which determines the position of the shoulder of the broom-corn *S*, Fig. 1, in being fed by the operator.

On the inclined side of the table and about opposite the farther extremity of each feed-roll is a pin *O*, which serves to check the advance of those lengths of broom-corn caught by the feed-rollers, and thus preventing them from having a tendency to advance farther, which might have the effect of getting their brushes caught between the iron extremities of the rollers, which would crush them.

The edge of the table just in advance of each pin and about opposite each feed-roller is disposed on an incline, as shown at *P*, which is for the purpose of allowing the brushes to yield downwardly as they are caught and pressed between the rollers, the lower one of which, being a yielding one, as we shall presently describe, is also pressed downwardly and would, if the table were maintained at the same level throughout, (said table being close up to the rollers,) cause a

bending and perhaps a breaking and crushing of the brush, which danger is entirely avoided by the depression in the table, allowing the brush greater room to yield.

The upper rollers *G* may be of any suitable material and may or may not be cushioned upon their surface, and they are made with tapering entrance ends *g*, so as to freely admit and guide the brushes to their engagement.

The lower rollers *H* are made with yielding surfaces to avoid crushing the corn. These rollers consist of two end heads *h* with an intervening periphery *h'* of rubber or other suitable yielding material, the interior of the roller being hollow. In order to adjust this periphery to the proper tension, we make the end heads slidable upon their shaft, so that by inserting a screw-key *Q* said heads may be separated to adjust the tension of the periphery, and then when set on the shaft with set-screws *q* the screw-key may be removed. As it is sometimes necessary to remove the shafts *E* and *F*, we fit them in boxes *R*, having removable caps *r*, confining the shafts.

T are the receptacles or boxes into which the different lengths of broom-corn are dropped by the withdrawing-rollers.

If desired, the upper rollers *G* may be formed as brushes, as shown at *G'* in Fig. 4, or in some cases the lower rollers may be dispensed with and only such brush-rollers as *G²* in Figs. 6 and 7 may be used, said rollers being in series arranged at different distances from the path of travel of the material, as before described, and located over the table and adapted to engage the corn-brush from above and by yieldingly pressing it upon the table to withdraw the several lengths of broom-corn by a brushing action.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a broom-corn-sizing machine, the combination of a bed or table having an inclined side, and provided with means for receiving and advancing the broom-corn over said bed or table and a series of rotatable devices arranged in pairs, said series being parallel with the inclined side of the bed or table whereby they are set at successively-different distances from the path of travel of the broom-corn, and adapted to receive successively-different lengths between them and withdraw said lengths.

2. In a broom-corn-sizing machine, the combination of a bed or table having an inclined side, a traveling carrier mounted thereon parallel with the straight side, and a series of rotatable devices mounted parallel with the inclined side whereby they are located at successively-different distances from the path of travel of the carrier and are adapted to successively engage and withdraw different lengths of said broom-corn.

3. In a broom-corn-sizing machine, the traveling carrier thereof, in combination with

the stationary toothed or shouldered strip on one side thereof for straightening the stalks of the corn.

4. In a broom-corn-sizing machine, the combination of a bed or table, and a carrier thereon for receiving and advancing the broom-corn over said bed or table, an inclined series of devices, set at successively-different distances from the path of travel of the broom-corn and adapted to engage and withdraw successively-different lengths of said broom-corn, and the stationary pins in the table for checking the progress of the corn after it is engaged by said devices.

5. In a broom-corn-sizing machine, the combination of a bed or table, having one side inclined, and a carrier thereon for receiving and advancing the broom-corn over said bed or table, the series of rotatable devices mounted along the inclined side of the table so that they are at successively-different distances from the path of travel of the broom-corn for engaging and withdrawing successively-different lengths of said broom-corn, and the stationary pins in the table for checking the progress of the corn after it is engaged by said rollers.

6. In a broom-corn-sizing machine, the combination of a bed or table and a carrier thereon for receiving and advancing the broom-corn over said bed or table, the inclined series of rotatable devices set at intervals along one side of the bed or table, the lower one of said devices being a yielding one, and the depressions in the edge of the bed or table opposite said rollers.

7. In a broom-corn-sizing machine, the combination of a bed or table, and a carrier thereon for receiving and advancing the broom-corn over said bed or table, and the inclined series of withdrawing rotatable devices mounted at intervals along one side of the table, the upper ones of said devices having conical or tapering ends in the direction of the advance of the broom-corn whereby the brushes thereof enter readily and freely between said rollers.

8. In a broom-corn-sizing machine, the yielding withdrawing-roller consisting of separated ends or heads with an intervening peripheral band of soft or yielding material, said ends or heads being adjustable upon their shaft whereby the peripheral band may be regulated as to its tension, the screw-key traversing the roller parallel with the shaft and threaded into both heads for adjusting said ends or heads and the set-screws engaging the hubs of the heads for holding them where set.

9. In a broom-corn-sizing machine, the combination of the withdrawing-rollers, consisting of separated and adjustable heads and

an intervening yielding band, the shafts upon which they are mounted and the bearings for said shafts, having removable caps whereby they may be readily taken out.

10. In a broom-corn-sizing machine, the combination of the carrier, the stationary toothed or ribbed strip at one side thereof, the feed-bench at the head thereof, and the superposed shield or knockdown plate having a flaring entrance for directing the broom-corn from the feed-bench onto the carrier and holding it thereon until settled.

11. In a broom-corn-sizing machine and in combination with a carrier adapted to receive and advance the broom-corn, the stationary knife at one side thereof and the two-part or split toothed wheel having one of its parts operating on each side of the knife said wheel adapted to carry the stalks of the broom-corn under said knife whereby they are cut off in even butts.

12. In a broom-corn-sizing machine and in combination with a carrier, adapted to receive and advance the broom-corn, a series of rollers set at successively-different distances from the path of travel of the broom-corn and adapted to successively engage and withdraw different lengths thereof, said devices including in their composition revolving brushes for engaging the broom-corn.

13. In a broom-corn-sizing machine and in combination with a carrier for receiving and advancing the broom-corn, a series of revolving brushes set at successively-different distances from the path of travel of the broom-corn whereby different lengths of corn may be successively engaged and withdrawn.

14. In a broom-corn-sizing machine and in combination with a carrier for receiving and advancing the broom-corn, a table over which the brush extremities of the corn travel and a series of revolving brushes mounted above said table and set at successively-different distances from the path of travel of the broom-corn whereby different lengths of corn are successively engaged between said brushes and the table and withdrawn.

15. In a broom-corn-sizing machine and in combination with a carrier for receiving and advancing the broom-corn, a series of revolving rollers in pairs set at successively-different distances from the path of travel of the broom-corn, and adapted to successively engage and withdraw different lengths of corn, one roller of each pair being a brush.

In witness whereof we have hereunto set our hands.

JOSEPH M. GAFFNEY.
JACOB J. FISCHER.

Witnesses:

S. H. NOURSE,
WM. F. BOOTH.