

O. L. OWEN.
WEIGHT RELIEVING DEVICE.
APPLICATION FILED NOV. 20, 1905.

908,606.

Patented Jan. 5, 1909.

3 SHEETS—SHEET 1.

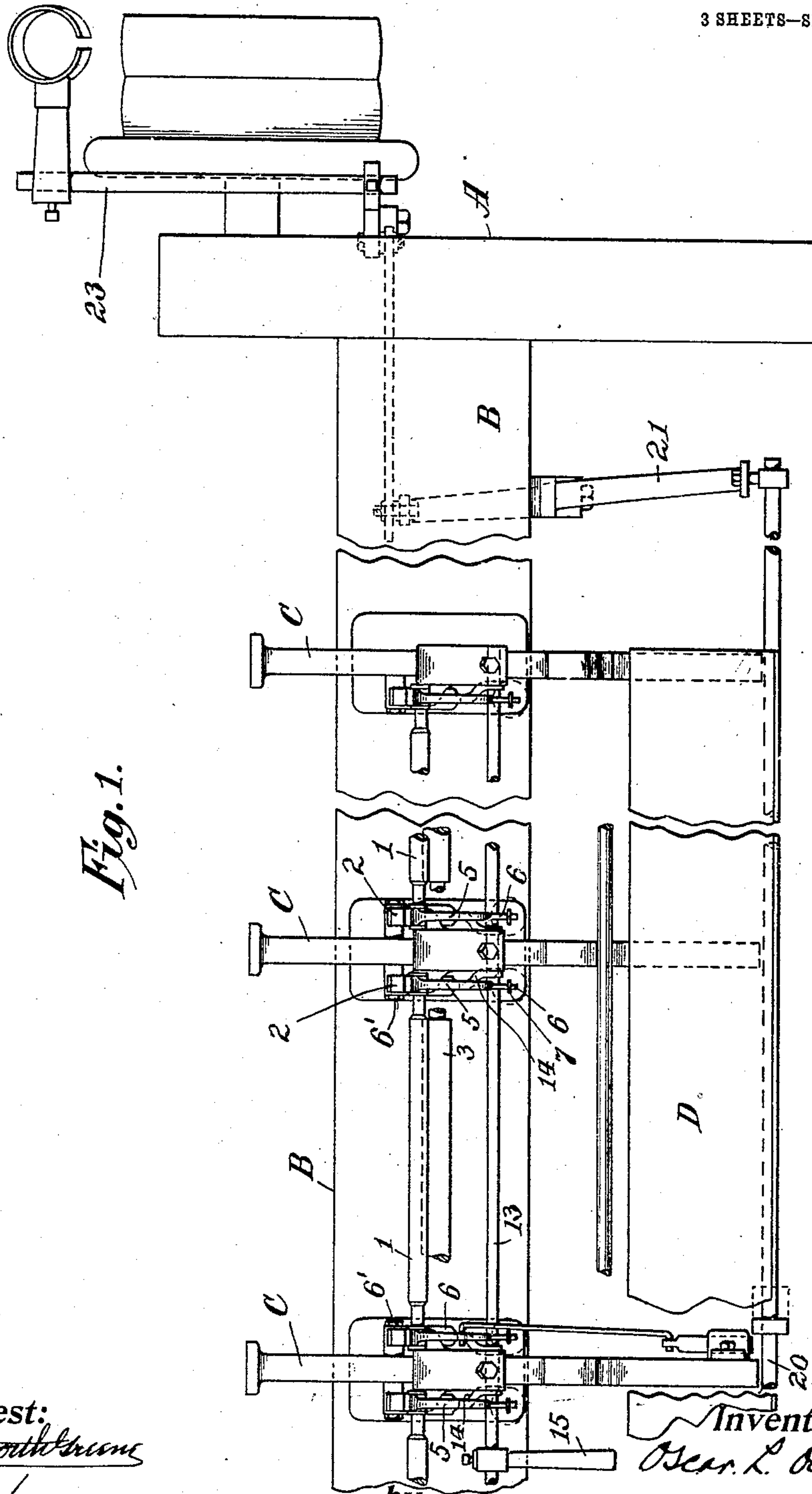


Fig. 1.

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Inventor:
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by *Edgworth & Co.* Attys.

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3 SHEETS—SHEET 2.



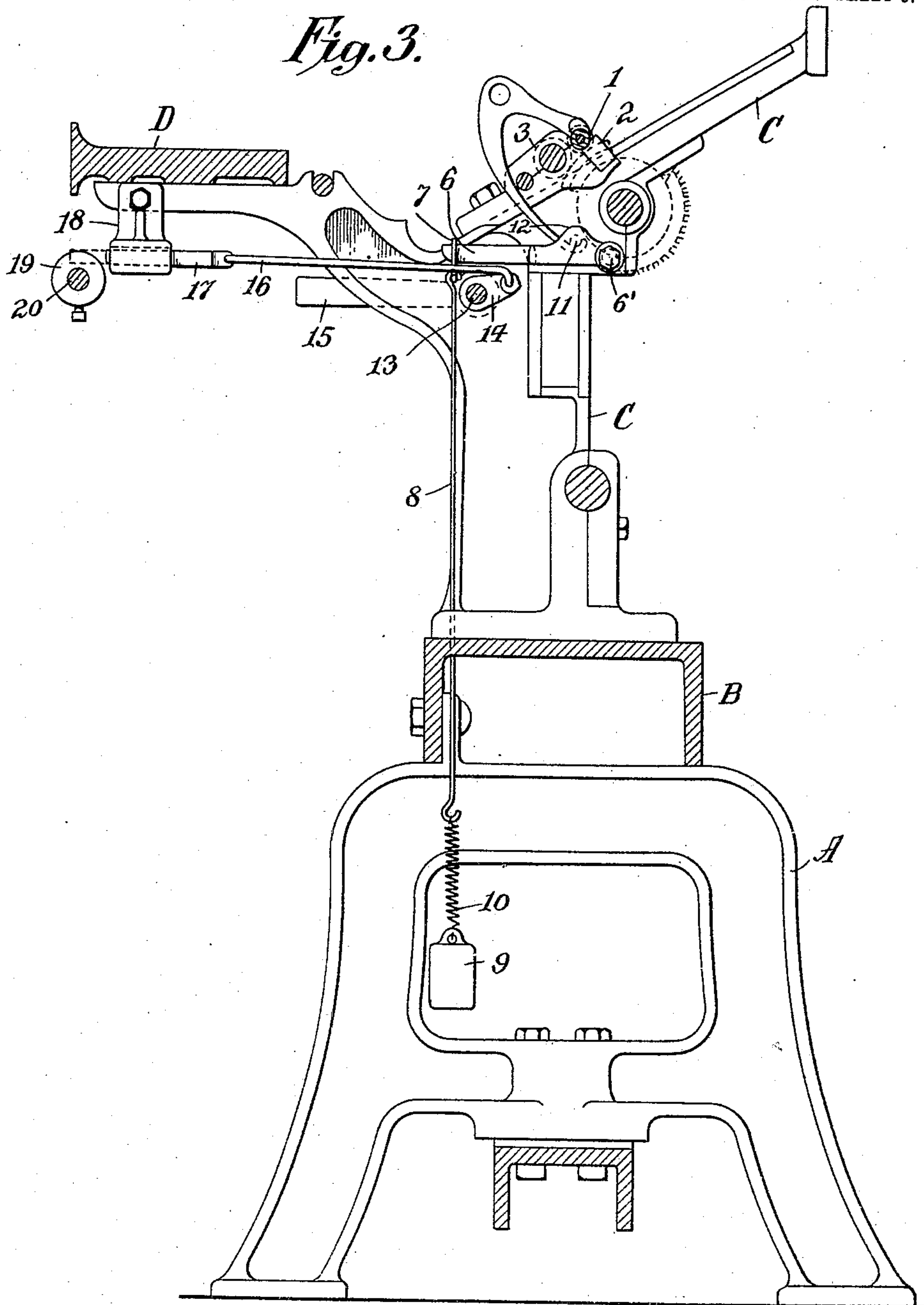
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3 SHEETS—SHEET 3.

Fig. 3.



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UNITED STATES PATENT OFFICE.

OSCAR L. OWEN, OF WHITINSVILLE, MASSACHUSETTS, ASSIGNOR TO THE WHITIN MACHINE WORKS, OF WHITINSVILLE, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

WEIGHT-RELIEVING DEVICE.

No. 908,606.

Specification of Letters Patent.

Patented Jan. 5, 1909.

Application filed November 20, 1905. Serial No. 288,121.

To all whom it may concern:

Be it known that I, OSCAR L. OWEN, a citizen of the United States, and a resident of Whitinsville, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Weight-Relieving Devices, of which the following is a full, clear, and concise specification.

My invention relates to the drawing mechanisms of machines operating upon cotton and similar material, and more particularly to means for relieving the normal working pressure from the top drawing rollers or other similar parts of such machines whereby said parts may be conveniently separated from pressing contact with their co-operating elements when the machine is at rest, the special utility of this invention being in respect of leather covered top rollers which normally work under heavy pressure against lower rollers, and are therefore apt to become indented or flattened by the latter, if allowed to remain stationary and under pressure for any considerable period, as over night or over Sundays or holidays.

My invention further involves the combination of pressure relieving means as above described with a device for controlling the application of the motive power to the machine in such manner that the pressure must be resumed upon the rollers before the same can be started in operation.

The invention also involves the provision of means whereby the manipulation of a single element will simultaneously remove the pressure from all of the rollers in the several heads of a multiplex machine, as well as other features of importance, all of which will hereinafter be fully described and more particularly pointed out in the accompanying claim.

The drawings which form part of this application illustrate an embodiment of my invention applied to the drawing off mechanism of a cotton combing machine of the well known Heilmann type. Only so much of this machine, however, is shown as is necessary for a thorough understanding of the present invention, and it is to be understood that the invention is not limited to use in such machines, but is likewise capable of adaptation to other and different kinds of machines wherein parts are required to be subjected to pressure while in operation and to be relieved of such pressure when at rest.

Figure 1 is a plan view of the delivery portions of several heads of a combing machine of the kind mentioned, with parts broken away and removed to show the improved weight relieving device; Fig. 2 is a front elevation, with parts obstructing the view of the drawing rollers broken away or removed; Fig. 3 is a vertical transverse section through one of the heads of the machine, as for example on line III—III of Fig. 2, showing the pressure exerting means in action.

The combing machine chosen for illustration comprises the usual standards A, a longitudinal girder or table B and several upright frame pieces C which form the intermediate supports between the several heads of the machine and carry the various parts which comb or otherwise operate upon the cotton staple in the ordinary way. These parts are perfectly familiar to those skilled in this art and since they form no part of the present invention they are omitted from the drawings, but their drawing-off mechanisms, however, are shown in order to illustrate the usual method of support of the top or leather detaching roller and the manner in which the present invention is related to it. The mechanisms of all of the heads are alike in structure, and description of one will therefore suffice for all. The said top roller, indicated by the reference 1, is normally supported by its end gudgeons, resting on suitable inclined arms 2, 2, and by its body portion, which rests against the body of a lower drawing-off roller 3, usually of metal and fluted. The inclined arms 2 are shown herein as carried by the stationary journal seats of the shaft of lower roller 3, but the end gudgeons of the roller 1 may be mounted upon any other kind of support which will properly maintain it in position. The inclined arms 2 and the body of the lower roller 3 form between them a sort of crotch, as shown in Fig. 3, into which the leather roller 1 is adapted to be pressed by means of the stirrups 5, which form a part of the pressure exerting means presently to be described and bear against each of the end gudgeons of the said rollers. The force which is thus exerted upon the roller 1 presses it against the lower drawing-off roller with considerable pressure, and it is at this point of contact that the pressure must be relieved in order to prevent injury to the compara-

tively soft and delicate upper roller, as above mentioned.

The pressure exerting means comprises a lever 6 pivoted to the frame pieces C beneath each stirrup 5 and extending forwardly to a point which is well out of the way of the parts of the machine that are located beneath the rollers (not shown in the drawings). At its free end each lever is connected by means of a link 7 and a chain or weight-hook 8, with a weight 9 or with any other source of yielding pressure, tension springs 10 being preferably interposed at some point in the connections, as for example between the weight-hooks and the weights, as shown in Figs. 2 and 3, for relieving the parts from the shock of a sudden application of the pressure. The lower extremity of each stirrup 5 is connected, either directly or through interposed links, with pin 11 carried by two upright ears 12 on the lever 6 and located thereon at a point nearer its fulcrum 6' than the point of connection with the weight so that the stirrups are thus connected with the short arm of the lever while the weight is applied to the long arm, thereby serving to multiply the effect of the weights upon the rollers in obvious manner and permitting the use of weights of comparatively small mass, without sacrifice of pressure. The means for relieving the pressure thus exerted upon the roller comprises a shaft 13 mounted in the frame-pieces C, and adapted to lift the weights or the free ends of the levers 6 against the tension of said weights, and thereby interrupt the action of the said pressure exerting connections. The shaft 13 is shown herein as a cylindrical shaft journaled to rotate in the intermediate frame-pieces C and bearing cams or cranks which are adapted to engage with the under sides of the levers and raise them a sufficient extent to relieve the tension in the stirrups. The cams for this purpose consist of curved arms 14 rigidly secured to the rock shaft 13 at points thereon which are offset from the levers 6 (Figs. 1 and 2) so as to provide adequate clearance for the links 7 and weight-hooks 8, and with their free ends located in position to engage with the under side of said levers, as above stated. A handle 15 is provided for rocking the shaft and raising the levers, as clearly shown in the drawing. For the purpose of retaining the levers in their uppermost positions the arms are adapted to be moved to or near a dead center position and their ends are also slightly flattened so as to serve as retaining means for holding them up in engagement with their levers, or if desired, special retaining means may be provided for this purpose. The shape of the curved crank arms 14 is such that they engage with the levers only by their ends which raise the levers

sharply when the shaft 13 is near the end of its rotary movement, that is to say, there is lost motion between the ends of the lifting cranks and the levers so that the latter are not lifted until the handle 15 is hard down. One of the cam arms on the shaft 13 is connected with a pitman 16, which in turn is connected with a locking bolt 17 supported by a hanger 18 beneath the sliver apron D. The arm 14 thus serves as a cam for the levers and also as a crank to move the locking bolt 17 in its bracket. Instead of employing one of the cam arms in the dual capacity referred to, it is obvious that a separate crank can be applied to the rock shaft at any desired point thereon for a similar purpose.

In the normal working condition of the apparatus, pressure being applied to the top rollers, the parts are in the position shown by Fig. 3, but when the pressure of the weights is relieved by rotating the rock shaft as above described, the locking bolt 17 is projected from its housing into the path of a collar 19 carried in fixed position upon a reciprocable belt-shipper rod 20 preventing the movement of said rod in a direction to start the machine. The shipper rod is connected with the belt by means of lever 21, journaled in the table B, connecting link 22 and shipping lever 23, as clearly shown in Figs. 1 and 2, but any other suitable device for turning off and on the power for the machine may be readily substituted for the rod 20 and its connected parts, provided the same may be locked by the bolt or rendered ineffectual for starting the machine by the condition of pressure relief of the top rollers.

By the construction above described, it will be seen that when the machine is at rest it is impossible for the operator to set it in motion until after he has manipulated the rock shaft to apply the pressure to the rollers; that is to say, the rock shaft and power controlling device must be operated in a definite order, in order to start the machine. In the multiplex machine described the said rock shaft 13 extends the length of the machine, being common to the several heads thereof and carries a sufficient number of cam arms or other lifting elements to raise all the levers of the several heads. All of the weights in the entire machine may therefore be removed from action upon the rollers from a single point and by a single movement.

The collar 19 on the shipper-rod 20 obstructs the outward movement of the bolt when the said rod is in its position which permits the machine to run and therefore compels the manipulation of the parts to be effected in a reverse order. The actual lifting of the levers by the crank arms, not being effected until the end of the rocking movement of the shaft, the bolt will either

encounter the collar 19 or will pass by it (according to the position of the shipper-rod) before the weight is relieved from the rollers, and therefore accidental lifting of the rollers while the machine is in motion is prevented.

Having described my invention, what I claim and desire to secure by United States Letters Patent, is:

10 Weight controlling means for the detaching rolls of combing machines comprising a stirrup, a lever connected thereto, a weight for said lever and a spring connecting said weight to the lever, in combination with a

rock-shaft operable to raise said lever and weight for relieving the tension on the stirrup, a crank arm on said rock-shaft, a rod connected therewith, a locking bolt operated by said rod and crank arm and a shipper rod adapted to be locked against movement by said bolt.

In testimony whereof, I have signed my name to the specification in the presence of two subscribing witnesses.

OSCAR L. OWEN.

Witnesses:

ELWIN H. ROONEY,
H. G. KIMBALL.