

No. 759,844.

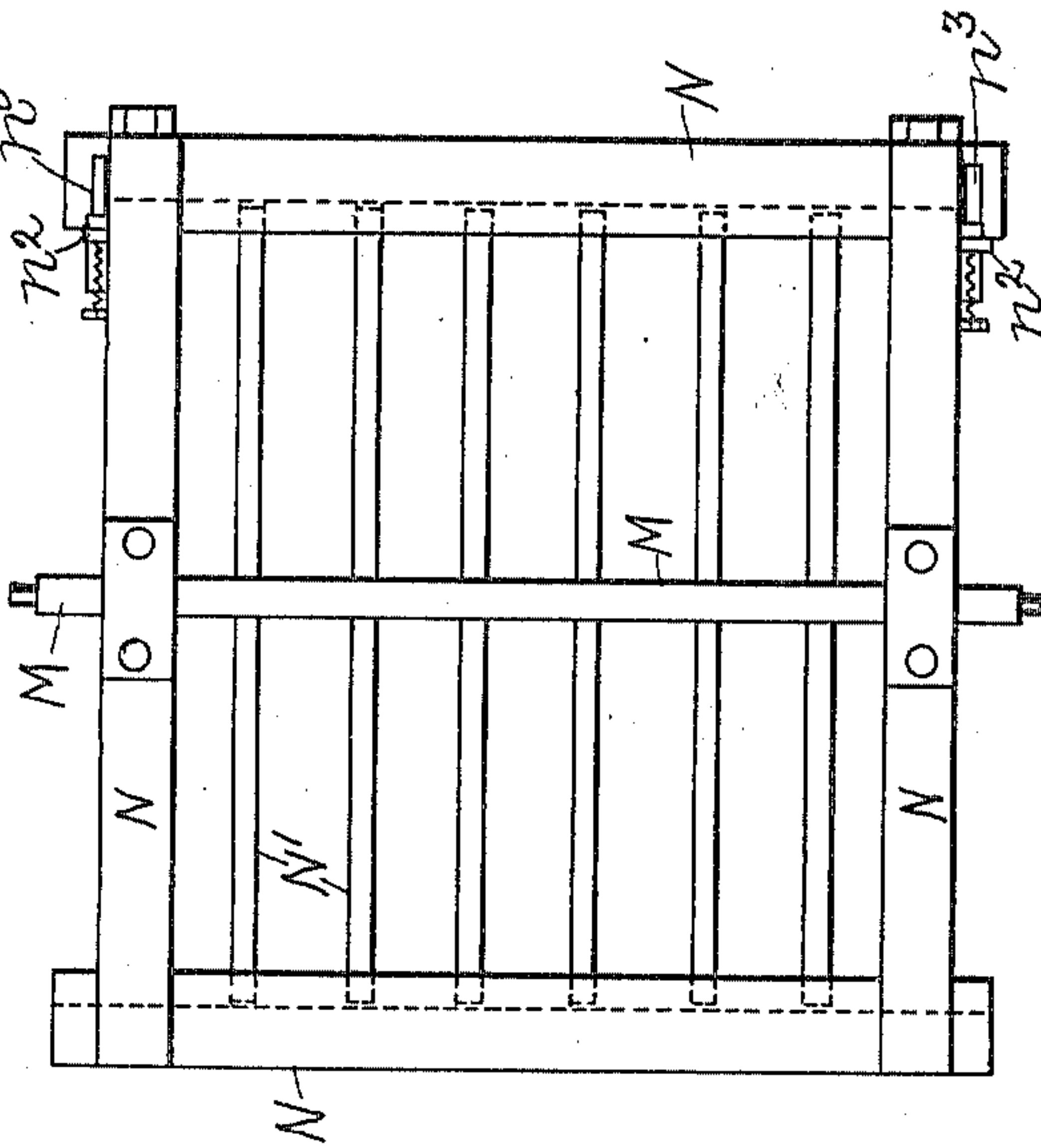
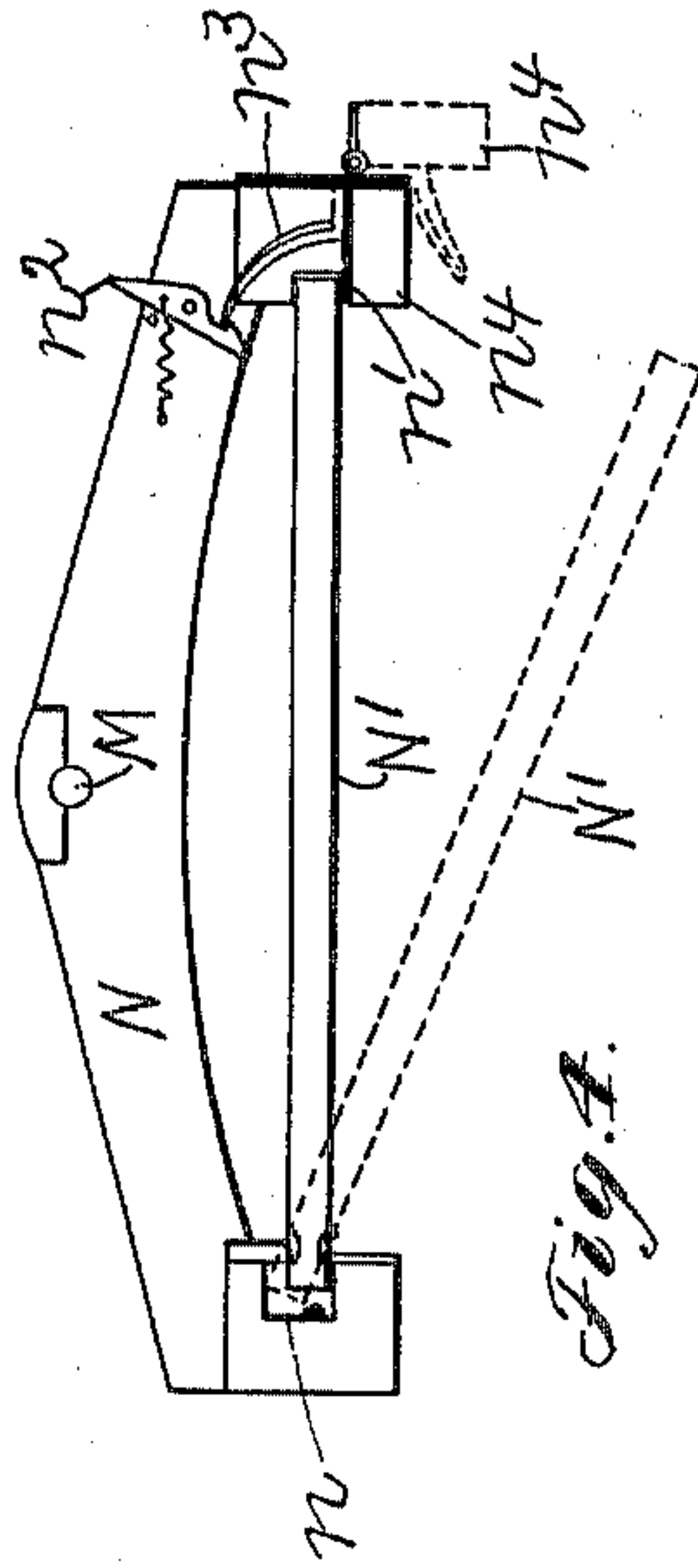
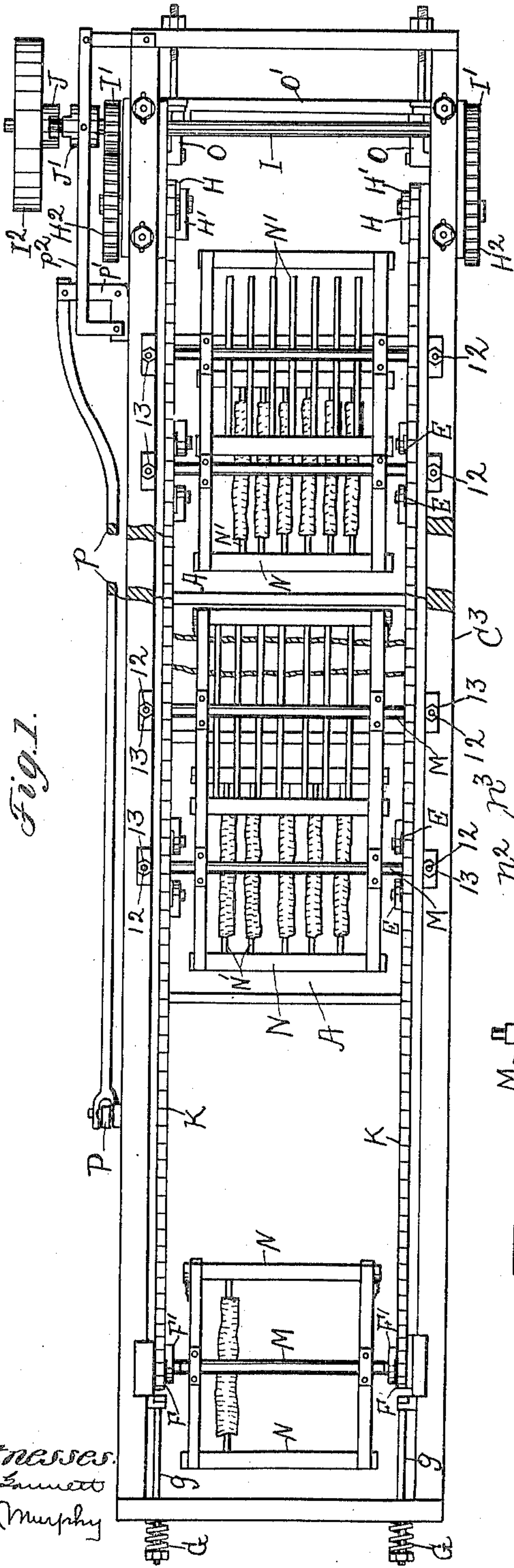
PATENTED MAY 17, 1904.

E. C. AMIDON.  
APPARATUS FOR BLEACHING LEATHER.

APPLICATION FILED JAN. 28, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



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C. H. Bennett  
J. Murphy

Inventor:  
Eugene C. Amidon  
by Jas. H. Churchill  
Att'y.

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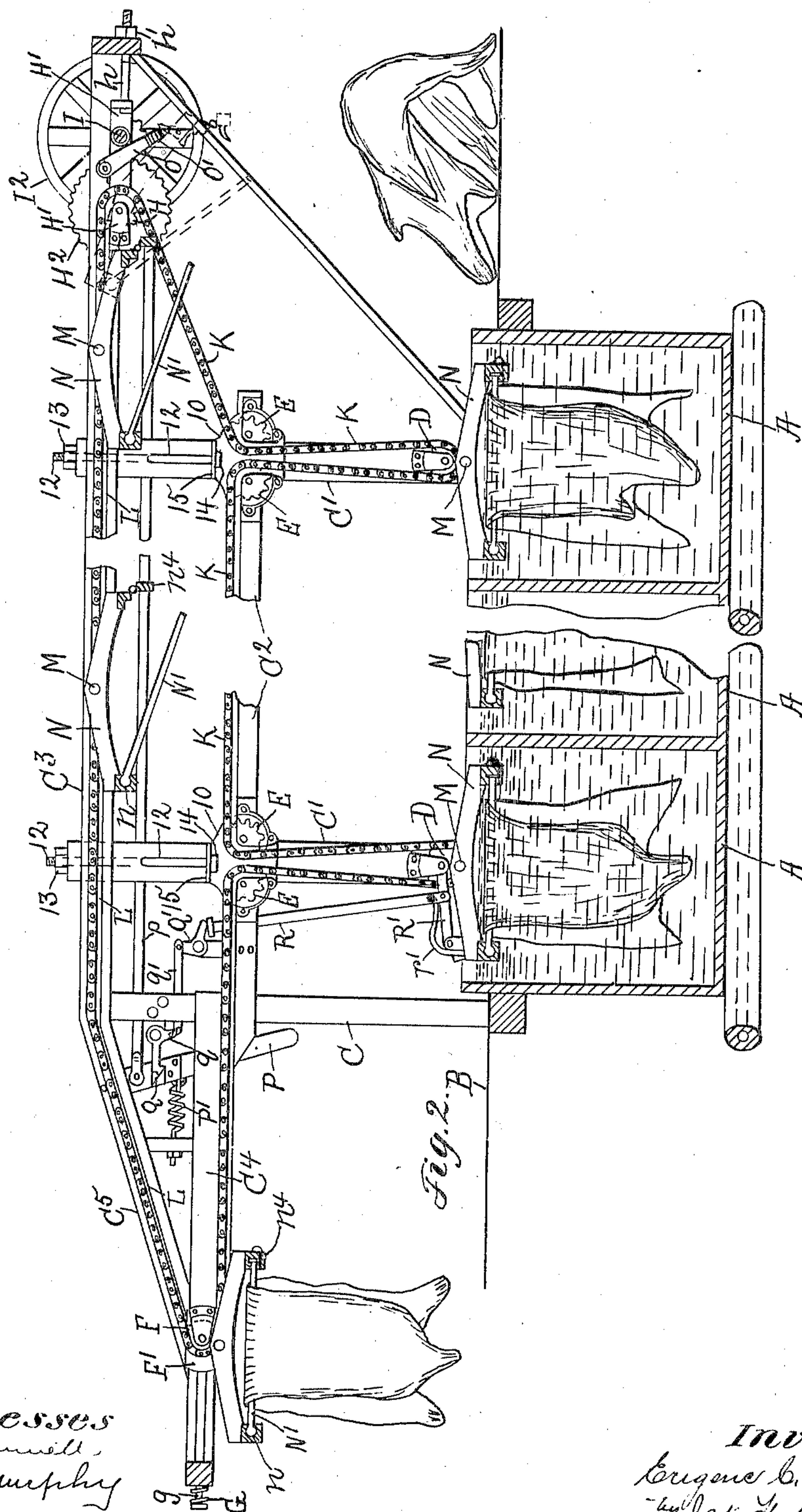
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3 SHEETS—SHEET 2.



Witnesses  
B. B. Bannell,  
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# UNITED STATES PATENT OFFICE.

EUGENE C. AMIDON, OF CORRY, PENNSYLVANIA.

## APPARATUS FOR BLEACHING LEATHER.

SPECIFICATION forming part of Letters Patent No. 759,844, dated May 17, 1904.

Application filed January 28, 1904. Serial No. 190,929. (No model.)

*To all whom it may concern:*

Be it known that I, EUGENE C. AMIDON, a citizen of the United States, residing in Corry, in the county of Erie and State of Pennsylvania, have invented an Improvement in Apparatus for Bleaching Leather, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to an apparatus for treating hides, skins, and sides of leather, which is especially adapted for use in bleaching the same.

In bleaching leather as now commonly practiced the sides or pieces of leather are subjected to successive treatment in a plurality of tanks or vats, some of which contain bleaching solutions, usually of different strengths, and some of which contain water to wash the bleached leather. These tanks or vats are usually located below the floor-level, and the operator places a single side of leather over a stick or bar and suspends the same in the solution in the first vat, and after leaving said leather in the first vat a given time the operator moves it from the first vat and places it in the second vat. This process is repeated in the succeeding vats. Usually from four to six vats are employed. This method of handling the hides, skins, or sides of leather is very laborious, is objectionable on account of the deleterious action of the bleaching solution, which is usually acid, upon the hands of the operator, and is defective in that a uniform result upon the hides, skins, or sides of leather is not obtained, owing to the variation in time the leather is subjected to the different bleaching solutions, and, further, on account of the lack of opportunity for drainage from the hide taken from one vat before it is immersed in the next adjacent vat.

The present invention has for its object to provide an apparatus with which the above-mentioned defects may be overcome and one with which a maximum number of hides, skins, or sides of leather can be uniformly bleached in a minimum time at a minimum cost with a minimum expenditure of labor and without danger of injury to the hands of the operator.

For this purpose I prefer to employ a series of supports or racks for the hides or skins, preferably each of which is capable of supporting a plurality of hides or skins, and attach said supports or racks to an endless carrier which is moved by power under control of the operator in a fixed path, comprising substantially horizontal and vertical portions, which latter are above and in line with the tanks or vats containing the bleaching solutions. Provision is made for automatically stopping the travel of the endless carrier when the hides or skins are immersed in the bleaching solutions, and provision may and preferably will be made for automatically discharging the skins from the racks or supports after they are removed from the last vat of the series. Provision is further made for starting the endless carrier in motion from near the first vat, so that a single operator can load the racks or supports with the hides or skins and start the carrier in motion from one end of the apparatus. The racks or supports may and preferably will be constructed so that the bleaching solution in the vats will not be contaminated by contact with corrodible portions of the mechanism. These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is a top or plan view of my improved leather-bleaching machine with the central part thereof broken away; Fig. 2, a vertical central section of the same on the line *xx* in Fig. 1; Fig. 3, an enlarged plan view of one of the leather-supporting racks embraced in my invention; Fig. 4, a side view in elevation of the same.

In the drawings illustrating one form of my invention, A A are a series of tanks, preferably extending below the floor B. Over this series of tanks I erect a frame, preferably consisting of posts C C' and horizontal beams C<sup>2</sup>, C<sup>3</sup>, and C<sup>4</sup>. The posts C' are located at each side of the centers of the tanks A. Upon the insides of these posts C', just above the tops of the tanks A, I mount sprocket-wheels D, and upon the insides of the posts C' at their junction with the horizontal beams C<sup>2</sup> two sprocket-wheels E E are mounted in metal frames or castings 10, which are ad-



justably secured to the posts  $C'$ , which adjustment may be effected, as herein shown, by rods 12, extended down through inclined openings bored in the said posts from the top down through the inner sides of the same, each rod being threaded at its ends to receive a nut 13 above the post and a nut 14 below a lip or flange 15 on the metal frame or casting 10 for a purpose as will be described. Near the front ends of the beams  $C^4$ , I mount sprocket-wheels  $F$ , the bearings  $F'$  of which are longitudinally movable to some extent on said beams  $C^4$  and are provided with tension-springs  $G G$ , which operate thereon through rods  $g g$ . At the rear end of the beams  $C^3$ , I also mount sprocket-wheels  $H H$  in longitudinally-movable bearings  $H' H'$  on the rear ends of the beams  $C^3$ , adapted to be adjusted by means of rods  $h$  and nuts  $h'$ . Mounted in bearings in said housing  $H'$  is a driving-shaft  $I$ , provided with pinions  $I' I'$ , intermeshing with gear-wheels  $H^2 H^2$  on the shafts of the sprocket-wheels  $H H$ , whereby power is transmitted from the shaft  $I$  to the sprocket-wheels  $H H$ . On one end of the shaft  $I$  there is a loose band-wheel  $I^2$ , adapted to be actuated by a belt (not shown) from any convenient source of power, and on the hub thereof and on the shaft  $I$  there is ordinary clutch mechanism  $J J'$ , whereby connection can be established between the shaft  $I$  and the band-wheel  $I^2$ , so that the shaft  $I$  will be driven thereby. Around each of the series of sprocket-wheels  $E E E D$  and the driven sprocket-wheels  $H$ , I place endless link chains  $K K$ . From the driving-sprockets  $H H$  along the beams  $C^3$  of the frame I make guideways  $L L$ , which extend along the beams  $C^3$  and inclined portion  $C^5$  of the beam  $C^3$  to the sprocket-wheels  $F$  at the front end of the frame, and upon which guideways  $L L$  the link chains  $K K$  rest during their backward traverse from the rear to the front of the machine. Upon the rods  $M$ , pivoted in the link chains  $K K$  at equal distances apart, I swing racks  $N$ , provided with slots  $n n'$ , in which bars  $N'$  can be placed and over which bars sides of leather can be hung, as illustrated in Figs. 1 and 2, the bars  $N'$  constituting movable members of the rack. These racks and the bars therein I preferably construct as illustrated in the enlarged Figs. 3 and 4. By referring to Fig. 4 it will be seen that the ends of the bars  $N'$ , fitting into the slot  $n$ , are so notched that they cannot be withdrawn longitudinally from said slot and that the lower wall of the slot  $n'$  is hinged to the rack-frame  $N$  and when in use is retained in place by means of a spring-actuated dog  $n^2$ , which engages an arm  $n^3$  on the hinged parts  $n^4$ , so that when the dog  $n^2$  is disengaged from the arm  $n^3$  the part  $n^4$  falls downward and allows the ends of the bars  $N'$  to drop downward, as shown in dotted lines in Fig. 4. To operate the dog mechanism on the racks  $N$ , I pivot to the movable housings  $H' H'$  on

the rear ends of the beams  $C^3$  of the frame, arms  $O O$ , connected by a transverse bar  $O'$ , which engages the dogs  $n^2$  on the racks  $N$  about the time they reach the terminus of their longitudinal traverse of the machine at the rear end thereof and disengages them from the arms  $n^3$  of the hinged part  $n^4$  of the racks  $N$ , which allows the ends of the bars  $N'$  therein to automatically move downward and the sides of leather thereon to slide off therefrom upon the floor, as illustrated by dotted and full lines in Fig. 2, after which the racks  $N$  travel back over the guideways  $L L$  to the front of the machine to be again filled, as illustrated in Fig. 2. For starting this mechanism I pivot a starting-lever  $P$  to the frame near the front end thereof and connect a retracting-spring  $P'$  thereto. This starting-lever  $P$  is provided with a hook-catch  $Q$ , adapted to engage the lever when it is moved forward against the tension of the spring  $P'$ . From the starting-lever  $P$  a rod  $p$  extends toward the rear end of the frame and engages lever mechanism  $P' P^2$ , which lever mechanism in turn engages and operates the movable member  $J'$  of the clutch mechanism  $J J'$ , so that when the starting-lever  $P$  is moved forward, so as to engage the hook-catch  $Q$ , it operates to bring the members of the clutch into engagement and retain them in that position until the starting-lever is released from the hook-catch  $Q$ .

For automatically releasing the hook-catch  $Q$  I provide thereon an arm  $q$ , from which a rod  $q'$  extends to one arm of a bell-crank lever  $Q'$ , and extending down from under the other arm of said bell-crank lever  $Q'$ , but not secured thereto, there is a rod  $R$ , which extends downward and is pivoted to an arm  $R'$ , which arm is pivoted to a support at one side of the top of the first of the tanks  $A$ , the free end of this arm extending a short distance beyond the line of the traverse of one of the link chains  $K$  in its downward traverse from the first of the sprocket-wheels  $E$  to the first sprocket-wheel  $D$ , and so that the free end of the arm  $R'$  will engage the rods  $M$ , upon which the racks  $N$  are suspended from the chains  $K K$ . Secured to the arm  $R'$  there is a retracting-spring  $r'$ , adapted to raise the free end of the arm  $R'$ , and as the rack  $N$  travels downward on the link chains  $K K$  it depresses the arm  $R'$  until the rod  $M$  has reached the under side of the sprocket  $D$ , at which time the rod  $M$  passes off the arm  $R'$ , and the spring  $r'$  causes it to instantly fly upward until the upper end of the rod  $R$  contacts with the arm of the bell-crank lever  $Q'$  with sufficient force to operate, through the connections therewith, the hook-catch  $Q$ , so as to release the operating-lever  $P$ , which is instantly moved back by the spring  $P'$ , so as to disconnect the clutch mechanisms and stop the machine.

In operation one of the racks  $N$ , which when



the machine automatically stops is at the front end of the machine, is filled with sides of leather, as illustrated in Fig. 2. The operator then starts the machine by means of the starting-lever P, and this rack is conveyed along the first of the sprocket-wheels E E and lowered into the first tank A, where the suspending rod M thereof engages the stop-lever mechanism and operates to stop the machine. Meanwhile another rack N has been brought to the front end of the machine ready to be loaded, and when the machine is again started it operates to raise the rack N out of the first tank and up and over the second tank, and at the same time the second rack N is conveyed over the first tank A, and both racks are then simultaneously lowered into the first and second tanks, when the mechanism at the first tank stops the machine, as before. This operation is repeated at each stopping and starting of the machine, regardless of the number of tanks in the series, and as the racks pass up and out of the last tank and reach the rear end of the machine they are in turn automatically unloaded, as hereinbefore described, and travel back empty over the guideways L L to the front of the machine. In the drawings I have shown two tanks and a section of a third. It will, however, be readily understood that this mechanism is equally operative with one or any number of tanks that it may be desired to pass the leather through.

It is obvious that while I have shown and described the mechanism as a leather-bleaching machine, yet it is equally useful in leather-coloring and for many other purposes in handling sides of leather or other materials into and out of tanks or vats.

By reference to Fig. 2 it will be seen that the supports or frames 10, in which the sprocket-wheels E E are mounted, are vertically adjustable by means of the rods 12 and nuts 13, so as to take up any slack in the link chains due to wear, thereby keeping the link chains in close engagement with the sprocket-wheels D and preventing the link chains making contact with the solutions in the tanks and avoiding some of the racks being in advance and others behind their proper position when said carrier is stopped, thereby insuring the material on all of the racks being submerged in the solution in all of the vats to the same extent when the endless carrier is stopped in its travel.

I have herein shown and described a convenient mechanism for utilizing my invention which will enable others to construct and use the same. It is obvious, however, that many parts thereof can be greatly modified without departing from the spirit of my invention. Therefore I do not desire to confine myself to the exact construction thereof herein shown and described.

It is to be observed that in the embodiment

of the invention herein shown the link chains constitute one form of endless carrier for the supports or racks N and that the said carrier is moved by power in a fixed path above the tanks, which path comprises substantially horizontal portions and substantially vertical portions. The substantially vertical portions preferably extend to near the tanks, so that the racks may be made compact and yet insure the hides, skins, or sides of leather being completely immersed in the solutions in the tanks when the said racks have reached the lowest or substantially lowest point of travel in a vertical path of the endless carrier. It is further to be observed that the endless carrier is automatically stopped in its travel when the hides, skins, or sides of leather have been immersed in the solutions in the tanks and that the stop mechanism which controls the travel of said endless carrier is rendered effective by means movable with the endless carrier at or about the time the complete immersion takes place, thereby insuring treatment of the entire hides, skins, or sides of leather.

I may prefer to have the automatic stop mechanism operated by the rack when the latter reaches its lowest position in the travel of the endless carrier; but I do not desire to limit my invention in this respect.

The bars N', upon which the hides or skins or sides of leather are hung, practically form movable members of the racks and are located below the point of connection of the racks with the endless carrier a sufficient distance to enable the leather to be totally immersed in the bleach or other solution without danger of the endless carrier coming in contact with said solution, thereby enabling said carrier to be composed of iron or steel chains, which would contaminate the solution in the vat, and thereby injure the leather if said chains were permitted to come in contact with the said solution.

By having the endless chain travel in a substantially vertical direction above and in line with the vats opportunity is afforded for the surplus liquor to drain off from the leather on the upward movement of the same and to run or drop back into the tank from which it is taken, thereby preventing the solution in one tank from being diluted or contaminated by the said surplus solution, which is taken from an adjacent tank.

With the apparatus herein shown the cost of treating the hides, skins, or leather is materially cheapened, inasmuch as a single operator can run the machine and a number of hides, skins, or sides of leather may be simultaneously treated in each vat, which latter result is accomplished by means of the multiple holder or rack. It is to be observed that the operator is relieved from all care in stopping the machine, so that the hides, skins, or sides of leather are completely immersed and uni-



formly treated, and, further, he is not obliged to handle the hides or skins while wet with the bleaching solution. It is also to be observed that the supporting-bars upon which the hides, skins, or sides of leather are hung extend substantially at right angles to the pivot for the rack N, thereby enabling a plurality of hides to be immersed in the solution when the pivot for the rack occupies substantially the lowest point of the travel of the endless carrier.

I claim—

1. The combination of a frame, sprocket-wheels at each side of the ends thereof, and pairs of sprocket-wheels at each side of the intermediate upper part of the frame, and sprocket-wheels at each side of the lower part of the sides thereof below said pairs of sprocket-wheels, endless link chains operating over and around said sprocket-wheels, mechanism for actuating said endless link chains, racks pivoted between and carried by said link chains, means for starting the link-chain-actuating mechanism, and mechanism arranged to engage one of the rack-supports as it approaches the lowermost point of its traverse for stopping the traverse of the link chains, substantially as set forth.

2. The combination of one or more tanks, a frame above said tanks, sprocket-wheels at the sides of the ends, and pairs of sprocket-wheels intermediate of the sides of the upper part of said frame, sprocket-wheels at the sides of the centers of said tank or tanks, below the pairs of sprocket-wheels intermediate of the sides of the upper part of the frame, endless link-chains operating over and around the sprocket-wheels at each side of the frame, racks pivoted upon and carried by said link chains, mechanism for actuating said link chains in unison, rods pivoted between and carried by said link chains, mechanism for starting the link-chain-actuating mechanism, and mechanism adapted to engage the rack-supporting pivot of one of the racks supported upon and carried by the link chains as it approaches the lowermost point of its traverse for automatically stopping the link-chain-actuating mechanism, substantially as set forth.

3. The combination of one or more tanks, a frame above said tanks, sprocket-wheels at the sides of the ends and pairs of sprocket-wheels on the sides of the frame above the centers of the tank or tanks, sprocket-wheels at the sides of the tank or tanks below the pairs of sprocket-wheels at the sides of the frame, and link chains over the sprocket-wheels at each side of the frame, gear-and-clutch mechanism operating some of the sprocket-wheels over which said link chain operates, racks pivoted between and carried by said link chains, removable leather-supporting bars in slots in said racks, and mechanism at the rear of the frame for releasing one end of the bars in said racks at the termina-

tion of their traverse toward the rear end of the machine, mechanism for throwing the clutch mechanism into engagement to start and actuate the link chains, and mechanism near the front of the machine adapted to automatically disengage said clutch mechanism and stop the traverse of the link chains, substantially as set forth.

4. In rack for a leather-bleaching machine, a rectangular frame, a transverse slot at the rear end of the frame adapted to receive and retain the ends of leather-supporting bars, a transverse slot at the front end of said frame adapted to support the forward ends of the leather-supporting bars, the lower wall of which slot is hinged to the frame, an arm-and-dog mechanism adapted to retain said hinged portion in place to support the ends of the bars and to release said hinged portion and allow the ends of the bars supported thereby to drop so that the sides of leather supported thereon will slide off therefrom, substantially as set forth.

5. The combination with a tank or vat, of an endless carrier movable in a path comprising substantially horizontal and vertical portions, said vertical portions being substantially in line with said tank, a support for the hide, skin or leather attached to said carrier to move therewith, power-operated mechanism for moving said carrier to thereby immerse the hide, skin or leather in the solution in said tank or vat and to remove it therefrom, and means which acts when the hide or skin or leather is immersed in said tank to automatically stop the travel of said carrier, substantially as described.

6. The combination with a tank or vat, of an endless carrier movable in a fixed path comprising substantially horizontal and vertical portions, said vertical portions being above and substantially in line with said tank, a rack or frame pivoted to said endless carrier and provided with a plurality of movable members or supports for the pieces of material to be treated extended substantially at right angles to the pivot for said rack, means to secure said movable members to said rack in their operative position, and means to release said members to permit the pieces of material to be removed therefrom, substantially as described.

7. The combination with a tank or vat, of an endless carrier movable in a fixed path comprising substantially horizontal and vertical portions, said vertical portion being above and substantially in line with said tank, a rack or frame pivoted to said endless carrier and provided with a movable member located below said pivot to permit the material hung upon said member to be totally immersed in the solution contained in the tank without bringing the endless carrier in contact with said solution, substantially as described.

8. The combination with a tank or vat, of an



endless carrier movable in a fixed path comprising substantially horizontal and vertical portions above said vat, said vertical portion being substantially in line with said tank or vat, guides located above said vertical portion to sustain the endless carrier in its movement in a horizontal path, means to move said endless carrier, a plurality of racks or frames for the sides, skins or sides of leather pivoted to said endless carrier and provided below the pivots therefor with members upon which the hides, &c., are hung, substantially as described.

9. The combination with a tank or vat, of an endless carrier movable in a fixed path comprising substantially horizontal and vertical portions, a support for the material connected to said carrier power-operated means for moving said carrier located at one end of the horizontal portion of said path, and means for controlling said power-operated means located near the opposite end of said horizontal portion, a device to lock said controlling means in its operative position, and means movable with said endless carrier for operating said locking device to release said controlling means, substantially as and for the purpose specified.

10. The combination with an endless carrier movable in a path comprising substantially horizontal and vertical portions, a support for the material to be treated connected to said carrier to move therewith, power-operated means for moving said carrier in said path, means for controlling said power-operated means, mechanism for locking said controlling means in its operative position, and a releasing device cooperating with said locking mechanism and rendered effective thereon when the said support reaches substantially the lowest point of the traverse of said endless carrier in the vertical portion of its path, substantially as described.

11. The combination with an endless carrier, of a plurality of racks secured to said carrier to move therewith and provided with a plurality of movable supports or members upon which the material to be treated is hung, means to lock said supports or members to said racks in their closed or operative position, and means cooperating with said locking means to release said supports or members, and to permit them to be moved into their open position, substantially as described.

12. The combination with a tank or vat, of an endless carrier movable in a fixed path comprising substantially horizontal and vertical portions, said vertical portion being substantially in line with said tank, a support for the material to be treated connected with said carrier to move therewith and provided with a movable member upon which the material is hung, means to lock said movable member in its closed or operative position, and means to engage said locking means and release said movable member after said support has been car-

ried out of the said tank or vat, substantially as described.

13. The combination with a tank or vat, of an endless carrier movable in a fixed path comprising substantially horizontal and vertical portions, said vertical portion being substantially in line with said tank, a support for the material to be treated connected with said carrier to move therewith and provided with a movable member upon which the material is hung, means to lock said movable member in its closed or operative position, and means having a fixed position with relation to the path of movement of said support to engage the said locking means and automatically unlock the same, substantially as described.

14. The combination with an endless carrier movable in a path comprising substantially horizontal and vertical portions, a support for the material to be treated connected to said carrier to move therewith, power-operated means for moving said carrier in said path, means for controlling said power-operated means, mechanism for locking said controlling means in its operative position, and a releasing device cooperating with said locking means to disengage it from said controlling means, substantially as described.

15. The combination with an endless carrier, supports for material to be treated connected thereto to move therewith, mechanism to move said endless carrier, a clutch to control the operation of said mechanism, a lever operatively connected with said clutch, means to lock said lever in its operative position, means movable with said endless carrier to effect disengagement of the locking means from said lever, and means to move said lever when released to operate said clutch to stop the travel of the endless carrier, substantially as described.

16. The combination with a tank or vat, of an endless carrier movable in a path comprising substantially horizontal and vertical portions, said vertical portion being above and in line with said tank or vat, a support for the material to be treated connected to said carrier to move therewith, mechanism for actuating said carrier, a starting device for controlling the operation of said actuating mechanism, means for locking said starting device in its operative position, and means movable with the endless carrier to effect disengagement of the locking means from said starting device, substantially as described.

17. The combination with a tank or vat, of a frame located above the same and comprising vertical and horizontal portions, rotatable devices supported by said horizontal portion near the opposite ends of the same, a rotatable device supported by said vertical portion of said frame near the said tank or vat, intermediate rotatable devices supported above the lowermost rotatable device and adjustable with relation thereto, means to effect move-



ment of said intermediate rotatable devices  
away from said lowermost rotatable device,  
and an endless carrier in engagement with  
said rotatable devices to be moved thereby,  
5 said endless carrier passing between the inter-  
mediate rotatable devices, substantially as de-  
scribed.

In testimony whereof I have signed my name  
to this specification in the presence of two sub-  
scribing witnesses.

EUGENE C. AMIDON.

Witnesses:

J. J. DESMOND,  
C. A. TRISKET.