

Aug. 30, 1938.

F. W. STORCK

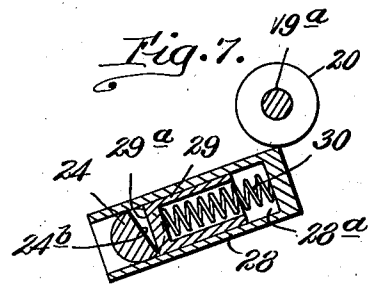
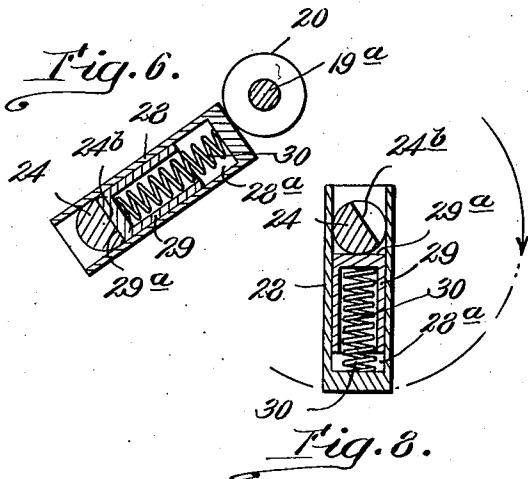
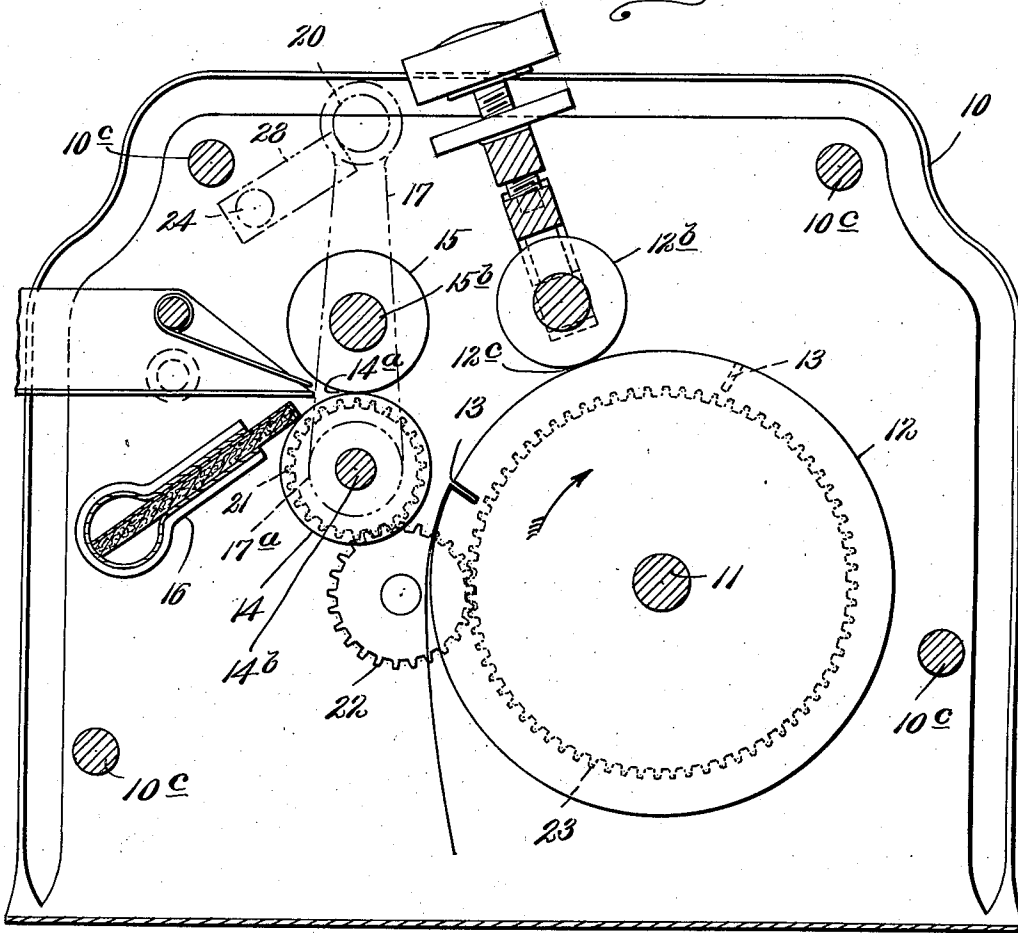
2,128,507

MECHANICAL POSITIONING STOP

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2 Sheets-Sheet 1

Fig. 1.



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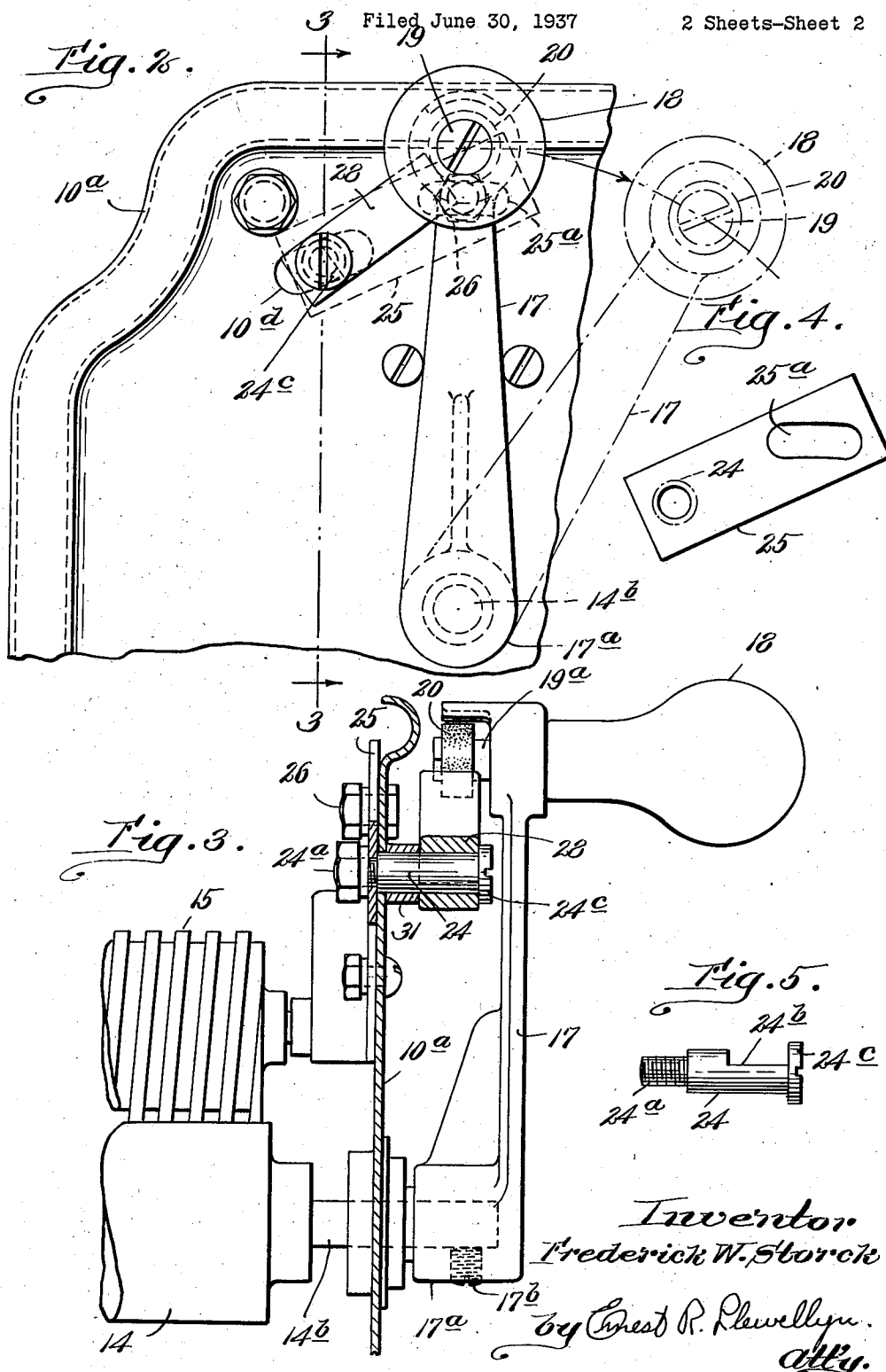
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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

2,128,507

MECHANICAL POSITIONING STOP

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to Standard Mailing Machine Company, Ever-
ett, Mass., a corporation of Massachusetts

Application June 30, 1937, Serial No. 151,208

4 Claims. (Cl. 101—132)

This invention relates to a mechanical position-
ing stop and more particularly to a registering
positioning stop for a manually actuated crank
or like operating member.

The present invention is conveniently adapted
to rotative elements that require a determinate
stop position in their cycle of rotation as is exem-
plified, for example, in a rotary duplicating ma-
chine of the general character shown and de-
scribed in my U. S. Reissue Letters Patent 19,951.
In machines of this general character, it is the
usual practice to provide an operating member
that makes a plurality of revolutions for each
complete cycle of operation of the machine, while
the main member to be rotated makes a single
revolution and other members of the machine
may be required to make revolutions correspond-
ing to the operating member.

By providing gearing or other suitable connec-
tions to produce the above relative number of
revolutions between the required machine ele-
ments and the operating member, operation of
the device is less fatiguing but presents a problem
in bringing the operating member to a positive
position upon the completion of each cycle of
operation. It is desirable, in an operating device
of this character, to provide a hand crank or like
member having a free path of travel in its opera-
tive direction and without the resistance as is
usually developed by the use of detents or other
like indicating devices that are spring-operated
and engage with the crank upon each and every
complete revolution thereof and wherein it is
necessary for the operator to exert a degree of
force upon the crank each time it engages with
the stop during this required plurality of revolu-
tions to complete a cycle of operation of the main
member.

Accordingly, one of the principal objects of my
present invention is to provide a positioning stop
for a primary rotatable member that will produce
a minimum of interference with free rotative
movement of the primary member in its operative
direction and, at the same time, provide a positive
registering stop against which the primary mem-
ber may be positioned subsequent to each com-
plete cycle of operation.

A further object of the invention is to provide a
stop device that may be readily displaced from
operative position and in a manner that will per-
mit of a free rotation of the elements in either
direction as may be required.

Another object of the invention is to provide a
stop of a simple construction with few working
parts and with the elements of the stop enclosed

so as to present a compact and neat appearance.

With the above and other objects in view, my
invention comprises a novel combination and
arrangement of parts hereinafter described and
more specifically pointed out in the appended
claims.

In the accompanying drawings I have shown a
preferred practical embodiment of my invention
sufficient to enable those skilled in the art to
understand the construction and operation there-
of.

While I have shown the invention associated
with a duplicating machine of the general char-
acter illustrated in my above mentioned patent, it
is to be understood that this is for illustrative
purposes only and the invention is not to be con-
strued as being limited thereto.

Referring to the drawings:

Fig. 1 is a transverse section of a duplicating
machine with my positioning stop and operating
crank handle or member indicated by broken
lines.

Fig. 2 is a fragmentary end elevation of one of
the machine side frames having my registering
positioning stop attached thereto.

Fig. 3 is a sectional view taken substantially
along line 3—3, Fig. 2.

Fig. 4 is a detail of my stop pivot stud adjustable
supporting plate.

Fig. 5 is a detail of the pivot stud.

Fig. 6 is a sectional view of my positioning stop.

Fig. 7 is a view corresponding substantially to
Fig. 6, but shows the parts in a different position.

Fig. 8 is a sectional detail of my stop illustrated
in its inoperative position.

The duplicating machine

The machine as illustrated in the drawings is
provided with opposed side frames 10, 10a in
which are mounted the operating elements of the
duplicator. The opposed side frames 10, 10a are
retained in spaced relation by suitable tie rods 10c.

Secured against rotation in the side frames is a
transverse shaft 11 that rotatably supports a
printing platen or drum 12. This drum 12 is pro-
vided with suitable means that may be disposed in
the slot 13 and whereby the end of the usual
master sheet may be clamped to the printing
drum.

The sheet to be duplicated upon is fed to and
positioned in the bight 14a, formed by the feed-
ing rollers 14, 15. These feeding rollers 14, 15 are
formed on shafts 14b, 15b that extend beyond
each end of the rollers to form journals designed
to rotate in suitable adjustable bearings in the

side frames. In this instance, the lower roller 14 functions as a combined feeding and moistening roller and, as the roller is rotated, moisture is applied to the peripheral face thereof from a suitable moistening device 16.

In the present instance, the roller shaft 14b extends beyond the side frame 10a and is adapted to have the hub 17a of the operating lever 17 secured thereto. This lever 17 is provided with a crank handle 18 freely mounted on a stud 19 secured in the lever 17. This stud is provided with a suitable extension 19a adapted to support a roller 20 or like member for a purpose hereinafter described.

In the operation of the machine, the moistening and feeding roller 14 is rotated by the lever 17 and the coating feeding roller 15 rotated by its frictional engagement with the moistening and feeding roller 14.

Secured to the roller shaft 14b and rotated therewith, is a gear 21 that meshes with an intermediate gear 22 which, in turn, meshes with a gear 23 secured to or otherwise directly associated with the drum 12. Through these gear connections 21, 22 and 23, the drum 12 is rotated in the direction of the arrow and in a direct relation to the feeding rollers 14, 15.

To effect the desired registration of a sheet, positioned in the bight 14a, with the master sheet, clamped at 13 to the printing drum 12, it is essential to position the clamped edge of the master sheet relative to the bight 12c, formed by the printing drum and its coating pressure roller 12b, and relative to the bight 14a formed by the feeding rollers 14, 15.

In the present instance, the drum 12 and feeding roller 14, being geared to rotate in unison, the positioning of the clamped edge of the master sheet, that is clamped in the slot 13, is controlled by the stop position of the operating lever 17; therefore, this operating lever must be positioned at a determinate point previous to a sheet being positioned in the bight 14a of the feeding rollers.

The adjustable registering stop

Preferably the pivot stud 24, of the stop device, is adapted to engage with a sliding fit in an arcuate slot 10d formed in the side frame 10a. This pivot stud 24 is adapted to have one end 24a thereof secured in a supporting plate 25 and this plate is also provided with an arcuate slot 25a adapted to receive a stud 26 by which the plate 25 is secured to the inner face of the side frame 10a. The arcuate slots 10d, 25a are designed to permit adjustment of the pivot stud 24 arcuately about the center of the shaft 14b to which the operating lever 17 is secured.

Rotatably mounted on the pivot stud 24 is a member 28 having a bore 28a therein that is adapted to receive a sliding plunger 29. This plunger is provided with an end face 29a that is adapted to seat squarely against a face 24b formed in the pivot stud 24. The plunger face 29a is urged to seat squarely against the stud face 24b by means of a compression spring 30 that has one end bearing against the inner face of the enclosed end of the bore 28a and its opposed bearing against the plunger 29.

The pivot stud 24 is positioned so that the face 24a is disposed to retain the stop member 28a in an angular operative position, as illustrated at Fig. 6, and in the path of the roller 20 connected to the operating lever 17. The stop member 28 is positioned on the stud 24 between

the enlarged head 24c of the stud, and a spacer 31 supported on the stud so as to position the plunger face 29a for proper engagement with the stud face 24a.

Registration adjustment

A broad adjustment for properly positioning the master clamp on the drum relative to the other machine elements may be made by loosening the set screw 17b of the operating lever 17 and rotating the drum by hand until the clamp slot 13 is in its approximately correct position. While this broad or initial adjustment is being made, the stop member 28 may be positioned as illustrated at Fig. 8, with the plunger face 29a completely disengaged from the stud face 24a.

After the initial adjustment has been made, the operating lever 17 is secured in position, by means of the set screw 17b, and the stop member 28 returned to its operative position, Fig. 6, and wherein the spring 30 urges the plunger to seat squarely against the stud face 24a. Further adjustment for proper registration may now be made by loosening the plate stud 26 and moving the plate until the pivot stud 24 disposes the outer end of the stop member in a correct position so that when the roller 20, of the operating lever 17, engages therewith, the machine elements will be set to advance a positioned sheet for registering engagement with the master copy.

Operation

In the present illustration, the feeding roller 14 and drum 12 are geared 3 to 1 as I have found that this ratio permits of an easy operation and further assists the operator to develop a rhythm in the feeding operation, although it is obvious that other ratios of gearing may be used with like results. With the present ratio of gearing, the operating lever 17 makes three revolutions to one revolution of the drum.

In beginning a cycle of operation, and provided that the operating lever 17 is not in its registering position, the operator rotates the lever 17 in a contra-clockwise direction until the lever roller 20 abuts against the end face of the stop member 28. The elements of the machine are thus correctly set and a sheet is then positioned in the bight 14a; the lever 17 is then rotated and advances the sheet into the bight 12c between the drum 12 and pressure roller 12b.

During the rotation of the operating lever 17, the stop member 28 is angularly disposed in its operative position, Fig. 1, and in the path of the lever roller 20. Upon each revolution of the operating lever 17, the roller engages with and deflects the stop member 28 against the action of the compression spring as illustrated at Fig. 7. As the roller 20 passes the outermost end of the stop member 28, the spring 30 urges the plunger face 29a to again seat squarely against the stud face 24a and thus the stop member is again disposed in its operative position.

After completion of the required number of revolutions of the operating lever 17, the operator will invariably overrun the exact registering stop position and in which event, the operating lever is moved in a contra-clockwise direction until the roller 20 abuts against the end face of the stop member 28, see Fig. 6. When the roller 20 is thus positioned, against the end face of the stop member 28, after the required number of revolutions, the machine elements are set to begin another cycle of operation.

It is to be noted also that, in the illustrated

machine, Fig. 1, the slot 13 for clamping the master sheet to the drum is shown substantially in its registering stop position, while, when the master sheet is to be removed and replaced, the drum must be rotated conversely to its normal direction of operation and until the slot 13 is conveniently positioned as shown by broken lines. To permit this reverse motion of the drum, the stop member 28 is adapted to be readily rotated until the plunger face 29a engages with the rounded surface of the pivot stud 24, see Fig. 8, and thus the stop member 28 is retained in an inoperative position.

Having thus described my invention, what I claim is:

1. A machine embodying a rotatable element having a determinate registering position and means for rotating said element in opposite directions; in combination with a registering stop for said rotating means, said stop being effective only when said means is rotated in one direction, said stop including a pivot stud having a seat portion, a member positioned on said stud and adapted for rotation thereon, a plunger carried by said member and having an end face adapted to engage with said seat portion with means urging said face to engage with said seat and whereby said member is urged to a normal operative position when said member is rotatively displaced.

2. A device of the character specified that includes a crank handle having a projection thereon, a stop member normally disposed in operative position in the path of said projection, said stop member including a pivot therefor that is provided with a seat portion, a slidable plunger carried by said member, said plunger having a face portion adapted to engage with said seat in a

manner to permit a rocking movement of said member relative to said seat with means urging said plunger face against said seat and whereby said member is urged to its normal operative position when rocked therefrom.

3. A device of the character specified that includes a rotative element, a projection fixedly associated with said element, a pivoted stop member in the engaging path of said projection, said member embodying a pivot stud for said member that is provided with a seat portion, a plunger slidable within said member and having an end face adapted for engagement with said seat portion, pressure means within said member and in engagement with said plunger and whereby said plunger face is urged to squarely engage with said stud seat when said member is arcuately moved on said pivot stud.

4. A machine embodying rotatable elements having a determinate registering position and means for rotating said element in opposite directions; in combination with an arcuately adjustable stop for said rotating means that includes a pivot stud having a seat portion, a movable supporting plate for said pivot stud with means for securing said plate and stud in a determinate position along a given arc and relative to said rotating elements, a member positioned on said stud and adapted for rotation thereon, a plunger carried by said member and having an end face adapted to engage with said seat portion with means urging said face to engage with said seat and whereby said member is urged to a normal operative position when said member is displaced by means associated with said rotatable elements.

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