W. H. SMITH.

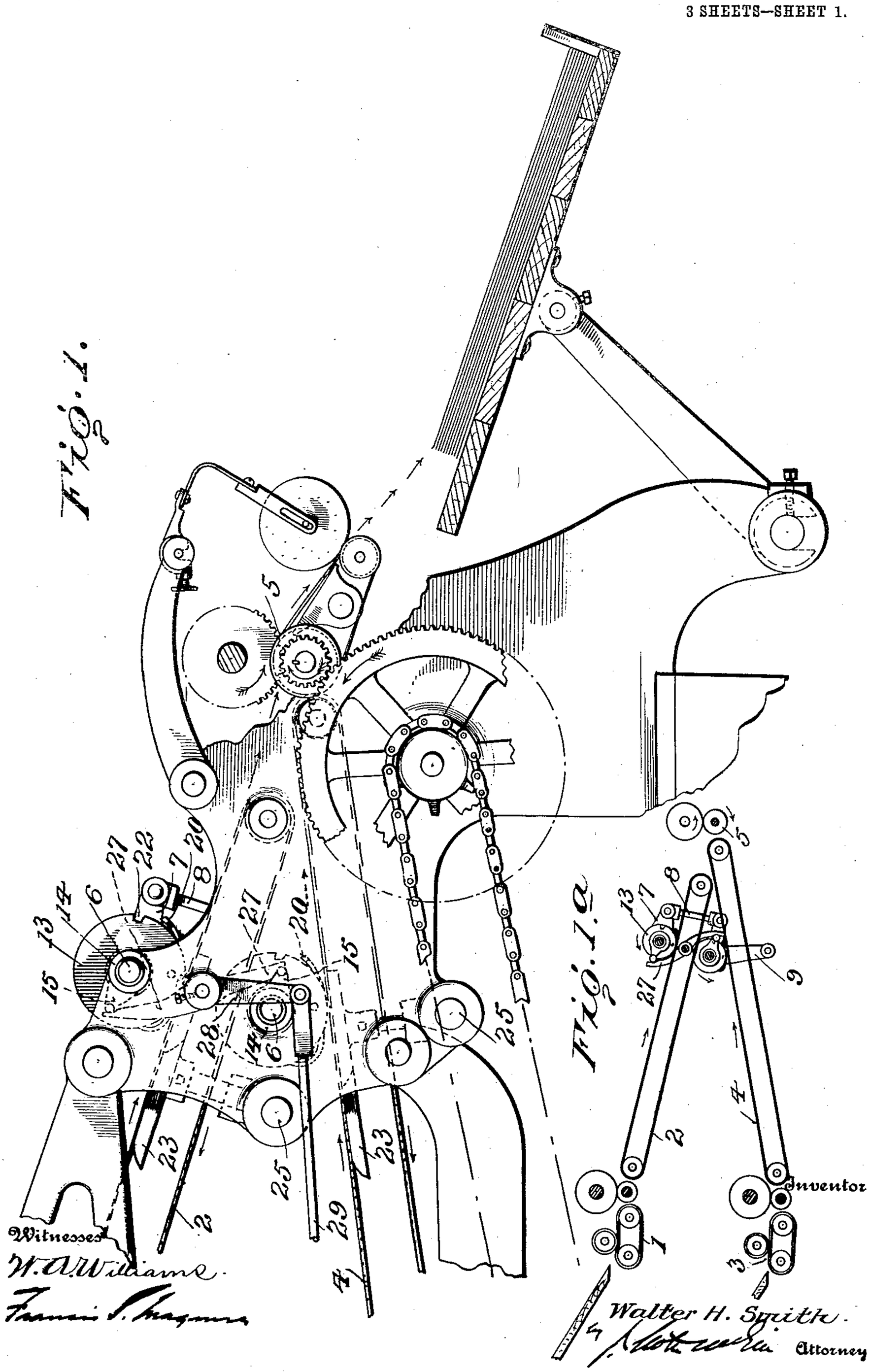
TRIP MECHANISM.

APPLICATION FILED MAY 20, 1908.

925,047.

Patented June 15, 1909.

3 SHEETS—SHEET 1.



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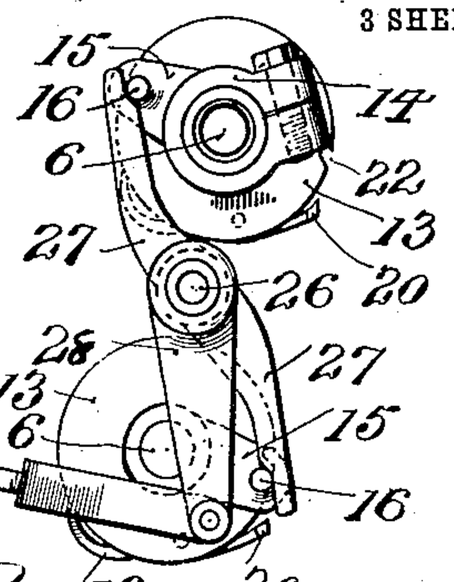

Fig. 2.

Fig. 8.

Fig. 3.

Fig. 9.

Witnesses

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3 SHEETS—SHEET 3.

Fig. 5.

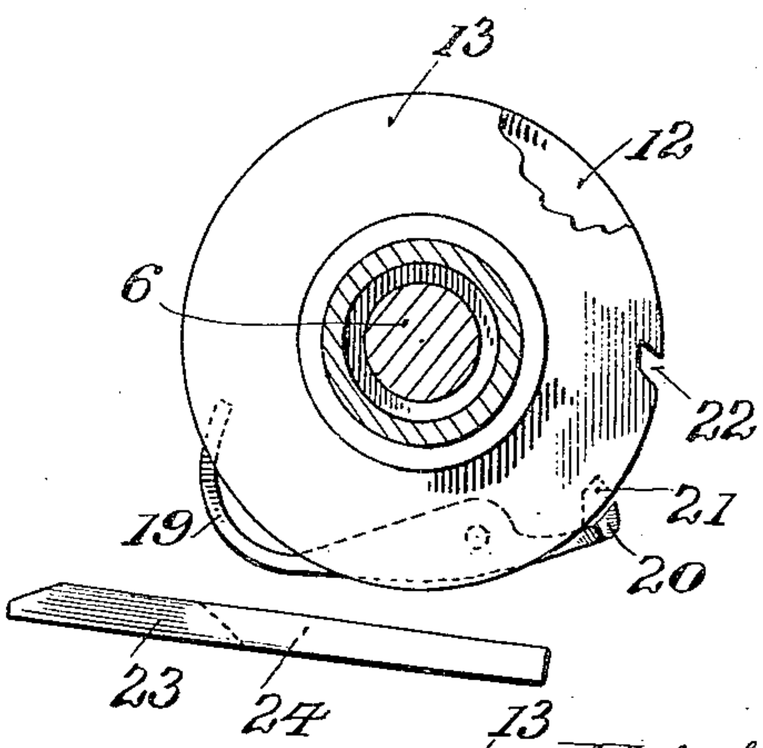
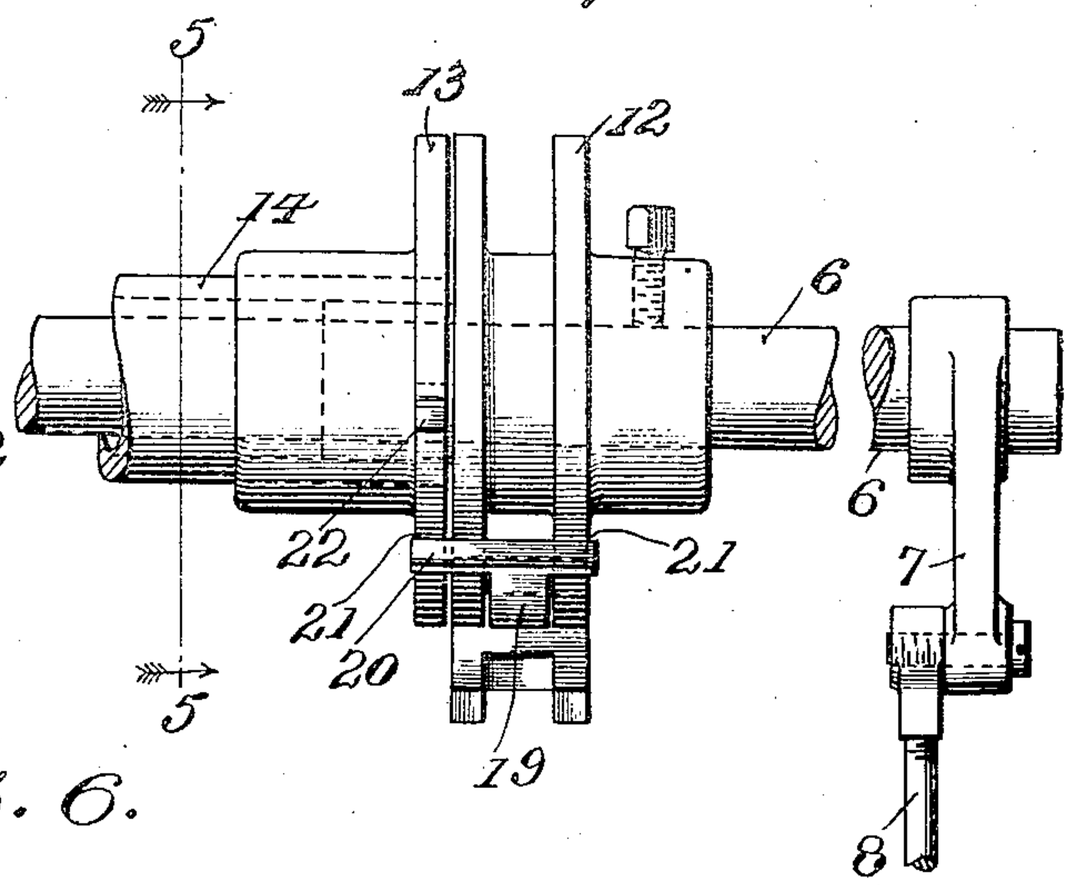


Fig. 4.



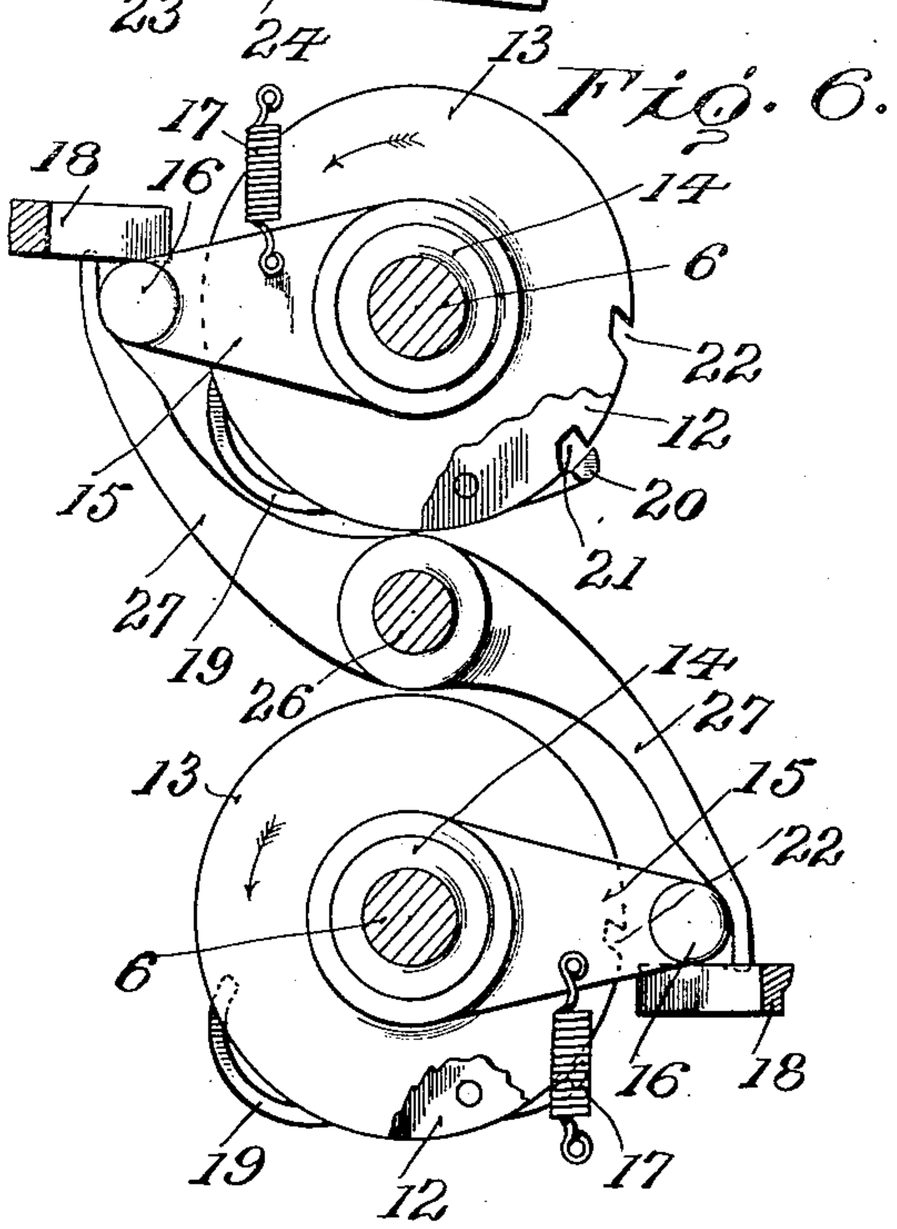


Fig. 6.

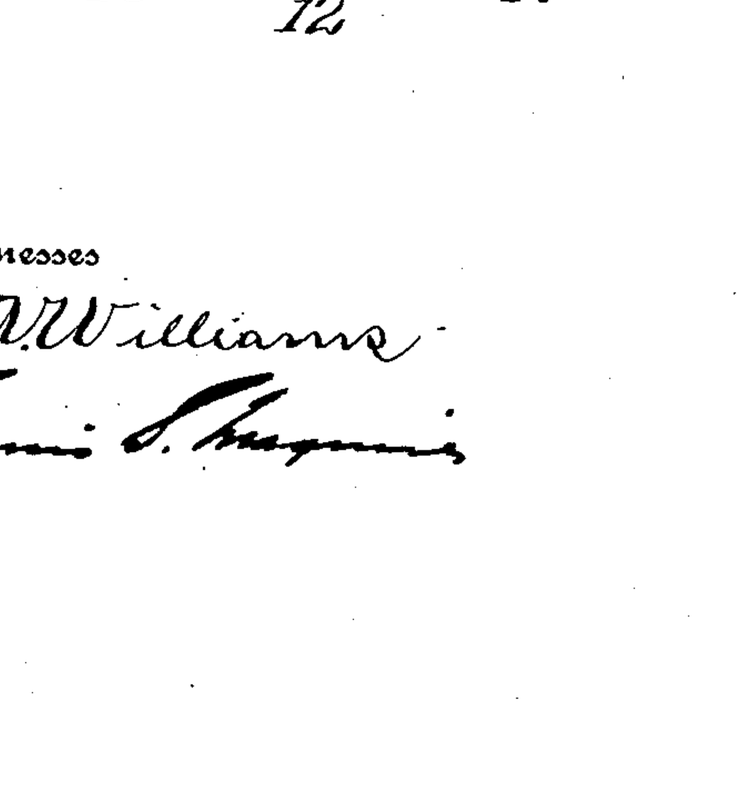
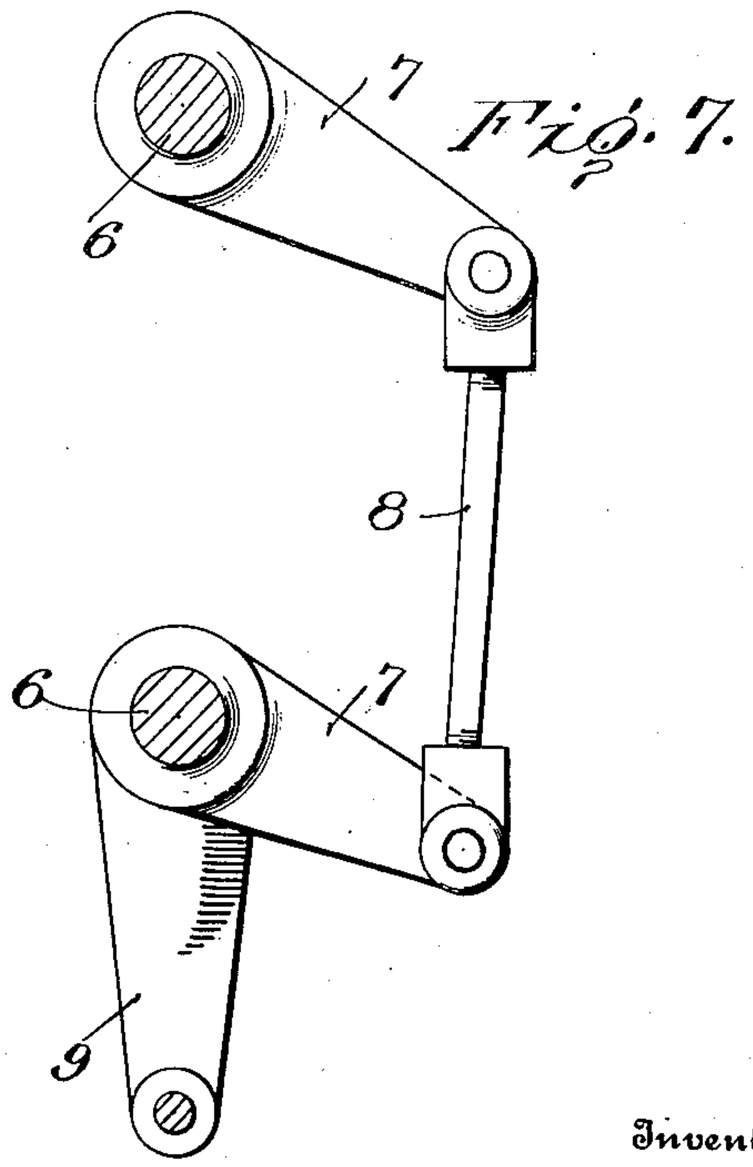


Fig. 7.



Inventor

Witnesses

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UNITED STATES PATENT OFFICE.

WALTER H. SMITH, OF NILES, OHIO, ASSIGNOR TO THE HARRIS AUTOMATIC PRESS COMPANY, OF NILES, OHIO, A CORPORATION OF OHIO.

TRIP MECHANISM.

No. 925,047. Specification of Letters Patent. Patented June 15, 1909.

Application filed May 20, 1908. Serial No. 433,974.

To all whom it may concern:

Be it known that I, WALTER H. SMITH, of Niles, in the county of Trumbull and State of Ohio, have invented certain new and useful Improvements in Trip Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The primary object of this invention is to provide improved, simple and highly efficient means for automatically effecting the actuation of stop or throw-off mechanism of a collator, a printing press, a folding machine, or the like, in the event of any interruption in the feed supply.

The invention will be hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation, with parts omitted, showing my improved trip-actuating mechanism applied to a collator. Fig. 1[a] is a diagrammatic view. Fig. 2 is a side view of the trip proper. Fig. 3 shows the trip lever and arm of prime mover. Fig. 4 is an enlarged view of a portion of the trip-actuating means and coöperative parts. Fig. 5 is a side view thereof. Fig. 6 shows details. Fig. 7 shows the connection between corresponding shafts. Figs. 8 and 9 show the application of my improvement to a printing press.

My present improvements are applicable to any machine which handles or operates upon sheets of paper, or other stock, and hence its use is not restricted.

Referring to the drawings, 1 designates an upper sheet feed or separator; 2 endless conveyer tapes leading therefrom; 3 a lower sheet feed or separator; and 4 endless conveyer tapes leading from the latter. The two conveyers converge so that stock conveyed thereby will be taken up, one sheet upon another, by the withdrawal rolls 5. I prefer to employ a sheet feed or separator of the type covered by Letters Patent of the United States No. 651,307, issued to Charles G. Harris, June 5, 1900.

Extending transversely above the conveyers are corresponding shafts 6. Each of these shafts is shown as carrying an arm 7, (Fig. 7) which arms are connected by a rod 8, and to one of the shafts, preferably the lower one, is secured a second arm 9 to which any suitable means may be secured for imparting to the two shafts 6 an oscillating movement. If desired these shafts may be geared together so as to be rotated in unison.

12, 12, designate grooved collars rigidly secured on shafts 6 at about the centers thereof. Adjacent to each grooved collar is a disk 13 fast on the end of a second or tubular shaft 14 loose on, and inclosing a portion of, shaft 6 and extending to one side of the machine where it is provided with an arm 15. The arms 15 of the two shafts 14 are extended laterally in opposite directions and have lugs 16 which are normally held by springs 17 in engagement with stops 18 of the main frame.

19, 19, designate feeler levers pivoted between the parallel sides of the grooved collars 12. At one end each lever is T-shape to form a tooth 20, and in the peripheries of the sides of collar 12 and also in the periphery of the disk 13 are formed cut-outs 21 and 22, respectively. Ordinarily the tooth rests against the periphery of disk 13; it can enter the cut-out 21 of the collar only when it falls into cut-out 22 of the disk. When this occurs the disk and its shaft, which are normally idle, are locked to and turn with shaft 6. The entrance of the tooth into locking engagement with this disk will occur upon failure or interruption in the feed supply. When stock is in proper position, preferably over slotted strips 23, the curved long arms of the feeler levers will engage therewith and be prevented from turning on their pivots a sufficient extent to interlock with disks 13. If stock should be absent on either conveyer at the time the long arm of the respective feeler-lever passes over the slot 24 in strip 23, such lever will turn on its pivot, under its own weight, and its tooth will interlock with the disk. Thus the tubular shaft 14 will be caused to travel with shaft 6 whenever the feeler-lever is not arrested by the stock. This is true in respect to both feeler-levers. The guide strips 23 are supported by cross-rods 25.

26 designates a shaft located between the upper and lower shafts 6. At one end it carries two oppositely-extended curved arms 27 (or it may be a two-armed lever) against or in close proximity to which are the lugs 16 of arms 15. The locking of either feeler-lever with its respective disk 13 will, through the turning of shaft 14, effect the partial rotation

of shaft 26 by the action of the respective arm 15 on the adjacent arm 27.

The shaft 26 carries an arm 28 which is connected by a rod 29 to a bell-crank lever 30. The latter is connected by a rod 31 to a latch 32 which normally holds a prime mover 33 by which a clutch may be controlled, or a belt may be shifted. When shaft 26 is turned, as stated, latch 32 will be moved to trip the prime mover and thus actuate the stop mechanism. After the necessary adjustments have heen made, or the supply of stock replenished, the parts are re-set so that the retaining arm of prime mover 33 will be held by latch 32 and shaft 26 will resume its normal position.

When my present invention is employed in connection with a collator it is designed to automatically trip the prime mover of any suitable stop mechanism. When applied to a printing press it may also effect the throw-off of one or more of the press cylinders. Thus in Fig. 8 I have shown the impression-cylinder 40 mounted in eccentric bearings 41, which bearings are shifted by moving toggle-links 42, to one of which the trip rod 31^a is connected. A connection is also formed by a link 43 to a bell-crank lever 44 which is designed to be actuated by a lug 45 of a disk 46 on the end of trip-actuating shaft 14. Thus when the latter is actuated by being locked to shaft 6 the impression cylinder is thrown off and the prime mover of the stop mechanism is released. The shaft 6, which carries the feeler-lever, is driven at one end by the press-gearing (not shown). Since in this arrangement the tubular shaft will make a complete revolution when locked to the revolving shaft 6, it is necessary to somewhat retard the former to insure the feeler lever releasing itself from the cut-out of disk 13 after the latter and its shaft have been revolved. For this purpose I employ a plate sping 50 which, after the shaft 14 has made a complete revolution, will press upon the walls of a notch in the periphery of disk 46 and thereby crowd the latter, together with shaft 14 and disk 13, a little in advance of collar 12. Thus the two shafts will be unlocked and shaft 14 will be held in its normal position. This shaft may be brought to rest at any given position, but the arrangement contemplated by Fig. 2 is preferable, as it allows the sheet of paper to pass beneath the feeler lever and lift the tooth thereof from the cut-outs in the disk and collar.

I claim as my invention:—

1. In combination with stop or throw-off mechanism, and a trip therefor, means for automatically actuating such trip comprising an actuated shaft, a second shaft, normally idle, for operating said trip, and a feeler lever carried by said actuated shaft for automatically locking the two shafts together.

2. In combination with stop or throw-off mechanism, and a trip therefor, means for automatically actuating such trip comprising an actuated shaft, a second shaft, normally idle, for operating said trip, and a feeler lever carried by said actuated shaft and designed to engage with and automatically lock said second shaft to the actuated shaft.

3. In combination with stop or throw-off mechanism, and a trip therefor, means for automatically actuating such trip comprising an actuated shaft, a feeler lever carried thereby, and a tubular shaft surrounding the actuated shaft and having means with which said feeler lever is designed to engage for automatically locking the two shafts together, said tubular shaft effecting the actuation of said trip.

4. In combination with stop or throw-off mechanism, and a trip therefor, means for automatically actuating such trip comprising an actuated shaft, a feeler lever carried thereby, and a tubular shaft surrounding the actuated shaft and having a disk formed with a cut-out with which said feeler lever is designed to engage for automatically locking the two shafts together, said tubular shaft effecting the actuation of said trip.

5. In combination with stop or throw-off mechanism, and a trip therefor, means for automatically actuating such trip comprising a revolving shaft, a feeler lever carried thereby, a tubular shaft mounted on said revolving shaft and having means with which said feeler lever is designed to interlock, and means for releasing such feeler lever after said tubular shaft has been revolved.

6. In combination with stop or throw-off mechanism, and a trip therefor, means for automatically actuating such trip comprising a revolving shaft, a feeler lever carried thereby, a tubular shaft mounted on said revolving shaft and having a disk formed with a cut-out with which said feeler lever is designed to engage, and means for retarding said tubular shaft to permit said feeler lever to be released from said cut-out.

7. In combination with a collator having a plurality of conveyers, means for feeding stock to each conveyer, stop mechanism, and a trip therefor comprising a normally idle shaft, an actuated shaft, and a feeler lever carried by the latter in juxtaposition to each conveyer for actuating such idle shaft in the event of any interruption in the feed supply to either conveyer.

8. In combination with a collator having a plurality of conveyers, means for feeding stock to each conveyer, stop mechanism, a trip therefor, and means located relatively to each conveyer for automatically actuating such trip, such means comprising an actuated shaft, a second shaft normally idle,

and a feeler lever carried by said actuated shaft for automatically locking the two shafts together in the event of any interruption in the feed supply of a conveyer.

9. In combination with a collator having a plurality of conveyers, means for feeding stock to each conveyer, stop mechanism, and a trip therefor, of constantly-actuated shafts, one for each conveyer, feeler-levers carried by such shafts and designed to engage the stock on the respective conveyers, and means for actuating said trip, such means comprising a tubular shaft loose on each actuated shaft and designed to be moved by the respective feeler lever in the event of any interruption in the feed supply.

10. In combination, an actuated shaft, a member fast on said shaft, a feeler lever carried by such member, a disk loose on said shaft having means with which said lever is designed to engage to lock said disk to said shaft, stop mechanism, a trip therefor, and means for operating such trip when the disk is locked to said shaft.

11. In combination, an actuated shaft, a member fast on said shaft, a feeler lever carried by such member and having a tooth projecting therefrom, a disk loose on said shaft having means with which said tooth is designed to engage, such tooth being normally held out of engagement with such means, stop mechanism, a trip therefor, and a second shaft carrying said disk and designed to be actuated when the disk is locked by the feeler lever, said second shaft effecting the actuation of the trip.

12. In combination, a shaft, means for actuating such shaft, a collar fast on said shaft, a feeler lever carried by such collar and having a tooth, a disk loose on said shaft having a cut-out to receive said tooth, a tubular shaft carrying said disk, stop mechanism, a trip therefor comprising a shaft, an arm on the latter, and an arm on said tubular shaft for actuating the trip shaft, such tubular shaft and its disk being turned by such feeler lever when the tooth of the latter enters the cut-out of the disk.

13. In a collator having two conveyers, two shafts, one above each conveyer, means for actuating such shafts in unison, collars fast on said shafts, feeler levers carried by said collars, tubular shafts loose on the former shafts, disks carried by said tubular shafts, said feeler levers having each means for locking the two shafts together, arms carried by said tubular shafts, stop mechanism, a prime mover therefor, and a trip comprising a shaft having oppositely-extended arms with which the arms of said tubular shafts are designed to engage.

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

WALTER H. SMITH.

Witnesses:
C. G. PRITCHARD,
R. A. BREEZE.