April 15, 1924. 1,490,887

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COVER CONTROLLED STOP MOTION MECHANISM FOR TEXTILE MACHINERY

Filed April 5, 1923 4 Sheets-Sheet 1

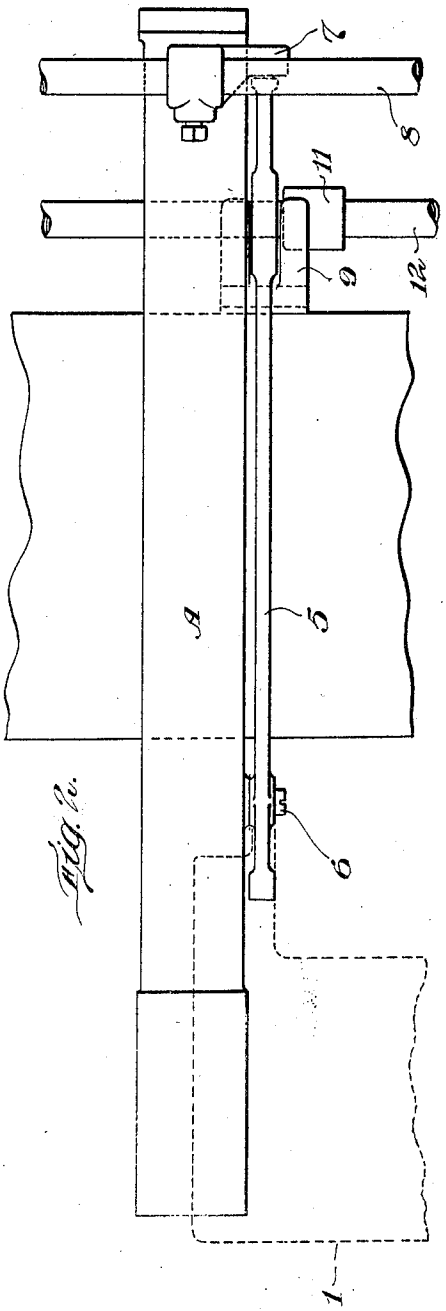


Fig. 2.

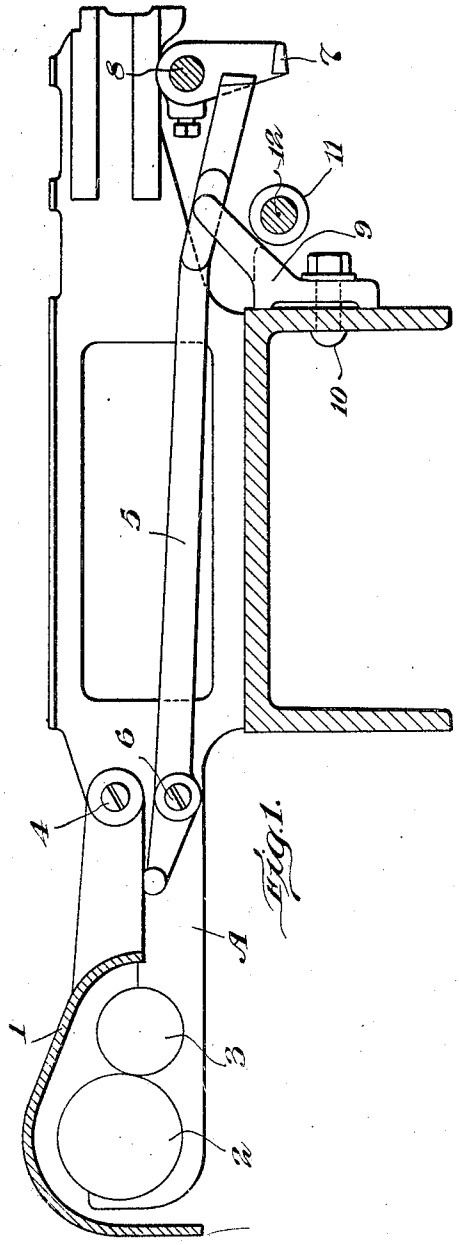


Fig. 1.

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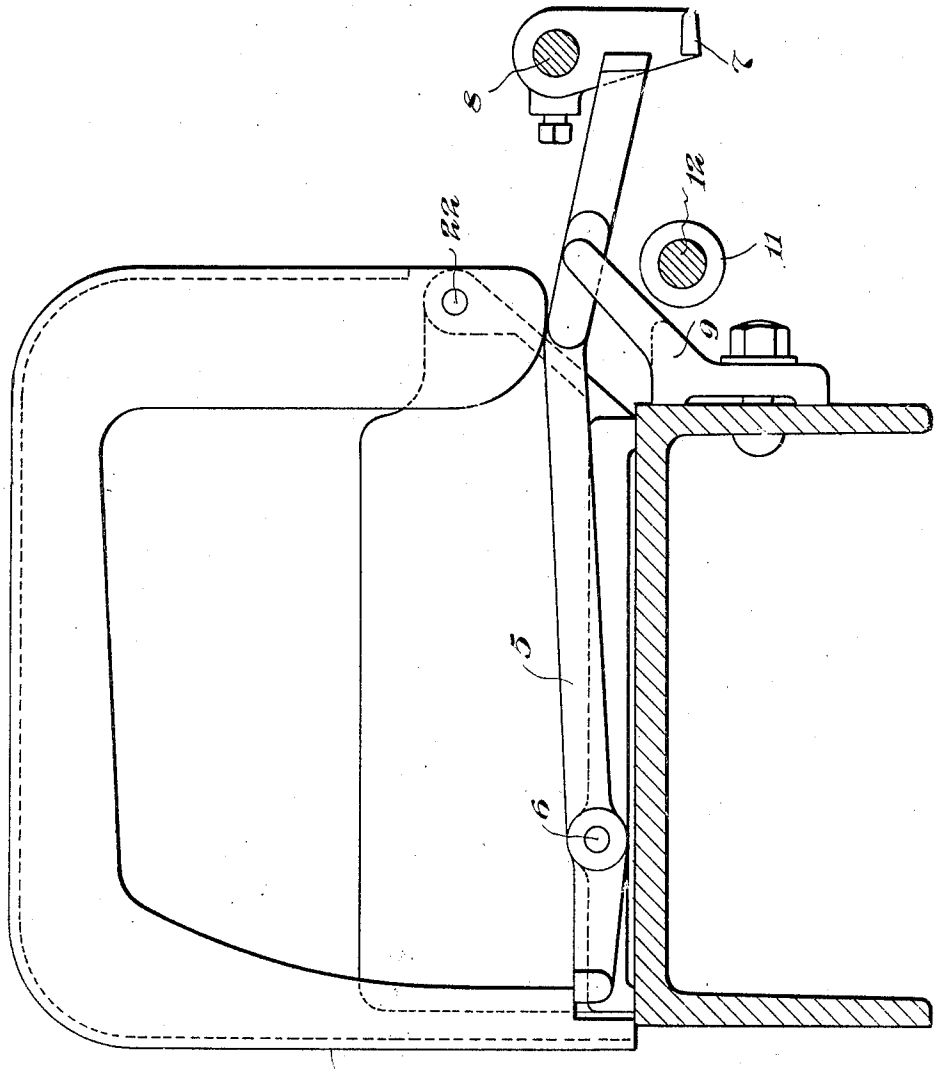


Fig. 3.

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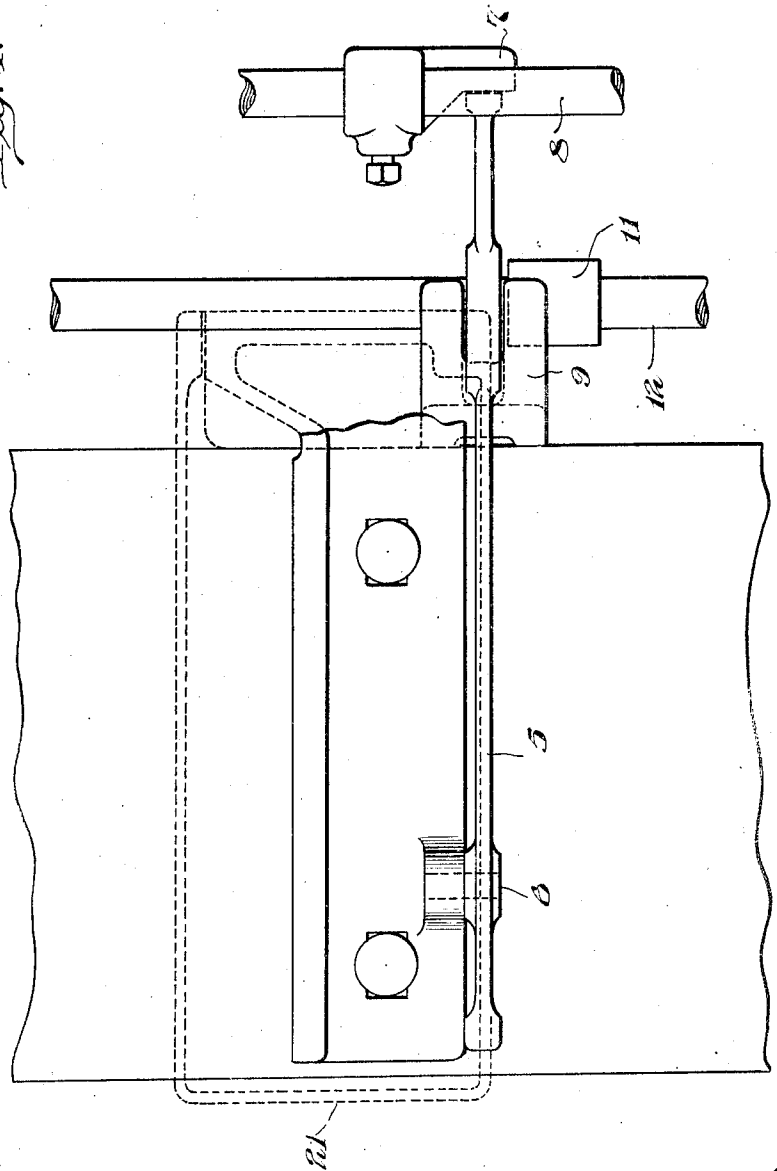
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Fig. 4.



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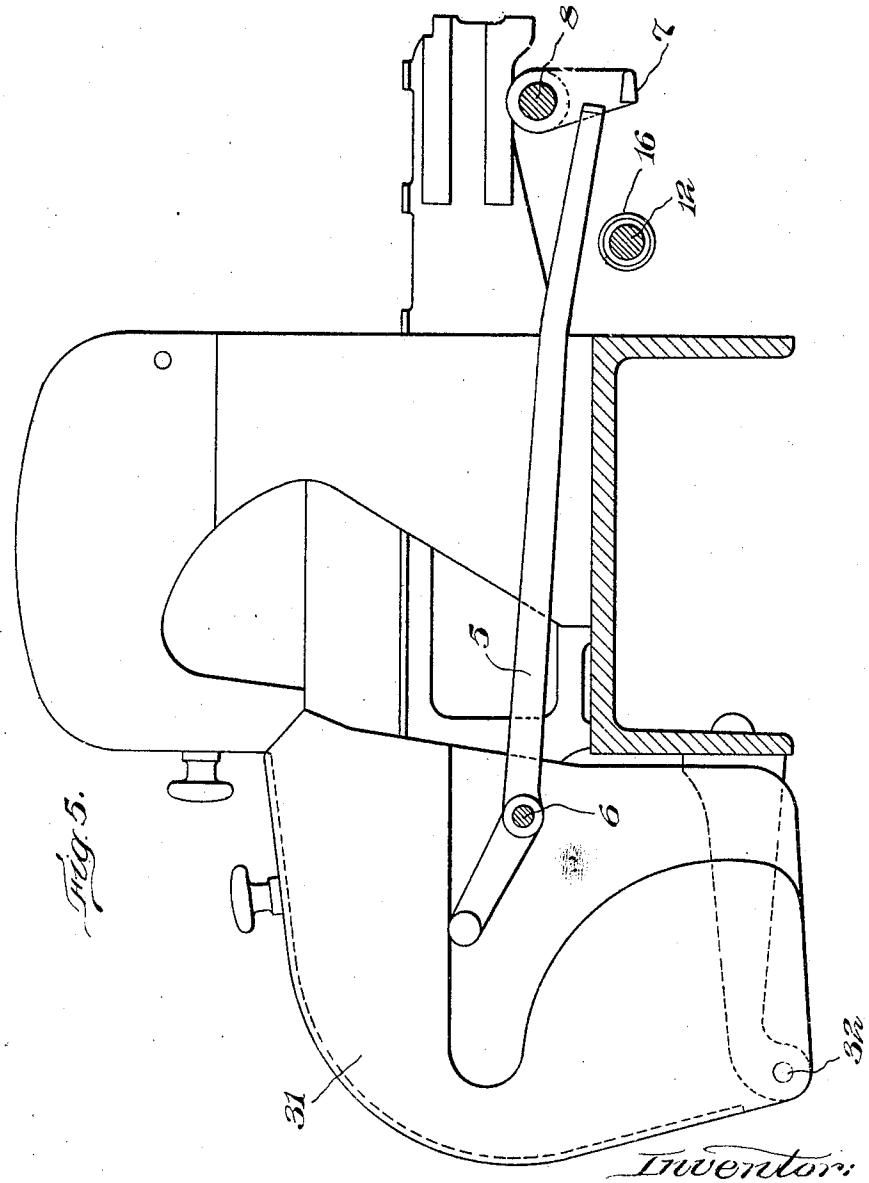


Fig. 5.

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Patented Apr. 15, 1924. 1,490,887

UNITED STATES PATENT OFFICE.

GEORGE F. ALBRECHT, OF WOONSOCKET, RHODE ISLAND, ASSIGNOR TO WOONSOCKET MACHINE & PRESS CO., INC., OF WOONSOCKET, RHODE ISLAND, A CORPORATION OF RHODE ISLAND.

COVER-CONTROLLED STOP-MOTION MECHANISM FOR TEXTILE MACHINERY.

Application filed April 5, 1923. Serial No. 630,020.

To all whom it may concern:

Be it known that I, GEORGE F. ALBRECHT, a citizen of the United States, residing at Woonsocket, in the county of Providence, State of Rhode Island, have invented a certain new and useful Improvement in Cover-Controlled Stop-Motion Mechanism for Textile Machinery, of which the following is a specification, reference being had therein to the accompanying drawings.

The gearing and rolls of textile machines such as preparing machines are in many instances provided with covers, guards, or shields all of which may be regarded as embraced by the generic term cover, for the protection of the attendant upon such machines, and for the exclusion of dust, lint, etc. From time to time access to the parts under or enclosed by the said covers, guards, or shields becomes necessary, in some cases for cleaning purposes, as in the case of calender rolls, and in other cases for the purpose of changing gears and making adjustments. If the covers, guards or shields are opened or removed while the machine parts are in motion, or are not closed or replaced before restarting the machine in case of having been opened or removed while the machine is standing at rest, there is a resulting liability to accidental injury to the persons occupied in performing work around or in connection with the rolls, gears, or the like. Such work may comprise, for instance, cleaning operations in connection with the calender rolls of drawing frames and other preparing machines, performed by wiping dust, dirt, etc., from the rolls and their surroundings; in the case of the gearing of drawing frames and other machines, various alterations, adjustments, etc., have to be made from time to time. Operatives have frequently been injured while wiping off calender rolls as a result of having their fingers and hands drawn in between a revolving pair of such rolls and thereby crushed. The like injury has often resulted to operatives engaged in working around the gearing. Also, injury to a machine itself sometimes result from tools and the like being carried in between gear wheels. Furthermore, there is a liability of persons who are engaged in work in connection with the gearing of a machine during a stoppage of the machine becoming injured as a consequence of the machine being inadvertently started up without notice.

The general object of the invention is to provide safeguards for the prevention of accidents and injuries such as have been mentioned.

In accordance with the invention, I combine with the covers, guards or shields employed as is customary in connection with calender rolls, gearing, etc., in textile machines, and with the stop-motion devices which are employed in such machines, means controlled by the said covers, guards or shields and adapted to act in conjunction with the said stop-motion devices, when a cover or the like is opened or removed, to bring about stoppage of the machine; in addition, I provide control means whereby the restarting of the machine is prevented until the cover or the like is restored to its closed or working position.

The features of the invention are variously applicable in practice in connection with machines for preparing fibrous materials for spinning.

I have herein illustrated the features of the invention applied in connection with the covers employed in a drawing frame for the calender rolls, and for the gearing at the head-end and the foot-end, respectively, of the machine.

The drawings show only those parts which are necessary for a proper presentation of the features of the invention.

In the drawings,—

Fig. 1 shows, partly in side elevation and partly in section, the application of the said features in conjunction with the calender roll-cover of a drawing frame.

Fig. 2 is a plan view of the parts which are shown in Fig. 1, with the calender roll-cover indicated in dotted lines.

Fig. 3 is a view similar to Fig. 1 showing the features of the invention applied in conjunction with the foot-end gear-cover of the said machine.

Fig. 4 is a plan view of the parts which are shown in Fig. 3, with the gear-cover shown in dotted lines.

Fig. 5 is a view similar to Figs. 1 and 3 showing the said features applied in conjunction with a front head-end gear-cover.

Having reference first to the application of the invention in connection with the cover 1 of the calender rolls 2, 3, as shown in Figs. 1 and 2,—

The said cover is hinged at 4 in connection with a fixed part A of the machine frame. It is shown in full lines in its normal working position, i. e., closed down over and around the calender rolls. The rolls may be exposed for inspection or access by swinging the cover upward and rearward. I provide a device or devices which are inoperative so long as the cover 1 is depressed in its normal closed or working position shown in full lines, and which are contrived to cooperate with the automatic stop-motion mechanism of the machine to bring about arrest of the machine when the cover is raised, as well as, in the more complete embodiment of the features of the invention, to prevent restarting of the machine until the cover is restored to its closed working position again. In accordance with the invention I employ a detent device, preferably comprising or including a lever-arrangement, the illustrated form of which is a lever 5, which is mounted pivotally at 6, with one arm thereof, a short arm in this instance, disposed so that when the cover is in its closed working position the cover bears upon the said arm, as shown in Fig. 1, and thereby holds the lever in the full-line position that is represented in such view. A second arm of the lever, a long arm in this instance, extends into proximity to the striker or vibrator 7, otherwise known as the stop-motion dog, fixed upon the rockshaft 8 constituting the striker-shaft of the general stop-motion mechanism of the machine. This rockshaft is continuously rocked or oscillated during the working of the machine, and its laterally projected striking part plays to and fro adjacent the free extremity of the arm last-mentioned (the long arm) of the stop-motion lever. So long as the stop-motion lever is held in the full-line position through engagement of the calender roll-cover with the other arm of such lever, i. e., with the short arm, the extremity of the long arm is kept out of the path of the toe of the stop-motion dog. When, however, the cover is moved so as to expose the calender rolls, and the stop-motion lever is thereby freed, such lever turns on its fulcrum so as to place the dog-engaging extremity of its long arm in the path of the stop-motion dog, and the said extremity thereupon obstructs the swinging movement of said dog, thus bringing about in well-known manner the customary action of the general stop-motion devices by which the unshipping of the driving power, and arrest of the machine are accomplished. In order to avoid encumbering the drawings and description with details which are old and not directly involved in the invention, I have shown in the drawings only such of the main parts of the stop motion mechanism as are necessary to be considered in setting forth the relations, etc., of the invention, namely the striker 7, striker-shaft 8, and shipper-rod 12. The manner and means of actuating the striker-shaft, and actuating and controlling the shipper-rod may be as in practice heretofore, or as preferred. Convenient disclosure of known examples will be found in the U. S. patents to Brooks & Standish, No. 128,999, granted July 16, 1922; T. Bentley, No. 971,963, granted Oct. 4, 1910; and T. Bentley, No. 988,925, granted April 4, 1911.

Having reference now to the provisions for preventing the machine from being started up while the calender roll-cover is in open position, such provisions consist in this instance in a collar 11, termed the shipper-rod safety-lock collar, that is mounted fixedly on the shipper-rod 12. The said shipper-rod is as usual movable longitudinally, and moves endwise in one direction as the driving power of the machine is shipped on, and in the power-unshipping operation is moved endwise in the opposite direction. This collar 11 is so located upon the shipper-rod that during the running of the machine, the driving power being on, and the calender roll-cover being in closed position and engaged with the short arm of the lever, whereby the long lever-arm is kept raised, the collar occupies a position vertically below the said long arm. If, while the machine is running the calender roll-cover is moved to open position, thereby permitting the stop-motion lever to move, the said long arm will drop upon the collar and for the moment will rest thereon, supported thereby with its free extremity in position to obstruct the swinging movement of the striker 7. Then the shipper-rod moves endwise in the power-unshipping action, brought about through arrest of the oscillation of the shaft 8 and striker 7, carrying the collar with it sidewise relative to the stop-motion lever, the collar is carried transversely past the lever to a position permitting the lever to drop past the end of the collar. In the position of the parts thus attained, the stop-motion lever is adapted to coact with the collar so as to lock the shipper-rod from being moved in the direction for shipping on the driving power of the machine. When, however, the calender roll-cover is moved into its closed or working position it engages with the short arm of the stop-motion lever and moves the long arm of the latter out of the path of the collar 11, and thereby frees the shipper mechanism to be manually actuated to restart the machine.

As a convenient means for preventing lateral displacement of the long arm of the stop-motion lever out of proper rela-

tions with the stop-motion dog through the pressure of collar 11 thereagainst, a slotted bracket 9 is fixed, as by means of a bolt 10, to the machine frame.

Having reference now to the application of the features of the invention in connection with gear-covers at the head-end and foot-end respectively of a drawing frame, attention may be directed first to the illustration in Figs. 3 and 4 of the combination of devices, essentially such as have just been described, in connection with a foot-end gear-cover 21, the latter being pivoted at 22, Fig. 3. Fig. 5 shows such features applied in connection with the front head-end gear-cover 31, which is pivotally hung at 32.

The application of the features of the invention to other known forms and arangements of strikers and shipper-devices is within the scope of the invention.

What is claimed as the invention is:—

1. In a preparing machine having automatic stop-motion mechanism including a striker-shaft and striker, the combination with said striker-shaft and striker, and a movable cover for a working element or elements of the machine, of a detent that is controlled by said cover and that in the open condition of the cover intercepts the striker and thereby causes suspension of the operation of the said working element or elements.

2. In a preparing machine having automatic stop-motion mechanism including a striker-shaft and striker, the combination with said striker-shaft and striker, a part partaking of the movement of the power-shipper devices, and movable cover for a working element or elements of the machine, of detent means controlled by said cover and adapted in the open condition of the cover to intercept the striker and thereby cause suspension of the operation of said working element or elements, and in addition to lock said part and thereby prevent the machine from being restarted.

3. In a preparing machine having automatic stop-motion mechanism including a striker, the combination with said striker, and a movable cover for a working element or elements of the machine, of a detent lever that is controlled by said cover and that in the open condition of the cover intercepts the striker and thereby causes suspension of the operation of the said working element or elements.

4. In a preparing machine having automatic stop-motion mechanism including a striker, the combination with said striker, a part partaking of the movement of the power-shipper devices, and a movable cover for a working element or elements of the machine, of a detent-lever that is controlled by said cover and that in the open condition of the cover intercepts the striker and thereby causes suspension of the operation of the said working element or elements and, in addition, locks the said part to thereby prevent such working element or elements from being restarted.

5. In a preparing machine having automatic stop-motion mechanism including a striker, the combination with said striker, a longitudinally movable rod connected with the power-shipper devices and having a shoulder in connection therewith, and a movable cover for a working element or elements of the machine, of a detent-lever that is controlled by said cover and that in the open condition of the cover by coaction with the striker causes unshipping of the driving connections and, in addition, through engagement with the said shoulder locks the said rod against longitudinal movement and thereby prevents restarting of the said working element or elements.

GEORGE F. ALBRECHT.